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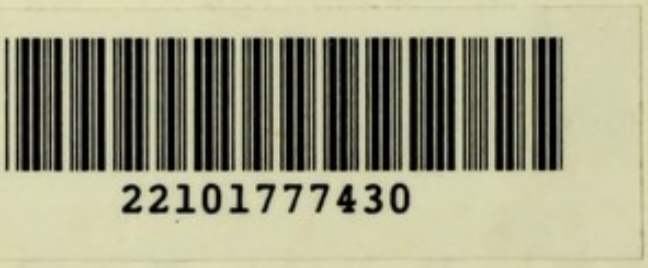
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A

PRACTICAL TREATISE

ON THE

DISEASES OF WOMEN.

BY

T. GAILLARD THOMAS, M.D.

THIRD EDITION, ENLARGED AND THOROUGHLY REVISED,

WITH TWO HUNDRED AND FORTY-SIX ILLUSTRATIONS ON WOOD.

LONDON:
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TO

JOHN T. METCALFE, M.D.,

PROFESSOR OF CLINICAL MEDICINE IN THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK.

My dear Doctor:

In the publication of this treatise I am secure of at least one pleasure, that of acknowledging my great indebtedness to you. Such an acknowledgment is usually merely a matter of compliment, but in my case it is more. Your conduct towards me from the first moment of our acquaintance has been such, that I find myself called upon, in simple justice, to confess that whatever of professional success has thus far attended me has been due much less to merit on my part, than to a generosity on yours which has known no bounds except those which I have been constantly forced to prescribe it. But not only has my connection with you yielded me many material advantages; a constant association with you has furnished one of the chief pleasures of my life, and the privilege of calling you friend has always been to me a source of pride.

What more can I ask for our relations for the future than that they may be as intimate as those of the past and equally free from any thought or word of reproach.

Very truly yours,

T. Gaillard Thomas.

PREFACE TO THE THIRD EDITION.

It is impossible for the author to introduce this, the Third Edition of his work, to the medical profession without expressing the sincere gratification which he has experienced from the kind reception with which its predecessors have met. The First Edition appeared in the year 1868; although large, a second was called for in 1869, and in 1871 a third was demanded. Only one acknowledgment can properly be made by an author for such appreciation of his labors, and this is to render his work more worthy of those who have encouraged him, by the most diligent efforts to improve it in every respect.

The author trusts that abundant evidence will be furnished by the text that he has not been idle or inappreciative. Though he has endeavored to avoid increasing unduly the size of the work, the additions amount to nearly one-fourth as much as the whole of the previous edition. Many portions have been rewritten, and several new chapters introduced. It will be found that in making these changes his views have been modified upon many points. For this he offers neither apology nor explanation. Had they not been changed by increasing experience and prolonged investigation, the necessity for an altered edition would not have existed. That his alterations may be found to be absolute improvements is his sincere hope.

For one of these, and for one only, he ventures to ask the indulgence of the reader. It is the discarding of the term chronic metritis, and the substitution of that of areolar hyperplasia. New terms always appear odd, and are apt to prove distasteful. He begs that no one will decide too hastily against this, but that all will believe that at least the object of the author is a good one, and he trusts that the propriety of the change may be dispassionately considered.

Some of the manipulations recommended here will be found difficult of performance by those who are unfamiliar with this field of practice; while a few may prove impossible to one who uses the cylindrical speculum. By the author, Sims's speculum has been invariably employed, and always with the assistance of a skilled nurse. This will account for apparent difficulties in manipulation which will be met with by those not working with the same means.

For the translations from German works, the author is much indebted to the kindness of Drs. John Jay, B. F. Dawson, Hugo Kuentzler, and B. Grunhut, of this city.

T. Gaillard Thomas, M.D.

No. 296 Fifth Avenue, New York,
January 10th, 1872.

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THE

DISEASES OF WOMEN.

CHAPTER I.

HISTORICAL SKETCH OF GYNÆCOLOGY.

At the present day, when so much attention is being paid to the diseases peculiar to women, it becomes almost necessary that a chapter upon the history of the subject should precede others of a more practical character in a systematic work. A knowledge of what has been accomplished in reference to any subject, and what was known concerning it in previous ages, cannot fail to interest the student, and render him more capable of appreciating recent advances. In this way, too, a taste for the study of ancient literature may be inculcated, and many a valuable hint, many a suggestive statement may be met with which will germinate for the common good. Some of the most valuable contributions to modern Gynæcology will be found to be foreshadowed, or even plainly stated, by the writers of a past age. Take, as examples, the use of the uterine sound, sponge-tents, dilatation of the constricted cervix, and even the speculum itself. Indeed, we need not seek in ancient literature for such illustrations of this fact, for nowhere could a more striking one be found than that of so valuable a procedure as Sims's operation for vesico-vaginal fistula being fully described in every detail in 1834, and so completely forgotten in twenty years as to be accepted as entirely new at the end of that time.

There can be no doubt that a knowledge of medicine as a science was possessed by the ancient Egyptians. Pliny informs us that in the times of the Ptolemies a medical school was established at Alexandria, and dissections of the human body legalized. They appear to have been especially skilful as oculists, and it is

probable that attention was paid to the diseases of women, for among the six medical books in the collection Thoth, consisting of forty-two volumes, one devoted to this subject is particularly mentioned.[1] Some modern Egyptologists have even stated that among the hieroglyphics the shape of the uterus can be recognized. As to the extent of Egyptian knowledge upon this subject we have no information, as the literature of that remarkable people has been entirely closed to us until, within a few years past, the genius of Champollion has discovered a key for its comprehension. Hope that the future may bring forth a great deal more than the past has done with reference to it may be further founded upon the fact that Herodotus[2] distinctly announces that specialties existed among them. "Here," says he, "each physician applies himself to one disease only, and not more. All places abound in physicians; some for the eyes, others for the head, others for the teeth, others for the parts about the belly, and others for internal diseases."

From Hebraic literature, which is so abundantly at our command, we learn almost as little upon our subject; and from the time of Moses, about 1500 B. C., to that of Hippocrates, 400 B. C., testimony of precise knowledge upon it is almost entirely wanting. This is the more astonishing when we bear in mind that in the Talmud are found evidences of a great deal of knowledge concerning the Cæsarean section and other subjects in obstetrics; that in the books of Moses we find intelligent reference to the hymen and to menstruation; and that in the New Testament we see St. Luke, a physician of the time, recording the fact of "a woman having an issue of blood twelve years, which had spent all her living upon physicians, neither could be healed of any," &c.

Although we know so little concerning the knowledge possessed upon this subject by those who preceded the Greeks in civilization, we cannot doubt that they did much to instruct the latter in this as in other departments of learning. History everywhere records the fact that the Greeks were instructed by the Egyptians, as the Romans subsequently were by the Greeks.

With our present knowledge of the literature of the most ancient civilizations, we must admit that with the writings of the Greek school, founded by Hippocrates, commences the history of Gynæcology. Three volumes were written upon the subject by

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[1] Abstract prepared for author by Charles Rodenstein, M.D.

[2] Book ii, c. 84.

authors contemporaneous with Hippocrates. They have ordinarily been attributed to him, but Dr. Francis Adams, the translator of the works of Hippocrates for the Sydenham Society, declares them to be "ancient but spurious, whose author is not known." In these books the subjects of metritis, induration, menstrual disorders, displacements, &c., are discussed. Aretæus, Galen, Archigenes, and Celsus, who probably lived in the first and second centuries, all treated of Gynæcology; the first describing accurately the vaginal touch, the varieties of leucorrhœa, and ulceration of the womb; while the second makes the first allusion on record to the speculum vaginæ, as being a distinct instrument from the speculum ani, and the third gives an excellent description of peri-uterine cellulitis.

Soranus, the younger, made important contributions to Gynæcology. He was educated at Alexandria, went to Rome in the year 220 B. C., where he wrote his celebrated work De Utero et Pudendo Muliebri. He is the oldest historian of medicine, and the biographer of Hippocrates. His accurate descriptions of the sexual organs were much admired. He takes pains to assure his readers that he dissected the human cadaver, and not monkeys, as did Galen and others. He compared the form of the uterus to a cupping-glass, showed the relation of this viscus to the ilium and sacrum, and made known the changes which the os undergoes during pregnancy. He attributes procidentia to a separation of the internal membrane of the uterus, speaks of the sympathy which exists between the womb and the mammary glands, and describes perfectly the hymen and clitoris.[1] He was the first, says Lessing, who treated of Gynæcology in a scientific manner.

From this time, for centuries, there is abundant evidence that the study of the subject was pursued with vigor, but so many of the works of the authors of those periods exist only in fragments, and so many are strongly suspected of being fictitious, that we pass them over to stop at the faithful compilation of Aëtius,[2] who flourished at Alexandria in the sixth century after Christ. His works, compiled in the great library at Alexandria, contain a digest of what was known and done by his predecessors and contemporaries, and offer the fullest and most reliable evidence concerning the knowledge of those times. In quoting him, and his

[1] Rodenstein's Abstract.

[2] I am indebted to the library of the New York Hospital for an opportunity of fully consulting this and other rare works which were accumulated by the late Dr. John Watson.

immediate successor, Paulus Ægineta, who was also a compiler, though a far less conscientious one, I must be understood as recording, not the views of these individuals, but those entertained by physicians who lived from the time of Hippocrates to the time of their writing, a period of about one thousand years.

In his 16th book Aëtius treats of the diseases of women in such a manner as to leave no doubt as to his having had a thorough knowledge of many disorders and means of investigation and treatment, which being rediscovered thirteen hundred years afterwards, have, in many instances, been regarded by us as entirely new. Thus he speaks of the speculum, sponge-tents, peri-uterine cellulitis, medicated pessaries, vaginal injections, caustics for ulcers of the cervix, dilatation of the constricted cervix, a sound for replacing the uterus, &c.

As I have already stated, Galen speaks of the speculum vaginæ in the second century; but Aëtius still more clearly mentions it and gives rules for its introduction, which are copied almost verbatim by Paulus without acknowledgment. The use of sponge-tents he very fully describes, telling of their mode of preparation, and even advising that a thread should be passed through them, for removal, and that a succession of them should be employed till complete dilatation is accomplished.[1] The importance of injections, the douche, hip-baths, and application of caustics to ulcers of the cervix, he also dwells upon, and advises the dilatation of a constricted cervix by means of a tin tube. The variety of vaginal injections in use among the Greeks was as great as that of to-day. As astringents, pomegranate rind, galls, plantain, rose oil, alum, sumach, &c., were employed, and as emollients, linseed, poppies, barley, &c., exactly as we use them now. They relied to a great extent upon the use of medicated pessaries in the cure of ulcerations and inflammatory engorgements, employing wool covered with wax, or butter mixed with saffron, verdigris, litharge, &c. Octavius Horatianus even goes so far as to advise a mixture of arsenic, quicklime, and sandarach in very foul ulcers. In addition to injections and pessaries, Aëtius mentions the use of vapor, medicated or simple, conducted to the cervix by means of a reed passed up the vagina.

The use of a uterine sound, passed into the uterus and employed as a repositor, is likewise alluded to by this author, in a passage where he advises that displacements of the uterus should be corrected *specillo et digito*.

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[1] Dr. H. G. Wright, Med.-Chir. Rev., No. lxxi.

Paul of Ægina, who succeeded Aëtius, alludes distinctly to the speculum as an instrument in general use before his time. "If, therefore," says he, "the ulceration be within reach, it is detected by the dioptra; but if deep-seated, by the discharges." And again: "The person using the speculum should measure with a probe the depth of the woman's vagina, lest, the tube of the speculum being too long, it should happen that the uterus be pressed upon."

It is curious to see how, even in many minor matters, the ancients anticipated discoveries which our contemporaries have brought forward as entirely new. For example, the air-pessary, made so popular in France and other countries by Gariel, is described and recommended by the Greeks. Colombat[1] declares that "the ancient Greek physicians made use of pessaries like those just mentioned (air-pessaries), of the form and length of the male organ, which is the reason why they are called πριαπισκωτα, or priapiform pessaries." Albucasis, in 1104, advised the use of an inflated pig's-bladder for the same purpose. The last-named author also describes herpes uterinus, and uterine hæmorrhoids are alluded to by Paulus Ægineta[2] in this explicit manner: "Hæmorrhoids form about the mouth and neck of the uterus, which will be discovered by the speculum." And thus it is with so many other modern suggestions, that the student of ancient medical literature is most willing to admit the truth of the proposition, formulated by Aristotle over two thousand years ago, that "probably all art and all wisdom have often been already fully explored and again quite forgotten."

The learning of the Greek School was appropriated by the Roman, which was an offshoot from it, as the writings of Celsus, Aspasia, Moschion, and Antyllus abundantly testify. But the knowledge of the schools of Greece and Rome was destined to be scattered abroad. At the period of the subjugation of Egypt and the destruction of the celebrated library at Alexandria by the Saracens, A.D. 640, it passed as a trophy of war into the hands of the Moslem invaders. "In a few centuries the fanatics of Mohammed had altogether changed their appearance," says the learned Draper.[3] "When the Arabs conquered Egypt, their conduct was that of bigoted fanatics; it justified the accusation made by some against them, that they burned the Alexandrian

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[1] Diseases of Females, Meigs's translation, p. 152.

[2] Sydenham Society's edition, vol. i, p. 645.

[3] Intellectual Development of Europe, p. 285.

library for the purpose of heating the baths. But scarcely were they settled in their new dominion, when they exhibited an extraordinary change. At once they became lovers and zealous cultivators of learning." The physicians of Alexandria were greeted by them as instructors, and from the seed thus planted sprang up the Arabian School. With other information, of course, they gained that pertaining to Gynæcology, but, the Mohammedan laws forbidding the examination of women by one of the opposite sex, the study languished in their hands; and although Rhazes, Avicenna, and their successors copied from Greek writers upon it, a want of zeal, due to want of personal observation and experience, allowed a retrograde movement to occur which left the subject enveloped in darkness for centuries afterwards. Albucasis, one of the last of this school, flourished at the end of the eleventh century, and after him, although from time to time writers of greater or less merit on diseases peculiar to women appeared, nothing worthy of special note occurs, except the occasional allusion to the speculum, which had evidently fallen almost entirely into disuse.

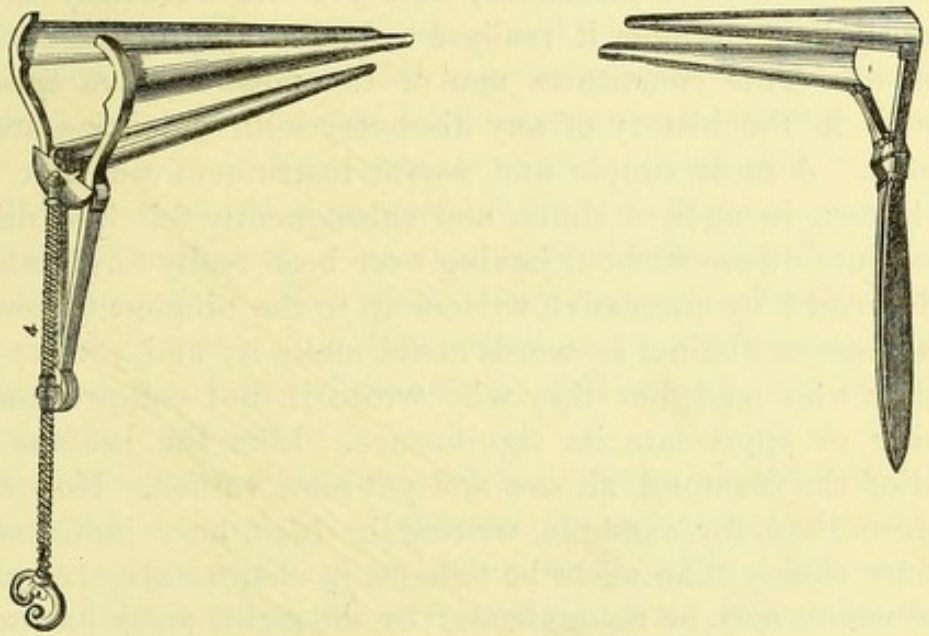
Although these facts prove that the physicians who flourished from the foundation of the Greek School of Medicine, 400 years before Christ, to the dispersion of the Alexandrian School by the Saracens, 640 years after Christ, were well informed in Gynæcology, and were familiar with means of investigation which were subsequently lost, or ceased to be appreciated, it must by no means be supposed that their knowledge was of the same exact and scientific nature as that which has prevailed since the modern introduction of the speculum. They did not sufficiently separate inflammations of the puerperal and non-puerperal uterus, confounded affections of that organ with those of the pelvic areolar tissue, and made no distinctions between diseases of the mucous membrane and parenchyma, nor the morbid states of the neck and body. Among their remedies were numerous articles which to-day we regard as inert or even injurious—as pigeon's dung, woman's milk, stag's marrow, &c.; and Aëtius and Paulus seem to have been as partial to the "grease of geese" as our Milesian population is at present.

The learning of the Arabians was in time, like that of the rest of the world, gradually enshrouded by the ignorance and superstition of the period termed the "Dark Ages." During that time many of their writings, as well as those of the Greek and Roman schools, were destroyed or lost; but as society emerged from the

darkness which overshadowed its intelligence, we see the thread at once taken up and followed, though languidly and without vigor, to the beginning of the nineteenth century.

Toward the middle of the seventeenth century we find very special and full allusion made to the speculum and its uses by Ambrose Paré and Scultetus; the instrument being well represented by diagrams, with descriptions attached.

Fig. 1.



Ancient valvular specula. (Scultetus.)

"Fig. 1," says Scultetus, "is an instrument which they call 'speculum ani, vaginæ et uteri,' in that by its help ulcers of the rectum, vagina, and uterus may be seen, to be carefully observed, according to their extent and kind."

Aëtius and Paulus evidently knew of a tubular speculum, since they say, "lest the tube of the speculum be too long," &c.; but Scultetus, as already shown, figures a bi-valve and quadri-valve, closely resembling those in our hands at present. It is worthy of mention, in this connection, that there is now preserved in the Museo Borbonico at Naples, a bi-valve speculum which was removed from the ruins of Pompeii.

It has already been stated that Aëtius makes an obscure reference to a sound for replacing the uterus. This is by no means the first notice of this useful instrument, for it is repeatedly mentioned by Hippocrates, and Avicenna, the Arabian, likewise alludes to it. Prof. Simpson[1] asserts, however, that it was used

[1] Obstetrical Works.

only for dilatation of the cervix, and not for exploration and measurement. In 1657, a probe, used as we now employ the uterine sound, and intended especially for uterine exploration, was actually described by Wierus,[1] and alluded to by Hilken, Cooke, and others.

As we pass in review the chief works which appeared upon our subject in the eighteenth century, we find frequent mention of the speculum, which is spoken of as a matter of course in the treatment of uterine affections, and yet was evidently not so employed as to render it really a valuable aid in diagnosis or treatment. This constitutes one of the most curious episodes met with in the history of any discovery with which we are acquainted. A most simple and useful instrument was not only well known in ancient times, and subsequently fell into disuse, but fell into disuse without having ever been really forgotten. It was described by successive writers up to the nineteenth century in language as distinct as words could make it; and yet not only did they who read, but they who wrote it, not comprehend its meaning or appreciate its significance. Like the Indians possessed of the diamond, all saw and yet none valued. How could Ambrose Paré, for example, writing in 1640, have indicated its use more clearly than when he tells us, in chapter xix, that ulcers of the womb may be recognized, "by the sight, or by putting in a *speculum?*" In a copy of his works, in the library of Prof. W. A. Hammond, the word speculum is italicized in this sentence. Scultetus, as we have seen, not only described, but figured the instrument in 1683.

In 1761, Astruc,[2] "Royal Prof. of Physic at Paris," in describing occlusion of the vagina and obstruction to the menstrual flow, says: "There is nothing more required than to examine the vagina by introducing the finger into it, rubbed previously with oil or pomatum; but, if that be not sufficient, a *speculum uteri* may be used, or some other more simple instrument for dilatation, in order to be able, by means of the dilatation of the vagina, to judge by the sight of what the touch could not decide."

In 1801, forty years after this, Récamier is supposed by many to have invented the speculum. Most assuredly it was not for a discovery, but for the regeneration of an instrument which had

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[1] Dr. H. G. Wright, loc. cit.

[2] Diseases of Women, Eng. ed., vol. i, p 135.

been curiously lost sight of, that the world was indebted to this great man, who was really the founder of the modern school of Gynæcology. Guided by the advice found in many works which his library must have contained—works with which to suppose him not to have been perfectly familiar would be to cast a slur upon his medical research—he employed a speculum vaginæ in 1801. Like his predecessors, he did not appreciate the great results which were to flow from it; nor did he appear to have regarded himself as having invented it. It was not until 1818, that he introduced it to the profession, and gave it its place as a valuable addition to science. Can any one suppose that it could have required seventeen years of experimentation and study for a man with the talent of Récamier, to have applied this simple and useful instrument to purposes of utility? Is it not more likely that the experience of seventeen years taught him the full value of the instrument? The credit which belongs to Récamier is not that of an inventor, but that which is equally great, of having recognized the value of what was well known, but not appreciated before his time.

Even before this fortunate revival, as the eighteenth century approached its close, the glimmer of the new era which was about to dawn could clearly be detected in the advanced views which were promulgated by Garangeot and Astruc in France, and Denman, John Clark, and Hamilton in England. The early part of the nineteenth century found the field occupied chiefly by Sir Charles Clarke and Dr. Gooch in England, and Récamier and Lisfranc in France. These were not the only eminent writers of that time, but they were unquestionably those who chiefly moulded professional opinion.

Even at that period Gynæcologists ranged themselves into two parties, which, so late as at our day, have scarcely coalesced. In England the feeling was strongly in favor of regarding the local disorder as the result and not the cause of concomitant constitutional derangement; while in France the uterine disease was viewed as the main element, and the general condition as dependent upon and resulting from it.

The great advantages of the speculum secured its rapid adoption in France. More slowly it forced its way, in spite of many prejudices, into Great Britain, and before a great many years had passed, it was, throughout the civilized world, placed upon an enduring basis as one of the many boons bestowed by medicine upon humanity. The way being opened for investigation by this instru-

ment, new aids to diagnosis and treatment were rapidly advanced. In 1826, Guilbert read before the Academy of Medicine of Paris an essay proposing the application of leeches to the cervix. In 1828, Samuel Lair read before the same body a paper in which he counselled the use of the uterine sound. In 1832, M. Melier presented an essay, in which he offered two new suggestions in the treatment of uterine diseases—one, injections into the cavity of the cervix; the other, local applications through the vagina by dossils of lint saturated with astringents, narcotics, &c. His views are quoted extensively by French writers, and Nonat says that the author recognizes, "avec une franchise qui l'honore," that Boyle, Chaussier, Guillou, and others had a short time before him used similar means. Very curiously neither Melier nor his commentators mention that both these suggestions are made and fully elaborated by Astruc, in his excellent article upon "Ulcers of the Uterus." He describes these applications of medicated charpie very carefully, remarking that it is advisable to "tie a thread to every pledget, in order to draw it out again when it is proper to renew the dressing." And he not only advises injections of water, impregnated with different substances, into the cavity of the womb, but also the juices of plantain, houseleek, nightshade, &c. "For," says he, "as it is of consequence that these injections should enter into the uterus, where the ulcer has its seat, it is proper they should be made by a professor of midwifery, capable of introducing skilfully the end of the canula into the orifice of the uterus," &c.

At this time arose the question as to cancer of the uterus, whether it was the local manifestation of a general blood state, or the result of an inflammatory engorgement long neglected; a question which excited warm discussion, and brought forth the most opposite views.

The ambition of Récamier was not satisfied with exposing the cervix uteri to view. He had the boldness to explore the cavity of the body of the organ, almost establishing the use of the sound, and even, by means of a species of scoop called a curette, ventured in certain cases to scrape off its investing mucous membrane. In addition he described, through one of his students, pelvic cellulitis, and gave the first intimation which modern observers have had of the possibility of pelvic hæmatocele.

These discoveries on the part of this French physician mark an era in Gynæcology; one no less important was created by the appearance in the field of labor of the late Sir James Simpson,

of Edinburgh. About the year 1843, he rapidly developed and recommended to the profession several of the most important means of diagnosis now at our command. The utilization of the uterine sound, which Lair had never succeeded in introducing into general practice, and the dilatation of the canal of the cervix by sponge-tents, so that the body may be examined, are both due to his genius and enterprise. He likewise contributed from time to time original and valuable papers upon pelvic cellulitis, hæmatocele, uterine flexions, &c. His articles, indeed, first excited the study of uterine displacements in Great Britain, and to his efforts may be traced, in a great degree, the interest which has been of late years aroused in that country with reference to uterine pathology. Until this time the subject had attracted very little attention there, and advances which had been made in it were due almost entirely to French pathologists. It is true that the excellent work of Sir Charles Clarke existed; but that warm and zealous interest which has since resulted in so much benefit to Gynæcology, had not then been excited. But Prof. Simpson was not alone in this work. Dr. J. H. Bennet, of London, at that time a young physician, who had for some years served as *interne* in the hospitals of Paris, returned to his own country imbued with the views which Récamier and Lisfranc had disseminated among a large circle of followers. In 1845, the first edition of his work on Inflammation of the Uterus appeared, and it is safe to assert that no work of modern times, written upon any subject connected with our profession, has exerted a more decided and profound influence. Taking up the matter with a vigor and energy which forced attention, if not conviction, he produced an undeniable impression upon the profession, not only in his own country, but in Germany, France, and America. However others may differ from him, no candid mind can deny him the obligation under which he has placed his brethren by arousing their attention and directing their investigations into proper channels. The chief points insisted upon in his work are these: 1. That inflammation is the *primum mobile* in uterine affections, and that from it follow, as results, displacements, ulcerations, and affections of the appendages. 2. That menstrual troubles and leucorrhœa are merely symptoms of this morbid state. 3. That in the vast majority of cases, inflammatory action will be found to confine itself to the cervical canal, and not to affect the cavity of the body. 4. The propriety of attacking the disease in its habitat by strong caustics.

It is now twenty-six years since the appearance of the first edi-

tion of Dr. Bennet's work, and since during that period his views have been freely criticized and vehemently opposed, since too his own experience has ripened and he has had abundant time for more mature reflection, it must be a matter of great interest to all to know to what extent his opinions have been modified. In the London Lancet appears the abstract of a paper read by him before the British Medical Association in 1870, which serves to contrast his present with his former views.

The purport of this paper will be best given in the recapitulation by which the author concludes it:

"1. I consider that, under the influence of mechanical doctrines pushed to an extreme, uterine displacements are by many too much studied *per se*, independently of the inflammatory lesions that complicate and often occasion them. 2. That the examinations made to ascertain the existence of inflammatory complications are often not made with sufficient care and minuteness, as evidenced by the fact that I constantly see in practice cases in which inflammatory lesions have been entirely neglected, and the secondary displacements alone treated. 3. That inflammatory lesions are often the principal cause of the uterine displacements through the enlargement and increased weight of the uterus, or of a portion of its tissues, which they occasion. 4. That when such inflammatory conditions exist, as a rule they should be treated and cured, and then time given to nature to absorb morbid enlargements before mechanical means of treatment are resorted to."

Soon after the appearance of Dr. Bennet's work, a discussion sprang up between its author on one side, and Drs. Robert Lee, West, and Tyler Smith on the other, with reference to the true character of ulceration of the neck; Dr. Bennet supporting the view that the cervix is often affected by inflammatory ulceration, and his opponents denying it. The discussion, looked at calmly by posterity—nay, even at the present time—will be pronounced a polemic disputation, which has not served to clear up the subject, nor accomplished any really good end.

One further benefit which Dr. Bennet conferred in his work, was placing upon a surer basis than it had yet occupied, the differentiation of inflammatory engorgement and induration from commencing cancer of the neck.

It would be well, before proceeding farther, to state as succinctly as possible the different pathological views which from this time, and even somewhat before it, were offered to the profession, and more or less generally adopted.

They may be thus enumerated:

1st. That inflammation is the starting-point of most of the affections of the uterus, and that a large number of evils follow this morbid state as results.

2d. That uterine disorder is dependent upon a constitutional derangement, and would yield without other treatment than that directed to the removal of the general condition.

3d. The view of Dr. Bennet, which is similar to the first mentioned, with this additional point, that metritis generally limits itself to the neck, and only exceptionally affects the body.

4th. The view of Dr. Tyler Smith, that leucorrhœa arising from glandular inflammation in the cervix is the cause of granular degeneration of this part, and of subsequent engorgement.

5th. The view that uterine disorders often, if not generally, commence in displacement, which is a primary and not a secondary condition, and that to relieve the train of morbid symptoms, this, its exciting cause, should be first removed.

6th. The view that uterine disorder is commonly the result of ovarian inflammation, which reacting on the womb is the prime mover, in many cases, of its morbid states.

I have no intention of fully discussing here the merits of these theories, but will limit myself to a few words connected with the history of each.

The theory mentioned first in this enumeration is the oldest on record, the writers of the Greek School even, adopting it. Thus Paulus Ægineta heads his chapter on the subject, "Inflammation of the uterus and change of its position." One of the symptoms of such inflammation he considers to be retroversion of the uterus. In the beginning of the present century this was generally accepted in France. Lisfranc and Récamier adopted it, and it was transferred to, and advocated in, Great Britain by the writings of Dr. Bennet.

The views of this last author, appearing as they did at a time when the field of uterine pathology was almost entirely uncultivated, and characterized as they were by a great deal of persuasive force, produced in this country so decided an impression that even now I do not believe that I state too much in asserting that the great majority of our gynæcologists still indorse them. As to myself I am forced freely to confess that since the publication of the first edition of this work my opinions with regard to them have undergone a material alteration. This alteration has resulted not from theoretical reasoning, but from careful and can-

did investigation and experimentation at the bedside. I have come to regard the belief of Dr. Bennet in inflammation as the great moving cause, the most common factor, in the production of uterine diseases not as an error in itself, but as a principle too exclusively adopted, too generally applied. And as my views have thus altered with reference to pathology, they have, necessarily, likewise changed with reference to treatment. It appears to me that the time has arrived when many who have accepted the opinions of Dr. Bennet will be prepared to admit the fact that his treatment is too severe; his use of caustics too heroic; and his neglect of artificial support to the displaced uterus too decided. No one could have accepted his views more cordially than I did. They were seductive by reason of their simplicity, and plausible from their apparent rationality. Careful observation at the bedside in as large a field as could be desired, has led me to feel that evil rather than good results from too exclusive an adherence to them. Feeling this, I shall strive in the work which I am now undertaking so to modify my statements as to meet what I regard as the true requirements of the subject.

No one can devote himself to the practical study of uterine diseases without being impressed with the strong grounds which exist for the maintenance of the second of the theories mentioned. No grave uterine trouble affects the system for any length of time without reacting to a greater or less extent upon the general health. The nervous system becomes greatly disordered, the functions under its influence are badly performed, and derangement in hæmatosis is the invariable result. As the local disease often approaches stealthily, and may exist for a length of time without exciting suspicion, what is more natural than that many should view it as one of the numerous results of the general depreciation? These three facts, however, which will constantly repeat themselves, as often, I may say, as favorable cases offer for testing the question, will, I think, very generally lead to a distrust of the doctrine: 1st, the fact that uterine disease and constitutional derangement existing together, a cure can rarely be effected by general means *alone;* 2d, that the uterine affection being removed, the general state is at once improved; and, 3d, that those general conditions which prostrate the vital forces to the last degree, as, for instance, tuberculosis, uræmia, scurvy, leucocythæmia, &c., destroy life without ever showing, unless as an exception to a rule, the local disease as a consequence of the constitutional malady.

The constitutional depreciation of a woman will, however, sometimes prove a predisposing cause of local disease. As granular degeneration under the lids will arise from this cause, so will a kindred condition often occur on the cervix uteri, yet both will require local as well as general treatment. The enfeebled woman is more liable to subinvolution, passive congestion, and displacements, after delivery, than the strong; and inflammation of the glands of Naboth is a well-known result of phthisis pulmonalis, tertiary syphilis, and anæmia.

The third of the theories mentioned has been already sufficiently spoken of. Those parts of it which are peculiar to Dr. Bennet will be fully dealt with elsewhere.

The theory of Dr. Tyler Smith[1] I lay before the reader in his own words: "It is my conviction, notwithstanding, that in the majority of cases in which morbid states of the os and cervix are present, cervical leucorrhœa, or, in other words, a morbidly augmented secretion from the mucous glands of the cervical canal, is the most essential part of the disorder, and that the diseased conditions of the lower segment of the uterus, which have been made so prominent, are often secondary affections resulting from the leucorrhœal malady." This theory was by no means a new one, when advanced as above mentioned, for Lisfranc[2] mentions it thus: "Observation proves that leucorrhœa can in the first place cause uterine engorgements, and that later it may be kept up by them; it occasions them often."

Lisfranc, however, says "often," while Dr. Smith says, "in the majority of cases." But even before Lisfranc it had attracted attention, for Paulus Ægineta[3] gives "defluxion" as one of the causes of "ulceration of the womb." That an acrid leucorrhœal discharge will create abrasion of the os, follicular vaginitis, urethritis, pudendal inflammation, and pruritus, no one will deny. We see a similar irritation occurring on the upper lip in nasal catarrh in children, which sometimes spreads as an eruption over the whole face. The leucorrhœa regarded by Dr. Smith as the primary disease is only a symptom of cervical endometritis, which may disorder nutrition in the deep tissues of the cervix, and result in enlargement and induration. The views of Dr. Smith were brought forth at a time when Dr. Bennet was pressing the theory of inflammation as the keystone of uterine pathology, and in combating the idea of parenchymatous inflammation, he recorded

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[1] On Leucorrhœa.
[2] Clin. Chirurg., vol. ii, p. 303.
[3] Op. cit., p. 624.

the important fact that the morbid state described under that name is very often preceded by, and results from disease taking its rise in the mucous lining of the canal. Dr. Smith's position was maintained with all that ability and force which have rendered him so popular as an author amongst us in America, and the influence of his writings upon uterine pathology can be at present clearly traced in this country.

In the year 1854, a discussion, which soon assumed extensive proportions and elicited great warmth, arose in the Academy of Medicine of Paris, with reference to the treatment of uterine displacements. M. Velpeau stood forth as champion of the view which is here expressed in his own words. "I declare, nevertheless, that the majority of the women treated for other affections of the uterus have only displacements, and I affirm that eighteen times out of twenty, patients suffering from disease of the womb, or of some other part of this region, those for instance in whom they diagnose inflammation (engorgements), are affected by displacements." In this and subsequent discussions he was upheld by some of the first physicians of Paris, and by many the view then expressed is still adhered to. It has resulted in a vast number of mechanical contrivances, called pessaries, to restore the organ to its place in the hope of thus striking the pathological series at its root. Intra-uterine, vaginal, and abdominal supporters have been employed, and attempts have been made to offer support even through the rectum.

The peculiar and very marked sympathy existing between the uterus and ovaries has given rise to the theory mentioned last in the enumeration. I meet very often, as I suppose every practitioner does, with cases of simple, uncomplicated uterine disease in which the patient has been treated for ovarian disorder, which is presumed to have been the cause of the uterine ailment. So often do I meet them, indeed, that I cannot but regard the belief in this view as very prevalent in America. Frequently it is used as a cloak for ignorance, the physician fixing upon it from his inability to determine the real pathological features of the case. At other times sensitiveness over the ovaries, with enlargement, is regarded by capable men as producing a series of evils, no special attention being paid to coexisting uterine disease, which is viewed merely as a complication. There can be no doubt that ovarian inflammation, which is clearly diagnosticable, gives rise to many of the symptoms of uterine disorders, but under these circumstances a carefully made differential diagnosis will generally settle the point. Nor is it less certain that uterine diseases very

frequently produce sympathetic trouble in the ovaries, resulting in great sensitiveness upon pressure, and sometimes enlargement. As, however, in this case no treatment directed to the ovaries will affect existing uterine disease, while curing the latter will generally remove the ovarian affection, it appears to me that in the present state of our pathological knowledge we are forced to conclude that if certain symptoms diagnostic of uterine or ovarian disease exist, and examination show a uterine lesion, with evidences of ovarian enlargement and sensitiveness, it is safe to decide that the latter state is the result of the former; but if no uterine disease be discoverable, and the ovarian symptoms alluded to exist, we are warranted in believing that ovarian disorder gives rise to them.

Of late years rapid advances have been made in the surgical treatment of the diseases of women. Under the lead of Simpson, Wells, Brown, and Clay, in Great Britain; of Simon, Esmarch, Ulrich, and Heger, in Germany; and of Sims, Atlee, Emmet, Bozeman, Peaslee, Dunlap, and Kimball, in the United States, operations for ovariotomy, the cure of ruptured perineum, vesico-vaginal fistulæ, constriction, or tortuosity of the cervix, prolapsus uteri, &c., have been perfected and are now constantly practiced. For a very long time these valuable procedures were so entirely neglected, that professional opinion in their favor has of late years, like a pendulum swung too far in one direction, gone to an extreme in the other. The excessive surgical tendencies of many of the leading gynæcologists of our day is a matter to be deplored by all who wish well to Gynæcology. Many conditions which time and patient medical treatment would readily cure are met boldly, and without sufficient consideration, by operations more or less formidable. Every practitioner must often have seen cases in which pelvic peritonitis or cellulitis has arisen from an incision of the neck of the uterus, or some similar procedure, in which the patient is for months confined to bed, and in which he is forced to doubt the necessity for the surgical resort which has been productive of the evil. No one who reads these pages will suspect me of a want of appreciation of the operations to which I have alluded, nor to timidity in resorting to them. I regard them as great advances in Gynæcology, and in practice commonly resort to them. It is not to their use, but to their unquestionable abuse, that I am objecting. The last remark applies with equal force to the almost exclusive reliance which by many seems placed upon local treatment in the cure of uterine disorders. One who fre-

quently sees cases of uterine disease in consultation, will meet with many in which he is called upon to urge cessation of all local treatment, as the first step in the proper management of the case.

The following passage, which appears in the Lancet of November, 1868, so well expresses the views which are, I think with justice, gaining ground with the profession upon this subject, that I present it at length:

"Practitioners who are much consulted about the diseases of these organs, know full well the peculiar mental and moral effects that are produced by the constant direction of the attention to them. There is much reason to believe that, in many instances, morbid uterine sensations are simply intensified and maintained by local treatment, of whatever kind; and there is a strong and growing feeling, particularly amongst country practitioners, that all uterine specialists are not unmixed benefactors to the human race. There is a growing belief that, in a majority of ailing women, there may be found sufficient flexion, or displacement, or congestion, or tenderness, or ulceration of the uterus, to furnish grounds for the employment of local means, and that these means often do more mischief than good. On the other hand, it is perfectly beyond question, that many women, with real and serious uterine ailments, suffer much unnecessary pain and distress so long as local treatment is neglected, and are speedily restored to health and comfort when it is used. On the whole, we lean to the opinion that cases of the latter kind are outnumbered by the former. We incline to the belief, that for every woman who is greatly relieved, or altogether cured, there will be others who leave the hands of the uterine specialist in much the same state as when they went to him, except—and the exception is important—that they have become accustomed to think perpetually about their genital organs, and to have them examined and manipulated. . . . . We would strongly urge, with regard to the sound and the pessary, the famous question that Lord Melbourne was wont to ask with reference to political activity: Cannot you leave it alone? If the doubt were in every case, 'Is not this an instance in which local treatment may be dispensed with?' rather than, 'Is it not one in which local treatment may be used?'—we are sure that there need be no neglect of any patient requiring it; and at the same time there would be less of the dissatisfaction which is now somewhat widely felt, and not altogether uncalled for, at the prominence given by some specialists to trifling variations in the condition of the uterine organs."

Until within the past twenty years, Germany has not been abreast of France and England in the advancement of Gynæcology. During that time, however, she has done very much. To-day,

confessedly in advance of all other nations in the study of pathology; the laborious, conscientious, and persevering scholars of that country are altering and improving our views in reference to this subject, while works of great practical value are coming forth from them to enrich our literature. Among these may be especially mentioned those by Siebold, Mende, Meissner, Kiwisch, Lumpe, Oppolzer, and Hennig. The work of Scanzoni, translated by Dr. Gardner, of this city, is well known to all, and Dr. John Clay, of Birmingham, has rendered service by his able translation of the chapters of Kiwisch's work on the Pathology and Treatment of the Diseases of Women, which relate to affections of the ovaries.

The first volume of Professor Julius M. Klob, of Vienna, upon the Pathological Anatomy of the Female Sexual Organs, which has been translated by Drs. Kammerer and Dawson, of New York, has proved so valuable an addition to the library of every practitioner in this department that all look with eagerness for the appearance of the second, which is now promised.

It is a great source of pleasure to me before closing this sketch to be able to record the fact that America has not been wanting in her contribution towards the progress of this branch of medicine. While the interests of this subject were, during the early part of the present century, advanced abroad by those whose names have been mentioned, in America they were pressed upon the attention of the profession and assiduously cultivated by three able advocates, all, curiously, from the same city—Dewees, Meigs, and Hodge. Each of these observers brought to his work the most signal ability and enthusiasm, and having abundant opportunities as public teachers and writers, of disseminating their views, they each exerted a decided influence upon the mind of the profession. To the last of these gentlemen the profession throughout the world is more deeply indebted for means of properly sustaining the uterus by pessaries than to any one who has ever labored in this field.

It is to this country that is due the credit, not only of the first performance of ovariotomy in 1809, by Dr. Ephraim McDowell, of Kentucky, but its subsequent development into a systematic operation by his compatriots. It was never even attempted in Great Britain until 1823. No successful case was ever performed in London until 1842, in Scotland only one successful case was reported up to 1862, and in Ireland, at that time, not

one success was on record.[1] In the meantime it had taken deep root in America; even as early as 1830, Dr. McDowell having performed it thirteen times, with eight favorable results, and before 1862, Dr. Atlee had achieved that eminence, as an operator, which he now enjoys.

Systematic works upon Gynæcology of great merit have been issued by Meigs, Hodge, Bedford, Sims, Byford, and Emmet. It would be inappropriate for me to speak lengthily here in praise of these, but all who know them will admit the justice of the statement that each possesses a marked individuality, and that each has aided in the advancement of the science of which it treats.

I have elsewhere called the results of the labors of Récamier and Simpson eras in the progress of this department. I now venture so to style those of Marion Sims. In doing this I make no reference to the improvements inaugurated by him in the treatment of injuries to the genital organs; my allusion is to the great advantages which now flow and are to flow from the invention of his speculum, which exposes the uterus by a new principle, and opens the way to a more complete examination of that organ. Récamier marked an era by improving our powers of diagnosis in exposing the cervix uteri; Simpson another, by opening to investigation the body of the uterus; and Sims a third, by rendering both investigations more simple, complete, and satisfactory. The ordinary specula in use before the discovery of Sims's, simply separate the vaginal walls mechanically, and thus expose the uterus. Sims's instrument, on the other hand, elevates the posterior vaginal wall, which allows the entrance of air to distend the whole passage, the woman lying on her side in such a manner that the cavity can be probed with the most perfect ease, and applications made to the fundus. I am fully aware that many will differ from me in this opinion, but being entirely free from prejudice in favor of this instrument, or against the ordinary varieties, I maintain it fearlessly, feeling confident that time will prove it to be correct. No one who has not tested the two methods of examination is really entitled to an opinion upon the point, and I cannot doubt the conclusion of him who has done so faithfully and intelligently.

Within the last twenty years a vigorous attempt has been made to open the field of Gynæcology to female labor, and to

[1] Peaslee on Ovariotomy. Pamphlet.

place it and its sister branch, Obstetrics, to as great an extent as possible, under the management of female practitioners. For this purpose female medical colleges have been established in New York, Philadelphia, and other cities of America; and of late the English journals inform us of the foundation of one in London. In France a proportion of the work has, for a long time, been allotted to the "Sages Femmes," or midwives. Many of those who foster the attempt appear to regard it as a novel one, and reiterate the assertion that woman has never been allowed a fair trial in this, her most appropriate sphere of action. This is a great error. Not only has the way been open to her as competitor with man, but at times it has been almost entirely relinquished to her keeping. If success has not attended her efforts, it has been due, not to want of opportunity, but of capacity or adaptation. Aëtius makes mention of the writings and practice of Aspasia, who was a doctress at Rome about the third century, and copies extensively from her upon ulceration and displacements of the womb. Paulus Ægineta is, for some of his chapters, indebted to Cleopatra, fragments of whose writings he has preserved to us. He evidently quotes her with respect, and credits her with what he borrows. In the thirteenth century an Arabian woman, Trotula by name, published a treatise, in which she mentions that many Saracenic women practiced the art of obstetrics at Salerno. In later times, during the eighteenth and nineteenth centuries, women were graduated as Doctors of Medicine in the Italian Universities, and as such enjoyed great consideration. In 1732, La Dottoressa Laura Bassi graduated at Bologna, and filled the chair of Natural Philosophy for six years. In the last part of the eighteenth century, Madonna Manzolina lectured on anatomy at Bologna, while others of lesser note filled positions of minor importance. The women of Greece and Rome approached the task as well prepared to meet its requirements, both mentally and physically, as do those of our day; and surely no lack of opportunity could have been complained of by the successors of Agnodice.[1] Those of the Arabian civilization had not only opportunity, but the incentive of duty, to urge them on to the acquirement of knowledge and skill; for so great were the

[1] The story of this physician is worthy of note. Contrary to the existing laws, she studied medicine, met with great success under the disguise of a man, was accused of corruption and brought to trial. Making her sex known to the judges, she was not only acquitted, but a law was passed allowing all free-born women to study medicine in future.

sensuality and libertinism of the Saracens, that the Mahommedan laws prohibited the attendance of males upon females; and thus their whole treatment, except in extreme cases, devolved upon the midwives.

No one of extended views can desire to see the doors of science shut against any who are sincere in their wish to engage in its pursuits; nevertheless, there is no resisting the evidence of history, that, in spite of opportunities and incentives, female practitioners have failed in times past, not only to advance, but even to maintain the integrity of the art intrusted to their hands. The experience of the future may contradict that of the past; but even its doing so will offer no good reason for despising the lesson which the past has left on record.

The opportunity which is now offered them for retrieving what has been lost in former ages is certainly all that the most exacting of modern reformers could require. The prejudice which for years existed against the admission of females to the practice of medicine, appears to be, in this country and in Europe, gradually wearing away. In this city, some of the most able of our junior teachers are engaged in instruction in the Female Medical College, and many of the most eminent and conservative of the senior members of the medical profession, have accepted positions as consultants to the hospital attached to the college. Female practitioners are freely met in consultation in general practice, and the County Medical Society, one of the two representative associations of the city, has recently admitted a doctress to its ranks as a member. The general and sincere feeling of the progressive and most prominent members of the medical profession here is unquestionably this, to allow to females a fair opportunity to enter the field of medicine, and strive to establish their ability to perform its arduous functions, however much they may doubt the success of the enterprise or deplore its inception.

I am so often consulted by recent graduates as to the works which they should make the basis of a library upon Gynæcology, that I feel that I may render a service by the following list. Only such works are recorded as will prove of absolute service to the active practitioner who seeks knowledge chiefly upon practical points:

Nonat—Maladies de l'Utérus, 1 vol.
Aran—Maladies de l'Utérus, 1 vol.
Becquerel—Maladies de l'Utérus, 2 vols.
Blatin et Nivet—Maladies des Femmes, 1 vol.

West—Diseases of Women, 1 vol.
Tilt—Uterine and Ovarian Inflammation, 1 vol.
Bennet—On the Uterus, 1 vol.
Simpson—Diseases of Women, 1 vol.
Hewitt—Diseases of Women, 1 vol.
Churchill—Diseases of Women, 1 vol.
Byford—Medical and Surgical Treatment of Women, 1 vol.
Sims—Uterine Surgery, 1 vol.
Baker Brown—Surgical Diseases of Women, 1 vol.
Tilt—Uterine Therapeutics, 1 vol.
Scanzoni—Diseases of Females, 1 vol.
Meigs—Diseases Peculiar to Females, 1 vol.
Bedford—Diseases of Women and Children, 1 vol.
Colombat—On Females (annotated by Meigs), 1 vol.
Ashwell—Diseases of Women, 1 vol.
McClintock—Diseases of Women, 1 vol.
Courty—Maladies de l'Utérus et de ses Annexes, 1 vol.
Hodge—Diseases Peculiar to Women, 1 vol.
Klob—Pathological Anatomy of the Female Genital Organs, 1 vol.
Spencer Wells—On Diseases of the Ovaries, 1 vol.
Kiwisch—On Diseases of the Ovaries, 1 vol.
Elliot—Obstetric Clinic, 1 vol.
Wright—Diseases of Women, 1 vol.
Emmet—On Vesico-Vaginal Fistulæ, 1 vol.
Duncan—Parametritis and Perimetritis, 1 vol.
Duncan—Fecundity, Fertility, and Sterility, 1 vol.

CHAPTER II.

THE ETIOLOGY OF UTERINE DISEASES.

In investigating the causes of uterine diseases I shall refer especially to those which are active in this country. I would not, however, be understood as drawing any comparison between their frequency here and abroad, for in the absence of statistical evidence such an attempt would necessarily be futile. It is easier, however, to write of habits which are under our immediate observation, than of those concerning which we merely read and hear; and for this reason I give myself the limits herein pre-

scribed. My intention is not in the present chapter to review all the causes of uterine disorders, but to confine myself to the consideration of those which are avoidable, incurred merely from disregard of the laws of health, and which are generally rather predisposing than exciting. Others, which are accidental and exciting, will be mentioned in connection with special diseases as they come under notice.

If we compare the present state of women in refined society over the world with that of the working peasants of the same latitudes, or with the North American squaws, or the powerful negresses of the Southern States, we can with difficulty believe that they all sprung from the same parent stem, and originally possessed the same physical capacities. Observation proves that women who are not exposed to depreciating influences can compete in strength and endurance with the men of their races, and in savage countries they are sometimes regarded as superior to them. In the lower orders of animals this equality is still more marked. The mare endures as much as the horse, and some of our most celebrated racers have represented the female sex. The lioness is fully as dangerous to the hunter as her more majestic consort, and the bitch proves as untiring in the chase as the most muscular dog in the pack.

From all these facts we may logically argue, that the human female, if properly developed and placed beyond causes which militate against her physical well-being, would be in no great degree the inferior of the male. This position I now assume, and maintain that the customs of civilized life have depreciated her powers of endurance and capacity for resisting disease. My efforts will be directed to an endeavor to point out what these habits and influences are. I do not, of course, advance the statement that uterine diseases are unknown among uncivilized women, for I have too often seen prolapsus, retroversion, ulceration, and kindred disorders among the former slaves of this country to do so. These affections were, however, rare among them, and not *exceedingly common*, as they are amongst our white women, and even when they existed, they did not so profoundly affect the constitutions of those suffering from them.

Those influences, which, growing out of civilization and refinement, tend most decidedly to produce uterine disorders may thus be enumerated:

Want of fresh air and exercise.

Excessive development of the nervous system.

Improprieties of dress.
Imprudence during menstruation.
Imprudence after parturition.
Prevention of conception and induction of abortion.
Marriage with existing uterine disease.

Want of air and exercise, in deteriorating the blood and enfeebling the muscular and nervous systems, should be classed first among these predisposing causes.

There can be no doubt that American women take much less exercise than those of Europe. Walking, riding, rowing, bowling, &c., which are there so common, are here not much practiced. In our large cities will be found hundreds of ladies who do not walk a mile in a day for weeks together, and many more who have never engaged in any exercise which called forth the action of other muscles than those employed in the quietest locomotion. This is partly due to the fact that, with us, recreations which require muscular efforts on the part of women are not fashionable; partly to a morbid desire to cultivate an appearance of delicacy in form and complexion; and in great part to improprieties of dress, which render it dangerous for them to remain in the open air except in good weather. Instead of our girls being encouraged to engage in outdoor pursuits calculated to create muscular power, they are reared in the belief that such pastimes are hoydenish, unbecoming, and fit only for rough boys. Their hours of leisure are occupied by reading, music, drawing, or some similar light task, and an hour's walk every day is regarded as an accomplishment quite creditable to the performer. This pernicious system of training is observed most markedly in our large female seminaries or boarding-schools, where every hour of the day is allotted by rule to its especial work. By this plan the mind is constantly kept in the thraldom of control, and chafes under the depressing influence of a never-ending surveillance. A set of romping school-girls could as profitably laugh by rule as really enjoy and improve by exercise under the eye of an instructress or professor of calisthenics. It is not the mere bodily exertion which is of benefit, but the total mental relaxation, the exhilaration and the abandon which accompany it. The prisoner working for eight hours on the treadmill does not profit by it as the free and happy equestrian or oarsman does, by one-eighth the time of exercise.

Excessive Development of the Nervous System.—The necessity for

a due proportion existing between the development and strength of the nervous and muscular systems has always been recognized, and has given rise to the trite formula, "mens sana in corpore sano," as essential to health. Unfortunately the restless, energetic and ambitious spirit which actuates the people of the United States, has prompted a plan of education which by its severity creates a vast disproportion between these two systems, and its effects are more especially exerted upon the female sex, in which the tendency to such loss of balance is much more marked than in the male. Girls of tender age are required to apply their minds too constantly, to master studies which are too difficult, and to tax their intellects by efforts of thought and memory which are too prolonged and laborious. The results are, rapid development of brain and nervous system, precocious talent, refined and cultivated taste, and a fascinating vivacity on the one hand; a morbid impressibility, great feebleness of muscular system, and marked tendency to disease in the generative organs, on the other.

That this statement of the advantages which are gained and the price which is paid for them is perfectly true, no American practitioner will deny. But the mere existence of the fact is not the most melancholy feature of the case; it is far more painful to see mothers listening to it, admitting its truth, and yet calmly and dispassionately choosing to make the trial, as we see them doing every day.

In a woman thus developed, the physiological congestion of the pelvic organs attending ovulation produces pain which is known as "neuralgic dysmenorrhœa;" the normal hypertrophy of the uterus consequent upon utero-gestation slowly and imperfectly passes off, "subinvolution" often remaining; while the enfeebled muscular supports of the heavy organ allow it to lapse from its position and assume that of "flexion" or "version."

Improprieties of Dress.—The dress adopted by the women of our times may be very graceful and becoming, it may possess the great advantages of developing the beauties of the figure and concealing its defects, but it certainly is conducive to the development of uterine diseases, and proves not merely a predisposing, but an exciting cause of them. For the proper performance of the function of respiration, an entire freedom of action should be given to the chest, and more especially is this needed at the base of the thorax, opposite the attachment of the important respiratory muscle, the

diaphragm. The habit of contracting the body at the waist by tight clothing confines this part as if by splints; indeed, it accomplishes just what the surgeon does who bandages the chest for a fractured rib, with the intent of limiting thoracic, and substituting abdominal respiration.

As the diaphragm, thus fettered, contracts, all lateral expansion being prevented, it presses the intestines upon the movable uterus, and forces this organ down upon the floor of the pelvis, or lays it across it. In addition to the force thus exerted, a number of pounds, say from five to ten, are bound around the contracted waist, and held up by the hips and the abdominal walls, which are rendered protuberant by the compression alluded to. The uterus is exposed to this downward pressure for fourteen hours out of every twenty-four; at stated intervals being still further pressed upon by a distended stomach.

In estimating the effects of direct pressure upon the position of the uterus, its extreme mobility must be constantly borne in mind. No more striking evidence of this can be cited than the fact, that in examining it by Sims's speculum, if the clothing be not loosened around the waist, the cervix is thrown so far back into the hollow of the sacrum as to make its engagement in the field of the instrument often very difficult, and that attention to this point in the arrangement of the patient will at once remove the difficulty. While the uterus is exposed by the speculum, it will be found to ascend with every expiratory effort, and descend with every inspiration; and so distinct and constant are the rapid alterations of position thus induced, that in operations in the vaginal canal the surgeon can tell with great certainty how respiration is being affected by the anæsthetic employed. An organ so easily and decidedly influenced as to position by such slight causes must necessarily be affected by a constriction which, in autopsy, will sometimes be found to have left the impress of the ribs upon the liver, producing depressions corresponding to them.

No one will charge me with drawing upon my imagination, even in the remotest degree, for the details of the following picture, for a little reflection will assure all of its correctness. A lady who has habitually dressed as already described, prepares for a ball by increasing all the evil influences which result from pressure. Although she may be menstruating, she dances until a late hour of the night, or rather an early hour of the morning. She then eats a hearty supper, passes out into the inclement night

air, and rides a long distance to her home. This is repeated frequently during each season, until advancing age or the occurrence of disease puts an end to the process.

A great deal of exposure is likewise entailed upon women by the uncovered state of the lower extremities. The body is covered, but under the skirts sweeps a chilling blast, and from the wet earth rises a moist vapor, that come in contact with limbs encased in thin cotton cloth, which is entirely inadequate for protection. It is not surprising that evil often results to a menstruating woman thus constantly exposed.

To a woman who has systematically displaced her uterus by years of imprudence, the act of sexual intercourse, which, in one whose organs maintain a normal position, is a physiological process devoid of pathological results, becomes an absolute and positive source of disease. The axis of the uterus is not identical with that of the vagina. While the latter has an axis coincident with that of the inferior strait, the former has one similar to that of the superior. This arrangement provides for the passage of the male organ below the cervix into the posterior cul-de-sac, the cervix thus escaping injury. But let the uterus be forced down, as it is by the prevailing styles of fashionable dress, even to the distance of one inch, and the natural state of the parts is altered. The cervix is directly injured, and thus a physiological process is insensibly merged into one productive of pathological results. How often do we see uterine disease occur just after matrimony, even where no excesses have been committed. It is not an excessive indulgence in coition which so often produces this result, but the indulgence to any degree on the part of a woman who has distorted the natural relations of the genital organs.

But this is by no means the only method by which displacement of the uterus may induce disease of its structures. It disorders the circulation in the displaced organ, and produces passive congestion and its resulting hypertrophy, prevents the free escape of menstrual blood by pressing the os against the vagina, creates flexion, causes friction of the cervix against the floor of the pelvis, and stretches the uterine ligaments and destroys their power and functions.

These facts should be carefully borne in mind by the physician who attempts to relieve uterine displacements by the use of pessaries. If he merely replaces the displaced organ and relies for its support upon a pessary, he will often fail in accomplishing the desired result. He is striving at great disadvantage with a short

lever power against the weight, not of the uterus alone, but of the super-imposed viscera pressed downwards by several pounds of clothing, which add their weight at the same time that they constrict the waist and substitute abdominal for thoracic respiration. Thus employed, the pessary will often give great pain, and so injure the parts upon which it rests as to necessitate removal, and the practitioner will find himself cut off from one of his most valuable resources. Should he on the other hand, before employing a pessary, remove all constriction and weight from the abdominal walls, apply a well fitting abdominal supporter over the hypogastrium so as to aid the exhausted abdominal muscles in their work, keep the displaced and congested uterus out of the cavity of the pelvis by a tampon of medicated cotton, or bring gravitation to his assistance by the position of the patient, he will ordinarily at the end of a week be able to employ with great advantage the same pessary, which at first seemed to accomplish evil and not good.

Imprudence during Menstruation is a prolific source of disease. Some women, through ignorance, many through recklessness, and a few from necessity, go out lightly clad in the most inclement weather during this period, and many suffer in consequence from violent congestive dysmenorrhœa, and often from endometritis. Every practitioner will meet with a certain number of cases of uterine disease which have this origin, and run on for years, ending, perhaps, in parenchymatous disease, which may prove incurable.

During a period in which the ovaries and uterus are intensely engorged, in which the surface of the ovary is broken through by the escaping ovule, and the nervous system is in an unusual state of excitability, ordinary prudence would suggest that the body should be well covered, that the congested organs should be left at rest, and that exposure to cold and moisture should be sedulously avoided. I need not say that these rules are commonly neglected; and in evidence of the fact I will venture the assertion that, on this very day, the thermometer 15° above zero, the skating pond of our park contains scores of delicate and refined women who are showing a disregard of them by their presence there.

The immediate result of exposure during menstruation is most commonly inflammation of the glands of Naboth. Such an inflammation once excited will often go on for years and in time

end in parenchymatous disease, entailing in its progress dysmenorrhœa, sterility, pelvic pain, and gastric disorders, which impair digestion and nutrition.

Imprudence after Parturition.—No sooner does fixation of the impregnated ovum upon the uterine surface occur than a surprising stimulation is exerted upon the fibre-cells forming part of the uterine parenchyma, which grow with rapidity, enlarging the organ, *pari passu*, with the requirements of its increasing contents. After the expulsion of the embryo, either at full time or at any period of pregnancy, the fibres thus developed undergo a fatty degeneration and absorption, which has received the name of involution. This process occurs rapidly after abortion, but after labor at term it requires six weeks for its full accomplishment. In order that it may proceed with normal rapidity and certainty, perfect rest is essential; and the woman who rises too soon, and resumes her usual occupations while the lochial discharge is still existing, risks the results of interference with it. Besides this, the uterus is much heavier than usual, and the additional danger of the induction of displacement is incurred by too early movement. Lastly, the mucous membrane lining the cavity of the uterus is for some time after parturition in an abnormal state, and is peculiarly liable to disease from exposure to cold and moisture. A very valid objection may be made to this view, that in the lower walks of life women rise after labor, and attend to their duties with impunity on about the ninth day, and yet enjoy a marked immunity from uterine affections. This is true; but let it be remembered that they are unaffected by the influences to which I have alluded, as calculated to enfeeble and deteriorate their generative systems.

Another influence connected with parturition which develops itself much more decidedly among the higher, than the lower classes is the pernicious habit of tight bandaging. For three or four weeks after delivery the nurse commonly applies two folded towels over the enlarged uterus, and by powerful compression by a bandage forces the organ backwards into the hollow of the sacrum. This is supposed to preserve the comeliness of the figure, and the reputation of many a nurse rests mainly upon the thoroughness, with which she develops an influence that is fruitful of evil in displacing an enlarged uterus in a woman who for a fortnight at least lies chiefly upon her back. That a well-fitting bandage, only tight enough to give support, applied after delivery

proves a source of comfort to the woman, I am not disposed to deny. In this way I always employ one. But I feel very sure that a great deal of superstition attaches in the lying-in room to this appliance both as a means of preventing deterioration of the figure, and post-partum hemorrhage. Uterine contraction should be secured by vital, not mechanical means, and no amount of compression by a bandage will cause the over-distended abdominal muscles, skin, fasciæ, and areolar tissue to return to their original condition. Not only should tight bandaging be avoided after delivery, the position should be systematically changed at intervals from the dorsal to the lateral decubitus.

Prevention of Conception and Induction of Abortion.—Means established for the accomplishment of the first of these ends are often productive of uterine disorder. This will not be wondered at when the harshness of some of them is borne in mind. The workings of nature in this, as in all other physiological processes, are too perfect, too accurately and delicately adjusted, not to be interfered with materially by the clumsy and inappropriate measures adopted to frustrate her laws. With this allusion we leave this unattractive subject to deal with one still more disagreeable, but which, from its importance, cannot conscientiously be passed over in silence. Statistics showing the frequency of criminal abortion have never been, and never will be written, for the crime creeps stealthily beneath the scrutiny of society, and, for some unaccountable reason, without material interference from the judiciary. It is, I feel, a bold statement, that, while the law pursues with relentless vigor the man who murders his fellow, it allows immunity to him who murders the young child in its mother's womb; and yet it is wellnigh correct. Let me point to a few facts which will substantiate this assertion, and the additional one that this crime is with us one of fearful frequency. On my table at this moment lies one of the most popular, respectable, and best edited daily journals of New York, —one which finds its way into the first circles of society, and into the hands of maidens and matrons throughout the land. In its columns I count fifteen advertisements well known as being those of professional abortionists—men and women who make a business of infantile murder. It may be that the editors, who are esteemed amongst us as upright men, it may be that the police, are entirely ignorant of these facts; but it is hard to believe so when many of these advertisements announce distinctly

the advantages of their having rooms in which their patients may be accommodated, and that one interview always accomplishes the desired result, without the use of means dangerous to life or health. At its last meeting in New York, the American Medical Association offered a prize[1] for "a short and comprehensive tract for circulation among females, for the purpose of enlightening them upon the criminality and physical evils of forced abortions."

However much I may desire reformation in this matter, it is not in the spirit of a reformer that all this is written. I am not raising my voice against a great national crime, but am striving merely to establish the truth of my statement, that this crime is so frequent as to constitute in all classes of society—for it is limited to none—a great cause of uterine disease.

Marriage with Existing Uterine Disease.—It is a common practice with physicians to recommend marriage as a cure for uterine disease. There are a sufficient number of abnormal conditions which childbearing cures to make the practice appear legitimate, but a vast deal of harm frequently results from it. A displacement without inflammation, a constricted cervix which causes dysmenorrhœa, a pure endometritis of neck or body, or an inactive state of the ovaries which results in amenorrhœa, may be relieved by the parturient act; but parenchymatous disease, periuterine cellulitis or pelvic peritonitis, will very often produce evil results after labor, and very generally return with renewed violence as soon as involution has been accomplished. The advice is too often given empirically, and, like all such counsel, is hazardous in its results. My experience leads me to fear a return of endometritis after childbearing, even in a patient whom I considered entirely cured at the time of marriage; and in such a case I always predict it.

Much injury has been done, and a strong position weakened by the insisting of overzealous persons upon isolated causes as productive of injury to females. Chapter upon chapter has been written against tight-lacing, for instance, in so vehement a style that the reader, if she did not reflect, might suppose that to this abuse could be traced the whole catalogue of feminine ills. If perchance, however, she inspected the unyielding stays which once compressed the sturdy form of Alice Bradford, and which

[1] The prize thus offered was awarded to Prof. H. R. Storer, of Boston, for an able essay, entitled, "Why Not?"

are now preserved in Pilgrim Hall, in Plymouth, she would at once see that the indictment was not a valid one; and similar objections might be raised against all the other causes which I have advanced, viewed as isolated influences.

The Indian squaw or Southern freedwoman may go half naked while menstruating, carry heavy burdens from morning till night, or rise to labor[1] or to travel in a day or two after parturition, and yet no evil will result; but to the civilized woman any one of these imprudences may prove a source of disease. It is the combination of evil influences, or the action of a single cause on a system so deteriorated by others as to be made incapable of resisting it, which produces the unhappy climax.

No one will doubt the conclusion, that if in cold weather the feet, legs, and abdomens of civilized women were clad in some woollen material; if they understood the necessity of caution during the period of menstruation and after labor; if they allowed the uterus to hold its proper place in the pelvis, uninterfered with by pressure; if they kept the sanguineous and nervous systems in their normal state of vigor by exercise, fresh air, and plenty of good food, and at the same time avoided any habits which directly produce disease by injuring the genital organs, much, very much less, of uterine and kindred disorders would be seen by the physician. All these reforms would probably bring forth results in one generation, but it would require many generations of reformers to restore woman to her proper physical sphere.

Before any improvement is attained in this or any other matter, its importance must be estimated by, and a desire for it cultivated in, those whom it most nearly concerns. Neither appreciation of, nor desire for, physical excellence sufficiently exists among the refined women of our day. Our young women are too willing to be delicate, fragile, and incapable of endurance. They dread above all things, the glow and hue of health, the rotundity and beauty of muscularity, the comely shape which the great masters gave to Venus de Medici and Venus de Milo. All these attributes are viewed as coarse and unladylike, and she is regarded as most to be envied whose complexion wears the livery of disease, whose muscular development is beyond the suspicion of *embon-*

[1] In this statement I do not desire to reiterate a report which has long been silenced—that uncivilized women rise *habitually* just after labor. I merely assert what my own observation puts beyond doubt in my mind that they *often* do so with impunity.

point, and whose waist can almost be spanned by her own hands. As a result, how often do we see our matrons dreading the process of childbearing as if it were an entirely abnormal and destructive one; fatigued and exhausted by a short walk or their ordinary household cares; choosing houses with special reference to freedom from one extra flight of stairs, and commonly debarred the great maternal privilege of nourishing their own offspring. These are they who furnish employment for the Gynæcologist, and who fill our homes with invalids and sufferers.

CHAPTER III.

DIAGNOSIS OF THE DISEASES OF THE FEMALE GENITAL ORGANS.

The diagnosis of the diseases of the pelvic viscera of the female offers many obscurities, and frequently foils the most careful and capable practitioner. With the utmost caution, assisted by the most practiced skill, no one can avoid occasional errors, while in the experience of those not possessing these qualifications, they must be frequent and glaring. The only safeguard which can be established against their occurrence, and the only guarantee which can be obtained for success in prognosis and treatment, is the thorough mastery of the subject which is now to engage us.

It is not rare for one making a special study of Gynæcology to find those less familiar with it committing errors of diagnosis, or, what is more common, arriving at no conclusion, in cases which are perfectly simple and present no obscurities whatever. When meeting such instances in the practices of intelligent men, I have been struck by the fact that the source of difficulty is almost always the same. The failure of diagnosis has not been due to their having drawn incorrect conclusions from diagnostic means, but to their not having brought these means fully into action, and properly applied them to the solution of the case in hand. In many instances, uterine disease being suspected, the

physician employs the vaginal touch, and follows it by the speculum. If the os and cervix be diseased, he is successful in diagnosis; but if not, he becomes discouraged, forgetful of the fact that the rectal touch, uterine probe, dilatation by tents, conjoined manipulation and other means, should be resorted to, and that, without appealing to these, even the most skilful diagnostician would be as helpless as himself. There are means at our command for exploring every tissue within the pelvis; the uterus, the ovaries, the areolar tissue, &c.; and until they are brought into service carefully, systematically and thoroughly, no one can feel that he has done justice to his powers of diagnosis, or allowed himself a full opportunity for drawing correct conclusions. Skill in diagnosis must be obtained at the bedside, but for that school to be made profitable, the student must have a thorough familiarity with the theory of the means of investigation which he is there to apply.

The following case, reported by Dr. John Shortt[1] to the London Obstetrical Society, in 1863, will not only illustrate these remarks, but prove of sufficient interest to warrant its introduction. "It was the patient's third pregnancy; during the greater part of which she had been treated for obstinate costiveness, and supposed displacement and inflammation of the womb. In the latter period of gestation the intumescence of the abdomen was mistaken for ovarian disease. When the membranes became accidentally ruptured, two days before delivery, it was supposed that an ovarian cyst had given way. When the pains of labor set in a surgeon was called, who pronounced the case to be one of rupture of an ovarian cyst into the abdominal cavity. An opiate draught, &c., was ordered, and the patient placed in a warm bath, when, to the surprise of all parties, a living child escaped into the bath, and would have been drowned but for the presence of mind of an assistant. The child was a boy at maturity, well proportioned, of average size, but of rather lanky appearance and pigeon-breasted.

"The patient, although twice a mother before, appears to have been entirely ignorant throughout of her pregnancy; all her feelings she attributed to disease. The birth of a son was, as she declared, 'the greatest surprise she ever experienced.' Another remarkable feature in this case was, that for almost two-thirds of the period of gestation, the speculum, caustic, &c., had been applied

[1] Am. Journ. of Med. Sciences, vol. 46, p. 515.

to the os uteri, and the most drastic purgatives administered without any injurious effects."

Rational Signs.

In the examination of a patient suspected of having uterine disorder no direct or suggestive questions should be asked, but the symptoms should be drawn forth by encouraging and properly directing her narrative of her case. Certain signs which we call "rational," from their appealing to our reason and not to our senses, such as pain in the head, back, and limbs, menstrual disorder, leucorrhœa, impeded locomotion, derangement of the digestion, and nervous manifestations, will lead us to suspect the genital organs, and may even convince us of the existence of disease there. Generally, however, they result in the adoption of other and more certain means of diagnosis, which are termed "physical."

Every one will, after due experience, adopt some system by which his examination of patients will be expedited, and the certainty of arriving at a correct diagnosis be increased. The plan which I consider best adapted to these ends is that which follows:

1st. The personal history, age, &c., of the patient should be obtained.

2d. The duration of the illness should be fixed.

3d. The history of the attack from commencement to date should be elicited.

4th. The present state of the patient should be ascertained.

In obtaining the history of the disease, no leading questions have thus far been asked; the patient has told us what she herself has observed. Her evidence leads us to suspect some special disorder, and then we proceed thus:

5th. Direct questions are put with the intent of testing the correctness of the suspicion which the patient's story has excited.

6th. Physical means are brought to the corroboration of the diagnosis by rational ones.

Forms, either written or printed, such as that which follows, will not only save a vast deal of time and trouble, but give uniformity to histories taken, so that after a number of them have been accumulated they may be collated with reference to special points, or preserved for personal reference or publication.

Case, No..... Date,.....

Name..... Age..... .....Married?

No. of children..... No. of abortions..... Time since last pregnancy..... Age at which menstruation appeared.....

Duration of present illness..... Symptoms during its course

.....

.....

.....

.....

.....

Supposed cause.....

Present condition as regards

Menstruation, { Regularity ..... Amount ..... Pain .....

Leucorrhœa, { Character ..... Amount ..... Constancy .....

Pain, { Locality ..... Degree .....

Locomotion .....

Other symptoms.....

Physical signs, { By touch ..... By speculum ..... By probe.....

Diagnosis .....

Treatment .....

It will be observed that I have not enumerated the various rational signs generally attendant upon uterine affections, but merely the means for drawing them forth. Their special mention will be reserved for the study of particular affections. If the evidence elicited leaves any of the pelvic viscera under suspicion, this is verified or removed by means which are more positive and reliable from the fact that they address our senses.

Management of Patient during Physical Examination.—Before commencing the consideration of physical signs, I shall premise a few remarks upon a subject of great importance in this connection, namely, the management of the patient during the examination. As Dr. Sims has taught us, she should never, unless

it be impossible to do otherwise, be examined upon a bed or sofa, but upon a table covered with a blanket, shawl, or rug of some kind, and provided with a small pillow. The facility thus given for thorough investigation is very great, and the avoidance of the sinking of the body into the soft bed repays most fully the extra trouble which it causes to make the change. It may be said that many ladies will strongly object to the exposure incident to getting upon a table. This is not so; a little persuasion will overcome such objections at once, and the increased exposure is in reality imaginary, for the table is to all intents a bed, and a sheet for covering the person gives all desirable protection. Should it be necessary to employ a bed, the leaf of a dining-table, or a wide board should be slipped across the mattress under the upper sheet and covering, and a hard surface will thus be presented for the patient to lie upon, which will obviate, in a great degree, the objections to the bed otherwise arranged.

The patient should always lie upon her back in a first examination, with the clothing loose around the waist, the knees drawn up and the abdominal walls relaxed. A sheet should be spread over her so as to conceal the entire person. The table having been previously turned to a window admitting a strong light, a chair should be placed at its foot for the examiner, and at the right side of it another, upon which has been arranged a basin of warm water, Castile soap, and a towel.

Means of Physical Diagnosis.

I shall enumerate and consider these in the order in which they will generally be employed in a case requiring the aid of all of them for its elucidation:

1. Anæsthesia.
2. Vaginal touch.
3. Conjoined manipulation.
4. Abdominal palpation.
5. Rectal touch.
6. Vesico-rectal exploration.
7. The speculum.
8. The uterine probe.
9. Tents.
10. The endoscope.
11. The exploring needle.
12. The microscope.
13. Auscultation and percussion.

Anæsthesia.—This should not be resorted to unless there be some special indication for it. Should the patient be intractable, delirious, or a malingerer; should the investigation involve much severe pain; or should there be some tonic spasm of the muscles as an element of the disease, as is the case in spurious pregnancy and phantom tumors, it affords an aid to diagnosis of great value, and should never be neglected. When we are forced to examine a virgin who is very sensitive, and opposed to the investigation, it is sometimes advisable, for without it a diagnosis is frequently impracticable.

Vaginal Touch.—This, which will be the first explorative measure to which the examiner will resort, constitutes one of the most important at his command. It will reveal much or little, as it is practiced slowly and thoughtfully, or hastily and as a matter of routine. In making it the index finger of either hand may be employed, and when it is desirable to reach as far up the pelvis as possible, the index and middle fingers may be used. During this examination the patient should invariably be laid upon the back, with the legs flexed and the buttocks very near the edge of the table. The observance of this position is of great importance, as vaginal touch should in every case be combined with abdominal palpation, to which union the name of conjoined manipulation or bimanual palpation, has been applied.

The index finger of one hand being introduced into the vagina, the other fingers being flexed into the palm and the thumb laid upon them, passes directly to the cervix uteri, assuring the investigator, as it goes, of the perviousness of the vaginal canal. Upon reaching the os, this part is carefully examined with reference to size, consistency of lips, and character of discharge; a patulous os, with soft, velvety sides covered by a glutinous secretion, admonishing him of the existence of inflammation of the os and cervical canal. The cervix should then be examined with reference to location, size, and density. This being done, the finger should be slid along its posterior surface into the recto-uterine space, and the presence of any hardness or tumefaction there be noted. Should such be found, it will probably be due to one of these causes: retroflexion or retroversion of the uterus, uterine enlargement, a fibrous tumor, scybala in the rectum, inflammatory products the result of periuterine cellulitis or peritonitis, a prolapsed ovary or ovarian tumor, or an hæmatocele. Should no tumor be discovered, but the line of resistance given to the finger be found

to disappear at the vaginal junction with the uterus, it may be inferred with moderate certainty that at this point none of the above mentioned conditions exist.

This space being explored, the finger should then be passed anteriorly, and swept upward and forward along the base of the bladder toward the symphysis pubis. Any hardness discovered here will probably be due to anteflexion or anteversion of the uterus, a fibrous tumor, stone in the bladder, uterine enlargement, or possibly cellulitis.

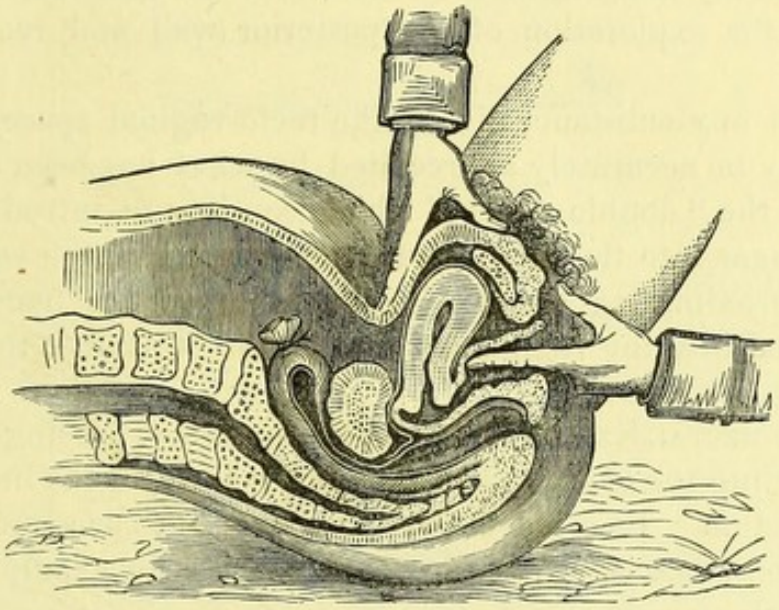
The state of the ovaries should then be tested by lateral pressure, and the condition of the pelvic areolar tissue and walls by firm pressure in all directions.

Conjoined Manipulation, or Bimanual Palpation.—As the preceding examination consists in touching organs above the pelvic roof for the most part, and which are generally quite movable, it is evident that its results are diminished by ascent of these parts as they are pressed upon. To bring them more fully within the reach of the finger in the vagina, and to obviate their retreat, abdominal palpation should invariably be combined with the vaginal touch. While the latter is being performed by the index finger of one hand, the other hand should be placed on the abdomen, and by it the uterus be made to descend, so that even its upper parts may become accessible. This will enable the examiner to sweep the finger in the vagina over the posterior, anterior, and lateral surfaces of the organ, and detect the presence of any enlargement, sensitiveness, or abnormal growth there. Fig. 2 represents this.

But not only should the walls of the uterus be thus explored; the volume, shape, sensitiveness, and regularity of surface of this organ, as well of the ovaries, the broad ligaments, anterior vaginal wall and bladder should likewise be ascertained. To accomplish this, with reference to the uterus, let the finger in the vagina be placed under it—anterior to the cervix if it be in normal position or anteflexed, posterior to it if it be retroflexed—and the organ will be distinctly felt resting between it and the fingers which depress the abdominal wall. By the same method the other parts mentioned should be examined. Conjoined manipulation is of great importance; indeed no examination can be considered complete without it. By a neglect of this seemingly trifling precaution I have known the existence of large tumors, and even of pregnancy quite advanced, entirely ignored. A short time ago a

physician sent to me from a distance a case which he supposed to be one of prolapsus uteri, from the fact that the uterus was low

Fig. 2.



Practice of conjoined manipulation. (Sims.)

in the pelvis, never suspecting for a moment the existence of two fibrous tumors, each the size of a fœtal head, which depressed the displaced organ.

Abdominal Palpation.—The practice of bimanual palpation will have assured the investigator of the presence of any tumors which may exist in the pelvis. Should such have been discovered, a further examination will, of course, at once be entered upon to ascertain their size, shape, attachments, and contents. In this exploration both hands are employed externally, and by them firm pressure is made and the abdominal walls depressed, so that by grasping the masses their characters may be appreciated.

Rectal Touch.—Should anything have been discovered upon either uterine wall to make further light upon the state of these parts desirable, or should symptoms have presented themselves which excite suspicion of the presence of some morbid growth, the index finger of one hand should be carried far up into the rectum, and, if necessary, to enable it to reach the upper portion of the posterior uterine wall, a tenaculum should be fixed in the cervix, and by gentle traction the organ drawn down. Generally, however, sufficient depression will be accomplished by firm pressure over the hypogastrium with the other hand, the tips of

the fingers pressing the uterus towards the floor of the pelvis; or both of these means may be combined by bringing to our aid the hand of an assistant. They who have not employed this method systematically must have a faint idea of the great facility which it gives for exploration of the posterior wall and recto-uterine space.

Should any substance lie in the recto-vaginal space, its character may be accurately appreciated by what has been styled, by Dr. Tilt, the "double touch," which consists in introducing the index finger into the rectum and the thumb into the vagina, and then approximating them. Or the index of one hand may be introduced into the vagina and that of the other into the rectum.

Vesico-rectal Exploration.—This consists in passing a catheter or sound into the bladder, and pressing it towards the index finger in the rectum. Its scope is not extensive, but for some purposes no other method answers the same end, as, for example, for the following:

Appreciating the size of the uterus in very fat women;
Detecting absence of the uterus;
Differentiating inversion from polypus.

The only difference between this method and conjoined manipulation consists in the attempt to grasp the uterus between the finger and sound instead of between the fingers of the two hands.

The Speculum.—This is by no means our most valuable diagnostic resource. Too great a reliance upon it as such is calculated to diminish the physician's powers in arriving at a correct conclusion in obscure cases. Unquestionably the greatest benefits derived from the speculum demonstrate themselves in the therapeutic department of the art. As a diagnostic means it is inferior to vaginal and rectal touch combined with abdominal palpation, and chiefly aids us in this field by opening the way to the proper use of the uterine probe, which constitutes one of the most reliable methods at our command for appreciating the condition of the cavity of the uterus.

All vaginal specula may be classified under two heads, cylindrical and valvular. Of the first variety cylinders of metal, porcelain, ivory, and wood are in general use. None of these compare in elegance, cleanliness, and utility with that of Dr. Fergusson, of London, which consists of a tube of glass coated with quick-

silver, and covered by India-rubber, which is thoroughly varnished. This instrument is represented in Fig. 3.

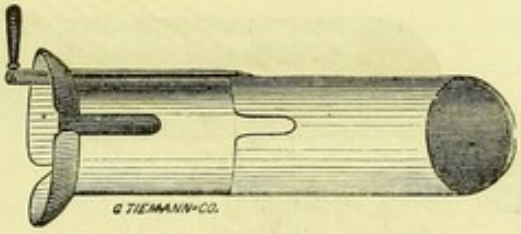
Fig. 3.



Fergusson's speculum.

Objections which attach to all cylindrical instruments are the following: to suit all cases they must be from five to six inches long, which renders probing the uterus through them impossible, and prevents applications from being carried to the fundus; it is not possible to examine through them by touch; in anteversion it is difficult to get the cervix into the field. The instrument represented by Fig. 4 obviates many of these difficulties by accommodating itself to the length of every vagina, so that the shoulders come just between the labia.

Fig. 4.



Thomas's telescopic speculum.

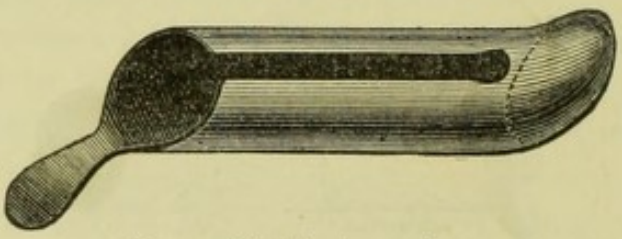
It consists of two thin metallic tubes, one of which slides within the other. To the inner tube are attached, at the mouth, wings which sustain the labia, and the outer tube ends in a tip which is either straight or curved. It is called the "telescopic speculum," from its mechanism, and measures, when not extended, along its shorter side two and a half inches, along the opposite, three. When extended, it is as long as the ordinary cylindrical specula. On both surfaces, upper and lower, are two fenestræ, which admit of elevating or depressing the probe in cases where flexion or version exists, and its handle must be much lowered. A downward curve may with advantage be given to the longer lip. This curve looks at first both odd and useless; but upon experiment it will be found to answer a very useful purpose.

In cases where the uterus is normal in position it will not depress the cervix too much, while by turning it up when this part lies imbedded in the hollow of the sacrum the examiner will be enabled to lift it and engage it in the field of the speculum. When fully introduced the wings at the mouth of the instrument support the labia, and thus no superfluous portion extends beyond the vulva.

A rougher instrument which I have used with great satisfaction is one made of thin sheet iron, measuring on both faces three and a half inches (Fig. 5). The only objection to this is that in certain rare cases it will prove too short to reach an elevated cervix. Through it the uterus may be readily probed to the fundus.

Of valvular specula the bivalve of Ricord, the trivalve of Ségalas, and the quadrivalve of Charrière have long been popular. No instrument of this variety with which I am acquainted equals in beauty and utility that of M. Cusco. It is compact, easily introduced, and shows the cervix very clearly. They all, however, present these great disadvantages. It is difficult to avoid prolapse of the vaginal walls between their branches, and in removing the instrument they are liable to be painfully pinched. If, upon introducing and expanding their branches, the os uteri is exposed, all goes well; but if it is not in the field, these instruments are awkward and unwieldy in overcoming the difficulty; indeed, in many cases, the speculum must be withdrawn and reintroduced to accomplish the result. They have one great advantage over the cylindrical specula, namely, their introduction is attended by much less pain. Should the case be one of a multipara, the cylinder may be introduced without pain, but in a nullipara, or virgin, this is often produced.

FIG. 5.

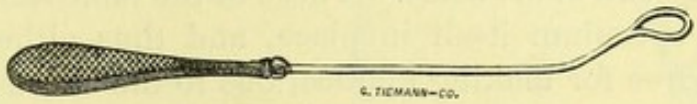


Short cylindrical speculum.

Like the cylindrical, the valvular specula in general use do not

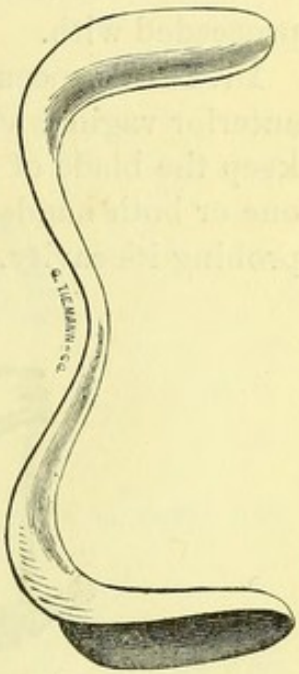
admit, as a rule, of probing the uterus and making applications to the fundus. I do not deny that in some cases it is possible, nor that by perseverance a skilful operator may succeed in effecting these objects in many instances, but it is usually so difficult that the general practitioner will not find such specula available for these ends.

Fig. 7.



Sims's depressor.

Fig. 6.



Sims's speculum.

Sims's speculum, Fig. 6, which is in reality a bivalve, obviates all these difficulties in the most complete and satisfactory manner. In exposing the uterus it develops a principle not brought into action by any other variety, the dilatation of the vaginal canal by air, which enters on account of the position of the patient and gravitation of the pelvic and abdominal viscera. I have stated that this instrument is a bivalve speculum; the upper valve is constituted by the blade of the speculum itself and the lower by the depressor, represented in Fig. 7, which acts upon the anterior wall.

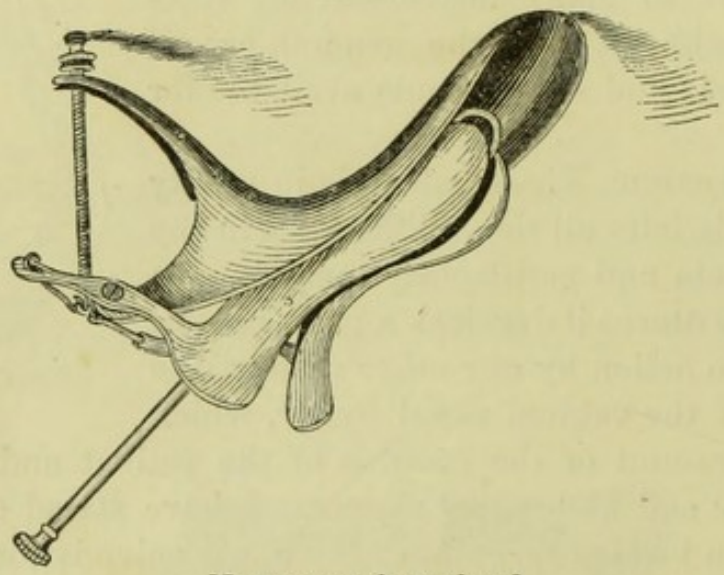
The facility which Sims's instrument gives for exploration and treatment is very great; so great, I think, that the practitioner devoting himself to Gynæcology who does not avail himself of it, loses as great an advantage as the auscultator would forego in not bringing to his aid the double stethoscope of Camman. But, unfortunately, this instrument presents such disadvantages that it can never come into general use. In the hands of specialists and obstetric surgeons it will always fill a large place, but in general practice it will not do so. It cannot be employed without an assistant, and not only so, a skilled assistant is necessary for it to be of real value. This fact has incited many to alter Dr. Sims's original model so as to combine its advantages in instruments free from the objections which have been mentioned. Four of these I shall describe as attaining this end, one by Dr. Nott, another by Dr. Montrose A. Pallen, and two by myself.

When the posterior vaginal wall is lifted by Sims's speculum, the anterior must be depressed by an instrument held in the other

hand. Thus both hands are occupied, and the operator is bereft of power to proceed. The object of the alteration is to liberate one hand in order that the further steps of the examination may be proceeded with.

Dr. Nott's speculum (Figs. 8 and 9), does this by depressing the anterior vaginal wall by two short arms. These at the same time keep the blade of the speculum itself in place, and thus either one or both hands are free for making applications to the uterus, probing its cavity, or whatever else may be required.

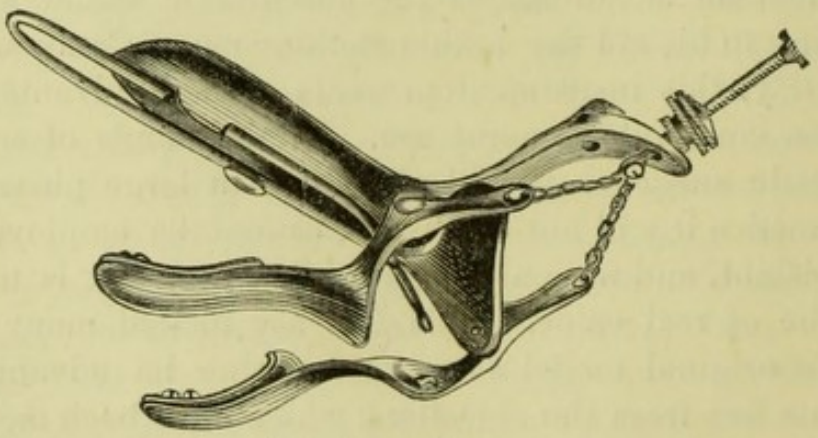
Fig. 8.



Nott's speculum closed.

Dr. Pallen's speculum consists of Sims's blade somewhat altered, and for use without a nurse, certainly improved. To the head of the blade is attached a long rod which passes to a support

Fig. 9.

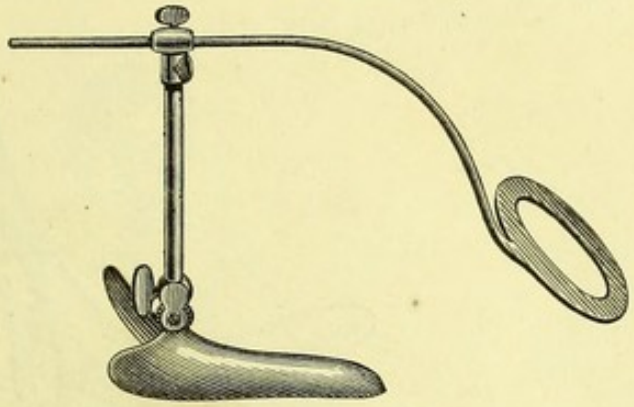


Nott's speculum open.

that rests against the spine. This acts as a fulcrum, and the patient lying in the lateral position, with her right hand seizes the end of the rod which projects beyond the blade of the specu-

lum, and by her own force lifts the perineum and posterior vaginal wall.

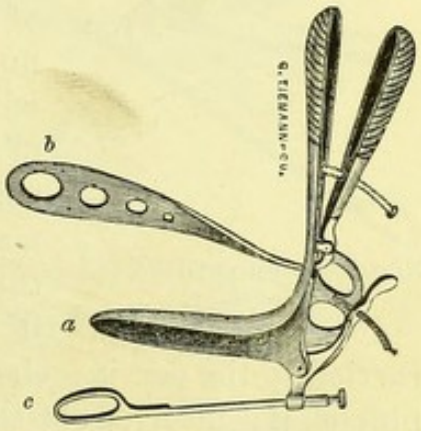
Fig. 10.



Pallen's speculum.

The instrument represented in Fig. 11, clasps the sacrum, one blade, *a*, the speculum itself, being placed within the vagina, and the other, *b*, on the outer surface of the sacrum. Their approximation by the left hand elevates the posterior vaginal wall, and the handle is held by one hand. The anterior wall is then depressed by the depressor *c*, and thus one hand is free. This instrument appears complicated in a diagram, but in reality it is by no means so. For a long time I employed it without the sacral piece as represented in Fig. 12. Some even now prefer it thus, though the fatigue which it causes to the left arm in lifting the posterior vaginal wall and perineum, constitutes an objection to it.

Fig. 11.



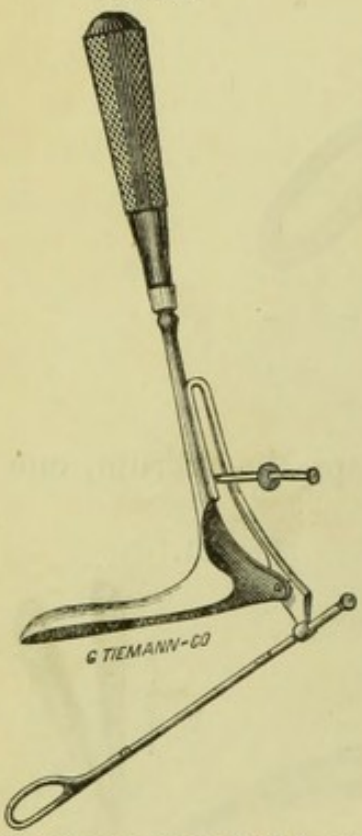
Thomas's modification of Sims's speculum.

The same principle I have developed by an alteration in Cusco's speculum, as represented in Fig. 13. In its use, of course, the woman lies on the side. The blade *b* is very shallow, and is split by a long fenestra, which admits of depression of the handle of the probe, so that it may be passed to the fundus uteri. These instruments are inferior to that of Sims in almost every respect. They possess the single advantage of being available for general practice.

Method of Introducing Valvular and Cylindrical Specula.—The patient being placed in position on the back, as already explained,

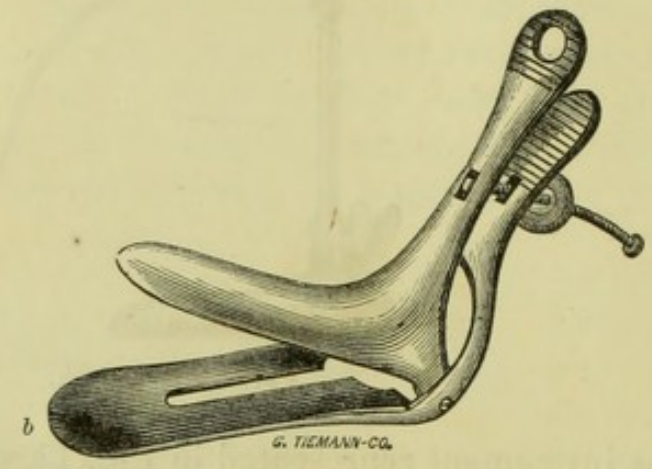
and the speculum, probe, and whatever other instruments are to be employed, laid in a basin of warm water at the bedside, the physician seats himself in a chair, or if a low bed be used instead

Fig. 12.



Sims's speculum with fixed depressor.

Fig. 13.



Cusco's speculum modified.

of a table, kneels or sits upon a stool. The finger having been thoroughly lubricated with soap is passed up, and the location of the cervix ascertained. The speculum, similarly lubricated, is then passed in this way; if the cylindrical instrument be used, the perineum is depressed by its tip, and it is very slowly and gently inserted and carried to the cervix—should one of the valvular varieties be employed, it is inserted closed, and expanded after reaching the cervix.

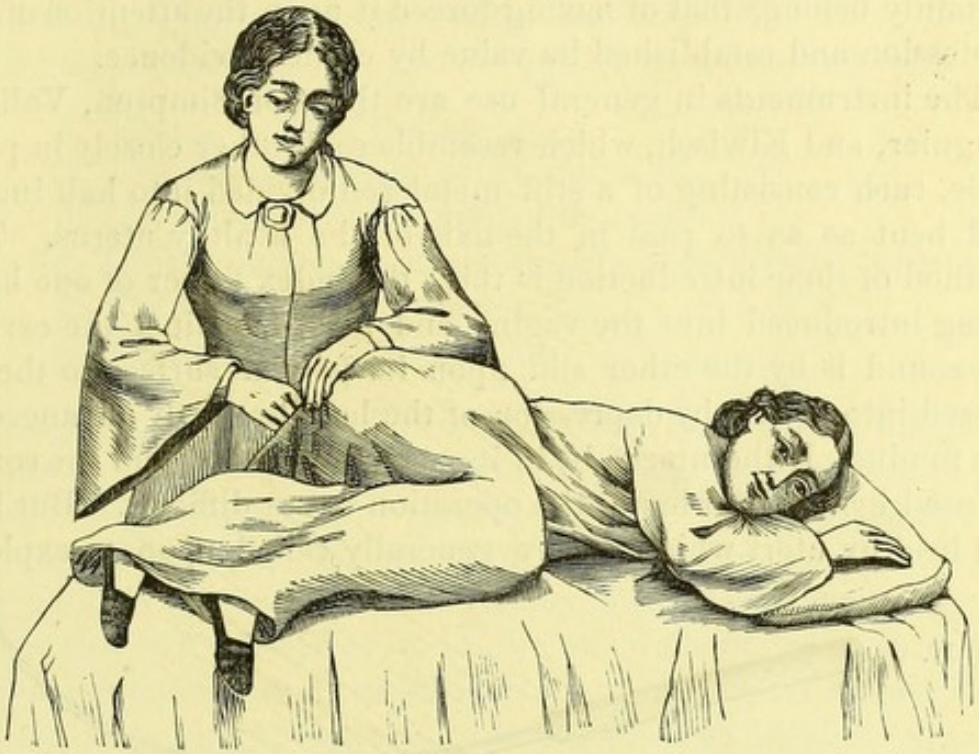
Introduction of Sims's Speculum and its Varieties.—In this method of examination the element which commands success is not the use of the instrument, but the position of the patient. If the position recommended by Sims be attained, exposure of the cervix will be easy; if a similar, but not *identical* attitude be substituted, the examination will prove entirely unsatisfactory.

The object of the position is to allow the abdominal viscera and walls to gravitate, so as to draw the anterior wall of the vagina forwards, in a direction opposite to that impressed upon the posterior wall by the speculum. To accomplish this the patient must not be on her back, nor yet on her side, but in a position between the two. This is well represented in Fig. 14. The left arm must be drawn behind the patient so as to let her rest on the left side of the chest, and the right leg be so flexed as to let the right knee lie just above the left.

When the patient is arranged, the correctness of the posture

may be tested by noting that the lower trochanter is not just opposite the upper, but nearer to the examiner by two or three inches. I am thus particular in describing this position, first,

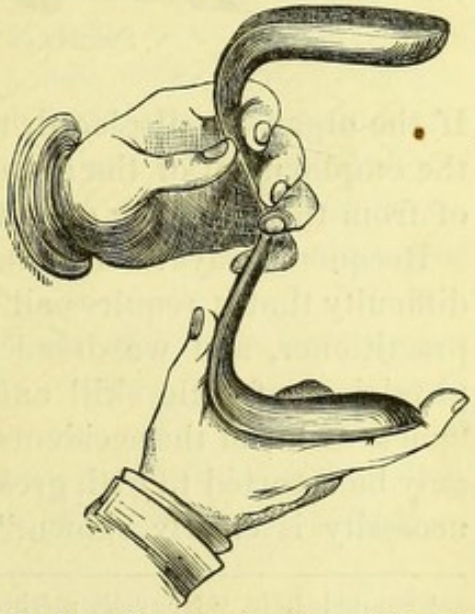
Fig. 14.



Nurse holding Sims's speculum. (Sims.)

because it is difficult for one unaccustomed to its employment to place his patient properly in it; and, second, because upon its *perfect* attainment depends the successful use of Sims's speculum. The patient being in position, the speculum, held as represented in Fig. 15, is introduced, the posterior vaginal wall elevated by it and the anterior depressed by the depressor, Fig. 7, held in the other hand, or by mechanical depressors represented in Figs. 11 and 12.

Fig. 15.



Position for introduction. (Sims.)

The Uterine Sound.—This most valuable diagnostic means was published to the world about the year 1843. The credit of its discovery is claimed for Simpson, of Edinburgh, Huguier, of Paris, and Kiwisch, of Prague. These practitioners simultaneously revived an

old method of diagnosis which had been described in modern times by Lair,[1] but had been allowed to fall into oblivion. It matters little to which of them belongs the credit of having been the first to conceive the idea of the regeneration, to Dr. Simpson certainly belongs that of having forced it upon the attention of the profession and established its value by clinical evidence.

The instruments in general use are those of Simpson, Valleix, Huguier, and Kiwisch, which resemble each other closely in principle, each consisting of a stiff metal rod divided into half inches and bent so as to pass in the axis of the healthy uterus. The method of their introduction is this: the index finger of one hand being introduced into the vagina and placed against the cervix, the sound is by the other slid upon its palmar surface to the os, passed into it, and by depression of the handle gently advanced to the fundus. If the uterus be in its normal position, and the sound be used by a skilful hand, the operation is not difficult. But it is not healthy uteri which we are generally called upon to explore.

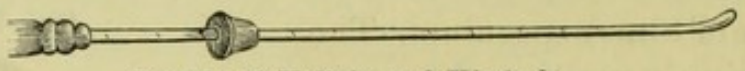
FIG. 16.



FIG. 17.



FIG. 18.



Sounds of Valleix and Kiwisch.

If the organ be displaced, the difficulties and dangers attending the employment of the sound are considerable, as may be judged of from the following quotations:

Becquerel[2] says: "But its employment is attended with such difficulty that it requires all the skill of an adroit and experienced practitioner, and we dread seeing it popularized among young physicians of little skill and experience." Nonat[3] declares that, "on account of the accidents which sounding may excite, it should only be resorted to with great caution and in those cases where its necessity is clearly shown." Scanzoni[4] candidly acknowledges

[1] Samuel Lair, "Nouvelle méthode de traitement des ulcères, ulcérations et engorgement de l'utérus," 1828.

[2] Maladies de l'utérus.

[3] Maladies de l'utérus.

[4] Diseases of Females, Am. ed.

that, "in the first place, the uterine sound is by no means so harmless as has been asserted," and then goes on to sum up the evils which may result from it. But I will not quote more; this suffices to show how the difficulties and dangers to which I have alluded are regarded by some of the best authorities of our day.

The facts which may be ascertained by the sound are these:

1. The capacity of the uterus.
2. The existence of growths within it.
3. Deviations of the course of its canal.
4. Differentiation of displacements from uterine tumors.
5. The existence of endometritis.
6. The mobility of the uterus.

The great importance of these facts with reference to diagnosis is evident, and one would suppose that an instrument revealing so much would be universally employed. Such, however, is not by any means the case. By adepts it is commonly resorted to, but in general practice will be found many, indeed a majority, who do not employ it from fear of its results, the difficulty of its introduction, and uncertainty as to its revelations. It is my opinion that no case of uterine disease should be regarded as fully investigated unless the cavity of the uterus be probed. Of course there are, in some cases, contraindications to such a procedure, but where none exist it should be considered as essential to a thorough examination.

Dr. Sims has furnished us with a new instrument and method for probing this organ, which acts upon an essentially different principle from that formerly employed, and makes the investigation so simple and void of danger that I strongly recommend its adoption. In practice I use it in almost every case which I examine for the first time, and never have I done injury by it except in two cases where miscarriage was produced, no suspicion of pregnancy being entertained.

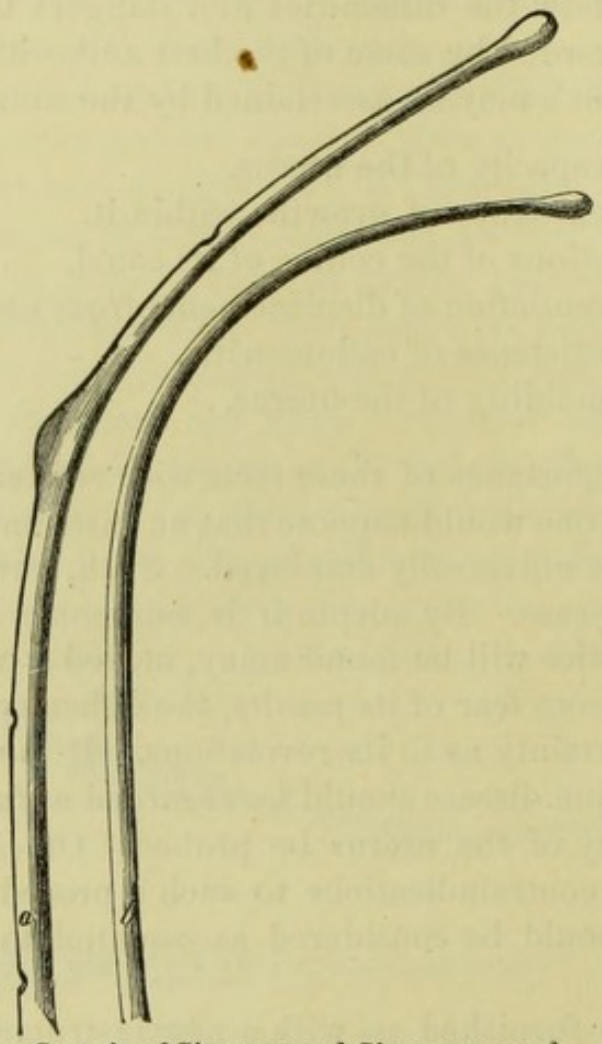
Fig. 19 represents the sounds of Simpson and Sims, for the purpose of contrasting them. The first is a strong, unyielding staff, composed of German silver, and as large as a No. 3 catheter.

The second is not a sound, but a probe, only a little larger than the ordinary surgical probe, composed of pure silver or copper, and perfectly pliable.

Dr. Sims has gradually decreased the size of the probe, so that that which is very commonly employed in New York, at present, is no larger than represented in Fig. 20.

Mode of Probing the Uterus.—While the woman lies on her back, the examiner, by vaginal touch, carefully ascertains the position

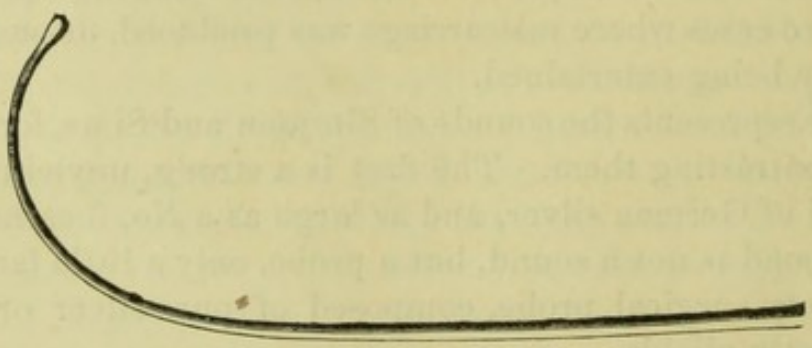
Fig. 19.



Sounds of Simpson and Sims compared.

of the uterus, by passing his finger, first into the fornix vaginæ over its posterior face, and then along the base of the bladder,

Fig. 20.



Sims's probe, smallest size.

over its anterior wall. This gives him a definite idea of the direction of the canal along which he is to pass his probe, and without

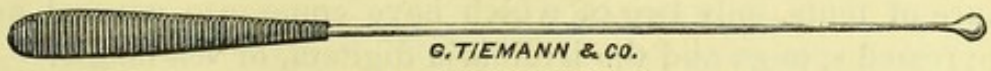
it he should never essay the procedure. The speculum is then introduced, the patient retaining the dorsal decubitus if a short cylindrical instrument be employed, and being turned on the left side if Sims's or one of its varieties be used. The examiner then takes the probe, and with his fingers gives it the exact curve which he supposes the uterine canal to have, and gently endeavors to pass it in. Should he fail he withdraws the instrument, alters the curve slightly, and makes other attempts until he succeeds, which will be very soon if he has used this method so often as to have given himself experience. Every effort at introduction is made cautiously as if the probe were passing into the larynx instead of the womb, and no force whatever is exerted. Success is attained by properly curving the probe, and by that alone. Sometimes the inflection given to it must be the arc of a small circle; at others a sharp angle; sometimes the instrument is left perfectly straight; in fact every variety of direction may be given it. In a certain set of rare cases, even a spiral twist is required.

Thus employed, the uterine probe becomes a means of verifying a diagnosis which has been made by touch, and is certainly safe, easy of introduction, and painless. It may be used in all cases except pregnancy, doing no injury even in endometritis, so gentle is its entrance into the inflamed cavity.

No one can dispute the fact that having been passed it performs the chief functions of the sound, proclaiming the course, length, and capacity of the uterine canal.

There are two things required of the uterine sound and probe, which none of those instruments which I have shown thoroughly and satisfactorily perform. The first is the measurement of a uterus very much enlarged by a submucous fibroid; the second the separate measurement of neck and body. For these purposes I have had constructed a very simple instrument, which is shown in Fig. 21. It consists of a slender rod of hard rubber

FIG. 21.



Hard-rubber probe.

or whalebone, ending in a knob the size of a buckshot. The entire instrument measures twelve inches, of which four are given to the handle and eight to the shaft. When an enlarged uterus containing a fibroid is to be measured, the knob is gently pushed

through the os internum and upwards to the fundus. The shaft bends, the knob does no injury to the uterine walls, and the measurement is obtained. The length of the cervical and uterine cavities may be obtained in two ways: first, the knob is pushed upwards to the os internum until resistance marks the end of the canal; then it is pushed upwards to the fundus, and the degree of penetration noted, and the measurement taken; second, the knob is carried by gentle pressure through the os internum up to the fundus, and the measurement observed; then it is drawn down to the os internum, and the difference will give the depth of each cavity. It would prove somewhat difficult to cause the bulb on this instrument to penetrate the os internum of a healthy virgin uterus; but in a diseased uterus, which we are generally called upon to measure, it is usually easy. I have employed this simple probe so constantly, within a few years past, that I cannot imagine how I could now dispense with it.

Tents.—Before the time of Récamier, the cavity of the uterus was a space entirely closed to investigation and local therapeutics, unless the os were greatly dilated by disease. He not only aspired to an accurate knowledge of its affections, but boldly applied his remedies directly to the diseased surface; and, in cases of intra-uterine granulations, scraped off the diseased mucous coat with the curette. Even to him, however, the diagnosis of diseases within the cavity, when the os was closed, was an impossibility, and for the means of combating this difficulty we are again indebted to Dr. Simpson, who, in 1849, placed the use of sponge-tents among the most important of our resources for diagnosis.

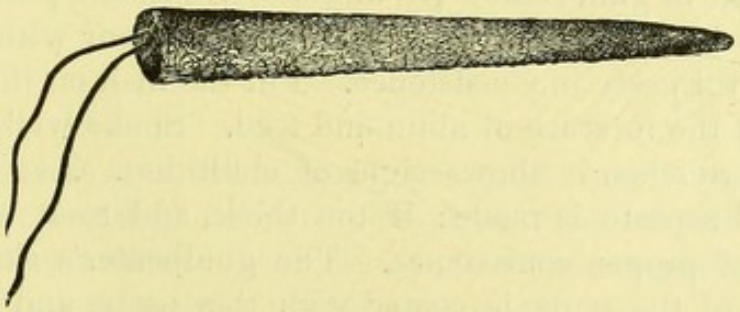
The object for which they are employed is the dilatation of the cervical canal, in order that the cavity of the body may be examined by touch or sight, and that treatment may be applied in cases of polypi, granulations, fibrous tumors, hydatids, removal of the products of conception, &c.

A variety of substances have been recommended for the manufacture of tents, only two of which have come into general use, compressed sponge and the laminaria digitata, or sea-tangle.

Mode of preparing Sponge-tents.—The sponge employed should be of good quality, though not of the finest texture, which is not sufficiently unyielding to overcome the resistance of the cervix as it expands. It should be thoroughly cleansed by boiling in water, rendered alkaline by bicarbonate of soda, and all adhering parti-

cles of earthy matter carefully removed. This being done, it should be cut into conical pieces, varying in bulk from that of the little finger to that of an egg, and in length from two inches to three and a half. Small tents, which are to be employed only for opening the cervical canal, need not be made longer than two inches, but those employed for complete dilatation in cases of polypi and fibrous tumors should measure three or even three and a half. As Dr. Noeggerath has advised, each piece should then be soaked in a weak solution of carbolic acid, which prevents to a great extent the fetid odor developing itself after the tent has been kept in the uterus for some hours. The sponges are then saturated with mucilage of gum acacia, and a sharp wire being passed through the centre of one piece, it is tightly wrapped with strong cord from the apex to the base. The wire is then removed and the tent left to dry. When it is half dry, it is a good plan to unwind and rewind it with still greater force. As soon as it is thoroughly dried, the cord is removed, the asperities of the tent removed by a file or by sand-paper, and a piece of cord passed entirely through the tent from base to apex, and there secured by being sewed to the tip of the tent. This can readily be done by a long darning-needle armed with doubled silk, and pushed upwards through the opening left upon withdrawal of the wire upon which the tent was bound. A neglect of this simple precaution has repeatedly allowed the tent to break upon its removal, and one-half to remain in the cavity of the body of the uterus.

FIG. 22.



A sponge-tent.

In Europe sponge-tents are prepared by machinery, and are far superior to those made as above described.

The following method of preparing them, described by Dr. J. B. Hough, in the Cincinnati Lancet and Observer, appears to

me worthy of record, though I have never personally tested it:[1] "The sponge is first thoroughly moistened with water, and pressed as dry as the strength of the hand will permit; then, having formed it into the desired shape and size by the hand, or by pressing it into a quill or any other tube or mould, it is immersed in alcohol. If the spirit is sufficiently strong (90 to 100 per cent.) the sponge is *immediately* set into the given shape, which it retains perfectly after the pressure or mould is removed. It is then hard, firm, and inflexible, and may be trimmed to a sharp point or any other desired shape. To restore it to its former size and shape, it is only necessary to moisten it with a few drops of water. The alcohol sets the sponge perfectly, whether the amount of compression be much or little, so that the degree of dilatation, attainable by the use of tents thus prepared, will, of course, depend upon the size after moulding and the degree of pressure used. As this process of preparation works perfectly and *without delay*, its advantages are obvious."

To prevent contact between the sponge, loaded as it is with organic elements, and the mucous lining of the uterus, a variety of expedients has been resorted to, such as coating them with tallow, glue, wax, &c. A very ingenious plan for accomplishing this has been suggested by Prof. J. C. Nott,[2] of New York, who speaks highly of it from extensive experience.

The tents, prepared as above directed and made smooth by sandpaper, are covered by goldbeater's skin, which is brushed over with a paste, that is prepared after the following formula: Take of acetate of lead and sulphate of alum each ℥iij, and dissolve in water. Take of gum Arabic ℥v, and dissolve in one pint of water. Mix in a dish a quarter of a pound of wheat flour with the gum water cold till pasty in consistence. Put the dish on the fire, and pour into it the mixture of alum and lead. Shake well, and take it off the fire when it shows signs of ebullition. Let the whole cool, and the paste is made; if too thick, add to it some gum water till of proper consistence. The goldbeater's skin, cut of the length of the tents, is coated with this paste, and each tent rolled in it until it is enveloped five or six times. It is then dried, after which several rows of perforations are made from end to end of the tents, with a pocket-knife, to admit fluids. They are now as smooth as cigars, very firm, and can be introduced very

[1] Braithwaite's Retrospect, vol. 60, p. 212.

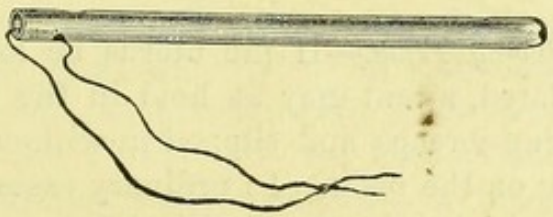
[2] Richmond Med. Journ., July, 1867.

easily. In introduction and removal the skin protects the uterus perfectly.

Preparation of Sea-Tangle Tents.—In 1862, Dr. Sloan, of Ayr, Scotland, recommended the use of this substance for dilating the cervix uteri. The laminaria is an aquatic plant found upon various parts of the Atlantic coast of Europe and America. That found in the Bay of Fundy, I am informed by Messrs. Tiemann & Co., is far superior to any other with which they have experimented. This plant, when saturated with moisture, swells to three times the bulk which it has when thoroughly dried. In its moist state a long piece of it is perforated at both extremities, in order that it may be hung up and allowed to dry, a weight being attached to the lower end so as to stretch it and make it straight. When dry, this is cut into pieces from two to two and a half inches long and made perfectly smooth and round by a knife, a piece of glass, or sand-paper. Tiemann & Co. prepare them very beautifully by turning in a lathe.

Dr. Greenhalgh, of London, has improved these tents by having them perforated from one extremity to the other, so as to make them tubular instead of solid. Thus prepared they will dilate much more rapidly and completely. One of Dr. Greenhalgh's tents is represented in Fig. 23.

FIG. 23.



A sea-tangle tent.

The advantages of these tents over those made of sponge consist in their creating no fetor, and presenting no animal matter for absorption. Their disadvantages are their requiring a longer time for expansion, their being kept in the cervix with greater difficulty, and offering a harder substance to the walls of the cavity of the uterus.

Dr. Nott, who has lately been experimenting extensively with them, arrives at conclusions very much in their favor, as will be seen from an examination of his deductions which I here place before the reader.

"1st. Where moderate dilatation is required, the laminaria is preferable to the sponge-tents.

"2d. If placed in warm water, just before introduction, for a few minutes, they become flexible, coated with mucilage, are easily curved to suit the cervical canal, and may be inserted with the utmost facility.

"3d. From their smoothness and softness they are removed without force, and produce no abrasion or irritation.

"4th. They may be medicated with morphia, iodine, or anything soluble in water, but do not absorb alcoholic solutions or glycerine. After being so charged, they may be dried and kept for use an indefinite time.

"5th. They do not become putrid, and therefore poisonous, as do sponge-tents, and may therefore be retained twenty-four hours or more with impunity.

"6th. The black, ovoid laminaria, from the Bay of Fundy, is much preferable to the other varieties yet brought to our markets, and free from the objections made to laminaria by some writers.

"7th. The laminaria will be found of great benefit in obstructive dysmenorrhœa, if introduced a few days before the menstrual period, and also in cases of uterine catarrh connected with contracted cervix; they prepare the way well, too, for all intra-uterine medication. In either case, if softened in hot water before introduction, they rarely produce any pain or irritation.

"8th. It is better to insert several small tents than one large one, as the small ones expand more rapidly than the large ones."

Mode of Introducing Tents.—If the uterus be low in the pelvis and its neck dilated, a tent may be held in the bite of any pair of uterine dressing-forceps and slipped in without the speculum, the woman lying on the back. In ordinary cases they should be introduced through the short cylindrical, or one of the varieties of Sims's speculum. The introduction is most easily accomplished with the last in all cases, and in some it can only be effected with it. The uterus being fixed and held by the tenaculum, Fig. 24,

FIG. 24.

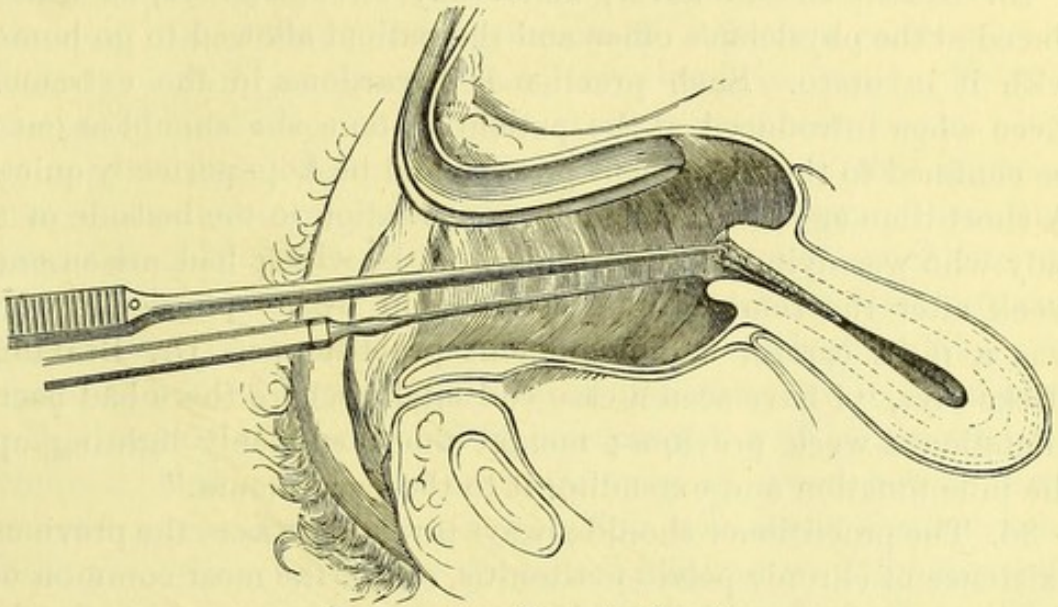


Tenaculum for fixing the uterus.

the tent, grasped by a pair of mouse-tooth forceps, is directed in coincidence with the axis of the uterus, as ascertained by the

probe, and gently pushed through the cervix, as represented in Fig. 25.

Fig. 25.



Introduction of a tent. (Sims.)

Should its retention be doubtful, a mass of cotton is then packed against it so as to keep it in place, and the woman is directed to keep quiet upon her bed until it is removed.

Its removal is accomplished, through the speculum, with the same forceps by which it was introduced, in from twelve to twenty-four hours.

Dangers.—There is always danger in dilating the cervix by tents, though it is by no means so great as to make one hesitate in employing them. In a case which I saw in consultation with Dr. Edward Parsons I employed two tents in succession, and, in about twenty-four hours after removal of the second, tetanus developed itself, which proved fatal. In several cases, in the practice of other physicians, I have seen death result from peritonitis after their use; and in several others have known perituterine cellulitis thus produced.

This subject is one of so great importance that I deem it best before leaving it to enumerate certain rules which should always govern the practitioner who resorts to this valuable, but at the same time unquestionably hazardous, method of diagnosis and treatment.

1st. In the introduction of a tent no force whatever should be employed. Should that first essayed not pass the os internum easily, it should be at once withdrawn, and either bent so as to

follow more accurately the course of the cervical canal as ascertained by the probe, or exchanged for a smaller tent.

2d. A tent should never, under any circumstances, be introduced at the physician's office and the patient allowed to go home with it in utero. Such practice is hazardous in the extreme. Even when introduced at the patient's home she should at once be confined to the recumbent posture and be kept perfectly quiet. A short time ago I was called in consultation to the bedside of a lady who was dying of general peritonitis, which had arisen one week after the removal of a sponge-tent by her physician, who was a most careful and competent practitioner. Dr. Braxton Hicks says, "I have seen a case end fatally where there had been dilatation a week previous; mental shock suddenly lighting up the inflammation and extending it to the peritoneum."

3d. The practitioner should always investigate as to the previous existence of chronic pelvic peritonitis, one of the most common of the diseases of women. Should it have existed, sponge-tents should be carefully avoided. In most of the instances in which I have seen dangerous results follow their use, this condition had previously existed and been excited into activity again by them.

4th. A tent should never be allowed to remain in the uterus more than twenty-four hours, and if it be compatible with the accomplishment of the desired result, it should be removed in twelve hours.

5th. After removal of a tent, the vagina should be washed out with an antiseptic fluid, and if any pain, chilliness, or discomfort follow the removal, opium should be freely administered and perfect quietude enjoined.

6th. After removal of a tent, the patient should be kept in bed for at least twenty-four hours, and never allowed to travel before the expiration of four or five days.

I am fully aware that these precautions will be incredulously received by those practitioners who have habitually and with impunity inserted tents at their offices, and sent the patients home with directions to remove them, by means of the cord, on the next day. But it is the duty of every conscientious man to give weight to the experience of others. If it were essential for every practitioner to lose one patient from this or any kindred cause before regarding it as really dangerous, the number of fatal cases would necessarily grow very large.

THE ENDOSCOPE.—This instrument consists merely of a long

cylindrical tube of metal, through which, by a very strong light, we are able to see for a considerable distance down narrow canals. It has been employed for visual examination of the deepest portions of the urethra, and by means of reflecting mirrors even hollow viscera, as the bladder, have been explored. By this method I have been able to accomplish very little in the diagnosis of uterine disorders, but have satisfied myself that as far as the os internum it may be used with slight advantage. I have employed a straight tube only, and hence have not been able to explore the body of the uterus, but varieties which are bent and supplied with mirrors have been used. If the cervix be dilated, the endoscope may be at once introduced after the part has been carefully cleansed of mucus. If it be closed, it will be necessary to dilate it with a tent, and to wash away all blood oozing forth in consequence, with ice water, which will check further flow. Then the tube is carried up through the speculum to the requisite extent, and the light to be employed thrown through it. The endoscope will, probably, never prove of great value in this field.

The Exploring Needle.—By means of a long, delicate needle, or very narrow tube, constituting a canula for a trocar the size of a small knitting-needle, the contents and characters of tumors in the pelvis may be ascertained. These instruments are not employed in treating cysts, but are required only to remove sufficient fluid to announce the character of the contents of the tumor. Sometimes a tumor, supposed to be solid and irremediable, is thus proved to be amenable to treatment by incision or the trocar.

The Microscope.—The microscope will often prove useful as an aid in diagnosis in determining the malignant nature of certain morbid growths, the character of products of inflammation, the connection of intra-uterine growths with the results of conception, the purulent nature of uterine leucorrhœa, and, as Dr. Sims has pointed out, the deleterious effects of uterine discharges upon the zoosperm in the production of sterility. In four cases of obstinate metrorrhagia dependent upon an unascertained cause, I have been able, through cervical dilatation and the use of the curette, to obtain material sufficient for a positive diagnosis of cancer of the body, by this instrument. One case has come to my knowledge in which many of the symptoms of cancer of the body existed, but in which the error in diagnosis thus created, was corrected by removal of a portion of the supposed morbid growth and examina-

tion by the microscope. By this instrument the substance was pronounced to be not cancer but sponge, and further investigation proved that one half of a sponge-tent had remained in the body of the uterus for several months.

In ovarian tumors of doubtful character it may often be made a valuable diagnostic means. Where, for example, the question of operation is to be decided by the benignity of the growth, an explorative incision may be made, a small portion removed, and all doubts be put at rest. Such an operation, though dangerous in itself, had better be resorted to than that the patient should lose the prospect of life held out to her by ovariotomy.

Auscultation and Percussion.—The important assistance of auscultation and percussion in mapping out the size of tumors, determining pregnancy, differentiating this from ovarian cysts, &c., is so evident as merely to require a passing mention.

RECAPITULATION OF MEANS FOR EXPLORING THE VISCERA AND TISSUES OF THE PELVIS.

1*st.* *Vagina and Cervix*—
- Vaginal touch;
- Sight, through the speculum.

2*d.* *Outer Surface of the Uterus*—
- Vaginal and rectal touch, while the organ is brought within reach by hypogastric pressure or the tenaculum;
- Conjoined manipulation;
- Vesico-rectal exploration.

3*d.* *Cavity of Cervix and Body*—
- Tents, followed by introduction of finger;
- The uterine probe;
- The endoscope;
- Removal of substance by curette and use of microscope.

4*th.* *The Ovaries, Broad Ligaments, Pelvic Peritoneum, and Pelvic Areolar Tissue*—
- Vaginal touch;
- Rectal touch;
- Conjoined manipulation;
- Abdominal palpation;
- Auscultation and percussion;
- The exploring needle.

CHAPTER IV.

DISEASES OF THE VULVA.

Normal Anatomy.—The vulva is the elliptical opening which exists at the distal extremity of the vagina, and comprises the mons veneris, labia majora and minora, clitoris, meatus urinarius, vestibule, fossa navicularis, fourchette, and hymen.

Labia Majora.—From the mons veneris, which consists of adipose tissue covered by skin in which exist numerous hair-bulbs, two folds of integument pass downwards to unite at the fourchette. These are called the labia majora. Externally they are covered by skin, which contains scattered hair-bulbs, but on their inner surfaces their covering is mucous membrane, which is studded with sebaceous follicles, the secretion of which is unctuous and semi-solid. Within, the labia are filled with adipose tissue, a portion of which is inclosed in sacs, of which one arises from each external abdominal ring and extends downwards towards the fourchette.

The Clitoris.—Beneath the superior commissure of the labia juts forward a little erectile organ, which is analogous to the penis of the male, and receives the name of clitoris. It is covered by mucous membrane, consists of erectile tissue, and arises by two rami, one of which is attached to each ramus of the pubes. Like the male penis, this little organ is provided with a prepuce and frænum.

Labia Minora.—These consist of two folds which, arising at the clitoris, pass downwards and disappear about half way between the two commissures. Like the clitoris they are formed of erectile tissue covered over by mucous membrane, and an attentive examination discovers upon their surfaces a large number of glands, which secrete a sebaceous material.

The Fossa Navicularis and Vestibule are merely spaces intervening; the first, between the perineum and vagina; the second, between the meatus and clitoris. They are both covered by mucous membrane, and the latter is studded with follicles.

The Hymen is a thin veil consisting of a double fold of mucous membrane, which in part closes the ostium vaginæ. When rup-

tured its remains contract and form little tubercles on the walls of the vagina, which receive the name of carunculæ myrtiformes.

Passing over the clitoris, to which it is attached, and running downwards on each side of the vulva so as in part to cover the bulbi vestibuli, will be found a muscle, the sphincter vaginæ. Some of its fibres pass down to the perineum to inosculate with the sphincter ani, with which it continues as a figure 8, but the greater portion decussate to the surrounding areolar tissue.

Vulvitis.

Definition.—Vulvitis is the name applied to inflammation of the mucous membrane lining the vulva. Affecting all of this structure, the surface covered by epithelium and the glands imbedded in it, the inflammatory action sometimes extends through the submucous tissue into the proper structure of the parts underlying it, creating tumefaction, pain, and sometimes even suppuration.

Varieties.—Authorities differ with regard to the classification of its varieties.

That which appears most appropriate is the following:

Purulent vulvitis;
Follicular vulvitis;
Gangrenous vulvitis.

Purulent Vulvitis.

This variety of the affection may be either of non-specific form, or a true gonorrhœa of the vulva. The former is in many respects analogous to balanitis in the male, while the latter resembles very closely specific inflammation in other mucous membranes of the body.

Causes.—It may result from

Vaginitis, specific or simple;
Want of cleanliness;
Injury, or friction from exercise;
Eruptive disorders;
Onanism;
Chemical irritants;
Excessive venery.

Symptoms.—The parts are red, swollen, hot and at first dry.

Then a free flow of pus takes place which bathes the whole surface and stains the linen of a yellow hue. In addition to these signs of active inflammation, superficial ulcers will be found scattered over the parts affected, and in rare cases patches of diphtheritic membrane will be seen adhering to them. At times the meatus urinarius becomes affected, and painful micturition, with scalding and heat, is complained of. At others the most intense pruritus affects the vulva, and the patient, in endeavoring to obtain relief, may contract the habit of masturbation. Should the inflammation extend to the vagina, the symptoms of vaginitis will also show themselves, and by a similar extension to the bladder those of cystitis may develop. In severe cases febrile action, with thirst, heat of skin, and general discomfort, is present, but this is not usually the case.

The pus which is discharged, always in the specific form of the disease, and very generally in the non-specific, gives forth a disagreeable odor, and is usually so irritating in quality as to excoriate the inner surfaces of the thighs when it comes in contact with them. Should this material, even in the non-specific form of the affection, be carelessly brought in contact with the conjunctivæ, a severe form of purulent ophthalmia is excited. The late Professor Bedford gave me the account of a case in which coition under such circumstances gave rise to a urethritis in the male, which was made the basis of a suit for divorce. He was appealed to as a medical expert, and found upon examination that non-specific purulent vulvitis, uncomplicated by vaginitis or urethritis, existed.

Course and Termination.—Even without treatment it is probable that the affection would always be recovered from in time; but it would run a lengthy and tedious course, and perhaps give rise to complications which would be productive of greater evil than the original disorder. When properly treated, it generally runs a rapid course and is readily cured.

Treatment.—If inflammatory action be excessive, the patient should be kept in bed, upon low diet, and the bowels freely acted upon by saline cathartics. Cooling and emollient applications should be made constantly to the inflamed part, and cleanliness scrupulously observed. The patient should be directed to bathe the vulva freely with warm water three or four times daily, and to apply a warm poultice of powdered linseed, slippery elm, or grated potato. To the poultices may be added with advantage acetate of lead and tincture or powder of opium.

As soon as the acute action has subsided, the lead and opium wash should be kept in contact with the parts, by dossils of lint soaked in it, and placed between the labia. It is thus compounded:

℞.	Tr. opii,	℥ij.
	Plumbi acetat.,	ʒj.
	Aquæ,	Oj.—M.

At a still later period the diseased surface should be painted over several times a day with a solution of persulphate of iron and glycerine, one part of the former to four of the latter. Should the disorder not be entirely eradicated by this treatment, the vulva may be painted over once in every forty-eight hours with a solution of nitrate of silver, ten grains to the ounce of water, and kept constantly powdered with lycopodium, bismuth, or starch, until recovery is complete. Should pruritus attend the latter stages of the disorder, a wash composed of one scruple of carbolic acid to one pint of water will be found useful.

Follicular Vulvitis.

Definition and Synonyms.—It has been already stated that in the mucous membrane lining the vulva, more especially in that covering the labia majora, labia minora, and vestibule, numerous follicles exist. Presenting themselves as solitary glands, they are classified under the three following heads—muciparous, sebaceous, and piliferous. In ordinary purulent vulvitis, these, as component parts of the diseased membrane, are implicated in the morbid action. Sometimes, however, they alone are affected by disease, when the name of follicular vulvitis or vulvar folliculitis has been applied to the condition. Any or all the varieties of glands just mentioned may be diseased, and authors have given special names to the varieties, so that a list which would comprise them all would be a long one. As examples may be mentioned papillary, pruriginous, erythematous, sebaceous, granular vulvitis, &c.

We may avoid tediousness of detail, and at the same time run no risk of being led into error, by classing all forms of inflammation affecting the solitary glands of the vulva under the head of follicular vulvitis; provided that we bear in mind that all the varieties of glands may be simultaneously affected, or that one set alone may be diseased, the others remaining healthy.

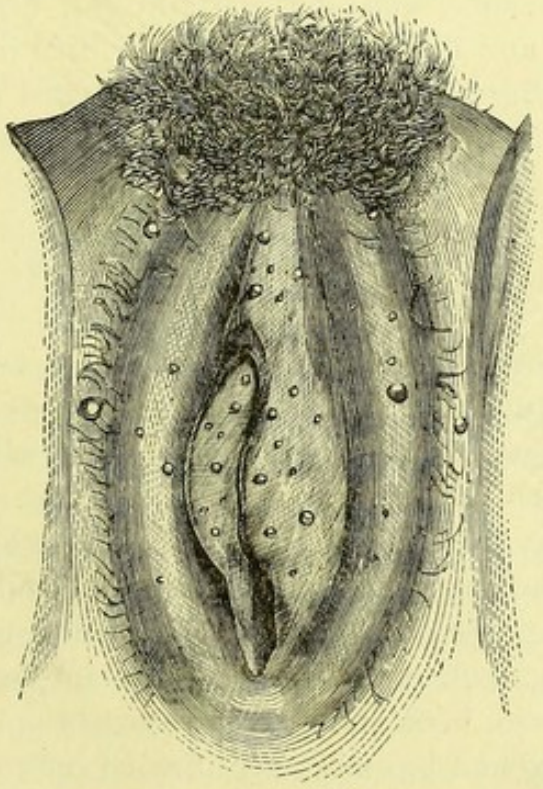
Causes.—This form of vulvitis may be induced by the following influences:

Pregnancy;
Neglect of cleanliness;
Vaginitis;
Exanthemata;
Eruptions on the vulva.

Symptoms.—There are burning, itching, and heat in the vulva, with increase of glandular secretion. At times the secretion is excessively offensive and irritating in character. The urethra frequently becomes inflamed at its vulvar extremity, and scalding in the passage of urine results. The vulva may become so sensitive to touch, that efforts at sexual intercourse excite vaginismus, which thus constitutes a symptom of the disease.

Physical Signs.—If the muciparous follicles be chiefly affected, the mucous membrane of the vulva will be found intensely red in spots or patches, which are slightly elevated. These are most com-

FIG. 26.



Follicular vulvitis. (Huguier.)

monly found on the edges of the lower vaginal rugæ, the nymphæ, and the carunculæ. They sometimes resemble the swollen villi upon the tongue, and bleed upon slight irritation.

Should the disease have affected chiefly the sebaceous and piliferous glands, little, red, rounded papillæ will be found on the surfaces of the labia majora and minora, and the base of the prepuce of the clitoris. After a while a drop of pus will appear in the apex of each, which is soon discharged, and the distended follicle shrivels. Beneath the labia minora a semifluid mass of offensive secretion will generally be found, which will, if not carefully removed, conceal the follicles underlying it.

Course and Duration.—If this disorder occur during pregnancy, it may disappear at its conclusion. In some cases it becomes so severe, and produces such annoying symptoms that abortion is induced by it. If it exist in the non-pregnant state, and be not appropriately treated, it may continue for an unlimited time and establish urethritis, not only in the patient, but in her husband. This fact should be especially recollected, for a suspicion of want of chastity may be excited in the mind of the husband, and serious domestic difficulty result.

Treatment.—Follicular vulvitis should be treated upon the same principles as the purulent form; by repeated ablution, warm poultices, sedative washes, and local alteratives, especially the persulphate of iron and nitrate of silver. Dr. Oldham, who was one of the first to enlighten the profession in regard to this affection, placed great confidence in the following prescription:

℞.—Acidi hydrocyanici dil., ʒij.
Plumbi diacetatis, ℈j.
Olei cacao, ℥ij.—M.
S. Apply after washing the parts with cold water.

The chronic form of this affection, which is fortunately rarely met with, constitutes a really formidable and uncontrollable disease. In the American Journal of Obstetrics will be found a remarkable instance of it reported by Dr. B. F. Dawson, which, as typical of that form of the disorder, is worthy of especial notice. The patient, aged 60 years, had suffered from follicular vulvitis since the age of 16, and after consulting numerous practitioners in vain, had, on account of the intolerable itching attending the disease, been induced to resort to opium for comfort, until in time she had become a confirmed opium-eater. At the time when the history was given, the following was the condition of the vulva: "On parting the labia, which had to be done with the utmost gentleness, as the patient suffered and flinched at every attempt, the mucous membrane of the labia, as well as the fourchette, was found completely covered over by a thick cheesy

substance, of a dirty cream color, which emitted a peculiarly offensive odor." This condition had proved so entirely rebellious to treatment, that removal of the entire mucous covering of the vulva which was the site of the diseased glands had to be resorted to.

Gangrenous Vulvitis.

Definition and Synonyms.—This singular disease, which is in many of its attributes akin to the cancrum oris of children, has been synonymously described under the names of noma, carbuncle of the genitals, gangrene of the vulva, &c. It is fortunately a very rare affection, as it commonly proceeds to a fatal issue.

Pathology.—A survey of the predisposing causes, none which are exciting being known, will convince the reader that this form of vulvitis, unlike the other affections of the genital organs which we have just considered, is dependent upon a depraved blood state, one somewhat similar to that which produces like results in the mouth and fauces in continued fevers, scarlatina, &c.

Causes.—The conditions which are known to result in it are—

Peculiar epidemics of puerperal fever;
An unknown epidemic influence;
Scarlatina, measles, and continued fever.

The affection has sometimes been observed to take on an epidemic character like similar disorders in the throat and mouth.

Symptoms.—Velpeau[1] describes these in the following graphic manner: "A patch or vesicle of grayish, reddish, or blackish hue, which ulcerates and soon becomes depressed in the midst of swollen and indurated tissues which are of a red color, forms generally the point of departure. From this moment the gangrene advances step by step; mortification affects the parts; an ichorous, fetid, nauseating fluid bathes the labia majora; separation of the gangrenous patches takes place slowly, and instead of limiting itself the process of destruction continues sometimes to extend until the death of the patient. The vital forces rapidly break down, and many children would die of this dreadful affection if art did not promptly interpose."

A swollen, purplish, and œdematous state of the labia, accompanied by grave constitutional signs, in a child exposed to any of the predisposing causes mentioned, would at once excite the

[1] Dict. de Méd., vol. xxx, p. 991.

suspicion of one at all familiar, even in theory only, with the existence of this malady. The only disease with which it would probably be confounded is diphtheria of the vulva, and this would readily be differentiated by the patches of false membrane which would cover the mucous lining of the part.

Treatment.—As soon as the nature of the disease is ascertained, both constitutional and local treatment should be promptly and energetically established. The patient should be placed in bed, in an apartment supplied by the purest air, and all depressing influences should be removed from her. The most nutritious food and wine or other stimulants should be administered, and the strength sustained by quinine and muriated tr. of iron in large and repeated doses. If the local disorder be not rapidly arrested, death will undoubtedly ensue in spite of all general means, and no time should be lost in trying inefficient remedies. A powerful caustic is the only hope. The gangrenous spot should be destroyed by the actual cautery or muriatic or nitric acid, the patient being under the anæsthetic influence. After this, disinfectant poultices should be applied, and every effort at sustaining the vital forces continued. Should a fresh gangrenous spot appear, a new application of the caustic should be resorted to.

Inflammation of the Vulvo-Vaginal Gland.

Anatomy.—Just anterior to the hymen, or its remains the carunculæ myrtiformes, will be found on each side a little opening, sufficiently large to admit a small probe or bristle. This opening leads through a canal three-fifths of an inch long, which is the excretory duct of a conglomerate gland which has received the name of vulvo-vaginal gland. These glands are found, one on each side of the ostium vaginæ, between the vagina and the ascending branch of the ischium, from which they are distant three-tenths of an inch, and lie in contact with the transverse artery of the perineum. The fact that they are separated from the vagina by an aponeurotic prolongation, lie between the superficial and middle layers of the ischio-pubic fascia, and have the unyielding ischium on one side, accounts for the complete confinement of pus forming in their tissue, and its not being discharged by the rectum or vagina. They were described by Duverney, Bartholinus, Morgagni, and their immediate successors, but in time, very singularly, they were lost sight of. In 1841, M. Huguier, of Paris, redescribed them fully, and threw much light upon their diseased conditions.

Sometimes, their mouths becoming occluded by adhesive inflammation, their secretion is retained, and they undergo great enlargement and distension. At other times their proper tissue becomes inflamed, as we see that of the breast do in mammitis, and abscess is the result.

Causes.—The causes of inflammation of these glands are very much the same as those of vulvitis, of which, indeed, this affection is often a concomitant disorder.

Symptoms.—There is heat about the vulva, pruritus, and pain upon touch. The mouth of the duct is red, and the finger pressed over the site of the gland discovers a hard, painful, and perhaps fluctuating tumor about the size of a large almond. Very often the first intimation of the existence of the disease, is given by pain during the sexual act.

Course and Duration.—This disease is one of no great moment, and its natural tendency is to recovery. Its usual duration is from two to three weeks, and the inflammatory process may terminate either by resolution or by suppuration. Should the latter occur, the pus may be discharged through the ducts of the gland, near them, or in the furrow between the labia minora and majora. In some cases, however, the gland becomes filled with a puriform or honey-like matter, and exists as a cyst for a number of months.

Treatment.—An emollient poultice or cooling and anodyne lotion should be kept applied to the vulva, and rest should be prescribed until suppuration has occurred. Then, if pain be very severe, the accumulated pus may be evacuated, by means of a lancet, near the mouth of the gland or at any other point where fluctuation is most distinct. If pain be not severe, the evacuation of the pus may be left to nature.

When frequent return of the morbid process makes it advisable to resort to an operation to give permanent relief, extirpation of the gland may be practiced. An incision should be made at the point where one labium minus unites with the labium majus, through which the gland may be seized by forceps and dissected out with scissors. The transversus perinei artery will probably be severed, and should be ligated for fear of hemorrhage. I have never found it necessary to extirpate the gland. When repeated collections of pus or of its proper secretion have occurred, I have succeeded in effecting permanent relief by opening the sac freely and stuffing it with greased lint, so as to cause the healing process to begin at the bottom.

Eruptive Diseases of the Vulva.

The skin and mucous membrane making up the vulva may, like the same structures in other parts of the body, be affected by eruptive disorders of various kinds. It is not my intention to enter with any minuteness into the consideration of these diseases, for which I refer the reader to any of the modern works upon dermatology, but merely to note the fact that they may occur upon this part, and mention the leading characteristics of the most frequent of them.

Any eruptive disorder which may elsewhere affect the skin or mucous membrane of the body may show itself on the vulva. The following list includes those which are most commonly met with and most frequently call for diagnosis and treatment:

Prurigo and lichen;
Eczema;
Acne;
Elephantiasis;
Erythema and erysipelas;
Syphilides.

As is the case elsewhere with prurigo, that of the vulva presents large, scattered papules, very irritating, and generally having their apices bereft of cuticle. Lichen shows more numerous papules, which rest upon a thickened and somewhat indurated cutaneous basis. Pruritus vulvæ is the most prominent symptom of these maladies.

In eczema the surface is red, heated, and covered by little vesicles, which breaking, give forth a serous fluid. The eruption confines itself chiefly to the cutaneous surface, the mucous lining being less affected. It may pass off rapidly as an acute disorder, but sometimes there are successive crops of vesicles which exhaust the strength of the patient, in consequence of the nervous excitement and irritability which the disease induces.

Acne consists in engorgement of the sebaceous follicles studding the labial faces; not in active inflammation, which would bring the case under the head of follicular vulvitis, but in engorgement by their own retained secretion.

Elephantiasis of the labia differs in nothing from that of other parts. The affection is very rare. Kiwisch records one case in which both labia increased in size, so as to equal the head of a

man, and to fall nearly to the knees. The parts affected by it are the labia majora and minora, the clitoris, and the perineum.

Erythema and erysipelas are simply accompanied by graver symptoms when they affect the genital organs than when they develop on the skin elsewhere.

Syphilis in secondary and tertiary form may affect the labia, creating hypertrophy, ulceration, and all the evils which it excites in other parts.

These disorders create the ordinary symptoms of vulvitis, and hence they are commonly confounded with it. Pruritus vulvæ is one of their most constant signs, and the itching which it produces often first attracts attention to their presence.

Treatment.—Little need be said here of treatment, for it should be guided by the rules which govern the management of the same cutaneous disorders in other parts of the body. The general health should be carefully attended to; change of air advised; and tonics and alteratives, such as iron and arsenic, prescribed in combination, the second, with the tinctures of cinchona, or gentian; or, the first, with colombo. Local treatment should consist in the maintenance of strict cleanliness by bathing the diseased parts freely in tepid water, and the pruritus, which invariably exists and excites scratching, should be relieved by lotions containing acetate of lead, opium, borax, or a small amount of creasote or carbolic acid.

Phlegmonous Inflammation of the Labia Majora.

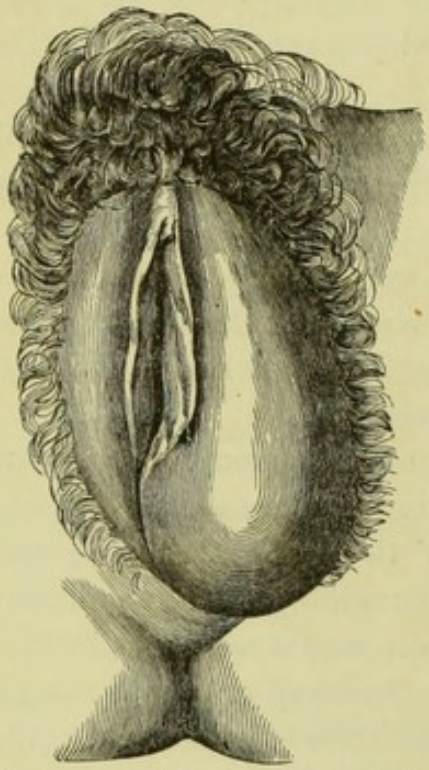
The areolar and adipose tissues, which in great degree make up the bulk of the labia majora, are very frequently the seat of inflammation and abscess. The disease is excited by irritating vaginal secretions, vulvitis, direct injury, and the peculiar blood state which results in the development of furuncles and carbuncles.

Symptoms.—In the first stage there is active congestion, which in the second produces hardness and tension from effusion of liquor sanguinis into the areolar tissue. The third stage consists in the breaking down of this mass by the process of suppuration and formation of abscess. The pus which is thus created is usually very offensive from propinquity to the rectum and vulva. Fig. 27 represents the disease.

The diagnosis is usually very easy. Attention is directed to the part by heat, pain, throbbing, difficulty of locomotion, and

exquisite sensitiveness upon pressure. Upon physical exploration one labium is found very much swollen and quite hard and tender. Although it is usually easy to distinguish this disease, care must always be taken to differentiate it from labial hernia, displacement of an ovary, pudendal hæmatocele, œdema labiorum, and vulvitis. As this point will engage our attention elsewhere, it requires no further mention here.

Fig. 27.



Phlegmonous inflammation of the labia majora. (Boivin and Dugés.)

Treatment.—The treatment should consist, in the first stage, in the application of cold and sedative lotions, low diet, saline cathartics, and perfect rest. One of the best local applications will be found to be the lead and opium wash. As the second stage advances the process of suppuration, which is now inevitable, should be encouraged by poultices, and as soon as pus is distinctly discoverable it should be evacuated by puncture. Early opening is advisable, because the tissues obstinately resist natural evacuation, and the accumulation may pass upwards towards the abdominal ring through the dartoid sac.

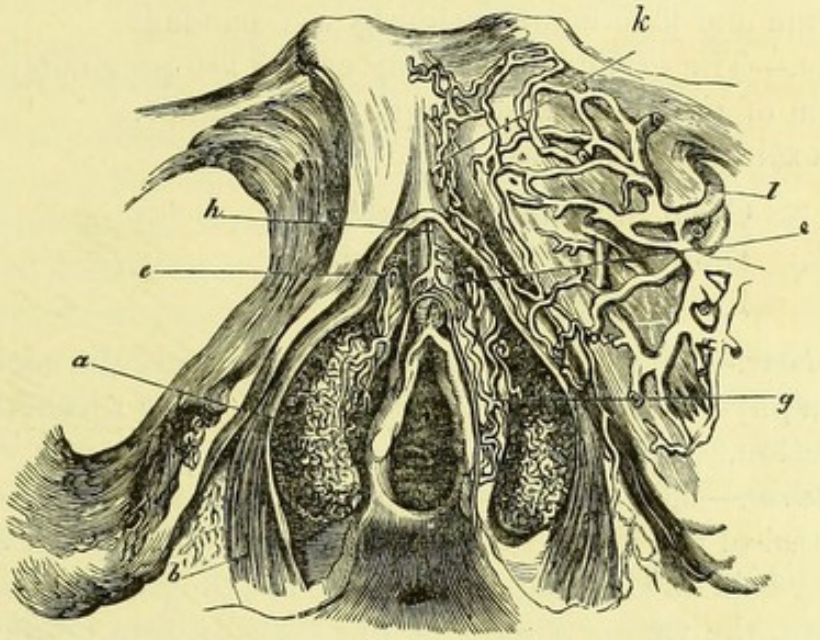
Rupture of the Bulbs of the Vestibule.

Normal Anatomy.—If an incision be made by a scalpel through the skin and its subjacent adipose tissue, around the vulva, and all the tissues making up that part be dissected off, a reticulated plexus of large veins will be found beneath the labia called the pars intermedia and bulbi vestibuli. These extensive channels for blood have been represented by Kobelt, as shown in Fig. 28.

Any influence which causes a rupture of these vessels must produce one of two effects; if there be a corresponding rupture of the skin, a free hemorrhage will occur; if not, the blood pouring out into the areolar tissue, surrounding the wounded plexus, will soon form a coagulum, which will constitute a bloody tumor,

which has received the name of thrombus or pudendal hæmatocele.

Fig. 28.



Plexus of veins of the vestibule. (Kobelt.)

Pudendal Hemorrhage.

Especial attention has been called to this condition by Sir James Simpson,[1] who, in 1850, recorded from his own experience, and that of others, a number of instances in which from a very slight rupture of one labium fatal hemorrhage had taken place. He declares that criminal cases have repeatedly occurred in Scotland, in which women, both pregnant and non-pregnant, had suddenly died from pudendal hemorrhage, arising from rupture of the bulbs of the vestibule. Suspicion of injury at the hands of the husbands or neighbors, had been entertained in most or all of the instances referred to.

The accident is a rare one. But two instances have come under my notice, one occurring in consequence of puncture of the labium by a stick, the woman falling in crossing a fence; the other the result of a similar puncture by a spicula of china, from the breaking of a pot de chambre. Both these cases readily yielded to the recumbent posture, and the application of cold and styptic compresses. A very interesting case, the details of which I cannot now find, has been recently published in one of the journals of the day. A lady standing upon a chair to mount a horse, slipped and fell, so as to cause the sharp extremity of one of the upright pieces

[1] Obstet. Works, vol. i, p. 277, Am. ed.

to puncture one labium. Bleeding was profuse, and so obstinate as to require several attempts at checking it before it was finally controlled. This was in the end accomplished by a tampon in the vagina and firm compression by a T bandage.

Causes.—The great predisposing causes are pregnancy, varicose condition of the veins, and a large pelvic tumor.

The exciting causes are:

Great muscular efforts;[1]
Blows rupturing the labia;
Incisions or punctures;

Symptoms.—The hemorrhage that announces the accident will lead to a physical exploration, which will at once reveal the nature of the lesion.

Treatment.—The nature of the accident being once recognized, the control of the flow will not usually be difficult. If it be not effected by cold and astringents, such as ice, the persulphate of iron, or tannin, the vagina should be filled with a firm tampon of cotton, a folded towel applied as a compress over the vulva, and a T bandage made to press this forcibly against the body. Should this plan fail, the wound should be enlarged by incision and filled with pledgets of cotton saturated with solution of persulphate of iron; then the tampon should be applied in the vagina and a compress carefully adjusted by means of a T bandage. It is difficult to conceive of any case occurring in the non-pregnant woman, which could resist this method if effectually employed.

Pudendal Hæmatocele.

Definition and Synonyms.—The term thrombus, derived from the Greek θρομβοω, "I coagulate," and which is used synonymously with hæmatoma and sanguineous tumor, is that which is generally applied to this condition. I have preferred the appellation of pudendal hæmatocele, given to the disorder by Dr. A. H. McClintock, from its pointing out the similarity between it and pelvic hæmatocele, which resembles it in pathology, and because the term thrombus is now universally applied to the coagulation of blood in a bloodvessel.

A pudendal hæmatocele is a tumor formed by a mass of clotted blood effused into the tissue of one labium, or the areolar tissue immediately surrounding the wall of the vagina.

History.—As early as 1554, the disease was mentioned by Rueff,

[1] Prof. Simpson records a case due to straining at stool.

of Zurich, and in 1647, Veslingius is said by Dr. Merriman to have noticed it. It attracted the attention of Kronauer, of Basle, in 1734, and subsequently that of Levret, Boer, Andibert, and others.[1] In time it passed somewhat out of notice, until the researches of Deneux,[2] in 1830, drew attention to it in more recent times. It is generally alluded to by authors only as one of the results of pregnancy and parturition, though it is incontestably proved that it may occur in the non-pregnant and even in the virgin state. Velpeau records an instance in a girl of fourteen years, who had not yet arrived at puberty, and declares as the result of his experience, that "thrombus vulvæ occurs almost as frequently in non-pregnant women as in those who are in labor." He declares that he has, in the course of one year, observed six cases in the non-pregnant woman; and in his whole experience he has met with twenty instances of the affection.

At the same time that I defer to the statement of so reliable an authority as Velpeau, I must express surprise at it. The accident in the puerperal woman is not very rare, but my experience would lead me to regard it as extremely so in the non-puerperal, since in a practice of nineteen years I have met with but one case. This occurred as a direct result of an injury done to one labium by a severe blow, and resembled very closely the same accident which occurs so often around the eye. Another fact which adds to my surprise is this; in connection with this subject I have carefully examined the current medical literature of the day, and, although it teems with reports of this affection as a complication or sequel of labor, I find no reports of instances in the non-pregnant woman. Nevertheless, as I am in this work strictly avoiding the study of the diseased states constituting the complications and sequelæ of labor, I shall confine my remarks to that form of the affection which occurs in the non-puerperal state.

Pathology.—The pathology of this condition is similar to that of pudendal hemorrhage, which has just received notice, for both are results of rupture of the bulbs of the vestibule. In that which we are now considering the effused blood, instead of pouring away, collects in the tissue of one labium, under the vagina, or even in the areolar tissue of the pelvis, and forms a coagulum. It bears to pudendal hemorrhage the same relation which a simple fracture bears to one of compound character.

Rupture of a branch of the ischiatic or pudic arteries may, dur-

[1] Velpeau, Dict. de Méd., vol. xxx.

[2] Sur les Tumeurs sanguines de la Vulve et du Vagin.

ing labor, likewise produce a bloody tumor,[1] but this should not be treated of under the technical head of pudendal hæmatocele, for it would really constitute a case of sub-peritoneal hæmatoma.

Mode of Development.—When a large vessel has been injured, a tumor—perhaps the size of an orange—is suddenly discovered at the vulva. At other times the tumor is quite small, not larger than a hickory nut. The extent of the laceration likewise governs the rapidity with which the tumor forms after the injury has been inflicted. In some instances a slight flow slowly continues until compression from the clot checks it. When the accident occurs in the non-pregnant state it is generally less extensive than in pregnancy, and is usually confined to the vulva.

Causes.—The causes are identical with those of pudendal hemorrhage, namely:

Muscular efforts;
Blows rupturing the labia;
Incisions or punctures.

Symptoms.—The symptoms are usually a sense of discomfort, with pain and throbbing, and if the effusion reaches the urethra, there is obstruction to urination. The patient or attendant will often first recognize the fact that something abnormal has occurred by the sense of touch, practiced without a suspicion as to the nature of the real difficulty.

Differentiation.[2]—Care must be observed not to confound this with,

Abscess of the labia;
Pudendal hernia;
Inflammation of vulvo-vaginal glands;
Œdema labiorum.

The mere announcement of the possibility of error in diagnosis is all that is necessary, for the physical characteristics, mode of development, and rational signs of these affections are so different from those of hæmatocele, that examination will always settle the point with certainty.

Prognosis.—If the sanguineous collection be small, it will, especially in the non-pregnant state, generally disappear spontaneously. If, however, it be large, and if the patient have recently been de-

[1] Meigs's Treatise on Obstetrics, 5th ed., p. 94.

[2] I have ventured to use this term in place of "differential diagnosis," giving it the signification which it has in Natural History, instead of that which belongs to it in Mathematics. This use is sanctioned by Worcester; and Agassiz speaks of the "differentiation of species." Its cognate verb is equally necessary and convenient.

livered, there are always two dangers to be apprehended. The lesser of these is hemorrhage; the greater, purulent infection through the walls of the cyst left empty by evacuation of the clot, or the formation of an extensive abscess, which may produce the same result. These dangers menace us in the non-puerperal form of the affection, but the danger of both is much less great than in the puerperal, where the vessels of the part are largely distended, in consequence of excessive growth, and where the blood state is one of hydræmia and hyperinosis.

Natural Course.—Should the tumor be left to itself, it may be absorbed in a short time and leave no trace; in five or six days it may burst and discharge; the clot may become encysted, and remain indefinitely in the tissues; or the irritation of the clot may create suppurative inflammation, and abscesses of the labium be the consequence.

Treatment.—Should the tumor be small, and not excite much pain, a cooling lotion of lead and opium should be applied, the patient kept quiet, and the evacuations of the bladder and rectum regulated, in the hope that absorption will take place. So soon as evidences of phlegmonous inflammation around the tumor appear, suppuration and discharge should be encouraged by poultices. When the tumor is large, and experiment has demonstrated that it will not undergo absorption, it is advisable to evacuate the blood-clot by incision. This should be done by means of a bistoury, upon the mucous face of the labium majus, the patient being placed under the influence of an anæsthetic. After an incision has been made, one finger should be inserted and the clot turned out of its nidus. If hemorrhage ensue, the cyst should be thoroughly washed with a solution of the persulphate of iron, and pressure exerted. Should this not check it, pledgets of lint soaked in this astringent should be passed into the cyst, and, if necessary, counter-pressure exerted per vaginam by a tampon of cotton. In case no hemorrhage should follow evacuation of the cavity, no vaginal tampon should be employed, nor should the empty sac be filled with cotton. A better plan under these circumstances would be to wash out the cavity thoroughly with a weak solution of carbolic acid in water, for the more certain avoidance of septicæmia and of phlegmonous inflammation.

Pudendal Hernia.

Normal Anatomy.—By some anatomists it is stated that the round ligaments of the uterus end in the mons veneris: but this

view is probably incorrect. A more careful dissection traces them through the internal abdominal rings, along the inguinal canals, to the labia majora, where they are lost in the dartoid sacs, described by Broca as passing through these folds. The labia majora are unquestionably the analogues of the scrotum of the male, and the round ligaments correspond to the spermatic cords.

Definition.—Down one of these canals, by the side of the round ligament, a loop of intestine, and sometimes a portion of the mesentery, an ovary, or even the bladder, may pass, as inguinal hernia occurs in the male.

The fact that this disease is by no means frequent, makes its recognition the more important, for were the practitioner not aware of the possibility of its occurrence, the intestine might be wounded, under the supposition that the labial enlargement was due to abscess, or distension of the vulvo-vaginal glands.

Causes.—The displacement may be produced by violent muscular efforts, or blows, or falls, as in the male.

Symptoms.—Strangulation of the intestine with its characteristic signs may occur, according to Sir Astley Cooper and Scarpa,[1] although it is very rare. The hernia may usually be overcome by taxis. In one case with which I have met, reduction was extremely difficult, and could only be accomplished by prolonged effort. When the intestine becomes prolapsed, no strangulation existing, a sense of discomfort, upon bending the body or even upon walking, directs the patient's attention to the affected part, and leads her to apply to the physician. By him the nature of the case will at once be suspected, from the peculiar gaseous or airy sensation yielded to the touch. Certainty of diagnosis will be arrived at by absence of all signs of inflammation or œdema, the detection of impulse upon coughing, and resonance upon percussion, and the possibility of diminishing the volume of the tumor by taxis and position. There are no very great difficulties attending the differentiation of the disease. The danger is that the possibility of hernia at this point may be forgotten, and deductions drawn without considering it. Although the probability of error be not great, the appalling nature of the accident in which it would result, warrants the relation of the following case, which is illustrative of its possibility. A patient called upon me with the following history: she had had an abscess just below the external ab-

[1] Scanzoni, op. cit., p. 560.

dominal ring, which, after poulticing, had been evacuated by her physician, about a month before the time of her visit to me. After this, she had felt well until a week before, when, after a muscular effort, the pain had returned with all the original signs of abscess, and these had continued, although she had painted the part steadily with tincture of iodine, as she had been directed to do in case of such an occurrence. Being in great haste at the moment, I examined the enlargement, while the patient was standing, and under a recent cicatrix, which was painted with iodine, I discovered what I supposed to be a reaccumulation of pus. As the patient came to me in the absence of her physician, merely for the evacuation of this, I placed her in the recumbent posture, and, bistoury in hand, proceeded to operate. But to my surprise, I discovered that change of posture diminished the size of the enlargement. This excited my suspicions, and I found that a recent hernia had occurred under the old cicatrix.

Treatment.—The patient having been placed upon the back with the hips elevated by a large cushion, or, as is better, by elevation of the foot of the bed or table upon which she lies, the tumor should be grasped, compressed, and pushed up the canal, down which it has descended, until it returns to the abdomen. Then a truss, so arranged as to press upon the inguinal canal, should be adjusted, and worn with a perineal strap, to keep the compress of the instrument sufficiently low down to effectually close the point of exit. Should strangulation have occurred, and return of the prolapsed part by taxis prove impossible, the case will require the surgical operation for that condition, for a description of which the reader is referred to works on general surgery.

Hydrocele.

Definition and Frequency.—This affection, which consists in a collection of fluid in the inguinal canal, around the round ligament, is one of such rarity in the female that its very existence is commonly ignored, and mention of it is rarely made by systematic writers.[1]

Normal Anatomy.—It has been already stated that the labia majora of the female are analogous to the scrotum of the male, and that the round ligaments, which are analogous to the spermatic cords, do not end in the mons veneris, as was formerly supposed, but passing downwards enter the labia majora and distribute their filaments within the dartoid sacs, which extend like

[1] Scanzoni's work upon Diseases of Women contains an account of this affection.

glove-fingers downwards towards the fourchette. The interesting and valuable article of M. Broca upon this subject will be found quoted at length in Cruveilhier's Anatomy. The peritoneal covering of these ligaments usually extends to the inguinal canals, but occasionally in young subjects it is prolonged through a portion of the canal constituting the canal of Nuck.[1] In adults this is ordinarily obliterated, and hence the rarity of hydrocele and hernia in the female. Sometimes it remains permanently open, when not only may the intestines descend, but even the ovary may pass down, making an attempt to enter the dartoid sacs and imitate the entrance of the male testes into the scrotum.

Pathology.—The affection which we are now considering, is probably the result of a higher secretion on the part of this serous membrane, which, by the fluid collected within it, is distended laterally and downwards. Should the abdominal opening of such a sac remain pervious, the fluid thus collecting could readily be forced upwards as in the same affection in the male, but if that opening has become impervious, the fluid becomes sacculated and such return is impossible. So rare is this affection that I offer no apology for the introduction of the following instance of it,[2] reported by Dr. E. P. Bennett, of Danbury, Connecticut.

"In an extensive practice of over forty years but one single case has come under my observation. This case occurred recently in a young married female residing in Putnam County, and was mistaken by a surgeon of some eminence for a case of inguinal hernia, who endeavored to reduce it, but failing to do so, pronounced it adherent and irreducible, and advised to let it alone. That such a mistake should have been made is not at all surprising, as it was a hydrocele of the round ligament coming down through the inguinal canal, and occupying exactly the place of inguinal hernia, and closely resembling one. She subsequently came under my care, and upon inquiry I learned that about five years since a small tumor had made its appearance, which had slowly and steadily increased in size until it had attained its present size, which was about as large as a turkey's egg. It had not been painful, was not attended with abdominal disturbance, had never receded when decumbent, and gave to the touch a feeling of fluid contents instead of the doughy feel of hernia, and I therefore thought that, whatever it might be, it was not hernia; and, upon closer inspection, I diagnosed hydrocele of the round ligament, although it was not diaphanous. So sure was I of a correct diagnosis that I at once proposed an operation, to which she readily consented; and, with the aid of a pro-

[1] Cyclopedia of Anat. and Phys., Supplement, p. 706.

[2] N. Y. Med. Record, Nov. 15, 1870.

fessional brother, who coincided with me in my diagnosis, I proceeded to cautiously lay open the sac, when we found to our great satisfaction that we had not blundered in our opinion. The serous contents of the sac having been evacuated, I injected it with a saturated tincture of iodine, and she speedily recovered without the supervention of a single unpleasant symptom. This case is only important from its rarity, and the fact that most physicians are not aware that hydrocele can, or ever does, occur in the female; and my object in writing this article is not to record any remarkable achievement in surgery, but to call the attention of physicians to this subject, and thereby prevent mistakes which might be attended with disastrous results."[1]

Differentiation.—The greatest circumspection should be observed before a diagnosis of this rare malady is arrived at. The sense of fluctuation, with entire absence of symptoms of inflammation, the absence of resonance on percussion, and the ordinary signs of hernia, the existence of translucency, and the gradual development of the tumor without pain or constitutional excitement, would all be reasons for suspecting it. But, before ultimate measures are adopted for its cure, a very fine exploring needle, such, for example, as the ordinary hypodermic syringe, should be passed in, in order that the contents of the sac might be carefully examined.

Treatment.—The diagnosis being made the treatment should consist in evacuation, and, if cure do not follow this, in the injection of tincture of iodine in addition.

Pruritus Vulvæ.

Definition.—This affection consists in irritability of the nerves supplying the vulva, which induces the most intense itching and desire to scratch and rub the parts. Although not itself a disease, it is always so important, and often so obscure a symptom, that it requires special notice and investigation.

Pathology.—It has just been stated that it consists in disorder of the nerves supplying the vulva. It matters not whether this be a true neurosis or one secondary to some other pathological state, the great element of pruritus vulvæ is nervous irritability or hyperæsthesia. That it is often excited by irritating discharges and eruptive disorders there can be no question. Whether it ever depends upon idiopathic nervous hyperæsthesia, as some suppose, is doubtful. I have never met with an instance in which it appeared to do so.

[1] A similar case is recorded in the New York Obstetrical Journal for May, 1871, by Dr. C. H. Hart.

Mode of Development and Course.—In the beginning, the irritability and tendency to scratch are sometimes very slight, so as to annoy the patient very little and give her but trifling uneasiness. Sometimes they exist only after exertion in warm weather, upon exposure to artificial heat, or just before and after menstruation. The disorder is aggravated by the counter-irritation which it demands for its relief. The rubbing and scratching that are practiced cause an afflux of blood, render the skin tender and its nerves sensitive, and in time greatly augment the evil by producing a papular eruption. The disease and the remedy which instinct suggests, react upon each other, the first requiring the second, and the second aggravating the first, until a most rebellious and deplorable condition is developed. It would be difficult to exaggerate the misery of some of these cases. The patient is bereft of sleep by night, and tormented constantly by day, so that society becomes distasteful to her, and she gives way to despondency and depression. It is generally intermittent, in some cases occurring by night, in others only at certain periods of the day. In two cases that I have met, the patients were free from all irritation except at night, when the disturbance and nervous anxiety became so intense as to prevent sleep, except when large doses of opium were given. Loss of sleep, the use of opium, and the nervous disturbance incident to the disease, often prostrate and exhaust the patient to an astonishing extent.

Its duration has no limit, months, and even years, sometimes passing before relief is obtained.

Causes.—Every practitioner dreads to take charge of an aggravated case of pruritus vulvæ, for he knows how obstinate the malady commonly proves. The only reasonable hope of controlling it must rest in viewing it strictly as a symptom, and striving to discover and remove its cause. No fixed prescriptions, however much lauded for their efficacy, should be relied upon. The primary disorder should be sought for and cured, in the hope of removing that one of its results which is most pressing in its demands for relief. Should the case have progressed for some time, it will often be found impossible to decide as to its cause, for the friction excited by it will frequently establish a cutaneous disorder, the connection of which with the pruritus, whether as cause or effect, will be doubtful.

In all the instances of pruritus vulvæ that I have been able to examine early enough to determine as to the etiology, I have found one of the following conditions to exist as the apparent cause of the hyperæsthetic condition of the nerves:

1*st.* *Contact of an irritating discharge*—
Leucorrhœa;
Hydrorrhœa;
Discharge of cancer:
Dribbling of urine;
Diabetes.

2*d.* *Local inflammation*—
Vulvitis;
Urethritis;
Vaginitis.

3*d.* *Local irritation*—
Eruptions on the vulva;
Animal parasites;
Onanism.

Of all these, leucorrhœa is the most frequent cause. This symptom of uterine disorder fortunately produces pruritus only as an exception to a rule. Under certain circumstances it appears to possess peculiarly irritating and excoriating qualities, which, even when the flow is very slight in amount, will excite the most intolerable itching. This feature is most commonly observed in the discharge attending pregnancy; and in that of senile endometritis, which covers the vagina with bright red spots, and gives it a glazed look like serous membrane. In an exceedingly obstinate case, occurring in a woman of seventy years, the leucorrhœal discharge was so small in amount that the patient was not aware of its existence, nor did I appreciate its connection with the disorder until I discovered accidentally that the only relief which could be obtained followed the application of a wad of cotton against the cervix uteri. In every case of pruritus the vagina should be carefully investigated for evidence of leucorrhœa, unless some other sufficient cause is apparent. In the same manner the other discharges mentioned may cause nervous irritability in the vulva.

I have so often found diabetes accompanied by this symptom that I always examine the urine in obscure cases. This result is probably not connected with the constitutional effects of the disease upon the nerves, but with the direct and local influence exerted by the disordered secretion.

Local inflammation, by the discharge which it excites and the itching which attends it, is very evidently calculated to give rise to pruritus; and yet cases thus established are not the most rebellious with which we meet.

Any form of eruption upon or around the vulva may, and usually does, excite itching. Eczema, prurigo, lichen, and many others, may do so here as they do elsewhere, and the natural warmth of the part, formed as it is of folds of tissue and covered by hair which is thickly interspersed with sebaceous and piliferous glands, makes them the more likely to prove active in causing it.

Animal parasites of two varieties may give rise to it, the pediculus pubis and the acarus scabiei. The first excites enough irritation to beget a lichenoid eruption, while the second produces scabies, or itch.

One of these causes will generally be found to have given rise to pruritus vulvæ, but it is only in originating the difficulty that it will prove active. Very soon secondary influences, as eruptions, excoriations, ulcerations, and increased discharges, the results of scratching, superadd themselves as auxiliary agents, and keep up the disorder.

Treatment.—It has been stated that the first effort of the practitioner should always be to discover the disease of which the pruritus is a symptom, and then to endeavor to remove it by appropriate means. Should leucorrhœa be the cause, the uterine or vaginal affection which gives rise to it should be treated. Should an eruptive disorder be found to be the source of the difficulty, the measures which would be advisable for this affection elsewhere developed, laxatives, baths, change of air, tonics, and arsenic, would be equally beneficial here.

But this alone will not be sufficient. While eradication of the mischief is thus attempted, palliative means must be vigorously adopted for the sake of present relief. Should the case be regarded, upon careful investigation, as due to contact of an irritating fluid with the nerves of the vulva, perfect cleanliness should be secured by three, four, or, if necessary, a larger number of sitz baths daily. The vagina should, at the time of taking each bath, be syringed out with pure or medicated water, the irritated surface protected by unctuous substances, or inert powders, as bismuth, lycopodium, or starch, from the injurious contact, and in case the discharge comes from the uterus, a wad of cotton should be placed daily against the cervix uteri to prevent its escape to the vulva. A very useful vaginal injection, and wash for the vulva, under these circumstances, is the following:

℞. Plumbi acetatis, ʒij.
Acidi carbolici, ℈j.
Tr. opii, ʒiv.
Aquæ, Oiv.—M.

This may relieve itching for the time, until removal of the cause of the symptom is accomplished.

In case the pruritus is the result of a local inflammation, this should be treated as elsewhere recommended, by poultices of linseed, potato, or slippery elm, to which have been added a proper amount of lead and opium; or fomentations of lead and opium wash, or poppy-heads may be used in their stead. If vaginitis or vulvitis be present, great relief will often be obtained by painting the lining membrane of the diseased part over with a strong solution of nitrate of silver, or by touching the whole surface lightly with the solid stick.

Should an eruptive disorder be the exciting cause, it should, as already stated, be treated upon general principles. Meantime temporary relief may be obtained by painting the surface of the vulva over with a solution of nitrate of silver (℈j to ℥j), the use of the ungt. creasoti, ungt. chloroformi, or ungt. atropiæ of the U. S. Dispensatory. Dr. Simpson advises an infusion of tobacco, and Dr. J. D. Osborn,[1] of Alabama, in an interesting article upon the medicinal use of this drug, declares that he always resorts to a strong decoction of it as a wash for the vagina and vulva in this affection, and for the anus in "prurigo podicis." According to the latter gentleman the local sedative effects of tobacco are very useful in the control of prurigo.

Although the fact will probably not prove one of practical value, it is certainly one of interest that cases have recently been reported in which smoking tobacco has appeared to relieve pruritus. As an illustration I quote the following: "Mrs. W.,[2] a woman of nervous temperament, became pregnant a few months after her marriage. In addition to the usual derangement of the alimentary canal, she soon experienced a severe itching all over her body. The skin was of a perfectly normal appearance; the pruritus, however, caused her great excitement and soon produced nervous spasms. For several weeks every possible external and internal remedy was used in vain. A decoction of walnut leaves gave her some relief when in the seventh month of pregnancy. Then a violent pyrosis and neuralgia of the dental nerves supervened. In order to alleviate the latter, she was advised by her husband to try the effect of smoking, when the pain as well as the itching and pyrosis disappeared immediately. Mrs. W. smoked one cigar

[1] N. O. Med. and Surg. Journal, Nov., 1866.

[2] Tribune Med., Jan. 31, 1869. Wiener Med. Wochenschrift, No. 22, 1869.

every evening until she was prematurely delivered by a fright, after 8½ months.

"Fourteen months afterwards, Mrs. W. again became pregnant, and was again affected in the fourth month of pregnancy with pruritus followed by pyrosis. She did not immediately resort to smoking, from dislike of this habit, until the evil increased, when the smoking of one cigar again rendered her perfectly comfortable."

No local application has acquired a more universal popularity in the treatment of pruritus vulvæ than solutions of corrosive sublimate. The following formula offers a good one of its kind:

℞. Hydrarg. bichloridi, ʒss.
Tr. opii, ℥j.
Aquæ, ℥vij.—M.
S. For external use only.

Should eczema or lichen have produced inflammatory action in the skin and subcutaneous areolar tissue, poultices, &c., should be employed, as if local inflammation were the cause of the affection.

While these palliative and curative means are being adopted, sleep should be secured by preparations of opium, or one of its substitutes, codeine, cannabis Indica, hyoscyamus, or chlorodyne. At the same time the general state of the patient should be improved by vegetable and mineral tonics, good food, and fresh air. In some cases more benefit will arise from the use of iron, the mineral acids, and sea-bathing, than from any other means.

In certain cases dependent upon chronic vaginitis, or chronic endometritis which has resulted in vaginitis, the disorder will be found to be rather "pruritus vaginæ" than "pruritus vulvæ," and under these circumstances the severity of the local and general disturbance will generally be very great. In such cases I have found great benefit from the frequent use of copious vaginal injections of warm infusion of bran. The patient, in the semi-recumbent posture, with the nates over a tub containing three or four quarts of this, with from six to eight drachms of laudanum, and one to two drachms of acetate of lead dissolved in it, should inject the vagina freely for from ten to fifteen minutes, and this bath should be repeated four or five times a day. After a short time the soothing and alterative influence which it exerts will show itself so decidedly that less assiduous attention to the disorder will be demanded.

Coccyodynia.

Definition and Frequency.—This affection consists in a peculiar condition of the coccyx, or the muscles attached to it, which renders their contraction, and the consequent movement of the bone, very painful. It is of frequent occurrence, numerous cases having been observed, since attention has been called to it, by practitioners who saw it previously without regarding it as a special disorder.

History.—Coccyodynia was first described in 1844, by Dr. J. C. Nott, formerly of Mobile and now of this city. Under the name of neuralgia of the coccyx he described a case which so fully embodies the symptoms and treatment of the affection, that I cannot refrain from a free quotation of it.

"*Extirpation of the Os Coccygis for Neuralgia.*—Miss ——, aged about 25, had been very much deranged in general health and suffering from neuralgia for ten months, for which she was treated by an eminent physician in Charleston, and afterwards by Prof. Jones in New Orleans. She came under my care the latter part of June, 1843, at which time her condition was a deplorable one; her general health was completely shattered and strength exhausted; dyspepsia; constant nervous headaches; menstruation regular though difficult; excruciating pain at the point of the coccyx; pains in the uterus, vagina, neck of the bladder, and back. *The most prominent symptom was the excruciating pain at the point of the coccyx, which became intolerable when she sat up, walked, or went to stool, or in short when motion or pressure was communicated to it in any way.* This symptom was so peculiar, that I was led to suspect some organic lesion about the coccyx, and on questioning her closely, she informed me that she had fallen about four years ago and received a blow upon the coccyx, which gave her a good deal of pain at the time and for several weeks afterwards; but these symptoms passed off, and did not return until about ten months before I saw her. This fact had been concealed from her former medical attendants.

"I then told her that her physicians had exhausted all the articles of the materia medica which afforded any prospect of relief, and that she had better consent to an examination to ascertain whether the coccyx, either by disease or displacement, had not become a source of irritation to one or more of the nerves in its vicinity. She consented, and on examining the whole course of the spine, I found no tenderness of any consequence until my finger

touched the point of the coccyx, when she screamed with pain. I then proposed the extirpation of this bone as the only chance of relief. She had suffered so long and so severely that she did not hesitate, and told me she was in my hands to do what I thought best, and would submit to anything I would advise.

"Accordingly, on the 2d of July, I made an incision down to the bone, and extending from the point upwards two inches; I then disarticulated the bone at the second joint, divided the muscular and ligamentous attachments, and without much difficulty dissected out the two terminating bones. On examining the bones after the operation, I found the left one carious and hollowed out to a mere shell; the nerves were exquisitely sensitive, and the operation, though short, was one of the most painful I ever performed. For several hours after, the pains were extremely violent, coming on every ten or fifteen minutes, and accompanied by a sensation of bearing down like labor-pains. Morphine in large doses and other anodynes afforded no relief; the pains became gradually less frequent and less violent; the wound soon healed, and at the end of a month the local disease disappeared and the general health was much improved."[1]

About the year 1860, Profs. Simpson and Scanzoni had their attention attracted to it, and the appellation which I have employed was applied to it by the former.

Anatomy.—The coccyx serves as a point of attachment for the greater and lesser sacro-sciatic ligaments, the ischio-coccygei muscles, the sphincter ani, levatores ani, and some of the fibres of the glutei muscles. These are thrown into activity by certain movements, as rising from the sitting into the standing posture, the act of defecation, &c., and in such acts the existence of the disorder which we are considering is revealed.

Pathology.—The pain which characterizes it is probably due to a hypersensitive state of the fibrous tissues surrounding the coccyx, or of that making up the tendinous expansions of the muscles. So long as the bone is uninfluenced by contraction of the muscles attached to it, no pain is experienced, but as soon as contraction produces motion it is excited.

Causes.—It occurs most frequently in women who have borne children, but it is by no means confined to them. I have on two occasions met with it in young, unmarried ladies, and Herschelman reports two cases in children from four to five years of age.

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[1] N. O. Med. Journ., May, 1844.

The chief causes of it are the following:

Parturition;
Delivery by forceps;
Falls or blows upon the coccyx;
Cold;
Exercise on horseback.

Symptoms.—The patient upon sitting down, rising to stand, making any effort, or passing fæces through the rectum, experiences severe pain over the coccyx. In some cases this is so severe as to cause the greatest dread of sudden or violent movement. In others, the patient is unable to sit on account of the discomfort caused by pressure on the bone. The most trying process is that of rising from a low seat, and, to accomplish this, the sufferer will obtain all the aid that is practicable, by assistance with the hands, which will be placed as auxiliary supports upon the edges of the chair or stool upon which she rests.

Differentiation.—The only conditions with which this may be confounded are painful hæmorrhoids, fissure of the anus, and a spasmodic condition about the muscles of this part, due to ascarides in the rectum. From these a careful, rational, and physical examination will always readily distinguish it.

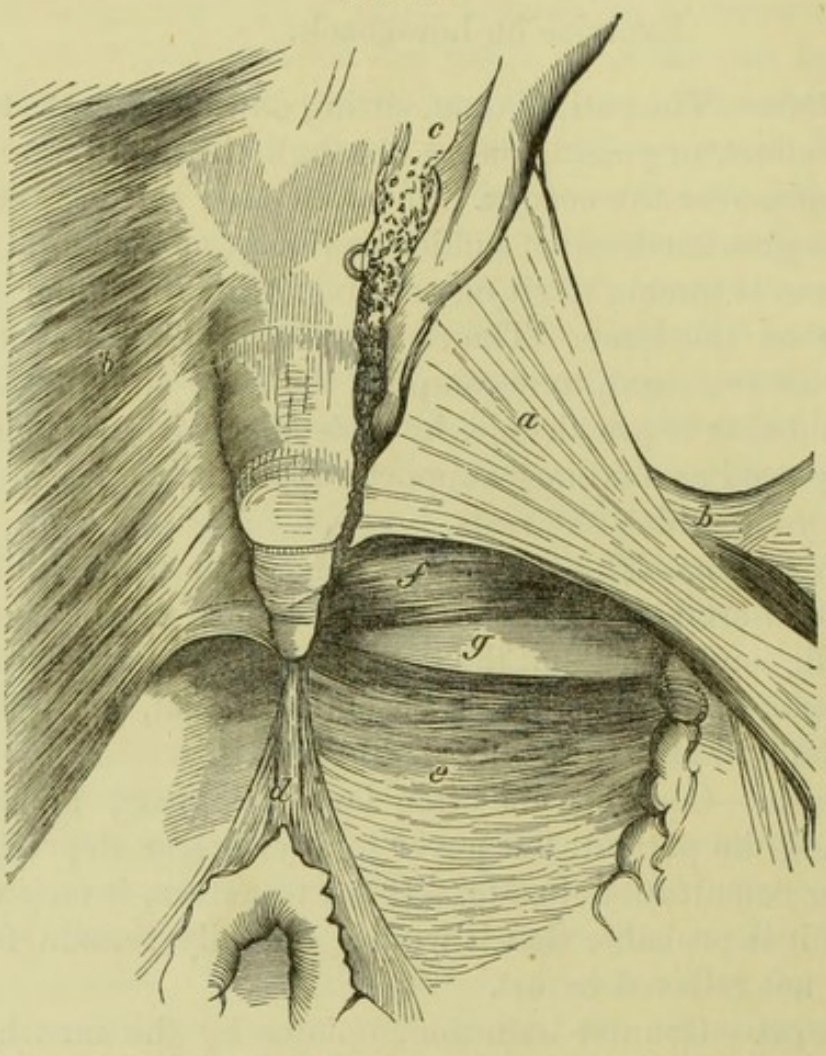
Prognosis.—Coccyodynia often lasts for years, annoying and distressing the patient, but never to any degree depreciating her health or constitutional state. If left to nature, it may wear itself out, but it is probable that it would generally remain for a long time, if not relieved by art.

Treatment.—Counter-irritation, opiates by the mouth, rectum, skin, and hypodermic injection have all been tried in vain in aggravated cases. In slight cases, blistering and the endermic use of morphia may effect a cure, but should they not do so promptly, no great length of time should be consumed in efforts of this kind. Recourse should at once be had to one of two radical methods of cure,—section of the diseased muscles, or amputation of the bone to which they are attached. The first, placed at our disposal by the ingenuity of Prof. Simpson, consists in severing the attachments of all the coccygeal muscles; the second in amputating the coccyx itself, after the plan of Dr. Nott.

The first operation is performed subcutaneously by an ordinary tenotomy knife. This is passed under the skin at the lowest point of the coccyx, turned flat, and carried up between the skin and cellular tissue until its point reaches the sacro-coccygeal

junction. Then it is turned so that in withdrawing it an incision may be made which entirely frees the coccyx from muscular attachments. The knife is then introduced on the other side so as to repeat the section there. As is usually the case in subcuta-

FIG. 29.



Sketch of the anatomical relations of the coccyx. *a*. Great sacro-sciatic ligament. *b*. Small sacro-sciatic ligament. *c*. Surface from which the gluteus maximus muscle (*h*) has been detached. *d*. Sphincter ani. *e*. Levator ani. *f*. Coccygeus muscle. *g*. Fascia in contact with the rectum. *h*. Glutæus maximus of the left side. (Simpson.)

neous operations, no hemorrhage occurs unless some large vessel be injured. Complete convalescence is rapid.

In fat women subcutaneous section of the muscles attached to the coccyx is by no means so easy a matter as one would suppose who has not made the experiment. Under these circumstances the operation is simplified and rendered more certain by making an incision down upon the coccyx, lifting the exposed extremity of this bone with the finger, and then with a pair of scissors severing the muscles. This procedure is both easy of performance and certain as to result.

Should detachment of the muscles fail, as it may do, an incision should be made over the coccyx, the bone laid bare by severance of its attachments, and the whole of it removed by a pair of bone forceps, or disarticulated by the knife as practiced by Dr. Nott in the case already detailed. By one of these procedures cure can be confidently promised, and as neither is attended by danger, our resources in this affection may be regarded with great satisfaction.

CHAPTER V.

RUPTURE OF THE PERINEUM.

Definition.—The perineum, which consists of the union of the tendons of a number of strong and important muscles intervening between the verge of the anus and that of the vagina, may by certain traumatic agencies be torn or ruptured so as to weaken the normal support of the posterior wall of the vagina.

Normal Anatomy.—The perineum extends from the edge of the anus to that of the vagina over a space of an inch or an inch and a half. It consists of skin, areolar tissue, and the tendinous expansions of several muscles, and is covered over internally by the posterior wall of the vagina, which ends at the fourchette. No muscular tissue exists at the raphé of the perineum, but this part is formed by the junction of the following muscles, which have there a point of attachment; the sphincter ani attached posteriorly to the tip of the coccyx, the sphincter vaginæ passing upwards over the clitoris and attached to its crura, and the transversus perinei attached on each side to the tuberosities of the ischia. An examination of a diagram representing this part will show that rupture of the perineum at the raphé will result in destruction of one of the fixed points, by drawing upon which the muscles there inserted act, and that the other point, remaining fixed, the lips of a wound existing there must be made to gape.

Another fact connected with the anatomy of this part which must be borne in mind, is that it is the inferior support or buttress

for the distal extremity of the posterior wall of the vagina. This wall runs to the end of the perineum, arching backwards towards the rectum. Should its support be destroyed, the vaginal wall may be affected unfavorably in two ways: first, the destruction of the perineal raphé weakens the sphincter vaginæ, and thus the whole of the ostium vaginæ loses support; second, the distal extremity of the posterior wall being carried, by the rupture and subsequent cicatrization, farther back towards the coccyx, the previously existing arch is impaired, and prolapse is rendered probable. Figs. 30 and 31 will illustrate this view.

Fig. 30.



Normal perineum; posterior wall of vagina arching backwards, and ending at the fourchette.

Fig. 31.



Ruptured perineum; posterior arch destroyed.

It is evident that the greater the extent of the laceration the more serious will be the evils which will accrue from it.

Dr. Matthews Duncan has recently written an essay in which he casts doubt upon the influence of rupture of the perineum in producing vaginal and uterine displacements. Since reading his article I have carefully reflected upon the subject, and examined with reference to it at the bedside, but thus far have found no reason for changing my views.

Results.—The following are the evil results which may follow this accident, directly or remotely:

Prolapsus vaginæ with cystocele or rectocele;
Prolapsus uteri;
Incontinence of fæces and intestinal gases;
Prolapsus recti;
Cervical endometritis, the result of friction.

These evils do not follow when the accident has involved the perineum to so limited an extent as not to have sundered the

union of the sphincters, or at least they are not likely to occur. Even when the two passages are laid into one, it is sometimes surprising to see how little the patient may suffer; but generally, under these circumstances, her condition is truly deplorable. Fecal matters and gases pass without control, and the uterus, vagina, bladder, and rectum, tend so strongly to descend, that, exercise, muscular efforts, or tenesmus, produce weariness, pelvic pain, and traction upon the broad ligaments. In some instances, so great is the disturbance of function that the unfortunate woman finds herself an object of disgust to her associates and even of loathing to her husband.

Varieties.—All cases may be classed under four heads:

1st. Superficial rupture of the fourchette and perineum, not involving the sphincters;

2d. Rupture to the sphincter ani;

3d. Rupture through the sphincter ani;

4th. Rupture through the sphincter ani and involving the recto-vaginal septum.

Causes.—The usual causes of rupture of the perineum are,

Parturition;
Passage of a large tumor;
Use of forceps;
Manual delivery;
Craniotomy;
Injury by falls or blows.

Minute details upon this subject and upon means which should be adopted for prevention, will be found in works upon obstetrics. All that it is necessary to state here is that parturition is the great exciting cause of the accident, and that it is almost never met with in nulliparous women, except after removal of large tumors per vaginam.

Prognosis.—In an incomplete case of slight character, in which neither the sphincter vaginæ nor sphincter ani has been injured, no evil will probably result. Although the wound, occurring as it does immediately after labor, is extremely unlikely to heal by first intention, it may do so by the process of granulation without surgical interference other than binding the thighs together, and producing constipation by opium.

The first and second varieties of the accident are very generally trifling in their consequences, and frequently pass unnoticed by both patient and attendant. The third is an evil of much greater

moment, and not at all likely to undergo spontaneous cure; while the fourth represents the most serious form of the condition.

The greater the injury the less likely will be spontaneous recovery, and the more probable the complications and results which have been mentioned. It may be affirmed in a general way, that any laceration which does not entirely sever the sphincter ani may heal without surgical treatment, and that none which converts the two passages into one will do so. Even when the rupture has been complete it has been asserted that spontaneous cure has taken place, but such reports need confirmation. Peu[1] once affirmed that he had seen a woman thus injured, and who passed her fæces involuntarily, entirely recover. De la Motte declares that thirty years afterwards he met and examined Peu's patient in Normandy, and found that no recovery had occurred.

Treatment at Time of Occurrence.—If the case be an incomplete one, in which it is not deemed advisable at once to resort to suture, an effort should always be made to secure union of the lips of the wound by the following means. The wound being thoroughly cleansed of blood-clots, which would prevent union, the thighs should be brought together and kept in contact by a bandage placed around them at the knees. The patient should then be placed upon the side so as to cause the lochial discharge to flow through the superior vaginal commissure, and prevent its pouring over the raw surface. Opium should be given to produce constipation, the bladder be kept empty by use of the catheter, and, once or twice in every twenty-four hours, the patient should turn upon the back, in order that the vagina may be cautiously and gently syringed out with tepid water.

This plan should be pursued for ten or twelve days, in the hope that union may occur, though, unfortunately, in the great majority of instances, it will not be rewarded by success.

Time for Operation.—Upon this point authorities differ widely; some urging immediate action, some advising delay until the effects of parturition have entirely passed away, while others compromise the matter by giving preference to the plan of waiting a few days only. To the first class belong Baker Brown, Demarquay, Scanzoni, Simon, and others of equal weight. Scanzoni thus clearly points out the advantage of early interference: "The operation should be performed just after the delivery, because it is more likely that the bleeding lips of the wound will then unite, and because, vivification of the edges not being neces-

[1] Velpeau, Traité de l'Art des Accouchements, vol. ii, p. 639.

sary, the procedure is simpler and less dangerous." The worst cases of the accident with which we meet generally follow instrumental or manual delivery, and when the discovery of its occurrence is made the patient will usually be in a profound anæsthetic sleep. Every operator should be prepared, under such circumstances, to attempt repair of the injury, for, if he succeed, the patient will be saved much suffering, while failure will not in any wise depreciate her condition. I have in a number of instances resorted to immediate operation, and the result of my experience leads me always to adopt it, unless the sphincter ani and recto-vaginal wall be implicated in the laceration to such an extent as to make the operation a serious and lengthy one, or to insure the passage of lochial discharge between the lips of the wound. Among those who are opposed to immediate interference are Roux and Velpeau; while Nélaton, Verneuil, and Maisonneuve advise delay for a few days, when all hemorrhage will have ceased and the edges of the wound be covered by granulations.[1] There are three circumstances which tend to defeat the success of immediate operation. First, it is often performed by one not habituated to its performance; and being practiced upon a woman who having just been delivered, is exposed to the danger of post-partum hemorrhage, and surrounded by anxious friends, it is likely to be finished too hastily. Second, the lochial discharge constantly passing over the lips of the wound, is very likely to enter and prevent union. Third, the patient being confined to bed for reasons connected with parturition, the urine is passed upon the bedpan, and dribbling over the wound may enter with the lochia and prevent adhesion.

Treatment of Cases which have Cicatrized.—The operation which is now generally adopted in these cases, and which has received the name of perineorraphy, consists in vivification of the edges of the lips of the wound and their approximation by sutures. Although the accident for which this procedure is instituted was described by the ancients, no surgical means of cure were ever advised for it until the time of Ambrose Paré. He advised the suture, and was followed in its use by his pupil Guillemeau. Subsequently it was employed by Delamotte, Saucerotte, Trainel, Noel, and others. Dieffenbach employed it successfully, adding to the operation oblique lateral incisions involving the skin and areolar tissue, for the purpose of relieving tension upon the parts brought together by suture.

About the year 1832, Roux, of Paris, obtained the most bril-

[1] Wieland and Dubrisay, French Trans. of Churchill on Dis. of Women.

liant results from the operation, and probably its elevation to the position of a reliable surgical procedure was due more to his achievements than to those of any other individual. He employed the quilled suture, and cured by it four out of the first five cases operated upon. Although such success was obtained in France at this period, we find English writers, as late as 1852, and 1853,[1] doubting the efficacy of sutures, and advising that assistance should be limited to aiding the efforts of nature. Of late years rapid advances have been made in the operation by Mr. Brown in England; Verneuil, Laugier, Demarquay, and others in France; Langenbeck in Germany; and Sims, Emmet, Bozeman, Agnew, and Thompson in the United States.

The varieties of the operation now before the profession are too numerous to require mention. Operators differ chiefly in these respects; some cut the tissue of the perineum or the sphincter ani, and employ the quilled suture, while others make no "liberating incisions," as the French surgeons style them, and employ the interrupted suture. As a type of the first class I shall describe the operation of Mr. Brown, and of the second that of Dr. Sims, omitting any explanation of other methods for the reason that one of these will always succeed in effecting a cure when performed with the requisite skill.

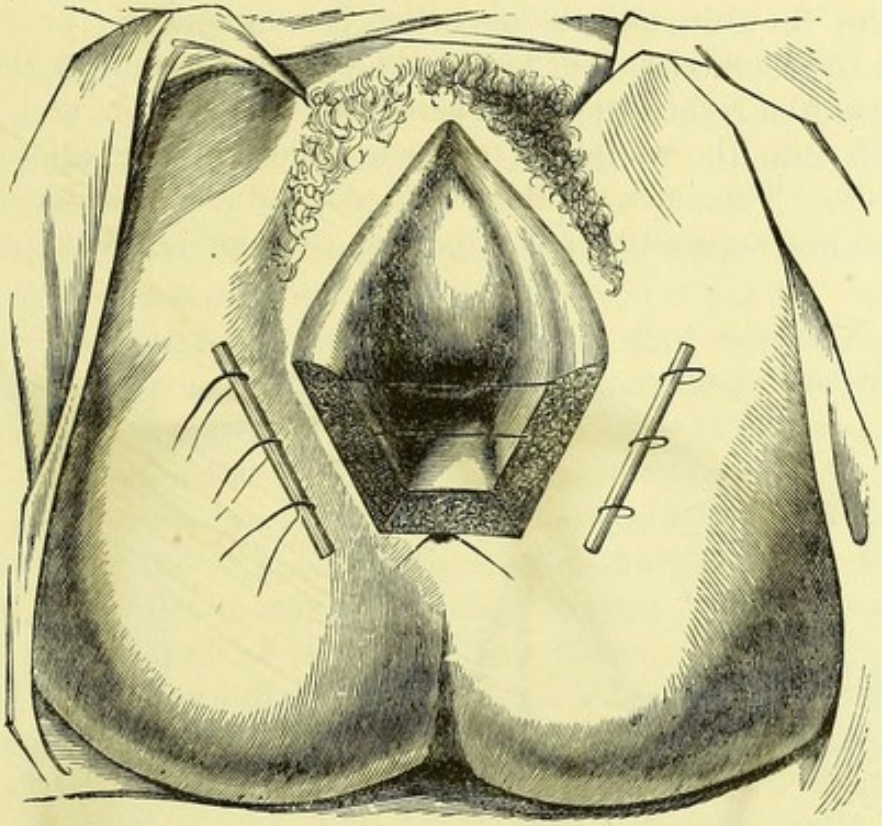
Preparation of the Patient.—The general health being in proper condition, the bowels should be thoroughly evacuated a day or two before the operation by some mild cathartic, and the vagina thoroughly syringed out to remove secretions and quiet local irritation. The patient, dressed for bed, should be placed upon a table before a window admitting a strong light, in the position for lithotomy, and put under the influence of an anæsthetic. Four assistants will be serviceable, although three would answer the purpose. One of these should administer the anæsthetic, one should hold each knee, and a fourth should attend to the duty of sponging blood from the wound.

Baker Brown's Operation.—The instruments required are a scalpel, a blunt-pointed, straight bistoury, a pair of long dissecting forceps, three large needles, several small ones, a tenaculum, pieces of gum-elastic catheter to act as quills, common hemp twine waxed, and sponges. All being in readiness, an assistant holds the sides of the fissure so as to secure tension, and the operator, by means of a bistoury, removes all the cicatricial tissue, first from one edge and then from the other. This should be done so

[1] Baker Brown, Surgical Diseases of Women.

as not only to vivify all the cicatricial surface, but also the superficial layer of tissue above the cicatrix. After this, the external sphincter of the anus is divided, with the skin and areolar tissue lying over it. The muscle is cut on both sides, about a quarter of an inch in front of its attachment to the os coccygis, by two incisions, carried outwards and backwards, as represented in Fig. 32. For this purpose, a blunt-pointed bistoury, guided by the

Fig. 32.



Shows the denuded surfaces and the insertion of the quill suture before the parts are brought together, and also the division of the sphincter on each side of the coccyx. (Brown.)

finger, is carried up the rectum for an inch and a quarter, and by it an incision of an inch in length[1] is made, extending outward from the anus, between the coccyx and tuberosity of the ischium. The thighs are then approximated and the sutures introduced. The left edge being grasped between the thumb and fore-finger of the left hand, a strong needle, armed with a double thread, is inserted an inch external to the pared surface, and passed downwards and inwards, so as to make its point come out at the bottom of the denuded surface. It is then passed through the opposite lip, and brought out through the skin at the same distance from

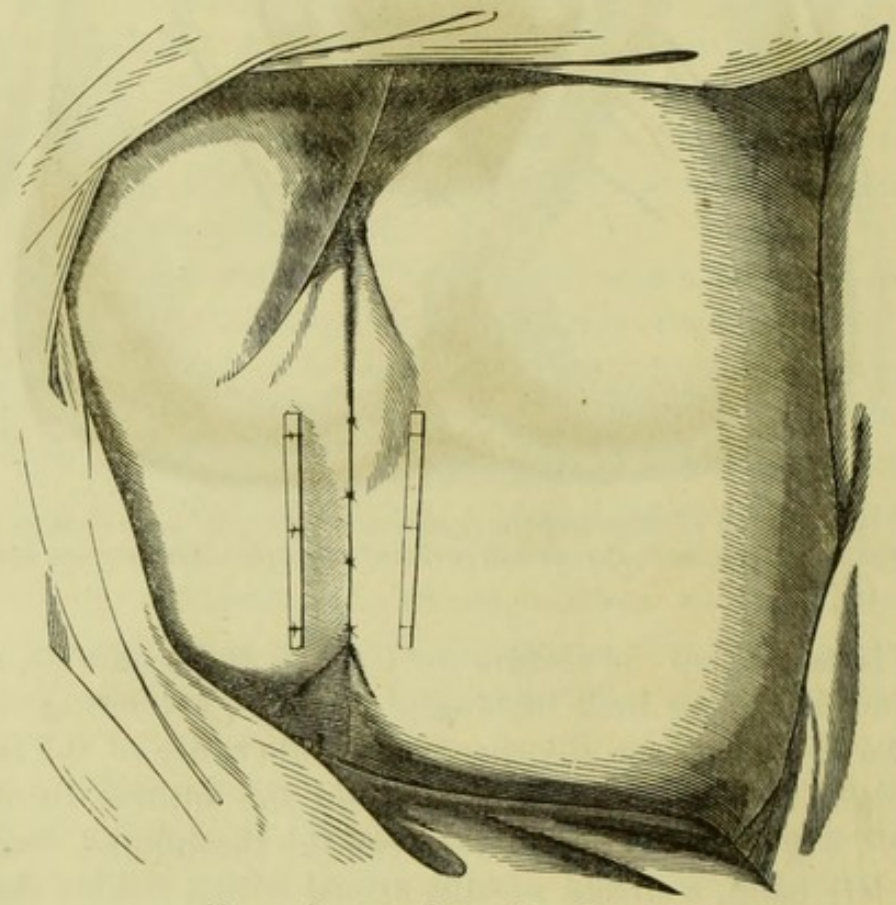
[1] This statement is quoted from Mr. Brown's work upon the Surgical Diseases of Women, but such extensive incisions appear to me to be neither necessary nor safe.

the edge of the wound. This suture is passed at the upper angle. Another suture is then passed in the same manner at the middle, which should go as deep as the septum, and even pass through it. A third suture is then passed at the lower angle. Two bits of gum-elastic catheter are now placed, one on each side, the first within the loops of the suture, the other at the opposite extremities. The sutures are then tightened, the opposing lips adjusted, and the sutures tied.

From four to six silver sutures are then passed through the edges of the skin, and the operation is complete.

Mr. Brown advises that before the patient is removed, the index finger of the right hand be passed into the rectum, and that of the left into the vagina, in order to ascertain that apposition is complete. The parts are then sponged, and a cold water dressing applied and secured by a T bandage. The patient is kept in bed

FIG. 33.



Shows the wound closed. (Brown.)

upon unstimulating but nutritious diet, the bowels constipated by opium, and the bladder frequently emptied by the catheter. The deep sutures should be removed in from three to six days, and on about the eighth day the superficial ones may be withdrawn.

During convalescence the vagina should be syringed out with warm water, or with a weak solution of chloride of soda if offensive discharge exist. Constipation should be kept up by the use of opium for two or three weeks, and when alvine discharges do occur, they should be encouraged and rendered easy by enemata.

Should a perineo-vaginal or rectal fistula remain, Mr. Brown thinks highly of the actual cautery in its cure.

In the use of the quilled suture after this plan, great care should be taken, not to interfere with the vitality of the compressed parts, and in view of this they should be daily examined. A case has recently come to my knowledge in which, under the influence of too great constriction, although the operation was performed by one of the most skilful operators of this country, extensive sloughing occurred.

Sims's Operation.—The operation performed by Dr. Sims differs from that just described in many respects, most notably in silver sutures being employed, and no section to afford relaxation being practiced, either upon skin and areolar tissue, after Dieffenbach's plan, or upon the muscles of the part, after that of Horner, Copeland, Cooper, and Baker Brown.

The first operator who treated these cases by metallic sutures was Mettauer, of Virginia, who, in the Edinburgh Med. and Surg. Journal (vol. xix, p. 552), described several cases successfully treated by lead used as an interrupted suture.

I avail myself of a description of Sims's operation given by Dr. Emmet, and published in the New York Medical Journal of December, 1865.

"In the operation for closing a lacerated perineum, either partially or entirely through the sphincter ani, it is unnecessary to divide the muscle, or to make incisions into the soft parts for the purpose of relieving tension.

"As early as 1855, Dr. Sims, in the Woman's Hospital, simplified this operation by bringing the scarified edges of the laceration together by means of deep, interrupted silver sutures, and from this time the use of the quill suture, or a division of the sphincter ani, has been abandoned. Further experience demonstrated a necessity for the use of a short rectal tube for some ten or twelve days after the operation, that a free escape of flatus might be unobstructed. Where the laceration of the perineum has extended only to the sphincter, the rectal tube is not needed, and three interrupted sutures are generally sufficient; if more extensive, so as to involve the muscle, two in addition are required.

The first suture passed should be the one nearest to the rectal mucous membrane, and should be made to follow the laceration entirely around, so as to bring together the sphincter. The second should also include the sphincter, and be passed in the recto-vaginal septum, just beyond the first one. The remaining sutures are introduced [as in the operation for a partial laceration of the perineum] through one labium about half an inch from the edge on one side, introduced from within outward into the other, and withdrawn at a point equally distant, so as to approximate perfectly opposite surfaces. If the laceration has extended up the recto-vaginal septum for some distance beyond the sphincter ani, the edges should be brought together down to the sphincter by interrupted silver sutures, at a distance of about five sutures to the inch. On introducing the first suture to clear the perineum, care must be taken that it is passed between the first and second sutures uniting the septum, and the next one in turn between the second and third. Without this precaution an opening into the vagina will be produced just behind the sphincter, from the fact that, as one set of sutures is passed at a right angle to the other, on twisting those of the perineum tension would be exerted. This is a weak point, for if the tube is allowed to become obstructed, a small recto-vaginal opening will always result from the escape of flatus in this direction. I always scarify by means of scissors; it can be done rapidly, and with less hemorrhage. The knees should be kept tied together for ten days after the operation, and the urine drawn with care, so that none is allowed to escape over the surfaces brought in apposition.

"The sutures of the perineum are usually removed about the sixth day; those within the vagina must remain for two weeks or longer, until the parts are strong enough to admit of the introduction of a speculum. The bowels are to be kept constipated for two weeks, at least, in all cases where the sphincter is lacerated. When the bowels are acted on by either a purgative or warm mucilaginous injection, the success of the operation will greatly depend on the dexterity of the nurse in properly supporting the parts."

In his recent work upon Vesico-Vaginal Fistula,[1] Dr. Emmet declares that to avoid protrusion of the folded lips into the rectum he now employs a hollow, awl-shaped needle, with a handle. By this a larger amount of tissue can be taken into the grasp of the

[1] Vesico-Vaginal Fistula. By Thomas Addis Emmet. Wm. Wood & Co., N. Y.

suture, and the operator is enabled to pass his wire thread simultaneously through both lips, which secures more perfect adaptation.

For the purpose of preventing tension upon the sutures closing the perineal wound, I have adopted a very simple procedure, which appears worthy of mention. Having entirely closed the wound as has been just described, a long needle, armed with silk, is passed about an inch and a quarter from the edge of the wound downwards through the vaginal septum, and brought out at a corresponding point on the other side. By means of the silk, a silver wire, doubled, is drawn through, and the doubled extremity cut. Through the two eyes of an ivory button one inch in diameter, the extremities of the wires are now passed, and then twisted on both sides of the vulva, and the twisted ends left long. Another such suture is passed above this one, which does not involve the septum. By these deep sutures, which of course are only a trifling modification of the quill suture, the parts are held at rest and traction upon the sutures prevented. When swelling occurs, the wires may readily be untwisted, so as to accommodate it.

When the lower portion of the rectal wall is involved as well as the perineum, it must be closed before the latter. This may be done by an entirely separate operation, performed a fortnight before the other, or the two openings may be closed at one time. The rectal opening should be closed by vivification of its edges, and approximation by silver sutures, placed a quarter of an inch apart.

It has been proposed, likewise, to cure these cases by applying to the cicatricial surfaces of the ruptured perineum escharotics, which, producing superficial sloughs, would leave granulating planes looking towards each other. These surfaces are then to be brought together by sutures, with the hope of producing more certain and powerful union. I have no experience with this procedure, and am under the impression that it has never yet been resorted to in this city.

CHAPTER VI.

VAGINISMUS.

Definition.—This affection consists in a peculiar sensibility or hyperæsthesia in the nerves of the vaginal mucous membrane at the site of the hymen, which upon irritation produces spasmodic contraction in the sphincter vaginæ muscle.

Frequency.—Vaginismus is of frequent occurrence, and will often be met with in practice. It has received little notice heretofore, not because of its rarity, but because the attention of practitioners has not been specially directed to it. Dr. Sims declares that during twenty-four months he met with it seventeen times, and during the past four years I have seen thirteen well-marked cases.

History.—The fact that such a condition occurs and becomes a morbid state of considerable importance was known to Dupuytren, Roux, and Burns,[1] of Glasgow. They not only described it, but adopted an operative procedure which has since been revived, and is at present regarded as the most reliable method of cure. Their views did not apparently attract much attention, nor was their import really appreciated until, at a later period, they were insisted upon by Professors Simpson and Scanzoni. Between August, 1861, and October of the same year, it was described by Debout,[2] Michon, and Huguier, and just afterwards by Marion Sims, who applied to it the appellation which I have adopted. By these authors, incision, subcutaneous or through the mucous membrane, was recommended, in imitation of earlier investigators, after less severe measures have failed in effecting a cure. Since the period last referred to, the affection has been allotted a space in the various systematic text-books which have appeared upon Gynæcology.

Anatomy and Pathology.—The mouth of the vagina is closed by a muscle of elliptical shape called the sphincter vaginæ, which is analogous to the accelerator urinæ in the male.[3] This muscle is

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[1] Simpson, Clin. Lec. Dis. of Women.

[2] Bul. Gén. de Thérap. Méd. et Chir., 1861.

[3] Gray's Anatomy, p. 780.

attached by its upper extremity to the corpora cavernosa and body of the clitoris, some of its fibres passing over that organ so as to compress the vena dorsalis and produce erection. Passing downwards so as partially to cover the plexus retiformis, a portion of its descending fibres decussate to the surrounding tissues, and some of them go down to unite with those of the sphincter ani, with which it forms a figure 8.

Certain morbid states produce so great a degree of irritability in the nerves supplying the vulva and lower part of the vagina, that upon contact with foreign bodies a spasm occurs in this muscle which constitutes the disease that now engages us. The attention of some has been chiefly fixed upon the nervous condition, the pubic nerve being, according to them, the seat of the difficulty, while others have especially regarded the resulting muscular spasm. It is curious to perceive how, from different standpoints, both parties were led to the same surgical resource.

Causes.—This affection bears to the vagina the same relation which blepharospasm does to the lids, or laryngismus to the larynx; and, like those affections, is not ordinarily a primary disorder, but one which results from some special local cause. It may arise from excessive nervous irritability affecting the whole system, as is often seen in hysterical women, or be produced by some local disorder of apparently insignificant character. Prof. Willard Parker[1] reports a case which was due to an irritable tubercle of the meatus not larger than a flaxseed, removal of which resulted in cure. In other words, it may be an idiopathic affection, or symptomatic only of some other disorder.

The recognized causes of the disease are:

The hysterical diathesis;
Excoriations or fissures at the vulva;
Irritable tubercle of the meatus;
Chronic endometritis or vaginitis;
Pustular or vesicular eruptions on the vulva;
Neuromata;[2]
Fissure of the anus.[3]

Professor Scanzoni has recently (Aug., 1868) published his views upon this subject. During the preceding three years he had seen thirty-four marked cases, due chiefly, he has thought, to vio-

[1] Bul. N. Y. Acad. Med., vol. i, p. 439.
[2] Simpson, Med. Times and Gaz., 1857, vol. i, p. 336.
[3] H. Dewees.

lent efforts at sexual intercourse, practiced upon women having small vaginas and well-developed hymens. Scanzoni found that twenty-five of his thirty-four patients had various functional and organic difficulties, which in twenty cases had come on after marriage; in eleven there was congestive dysmenorrhœa; in one amenorrhœa had existed for three years; in thirteen there was chronic metritis; four had either ante or retroversion; in one there was perimetritis; in seventeen, chronic uterine catarrh; in fourteen, vaginal catarrh; in one, anteflexion; in two, retroflexion; nine had urinal difficulties; one had inflammation of the right Bartholin's gland; in fourteen there were symptoms of anæmia; and in seventeen of hysteria. Although the sexual act could not be fully completed, conception was not entirely impossible, as out of the thirty-four cases two had conceived; in the other thirty-two, sterile marriages had existed from one to eleven years. This sterility was not due to want of sexual desire, but arose entirely from spasm involving all the muscles of the pelvis, which also rendered examination, either by the touch or speculum, impossible without the use of an anæsthetic.[1]

Some of the causes which I have enumerated produce vaginismus by direct irritation of the nerves of the vaginal mucous membrane; others, by creating a discharge which indirectly establishes the same condition.

Symptoms and Physical Signs.—The patient will generally complain of excessive pain upon sexual intercourse, the mere attempt at which will throw her into a state of nervous trepidation and apprehension. This and sterility will probably be all that will have attracted her attention, though in some cases a marked tendency to spasm will have been noticed upon sudden changes of position, or washing the genital fissure. One or more of these symptoms will call for a physical exploration, when the following facts will be recognized. As soon as the finger is brought into contact with the site of the hymen, the patient will probably spring from her place, complain of agonizing pain, and evince great nervous disturbance. Should the examination be persisted in, introduction of the finger will be found to be almost impossible, and if it be forced into the canal, a violent contraction of the sphincter will be perceived. If, instead of the finger, a camel's hair brush or a feather be employed, severe pain and contraction will follow even this application to the surface.

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[1] New York Med. Journal, vol. ix, p. 181.

There is no other affection with which this can be confounded. All that it will be necessary to decide concerning it, will be whether it is an idiopathic or a symptomatic disorder.

Course and Duration.—In its duration it is unlimited. Cases are recorded in which it lasted for twenty-five and thirty years, and unless relieved by art, it will probably, in its worst forms, become a permanent condition. In its less severe type, and more particularly when dependent upon some other diseased state, it may often be relieved by mild means, or pass away without treatment.

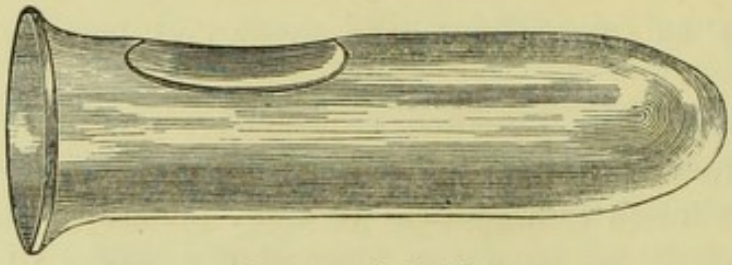
Prognosis.—"From personal experience," remarks Dr. Sims, "I can confidently assert that I know of no disease capable of producing so much unhappiness to both parties to the marriage contract, and I am happy to state that I know of no serious trouble that can be so easily, so safely, and so certainly cured."

The experience of Scanzoni, Tilt, and others, who have adopted an entirely different treatment from that pursued by the last-mentioned author and who deprecate the use of the knife, leads them to the same happy conclusion. In my own experience I have met with no case in which I have not been able to give relief, either by operative interference, or by the complete removal of the disease of which this condition was a symptom.

Treatment.—Careful search should be made, before the adoption of treatment, for the cause of the affection. Should this be discovered, hope may be entertained that its removal will effect a cure. Should no cause be discovered, or its treatment not be followed by recovery, the general state of the patient should be altered and improved by exercise, change of air and scene, vegetable and mineral tonics, sea bathing and cheerful society. Riding on horseback has been especially advised, but rowing, bowling, walking, or any other exercise which develops the system and improves the tone of the nervous organism, will probably answer as well. Local treatment calculated to soothe the excited vaginal nerves should then be resorted to. The free use of vaginal injections containing laudanum, creasote, or acetate of lead is sometimes productive of good. Dr. Peaslee speaks highly of an ointment composed of two grains of atropine to an ounce of lard. This alkaloid, or the extracts of opium, belladonna, hyoscyamus, or stramonium, may be incorporated in an ointment or in suppositories, and applied freely to the sensitive part. In some cases suppositories containing from five to ten grains of iodoform prove very beneficial. At the same time the glass tube, represented in

Fig. 34, should be gently inserted into the vagina, and kept there for as many hours a day as practicable. Its presence will tend to benumb the nervous sensibility, distend the vagina, and produce a tolerance of foreign bodies. During this treatment the patient should live apart from her husband. This plan of treatment, simple as it is, combined with copious vaginal injections used

Fig. 34.



Sims's vaginal dilator.

night and morning for the complete removal of irritating discharges, as well as for their own direct sedative effects, will often prove effectual and avoid the necessity for a surgical procedure of some gravity.

That the operation proposed by Dr. Sims for the cure of this condition is effectual there can be no doubt. I have myself resorted to it in six very aggravated cases, and in all with perfect success. But there has been for some time in the minds of many Gynæcologists a growing distrust of the necessity of a resort to a procedure, which is reported in one case to have resulted in fatal hemorrhage. In many cases even of grave character it has been proved that by distension of the vagina, either with the fingers or by expanding instruments, and subsequent maintenance in the canal of a vaginal plug, cure can be accomplished as perfectly and even as rapidly as by the cutting method. Two eminent authorities, Scanzoni and Tilt, have especially advocated this plan and opposed the operation of Sims. Their views, as reported in recent journals, I here place before the reader.

"Of more than 100 cases that have fallen under Scanzoni's observation, in times past, he has been completely successful in the treatment of all to which he was able to give his personal attention, without in a single case having recourse to the knife. The first condition of success is complete sexual abstinence; for the first three or four days, a tepid sitz-bath should be used night and morning; warm local bathing, with aq. Goulardi, or the same applied with lint, several times a day. Defecation must be regulated, and friction from motion carefully avoided.

After a few days, the sensibility of the parts will be so much allayed that a solution of arg. nit., x–xx grs. to ℥j of water, may be applied with a brush. After about eight days' continuance of this treatment, vaginal suppositories of ext. belladonna and cacao-butter may be placed behind the hymen, and in contact with it, daily. These remedies, either alternately or simultaneously, must be continued until every trace of inflammation has disappeared, and the normal sensibility is restored. Generally two or three weeks will be required to attain these objects. Then dilatation must be commenced; but for this purpose sponge-tents are useless. A graduated series of glass conical specula are best adapted to this object. After the first slightly painful attempt, the patient generally will be able to introduce it with facility, and it may be allowed to remain from one-half to one hour. Even when the hymen remains, it will not be necessary to incise it, as dilatation can be effected without recourse to that measure. At first, the dilator may be used every two or three days, then every day or twice a day for two or three hours, gradually increasing the size of the dilator until the object shall have been attained, which in some instances may require an instrument admitting dilatation, as that of Segalas. Sitz-baths, belladonna, and pencilling with nitrate of silver may be required from time to time, and the cure will usually be completed in from six to eight weeks. It will be seen that, although the treatment of Sims is attended with an equally satisfactory result, it is of a much more serious character than the treatment adopted by Scanzoni; and, after the operation, the success of the treatment depends generally upon the subsequent dilatation. The time required, moreover, is nearly the same by either process."[1]

Dr. Tilt[2] takes the same position in deprecating resort to the knife and giving preference to forcible distension. He anæsthetizes his patient, and introducing both thumbs, back to back, forcibly distends the ostium vaginæ for five or six minutes. He then keeps a large vaginal plug *in situ* by a T bandage for a number of days. This author lays especial stress upon the necessity, already alluded to, of first removing any existing uterine or vaginal disease, in the hope of simultaneously curing the secondary trouble, before having recourse even to the process of distension.

Should these means fail, the operations of section of the sphincter vaginæ muscle, as recommended by Sims and others, or of the pudic nerve, as recommended by Burns and Simpson, offer themselves as procedures promising cure.

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[1] N. Y. Med. Jour., vol. ix, p. 181.

[2] Lancet and Practitioner.

Sims's Operation.—The patient having been anæsthetized, and placed on the back, upon a table, the remains of the hymen are entirely excised by a pair of curved scissors. The slight hemorrhage resulting from this will soon cease under the application of a compress wet with ice water, or of a solution of the persulphate of iron.

The index and middle fingers of the left hand are then passed into the vagina, so as to put the fourchette on the stretch. By means of a scalpel a deep incision is then made on the right of the mesial line, terminating at the raphé of the perineum. A similar incision is then made on the other side, the two being united at the raphé, and extended to the perineal integument and through its upper border. Each of these incisions will extend from about half an inch above the upper border of the sphincter to the perineal raphé, thus passing across the muscle, and measuring nearly two inches. They should pass over the sphincter muscles, but not entirely through them, Dr. Sims[1] especially declaring that this is unnecessary.

After this, the vaginal dilator is placed in the canal, either immediately, or in about twenty-four hours, and worn for two hours in the morning, and three or four in the evening, according to the tolerance for it which is manifested. Fig. 34, represents the glass vaginal dilator, which is three inches long, slightly conical, open at one end and closed at the other, and varying in size from an inch to an inch and a half in diameter. This instrument is kept in place by a T bandage, and should be worn for two or three weeks.

Dr. Emmet has altered Dr. Sims's method of performing the section, which he makes complete, so far as concerns the fibres of the sphincter vaginæ inosculating with the sphincter ani. Passing the index finger into the vagina, the patient lying in the lateral position, he elevates upon it the sphincter vaginæ, which feels like a cord rolling upon it. Then, by means of a pair of scissors, he clips the muscle upon both sides of the perineal junction, and the operation is complete.

Burns's Operation.—This operation is described by Simpson[2] in the following manner: The pudic nerve "is often preternaturally sensible, so as to cause great pain *in coitu* as well as at other times. It may be exposed by cutting through the skin and fascia, at the side of the labium and perineum; beginning on

[1] Trans. N. Y. Acad. of Med., pp. 61 and 62.

[2] Dis. of Women.

a line with the front of the vaginal orifice, and carrying the incision back for two inches. The nerve being blended with cellular substance is not easily seen in such an operation; but it may be divided by turning the blade of the knife and cutting through the vagina to its inner coat, but not injuring that. It may be more easily divided by cutting from the vagina. Slitting merely the orifice of the vagina will not do; we must carry the incision fully half an inch up from the orifice, and also divide the mucous membrane freely in a lateral direction."

Dr. Simpson has modified the operation of Burns by simply cutting the pudic nerve subcutaneously by a tenotomy knife. With regard to its efficiency I have no experience, but it is spoken of with confidence by those who have employed it. There is no reason why it should not accomplish what Sims's operation does, for in the latter the muscle is not cut, but the mucous membrane merely, so as to divide "the nerves of the part," as the author expresses it. The pudic nerve arises from the lower part of the sacral plexus, passes out of the pelvis through the great sacro-sciatic foramen, below the pyriformis muscle, and returns to it through the lesser. It then divides into the dorsal nerve of the clitoris and the perineal nerve.

The act of parturition would be very likely to remove this condition entirely, but unfortunately one of the most constant of the results of vaginismus is sterility. This arises from the fact that sexual intercourse is so painful that it is imperfectly performed, or, as is more commonly the case, all efforts at overcoming the obstacle to it cease, and the woman lives *absque marito*. Should this state of things be found to exist, the patient may be thoroughly anæsthetized, in the hope that complete connection, accomplished under these circumstances, may result in pregnancy.

For a number of interesting cases of this character the reader is referred to Dr. Sims's work upon Uterine Surgery.

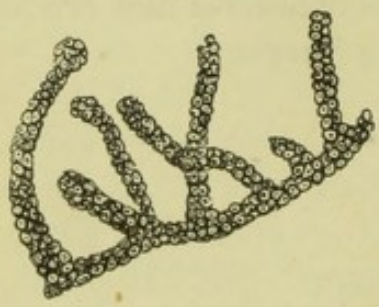
CHAPTER VII.

VAGINITIS.

Definition and Synonyms.—The mucous membrane lining the vagina is subject to inflammatory action, which receives the name of vaginitis. It is the same disease which by certain authors has been described under the titles of vaginal leucorrhœa, blennorrhœa, and blennorrhagia.

Normal Anatomy.—The vagina is a canal which extends from the vulva to the cervix uteri, with which it unites at a variable point, but usually midway between the os internum and os externum. This canal consists of three coats: 1st, an outer coat, formed of fibrous and elastic tissue; 2d, a middle coat, formed of unstriped muscular fibre and fibre-cells, which are subject like the same structures in the uterus to great enlargement during utero-gestation; and, 3d, an inner coat or lining mucous membrane, composed of connective tissue and elastic fibre, and covered over with squamous epithelium. Its general form has been aptly likened, by Dr. Savage,[1] to that which would be assumed by a flexible tube if shortened to nearly half its length by a cord passed from end to end through one of its sides. The ridge thus formed is called the anterior column of the vagina, and marks the vesico-vaginal septum. It is about two inches long, while that of the posterior wall, the posterior column, as it is called, is twice that length. The anterior column, or cord, which shortens the vagina, puckers its investing mucous membrane and throws it into folds or rugæ, which run transversely towards the posterior column. This mucous membrane is studded with papillæ, which are covered by pavement epithelium. The papillæ of the vagina, which were first fully described by Dr. Franz Kilian, were regarded by him as sensitive in function. He represents them as being threadlike and filiform, as shown in Fig. 35.

FIG. 35.



Filiform papillæ of the vagina. (Kilian.)

[1] On Female Pelvic Organs.

Much discussion has occurred among anatomists as to the presence of muciparous glands between the folds of the vaginal mucous membrane, some asserting and others as positively denying their existence. The researches of Huschke, Jarjavay, Jamain, Farre, and other eminent investigators, enable us to accept their existence as an undoubted fact, though it is curious that Charles Robin[1] and Sappey[2] have been unable to discover them. The vagina may then be said to be lined by a mucous membrane which is covered by epithelium, and thrown into folds which are studded by projecting, filiform papillæ, between which lie numerous muciparous follicles.

Varieties.—Vaginitis assumes three forms, which differ so widely in their pathology, etiology, and symptoms, as to require separate investigation. They are denominated as follows:

Simple vaginitis;
Specific vaginitis;
Granular vaginitis.

Simple Vaginitis.

Definition.—This variety of vaginitis consists in inflammation of the mucous membrane of the vaginal canal from some cause other than gonorrhœal contagion.

Varieties.—It may exist in the acute or chronic form, either of which types may appear originally or be the result one of the other. The acute form may be excited by some special cause and rapidly pass into the chronic; or, originating as a low grade of inflammation, the disease may at any time take on the characters of virulence and acuity. Two other varieties of simple vaginitis, the recognition of which at the bedside constitutes an important point, are, primary and secondary. Sometimes the disease exists as a primary lesion, but very commonly it depends upon the excoriating properties of a fluid discharged by the mucous membrane of the uterus. Under these circumstances no treatment addressed to the vaginal surface will effect a cure, for even if the disorder there existing be removed, it must inevitably return so long as the cause which originally produced it remains.

Causes.—In the great majority of instances this affection, more particularly in its chronic form, depends upon a discharge from the uterus, to which it is secondary. It may, however, arise from any of the following exciting influences:

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[1] Nysten's Dictionary. [2] Descriptive Anatomy.

Exposure to cold and moisture;
Injury from pessaries or coition;
Disordered blood states, as those of phthisis and the exanthemata;
Retained and putrefying secretions;
Chemical agents;
Parturition.

After matrimony the acute form is not unfrequently excited, and in prostitutes, whose occupation involves an abuse of sexual intercourse, it is quite common.

A bit of sponge, or other substance which retains the natural secretions, left in the vagina until putrefaction occurs, will often induce the affection, and three of the most virulent cases that I have ever seen were caused by contact of a solution of chromic acid with the vaginal walls in making an application to the uterus.

Pathology.—At the commencement of the disease, the mucous membrane of the vagina becomes highly vascular and its arterioles distended. There is a rapid moulting of epithelium, so that abrasions often exist, and at times follicular ulcerations and diphtheritic deposits make their appearance. Sometimes, though rarely, the epithelial lining of the vagina is thrown off entire, constituting a cast or mould of the canal very similar in character to the dysmenorrhœal membrane which is occasionally expelled from the uterus.

In very severe cases the inflammatory action passes down into the submucous tissues and a true phlegmonous process is established which may result in abscess. For a period varying from fifteen to thirty hours after the inception of the disease, the natural secretion of the part is checked; then there pours forth freely pus of acrid and offensive character, which, in a week or ten days, is replaced by muco-purulent material. This discharge is found to consist of serum, large numbers of epithelial cells, pus, blood-globules, and an infusorial animalcule called the trichomonas vaginalis by M. Donné, who first described it. By some the last has been regarded as ciliated epithelium separated from the uterus, but it is probably an animalcule which exists in vaginal mucus of unhealthy character. M. Donné at first regarded it as characteristic of specific vaginitis, but subsequently renounced the view.

Symptoms.—Acute vaginitis manifests itself by the following symptoms:

A sense of heat and burning in the vagina;
Aching and weight at the perineum;

Frequent desire for micturition;
Profuse purulent leucorrhœa of offensive character;
Violent pelvic pain and throbbing;
Excoriation of the parts around the vulva.

In the chronic form the disease shows the same symptoms, though with much less severity. In very mild cases, only a slight itching or burning sensation is experienced, with discharge of leucorrhœal matter.

Physical Signs.—When the inflammation is acute the labia are found swollen and tense, the mucous membrane of the vaginal canal red and covered with pus, and the animal heat very much increased. Introduction of the finger produces great pain, and often cannot be tolerated. As the labia are separated a flow of fetid muco-pus is discharged. If the canal be explored by means of the speculum its surface will be found congested, while at numerous points abrasions and, perhaps follicular ulcerations, will be noticed. The inflammatory appearances of the vagina will be seen to have extended themselves to the cervix uteri, and very generally from the os will be found to hang a plug of mucus secreted by the irritated, or even inflamed, Nabothian follicles.

Fig. 36.



Epithelium in all stages of development, in simple vaginitis. 220 diameters. (T. Smith.)

Prognosis.—In its acute form it usually runs its course in about two weeks. In the chronic form it lasts for an indefinite time, often subsiding into ordinary vaginal leucorrhœa, or rather into a state of which this is the only prominent symptom.

Differentiation.—Simple vaginitis may be confounded with—

Gonorrhœa;
Endometritis;
Pelvic abscess;
Cervical ulceration.

From the first the differentiation is always difficult and frequently impossible. The means by which it may sometimes be accomplished will be mentioned in the article relating to Specific Vaginitis. From the three remaining affections it is readily dis-

tinguishable by the speculum and vaginal touch. An error will be committed only when the practitioner is not mindful of the possibility of its occurrence, and draws his conclusions from insufficient data. I have seen two cases of profuse and obstinate vaginal discharge regarded as the result of vaginitis, which were in reality produced by pelvic abscesses that emptied their contents into the upper part of the canal. An element in such cases calculated to mislead a superficial examiner is the fact that vaginitis does really exist to a limited extent as a result of the purulent flow from the abscess. This remark likewise holds true in reference to endometritis and ulceration.

Complications.—Vaginitis sometimes produces violent urethritis, and less frequently results in endometritis, Fallopian salpingitis, and pelvic peritonitis.

Specific Vaginitis, or Gonorrhœa.

Definition.—This variety of the affection consists in inflammation of the vulva, vagina, and urethra, arising from a specific contagion which is transmitted by a yellow, purulent discharge.

Pathology.—The purulent material which is the contagious element, after remaining for some time in contact with the vaginal walls, excites in their investing mucous membrane an active hyperæmia which results in heat, swelling, pain, and an ichorous and abundant purulent secretion. This inflammation may be simulated by simple acute vaginitis, but its most characteristic features are usually excited by the contagious influence just alluded to. The disease may affect all the localities above mentioned at the same time, but very often it is limited to the upper part of the vagina, to the vulva, or to the urethra. In some cases it is for a length of time concealed in the vaginal cul-de-sac, no other part of the vagina being affected. This fact explains, says Alphonse Guérin,[1] how women apparently healthy transmit gonorrhœa.

Causes.—As there is but one cause for scarlet fever, for measles, and for variola, namely, absorption of a specific poison or contagious material, so is there but one cause for gonorrhœa. It is true that simple acute vaginitis may simulate gonorrhœa so closely that the most experienced observer will be foiled in diagnosis, but this fact does not prove the diseases identical. The poison of

[1] Maladies des Organes Génitaux, p. 285.

gonorrhœa produces inflammatory results as a certain consequence of contact; the causes of acute vaginitis produce them as an accident which probably in a different state of the patient's system would not have occurred.[1]

Symptoms.—The symptoms of this variety of vaginitis differ very little, indeed in many cases not at all, from those of the simple acute form. They may be thus enumerated:

Heat and burning in the vagina;
Aching and sense of weight at the perineum;
Frequent desire for micturition;
Scalding in the passage of urine;
Profuse purulent leucorrhœa of offensive character.
Violent pelvic pain and throbbing;
Excoriation of the parts around the vulva.

Physical Signs.—The vulva, vagina, and urethra will be found swollen, tense, red, and hot. In the beginning they are unnaturally dry, but very soon a profuse secretion bathes them with a creamy pus, sometimes streaked with blood. Should the affection have exerted its influence chiefly upon the vulva, pruritus, excoriation, and an increase of sexual appetite will be observed. Should the urethra be chiefly or solely diseased, instances of which are recorded by Ricord and Cullerier, the most violent scalding upon the passage of urine will especially annoy the patient.

Differentiation.—It will be seen, from what has been already stated, that the differentiation of this disease from simple acute vaginitis must be extremely difficult. In many cases it is impossible, for there are no signs which can be regarded as positively conclusive. The trichomonas vaginalis, once supposed by Donné to be pathognomonic of specific vaginitis, is now known to exist in the pus of that which is simple; and urethritis, formerly viewed as diagnostic by many, is sometimes a complication of the simple form and is sometimes absent in the specific.

The following are the symptoms which should lead us strongly to suspect the specific nature of a case:

Great virulence and acuity in development;

Development in a woman previously free from vaginal discharges;

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[1] This view is denied by many of the best authorities, who regard gonorrhœa as having nothing specific about its nature. At the same time that I have no wish to ignore the opinion with which mine conflicts, I have preferred to give my own impressions without discussing the matter.

Marked urethral complication;
Copious purulent discharge;
Transmission to the male from coition.

Although it is true that in many cases these symptoms will render us certain in our conclusions, in many others they will exist in cases certainly of non-specific character. I have on two occasions seen them all attend cases of vaginitis, excited by accidental contact of chromic acid with the vaginal walls.

Course, Duration, and Termination.—The duration of the disease will depend in great degree upon the character of the treatment adopted. Under proper management even a severe case may be cured in from two to three weeks, but if neglected, it may continue for months and perhaps years. The morbid action passing up into the uterus may exist as an endometritis long after the vaginal trouble has disappeared; or it may pass into the bladder and excite cystitis; or down their narrow ducts into the vulvo-vaginal glands.

Complications.—The complications of gonorrhœa in the female are numerous and important. The disorder sometimes becomes an exceedingly grave one, and, in some instances, destroys life. It may induce the following results:

Buboes;
Vulvar abscesses;
Cystitis;
Inflammation of vulvo-vaginal glands;
Endometritis;
Fallopian salpingitis;
Pelvic peritonitis.

Mr. Salmon,[1] who first drew attention to inflammation of the vulvo-vaginal glands as a result of the disease which we are considering, declares that it is quite common.

The passage of the disordered action into the uterus through the tubes and into the peritoneum is the most dangerous of all its consequences, and produces great risk to life from the pelvic peritonitis which it excites.

Granular Vaginitis.

Definition and Synonyms.—This variety of vaginitis was first described by Ricord, under the name of Psorolytrie. In 1844, M. Deville,[2] a pupil of Ricord, described it fully, and it was sub-

[1] Bumstead on Venereal, p. 172. [2] Archiv. de Méd, 4th series, t. v.

sequently treated of by Blatin, Guérin, and others, under the names of papular, glandular, and granular vaginitis.

Pathology.—By these writers it was regarded as an hypertrophy of the muciparous follicles, lying imbedded between the rugæ of the vagina. This hypertrophy, it was thought, was generally the result of pregnancy, though it was admitted that it might arise from simple or specific vaginitis. Many recent writers deny the existence of this variety of vaginitis, and view it only as an hypertrophy of vaginal papillæ, the result of the forms of the affection already mentioned. Thus Dr. Bumstead,[1] in speaking of granulations found in the vagina as a result of vaginitis, says, "They have been erroneously regarded by Dr. Deville as peculiar to the vaginitis of pregnant women." Scanzoni[2] and West[3] both deny its existence, and upon the same ground, viz., the fact that Mandl and Kölliker have discovered very few mucous follicles in the vaginal mucous membrane. When, however, in opposition to the negative fact that these excellent observers, supported by Robin and Sappey, *have not* discovered these glands, is arrayed the positive fact that Huschke, Jamain, Richet, Becquerel, Guérin, and others *have* done so, the grounds for denial must be admitted to be insufficient. Even if such evidence of the propriety of admitting this variety of vaginitis did not exist, clinical research would corroborate the truthfulness of the deductions of M. Deville. The disease is characterized by hemispherical granulations, about as large as half a millet-seed, scattered thickly over the mucous membrane of the vagina and over the cervix uteri. This variety of the disease appears to bear the same relation to simple vaginitis that follicular vulvitis does to the purulent form of that affection. I once saw a case of granular vaginitis, so striking in its features that the attending physician had expressed to the patient's family his fears that malignant disease was developing. He became at once convinced of his grave error, when shown a description of the disease which really existed, and with which he had never before met. Although I believe in the validity of this variety of vaginitis, I must declare that I have very rarely met with it out of the condition of pregnancy.

Causes.—The glandular hypertrophy which gives to the disease its characteristic features and name, generally results directly from pregnancy, though it may be produced by either simple or

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[1] Op. cit. [2] Diseases of Females, Am. ed., p. 529.

[3] Diseases of Women, Eng. ed., p. 640.

specific vaginitis. Some women in successive pregnancies suffer from it.

Symptoms.—It demonstrates its presence by the symptoms already recorded as characteristic of simple and specific vaginitis. With these, pruritus vulvæ and a lichenous eruption about the pubes are apt to appear. As parturition comes on and puts an end to pregnancy, it usually disappears, very often without any treatment whatever.

Treatment of Vaginitis.—The treatment of the various forms of this disease is so similar that it may be described under one head, modifications being suggested for those cases which have assumed a subacute or chronic aspect. If the case be one of acute character, the patient should be kept perfectly quiet in bed, and locomotion and sexual intercourse strictly interdicted. Pain should be relieved by opiate or other anodyne suppositories placed in the rectum, and febrile action prevented or combatted by mild, unstimulating diet and refrigerants. Every fifth or sixth hour the patient, placing under the buttocks a bed-pan, upon which she lies, and between the thighs a vessel of warm water containing boiled starch, infusion of linseed, bran, or poppies to render it soothing, should, by means of a syringe with continuous jet, or an irrigator, throw a steady stream against the cervix uteri for fifteen or twenty minutes, or even for a longer time. The methods most appropriate for syringing the vagina are fully described in chapter fifteen, and to it the reader is referred for details.

After the severity of the attack has been subdued by these means, the acetate of lead or sulphate of zinc, with tr. of opium, may be added to the water in small amounts, not more than a drachm of the mineral preparations being dissolved in a gallon of fluid. As soon as the signs of acute inflammation have disappeared, the sulphate of alum, tannin, or infusion of oak bark may be employed to render the fluid injected more decidedly astringent. At the same time laxatives should be administered, and ardor urinæ relieved by the use of soda, potash, or other alkaline diuretics. Should inflammatory action run very high and much pain be experienced, great benefit will be derived from the free administration of opium, which should be given to the accomplishment of complete quiescence of the nervous system.

When the acute form shows a tendency to become subacute or chronic, the speculum of Sims should be cautiously introduced, the whole vaginal canal painted over with a solution of nitrate of silver, one drachm of the salt to one ounce of water, and a roll

of cotton, saturated with glycerine, placed against the cervix. The cotton saturated with this or some anodyne substance may be renewed daily with advantage, but the painting with the caustic solution should not be frequently repeated. After free vaginal injection, suppositories composed of butter of cacao or gelatine and gum tragacanth, with persulphate of iron, alum, copper, zinc, or opium, may, by means of the suppository tube represented by Fig. 37, be placed at intervals in the upper part of

FIG. 37.



Hard rubber tube with piston, for placing medicated cotton or suppositories in the vagina.

the vagina. As the disease passes into the chronic form, the general state of the patient should be carefully watched, and if tonic or chalybeate treatment be indicated, it should at once be resorted to.

CHAPTER VIII.

ATRESIA VAGINÆ.

Definition and Synonyms.—The term atresia, derived from α, privative, and τραω, "I perforate," signifies an imperforate condition, and should in its strict import be limited to complete closure of an aperture or canal, but custom sanctions its application to any obliteration or occlusion which is so extensive as to remove the case from the class of strictures.

The genital canal of the female may be imperforate at the vulva, in the vagina, or in the canal of the uterus itself. In the present essay it is proposed to treat only of those forms which affect the vagina and receive the appellation which serves as the caption of this chapter.

History.—Hippocrates[1] refers to this condition as a result of labor; Aristotle speaks of the accidental and congenital varieties; Celsus devotes a chapter to it, and it claims attention, as we come down to subsequent times, from Aëtius, Avicenna, Lanfranc, Wierus, Ruysch, Mauriceau, and Roonhuysen. Heister and Boyer advanced our knowledge of it, and still more lately Amussat, in 1835, operated for its cure with greater boldness than his predecessors had ventured to do.

Pathology.—As a result of injury from mechanical or chemical agencies, a vagina once fully developed may close from adhesion of its walls; its calibre may be diminished by absolute removal of its component structures in consequence of ulceration or sloughing; or the other parts of the female genital system may go on to full development while this is arrested in its growth and remains a fibrous cord rather than a distensible canal.

Varieties.—Atresia may be either congenital or accidental; and it may likewise be partial or complete. In a case of stillicidium mensium,[2] presenting itself at the clinique for diseases of women in the College of Physicians and Surgeons, I found the vagina apparently completely closed at its middle, yet permitting a slight flow of menstrual blood. Upon careful examination a small opening, admitting only a probe, was discovered, leading into a sac between the vaginal constriction and the neck of the uterus, which contained several ounces of thick, tenacious blood.

If the atresia be congenital, the whole canal will probably be found obliterated; but this is rare. Generally the inferior, middle, or upper part is the seat of stricture.

Causes.—The following causes may be enumerated as productive of it:

Arrest of development;
Prolonged and difficult labor;
Chemical agents locally applied;
Mechanical agencies;
Sloughing, the result of impaired vitality;
Syphilitic or other extensive ulcerations.

One case which has come under my observation resulted from syphilis; another from prolonged labor; another from the accidental passage of a sharp bit of wood up the vagina; and another from retention of the fœtal body for two hours after delivery of

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[1] Puesch, De l'Atrésie des Voies Génitales de la Femme. Paris, 1864.

[2] This term is employed by Aëtius, Tetrab iv, p. 990.

the head. Among the causes of sloughing from impaired vital force should be especially mentioned the continued and eruptive fevers, typhus fever, scarlatina, variola, &c.; and cholera as a cause of the accident is referred to by M. Courty.[1] Dr. Trask, of Astoria, N. Y., has written an excellent article upon this subject, his conclusions being based upon thirty-six cases, of which fifteen were due to prolonged labor.

Symptoms.—The disorder will demonstrate its existence only by incapacitating the vaginal canal for its important functions, copulation and transmission of menstrual blood. Should it occur in one too young or too old to require such functions from the vagina, no suspicion will be aroused as to its existence. The notice of the practitioner will generally be called to the patient by amenorrhœa or by an inability to perform the act of coition. Should the menstrual hemorrhage have taken place, a large amount of blood will generally be found confined above the constricted part of the canal, and violent uterine contractions will have demonstrated the efforts which the uterus has made to expel the accumulation. Besides these, no other rational signs will show themselves, but they will be sufficient to urge upon the attendant the necessity for a physical exploration.

Physical Signs.—The patient being placed upon the back, and vaginal touch attempted, entrance of the finger into and up the canal will be found to be impossible. A little investigation will prove that this is not due to vaginismus, imperforate hymen, or adhesion of the labia majora, and rectal touch will usually discover the vagina running up the pelvic cavity as a fibrous cord.

Results.—From the mere obliteration of the vagina there is no immediate or direct derangement. But in certain cases where menstrual blood is poured out by the vessels of the uterine mucous membrane, and is accumulated at each monthly epoch in the portion of the canal above the stricture, or in the uterus, which is dilated by its retention, rupture of this organ or of the Fallopian tubes may occur; reflux through these tubes into the peritoneum may take place, and pelvic hæmatocele be the consequence; or the retention of the menstrual flow may produce all those nervous and cerebral symptoms so characteristic of such an occurrence.

Prognosis.—The prognosis of these cases as regards the possibility of removal of the abnormal state, will depend upon the

[1] Mal. de l'Utérus, p. 369.

extent and completeness of the obliteration, and destruction of tissue. The smaller the amount of vaginal tissue found by rectal touch and examination by a sound in the bladder, to exist, and the more complete and extensive the adhesion of the vaginal walls, the more closely will the case resemble one of entire absence of the vagina. The prognosis as to permanent cure is eminently unfavorable. During the process of making a canal between the bladder and rectum, one of these viscera is very apt to be cut into, or the peritoneum may be opened at the fornix vaginæ. If a depot of menstrual blood be reached and evacuated, death is by no means rare from purulent absorption, septicæmia, or a septic endometritis which ends in salpingitis and peritonitis; and even if these dangers be avoided, it is always a matter of great difficulty to maintain the perviousness of the canal. Sometimes patients are forced to accomplish this end by employing the vaginal plug for years, and even then, upon removal of it, the tendency to contraction still shows itself.

Differentiation.—Before any surgical interference is established for the relief of atresia, it should be differentiated from absence of the vagina. The latter very rarely, if ever, Scanzoni[1] says never, exists without simultaneous absence of the uterus and rudimentary development of some of the external organs of generation. If an obliterated vagina be present, it may be generally recognized as a hard, fibrous cord, by one finger in the rectum and a sound in the bladder. Sometimes a short cul-de-sac will be found at the vulvar extremity, and another at the uterine, which are united by a cord of fibrous character.

Should deformity of the external genitals exist, the uterus not be discoverable, and no signs of distress at menstrual epochs show themselves, it may be concluded that the case is one of absence of the vagina, and not of complete atresia. But, thanks to the boldness of Amussat, even absence of the vagina does not preclude the possibility of establishing an artificial canal. The importance of the differentiation consists in the fact that the surgeon should in such a case be doubly cautious and circumspect in his efforts, and guarded in his prognosis. It may at first thought appear that in case there is no evidence of the existence of uterus or ovaries, and no inconvenience be experienced from retention of menstrual blood, it would not become necessary to resort to an operation to render the vagina pervious. But so

[1] Diseases of Females, Amer. ed., p. 478.

great is the unhappiness often resulting from incapacity of the woman for the sexual act, that this becomes a reason for her to demand the resources of art, and a valid ground for interference on the part of the surgeon.

Treatment.—The sudden evacuation of menstrual blood, which has been for a long time imprisoned in the uterus and vagina, is always a procedure attended by danger. Even where the obstruction has been only an obturator hymen, such an operation has been followed by endometritis, peritonitis, and death. The chief danger is probably dependent upon the fact that the imprisoned fluid distends the uterus and Fallopian tubes, and renders them so sensitive that the admission of air produces a septic endometritis, which in its course and termination resembles closely the most common form of puerperal fever. Such accumulations should not be evacuated, therefore, without great caution, and it is always well for the operator to announce to the patient, or her friends, the fact that dangerous consequences may result.

Menstrual blood thus retained may be removed through the vagina, bladder, or rectum, by one of three operations:

1st. Puncture by a large trocar and canula;
2d. Puncture by a small trocar and use of tents;
3d. Incision by knife or scissors.

Should the occluding space be limited in extent, a full supply of tissue exist on both rectal and vesical aspects, and a volume of menstrual blood be imprisoned above, a trocar and canula may be plunged through the obturator tissue or the wall of the rectum and the fluid evacuated. In case it be thought best to effect the discharge more gradually, and if doubt be entertained as to the safety of passing a large instrument, which may require for its passage more tissue than the case presents, a small trocar or exploring needle may be employed, and the canal created by it dilated by systematic use of tents of sponge or sea-tangle. In a case which I saw with Profs. I. E. Taylor, Hamilton, and Peaslee, this plan succeeded most perfectly in the hands of the first-named gentleman. Should incision be deemed necessary, the patient, thoroughly anæsthetized, and having had the bladder and rectum emptied, should be placed upon the back upon a table, in the position adopted in operating for stone. By means of a pair of curved scissors, conducted up to the point of obliteration upon one or two fingers, the tissue should then be very cautiously cut, and the finger introduced into the opening made

in the mucous membrane. By this a little force should be employed in order to separate, if possible, the adhering surfaces, or tear up a new tract. Then, one finger being kept in the rectum, and a sound in the bladder, cautious and gradual dissection of the canal should be practiced, great care being observed to avoid opening into the rectum posteriorly, the bladder anteriorly, and the peritoneum above. Dr. Emmet, whose experience in this class of cases has been extensive, declares that if the new tract be created by incisions by scissors and tearing of tissue by the fingers, subsequent contraction and atresia are less likely to occur than if a knife be used. According to his experience incisions made by the knife granulate and undergo cicatricial contraction with much greater rapidity. In 1832, Amussat advocated forcible pressure continued until the parts were softened and gave way, and when fluctuation was discovered, the use of a trocar or knife for evacuation of the fluid. Dr. Graily Hewitt asserts that Amussat rejected the use of the knife, and effected laceration of the tissues by tearing by the finger. Dupuytren followed a mixed method, performing the operation partly by cutting and partly by tearing the textures. Bernutz,[1] who believes that the admission of air into a uterus previously closed to its entrance, causes contraction, which forces imprisoned blood into the peritoneum, advises for the avoidance of this accident the following plan. He proposes to operate in from eight to ten days after menstruation, when the calm which succeeds it is well established, and at the same time at a period distant from the next epoch. In place of a large incision, he proposes puncture by a very small trocar guarded by gold-beaters' skin. In this way gradual discharge is accomplished, and air excluded. He does not leave the trocar in place, but prefers subsequent puncture, if necessary. The fatal termination of four cases which he reports has led to the adoption of these precautions.

After evacuation of all the retained blood, and diminution of the size of the distended uterus, he recommends the practice "to make sure of the permanent freedom of the excreting channel by as extensive incision of the obturator membrane as is practicable, and the employment of dilatation."

However the operation for atresia be performed, there is always great danger of relapse, and unless special means be adopted for maintaining the perviousness of the canal, it will invariably occur.

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[1] Clin. Med. sur les Mal. des Femmes, vol. i, p. 303.

To prevent such a result, a plug of glass, such as represented by Fig. 34, should be introduced into the vagina, secured by a T bandage, and worn for weeks. After this it should be kept in place at night for many months. Where the entire canal has been obliterated even these efforts may fail and closure occur above, which gradually advances to the ostium vaginæ.

If menstrual blood have been imprisoned above the strictured portion of the vagina, the canal should be kept scrupulously clean by injections of tepid water practiced twice a day. If the uterus and tubes have been distended by retained fluid, the cavity of the former should, just after the operation, be carefully washed out with tepid water very slightly impregnated with carbolic acid, tincture of iodine, or Labarraque's solution of soda. The patient should then be kept as quiet as possible in the recumbent posture, and under the full influence of opium.

The period at which operation should be resorted to for congenital atresia is a subject of importance. Velpeau advocates operating in infancy, but Puesch, Boyer, and others regard the age of puberty and approach of menstruation as a more appropriate time. Should the menopause have arrived, no operation will be called for.

It should not be forgotten that delay in interference is often very disastrous during the period of menstrual activity, for lives have, in numerous instances, been destroyed by rupture of the Fallopian tubes, and even of the uterus itself, as seen by Puesch. This observer drew his conclusions from 258 cases of atresia, in 18 of which rupture of the Fallopian tubes from distension by menstrual blood occurred. In one instance of atresia I saw an hæmatocele the size of an infant's head, result from regurgitation of blood through the tubes into the peritoneal cavity. It is highly probable that the mental emotion of the patient, and her struggles during the operation, may account for the entrance of blood into the peritoneum as noted by Bernutz. Hence, every effort should be made to avoid these, and care should be taken not to allow of pressure upon the uterus in examination, or in restraining the patient.

CHAPTER IX.

PROLAPSUS VAGINÆ AND VAGINAL HERNIÆ.

Prolapsus Vaginæ.

Definition and Synonyms.—The mechanism by which the pelvic organs of the female are kept in their proper positions, and relations to each other, offers, in its simplicity and perfection, an excellent example of that adaptation of means to an end which is so often repeated in the animal economy. The uterus is so sustained that when necessity requires it, not only in pregnancy but under a number of other circumstances, it may rise or fall, or tilt backwards or forwards, while the rectum, bladder, and lowest layer of small intestines are kept in place and allowed to distend and empty themselves without material change of relation.

The three organs which are mainly instrumental in this result are the vagina, the peritoneum, and the pelvic areolar tissue. The first of these performs an important part. By it the uterus and super-imposed layer of small intestines are to a great extent supported, the bladder is prevented from falling backwards when in a state of repletion, and the anterior wall of the rectum from undergoing displacement forwards.

When the tone of the walls of the vagina is impaired and they pouch into its own canal so as to fall downwards towards the vulva, the condition is called prolapsus. As, however, loss of the support which the vagina previously gave usually results in descent of the uterus, small intestines, bladder, or anterior wall of the rectum, it is often included under the names of prolapsus uteri, cystocele, enterocele, or rectocele. As considerable diversity of opinion exists concerning the nature of prolapsus vaginæ, it is necessary for us, before proceeding, to comprehend its definition with perfect clearness. By some it is maintained that hernia of neighboring viscera into the vagina should not be included under the head of prolapsus, which, as Colombat declares, is an "inversion of the internal lining membrane, caused by infiltration of the cellular texture that unites the mucous to the subjacent membranes." By others it is believed that true prolapse is impossible

without simultaneous displacement of one or more of the surrounding pelvic organs. All admit, of course, that in such an exuberant development or hypertrophy as that which occurs during pregnancy, a portion of the canal may be forced out of the vulva, but this is not what is ordinarily meant by the term prolapsus vaginæ. Dr. Savage[1] expresses himself thus upon the point: "Prolapse of the vagina alone, or prolapse of the vaginal mucous membrane alone, are two affections which, anatomically considered, would seem impossible." The text-books, however, mention both.

It is an important question whether there can be prolapse of the vagina without vagino-rectocele, vagino-cystocele, vaginal hernia of intestine forcing down the vaginal cul-de-sac, or uterine prolapse. When the vagina has lost its elasticity by excessive and frequent distension, the vaginal canal is often occupied by a collocation of its own folds, which may form a considerable projection at the vulva; but this does not constitute true prolapse of the vagina. The anterior or upper wall of the vagina is closely bound to the base of the bladder and the front of the cervix uteri, and by means of the utero-sacral ligaments it is indirectly attached to the sacrum. This wall aids powerfully in support of the uterus, bladder, and small intestines. The posterior wall is not so firmly bound to the rectum, though the adhesion at the extremity of the utero-rectal pouch of peritoneum is quite strong. At the vulva the vagina is fixed by the deep perineal fascia and closed by the sphincter vaginæ muscle. These anatomical arrangements account for the fact that prolapse of the vagina without simultaneous displacement of one or more of its surrounding viscera is exceedingly rare, and that when it does occur as a distinct disease it is very generally found to affect only the posterior wall. I have met with no case in which the anterior wall has decidedly prolapsed without coincident descent of the bladder, but I have seen several instances of prolapse of the posterior wall without alteration of the position of the rectum.

Pathology.—Any influence which impairs the natural tonicity and strength of the vaginal canal, renders it abnormally voluminous and lax, or destroys its lower buttress or support, will tend to induce the affection. As pregnancy and parturition combine most, and sometimes all, of these, they are generally found to be predisposing, and very frequently exciting circumstances. The development of the vagina, and increased weight of the uterus

[1] Female Pelvic Organs.

dependent upon the former, and the distension of the canal and stretching of the sphincter incident to the latter, all unite in bringing about prolapsus. As the fibre cells, which constitute the nascent state of the uterine muscular fibres, develop, so as to make of the insignificant non-pregnant uterus the powerful organ which expels the child at full term, so do those of the vagina, the Fallopian tubes, and the round ligaments. By the process of involution which diminishes the size and weight of the uterus, these parts likewise return to their original dimensions. It is, therefore, highly probable that those influences which arrest this important process in the uterus, resulting in subinvolution, likewise affect it in the other parts mentioned, and render them atonic and feeble.

Prolapsus vaginæ is very rare, except in those who have borne children, although it may occur. Sir Astley Cooper met with it in a girl, aged seventeen, who was admitted into Guy's Hospital, for supposed prolapsus uteri, and Prof. Meigs[1] mentions that Dr. Mütter, of Philadelphia, saw it occur in a child six months old in consequence of a convulsion.

Causes.—From what has just been said the following causes will naturally suggest themselves as those most likely to produce this displacement:

Violent efforts of the abdominal muscles;
Repeated parturition;
Excessive weight at the uterine extremity of the vagina;
Senile atrophy of vaginal walls;
Rupture of perineum;
Distension by pessaries, or tumors;
Long-continued vaginitis.

It is evident that these causes act either by debilitating the power of the vaginal walls by mere mechanical distension, by specifically robbing them of their tonicity, or by removing the buttress against which the canal rests at the vulva.

Varieties.—The displacement may be of two forms, acute and chronic. The power of the canal may be overcome by a violent effort, a fit of coughing, uterine or abdominal contractions, or similar acts, which, with great suddenness, force the contents of the abdomen down upon the pelvic viscera. This occurrence, which is very rare, is generally accompanied by sudden descent

[1] Meigs's Translation of Colombat.

of the uterus, or follows parturition. The ordinary form of the affection is that in which by the slow and steady action of one or more of the causes enumerated, the resistance of the vagina is gradually overcome, and little by little a fold is forced downwards towards and through the vulva. The first variety is the result of a few minutes' effort; the second, that of months, or even years of morbid action. Prolapse of one wall, partial prolapsus, as it has been styled, is often lost sight of in view of the hernia of the bladder, rectum, or small intestines, which accompanies it. Hence cystocele, rectocele, and enterocele may be regarded also as complications of the affection.

Course, Duration, and Termination.—A sudden attack of prolapsus being overcome by proper means, and the patient kept quiet, may disappear, and not return; but in that variety which occurs gradually there is no limit to the duration of the disease. Generally, the physician is not called until it has existed for a long time and become complete. Fortunately, it has no serious results, except the occurrence of the herniæ just alluded to, and these prove only annoying, not dangerous to life.

Prognosis.—The prognosis as to cure will depend upon the degree and duration of the malady. It is always, whatever be its extent, relievable by surgical means, but generally proves incurable by those of medical character.

Symptoms.—Should displacement of the vagina exist alone, that is without creating hernia of surrounding organs, the patient will complain of a sense of discomfort in the vagina, with a tendency to bearing down, as if to expel some foreign body; a feeling of heat, fulness, and throbbing at the vulva; a certain amount of pelvic uneasiness in walking, or making any muscular effort, and a general tendency to prostration, if the condition be one of aggravated character. Physical exploration will reveal the presence of a tumor between the labia, which touch will demonstrate to contain no liquid, and yet not to be solid in its nature. Sometimes the mucous membrane covering it is excoriated, ulcerated, and purple in color; at others it will be smooth, shining, tough, and covered by pavement epithelium. A simple vaginal prolapse of any extent is, as has been stated, quite rare. When it does occur it generally affects the posterior wall, but prolapse, accompanied by hernia, is more commonly found to affect the anterior wall, cystocele existing. Should the case be complicated by vesical or rectal prolapse, the symptoms just enumerated will present themselves with the addition of others dependent upon disturb-

ance of the functions of the part which forms the hernia. In one case the prominent symptoms will point towards the bladder; in another, to the rectum, and, in very rare instances, to the small intestines.

As the treatment of prolapsus vaginæ is, with slight modifications, the same for uncomplicated and complicated cases, it will be considered after the subject of vaginal herniæ has been discussed.

Vaginal Herniæ.

Cystocele.

Cystocele, or vesico-vaginal hernia, consists of descent of the bladder towards the vulva, so as to impinge upon the vaginal canal. When the anterior wall of the vagina, which is closely adherent to the bladder, the base of which it sustains, ceases to afford the required resistance, the bladder descends and forms a small pouch in the vagina. This is at first very small, but gradually it increases, until at last it forms a decided tumor, which hangs between the labia majora. The pouch thus created becomes filled with urine, which, in the ordinary act of micturition, cannot be evacuated, from its being contained in a species of diverticulum. This undergoes decomposition, free ammonia is formed, and cystitis or vesical catarrh is established, which annoys the patient by pain, heat, vesical tenesmus, and scalding in urination. Should any doubt exist as to the character of the tumor felt in the vagina, a curved sound or catheter may be passed into it through the urethra for the settlement of the question.

It is an interesting question whether cystocele is ever the cause instead of the result of prolapse of the vagina. It is probable that it may be so in very rare cases, though such a connection between the two affections must be uncommon, since the former seldom occurs except in women who have borne children, and thus been exposed to influences which tend to diminish vaginal resistance. Scanzoni[1] is convinced that the vesical prolapse is sometimes primary, and due to irregular spasmodic contraction of the fibres of the body of the bladder while the neck remains firm. This forces the urine to the fundus, which dilates and undergoes displacement.

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[1] Op. cit., p. 497.

Rectocele.

Rectocele, or recto-vaginal hernia, occurs in a manner similar to that by which the bladder descends. The posterior wall of the vagina ceasing to give proper support to the anterior wall of the rectum, this forms a pouch which soon fills with fecal matters. The fæces becoming hard, and, in consequence, irritating, create mucous inflammation and discharge, with tenesmus, obstinate constipation, and hæmorrhoids. The tumor thus formed will sometimes equal in size a man's fist, and protruding over the perineum give some difficulty in diagnosis from its size and solidity. This difficulty will at once disappear upon rectal exploration and the use of an enema of ox gall and warm water. In one instance I saw a patient confined to bed for three or four months from one of these sacculated accumulations of fæces under the supposition that cellulitis existed, which by effused lymph had completely blocked up the pelvis. It may be supposed that such an error will rarely be met with, yet the case which I have just mentioned occurred to a practitioner of great experience and ability.

Enterocele.

Enterocele, or entero-vaginal hernia, consists in descent of a portion of the small intestines into the pelvis, so as to encroach upon the vaginal canal. Such a descent usually occurs in this manner: a loop of intestine resting in Douglas's cul-de-sac stretches this serous prolongation, and, advancing between the rectum and vagina, pushes the posterior wall of the latter before it so as to form a tumor at the vulva. In a similar manner it is stated that the intestine may advance between the bladder and uterus and depress the anterior vaginal wall, but this must be rare, as authors of extensive experience assert that they have never met with it.

Enterocele is not an accident likely to produce evil results unless it occur during labor, when strangulation may take place. Even at this time such a complication is very rare, for the free passage afforded the displaced intestine back to the abdomen will almost always preclude this difficulty. Dr. Meigs[1] relates a case occurring during labor, in which the progress of the parturient process was checked by a large mass of intestines until he succeeded in reducing the hernia. He says, with reason, that in such a case strangulation or contusion was to have been feared.

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[1] Notes to Colombat, p. 211.

One very momentous aspect in which these herniæ must be viewed is in relation to puncture of vaginal tumors, occurring during labor, for ascertaining their contents. No such explorative means should be resorted to without careful differentiation of vaginal herniæ of all descriptions, and especially of that of which we have last spoken. The peculiar sensation to the touch, of a tumor filled with air, a resonant sound upon percussion, the detection of peristaltic movements, and careful exclusion of all other forms of tumor which might appear under the circumstances, will serve to avoid error. When, however, it is borne in mind that vaginal tumors are very near the inflated intestines and that they often yield to the touch an airy sensation, it will be appreciated that great caution is necessary in arriving at a diagnosis. In a case which I attended with Dr. Abram Dubois, of this city, a cyst the size of a walnut existed just below the neck of the uterus, and had many of the features of a knot of intestine. I was persuaded that it was a vaginal cyst, punctured and evacuated a mass of gelatinous matter which resulted in cure of the growth.

Treatment of Prolapsus Vaginæ and its Complications.—Should the accident have occurred suddenly, reduction should at once be accomplished, and the recurrence of the displacement prevented by appropriate means. The bladder and rectum being evacuated, the patient should be placed in the knee-elbow position, and, the fingers being well oiled, steady pressure should be exerted in coincidence with the axis of the inferior strait, until the prolapsed part is returned to its place. In the case of enterocele already referred to as treated by Prof. Meigs, the patient was placed upon the left side, and taxis being practiced, the mass suddenly slipped above the superior strait, into which the next uterine contraction forced the child's head. To prevent a relapse the pelvis should be elevated, the patient kept perfectly quiet, tenesmus, if present, relieved by the use of opium, and the vagina constricted by astringent injections.

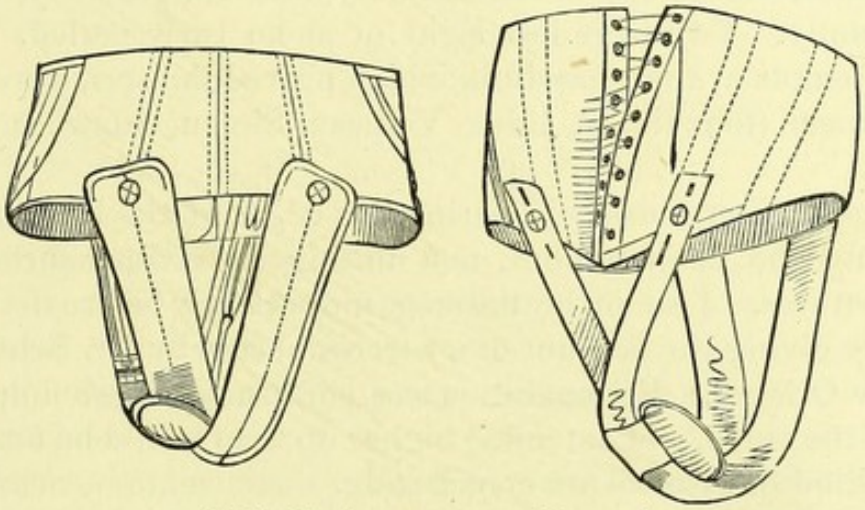
But sudden cases of vaginal prolapse and hernia are very rarely met with. It is usually those which have slowly and gradually established themselves that we are called upon to treat, and these are always obstinate and rebellious. The means at our command for overcoming such cases are the following:

1st. Local astringents and tonics;
2d. Supplementary support;
3d. Surgical procedures.

The first of these may be effectual in slight cases, but in those of graver character they will generally prove insufficient. The tone and strength of the vagina may be temporarily restored by the use of injections of large amounts of cold water medicated with tannin, alum, or zinc, employed night and morning. The patient should be sent during the summer to a watering-place, where sea-bathing and injections of sea-water into the vagina may be employed. A very excellent result will also sometimes follow the use of vaginal suppositories containing one of the astringents mentioned.

Supplementary Support may be effected by an abdominal supporter, with perineal band, and by the use of a properly constructed pessary, such, for example, as the double lever of Hodge or Smith, the ring of Meigs, or the stem of Cutter.

FIG. 38.



Abdominal supporters. (Brown.)

In some instances the air pessary of Gariel will be found to be very useful, more especially where the bladder or rectum participates in the prolapse. But this must necessarily be only palliative in its results, since while it relieves the immediate consequences of want of power in the canal, it increases the existing weakness by continued distension. In several very obstinate cases in which I could not for certain reasons resort to surgical procedures, I have succeeded in giving great temporary relief by the use of the anteversion pessaries represented in the chapter on anteversion. The prominent or supporting arm of these instruments, making pressure upon the vagina just anterior to the uterus, lifts up this surface and thus sustains it and the bladder.

Surgical Procedures.—Of these there are three which may prove

effectual. If a ruptured perineum seem to produce the want of support, the operation of perineorrhaphy may be all that will be necessary. This is described elsewhere. In a certain number of cases where the vaginal displacement has not resulted in prolapse of the uterus, where it is desired to exchange a prolapse in the third degree for one in the second, and where from the advanced age of the patient patency of the vagina is no longer necessary, union of the labia majora for the lower three quarters of their extent may fulfil the indication. This procedure has received the name of *episiorrhaphy* (*επισειον* the labium, and *ραφη* suture). The operation of uniting the labia majora, and thus partially closing the vagina, was first proposed and practiced by Fricke, of Hamburg, in 1832. In 1835, he reported to the French Academy of Medicine four cases, three of which ended successfully. In 1839, Dr. Eli Geddings, of Charleston, S. C., performed the operation four times, two of his cases, certainly, and all, probably, ending successfully. Two were lost sight of at an early period. After this, attempts at the procedure, which proved failures, were made by Scanzoni (four times), Roux, Velpeau, Simon, Stoltz, and Malgaigne.

The operation consists in paring the edges of the labia majora, removing the labia minora, and uniting the vivified surfaces by silver sutures. I cannot lay the steps more clearly before the reader than by giving the account of a successful case by Dr. Schuppert, of New Orleans. His operation was performed for complete closure of the vulva, and extended higher up than would be necessary in the kind of case we are considering.

"The woman was placed on her knees, whilst her abdomen, chest, and head were supported by pillows. In paring the inner part of the labia majora, removing the nymphæ to a level with the denuded surface of the labia majora, and vivifying a circular part of the entrance of the vagina to an extent of two centimetres, I had obtained a surface which, when agglutinated, would measure from four to five centimetres in depth. Entering now the long flexible needle from outside the lower vivified border of the right labium majus, in a horizontal line with the meatus urinarius, I thrust it in and back through the tissues, till its point came out in the centre of the posterior wall of the urethra, just above the meatus urinarius. A silver wire was then introduced into the eyehole of the needle and the latter withdrawn, leaving the other end of the wire in the vagina. The needle freed from the thread, was then inserted again in the left labium majus in a correspond-

ing place with that of the right labium, thrust through the tissues, and brought out at the same point where the wire was hanging out of the urethral wall. This end of the wire was now carried through the eyehole of the needle. In withdrawing the latter, I had formed a loop which, when tightened, would include a depth of at least four centimetres. Three sutures were in this manner applied, each of them going through the posterior wall of the urethra. The other four sutures were placed at proper distances, reaching on each side above the denuded surface of the vagina. All the sutures were then secured outside the labia majora, over broad leaden clamps, by perforated shot."

But if prolapsus uteri have occurred, or even a marked degree of vesical or rectal displacement, the operation of elytrorrhaphy, or diminishing the calibre of the vagina, is the only procedure upon which reliance can be placed. This operation will be fully described in connection with prolapsus uteri.

CHAPTER X.

FISTULÆ OF THE FEMALE GENITAL ORGANS.

Definition.—As a result of certain traumatic and morbid processes, the continuity of the vaginal and uterine walls may be destroyed and communication established with adjacent viscera. To the tracts or passages thus opened, the name of fistulæ has been given.

Varieties.—These communications connect the vagina or uterus with some viscus in immediate proximity, for the natural outlet of which they act vicariously, or with some neighboring part, as the peritoneum, the vulva, or the pelvic areolar tissue. Their varieties have received the following descriptive appellations:

Urinary Fistulæ.

Vesico-vaginal fistula;
Urethro-vaginal fistula;
Vesico-utero-vaginal fistula;
Vesico-uterine fistula;
Utero-uterine fistula.

Fecal Fistulæ.

Recto-vaginal fistula;
Entero-vaginal fistula;
Recto-labial fistula.

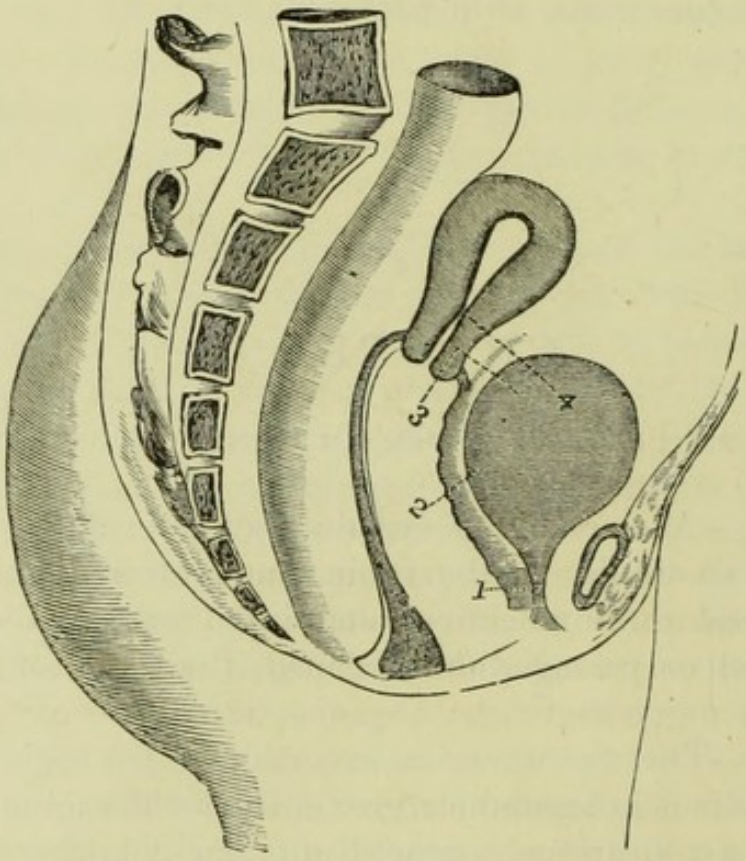
Simple Vaginal Fistulæ.

Peritoneo-vaginal fistula;
Perineo-vaginal fistula;
Blind vaginal fistula.

Urinary Fistulæ.

Urinary fistulæ may occur on any part of the anterior surface of the genital canal intervening between the vulva and fundus uteri. Fig. 39 displays the points at which they are usually observed.

FIG. 39.



Varieties of urinary fistulæ: 1. Urethro-vaginal fistula; 2. Vesico-vaginal fistula; 3. Vesico-utero-vaginal fistula; 4. Vesico-uterine fistula.

Vesico-Vaginal Fistula (2) is a communication between the bladder and vagina, either at the trigone or the bas-fond, which may involve only enough tissue to admit a small probe, or entirely destroy the vesico-vaginal wall. Such an opening may be oval, angular, elliptical, or linear in shape, and its borders may be thick or thin, soft or indurated, rough or smooth, pale or vascular.

Urethro-Vaginal Fistula (1) resembles that just mentioned, except in the fact that the destruction of tissue which has produced it involves the wall of the urethra, and not that of the bladder.

Vesico-Uterine Fistulæ (4) are those in which there is a direct communication between the bladder and uterus above the point of vaginal attachment. The vagina is consequently not involved, and the urine passing into the uterus escapes at the os.

Vesico-Utero-Vaginal Fistulæ (3) are those in the production of which a lesion occurs in both uterus and vagina, as is imperfectly shown by (3). At the vaginal junction there is a perforation of the bladder, but this does not penetrate to the cavity of the uterus. A canal is created in its wall, and through this the urine escapes into the vagina. The last two forms of fistulæ were first accurately described by Jobert, who made of the last, two varieties, superficial and deep. In the first a canal is channelled out on the vesical surface of the cervix uteri; in the second, the cervix is to a greater or less extent destroyed by the process of sloughing, and through it the urine passes. In the first form the lesion is chiefly vesical and uterine, the vagina not being much injured; in the other it affects three organs, the bladder, the uterus, and the vagina. All these forms of fistulæ have thus been grouped into classes by Dr. Bozeman:

1st Class. Those consisting in a communication between the urethra and vagina;

2d Class. Those established at the expense of the trigonus vesicalis;

3d Class. Those situated in the bas-fond of the bladder;

4th Class. Those involving the trigone and root of the urethra, the trigone and bas-fond, or all three of these parts together;

5th Class. Those implicating the cervix uteri.

In some cases, however, multiple fistulæ exist, and no special classification can be made.

Causes.—Any influence which is capable of destroying the continuity of the vaginal walls, either by mechanical, chemical, or vital action, would of course give rise to this condition. Those which are found in actual practice to have proved most commonly efficient, are the following:

1st. Prolonged or very severe pressure;

2d. Direct injury;

3d. Ulceration or abscess.

Pressure, which is more frequently a cause than any of the others mentioned, is generally produced by the child's head remaining too long in the pelvis during labor. This is beyond all doubt the most prolific source of the accident, though it may also attend a rapid labor in which the vagina has been pressed against some point of the pelvis with great violence. Such pressure produces sloughing of the part of the vagina receiving it, and at that spot a deficiency of tissue in future exists, which constitutes a fistula. The process of sloughing occurs from pressure of the fœtal head, exactly as a bedsore takes place in one who lies for too long a time in the same position, the sequence being, disturbed and retarded circulation, impaired nutrition, and local death. Or a puerperal vaginitis may be established, which runs a violent course, and may end in sloughing after several weeks' duration.

An involuntary flow of urine usually announces the existence of a fistula within three or four days after delivery, though when it is the result of injury inflicted by instruments employed in delivery, it may occur immediately. On the other hand, the separation of the slough, which will entail deficiency of tissue and its results, may not take place until much later, when perhaps all fears are allayed, and the case is regarded as progressing favorably. Jean Louis Petit records one case developing its symptoms after a month; Jobert one in which on the twenty-second day after delivery the slough was found at the mouth of the vagina; Adler, of Iowa, one in which after twenty-nine days the slough was only partially separated; and Agnew, of Philadelphia, another, in which it occurred on the twenty-first day.

Other agencies which may act in the same manner, but which have been rarely noticed, are pessaries, stones in the bladder, fecal accumulation, &c.

Direct injury may produce the accident by contusing or lacerating the vaginal walls, as may occur during delivery by the forceps or craniotomy. That these operations when carelessly or unskilfully performed may produce a fistula, no one will pretend to deny, but there can, with the evidence now recorded, be no doubt that they have often been credited with unfortunate results which were in reality due to tardiness in their employment. Very often, where a labor has been allowed to be prolonged in the second stage until the vitality of certain points in the vagina has become irremediably impaired, and the process of sloughing been already inaugurated, delivery by forceps or craniotomy has been regarded as producing fistula. Under such circumstances the real morbid

agency, prolonged and violent pressure, is lost sight of, and the more palpable agents, the instruments employed, are viewed as the source of the accident. The truth with reference to this point should be well understood by every practitioner, for unless it be so, an incompetent person may shield himself from merited blame by casting censure upon a consulting physician by whose efforts the lives of both mother and child have been saved, or a skilful operator may suffer unjustly in a suit for mal-practice.

In a report upon this subject by Mr. I. Baker Brown[1] to the Obstetrical Society of London, in 1863, the following statements are made; "With regard to the causes of vesico-vaginal fistula, of the 58 cases admitted into the London Surgical Home, 47 were over 24 hours in labor, and 39 were as much as 36 hours or more; 7 were two days; 16 were three days; 3 were four days; 2 were five days; 2 six days; and 1 seven days.

"In the whole number of cases instruments were used in 29, exactly one-half, and in 4 only of these was the labor less than twenty-four hours, and with seven exceptions the patient had been thirty-six hours or more in labor before instruments were used.

"Of the 58 cases, in 24 only the injury happened at the first labor; in 7 at the second; in 5 at the third; in 4 at the fourth; in 6 at the fifth; in 2 at the sixth; in 5 at the eighth; in 1 at the ninth; 1 at the thirteenth; 1 at the fifteenth; and 2 not mentioned."

"From the foregoing statistics it is evident that the cause of the lesion is protracted labor, and not the use of instruments or deformity of the pelvis."

"As a necessary deduction from what has been stated, it follows that vesico-vaginal fistula would scarcely if ever occur, if a labor were not allowed to become protracted; and this is a point for the careful consideration of practitioners in midwifery." The experience of Drs. Sims,[2] Emmet, and Bozeman[3] is confirmatory of that of Mr. Brown, and as the opportunities for observation enjoyed by these four practitioners have probably been as extensive as those of any living authorities, their evidence may be regarded as conclusive.

It is a curious fact that when for the relief of obstinate chronic cystitis a vesico-vaginal fistula is intentionally created by the

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[1] Obstet. Trans., vol. v, p. 23.

[2] Gardner's Notes to Scanzoni, p. 503.

[3] Agnew, Vesico-Vaginal Fistula.

knife it is difficult to keep it open. In spite of the occasional introduction of the sound for this purpose, such openings obstinately heal of their own accord, so that Dr. Emmet informs me that he has been induced to place a species of button or stud in the opening to prevent an issue, which, under these circumstances, is undesirable. This case seems parallel with that of perforation of the tympanum, which, being effected by an instrument, heals rapidly; while the closure of an opening, the result of disease, becomes impossible.

About thirty years ago Dieffenbach[1] recorded a case of vesico-vaginal fistula, the cause of which had been the presence of a stone in the bladder, complicating labor; and Baker Brown[1] mentions another instance of this kind in 1861.

Ulceration or Abscess.—The vaginal walls may be eaten through by cancerous, syphilitic, or phagedenic ulcers, or a communication may be established by an abscess opening into the vagina and into a neighboring viscus or part. In one case I found, in the autopsy of a woman who had died from a profuse diarrhœa, in which the fæces had passed by the vagina, a communication created by abscess between the caput coli and that canal.

Cancerous disease often destroys the vesico-vaginal septum, but as these fistulæ are irremediable, and attend upon a rapidly fatal disorder, they attract little attention in themselves. Lastly, certain diseases producing deficiency of nutrition, as, for example, the continued fevers, may cause sloughing of the vaginal walls or phagedenic ulceration.

Symptoms.—The prominent symptoms and signs of urinary fistulæ may be grouped under three heads: first, those furnished by a characteristic discharge; second, those arising from the irritant action of such discharge upon the part over which it flows; and third, those afforded by physical examination.

Sometimes the escape of urine is so excessive as to preclude the necessity of a discharge *per vias naturales;* at others the excretion is partly evacuated by the natural and partly by the vicarious outlet. This symptom shows at times eccentric variations. When the fistula is seated in the urethra the bladder may be distended without loss, which may take place into the vagina during micturition. Sometimes while in the horizontal posture the escape will cease, the anterior vesical wall being pressed by the intestines against the bas-fond so as to close the opening, and in other cases,

[1] Med. Record, vol. i, p. 321.

where the fistula is above the orifice of the ureters, the flow will take place while the patient lies, and cease when she stands.

The passage of excrementitious material through a canal and over a tissue not intended by nature to tolerate it, produces inflammatory action, pruritus, eruptions, and excessive irritability. In urinary fistulæ the vulva and thighs are usually red, excoriated, and covered by a vesicular eruption. The vagina is sometimes covered by urinary concretions, and from the patient's body emanates a highly offensive odor, which, to one accustomed to seeing the condition, is often sufficient for purposes of diagnosis.

The general health of the patient is very likely in time to give way, and hysteria, chlorosis, and graver disorders, often show themselves.

Physical Signs.—If the fistulous orifice be a large one, even a superficial examination by touch, the patient, lying upon her back, will generally serve to reveal the nature and extent of the lesion. It is different, however, with very small fistulæ, which will sometimes elude the most careful investigation. For their detection Sims's speculum should be employed, and in many cases it will be found advisable to place the woman in the knee-elbow position, instead of that on the side, before its introduction, and to have the buttocks and labia pulled apart by the hands of assistants. Even this method is not effectual in revealing the opening if it be very minute. Under these circumstances the bladder should be injected with water, and its escape into the vagina carefully watched for. Sometimes, by this means, a capillary opening, just at the junction of the vagina and cervix, will be detected. Kiwisch, Meyer, Veit, and others have used for this purpose water colored with substances which will impart a bright tinge to it. Infusions of cochineal, madder, or indigo, may be thus employed. The opening being once detected, the probe and finger will readily reveal the course, extent, and terminus of the tract.

Complications.—The complications which these fistulæ develop are vaginitis, vulvitis, stricture of urethra and vagina, and sometimes endometritis and periuterine inflammation. The most constant and important of these is the formation of bands, which contract the vagina, and which often require severance before operative procedure can be practiced.

Prognosis.—Previous to the year 1852, the prognosis of all cases in which the orifice acted as a vicarious outlet, for example, vesico-vaginal, recto-vaginal, and vesico-utero-vaginal fistulæ, was eminently unfavorable, for they very rarely undergo spontaneous recovery, and the means of cure at our command up to that time were uncertain and full of discouragement. In 1860, Dr. Sims[1] stated, "Of 261 cases of vaginal fistula (vesical and rectal) 216 have been permanently cured by the silver wire suture, 36 are curable, and 9 incurable. Every case is curable when the operation is practicable, provided there is no constitutional vice to interfere with the powers of union. Success is the rule, failure the exception."

The enlarged experience of the profession has fully corroborated these assertions, made eleven years ago, and it may now be accepted as a true statement as to the prognosis of all fistulæ of the female genital organs except cases of vesico-uterine fistula, in which the point of rupture is out of reach of surgical interference.

History.—The history of this subject dates back only to the sixteenth century, when attention was called to it, and a plan of treatment proposed by Ambrose Paré. Before the discovery of the forceps, the accident must have been one of very frequent occurrence, for then powerless labor was not under the control of the obstetrician, except by resort to a set of badly-constructed instruments for craniotomy, which in themselves presented serious dangers of laceration. The symptoms which mark its existence are so palpable and distressing that it does not require a physician to diagnosticate it, and no case of any gravity could have escaped notice. And yet, curious to relate, there are few diseases to which woman is liable, which have received so little notice at the hands of the ancients. Even pelvic cellulitis and other affections, which have but lately attracted attention from the physicians of our day, are distinctly spoken of by the writers of the Greek school; but this one, so annoying, so destructive of happiness, and so urgent in its demands for relief, has received scarcely any mention. It is true that Hippocrates makes some slight allusion to involuntary discharge of urine following difficult labors, but his remarks upon the condition are meagre and unimportant.

I do not claim to have made a full examination of the writings

[1] Gardner's Notes to Scanzoni, p. 515.

of the Greeks and Romans with reference to the subject, but base the statement which I have advanced chiefly upon the fact that the two great compilers of their periods, Aëtius and Paulus Ægineta, make no mention of it. The work of Aëtius upon diseases of women (Tetrabiblos IV) is made up of quotations from Soranus, Aspasia, Galen, Philumenus, Archigenes, Leonidas, Rufus, Philagrius, Asclepiades, in fact of all worthy of note, whose writings were stored in the Alexandrian Library, which was the seat of his labors. By none of these is mention made of the affection. The works of Paul of Ægina, enriched as they have been by the copious notes of Dr. Adams, their translator, are equally silent; and the researches of those who have examined the writings of the Arabians record no discovery of any description of it at their hands. At any rate, it is quite certain that no contributions to the treatment of the difficulty were made by the writers of the Greek, Roman, or Arabian schools.

Beginning at the seventeenth century, I will allude only to those who have made some advance in treatment, and not endeavor to record the names of all who have reported cures, or advised procedures which have not been of subsequent utility.

Before proceeding with the historical sketch which ensues I would draw the attention of the reader to two interesting facts which it will demonstrate. It will be seen that for centuries steady, persevering, and systematic efforts have been made to render this revolting malady curable, and that, as has so often been the case in other great discoveries, the minds of several investigators pursued the same course until at last success was reached. After a discovery has been made it is always easy to point out the elements upon which it rests for its success, and even to follow the process of reasoning by which each in turn was supplied. There can be no doubt that the three elements necessary for successful treatment of the lesion which we are considering, were:

1st. A means for exposing the fistula to view and manipulation;

2d. A suture which would remain in place without causing inflammation;

3d. A means of disposing of the urine during the process of cure.

From the time that Paré suggested a plan of treatment, it will be noticed that surgeons brought these three means of cure to their aid. But they employed them separately, some using one of them, some another, and others still, combining two. It was not, how-

ever, till the time of Gosset, in 1834, that the three were combined by the same operator.

In 1570, Ambrose Paré proposed the closure of vesico-vaginal fistulæ by a retinaculum. In 1660, Roonhuysen, of Amsterdam, used a speculum, through which he pared the edges of fistulæ, and united them by a needle. In 1720, Vœlter, of Wurtemburg, advised a needle, needle-holder, suture by silk or hemp, and a catheter. In 1792, Fatio of Basle, operated by twisted suture placing his patients in the lithotomy position. In 1804, Dessault used a vaginal plug and catheter in the bladder. In 1812, Naegelé, of Wurtemberg, scarified the edges by scissors, used needles to approximate them, and employed the interrupted suture. In 1817, Schreger, of Germany, placed the patient on the abdomen, scarified the edges and used interrupted suture. In 1825, Lallemand, of France, applied nitrate of silver to the edges of the fistula, and approximated them by a "sonde érigne" passed through the bladder, and, of fifteen cases, cured four. In 1829, Roux, of France, tried twisted suture with metallic bars and ordinary thread. In 1834, Gosset, of London, combined the knee-elbow position, levator perinei speculum, metallic sutures, and catheter permanently kept in the bladder. In 1836, Beaumont[1] employed the quilled or clamp suture. In 1837, Jobert de Lamballe resorted to autoplasty, transplanting a piece from the labia, buttocks, or thighs. In 1838, Wutzer, of Bonn, placed his patients on the abdomen, pared the edges of the fistula, and approximated them by insect needles and figure of 8 suture. To expose the fistula the perineum was held up by a hook and the labia drawn aside by assistants. In 1839, and 1840, Hayward, of Boston, U. S., reported three cases cured by vivifying the edges and closing with silk suture. This surgeon introduced a notable improvement, and aided in the final success by vivifying not only the borders of the fistula but the neighboring vaginal surfaces. In 1844, Chelius[2] placed his patients in the knee-elbow position. In 1846, Metzler,[3] of Prague, employed the levator perinei speculum, perforated balls the size of shot, the knee-elbow position, gilded needles, and a permanent catheter. In 1847, Mettauer, of Virginia, employed the catheter and leaden sutures with such success that he was led to make the following statement: "I am decidedly of the opinion that every case of vesico-vaginal fistula can be cured, and my success justifies the opin-

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[1] Med. Gaz., Dec. 3d, 1836, p. 355.
[2] Agnew, op. cit., p. 15.
[3] Schuppert on Ves.-Vag. Fistula, p. 41.

ion." In 1852, Jobert de Lamballe adopted his method styled "réunion autoplastique par glissement," which consisted in giving sufficient vaginal tissue for union, by cutting transversely through the vagina, at its junction with the uterus, in a line with the fistula. In 1852, Marion Sims,[1] of the United States, combined the three essentials for success, the speculum, the suture, and the catheter, and placed the operation at the disposal of the profession.

The discoveries to which he laid special claim were these:

1st. A method by which the vagina could be distended and explored;

2d. A suture not liable to excite inflammation or ulceration;

3d. A method of keeping the bladder empty during the process of cure.

From a study of the literature of this subject it is made as evident as written testimony can make any history of the past, that not only did several investigators combine two of these elements of success in their operations, but that two, Gosset, in England, and twelve years afterwards Metzler, in Germany, absolutely combined all three. It is also made equally evident that they either failed to recognize the importance of what they had attained, or did not impress its value upon others, so that humanity could profit by it. Dr. Gosset's procedure is thus described in his own words in the first volume of the London Lancet, page 346.

"Having placed the patient resting upon her knees and elbows, upon a firm table of convenient height covered with a folded blanket, the external parts were separated as much as possible by a couple of assistants, so as to bring the fistula, which was immediately above the neck of the bladder, into view. I seized with a hook the upper part of the thickened edge of the bladder which surrounded the opening, and proceeded with a spear-shaped knife to remove an elliptical portion, which included the whole of the callous lip surrounding the fistula, the long angle of the ellipsis being transversely. This was readily effected; but, in consequence of the very contracted state of the parts, the next steps of the operation were with difficulty executed; and I should not have succeeded in passing the sutures, had I not used needles very much curved, and a needle-holder which I could disengage at pleasure, the needles being withdrawn with a pair of dissecting forceps after

[1] Amer. Journ. Med. Sci., 1852.

the holder was removed. In this way three sutures were passed; and afterwards, by twisting the wire, the incised edges were brought into contact and retained in complete apposition until they had firmly united. One of the sutures was removed at the end of the ninth day, the second at the end of the twelfth day, and the third was allowed to remain until three weeks had elapsed. After the operation the patient was put to bed and desired to lie on her face, an elastic gum catheter, having a bladder secured to its extremity for the reception of the urine, having been introduced and retained by means of tapes. She had not the slightest discharge of urine through the vagina after the operation, which completely succeeded in restoring the healthy functions of the part. The advantages of the gilt wire suture are these: it excites but little irritation, and does not appear to induce ulceration with the same rapidity as silk or any other material with which I am acquainted; indeed, it produces scarcely any such effect, except when the parts brought together are much stretched. You can, therefore, keep the edges of a wound in close contact for an indefinite length of time, by which the chances of union are greatly increased. I have used it now in very many operations, as after extirpation of the breasts, tumors of various kinds, and for bringing the lips together after the removal of a cancerous growth, in all of which cases it answered extremely well."

The method of Metzler was published in the Prague Viertel Jahresschrift for 1846, under the title of "Pathology and Treatment of Urinary and Vesico-Vaginal Fistulas, with a method of treatment easily executed and completely successful." I transcribe his article from the brochure of Dr. Schuppert already alluded to.

"To perform the operation successfully, it is of much importance to have—1st, a speculum, serving as a dilator of the vagina. Such an instrument consists of a grooved conical blade, five and a half inches long, three inches wide at the anterior part, one-half of an inch wide at the posterior. The end of the speculum is bent under at a right angle, and protected with wood for the handle. The instrument is best when made of silver, and polished to reflect the light on the parts to be operated upon. 2d, an apparatus consisting of perforated clamps, gilded needles, and an instrument called 'Rosenkranzwerkzeng,' consisting of perforated balls of the size of large shot, by which the clamps are held in contact. After the patient is placed on her knees and elbows, the dilator is introduced into the vagina and given to an assistant, who in

holding it presses it against the rectum. The edges of the fistula are then pared off, which may be accomplished with curved scissors. One line and a half from the mucous membrane of the vagina and half a line from the edge of the bladder have to be cut off; the needles are then applied, and the wound held in coaptation by the clamps; a female catheter is introduced into the bladder by the urethra, and the catheter fastened by a T bandage."

From what has been said thus far it would appear that Dr. Sims was forestalled in all the details of the discovery by which he has rendered vaginal fistulæ curable. To a certain extent this is unquestionably true, but only as regards the theory of the matter. Before his publications the unfortunate women, whose lives were rendered miserable by fistulæ through the vaginal wall, were virtually almost as hopelessly affected as they were before Gosset and Metzler appeared in the field.

Velpeau,[1] in 1839, thus speaks of cure of these fistulæ: "To abrade the borders of an opening, when we do not know where to grasp them; to shut it up by means of needles or thread, when we have no point apparently to secure them; to act upon a movable partition placed between two cavities, hidden from our sight, and upon which we can scarcely find any purchase, seems to be calculated to have no other result than to cause unnecessary suffering to the patient." Vidal de Cassis[2] says: "I do not believe that there exists in the science of surgery a well-authenticated complete cure of vesico-vaginal fistula." Malgaigne,[3] in 1854, says: "But the truly rational method, that which at present offers the greatest facility and efficacy, and the only one which should be applied in all cases of fistula of large size, is the suture by the procedure of Jobert."

Wutzer reported the following as the statistics which he had collected:[4] "20 cases of vesico-vaginal fistula were subjected to 48 operations—among which were elytroplastie, epissoraphie, cauterization, sutures, interrupted or twisted, and both—and only two cured!"

This was the real state of science with reference to this *opprobrium chirurgiæ* when Marion Sims, by combining and utilizing the three essentials for success, gained it, and rendered the operation practicable for all surgeons. It must not be supposed that he availed himself of the results obtained by his predecessors. All that he attained was arrived at by hard and original labor.

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[1] Operative Surgery.
[2] Pathologie Externe.
[3] Manuel de Méd. Opérat.
[4] Med. Record, vol. i, p. 322.

Indeed, no one can read his address upon "Silver Sutures in Surgery," delivered before the New York Academy of Medicine, in 1857, without being struck by his want of familiarity with the antecedent literature of the subject of his discourse.

Since the first publication of Sims's method, numerous modifications of it have been put into practice both in this country and Europe, and Dr. Sims himself has altered his plan of operating very much. The principle which he demonstrated is, however, the same, and the modifications of the operation all act in developing it.

Means for Obtaining a Natural Cure.—Within a few days after delivery the obstetrician is generally made aware of the existence of vesico-vaginal fistula by a steady and involuntary dripping of urine. As soon as this is evident a Sims's stationary catheter should be placed in the bladder, the vagina frequently syringed out with warm water to lessen inflammatory action, and the patient kept perfectly quiet in order that a repair of the injury may be accomplished by the efforts of nature. This is all that can be done at this time, for it is too early to resort to suture, and the lochial discharge would be interfered with by a tampon intended to aid in the cure. The operation by suture should not be undertaken before the immediate results of parturition have passed off and the fistula has assumed a permanent size and character.

Treatment.

The methods at our command for curing, or, where cure is impossible, obviating the inconveniences due to fistulæ of the female urinary apparatus, are—

1st. Cauterization;
2d. Suture;
3d. Elytroplasty;
4th. Occlusion of the vagina or uterus.

Cauterization.

This once favorite method of treating all varieties of these fistulæ has now almost entirely fallen into disuse under the influence of improved methods by suture. Malgaigne probably gives this means its proper place when he declares that it should be employed only in those cases where the fistula is scarcely perceptible. Even in such cases Sims's operation is far preferable, and cauter-

ization should be employed only where some special circumstance, such as want of skill or of the proper instruments, forces the operator to resort to it. The performance of it is very simple. Sims's speculum being passed so as to expose the fistulous spot, its borders should be thoroughly touched with a pointed stick of nitrate of silver or the actual cautery. This should not be repeated before the slough created has separated, and an opportunity been allowed for granulation to fill up the opening.

To check the flow of urine through the fistulous orifice and support the vaginal and vesical walls during the process of granulation, a small tampon of cotton, a Gariel's air pessary, or a glass vaginal plug, like that delineated at Fig. 34, should be kept in the vagina, and, to prevent distension of the bladder, a sigmoid catheter should be permanently retained.

Suture.

Preparation of the Patient.—No operation in surgery more urgently demands a good constitutional condition, as an element of success than this. Should the patient's health not be good, and her blood-state be abnormal, a visit to the country, exercise, and fresh air, with vegetable and mineral tonics, will do a great deal towards avoidance of failure. At the same time the vagina should be regularly syringed with warm water to overcome local inflammation, and insure cleanliness. Should the disorder which caused the destruction of the vaginal wall have produced as a complication cicatricial bands in the canal, these should be cut, from time to time, and allowed to heal over a glass vaginal plug, and if contraction have taken place in the urethra, it should be overcome by bougies. Before the time of the operation the bowels should be thoroughly emptied by a cathartic, and on the day of its performance very little food should be taken, for fear that the long-continued use of an anæsthetic might produce vomiting, which would tear out the sutures.

Sims's Operation.—This operation may be divided into three parts:

1st. Paring the edges of the fistula;
2d. Passing sutures through them;
3d. Approximating them and securing the sutures.

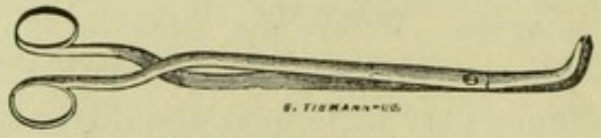
The patient being placed upon a table two and a half by four feet, which is covered by folded blankets, is brought under the influence of an anæsthetic, and placed in the following position.

She is made to lie on the left side, with the thighs bent at about right angles with the pelvis, the right a little more flexed than the left. The left arm is placed behind her back, and the chest brought flat down upon the table so that the sternum may touch it. The assistant who is to hold the speculum, which is now introduced, does so with the right hand, while with the left she elevates the right side of the nates. The table should be so arranged that a bright and steady light may fall into the vagina, which being now fully distended, will be seen throughout its extent, except where it is obscured by the speculum.

The operator having near him all the instruments, &c., which he will require, places his assistants thus: one holds the speculum, another administers the anæsthetic, and a third stands ready at his right hand to remove the blood accumulating in the vagina, by means of sponges, in the sponge-holders, Fig. 44, which are rapidly washed in a basin of water that stands by his side, to be used again. A fourth assistant, if attainable, may be well employed in handing the instruments as they are required. All being ready, he now proceeds with the first step of the operation.

Paring the Edges of the Fistula.—The edge of the fistula at the point which is deemed most difficult of access and manipulation, is caught by the tenaculum and held up. Then with a pair of long-handled scissors, Fig. 40, or a knife, Fig. 41, a strip is cut, extending from the mucous membrane of the bladder to that of the vagina, care being taken not to wound the former.

Fig. 40.



Long-handled scissors.

Fig. 41.



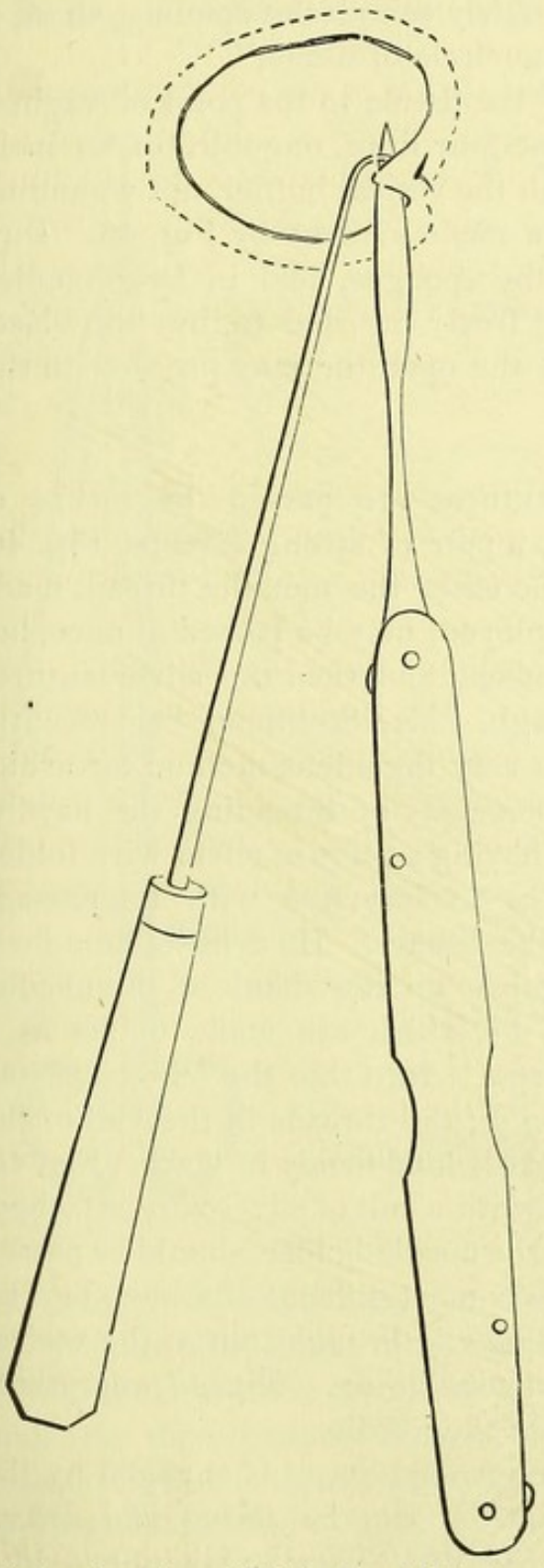
Bistoury for paring edges of fistula.

Another portion of the edge is then seized, and removed like the first. The wound thus left should be one bevelled from the vesical surface outwards, and great care should be observed to remove the entire border, for upon this, success depends.

It is of great moment that sufficient tissue should be removed,

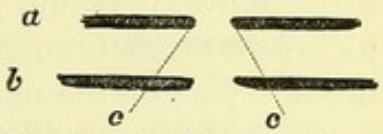
and that the amount taken on the vaginal surface should be greater than that near the vesical. Prof. Simpson[1] makes this point very

Fig. 42.



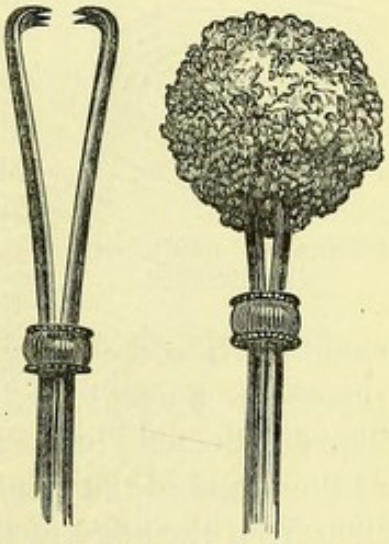
Paring the edges. (Wieland and Dubrisay.)

Fig. 43.



Showing bevelling of edges. *a*, vesical border; *b*, vaginal border; *c c*, incision.

Fig. 44.



Sims's sponge-holder with handle nine inches long. (Sims.)

clear by the following language: "Enter the point of your knife

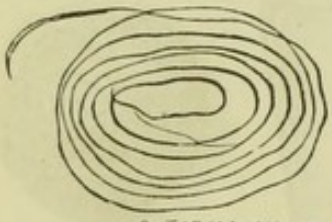
[1] Diseases of Women.

into the vaginal mucous membrane at some distance from the fistula; then transfix with your knife the edge of the fistula to the extent you intend to remove it, and bringing it out at the vesical border, carry it right and left fairly round the opening, so as, if possible, to bring out a complete circle of tissue."

The tissue, from the edge of the fistula to the point of vaginal section, should measure at least four lines, one-third of an inch, while above, it should just touch the vesical border, not wounding its mucous membrane. This is made evident by Fig. 43. During this part of the operation the sponges, held in long-handled sponge-holders, will have to be freely resorted to, but the bleeding generally soon ceases, and the operator may proceed to the second step.

Passing the Sutures.—The sutures are passed by means of slightly curved needles held in a pair of strong forceps, Fig. 46, made for the purpose. In some cases the metallic thread, made of annealed silver, which is employed, may be passed at once, but usually silk threads are first passed, and then the silver sutures are attached and drawn through. Mr. Stohlman has recently adopted a very ingenious method for avoiding the necessity of threading the needle, and thus having a piece of silver wire folded over so as to interfere with its passage through the tissues. He drills a hole for a short distance up the shank of the needle, the walls of which are made to act as a female screw. Into this the wire is passed by turning it; the threads in the wall of the canal cut into the soft wire, and it is held firmly in place. Fig. 45, represents a needle of this kind with a roll of silver wire attached. The needle, held in the grasp of the needle-holder, should be passed at the angle of the wound which is most difficult of access, half an inch from the edge of the incision, and brought out at the vesical surface, but not involving its mucous lining. Fig. 47, represents the points of entrance and exit of the needle.

Fig. 45.



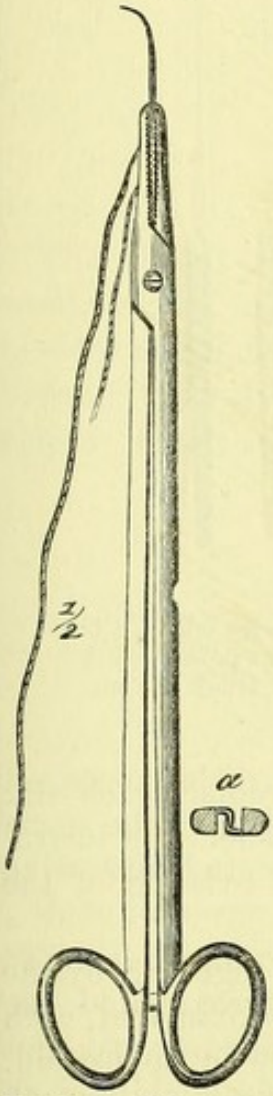
Stohlman's needle with wire attached.

The point of the needle having passed out, it is engaged by the small, blunt hook, Fig. 53, until it can be seized and drawn through by the needle forceps, Fig. 49. Then it is plunged into the other lip and drawn out half an inch from the edge of the incision. The ends of the silk suture are now given into the charge of the assistant holding the speculum, and another is passed

in the same way at the distance of one-sixth of an inch from the first. In this way a sufficient number are passed to close the fistula, Fig. 50.

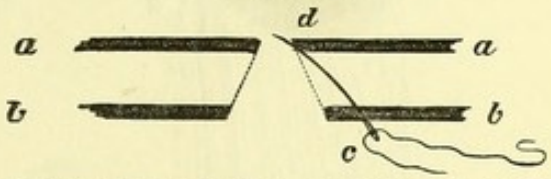
During this procedure the edge of the fistula is to be fixed by

Fig. 46.



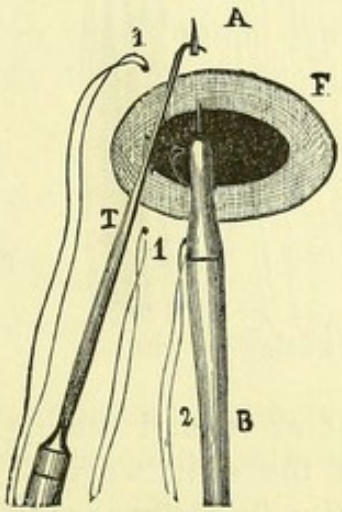
Needle held in forceps.

Fig. 47.



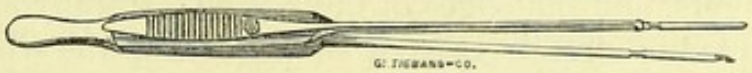
Course of the needle. *a*, vesical border; *b*, vaginal border; *c*, point of entrance of needle; *d*, point of exit of needle.

Fig. 48.



Passing the needle. (Wieland and Dubrisay.)

Fig. 49.



Forceps for drawing needle.

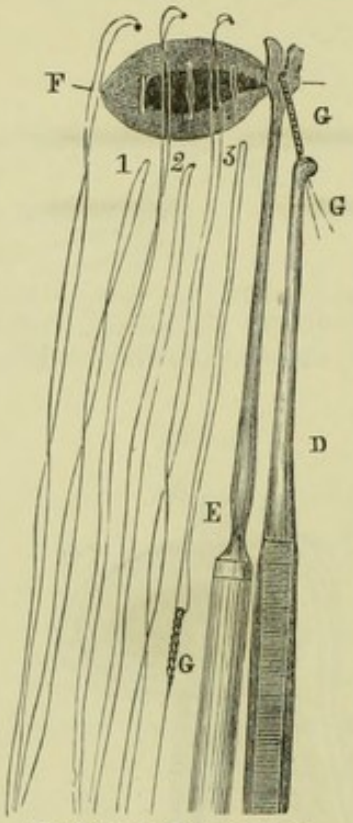
the tenaculum, and should firm, opposing force be needed to make the needles pass, it may be given by that instrument.

When the needle is seized by the forceps and pulled so as to make the thread follow it, some opposing force is needed, or the thread might cut through the tissues. This force is offered in the species of fork represented in Fig. 52, which is put as a fulcrum under the thread at its point of exit, and made to sustain and draw it through.

A bit of silver wire about twelve inches long is attached, by bending its extremity, to the first silk suture, and by the use of

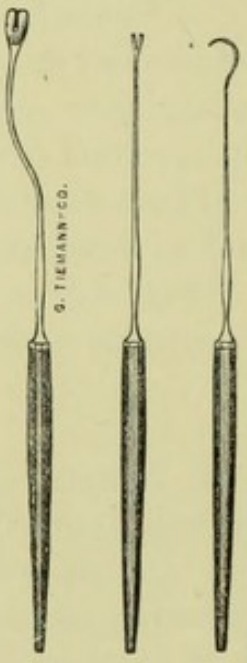
the fork just mentioned, the silk thread is drawn through so as to make the wire replace it. The silk is then cut off, the silver

Fig. 50.



Twisting the sutures.

Figs. 51, 52, 53.



Fulcrum for supporting wire while it is twisted. Fork with blunt points to aid the passage of sutures. Hook for engaging needle.

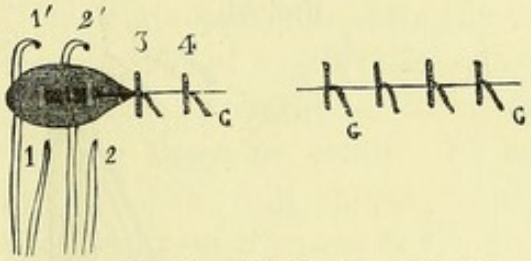
suture put aside, and the operator proceeds to replace each silk thread in the same way. This being accomplished, the instruments are now changed in order to effect the twisting of the sutures.

The ends of the silver sutures being drawn together by the fingers, and the edges of the wound carefully approximated, each thread is slightly twisted so as to keep the whole in apposition. Then the ends of the first suture are seized in the bite of the forceps, Fig. 49, slipped into the fulcrum, Fig. 51, and torsion is made so as to close the wound completely at this point. In this way the sutures are, one after the other, twisted, care being taken not to carry the torsion so far as to strangulate the tissues engaged in the constricting loop. Each suture is now clipped by a pair of scissors, about half an inch from the edge of the fistula, and by means of forceps pressed flat against the vaginal wall so as not to wound the opposite surface.

The bladder should then be syringed out to remove all blood which may have accumulated there; for if a large clot should be retained in this viscus, it may cause severe vesical tenesmus, and

smaller ones may block up the mouth of the catheter, which is to be kept in place permanently, and call for its repeated removal.

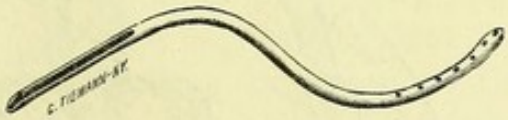
Fig. 54.



Sutures twisted. (Wieland and Dubrisay.)

The patient is now placed in bed by the assistants, an opiate is administered, and a Sims's sigmoid catheter is passed into the bladder and left there. The mouth of this instrument projects beyond the vulva, so that under it a small china dish may be placed, which will receive the urine as it passes through.

Fig. 55.



Sims's sigmoid catheter.

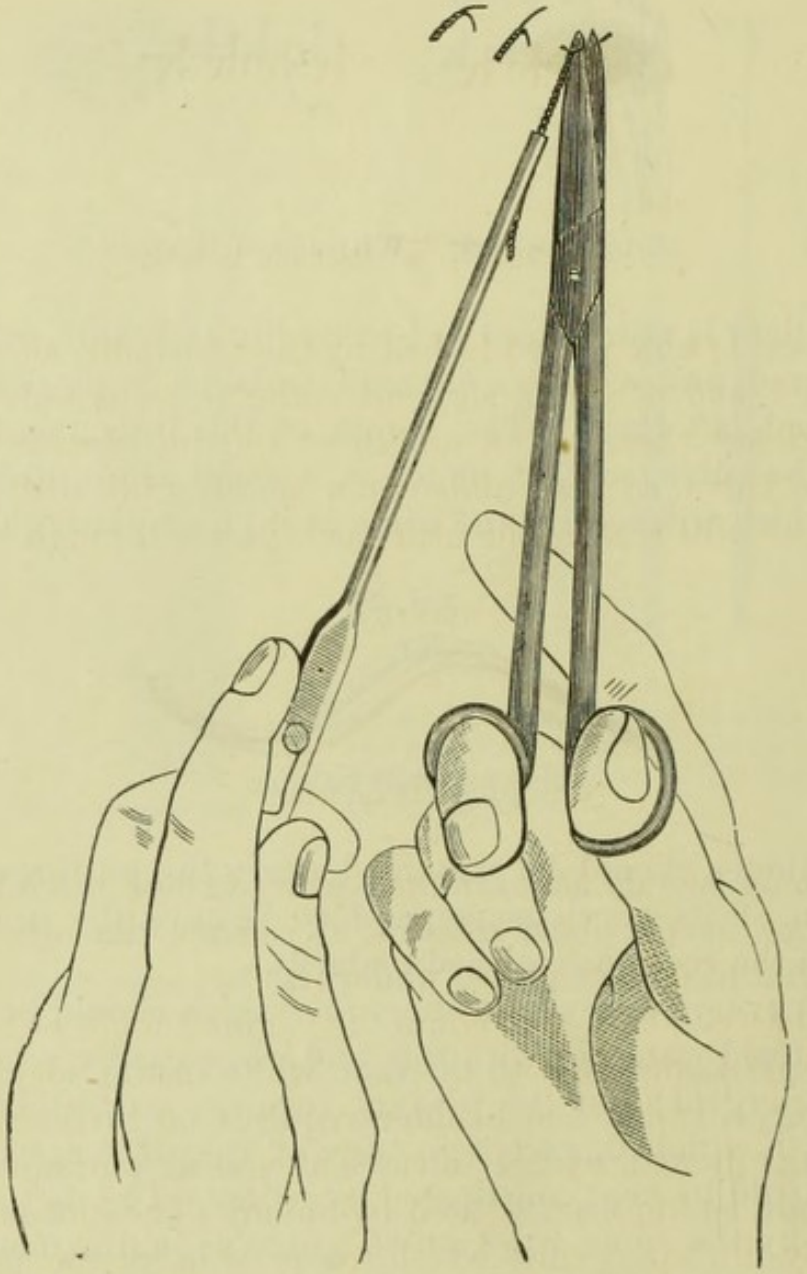
The catheter should be examined every two or three hours to be certain of its perviousness, and to remove the urine which collects in the receptacle placed under it.

Once in every twenty-four hours the vagina should be syringed out with tepid water, or with this and white castile soap, or any similar detergent; but the bladder requires no further washing than that mentioned, except in cases of vesical tenesmus. The bowels should be kept constipated by opium. The diet should be governed by the same rules which guide us in the management of patients under other surgical operations. It should be nutritious and unstimulating.

In from eight to fourteen days the sutures should be removed. Dr. Sims declares that "it is unnecessary to allow the wires to remain longer than the eighth day;" but others, calculating upon the innocuousness of metallic substances in the tissues, have left them longer. In two of Dr. Schuppert's cases a leaking was detected when the bladder was injected on the sixth and seventh days, which had disappeared entirely on the twelfth, when the sutures were removed and the cure was found complete.

To accomplish the removal of the sutures, the twisted end of one of them should be seized by a pair of forceps and drawn upon gently until the edge of the loop emerges from the tissues

FIG. 56.



Removal of the sutures. (Sims.)

in which it has been imbedded. Then the blade of a pair of scissors should be inserted into the loop and one side cut, after which a little traction will remove the suture.

An examination may then, with great caution, be instituted to ascertain whether success or failure has attended the operation. A visual examination will generally determine this. Should there be any doubt, the bladder may be filled very cautiously with tepid water to settle the question as to the entire closure of the fistula.

Sometimes one operation fails to cure, although it diminishes the size of the fistula very much, and subsequent operations must be resorted to. It may be necessary to repeat these very frequently before success is attained.

The operation of Dr. Sims has been variously altered in all its steps, so that now the number of modifications is quite numerous, —so numerous, indeed, that it would be out of the province of a work like this to mention them in detail. In his earlier operations Dr. Sims employed the quill suture, which he called the clamp suture, but a tendency on the part of the little metallic bars, which he used in place of quills to produce ulceration, induced him to resort to the interrupted suture.

Four years after the publication of Sims's method, Dr. Nathan Bozeman, of Alabama, now of this city, proposed a method which he regarded as an improvement upon it, and which he styled the "button suture." It may not be out of place to state here that, judging from the written testimony bearing upon this subject, Dr. Bozeman acknowledged the priority of the claims of Dr. Sims, and accorded him the credit of developing the principle upon which the cure in these cases is effected. But finding the clamp, which had up to that time been employed by Dr. Sims, open to a number of objections, he proposed a modification which he supposed would obviate them. In announcing his method, he says:

"I do not wish to be understood as attempting to detract from the great credit due from the profession and the public to Dr. Sims for his untiring perseverance in bringing his method to its present high state of perfection. I consider that this gentleman is fully entitled to more than all the praise that has been bestowed upon him both in America and Europe. To the honor of his professional brethren in this country it may be stated that no one has been found who has not gladly accorded to him the high distinction that he at present occupies."[1]

Bozeman's Operation.—"The edges of the fistule having been pared, the wire sutures are to be lodged in their respective places in the usual way, by attaching them to the ends of silk ligatures previously carried by means of a needle through the septum from one side of the fistule to the other. But in connection with this step of the operation, there is some difference between Dr. Sims's procedure and my own. In the first place I do not usually take

[1] Louisville Review, January, 1856.

so firm a hold of the tissues, the space between the entrance of the needle and the edge of the fistule rarely if ever exceeeding half an inch, and it matters not whether the parts be indurated or not, the wire is not likely to cut out very soon. Secondly, it is not necessary to observe the same scrupulous care in entering and bringing out the sutures upon an exact line with each other; for, as will be hereafter understood, each one is in its action entirely independent of the others. Thirdly, instead of being obliged always to place the sutures parallel with each other, I have it in my power, if the peculiar nature of the case indicate, to insert them in any direction, and am thus enabled to bring within the sphere of successful treatment a large class of cases, which, owing to the irregular shape of the fistule, and the scarcity of tissue not admitting of extensive paring, cannot be subjected to the clamp suture.

Fig. 57.



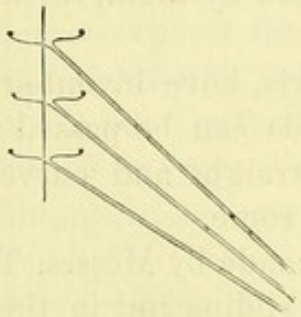
Bozeman's suture adjuster.

"The next step in the operation is to draw the raw edges closely in contact by bringing the opposite ends of each wire together. This may be readily accomplished with an instrument which I have invented for the purpose, and call the *suture adjuster*. It consists simply of a steel rod, fixed in an ordinary handle, its distal extremity flattened, perforated, and raised upon one side into a kind of knob, as represented by Fig. 57. The opposite ends of each suture are to be passed through the aperture in the end of the adjuster from the convex toward the flat surface, and while the former are held firmly between the forefinger and thumb of the left hand, the latter is carefully slipped down upon the wires until it comes closely in contact with the tissues. In this way the edges of the fistule are gently forced together, and, for the time being, the stiffness of the wire prevents their separation. Should it be found, however, that accurate coaptation does not take place, owing to the imperfect manner in which the edges have been pared, the sutures may be readily loosened, and the defect remedied without the necessity of withdrawing the wires. The appearance of the parts after all the sutures have been adjusted is faithfully represented in Fig. 58.

"A button of suitable shape and size having been previously provided, is now to be placed upon the wires (Fig. 59), its concave

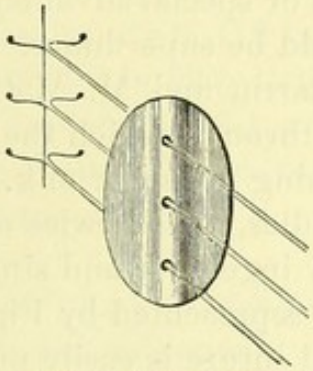
surface corresponding to the vesico-vaginal septum, and carried down in contact with the septum. The wires being again held in

Fig. 58.



Sutures adjusted.

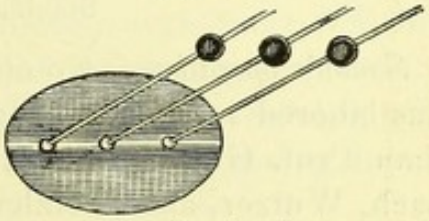
Fig. 59.



Button being passed.

the left hand, the button should be pressed gently against and adapted to the surface of the parts (Fig. 59). This may be accomplished by an instrument which I call the *button adjuster*, consisting of a stiff iron rod, bent at a right angle within half an inch of its distal extremity, and inserted into an ordinary wooden handle.

Fig. 60.



Passing the shot.

"The shot are to be now passed down over the approximated ends of each suture to the convex surface of the button, and here each one is to be successively grasped with a pair of strong forceps, and held against the button, while contraction is made upon the corresponding suture, in order to bring the vaginal surface of the septum in close contact with the concave surface of the button, and insure close coaptation of the edges of the fistule. This having been accomplished, sufficient force is exerted upon the forceps to compress the shot and thus prevent its slipping. The operation is then concluded by clipping off the wires close to the shot."

The advantages claimed by the inventor for this method are the following:

1st. It exerts a controlling influence in bringing the edges into apposition, and preventing inversion and eversion.

2d. It gives steadiness and support to the edges of the fistula.

3d. It protects the lips of the wound from contact with the secretions.

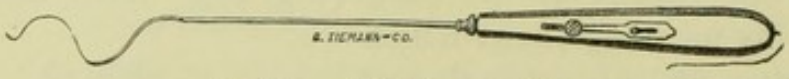
Dr. Bozeman operates with the patients in the knee-elbow position, and not on the side.

This operation, like that of Dr. Sims, has been altered in various ways. Shields or splints of other forms have been substituted by Simpson, Baker Brown, Agnew, Battey, and others; but as no new principle or special advantage is developed by them, further mention would be superfluous.

Dr. Startin and M. Matthieu, of Paris, have invented hollow needles, through which the silver threads can be passed without first passing those of silk. Needles, straight and curved, with long handles, are likewise employed by some.

A very ingenious and simple needle, made by Messrs. Tiemann & Co., is represented by Fig. 61. By a sliding nut in the handle the metal suture is easily pushed through the hollow needle so as to facilitate its passage very materially.

FIG. 61.



Stohlman's hollow needle.

Simon's operation.—No one, with the exception of Marion Sims, has labored more earnestly, or achieved more for this operation than Prof. Gustav Simon, of Heidelberg. Succeeding Dieffenbach, Wutzer, and Metzler, who had themselves accomplished a great deal in advancing the interests of the operation by suture, he steadily labored with the means at his command, and even before he became acquainted with the great improvements made by Sims, had acquired a great degree of skill in treating vesico-vaginal fistulæ. The chief features of Simon's operation are these: 1st. He repudiates silver wire as a suture superior to fine silk; indeed, he regards the latter as superior to it.[1] "I even," says he, "not only consider it no progress, but rather disadvantageous, on account of the difficult application and removal of the sutures, and I have not the least doubt that the time is not far distant when the metallic suture for plastic operations, and especially for that of vesico-vaginal fistula, will yield again to the more convenient sutures made of fine silk."

2d. He employs an exaggerated lithotomy position in place of the left lateral position.

3d. Instead of avoiding the mucous membrane of the bladder, he intentionally involves it in his abrasion.

4th. He uses no stationary catheter, and has the urine drawn only during the first twenty-four hours, and this not always.

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[1] New York Journal of Obstetrics, vol. ii, p. 241.

5th. He allows the bowels to be evacuated whenever nature prompts it, and does not diet the patient nor confine her to bed. At times he even permits outdoor exercise in twenty four hours after the operation in favorable cases.

Prof. Simon reports the following results: "Of 118 fistulæ occurring in 105 patients, there were 104 fistulæ in 92 patients cured completely (a later cure is counted in under the first category); 5 fistulæ in 5 patients almost entirely closed; 2 patients with 3 fistulæ discharged as incurable; 6 patients died."

Elytroplasty.—This operation was published to the profession by Jobert de Lamballe,[1] in 1834, and was subsequently altered and improved by Velpeau, Gerdy, and Leroy d'Etiolles. It consists in dissecting a flap from one buttock (Jobert), or the posterior wall of the vagina (Velpeau and Leroy), and fixing it by sutures into the orifice of the fistula, the borders of which have been previously pared. It resembles the operations of rhinoplasty performed upon the face, but is unfortunately even more difficult than they, and calls for such great manual dexterity as to preclude its frequent adoption. Velpeau, by making two parallel, longitudinal incisions in the vagina, dissected up the intervening tissue and stitched it to the edges of the fistula.

Leroy prolonged these incisions to the vulva, dissected up the intervening flap, and, rolling this upon itself, applied its under or bleeding surface against the fistula.

Elytroplasty is still employed sometimes where great destruction of tissue has taken place at the base of the bladder, but the difficulties and uncertainties attending it, together with the fact that more simple and efficient methods for dealing with this class of cases are at command, have rendered a resort to it very rare.

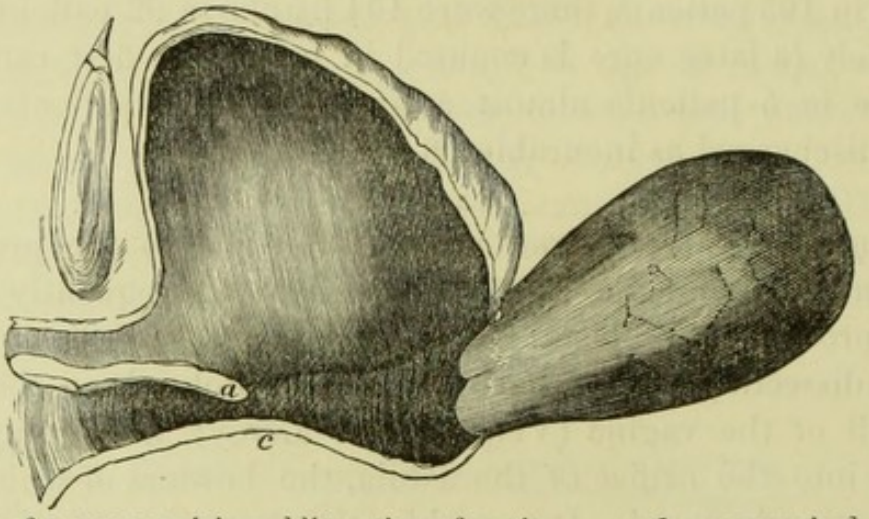
Closure of the Vagina.

This procedure is resorted to in despair of accomplishing the cure of the fistula, and in the hope of relieving the patient from the intolerable annoyance attendant upon an involuntary and constant discharge of urine. It is proposed only for those cases in which, from extensive destruction of tissue, no hope of closure by suture or elytroplasty can be entertained. By it the vagina and bladder are rendered a common receptacle for urine and menstrual blood, the only advantage gained consisting in the fact

[1] Bull. de l'Acad. de Méd. de Paris, t. ii, p. 145.

that they may be retained and discharged at will through the urethra which remains open. Closure of the vagina may be accomplished by two operations, episiorrhaphy and obliteration of the

FIG. 62.



Example of a case requiring obliteration of vagina; *a* and *c* were united. (Sims.)

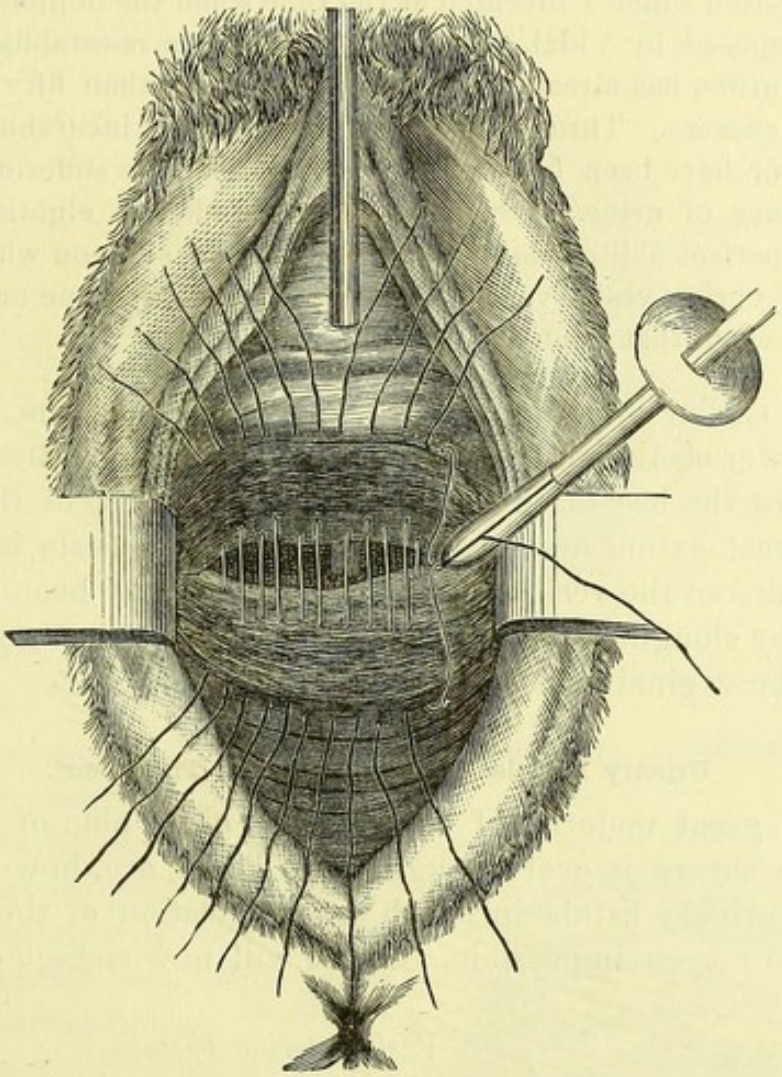
canal. Neither of these, however, equal in efficiency closure of the vesical fistula, since they involve the necessity of the urine being retained in the vaginal canal, which is injured by its presence.

The first, which consists in paring the inner surfaces of the labia majora and uniting them by suture so as to cause their complete adhesion, originated with Vidal de Cassis, who performed it in 1833. The operation is exceedingly simple in its steps, but a very minute opening almost invariably remains just under the meatus through which a little urine exudes. This very nearly invalidates the success of the method, for even a slight escape renders the patient uncomfortable.

The second consists in paring, not the labia, but the vaginal walls. Strips of mucous membrane being thus taken away, the bleeding surfaces are brought in contact by suture, and the bladder is kept empty by a catheter until union has occurred. This procedure, a far more valuable and reliable one than that of Vidal, was first performed by Prof. Gustav Simon, of Heidelberg, who has applied to it the name of "Kolpokleisis," or cross obliteration. Prof. Simon's first operation was performed in 1855, and since that time he declares that it has been resorted to in Germany in over fifty cases with complete success, and many patients suffering from incontinence of urine due to great loss at the base of the bladder have been entirely relieved by it. He places upon the

operation a very high estimate, as the following extract from a published letter from him to Dr. Bozeman of this city will show:

Fig. 63.



Obliteration of the vagina. (Wieland and Dubrisay.)

"The reason why I have proved the validity of my claims of priority at such lengths, is simply this, that in my opinion kolpokleisis is the most important plastic operation which in the last decennia has originated from one single man. The operation of vesico-vaginal fistula by uniting the borders of the defect is indeed, in its present perfection and precision, a much more important acquisition than kolpokleisis, and probably the greatest achievement of our century in plastic surgery; but it has not been carried to that perfection by a single man, but, on the contrary, operators of all nations have contributed their share to it. The 'uranoplastie' of our ingenious countryman—von Langenbeck—could alone be placed by the side of kolpokleisis, as far as the safety of the performance and its immediate success are concerned. It would rank higher still on account of its more frequent occurrence, if its benefit for the voice in increasing its purity could be secured in all or in the

majority of cases. But as in many cases this result is not obtained at all and in others only incompletely, kolpokleisis must be considered the more important operation, as in all cases it fully answers its purpose. This operation which I invented at the time when the obliteration of the vulva, proposed by Vidal, proved inefficacious in re-establishing continence of urine, has already been performed more than fifty times with complete success. Through it many patients with incurable defects of the bladder have been freed of the most intolerable suffering, viz., the incontinence of urine. I have myself succeeded in eighteen cases in effecting perfect obliteration, and every German surgeon who practises the art of curing vesico-vaginal fistules, has recorded one or more successful cases of that kind."

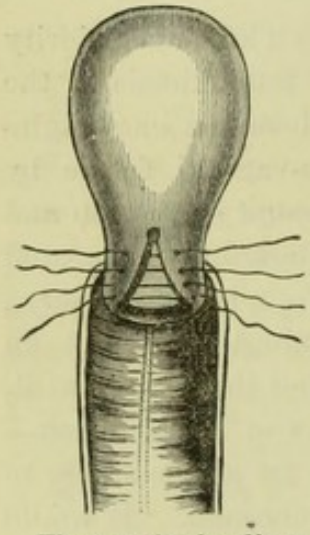
In his earlier operations, Prof. Simon confined the procedure to the lower section of the vagina, but he now obliterates the canal just below the loss of substance. When the base of the bladder is to a great extent destroyed, this operation consists in bringing the remains of the vesico-vaginal wall, which has been nearly destroyed by sloughing, into union with the posterior vaginal wall, so that the vaginal orifice is closed transversely.

Urinary Fistulæ requiring Special Treatment.

In the great majority of instances no other plan of treatment than the suture is ever thought of. There are, however, some cases of urinary fistulæ in which the application of the suture is difficult, or even impossible. These will now engage our attention.

Vesico-uterine Fistulæ.

Fig. 64.



The cervix is slit to expose the fistula above, and sutures are passed.

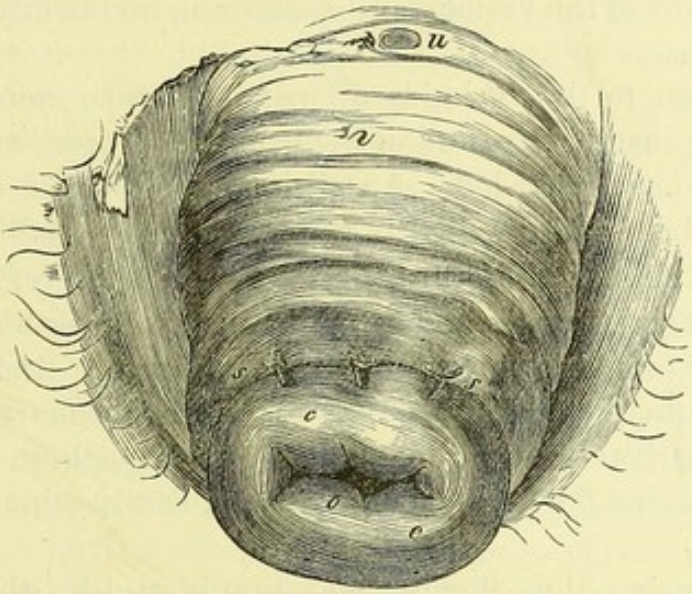
Jobert first pointed out the proper method for reaching these. His plan is not at present employed, but that now regarded as most reliable is only a modification of it. It consists in slitting up the anterior lip of the uterus until the fistula is reached, vivifying its edges and passing sutures directly through the cervix, as represented in Fig. 64, so as to approximate the walls of the cervix and the lips of the fistula.

In case the fistulous orifice be so high as to be considered beyond reach, the only remaining resource is to close the os uteri externum by suture, and allow menstruation to occur through the bladder.

Vesico-utero-vaginal Fistulæ.

For these the plans of Jobert and Bozeman of vivifying the anterior lip of the os, and thus making the uterine tissue subser-

Fig. 65.



Anterior lip of fistula united to anterior lip of cervix.

vient to closure of the fistula, are peculiarly applicable. The operation, represented at Fig. 65, is similar to that for ordinary vesico-vaginal fistula, the only difference being that one lip of the fistula is made of the vivified cervix uteri.

In case the anterior lip of the uterine neck be so completely destroyed that it cannot furnish the requisite tissue for this purpose, the vagina may be united to the posterior lip so as to throw the cervix into the bladder. Menstruation will afterwards occur into that viscus, and the blood thus accumulating be discharged with the urine.

Fig. 66.



Anterior lip of fistula united to posterior lip of cervix. (Wieland and Dubrisay.)

Fistulæ with Extensive Destruction of the Base of the Bladder.

It has already been mentioned that elytroplasty and kolpokleisis offer resources in these cases. To Dr. Bozeman, however, we are

indebted for still another procedure, which consists in dragging the uterus down daily for weeks before the operation by means of a pair of forceps by which the neck is seized. In this way the uterus is made to approximate the vulva. Then one lip of the cervix, being vivified, is brought into contact with the extremity of the remains of the vesico-vaginal septum, and firmly united with it by suture.

In addition to the varieties of urinary fistulæ mentioned here, certain rare instances of union between the ureters and vagina or uterus have been recorded. A striking example of uretero-uterine fistula may be found detailed in the Dictionnaire de Médecine, vol. xxx, by the pen of M. Bérard. It is not only interesting in itself, but as displaying the method by which the diagnosis may be arrived at is worthy of special mention. Regarding it at first as a vesico-uterine fistula, from the fact that urine was discharged from the uterus, he arrived at a different diagnosis from these facts:

1st. The urine flowed steadily from the cervix when the bladder was empty.

2d. The urine thus flowing was limpid, unlike that from the bladder.

3d. The patient being kept seated over a vessel for two hours, so as to preserve all the urine flowing per vaginam, a catheter was passed into the bladder and the amount removed exactly equalled that which had escaped vicariously.

4th. Injecting the bladder with fluid colored by indigo, the urine passing per vaginam remained limpid.

5th. A sound being passed into the uterus and another into the bladder, their points could not be brought into contact.

Uretero-uterine fistula is by no means common. Dr. Bozeman informs me that he has rarely seen it, and not one instance is mentioned by Dr. Emmet in his recent work upon Fistulæ.

An interesting instance of union between the ureter and vagina, uretero-vaginal fistula, is detailed by M. Robert,[1] of Paris, as the condition remaining after an operation by Dr. Bozeman at the Hôtel Dieu. The following is his description of the case:

"The vagina then being dilated by means of a speculum we explored this canal. The milk injected in the bladder neither

[1] Bozeman on Fistulæ, N. O. Med. and Surg. Journal, March and May, 1860. Dr. Bozeman clearly recognizes this form of fistula as a result of the ordinary operation for the vesico-vaginal variety, explains the method of its occurrence, and describes his "usual plan for overcoming this obstacle," when he has reason to fear its occurrence from cutting of the ureter.

escaped into the vagina nor by the urethra. After prolonging the examination, however, we saw now and then a drop of clear urine escape from the vesico-vaginal wall at the point precisely where Dr. Bozeman had encountered the right ureter, and which he endeavored to avoid with the suture. This examination, therefore, demonstrates in a positive manner: 1st. That the vesico-vaginal perforation is obliterated, since the milk contained in the bladder does not escape into the vagina. 2d. That the urine which wets the vagina from time to time is turned directly into the canal by the ureter, which was implicated by the suture notwithstanding the efforts of the surgeon to prevent it. We would remark that the dribbling of the urine from the right ureter into the vagina is limited to a few drops, because of the compression that the cicatrix exerts over the former, which is found to be considerably diminished in size. 3d. Lastly, and this is the main fact, that the opening in the vesico-vaginal wall being four centimetres in diameter, has been completely obliterated by the simple suture without having recourse to incisions to permit locomotion of the tissues, and notwithstanding too the presence of the ureter between the edges of the fistule."

There are eccentric and rare forms of fistula which I have not mentioned in my enumeration. For example, I have now under observation a case of vesico-abdominal fistula. Eight days after the operation of ovariotomy, about one pint of urine began to pass daily through the abdominal opening, the lower angle of which had been kept open for washing out the peritoneum. That the fistula is vesical and not ureteral is proved by the escape of colored fluid through the abdominal wound when injected into the bladder. The case is still in progress.

CHAPTER XI.

FECAL FISTULÆ.

Definition.—These fistulæ, which are much less frequently met with than the urinary, consist in communications established between the vagina or vulva and some part of the intestinal tract.

Varieties.—They may be recto-vaginal, entero-vaginal, or recto-labial; the first being the most common, and the second the rarest of the varieties.

Causes.—The causes which produce them are almost identical with those which result in urinary fistulæ, viz.:

Prolonged pressure;
Direct injury;
Ulceration or abscess.

The first of these may produce them, as it does those occurring on the anterior vaginal wall, by creating an intense inflammation which results in sloughing, or the intensity of the pressure may be so great as rapidly to destroy the vitality of the part. Such pressure is most frequently the result of difficult parturition, but in rare cases it may arise from badly-fitting pessaries or scybalous masses in the rectum.

Direct injury by instruments used in delivery, or others employed for removal of impacted fæces, may evidently produce them.

Ulceration or Abscess.—These pathological conditions much more frequently produce fecal than urinary fistulæ. For the recto-vaginal variety stricture of the rectum is a fruitful source, the stricture producing a retention of fecal matters which excites ulceration that may extend to the vaginal canal. An abscess between the vagina and rectum may cause a communication between the two, or burrowing towards one labium may open there and connect this part by a tract with the rectum. In the same manner a purulent collection has been known to make a junction between the caput coli and vagina. Lastly, syphilitic and cancerous ulceration may open a channel between the intestinal and vaginal canals.

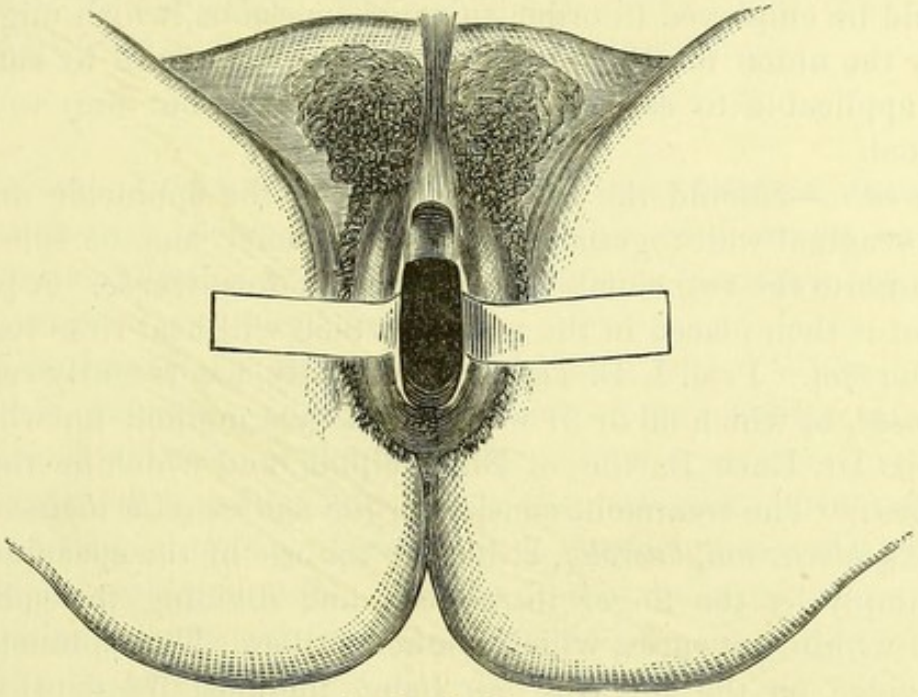
Symptoms.—The most prominent, often the only symptom which will attract the patient's attention, will be a discharge of offensive gas or fecal matter by the vagina. The amount which escapes will of course be governed by the size of the fistula, but the annoyance dependent upon the accident will not be so, for even the smallest quantity will be sufficient to render the patient utterly wretched by the offensive odor to which it gives rise.

Physical Signs.—The patient being placed upon the back, touch should be practised upon all the surface of the vagina. If the fistula be one of any magnitude, this will at once discover it. If not, careful exploration by the speculum will almost always do so. Sims's speculum should be introduced under the symphysis

so as to lift the anterior wall of the vagina while the lateral walls are held aside by spatulæ. Should visual exploration not reveal the opening, the rectum may be filled with tepid water colored with cochineal or indigo, and its escape carefully watched for.

Prognosis.—Fecal fistulæ are more likely to be spontaneously recovered from than those of urinary character, from the fact that they give passage to gaseous and semifluid excretions, and not to an irritating fluid which is constantly dribbling away and keeping the fistulous walls from uniting. But even these are rarely recovered from unless surgical aid be brought to their relief.

FIG. 67.



Examination for fecal fistulæ.

Treatment.—Recto-vaginal and recto-labial fistulæ may be treated by the following methods:

Cauterization;
Suture;
Incision;
Ligature.

Cauterization may be effected by one of the strong mineral acids, nitrate of silver, or the actual cautery. If the fistula be direct, any one of these may be employed. If it be indirect, touching with a probe, the point of which has been covered by a coating of nitrate of silver by dipping it in that substance when in a state of fusion, will be the most appropriate plan. After cauterization the

rectum should be kept perfectly quiet by opiates, and a glass plug should be worn in the vagina. In cases of recto-labial fistulæ, Prof. Simpson speaks in high terms of the injection of strong tincture of iodine through the fistulous tract.

Suture.—This is practised upon the same plan as that which is followed in vesico-vaginal fistulæ, with these exceptions, that the patient is placed in the position adopted in operating for stone, and that the speculum is so inserted as to elevate the anterior instead of the posterior vaginal wall. After the operation, the rectum, which should have been thoroughly emptied by enema before it, should be kept perfectly quiet by opiates for ten or twelve days. When evacuations are first permitted, laxatives should be employed in order to avoid tenesmus, which might destroy the union of the lips of the fistula. The cure by suture is not applicable to cases of recto-labial fistula, but only to recto-vaginal.

Incision.—Should the opening be near the sphincter ani, the recto-vaginal wall together with the sphincter may be incised so as to unite the two canals from the fistula downwards. A pledget of lint is then placed in the wound, which will heal from its deepest portion. Prof. I. E. Taylor, of this city, has recently reported 40 cases, of which 36 or 37 were cured by a method for which he credits Dr. Rhea Barton, of Philadelphia, and which he thus describes: "The treatment consists in *full and complete division of the whole sphincter ani, laterally*, either by the use of the speculum ani, or simply by the finger introduced, and dividing the sphincter from within outwards, which I much prefer. The sphincter ani is divided on the side (the left being the most frequent), where the external orifice is found. If the fistula is double, then divide the sphincter ani on both sides *laterally*. In all the cases operated upon the sphincter ani has closed up well and remained perfectly natural. The fistula externally, either in the vagina or on the labia, is not *touched, either by caustics* or *suture*. The rule which guides the surgeon at the present day, as proposed by Brodie, Syme, Curling, and Quain, where the internal opening in fistula in ano is high up, is not to disturb or touch it, but let it alone. Experience has taught that the internal opening in the case of fistula in ano, though two to three inches high up, will close, after the sphincter ani only is divided through to the external orifice, and so it is with recto-vaginal and labial fistulæ of the nature I refer to."

Ligature.—This method consists in the passage of a silk thread,

by means of a bent probe, through the fistula, so as to embrace the recto-vaginal septum between the fistula and the perineum. A silver ligature being then attached to one of its ends, is drawn into place by it and tightened every day until it cuts its way out.

Entero-Vaginal Fistulæ.

Entero-Vaginal Fistula, which consists in a fistulous tract between some part of the intestinal canal above the rectum, and the vagina, is rare, and when existing should be looked upon as an artificial anus, the closure of which would be attended by danger. If the opening be direct and there be no tract leading from one canal to the other, this would not be the case, but if a tract exist, the closure of its vaginal extremity would probably result in abscess excited by fecal matters passing out of the intestine.

Simple Vaginal Fistulæ.

Definition.—Under this head is grouped those forms of fistulous connection with the vagina which do not act as vicarious outlets for any neighboring organ, as, for example, peritoneo-vaginal, perineo-vaginal, and blind fistulæ.

Peritoneo-vaginal Fistula has been rarely met with. When it does occur it is attended by danger of descent of the intestine into the vagina, and entrance of fluids and air into the peritoneal cavity. One reason for its rarity is probably the fact that no excrementitious substance passing through it, it very generally disappears without becoming chronic. Should it not do so, no annoyance would arise from its existence, and it would be susceptible of immediate cure by suture.

Perineo-vaginal Fistula may result from partial closure of a ruptured perineum leaving a small orifice near the sphincter ani, or from penetration of the presenting part of the fœtus through the perineum. It may be readily cured by incision, ligature, cauterization, or injection, after the plan just pointed out in connection with fecal fistulæ.

Blind vaginal Fistulæ are those which lead to a purulent collection in some part of the pelvis. They will be fully treated of when considering pelvic abscesses, and nothing need be said of them here further than to mention the principles upon which their treatment rests: 1st, dilatation of the fistulous tract by tents or incision; 2d, exerting an alterative action on the walls of the abscess by iodine, iron, nitrate of silver, water, &c., &c.

CHAPTER XII.

GENERAL CONSIDERATIONS UPON UTERINE PATHOLOGY AND TREATMENT.

For the past half century Gynæcologists have busily discussed the question of the proximate cause, the primary element, of uterine disorders. Among those whose authority is highest there has existed the greatest difference of opinion, and as each one has maintained his position with much warmth, the result has been an almost inextricable confusion with regard to the matter in the minds of those for whose guidance these views were expounded. In the present topic I feel that I am dealing with one of the most subtle, the most difficult, and at the same time the most important parts of my subject, and if I should fortunately succeed in rendering it more clear and comprehensible for the student whose mind is in a state of doubt and uncertainty with regard to it, one of the chief objects for which I strive in this work will be accomplished.

One set of authorities, unfortunately I may say one "sect," has entertained the view that inflammation of the parenchyma plays the important part of moving cause in uterine disorders; another that displacements of the uterus do so; another that the chief trouble consists in an irritation or hyperæsthesia in the uterine nerves; another that catarrhal inflammation of the uterine mucous membrane, is the origin of most of its disorders; while still another attributes to the inefficient restoration of the uterus after the structural changes due to utero-gestation, the most important rôle. To one who calmly and dispassionately considers the subject, not in the study, but by the bedside, and who goes to it with a mind free from prejudice, and eager for the discovery of truth, it appears to me that it must in time, become evident that that truth lies not in any *one* of these theories, but is to be found to a certain extent in each. To any one who endeavors to reconcile the conflicting views of others, the appearance of presumption is very apt to attach itself. I trust that it will not do so here. In expressing the views which I do, I am merely candidly striving to state what has impressed itself upon my own mind from absolute observation. These are my own views, honestly arrived at and fairly stated, and I feel sure that I have generally succeeded, where I have had clinical opportunities of demonstrating them, in convincing others that they have a basis in truth. Let each reader test the statements

here made at the bedside, and not too hastily and from theoretical reasoning alone, conclude that the author is making a politic attempt *in medias res tutissimum ire.*

That the uterus should perform its functions efficiently and naturally it is essential, 1st, that its innervation and circulation should be normal; 2d, that its structure should be unaltered in character and proportions; and 3d, that no decided and permanent change should have occurred in its position. An abnormal state developing in connection with any one of these essential conditions, may derange the functional powers of this important viscus, and demonstrate itself by symptoms which produce greater or less discomfort to the woman. When, as very often happens, the first evil produces others, until at last all three conditions are interfered with, the gravity of the symptoms increases with simultaneous increase in their number and variety. Sometimes the first link in the chain of morbid action is an altered condition of the nerves governing circulation, some general or local condition reflecting itself upon these regulators of nutrition; as a consequence, an afflux of blood takes place to the uterine mucous membrane, and its vessels become distended, and in time dilated. This lasts for a variable time, when the second link is furnished in this manner: an excessive degree of nutrition is supplied to the subjacent connective or areolar tissue of the organ, and its size and weight increase. Then the third link rapidly develops itself. The uterus now being heavier than normal, its natural and hitherto sufficient supports are insufficient for its maintenance in position, and it descends in the pelvis, so as sometimes to alter the direction of its axis, and protrude between the labia majora; at other times its axis is not changed in its descent, and then the cervix striking against the curved surface of the sacrum, is bent forwards so as to offer an obstruction to the escape of menstrual blood; at others, the fundus falls forwards, laterally, or backwards, either bending upon the neck, or by its displacement forcing this part out of position likewise. Then appear as symptoms of this threefold disturbance, leucorrhœa, backache, dysmenorrhœa, difficulty in locomotion, and the long list of discomforts to which women thus affected are liable.

This, however, is by no means always the sequence of events. Sometimes the uterus enlarged by utero-gestation does not return to its original small size, but remaining large and heavy, it falls from its place in consequence, and this disorder of position results in subsequent disorder in the other two conditions which I have stated are essential to health—normal innervation and circulation,

and unaltered state of the structure of the organ. A displacement may even occur to the healthy uterus in consequence of a blow, a fall, or a violent effort, and the uterus being kept out of position, altered circulation at once takes place, and tissue change soon follows.

The position, then, which I assume with reference to the pathological series which may result in confirmed uterine disease, is this: that the pelvic organs of a woman who has hitherto been in perfect health, may become gradually or suddenly diseased by one of the three following abnormal developments in the uterus: 1st, disorder in innervation and circulation; 2d, change in quantity of connective or muscular tissue;[1] 3d, change in position. I assume, furthermore, that the first here mentioned being the primary lesion, the second and third may result from it; that the second being the primary lesion (as in subinvolution or the development of neoplasms), the first and third may result from it; and that the third primarily showing itself in a perfectly healthy organ, the first and second may be its consequences.

Appreciating as highly as I do the idea of that French writer who declares that the most certain method of teaching is by "répétition sans cesse," at the risk of prolixity I again put the matter before the reader in other words.

1st proposition: A healthy girl of 17 years, while menstruating, is exposed to cold, and is affected by catarrhal inflammation of the lining membrane of the uterus. The glands of Naboth, as well as the utricular follicles, become inflamed, and the results are backache, pelvic pains, and dysmenorrhœa, from obstruction of the cervical canal by its swollen lining membrane, and from a neuralgia developed in the nerves supplying the inflamed part. Time passes, the girl keeps her ailments a secret, and in a year or two, or, perhaps, in a few months, the constant irritation and congestion kept up in the lining membrane of the uterus induces a more active nutrition in the subjacent parenchyma, and the connective tissue becomes hypertrophied in consequence. Examined now by the speculum the cervix is found large, tender, and swollen, and by conjoined manipulation the body is discovered to be in the same condition. Time still passes, no treatment having been adopted, and at the end of a certain period, examination is again made in consequence of great increase of trouble on the part of the patient. The heavy uterus is now found to be out of position; its normal supports have

[1] In hyperplasia the connective tissue is the part diseased; in sub-involution the muscular tissue is so.

proved unequal to the increased labor required of them, and retroflexion, anteflexion, retroversion, or anteversion, are discovered to exist, and mechanical causes have added themselves to pre-existing vital ones to increase congestion.

Now arises the question, is this patient suffering from metritis or not? She is not suffering from "parenchymatous metritis," such as Dr. Henry Bennet has described, but there is in her case a structural change in the uterus induced by a derangement of nutrition, the result of endometritis. There exists a diseased state of the connective tissue which has been excited by the morbid action kept up in its mucous lining, and which is characterized by congestion due to vital sources chiefly, increased nervous irritability, and increased activity in growth of connective tissue.

This is the condition that has ordinarily received the appellation of "Chronic Parenchymatous Metritis," which, according to the demonstrations of the most recent pathologists, it unquestionably is not. It is true that some progressive writers still cling to the name chronic inflammation, and apply it to hyperæmia resulting in hypergenesis or hypertrophy of connective tissue. Prof. Billroth, for example, regards this pathological state even when developing in the liver, under the name of cirrhosis, as a chronic inflammation. He says:[1]

"Just as we did in acute inflammation, we shall here (in treating of chronic inflammation), take the connective tissue as the ordinary seat of the disease. Besides the distension and multiplication of the capillary vessels by formation of loops in acute inflammation, we found serous and plastic infiltration of the tissue to be the essential anatomical appearances. In chronic inflammation, *distension of the capillary vessels, or fluxion, is a less prominent symptom, while the new formation of tissue* and serous infiltration seem to play a more important rôle. The cell infiltration of the tissue takes place in few cases, as it does in acute inflammation; but the individual cells often attain a rather more complete development. In this process of development the intercellular tissue changes; the connective tissue filaments lose their tough, filamentary consistency, the distensibility and elasticity of the subcutaneous tissue are impaired, and the consequence, as regards the coarser, palpable, and visible consequences, is that the tissue becomes more swollen and fatty, and less movable than normal. This is the first stage of every chronic inflammation."

But this is by no means the signification which is ordinarily given

[1] Billroth's Surgical Pathology, Am. ed., p. 366.

to the term inflammation. Indeed, with reference to the uterus, so vague and unsatisfactory is the appellation chronic metritis, that there is no knowing what idea one who uses it really intends to convey. He who has in the library and at the bedside been perplexed and disheartened by the constantly recurring uncertainty which it has induced, will have learned to appreciate the feeling which prompted two eminent pathologists, Andral and J. Hughes Bennett, to propose that the vague term "inflammation" should be expunged from our nomenclature. To quote the words of an accomplished writer of New York:

"The entity inflammation, fallen from its high and palmy state, is hanging by its eyelids as a pathogenic factor in most of the organs of the body; its last resting-place seems to be the womb, and here still it has a good foothold. Why should uterine pathology alone be cumbered by an outworn theory?"

"If," says Dr. J. Hughes Bennett,[1] "the use of the word inflammation be retained, it should be applied only to that perverted alteration of the vascular tissues which produces an exudation of the liquor sanguinis; it is this exudation only which can be held to unequivocally characterize an inflammation."

I have stated my impression that a great deal of the diversity of opinion existing as to chronic inflammation of the uterus is due to a misunderstanding as to what different authorities intend to convey by this unsatisfactory and vague term. Let me illustrate this by reference to a discussion[2] upon the subject before the New York Academy of Medicine in 1869:

Dr. Noeggerath,[3] whose essay opened the discussion, said "that he could not retract a single phrase of what he said at the last meeting. He had clearly defined what he understood by the term chronic metritis. He had called it a diffuse parenchymatous metritis, occurring only during the puerperal state—with very rare exceptions—and which consists of growth of cellular tissue both of the body and neck, and has a strong tendency to be transformed into cancroid; he had carefully avoided the word cancer. This is the disease which he has chosen to call chronic metritis, and if other gentlemen choose to call something else chronic metritis, he had no objections."

"Dr. Kammerer expressed the view that chronic inflammation of the substance of the non-puerperal uterus is never met with; what has been

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[1] Lancet, 1863.

[2] Discussion on Noeggerath's paper, Med. Record, No. 90, p. 425, *et seq.*

[3] Med. Record, No. 92, p. 475.

described as such is hypertrophy of connective tissue resulting from long-continued hyperæmia. He believes that the far greater portion of uterine affections originates in catarrh or displacement."

Dr. Barker[1] "repeated what he said at the last meeting, that he considered chronic inflammation of the uterus as resembling chronic inflammation of other tissues of the same histological character; and were it not that the uterus is subject to periodical congestions, chronic metritis might terminate in resolution, the same as chronic inflammation of other tissues."

Dr. Peaslee[1] "said that the fact of hypertrophy proved to his mind the fact of congestion, otherwise we have no right to the term congestion. He prefers to call the disease under consideration congestion rather than inflammation, because it has none of the events of inflammation. Acute inflammation destroys connective tissue, while this disease increases it. He therefore thought it just as logical to call the healing of an acute ulcer, by the production of new tissue, chronic ulceration, as to call this disease chronic inflammation."

In the report of this discussion we have the views of four of the most eminent and able of the Gynæcologists of New York, and what do we see? One gives his adherence to the views of Dr. Henry Bennet; one denies the possibility of non-puerperal metritis, and adopts the theory of catarrh and displacement; one claims the essential dependence of chronic metritis upon inflammation occurring just after parturition; and one favors the theory of habitual hyperæmia! Even had a larger number of debaters been present, no other theory could have been upheld, for no standpoint remained unoccupied.

What is to be done for the relief of the unfortunate student under such circumstances, and where in this pathological quicksand is he to find a "rest for the sole of his foot?"

It is incontestable that there is a peculiar condition that affects the uterus which is characterized by (*a*) distension of bloodvessels from vital or mechanical cause; (*b*) effusion of the serum of the blood; and (*c*) hypergenesis of connective tissue. To denote this state, Gynæcologists have long required a name, for medical nomenclature is as necessary as it is faulty. Lisfranc felt this need when he styled it "engorgement;" Hodge when he entitled it "irritable uterus;" Bennet when he called it "metritis;" and so have others acknowledged the necessity, Klob, for example, in "habitual hyperæmia" and "diffuse proliferation of connective tissue," and Kiwisch in "infarctus."

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[1] Med. Record, No. 92, p. 475.

So much evil has arisen for pathology and treatment from the use of the term chronic metritis, and so clear a demonstration has been made that the condition so-called is not one of true inflammation, that some other appellation is not only called for but has become absolutely essential. The appellations, infarctus, engorgement, and hyperæmia, only convey a partial idea of the truth; they only announce one element of the condition—congestion; while that of irritable uterus ignores all structural change in announcing another element—nervous hyperæsthesia. At the same time that the phrase, "diffuse proliferation of connective tissue due to hyperæmia," which is employed by Klob, clearly defines the pathological condition, it is too long and burdensome to answer the purpose of a name to be conventionally employed. If there be a term now in existence which does really convey the idea truly and completely, it should surely, in the interests of pathology and treatment, as well as out of consideration for the overburdened student of medical nomenclature, be employed in preference to the adoption of a new one. Enlargement of an organ due to formation of new cells similar to those of the tissue in which they are developed, has been styled by Virchow, hyperplasia; in contradistinction to hypertrophy, which consists in increase of size from distension of cells already existing.[1] As the condition of the uterus now under consideration is one arising from over-excitation of the vaso-motor and excito-nutritive nerves, a "formative irritation," as Klob styles it, and resulting in a numerical hypertrophy, it appears to me that the term, areolar hyperplasia, would more correctly designate it than any other with which I am acquainted. With a sincere desire to lessen and not to increase the labors of the student and the perplexities of the Gynæcologist, I shall therefore replace the confusing term, chronic metritis, by that of areolar hyperplasia of the uterus.

That the term is faultless, I do not claim. To one unaccustomed to it, it must even appear peculiar. I have merely to ask for it a favorable consideration on the grounds that it is faithfully descriptive of the condition to which it is applied, and that a decided necessity for some such term exists.

2d proposition: A woman, a year after a delivery which was followed by slow convalescence and obscure symptoms of endometritis, comes to the physician complaining of languor, backache, pelvic pains, leucorrhœa, menorrhagia, and discomfort in locomotion. He examines, and makes in his note-book the following

[1] Virchow's Cellular Pathology, Am. ed., p. 94.

entries: "Uterus generally enlarged; cervix hypertrophied; body considerably retroflexed; measurement by probe three and a half inches; displaced body touched through vagina, rectum, or abdominal walls exquisitely sensitive; by speculum, cervix is seen to be affected by extensive granular degeneration, which extends into its canal; from canal a plug of glairy, tenacious mucus hangs out, which is difficult of removal; a certain amount of secondary vaginitis exists. Replacement of the uterus accomplished by application of a good deal of carefully applied force through the vagina and rectum; fingers removed, the enlarged body immediately falls again into retroflexion; fundus and body so sensitive that a pessary which was tried gave so much pain that its removal became at once necessary."

This patient suffers from many of the signs and symptoms of chronic metritis, and yet she has no such disease. The retrograde metamorphosis by which the uterus, physiologically hypertrophied by utero-gestation, returns to its normal condition, has been checked by a low grade of puerperal endometritis. The tissues of the organ are superabundant, its vessels and nerves enlarged, its circulation feeble, and its weight greatly increased. In consequence of the latter fact, retroflexion has occurred, and the results have been these: sudden bending of the uterine vessels at the point of flexure has resulted in only slight obstruction to the flow through the resisting arteries, but has produced a much more decided bar to venous return, and the uterus is greatly engorged with blood. Its nerves are compressed by surrounding vessels; a neuralgic pain is the consequence, and the whole organ becomes large and sensitive. But not only is this effect exerted upon the nerves of the uterus; those of the pelvis are likewise pressed upon by the enlarged uterus, and those of the lateral and round ligaments are rendered sensitive by traction. If the uterus be put fully in position, and kept there while general and local means are employed calculated to excite absorption of the blood elements effused in consequence of hyperæmia, to quiet neuralgia, to restore tone to the weakened and distended bloodvessels, this patient will greatly improve. She will probably not get well, and will be subject to attacks of active hyperæmia when exciting causes are applied, but she will be so much improved as to be able to lead a useful and comfortable life.

Not only will subinvolution produce the state of things here represented, alteration of uterine tissue by development of neoplasms, and great and repeated distensions of the cavity of the uterus by

retained menstrual blood will result in a condition somewhat similar. And such a condition as I have described may not be followed by hyperæmia only, the uterus thus affected *may* become the seat of true metritis, and it very often is affected by endometritis. It is of this class of cases that Scanzoni has written as follows:[1]

"There are a great number of cases where not only there is no inflammation at the beginning, but where even its existence cannot be suspected. On the contrary, we may affirm with certainty what are the causes which have provoked the chronic hyperæmia and the consequent anatomical changes; and yet, in such, induration of the uterine tissue, of more or less extent, is noticed. These cases often present great difficulties in their etiological explanation, for we cannot admit an inflammatory beginning. It is possible that, in these instances of really passive hyperæmia, an exudative process may occur occasionally, but we cannot prove it. Supposing even that it were demonstrable, it would not on that account be an essential condition for the explanation of the various lesions of nutrition heretofore described."—*Die Chronische Metritis*, p. 43.

And he concludes his chapter on the pathology of the disorder in this wise:

"The term chronic metritis is not strictly proper in all cases to which the name has been given. Many even of the engorgements of the womb (gebärmutter anschwellungen) have nothing of inflammation in the exact sense of the word; they are nutrition troubles (nutritions störungen), just as we see them happen in other organs after long-continued hyperæmia." (*l. c.*, p. 43.)

3d proposition: This I prefer to illustrate by a case in point. On the 25th of last June I examined an unmarried lady, aged 23 years, who gave the following account of her case. She had been in perfect health up to her 20th year, never before that time having had any menstrual or other difficulties, and having been remarkable for her endurance and activity. At this time, on the occasion of a fire breaking out in the house, she lifted a heavy box, and carried it down stairs. She did not suffer at the moment, which she attributed to excitement, but for two weeks afterwards was confined to bed, and kept under the influence of opiates on account of intense pain, due to what her physician called "inflammation of the bowels." She then left her bed, but for three years had been an invalid, suffering from the severest dysmenorrhœa, backache, leucorrhœa, pain on walking, and general nervousness.

[1] N. Y. Med. Journal, vol. viii, p. 547.

Upon making a physical exploration, I made the following entries in my case-book: "Uterus sharply retroflexed; body fixed, exceedingly sensitive and enlarged; neck unaltered in size; whole pelvis sensitive to pressure, and examination difficult from presence of hymen." With a great deal of effort, and at the expense of great pain to the patient, who was a woman of fortitude, I succeeded in replacing the uterus, and, being unwilling to essay a pessary, plugged the fornix vaginæ with carbolized cotton, and agreed to see her in twenty-four hours. Upon examining at the end of that time, I found the uterus in proper position, or almost so, its size increased, very sensitive to the touch, and pouring forth a thick tenacious mucus, which clung to the cervical canal. After preliminary treatment, this patient tolerated a retroversion pessary, and was at the end of six weeks so much relieved that she left the city, still wearing, however, her pessary, and the uterus not having returned to its normal size.

The point which I wish to illustrate by this case is the following. A healthy uterus may fall out of its position either from some suddenly developed cause, or from one slowly exerting its influence, and the consequence of the dislocation may be, (*a*) engorgement of the uterus from interference with venous return; (*b*) effusion of blood elements through the walls of the distended vessels; (*c*) tenderness, swelling, and pain, in consequence of these and of nervous compression; and (*d*) hypertrophy of connective tissue, the result of disordered nutrition. Dr. Graily Hewitt[1] has drawn especial attention to this condition under the name of "strangulation of the uterus," an appellation which appears to me to convey an erroneous view of the pathological state to which he applies it. The statement that a part is strangulated, implies its threatened death, if the condition be not relieved immediately, while this condition often lasts for years.

But a mere displacement does not produce uterine disease in this way only; it often does so by preventing escape of menstrual blood by closure of the os by flexure, or by contact with the vagina; produces pelvic and uterine neuralgia by direct pressure, and induces as consequent affections cystitis and rectitis.

Prognosis in Uterine Affections.—There is no organ of the body the diseases of which offer greater difficulties in prognosis than those of the uterus. So much depends upon the habits of the patient, the injurious influences to which she is exposed, and the faithfulness with which she follows out the directions of the phy-

[1] Brit. Med. Journ., Jan. 28, 1871.

sician, that often very little can be predicted, very little promised with any certainty. The error into which the incautious practitioner is most likely to fall is that of predicting a cure at too early a period, and fixing some definite time for its accomplishment. The patient may declare that she and her friends will be satisfied even if the limit be fixed not by months but by years, nevertheless she is desirous of knowing *when* she may confidently expect a cure. The answer to this question, not in the lesser interest of the practitioner, but in the greater one of the patient, must often be, that no such time can possibly be determined upon. In some cases it becomes necessary to state further that not only is the time but the certainty of complete cure doubtful; that local treatment will cause pain, may result in danger, and may absolutely aggravate the existing symptoms.

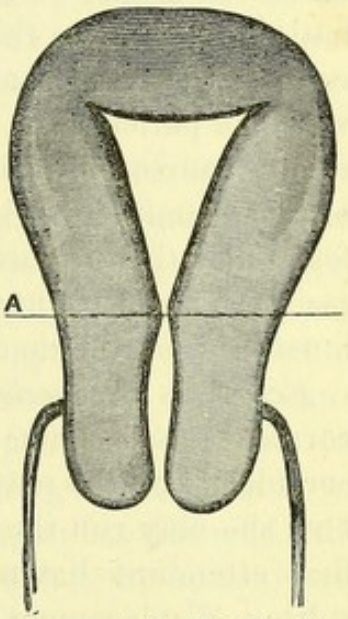
Another point which influences prognosis is this: in the management of uterine diseases it is of primary importance that the practitioner should enlist the interest and co-operation of his patient. Should she be apathetic with regard to the result, or even having begun treatment with enthusiasm, become disaffected from any cause, his duties will probably prove irksome, annoying, and fruitless. For this reason he should be cautious in urging with too great earnestness the adoption of local treatment.

In view of this and the additional fact that treatment may extend over months, before a cure is effected, the physician should avoid all resources which by their uncleanliness or disagreeable nature may disgust a refined patient, or make her rather willing to bear her disease than the means adopted for its cure. If such means will be very likely to give relief, they should of course be employed; but if, as is the case with many of them, their efficacy be extremely doubtful, they should not be insisted upon. For example, if a lively, fastidious lady were called upon, for the relief of an endometritis which is not in itself very annoying, to forego society and spend most of her time in bed; to fill the vagina daily with a semi-solid mass of powdered linseed after the method of Mélier; to rub mercurial ointment over the hypogastrium, and have a weekly application of leeches around the anus, she would probably in time get tired of the treatment, and lapse into the very state of apathy to which I have alluded.

There is one class of cases in dealing with which I should especially recommend that perfect frankness be observed. It may be represented by a patient who has been persuaded by husband, mother, or friends, contrary to her wishes, to submit to treatment.

She utterly repels the course to be adopted, is sure that it will do her no good, is unwilling to fulfil the directions left her for daily guidance, but yields, under the assurance of her advisers that the treatment will be free from discomfort, give no pain, and will surely cure her in a few weeks. The physician for the sake both of his patient and himself, should avoid joining in this deception. Stating the facts fully to her, telling her of the danger which neglect will involve, and of her duty under the circumstances, he should appeal to her reason, and decline to take charge of her case until she really desires his services.

FIG. 68.



A represents the dividing line between body and cervix.

There is a general rule which I have kept before me as a guide to prognosis, and which has so rarely failed me that I urge it upon the attention of the reader. If the disease affect that part of the uterus below a line runing across it at the junction of the neck and the body, it matters not how grave the affection, either of mucous or parenchymatous tissue, if it be not of malignant type, a prospect of cure may be held out. Should the morbid action exist above this line, even if it present no features of special gravity, the physician should be cautious in his promises of cure, and fix no limit as to time. It is true that recent cases, and sometimes even old ones, of corporeal endometritis may be cured; but in those which are recent, cure is always very difficult, and in those which are chronic often impossible.

Reasons for the Frequency of Failure in the Treatment of Uterine Diseases.—That some uterine affections of non-malignant type are incurable cannot be denied; but even putting these out of consideration, the fact is notorious that the local treatment of these diseases is not as successful in its results as we could wish. I now propose an investigation into the causes of this want of success. It appears to me that the most apparent and most constant of them may thus be summed up:

Imperfect diagnosis;
Erroneous prognosis;
Inefficient or inappropriate therapeutics;
Inattention to general management.

Imperfect Diagnosis.—It is not rare to meet with instances in which physicians have, for months, treated cases of uterine disease concerning the nature of which they not only did not have a correct theory, but had no theory at all. Under these circumstances the most general practice is to pass, about once a week, a solid stick of nitrate of silver up to the os internum, not to cure cervical endometritis, for that has never been suspected, but to do the best one can in the way of treatment, when he does not know the nature of the disease which he treats. I have no inclination to attribute this to any intentional laxity of morale, but rather to indecision and aversion to creating a disagreeable issue with the patient. It is, however, impossible to deny the fact that such a course will sometimes be pursued by those who in the case of a diseased eye, or inflamed knee-joint would not hesitate to confess, with the utmost frankness, their uncertainty and need of assistance. With uterine, as with all other diseases, the diagnosis must be properly made before treatment can prove curative.

Erroneous Prognosis.—Even if the diagnosis and treatment be correct, an erroneous prognosis as to time of cure may so sap the confidence of the patient as to send her to other counsel. And now she may run the gauntlet of theories and therapeutics. Her first attendant having recognized areolar hyperplasia with resulting displacement, the second may treat the displacement alone, as the origin of her symptoms. Passing into the hands of a third, she may be told that to check her profuse leucorrhœa would be to cure her disease, which the fourth might contradict, with the assertion that the uterine disorder was only a complication of ovaritis, which was the fountain of all her difficulties.

Inefficient or Inappropriate Therapeutics may cause failure in cure even when a proper diagnosis and prognosis have been made. At times a gentle course of local alteratives may be persevered in when the disease demands more general treatment. At others it is necessary to carry local applications up into the cavity of the body, and not of the neck alone; and at others still, to perform a trifling surgical operation to remove a difficulty which, unless removed, may keep up the disease indefinitely.

The best results in the management of these affections will not follow a direct resort to treatment of the most prominent existing disease, but will very often be obtained by removal of its cause, or the alleviation of its complications. Let me make my meaning clear by some examples. The physician examines and finds endometritis to exist with its usual symptoms, leucorrhœa, pain,

menstrual disorders, &c. This affection may be the result of an antecedent displacement. If it be so, replacing and retaining in position the displaced organ should be the first step in treatment, as it was the first step in diseased action. *Causa non sublata tollitur non effectus*, is as true as the converse proposition. Again, a patient has menorrhagia and prolonged menstruation with a long, contracted cervix uteri. Obstruction to the ready escape of menstrual blood often so alters the lining membrane of the body of the uterus as to create these disorders. If the physician treat the symptom, he will surely fail in curing it, while success will attend his efforts if he remove the obstruction which prevents the uterus from emptying itself.

So also with the complications which are excited by uterine disorders. A patient is affected by cervical endometritis that in time produces hyperplasia, which by increasing uterine weight displaces the uterus. That organ lying upon the floor of the pelvis is injured by locomotion and coition, its lower segment is bathed in purulent leucorrhœa, and great pelvic pain annoys and harasses the patient. If the practitioner expect to cure her, let him at the same time that he treats the primary disease, the endometritis, relieve a set of complications which, unless removed, will cause repeated relapses as often as he approaches the accomplishment of his end.

One more example may be cited before concluding these remarks. A displacement of the uterus exists, and the practitioner knows that it has been due to one of two influences, either increase of uterine weight, or loss of uterine support. Which was primary he cannot determine, for at the time of his examination both exist. To effect a cure it would be the part of wisdom not to limit treatment to one, but simultaneously to treat both by giving artificial support, and diminishing uterine weight. Without being able to say which is the original disease and which the complication, he should endeavor to relieve both at the same time.

Inattention to General Management and Hygiene.—The statement which we often meet with, that the majority of the cases of uterine disease require no local treatment whatever, is a fallacy, based either upon strong prejudice against one of the most important modern improvements in medicine, or upon want of experience in such cases. But too much stress cannot be laid upon the advantages to be derived from constitutional treatment and the general management of these cases. We too often fail to insist upon rest, cessation of marital intercourse, quietude after applications to the

uterus, and other points, a neglect of which may exert a powerful influence for evil, and frustrate the effects of all that is done by local means.

Astruc begins his directions for treating uterine ulcers by advising—

"To charge the patient to abstain from all kinds of exercise and to keep constantly laid down on a long seat.

"It is for the same reason fit, in the case of a married woman, that she should lie separately from her husband.

"They should for the same reason guard against all the passions of the mind that may agitate it, as grief, uneasiness, and anger, &c."

This advice, given over a century ago, is often neglected to-day, and too much reliance placed upon local means, and upon them alone. Every one who has had experience in the treatment of these disorders must have been struck with surprise at the wonderful improvement exerted upon cases, which have long resisted local means, by a sea voyage, a visit to a watering-place, a course of sea-bathing, or a few months passed in the country. Not only is this improvement manifest in the general state of the patient; it shows itself locally, also, and in some cases complete recovery may be thus attained. The same fact is equally noticeable in old ulcers of the leg; local means, the efficacy of which in such cases, no one doubts, having failed in producing good results, entire recovery is effected by means, such as those alluded to, which act upon the constitution.

I remember having had this very decidedly impressed upon my mind by the following case: I had for months been treating a delicate lady for marked retroversion with cervical endometritis and hyperplasia. Suddenly her friends made up their minds to visit the Holy Land, and she was eager to accompany them and applied to me, not for permission, but assent, for she had evidently determined to go before consulting me. A great part of the journey was to be made on horseback at a very slow gait, and I really feared that she would be made very ill by it. To my surprise, however, she rapidly improved, and returned to this country better than she had been for years. And yet upon examination I found the uterus still out of position, and a granular ulcer of the cervix still existing, though much improved.

It should not be forgotten by the Gynæcologist that chronic local disease is often caused by a general depreciation of the system. In some cases the lungs undergo chronic pneumonic con-

solidation, which often goes on to phthisis; in others, chronic corneitis or granular lids occur; while, in others still, cervical endometritis marks the altered constitutional condition. When such a result takes place, the two states continue to react one upon the other. The depraved system increases the local disorder to which it has given rise, and the irritation, kept up by the latter, aggravates the degree of the former. This being true, it would evidently be irrational to treat one of the two existing pathological conditions without having due regard to the other. Some cases of endometritis, however, occur in women who are apparently in good health, and are usually the consequences of parturition or abortion. But cervical, and even corporeal endometritis, the latter of which may go on to granular degeneration, will generally be found to have engrafted themselves upon a depreciated system.

The following case is illustrative of this view. Dr. Alfred E. M. Purdy brought to my office, for examination, a patient who had two uteri and two distinct vaginæ. As I proceeded to examine, he stated that the right uterus was affected by granular degeneration. I discovered, however, that both were thus diseased. Dr. Purdy had not examined for some weeks, and, during this period, the general state which had produced disease in one uterus had effected the same change in the other. It may with justice be objected that both may have been produced by a local cause. None such could be discovered, the patient having been exposed to no local influences which had not existed for years previously.

CHAPTER XIII.

ACUTE ENDOMETRITIS.

The varieties of inflammation of the uterus may be clearly expressed in the following manner:

- Endometritis
  - Acute
    - General.
    - Cervical.
    - Corporeal.
  - Chronic
    - General.
    - Cervical.
    - Corporeal.

Metritis—Acute.

Synonyms.—Acute endometritis has been treated of under the names of acute uterine leucorrhœa, acute uterine catarrh, acute internal metritis.

Frequency.—Acute inflammation of the lining membrane of the uterus is a condition which occurs quite frequently. Often running a rapid course, however, and ending in recovery or in chronic disease, it passes unrecognized in many cases. In this way I would explain many of the cases of suppressio mensium and congestive dysmenorrhœa, which we so often find ending in chronic disease. And thus also would I account for the profuse and painful attacks of leucorrhœa occurring with exanthematous fevers, and lasting for a length of time after they have passed off. It is very generally stated that acute metritis is seldom met with except as a sequel of parturition, and I agree in the statement as applying to parenchymatous inflammation, but it does not apply to endometritis, which often proves the source of sudden menstrual disorder and the cause of violent leucorrhœa.

Varieties.—The morbid process may affect the lining membrane of the cervix or of the body alone, or it may attack the whole uterine mucous tract, its selection of site being governed by its cause. Thus, that form which immediately follows parturition or abortion or results from gonorrhœa, is likely either to affect the whole mucous tract or the cervical canal alone; while that which is due to sudden checking of the menstrual flow is generally confined to the body.

Causes.—The causes of acute endometritis are as follows:

Direct injury;

Cold from exposure during menstruation;
Constitutional diseases of septic or asthenic character;
Vaginitis, specific or simple;
Evacuation of retained menstrual blood;
Excessive venery;
Suppression of menstruation.

Examples of direct injuries which may produce acute endometritis are the introduction of the uterine sound or the intra-uterine pessary, the employment of tents or the application of chemical irritants, surgical operations, and intemperate coitus.

It is through the instrumentality of this disease that those cases of fatal peritonitis which result from tents, sounds, and intra-uterine pessaries occur. Inflammatory action is first set up in the lining membrane of the uterus, and thence swiftly passes through the Fallopian tubes to the peritoneum.

Specific vaginitis or gonorrhœa will sometimes pass up into the cervix and body of the uterus, and out through the Fallopian tubes, creating pelvic peritonitis of most violent character. Even simple vaginitis, when of very severe form, may produce endometritis, though this is by no means common.

The peculiar blood state, attending upon and forming an element of measles, scarlatina, variola, and roseola, and its influence on all the mucous linings of the body, will sometimes result in general endometritis, and the hæmic condition resulting from phthisis not rarely does so. Kiwisch has styled this, "metastatic constitutional catarrh."

Exposure to cold and moisture, great mental anxiety, or any other influence which suddenly checks the menstrual flow, very frequently produces this disease. At the moment of exposure suppressio mensium, or congestive dysmenorrhœa, may take place, and from that time endometritis may exist. When we consider that such a sudden check of menstruation will sometimes result in hæmatocele of fatal character, it is certainly not to be wondered at that it may likewise produce the disease of which we are speaking.

Excessive venery, even where no violence is done to the uterus, may produce it by the prolongation of intense congestion of the organ kept up by this act.

It is a well-known fact that when menstrual blood is retained for a long time in utero by an obstruction in the vagina or at its mouth, by an imperforate hymen, for example, the severance of

the occluding medium and admission of air will often result in endometritis of dangerous and even fatal character. Such cases appear to resemble very closely the septic endometritis which occurs after parturition, and constitutes the first step towards puerperal fever.

Symptoms.—The disease demonstrates its presence in the non-puerperal uterus without any very violent symptoms.

Ordinarily the patient complains of pain, weight, and dragging in the pelvis; pain in the back, groins, and thighs; burning and pricking in the vagina, and vesical and rectal tenesmus. After four or five days there is usually a discharge of a viscid liquid, which in eight or ten days becomes creamy, purulent, and perhaps bloody; tympanites and sensitiveness upon pressure, and uterine tenesmus or "bearing-down pains," show themselves in severe cases, and at times, though rarely, there is active diarrhœa due to reflex irritation of the rectal nerves. Should the fluid discharged from the vagina be allowed to come in contact with the skin of the vulva, abdomen, or thighs, an intense cutaneous irritation is established, which may go on to excoriation and the development of pruritus of aggravated character. In two cases I have seen prurigo thus excited which spread over the entire body. If the reaction of this purulent discharge be examined into, it will sometimes be found to be acid and at other times alkaline. The explanation of the fact is this: the discharge from the uterus is alkaline and that from the vagina acid. If the irritating uterine fluid have established, as it very generally does, a vaginitis, the acid secretion from this source overcomes the alkalinity of that from the other. If on the other hand no severe vaginitis exist, the discharge from the uterus presents its ordinary alkaline features.

Physical Signs.—An examination by touch reveals the vagina hot and dry, or covered by the discharge noted above. The os uteri is found gaping, the cervix swollen and very sensitive to pressure, the body slightly enlarged, and the whole organ lower than normal in the pelvis. Through the speculum the cervix is found to look swollen, œdematous, and red, and from the pouting os pours forth either a clear, albuminous-looking fluid, muco-pus, or long tenacious shreds of cervical mucus. The probe, if used at all, should be employed with the greatest caution. It will discover great sensitiveness throughout the uterine cavity, and the slightest touch upon the fundus will cause a few drops of blood to flow. Indeed, so great is the engorgement that the speculum itself will often cause blood to flow from the cervix.

Bimanual examination will discover the uterine body enlarged, and tender upon pressure, so that one who judged hastily and without sufficient knowledge of the subject, would be very apt to diagnosticate with great positiveness acute parenchymatous metritis. Indeed there can be no doubt that many of the reported cases of that affection have been nothing more than instances of this form of endometritis.

Differentiation.—The only diseases with which this would with any probability be confounded, are pelvic cellulitis, peritonitis, acute parenchymatous metritis, and acute vaginitis. Physical exploration would so easily settle the point with reference to three of these that they require no special consideration. The certain differentiation of this affection from parenchymatous disease, at a period when muco-purulent discharge is in abeyance, is by no means easy. One general fact should be borne in mind, namely, the extreme rarity of acute metritis, and the frequency of this affection. It must be remembered that in acute endometritis the submucous tissues are engorged, and that the supply of blood to the entire parenchyma is increased.

Pathology.—In its first stage acute endometritis consists in an intense and active hyperæmia of the mucous lining of the uterus, which is red, swollen, œdematous, and softened. Its surface is spotted, Scanzoni declares, from congestion of the capillary network around the mouths of the utricular follicles. When the second stage has set in, the cavity of the uterus is found to contain an excess of mucus or creamy-looking pus, which may be more or less mingled with blood. If the cervix be involved in this inflammatory engorgement, the mucous membrane of its vaginal portion participates markedly, as an examination by the speculum will prove.

In the mucus just mentioned the microscope reveals the presence of thousands of cells and sometimes entire casts of the utricular follicles.

"Ordinarily," says Scanzoni,[1] "acute catarrh of the mucous membrane of the uterus, is accompanied by a congestive swelling of the muscular substance of the womb, and most generally, it is possible, particularly in the most internal layers of the organ, to see with the naked eye, that the vessels are gorged with blood. There ordinarily results from it, an infiltration and a softening, which are much greater in the layers of the parenchyma of the

[1] Diseases of Females, American ed., p. 193.

uterus nearest to the mucous membrane. Hence, these alterations of tissue which are characteristic of acute parenchymatous metritis ordinarily accompany catarrh of the mucous membrane, when this has obtained a high degree of intensity." "The whole substance of the uterus," says Klob,[1] "generally appears to be increased, and its tissue more vascular and succulent, especially in the layers nearest the mucous membrane."

Acute endometritis very rarely shows itself before puberty.

Complications.—Its complications are acute metritis, urethritis, vaginitis, vulvitis, cystitis, salpingitis, pelvic peritonitis, and various eruptive disorders, the results of scratching excited by pruritus vulvæ.

Course, Duration, and Termination.—Acute endometritis, when occurring in the non-puerperal state, may, without treatment even, go on to recovery, generally lasting from a month to six weeks, and perhaps passing through its whole course without its existence having been diagnosticated. It sometimes ends in the chronic form of mucous inflammation, or even in hyperplasia, the superficial subjacent connective tissue becoming affected. It is doubtful whether any severe case of endometritis runs its course without being to a greater or less extent complicated by a slight degree of parenchymatous disorder. As already stated the disease may end in chronic endometritis or in recovery. It may, likewise, end in death; inflammatory action spreading along the Fallopian tubes and causing salpingitis, which, by resulting in free purulent discharge into the peritoneum, may establish inflammation there.

Prognosis.—In spite of all these possibilities the prognosis is always favorable if the patient take ordinary care of herself and yield to a judicious plan of treatment.

Treatment.—The diagnosis having been clearly made, treatment should be at once established. Complete rest of mind and body should be regarded as essential points. In severe cases, the patient should be kept perfectly quiet upon her back in bed, and not allowed to leave it or to assume the sitting posture even to gratify the calls of nature. Opium should be freely given by mouth or rectum for the production of perfect nervous quiescence and for the relief of pain. In severe cases one grain of powdered opium or its equivalent of morphia should be administered every third hour. This drug, I feel sure, not only acts as a sedative to the

[1] Path. Anat. Female Sex. Organs, American ed , p. 231.

nervous system, and a quieter of pain; it absolutely modifies the inflammatory process by its influence upon the nerves. The bowels should not be acted upon by cathartics, and ordinarily no other medicine should be administered than that already advised. Over the hypogastrium a soft, warm poultice of powdered linseed should be placed and covered by oiled silk. This need not be renewed oftener than once in twelve hours, for the oiled silk will preserve its warmth. The patient should not be annoyed by leeches or cups. Even if high febrile action show itself, this can be readily controlled by appropriate administration of tincture of veratrum viride. The diet should be very simple, and should consist of fluid food chiefly, as milk, beef-tea, &c. A condition of constipation should be encouraged, and such food as involves the elimination of a small amount of excrementitious matter should be allowed. The object of maintaining a state of constipation is that all motion in the abdominal cavity may be avoided and perfect rest be assured to the diseased part. As soon as secretion of muco-pus begins to show itself, the vagina should be gently syringed out three times daily with copious warm injections of infusions of bran, linseed, starch, or poppies. For the proper accomplishment of this the patient should turn so as to lie across the bed, in the French obstetric position, on the back, with the buttocks over the edge of the bed, which has been protected by India-rubber cloth, each foot being supported by a chair. A nurse then placing between the thighs a tub containing three or four gallons of the selected infusion, should pass the nozzle of a Fountain or a Davidson's syringe up to the cervix, and for fifteen minutes project against it a steady stream. All examination by speculum, probe, and after a diagnosis has been made, even by the finger, should be avoided unless some special indication demand it. Astringent injections and all vaginal applications should be avoided. The affection which we are treating is in the uterus, not the vagina, and such applications merely annoy the patient and aggravate the disease. The warm injections which have been advised act as poultices or fomentations to the whole internal surface of the pelvis, at the same time that they insure cleanliness to the vagina and remove from it a fluid, which if left there might excite vaginitis. Under this plan of treatment the patient should be kept until recovery, or until we are admonished by time that the disease has passed into its chronic form and requires different remedies.

To one accustomed to the advice to apply leeches to the cervix or perineum, pass the speculum, and apply solid nitrate of silver

to the cervix, inject the vagina with solutions of persulphate of iron, keep the bowels constantly active by saline cathartics, &c., this plan may appear too inefficient to be relied upon. Of any one entertaining this doubt I would ask a trial and comparison of the two methods before he arrives at a decision which will guide his future practice. If his experience agree with mine I do not doubt the resulting verdict.

CHAPTER XIV.

ACUTE METRITIS.

Definition and Synonyms.—By this term is designated acute inflammation of the parenchyma of the womb, in contradistinction to that of its lining membrane. As already stated, endometritis rarely occurs and runs its usual course without, at least to a limited extent, producing parenchymatous disease. Under these circumstances, however, it is merely a complication of the existing disorder.

Frequency.—With reference to its frequency as a primary affection many conflicting statements will be found. This arises partly from the fact that some have written of it without making any distinction between the forms occurring in the puerperal and non-puerperal states, while others have confined their remarks, as is here done, to the disease in the latter condition; partly from endometritis, active congestion from suppressio mensium, and pelvic cellulitis having been mistaken for metritis; and in great part from the difficulty of gaining post-mortem evidence, the disease generally being recovered from. My own experience leads me to regard it as of extremely rare occurrence, since I have met with it but twice in a practice which has afforded abundant opportunities of seeing uterine diseases. One of these cases resulted from slitting one wall of the cervix uteri up to the vaginal junction, and the other from the use of a badly fitting pessary. I have, however, seen

numbers of cases which were regarded by others as of this character, and quite a number which I viewed as such until enlightened by post-mortem or other evidence. Rokitansky[1] declares that, "in acute inflammation of this organ, generally the lining membrane of the uterus is affected primarily, and that this is scarcely ever the case with the uterine tissue, as far as can be demonstrated by the pathological anatomist, with the exception of the reaction following traumatic influences, especially of the vaginal portion."

In his recent work Klob[2] takes still stronger ground as to the existence of uncomplicated metritis, and asserts that never having met with an instance of the disease, he is forced to describe it upon the authority of others.

Some practitioners are prone to regard every case of inflammatory action in the pelvis, accompanied by great tenderness over the uterus, as metritis. Such cases are much more frequently due to pelvic cellulitis or peritonitis, which are by no means rare affections, or to active congestion, caused by suppression of the menses or excessive coition. After parturition, either at term or premature, true metritis does occur not unfrequently, but this variety does not concern our present investigation. As regards that form which we are considering, I feel convinced that if the experienced practitioner will put aside his preconceived views and interrogate the results of his observation, he will find, if he has had his attention aroused to the frequency of the diseases which simulate it, that he has met with this affection very rarely. Let it be borne in mind that as a complication of endometritis there is sufficient inflammation of the parenchyma to produce enlargement, puffiness, and sensitiveness, and that a differentiation of the affections, to be reliable, must be made with care.

Varieties.—No varieties of acute metritis can be based upon the part of the organ attacked, for it is confined to no special portion, but affects the entire parenchyma from the cervix to the fundus. A distinction should, however, be made between the puerperal and non-puerperal forms, on account of their dissimilarity in frequency, severity of symptoms, prognosis, and termination.

Causes.—The chief causes for the disease in the non-puerperal uterus are—

1st. Mechanical injuries—from operations on the uterus, vagina, or bladder; excessive or intemperate cohabitation about the men-

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[1] Patholog. Anat. [2] Op. cit., p. 227.

strual epoch; the use of intra-uterine or vaginal pessaries; dilatation of the cervix by tents; the careless use of the uterine sound, or attempts at removal of growths from the body of the uterus.

2d. Sudden suppression of the menstrual flow from any cause.

3d. Acute endometritis, whether its cause be vaginitis, specific or simple, or any other of those mentioned in the last chapter.

4th. Morbid growths in the parenchyma of the uterus, whether cancerous or fibroid.

Symptoms.—It is generally stated that the disease announces its invasion by a chill. In the cases which I have seen this has not been the fact, and should an attack be thus ushered in, I should strongly suspect cellulitis or pelvic peritonitis. In the beginning, violent pelvic pain, accompanied by vesical, rectal, and uterine tenesmus, comes on, sometimes with nausea, vomiting, and diarrhœa. The pain soon becomes agonizing, extends down the thighs, and is very much increased by the passage of fæces through the rectum. Should the complication of endometritis be present in any marked degree, a glairy, tenacious, and gummy flow will appear, which rapidly becomes purulent and creamy. Should it not exist, no vaginal discharge will take place, unless the disease occur during menstruation, when menorrhagia may show itself. All these symptoms will merely lead us to suspect the existence of metritis. The complete diagnosis will depend upon physical signs for its establishment.

Physical Signs.—When pressure is made over the uterus great sensitiveness is found to exist. The finger introduced into the vagina discovers the organ lower than its normal position in the pelvis, the cervix enlarged and swollen, and the os dilated, and pressure upon the cervix gives great pain, as it does also when practised against the body in the fornix vaginæ. This last symptom is still more clearly developed by rectal touch and conjoined manipulation, which generally detect the body of the uterus pressing back upon the bowel. The passage of a speculum will generally be attended by pain, but it may, if necessary, be employed. Should it be introduced, the cervix uteri will be seen to be swollen and the os gaping. The vagina will be hot and dry, unless bathed with purulent material discharged in consequence of endometritis.

Differentiation.—The disease must be differentiated from pelvic peritonitis, cellulitis, endometritis, and active congestion. From the first it may be known by mobility of the uterus, which would be fixed if it existed; by sensitiveness being confined to the uterus, and not existing over the pelvis, and by enlargement and tender-

ness of the os and cervix: from the second by absence of a phlegmonous, tender mass in one broad ligament or near the uterus. If the case be one of endometritis, it will be known by the fact that the uterus will not be found so markedly enlarged, nor so exquisitely sensitive upon pressure; the constitutional signs will not be so grave, and there will be the peculiar discharges marking this disease. From active congestion of violent character in its early stages, I know of no means of differentiation. The diagnosis must be determined by the subsequent progress of the case.

Pathology.—The first stage of acute metritis is one of active congestion. The bloodvessels of the parenchyma become distended, press upon the intervening nerves, and produce enlargement of the uterus and pain. A blood stasis exists similar to that constituting the first stage of inflammation in other organs of the body. This is soon succeeded by the second stage, which consists in the exudation of liquor sanguinis, which being poured out into the interspaces of the muscular fibre thickens the walls of the uterus, and often produces displacement. The excessive amount of nutritive materials furnished to the tissues may result in a proliferation or abnormal growth of connective tissue. It is very rare for suppuration to occur and abscesses to form subsequent to this as a third stage, though in a few exceptional cases such a result has taken place. Cases of this character are recorded by Depaul, Scanzoni, Reinmann, and Bird.

Even at the present day many practitioners, it appears to me, cling to discarded views upon the subject of inflammation, a term employed with too much latitude, and not limited by a sufficiently succinct and comprehensive definition. By many it is supposed to signify an increase in the vital processes; an exaltation of function; a rapidity and excess of life. To no such condition would I apply it in these pages. On the contrary, I adopt the view of those who look upon it as an arrest of function; an interference with vital action; a checking of physiological processes, which, if carried far enough, invariably results in abnormal development or local death. Acute inflammation may be defined as an arrest in the processes of nutrition, characterized by nervous hyperæsthesia, congestion, effusion of the elements of the blood, and a tendency to suppuration.

Should mere blood stasis exist, unaccompanied by the circumstances mentioned, congestion is the name applied to the condition; while, if excessive generation of homologous tissue occur without active congestion, alteration of secretion, &c., the term hypertro-

phy conveys the idea of excessive development uncomplicated by inflammatory action.

Unquestionably, the greatest advances which have been made of late years in the elucidation of the processes of inflammation have been effected by the German school. By the labors of Virchow, Recklinhausen, Cohnheim, Schultze, and others, much light has lately been thrown upon it, and I now propose to lay some of their views before the reader.

Virchow has established a group of connective tissues which comprises the fibrous, the mucous, the adipose, the elastic, the cartilaginous, and the bony. The component parts of these are cells which vary in shape and contents, and intercellular substance which has been proved by Recklinhausen to be perforated by little canals which convey nutritious juices. The walls of the blood-vessels, arteries, veins, and capillaries, as proved by Oedmansson, have between their epithelial investments apertures or stomata, which by vascular distension become opened and allow of more easy escape of the contents of the vessels. An interference in the functions of circulation, secretion, and nutrition occurs in these parts as a result of, and really may be said to constitute the first stage of, inflammation, which consists in congestion and distension of the canals just mentioned, and a stasis or arrest of the elements of the blood. Such an interference sometimes results from local influences, hence the trite maxim of our forefathers, "ubi irritatio ibi fluxus;" sometimes the nerves governing capillary circulation, nutrition, and secretion are disturbed by an influence reflected from some central cause; again, vascular derangement occurs without connection with the nervous system. "It is certainly true, as maintained by Virchow," says Brown-Séquard,[1] "that nutrition and secretion, normal and abnormal, can be carried on without the intervention of the nervous system; but this does not at all prove that that system cannot interfere, for good or for evil, in nutrition and secretion in the various tissues and organs. For instance, there is no doubt whatever that an inflammation, followed or not by suppuration and ulceration, can take place without any intervention of the nervous system; but there is no doubt also, that the same morbid processes, not only can be, but very frequently are, produced by a nervous agency."

Whatever be the pathological condition resulting in impairment of capillary circulation and coincident disorder in nutrition and

[1] Diagnosis and Treatment of Functional Nervous Affections, p. 21.

secretion, Cohnheim[1] has demonstrated, by vivisection, the following steps in inflammation. First, the arterioles begin to dilate and become tortuous, and soon the venules do likewise; this is followed by retardation of the circulation and aggregation of the white corpuscles on the walls of the vessels. This retardation, dependent as it is on want of tone, almost paralysis, in the muscular coats of the vessels, distends these still more fully, opens their stomata, and through these ooze the plastic elements of the blood,[2] an amorphous fibrinous matter, and also pass many of the white and a few of the red corpuscles of the blood. The white corpuscles soon pass out in great numbers and become pus cells.

All this, even when the type of the action is acute, belongs to depreciation and not to increase or excess of vitality. When the process is of acute type, suppuration soon occurs, and disintegration of plastic effusion is at an early period followed by discharge; or the semi-paralyzed vessels recover their tone, the stagnant circulation is restored to a healthy state, and the effused materials either become organized or are absorbed.

Complications.—Acute metritis may be complicated by inflammation of any of the tissues most proximate to it, and peri-uterine cellulitis, peritonitis, endometritis, cystitis, or rectitis, may occur.

Course, Duration and Termination.—Its course is not lengthy, recovery being generally arrived at in a fortnight or three weeks. It may end in one of two ways, by resolution or formation of abscess.

Treatment.—As soon as the disease has been recognized the patient should be placed upon her back in bed and not allowed to leave it or to sit up upon any pretext, not even for evacuation of the bladder or rectum. Perfect rest should be insisted upon as an important element in the curative process. Warm poultices of flaxseed or corn meal should be laid over the hypogastrium, or, instead of these, towels wrung out of hot water and covered by oil-silk may be used. Should these be inconvenient on account of weight, the artificial poultice called spongio-piline, which consists of a thick layer of wool and sponge woven together and covered by a thin layer of India-rubber, may be made to replace them. During the entire course of the disease the patient should

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[1] Revelations on Inflammation, &c., by M. Cohnheim, London Lancet and Med. Times and Gazette.

[2] The passage of fibrin from the vessels is denied by Virchow, who declares that all fibrin found outside the blood is "a local production." But this subject is one requiring too much space to admit of treatment here.

be kept under the moderate, but systematic use of opium. This should be done not only for relief of pain, and production of constipation, but for the nervous quiescence and controlling influence over inflammation which it exerts.

Under this treatment, combined with restriction to mild, unstimulating diet, the disorder will generally subside very rapidly, but great care should be exercised with reference to allowing the patient to resume her usual avocations, for carelessness in this respect may result in her becoming a sufferer from chronic congestion. For the purpose of preventing this, sexual intercourse, severe exercise, exposure during menstruation, &c., should be carefully avoided for some time after the apparent termination of the existing affection.

The practitioner should daily watch for the spread of inflammatory action to the pelvic areolar tissue. Should it be detected, a blister should at once be applied over the hypogastrium, preceded, if it be thought advisable, by a few leeches. It may be objected to this plan that a blister should not be applied during the existence of acute inflammation. I have never seen one, used under these circumstances, aggravate the symptoms, and have frequently noticed an amelioration from its employment.

CHAPTER XV.

CHRONIC CERVICAL ENDOMETRITIS.

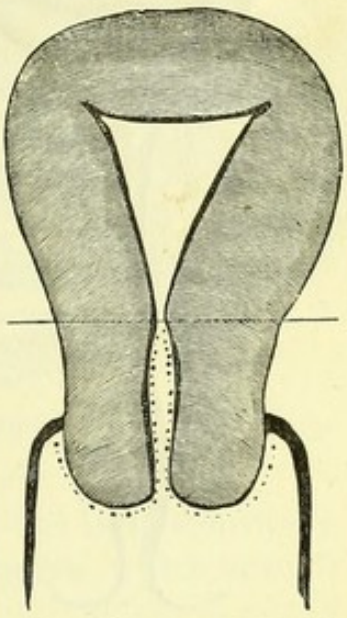
When inflammation of acute character affects the uterus it has a marked tendency to invade the entire organ, and to involve both cervix and body, but with chronic inflammation this is not the case. Being of a lower grade of intensity, it more strictly confines itself to the mucous membrane and limits itself to the body or cervix. Such limitation is neither universal nor absolute, sometimes adjoining parts being more or less implicated and at others the entire organ being simultaneously and equally involved.

Definition.—By the term chronic cervical endometritis is meant

chronic inflammation of the mucous membrane, extending from the os internum through the os externum and over the vaginal portion of the cervix uteri, as represented by the dotted lines in Fig. 69.

Between inflammation affecting the vaginal surface of the cervix and that occurring within the canal there are many points of difference; so marked are they, indeed, that M. Nonat has been induced to make two varieties of the affection. The disease may be, and commonly is, confined to one of these parts. When it occurs on the vaginal face of the cervix, friction and other influences often produce granular or cystic degeneration; and areolar hyperplasia is very likely to occur from the same causes. In spite of this I deem it best to define the disease as I have done above, relying for completeness of description upon a subsequent chapter devoted to what is commonly termed ulceration of the os uteri.

Fig. 69.



The dots represent the site of chronic cervical endometritis.

Frequency.—Of all diseases of the genital system of the female this is without doubt the most frequent, and although not in itself a malady of dangerous character may prove the starting-point for some of the most serious and rebellious of uterine disorders. Exposed as the cervix uteri is to injury during coition, laceration from parturition, and irritation from walking, riding, and lifting, it is not surprising that its complicated investment should frequently become the seat of disease.

Synonyms.—It has been described under the names of cervical catarrh, cervical leucorrhœa, and endo-cervicitis.

Normal Anatomy of the Cervical Mucous Membrane.—The cavity of the cervix uteri is a fusiform canal, measuring about one inch and a quarter, beginning at the os internum above and ending at the os externum below.

Dr. H. Bennet lays great stress upon the fact that the division of the uterus into two cavities, accomplished by the os internum, is very complete. He objects to the diagram of Dr. Quain, given in Fig. 70, and offers the representation in Fig. 71 as more correct.

The internal os in the virgin uterus is shown by Dr. Bennet's diagram, while that of Dr. Quain more faithfully represents

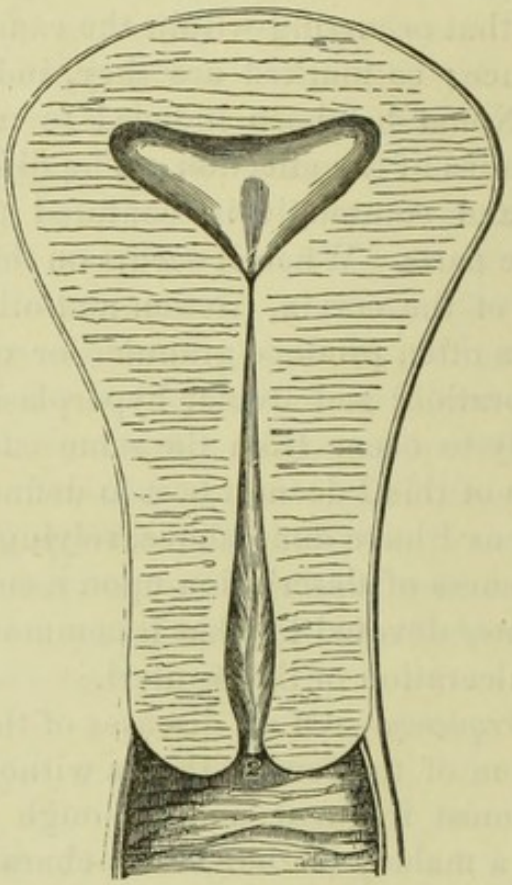
that of the multiparous organ. The fact pointed out by Dr. Bennet attracted the attention of the ancients.[1] "Many of the ancient authorities describe the uterus as consisting of two cavities sep-

Fig. 70.



Dr. Quain's representation of the cavities of body and cervix. (Quain.)

Fig. 71.



Dr. Bennet's representation of uterine and cervical cavities. (Bennet.)

arated from one another by a membrane." On the anterior and posterior walls of the cervix are ridges, from which folds are given off which are arranged with regularity, and run obliquely upwards and outwards, to end in other indistinct lines on the sides of the canal. (Fig. 72.) This arrangement of mucous membrane has received the name of arbor vitæ.

Between these folds numerous mucous glands are seen, which are called the glands of Naboth. Dr. Tyler Smith[2] estimates that a well-developed virgin cervix probably contains at least ten thousand of these follicles. The mucous membrane forming these folds or rugæ is covered over by cylindrical and ciliated epithelium and studded by villi, which are found in considerable numbers

[1] Theophilus, Com. on Hippocrates, Aph. ii, p. 469, ed. Dietz.

[2] On Leucorrhœa, Am. ed., p. 38.

upon the larger rugæ and other parts of the mucous membrane. (Fig. 73.)

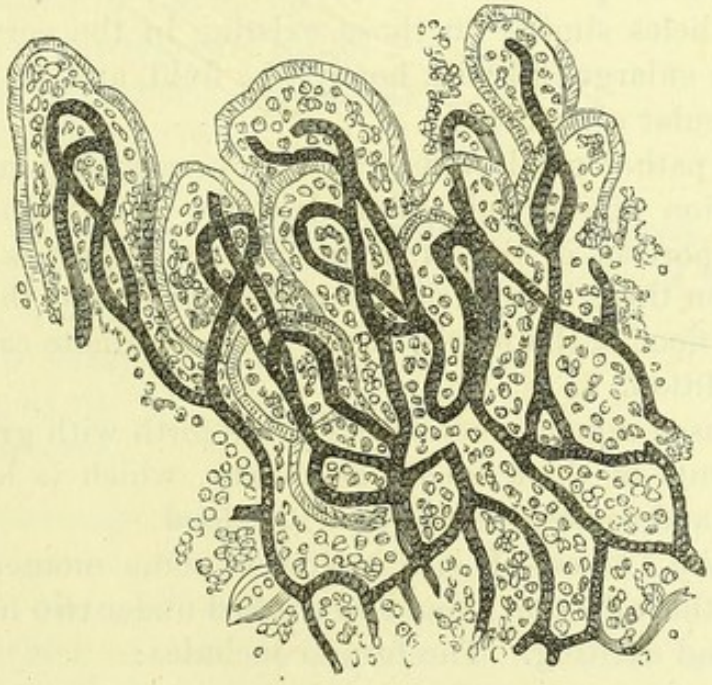
Fig. 72.



One of the four longitudinal columns of rugæ from the virgin cervix. Nine diameters. (T. Smith.)

The natural secretion of the cervical canal has been shown by M. Donné to be alkaline, unlike that of the vagina, which is acid.

Fig. 73.



Villi of canal of the cervix uteri, covered by cylindrical epithelium and containing looped bloodvessels. One hundred diameters. (T. Smith.)

Pathology.—Cervical endometritis consists in inflammation of all this structure and consequent alteration of its condition. The

glands of Naboth are especially involved in the morbid action, the disease chiefly consisting in glandular inflammation. The glairy mucus which is secreted in large amount as one of its symptoms is the characteristic discharge of these structures. Looked at with a strong glass in post-mortem examinations of this disease, they are seen enlarged and elevated, and, according to Aran,[1] their mouths may be seen very much dilated. But the affection does not confine itself to these follicles for a long time. Very soon the villi or papillæ, especially those on the vaginal face of the cervix, become diseased. At first there is a loss of the normal supply of epithelium which produces a slight and very superficial abrasion. This becomes in time more distinct and marked, from destruction of the villi themselves over spaces of greater or less extent. If this process of destruction should go on and affect the deeper tissue, a true ulcer would be formed, and no one would ever have denied the name of ulceration to the existing condition, but it does not thus progress. In time an hypertrophy occurs in the villi, which increase in size, project like so many hairs from the surface, and give to the os and cervix an appearance which has caused the term granular degeneration to be applied to it. This state affects the vaginal portion of the cervix chiefly, but may extend up the canal.

On the vaginal portion of the cervix are sometimes found muciparous follicles similar to those existing in the cervical canal. These often enlarge, fill with honey-like fluid, and, bursting, give rise to follicular ulceration.

Another pathological state, which is occasionally met with as a complication of cervical endometritis, is an eversion of the os and lower portion of the canal to such an extent as to keep up inflammation there by the friction of the membrane, thus exposed, against the floor of the pelvis. Some very obstinate cases are due to this condition.

The diseased mucous membrane pours forth with great activity large amounts of thick tenacious mucus, which is loaded with epithelium and sometimes tinged with blood.

Predisposing Causes.—It is a matter of some moment that the etiology of this affection should be studied under two heads,—predisposing and exciting. The former includes:

Natural feebleness of constitution;

The existence of a cachexia, as tuberculosis or scrofula;

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[1] Mal. de l'Utérus, p. 423.

Impoverishment of the blood from chlorosis or other cause;
Prolonged mental depression;
Insufficient nutriment;
Lactation;
Frequent parturition;
Subinvolution;
Styles of dress which depress the uterus;
Want of exercise and fresh air;
Residence in a city.

These influences either act injuriously upon the nervous system, and thus interfere with the circulation and nutrition of the lining membrane of the cervix; or by directly disordering the vessels and nerves of the uterus render it ready for the establishment of disease by some cause which would have exerted no baneful effect upon a woman in perfect health.

It may naturally be asked why most of these influences should produce this disease more than others. My answer is, that they do not do so. Sometimes they cause chronic pneumonia; at other times granular lids; at others follicular faucitis; and again at others chronic cervical endometritis.

Exciting Causes.—Chief among these may be enumerated:

Displacements of the uterus;
Excessive or intemperate coition;
The use of intra-uterine pessaries;
Puerperal endometritis;
Acute non-puerperal endometritis;
Exposure or fatigue affecting a subinvoluted uterus;
Efforts at production of abortion and prevention of conception;
Vaginitis, specific or simple;
Obstructive dysmenorrhœa;
Cervical polypi;
Cervical fissures.

Many other causes might be enumerated; but these will suffice to show the nature of those influences which act as excitants of the disease. Many of those mentioned would fail to produce it in a uterus which had not been prepared for their action by depreciating constitutional conditions. When treatment is established for the cure of the disease, if it be inaugurated and pursued without regard to these predisposing causes, it will often prove to be inefficient or futile in cases which would yield to a plan that

showed a recognition of their importance. Appreciating highly as I do the value of local treatment in uterine affections, were I in the management of this disease limited entirely to one kind —local or general—I do not hesitate to say that I would infinitely prefer the latter. A removal from a city to the country, the use of mineral and vegetable tonics, plenty of good, nutritious food, the observance of regular hours, the systematic resort to exercise in the fresh air, and the pleasures of cheerful society, will, I feel confident, do far more for the patient than a weekly visit to the office of a physician and the reception of the most appropriate local treatment which science can afford. But better than either plan is the judicious combination of the two. They should go hand in hand. My wish is to keep prominent the fact, that of the two the general treatment is the more important in the disease which now concerns us, as it is of many others which we shall come to consider.

Symptoms.—Cervical endometritis may exist for a length of time without presenting any symptoms of sufficient gravity to warn the patient of its presence. Even a leucorrhœa, which is somewhat abundant, often fails to attract her attention. The answer to a question as to its existence will often be a negative one in cases in which the practitioner will, by the speculum, discover a considerable amount in the vagina. In the great majority of cases the disease will soon announce its existence by some or all of the following signs. The first symptom which will attract attention will probably be dragging sensations about the pelvis. These will soon be followed by pain in the back and loins, which will be very much increased by exercise or muscular efforts. Then a more or less profuse leucorrhœa will be noticed, the discharge as it issues from the vulva resembling boiled starch or thick gum-water, and often irritating the vulva and vagina to such an extent as to produce inflammation in them. Menstrual disorders will now show themselves. The discharge will be either too scanty or too profuse, too frequent or too infrequent, and to a certain extent painful; sometimes decided dysmenorrhœa will exist.

Usually before the disease has existed for a long period, the constitution of the patient will show signs of becoming implicated. She will become nervous, irascible, moody, and often hysterical. Her appetite will diminish and digestion grow feeble, so that impoverished blood will soon be observed as a result of impaired nutrition. With some or all of these signs of the existing disorder

the patient may continue for a length of time without suffering from others of more annoying or graver character. Complications may, however, rapidly develop themselves; cystitis, cervical hyperplasia, and corporeal endometritis coming on and proving exceedingly troublesome. At times pain during sexual intercourse constitutes a prominent sign of cervical disease, but it belongs rather to cervical hyperplasia than to endometritis, the former having added itself as a complication to the latter, and thus produced the symptom. Sometimes nausea, and even vomiting, present themselves as symptoms, and these, together with the digestive disorder before mentioned, produce so great a deterioration in the nutrition of the patient as to result in emaciation, excessive paleness, and loss of muscular power and capacity for endurance.

Although these symptoms are enough to make us confident of the existence of uterine disorder, they by no means furnish reliable grounds for a positive diagnosis. This can be arrived at only by physical exploration.

Physical Signs.—The patient being placed upon her back, and the finger of the examiner introduced into the vagina, the os uteri will probably be found in its usual position in the pelvis, for the weight of the uterus is not increased, the connective tissue not being involved. The os may be somewhat enlarged and its lips slightly puffed, or it may be roughened on account of granular degeneration of its papillary structure. Sometimes, however, severe cervical endometritis may exist without any enlargement of the os, or any trace of abrasion or granular degeneration. If the finger be now placed under the cervix and that part raised by it, pain will be complained of, though not to any great extent. This will be most marked near the os internum. No other affirmative sign can be elicited by this means, and the speculum should then be used. By this the os will be seen to be in the condition just described, and from it will be found to exude a long string of tough, tenacious mucus which will closely resemble the white of egg. If entangled by a small mass of cotton attached to the end of a whalebone rod, it will be found to be so viscid and resisting that it cannot be drawn from the canal. It will resist even a stream of water thrown with some force upon it, and very often is removed only after several efforts by this or other means. The cervix will usually be found not to be enlarged. Its tissue may present a swollen, puffed appearance, or be intensely red as if in a state of ulceration, which will upon close inspection be found to be due to removal of its investing epithelium and the occur-

rence of a granular degeneration. Should this condition exist, it will afford relief to the mind of the inexperienced Gynæcologist, for the diagnosis of the case will be clear. But another state of things may be discovered which will leave him in doubt. Upon removing the plug of obstructing mucus, he may discover no evidence of disease. The os is no larger than it should be, its tissue is not reddened, no ulceration exists, in fact nothing is found explaining the backache, nervousness, emaciation, and profuse leucorrhœa which led him to advise and urge the examination. The case is simply one of cervical endometritis which affects the inner and upper parts of the canal without having produced granular degeneration.

Differentiation.—We will suppose the diagnosis of cervical endometritis to be made; there are several questions to be decided before it should be considered complete. First, it must be settled whether the morbid state is confined to the cervix or extends into the body. Second, whether if confined to the cervix it is limited to the mucous lining of that canal or is complicated by areolar hyperplasia. If the symptoms are no more severe than those already mentioned, more especially the constitutional signs, it may at least be regarded as probable that the membrane of the body of the organ is free from disease. If the patient be a virgin, it is much more likely to be corporeal than cervical disease; while if she have borne children, it is much more likely to be cervical than corporeal. More reliable information than this may be obtained from the use of the uterine probe, which should now be employed. The examination by touch has taught us the position of the uterus; now, bending the probe so as to give it a curve proper for entrance into its cavity we pass it gently in. If the disease be confined to the cervix, the instrument will meet with slight obstruction at the os internum, which will be dilated in case the affection has advanced beyond it, a fact which has been specially insisted upon by Dr. Henry Bennet. Passing the probe into the cavity of the body, it should be carried up to the fundus, which should be gently struck by it. Then it should be made to impinge with a slight degree of force upon the sides of the cavity. If the body be affected, this will give pain which may last, as a patient once expressed it, "like a toothache," for half an hour, and the removal of the instrument will very likely be followed by a flow of mucus and probably by one or two drops of blood.

Should the disease be cervical, no pain will result from the exploration, and the removal of the probe will be followed by the

escape neither of mucus nor blood, unless improper force be applied.

Course, Duration, and Termination.—Cervical endometritis is not a self-limiting disease, and consequently its duration will depend upon circumstances which control its progress. It may unquestionably disappear without medical aid. Any alterative influence which exerts a complete change in the economy, as, for instance, parturition, entire alteration of the habits of life, or some change equally decided, sometimes results in a cure. But it is certainly safe to say that, unchecked, it might pass, slowly, perhaps, but still steadily, into cervical hyperplasia, which would probably draw in its train displacement, and all the long list of ailments which make the lives of women suffering from uterine disease so burdensome.

Prognosis.—The prognosis of the disease is always favorable if proper treatment be adopted; but great caution should be observed as to fixing the time at which recovery will take place. Even in the mildest case which has lasted for some time, from four to six months will probably elapse before perfect cure can be accomplished, and even after this a relapse will be very likely to occur unless preventive measures be adopted and strictly adhered to. The prognosis will of course depend for its correctness upon that of the diagnosis, for if areolar hyperplasia exist, or the morbid action have affected the lining membrane of the body, an equally favorable prediction cannot be made.

Treatment.—The disease consisting in cervical endometritis, the efforts of the practitioner must be directed to producing an alterative influence upon a mucous membrane which is in a condition of chronic inflammation, and the prevention of all influences which may cause it to spread to the body of the uterus. These ends will be best accomplished by the following means:

General regimen;
Emollient applications;
Alterative applications.

General Regimen.—"The first care of the practitioner," says Sir Charles Clarke, "should be to remove, if possible, the causes of the disease. . . . Women who live in a moist atmosphere, who keep bad hours, who spend much of their time in bed, or who inhabit hot rooms (being generally weak women, and having a relaxed vagina), will be apt to be affected by the complaint." All such unfavorable circumstances should be modified. If any

depressing influence, such as lactation, any habitual discharge, or any cause for mental anxiety be discovered, it should be carefully removed, and the patient, unless absolutely plethoric, be put upon the use of vegetable tonics, the mineral acids and preparations of iron. The functions of the alimentary canal should be constantly supervised. The diet should be mild and unstimulating, but most nutritious. No system of starvation should be entered upon, for the tendency of the disease is to the production of spanæmia, and this we should combat. All spices, and stimulating condiments should be avoided. Every day, unless some special contraindication exist, the patient should take fresh air and exercise, by carriage or on foot for a time, which should be limited by the circumstances of the particular case. If she should be unable to do this from any cause, she should be thoroughly protected, and pure air, even in winter, be allowed to circulate freely in her chamber, all the doors and windows of which should be opened for two or three hours daily. This plan, which is suggested by Prof. Byford, of Chicago, I have found a most excellent one. The bowels should be kept regular by saline cathartics, and the skin in proper state by occasional baths. Care must be observed not to depreciate the strength by catharsis, and, to prevent this, a ferruginous tonic may be advantageously combined with the cathartic, as in the following mixtures:

℞.—Magnesiæ sulphatis, ℥ij.
Ferri sulphatis, gr. xvj.
Acidi sulphurici dil., ʒj.
Aquæ, Oj.—M.

One ounce (two tablespoonfuls) in a tumbler of iced water every morning upon rising.

℞.—Sodæ et potass. tart., ℥ij.
Vini ferri amari (U. S. D.), ℥ij.
Acidi tartarici, ʒiij.
Aquæ, ℥xiv.—M.

One ounce in a tumbler of iced water every morning upon rising.

Should one draught not be sufficient, two, or even three may be taken daily, for the result will prove tonic and reparative as well as cathartic.

If much disturbance of the nervous system should exist, the bromide of potassium in doses of five to ten grains, three times a day, will be found very useful.

The appetite and digestion are so often impaired that special attention will generally have to be directed to alleviation of that collection of symptoms which are grouped under the head of

dyspepsia. The stomach sympathizing with the uterus does not perform its functions with vigor; the gastric juices appear to be wanting or inefficient, and fermentation of the food often takes the place of digestion. Under these circumstances I can recommend from lengthy experience with it the following digestive tonic:

℞. One rennet washed and chopped,
Sherry wine, Oj.

Macerate for twelve days, then decant, filter, and add—

Dilute nitro-muriatic acid, ʒij.
Tinct. of nux vomica, ʒij.
Subnitrate of bismuth, ʒij.

One tablespoonful in a quarter of a tumbler of water before each meal.

This prescription combines the tonic properties of nux vomica and the peculiar alterative influences of bismuth, with a fluid which resembles the gastric juice. In many cases of habitual indigestion I have obtained from it the best results.

Emollient Applications.—The cervix should be irrigated every night and morning, by warm water thrown against it by one of the plans recommended elsewhere. To the water may be added chloride of sodium, glycerine, boiled starch, infusion of linseed, slippery elm, or tincture of opium. The irrigation should be so planned as to last for twenty or thirty minutes without fatiguing the patient or proving a source of annoyance to her. The method for doing this is so fully described elsewhere that it need not be repeated here.

In many cases of the affection of not very aggravated character, and which have not advanced to the production of granular degeneration or hyperplasia, if this plan of general tonic treatment and soothing injections be faithfully carried out, all complaints will cease on the part of the patient, and a cure be gradually effected. Should this result not be attained, or should the disease be discovered at the first examination to have progressed to disease of the connective tissue, resort must be had to local alteratives.

Alterative Applications.—The local treatment by means of applications made through the speculum will, with great advantage, be preceded by dilatation of the whole cervix by means of a tent of sponge or sea-tangle. This not only exposes the canal to applications, but opens the way for escape of fluids, and by pressure exerts an alterative influence on the diseased membrane. Should granular degeneration exist, it will be peculiarly advantageous. The tent being removed the canal should be cleansed of blood and mucus, which may be done by a small pledget of cotton wrapped

around a staff of whalebone, hickory, or bamboo, eight inches long, as thick as a pipe-stem, and tapering toward its extremity. Should the first pledget become saturated, it can readily be slipped from the staff and another wrapped in its place, or several staves may be prepared and kept ready for use. A little practice will be necessary to enable one to arrange the cotton upon the staff in a proper manner. When the plug of mucus is very tenacious and will not allow of removal in this way, a very small bit of

FIG. 74.

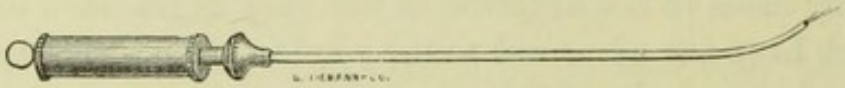


Rod eight or nine inches long, wrapped with cotton.

sponge, not larger than a large pea, may be fixed in a sponge-holder or a pair of long forceps and passed up to the os internum. The sponge should be thrown away afterwards, for the repetition of its use might convey disease from one patient to another. A supply of such small pieces of sponge should be kept at hand, in order that a new one may be used for each patient.

Another method of cleansing the cervical canal, and one which I commonly employ, consists in the use of a syringe with a nozzle four or five inches long, which may be worked by one hand. The thumb retracting the piston, while two fingers hold the body of this instrument, it is filled with water, which is

FIG. 75.



Syringe for cleansing the cervix and vagina.

thrown with violence against the os and cervix, the tip of the nozzle being in direct contact with the part to be cleansed. The fluid thus ejected collects in the speculum if a cylindrical instrument be used, or in the vagina if Sims's speculum or one of its varieties be employed. It is again taken up and projected against the cervix, and this is repeated until the part is sufficiently cleansed. I am thus particular in speaking of the process of cleansing the cervix, because I believe that treatment is often impaired in its efficacy by a neglect of it. The caustic used being neutralized by a thick envelope of coagulable mucus, is prevented from exerting a decidedly alterative influence upon the diseased part. Care must be taken not to throw the fluid into the body of the uterus, but even should this occur after dilatation, it will at once escape.

The cervix can after cleansing be clearly seen and applications made.

It is a fact, universally admitted in every department of therapeutics, that certain substances of greater or less strength as escharotics have the property, when applied to inflamed mucous surfaces, of so modifying the morbid action existing in them as to diminish its intensity and in time to check its progress. It is upon this principle that chronic inflammation of the fauces, urethra, bladder, and many other mucous surfaces are treated. Those substances which have been found by experience to answer the best purpose in inflammation of the mucous lining of the cervix are the following: nitrate of silver, iodine, chromic acid, carbolic acid, sulphate of copper, solution of persulphate of iron, tannin, and acetate of lead. After the tent has been removed and the cervix cleansed, a brush composed of delicate pig's bristles is dipped in a solution of one of the substances mentioned. If copper, zinc, or lead be employed, the solution may be made saturated, and if tannin be used, it may be dissolved in glycerine in large amounts. The whole cavity of the cervix should be painted over thoroughly with the solution, from the os internum to the vaginal mucous membrane. After this application, a bit of cotton, with a piece of stout thread attached, should be dipped in glycerine and applied against the cervix. This protects the vagina from contact with the drug, and, as Dr. Sims has shown, acts as a local hydragogue, depleting the part to which it is applied.

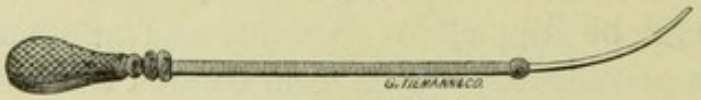
This treatment may be repeated once a week, the application being preceded each time by the tent, which should never be allowed to remain longer than twenty-four hours.

It is difficult to give any rule with reference to a choice of these alterative applications. All that can be said is that it is indicated by the same rules which govern a selection when employed elsewhere in the economy. In choosing the caustic the practitioner should bear in mind that one great objection to those of severe character is the liability of their closing the cervix by causing cicatricial contraction. For this reason I would never, unless to destroy a malignant growth, or cause contraction in an everted cervical canal, introduce within the os externum, or apply nearer than three or four lines from its edge, the actual cautery or the acid nitrate of mercury. In the use of even the solid nitrate of silver, one should be cautious and limit its application to cases in which the canal is dilated. Chromic acid, which was, I think, introduced into uterine practice by Dr. Marion Sims, possesses

the great advantage of not contracting the neck. At least I should say that I have never seen, nor heard of, a case in which it did so. The fluid preparation in general use is a saturated solution, though it may be used of any strength desired. The plan just described involves keeping the patient in bed only for twenty-four hours out of every week, while the tent is in place, and certainly shortens the course of the affection very much.

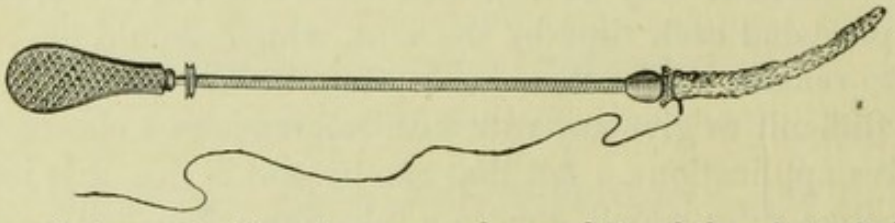
Another means of making applications to the whole cervical canal, either after or without dilatation by tents, is the following: the uterine probe being passed up to the os internum and withdrawn, its curve shows the direction to be followed by the instrument by which the application is to be made. This consists of a flat silver probe, measuring with its handle about eight or ten inches. It is decidedly the best instrument for the purpose in view with which I am acquainted, and was introduced into practice by Dr. Emmet of this city. It resembles very closely the uterine probe, the only difference being that it is flat and has no terminal bulb. Fig. 76, constructed after a plan adopted by Dr. Sims, represents a slight modification of this instrument. Two

Fig. 76.



Silver probe with slide.

Fig. 77.



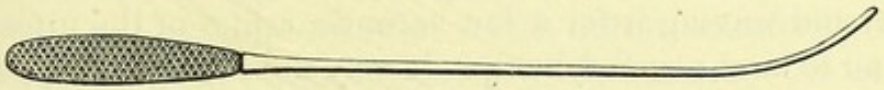
Same instrument with cotton wrapped around it and thread attached.

inches of the extremity of this are wrapped with a very thin film of cotton, the arrangement of which, although it appears quite simple, requires a little practice, and the probe is bent to the curve of the uterine probe which has been passed to the os internum. It is now dipped in a solution of chromic acid, nitrate of silver, or saturated tincture of iodine, and passed up to the os internum, where it is kept for one or two minutes and then withdrawn. A stream of water should then be projected on the cervix, to remove any surplus which may have escaped, and the application should be repeated. This repetition is advisable because the first appli-

cation sometimes only coagulates and removes tenacious mucus which remained in the upper part of the canal, and a second is required to really cauterize the surface. This instrument may be likewise employed so as to leave a long thin roll of cotton in the canal. The flat rod, being wrapped with this substance, is dipped in a solution of alterative or astringent character. It is then carried up to the os internum, the cotton is slipped off by the slide and remains in the cervical canal. By a thread attached it may be removed in twelve hours. Instead of dipping the cotton in a solution it may be prepared in the following manner and applied dry. An ounce of the sulphate of copper, zinc, or iron may be dissolved in a pint of water. In this a mass of cotton is soaked, then dried in the sun, and it is ready for use. Or the cotton may be saturated with iodine and glycerine, as recommended by Dr. Greenhalgh, and employed in the same manner.

Another convenient method for reaching the upper parts of the canal is by the use of a very delicate probe of hard rubber, about eight inches long, the invention of Prof. C. A. Budd, of New York.

FIG. 78.



Budd's elastic probe.

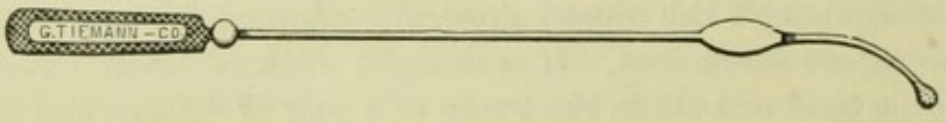
This instrument is wrapped with cotton as is Dr. Emmet's, and so delicate is it that when introduced straight into the cervical canal, it passes along its curve and goes directly to the fundus. Holding it over the flame of a lamp for a few seconds will cause it to become pliable as a willow twig, when it may be bent as desired, and when it becomes cool it keeps the curve given it until heated again. These two probes leave nothing to be desired in making fluid applications.

In applying solid caustics to the walls of the canal a different method should be pursued. Should the case appear to require a solid caustic, the nitrate of silver may, with great advantage, be employed, though the means generally adopted for applying this substance are inefficient. If a straight stick of lunar caustic be fixed in a quill or held in the grasp of a pair of forceps and passed into the os, by no possibility can the procedure accomplish what is desired. It may cauterize, and will probably do so with objectionable thoroughness, a quarter or half an inch of the lower portion of the canal, but how can it be expected to go upwards for an

inch and a quarter and come in contact with the whole surface inflamed, a surface remarkable for its inequalities and convolutions. Sir Benjamin Brodie many years ago, according to Dr. Barnes, of London, advised fusing nitrate of silver and allowing it to cool upon the tip of a probe for cauterizing sinuous tracts, and Chassaignac, of Paris, applied the same substance to the cavity of the womb by coating platinum wires with it. Within the last few years Dr. F. D. Lente, of Cold Spring, N. Y., has experimented extensively in reference to this subject, and the result of his investigations has been to furnish the profession with the best and most reliable of all the means at our command for applying solid lunar caustic to the mucous lining of the uterus. Other methods which have been suggested and employed are these: the use of Lallemand's porte-caustique; leaving a pellet of nitrate of silver in the uterine cavity to dissolve; carrying up a small piece held in a delicate wire casing, &c.; but none of these compare with Dr. Lente's, which is thus practised. A probe, somewhat similar to the ordinary uterine probe, is warmed and then dipped in a little platinum cup that contains nitrate of silver which has been fused over a spirit-lamp. Removing the probe after dipping it, and waving it for a few seconds, a film of the nitrate will be found to have covered its tip. It may then be again dipped, and the process repeated until a sufficiently large pellet is made to cover the end of the instrument. Figs. 79 and 80 represent the probe and cup.

It is used thus: the cervical canal having been cleansed of mucus, and its direction learned by the ordinary probe, Lente's probe is passed up and rubbed against every part of its investing membrane, and dipped as carefully as possible into its convolutions before removal. After all such applications, a stream of water should be projected against the cervix and a pledget of cotton, which has been freely saturated with glycerine, with a bit of thread attached, should be placed against it. By means of

Fig. 79.



Lente's silver caustic probe.

the thread this may be removed by the patient in twelve hours. It is a question of some importance to decide how often these

caustic applications should be repeated. As a general rule I should say once a week, except in the case of a thorough application of chromic acid or the solid nitrate, when twice that time should be allowed to elapse. These substances cause decided sloughs to

FIG. 80.



Lente's cup for fusing nitrate of silver.

occur, after the removal of which it is better to dress the surfaces left uncovered, by equal parts of glycerine and solution of the persulphate of iron, or by tincture of iodine, or weak solutions of the nitrate of silver left in the canal upon rolls of cotton.

Another excellent plan of treating this affection is by the use of medicated tents of sponge. For the past four years I have employed it very generally, and now prefer it to any other mode of treatment. Tents of this character may be prepared in two ways. The sponge may be wound upon a large wire which will leave a capacious canal. This may be filled, after the tent is dried, with a long suppository of cocoa butter containing nitrate of silver, iron, or any other mineral in admixture. As the tent expands it is permeated by the elements contained in the suppository, which thus come in contact with the walls of the uterus. A better method is this: sponge cut into proper shape is saturated with a solution of zinc, copper, iron, iodine, carbolic acid, or lead. It is then squeezed, dried, soaked in a solution of gum acacia, and made into tents. They possess not only the alterative powers attached to the pressure which they exert, but bring into direct contact with the diseased surface alteratives of most reliable character. The influence of this means is unquestionably good; it produces no more pain than the use of the non-medicated tent, and all offensive odor is prevented in the sponge.

The idea of dilating a uterine neck affected by endometritis by means of sponge is apt to strike one who has never essayed the method as being attended by some danger. I can say with positiveness that it is not so. The tent not passing into the body of the uterus does not excite that part of the organ, and in no case in which I have employed one in the cervix have I been led to regret having done so.

Instead of medicated sponge, an alterative may be incorporated with butter of cocoa, gum tragacanth, or some similar substance,

made into suppositories two inches in length, and left in the cervical canal. Into these cervical suppositories may be introduced zinc, copper, iron, lead, or bismuth, with opium, conium, or hyoscyamus. They do not compare in efficiency with medicated tents, and it is difficult to keep them from becoming dislodged.

To keep in mind the plans recommended for applying caustics and alteratives to the cervical canal the following *résumé* may prove useful:

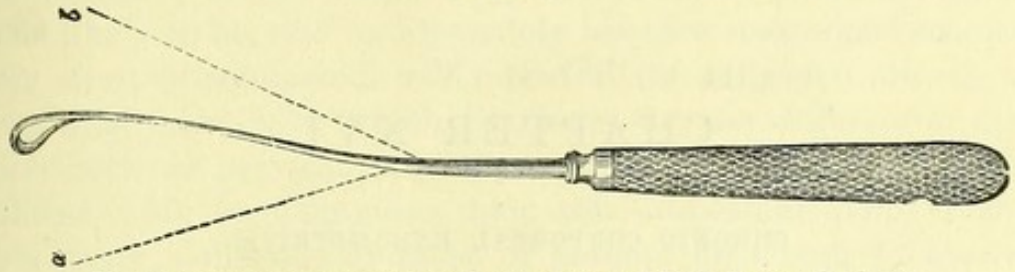
1st. Dilatation by tents;
2d. Application of fluids by small brushes;
3d. " " by flat probe;
4th. " " by rolls of cotton;
5th. " of solids by Lente's probe;
6th. " " by medicated tents;
7th. " " by suppositories.

But as every Gynæcologist must have found out by annoying experience, there are a few cases of this affection which prove incurable by any of these means. They are instances not of granular cervical endometritis, but of true and simple inflammation of the Nabothian follicles. When these cases are examined, a long glairy and extremely tenacious plug of mucus is seen hanging from the os externum, which it is often found almost impossible to remove completely. Month after month they tax the ingenuity and perseverance of the practitioner, and at the end of his efforts they seem as aggravated in character as they were before. Under these circumstances some, despairing of a cure by minor means, have resorted to the heroic method of passing sticks of nitrate of silver freely, or the actual cautery or potassa fusa more cautiously, to the os internum. This treatment unquestionably cures the affection, for it destroys the whole of the glands of Naboth which constitute its habitat. But in a year or so after the cure, if the patient, who will begin to suffer from severe obstructive dysmenorrhœa, be examined, her last state will be found to be worse than the first. The lining membrane of the cervical canal has sloughed, and subsequent contraction having taken place the canal has become almost obliterated. I have in several cases seen it completely closed, so that a surgical procedure had to be resorted to for allowing escape of menstrual blood.

For these aggravated cases of cervical endometritis, I have resorted to an operation which has for its object the complete re-

moval of these glands by a surgical procedure, which I have never seen followed by subsequent contraction.

Fig. 81.



Sims's curette, representing the angles at which it may be bent.

This consists in the application of the cutting steel curette, represented in Fig. 81, so forcibly as to remove the glands from the os internum to the os externum. Sometimes a second application in two or three weeks after the first, has been necessary, and very rarely even a third. By this means I have succeeded in curing some most obstinate cases which had resisted cure by all other means except the destructive caustics to which I have alluded. The use of this method should be looked upon as an operation, and the patient guarded just as carefully against inflammation as she would be after section of the neck or any kindred procedure. I am fully aware that there are many who will at once characterize this procedure as harsh and unnecessary, but as I feel certain that it is neither, and as I have had experience enough with it to know that it meets the requirements of a class of cases which are incurable by other means, I strongly press its claims to a fair trial. This operation is not parallel with the application of the curette to the body of the uterus for vegetations. It consists in what is equivalent to amputation of the glands and is the counterpart of removal of the follicular surfaces of the tonsils when chronic inflammation of the follicles proves incurable.

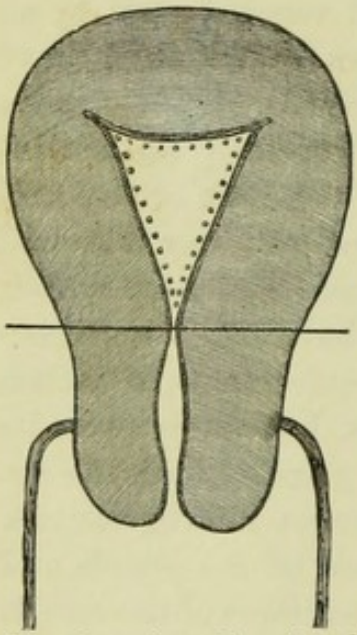
CHAPTER XVI.

CHRONIC CORPOREAL ENDOMETRITIS.

LIKE the cervix, the body of the uterus is liable to chronic inflammation confined to its lining mucous membrane. This receives the name of chronic corporeal endometritis.

Synonyms.—This disease has been described under the names of endometritis, uterine catarrh, uterine leucorrhœa, and internal metritis. The precise seat of the affection is pointed out by the dots in Fig. 82.

FIG. 82.



The dots show the site of corporeal endometritis.

Frequency.—Few points in uterine pathology have created more discussion of late years than this. Some excellent authorities, following the lead of Dr. Henry Bennet, regard it as of rare occurrence, while a large majority consider it quite common. "Internal metritis,"[1] says Aran, "is more frequent, nevertheless, in spite of all that has been said to the contrary, in the cavity of the body than in the cavity of the neck of the womb;" and this opinion is concurred in by Dr. West and others. To show how unsettled this point is in the present state of pathology, let me contrast with this statement that of Prof. Byford,[2] of Chicago, whose excellent work on Medical and Surgical Treatment of Women has recently appeared: "Inflammation limited to the cavity of the body of the uterus is not common, but I am quite sure that I have met with at least two instances." While Dr. Byford's experience furnishes him but two instances, Dr. Tilt

[1] Mal. de l'Utérus, p. 408.

[2] Op. cit., p. 182.

gives the statistics of fifty cases of which he has kept notes, and Klob declares the disease to be quite common.

The more industriously the student of Gynæcology interrogates the literature of this subject, the more unsettled are his conclusions likely to be, and unfortunately his own investigations, however carefully conducted, will often fail to enlighten him in the individual cases with which he meets, for the differential diagnosis between cervical and corporeal endometritis is often very difficult. My own opinions upon this important point I shall state freely, unbiassed by those of authors for whom I entertain the highest respect, but whose conclusions conflict with what I have carefully observed at the bedside.

The most frequent locality of uterine inflammation is that portion of the uterus below a line running across it through the os internum. That portion of the organ above this line, however, is much more commonly affected by inflammatory disease than is stated by Dr. Bennet. During eighteen months I have met, in private practice alone, nine well-marked and unquestionable cases, and with several more in which I could not satisfy myself as to the exact limit of the disease. The lining membrane of body and cervix may be simultaneously affected, but this is the exception and not the rule; generally we find one or other portion of the organ the seat of disease. In making this last assertion I am fully aware of its importance, and of the fact that it will be dissented from by a great many. But feeling convinced, as I do, that upon its non-recognition depends a certain amount of the obscurity attending the differentiation of disease of the neck and body, I wish to fix the attention of the reader upon it.

Normal Anatomy.—If the mucous membrane of the uterus be examined by a lens, it will be seen to be studded with minute openings somewhat similar to the mouths of the glands of Lieberkühn in the intestines. These are the mouths of long, curling follicles which project by their closed extremities downwards towards the parenchyma of the organ. They are lined by delicate epithelium, their lining membrane consisting merely of involution of that of the uterus. These glands are of two kinds, the simple which are unbranched tubes, and the compound which have several branches. Besides these glands there are intermixed with them mucous crypts which sometimes become distended so as to form the so-called "channel polypus."

Between these glands ramify numerous capillaries, which dip down between them and form a network about their mouths so

superficial that they are sometimes seen by a strong glass completely uncovered, and even projecting like villi into the cavity.

Pathology.—Corporeal endometritis is, like the same affection in the cervix, a glandular disease. The utricular follicles are the seat of the disorder, and it is to the exaggeration of their secretory function that is due the uterine leucorrhœa, which constitutes one of its prominent symptoms.

The post-mortem appearances of the mucous membrane are these: it is found to be swollen, soft, pale, and smooth, or covered over with granulations. In cases which have lasted very long the utricular glands are in great numbers obliterated, or atrophy having taken place at their mouths only, their secretions are retained, and they are distended into cysts. In time the mucous membrane is replaced by a thin layer of connective tissue, which is covered not by cylindrical or ciliated epithelium, but by what resembles that of basement character. At times small mucous polypi are found in the cavity, while at others a closure of the os internum uteri having been effected by adhesion, hydrometra exists.

I have had three opportunities for examining post mortem into the pathology of this disease. Two of these cases were presented to the Obstetrical Society of this city. In these instances the condition described by Scanzoni was most evident. The uterine cavity was found considerably enlarged, its walls diminished in thickness, and in one instance they were pronounced by Dr. J. B. Reynolds, after microscopical examination, to be in a state of fatty degeneration. The uterine neck was in every case found healthy both as to parenchymatous and mucous structure, and the enlarged body displaced by anterior or posterior flexure. The mucous lining of the body was in two cases quite smooth and to a great extent deprived of epithelium, while in the third it was roughened, and presented points where the enlarged bloodvessels created a number of reddish spots. But enlargement of the uterine cavity is not always present; it marks chronic cases, and will not be recognized in those of recent origin. It is highly probable, too, that in cases of recent origin the pathological appearances which have been here described would not be found to exist, but in place of them a thickened, congested, and florid appearance would present itself.

Prognosis.—The prognosis of chronic inflammation of the uterine body is always grave with reference to cure. Even if the case be not of very serious character, and have lasted only a short time, the possibility of rapid recovery is doubtful, while, if it have continued

for a number of years it will often prove incurable. Scanzoni[1] says, with a candor which does him honor: "As for ourselves we do not remember a single case where we have been able to cure an abundant uterine leucorrhœa of several years' standing." In most cases a certain amount of amelioration may be effected even when they are of long standing; in a certain number treated early, cure may unquestionably be accomplished; while in a great many, nothing whatever, either in the way of cure or of relief, can be obtained, and the patient, after passing from physician to physician, settles down into a careful mode of life, resolved to cease treatment and bear as best she may an evil which she has learned to regard as incurable.

The symptoms of a hopeful and desperate case of corporeal endometritis may be thus contrasted:

Prognosis is Favorable when	Prognosis is Unfavorable when
The case is of recent standing;	The case is of long standing;
The discharge is mucus or blood;	The discharge is purulent;
Dysmenorrhœal shreds are not cast off;	Dysmenorrhœal shreds are cast off;
Patient naturally of strong constitution;	Patient naturally of feeble constitution;
Connective tissue is not affected;	Connective tissue is affected;
No displacement exists;	Displacement exists;
Dimensions of cavity are not increased;	Dimensions of cavity are increased;
Discharge does not produce vaginitis;	Discharge produces vaginitis;
Nervous system is not involved;	Nervous system is involved;
Patient near menopause.	Patient not near menopause.

Predisposing Causes.—It has been noticed most frequently to have developed itself in women showing a tendency to the following conditions:

Scrofula;
Tuberculosis;
Spanæmia;
Exhaustion from parturition;
" " lactation;
Great and prolonged nervous depression.

Exciting Causes.—These may be enumerated as follows:
Exposure during menstruation;
Sudden checking of the menstrual flow;
Obstruction to escape of menstrual blood;
Abortion and parturition;
Cervical endometritis;
Acute endometritis, puerperal or not;

[1] Scanzoni, Diseases of Females, Am. ed., p. 202.

Abuse of sexual intercourse;
Injury from sounds, or intra-uterine pessaries, and injuries resulting from attempts to produce abortion;
Certain hæmic conditions, as those accompanying phthisis and exanthematous diseases;
Tumors in the uterine cavity or walls;
Vaginitis, specific or simple.

It is quite clear how either of the first two causes, in checking hemorrhage from the congested mucous lining of the uterine body, may at once induce the first stage of this disease. They generally result in the acute variety, which may pass off rapidly, but which sometimes ends in the chronic form.

Obstruction to escape of menstrual blood is a very fruitful source of the affection. The menstrual blood, if it pour at once into the vagina, remains fluid from admixture of an acid mucus secreted by the lining membrane of that canal; but if it be imprisoned in the uterine cavity, where only an alkaline mucus exists, it very soon becomes clotted. These clots are too large to pass through a cervix of normal dimensions, and, of course, cannot escape from one unnaturally constricted. Their presence in the uterine cavity, together with that of blood which they imprison, in time excites contraction, by which they are expelled. But this repeated dilatation and contraction cannot last long without exciting inflammation in the mucous lining either of the body, the cervix, or of both. Such an obstruction may have as its cause a small polypus, which acts as a ball valve at the os internum, congenital or acquired narrowness of the cervical canal, uterine flexion, or swelling of the cervical lining from congestion.

The parturient process is a very frequent source of the disease, especially where the unripe placenta is prematurely separated from its uterine connection. Where, as in a prolonged labor, the early evacuation of the liquor amnii leaves the irregular outline of the body of the child pressing against the uterine investment for many hours, such a sequel is not astonishing.

Of cervical inflammation as an exciting cause Dr. Bennet[1] thus expresses himself: "It," (corporeal endometritis), "appears, however, to be generally met with in practice as the result of the lengthened existence of inflammatory disease of the cervix and its cavities. The inflammation gradually progresses along the cavity of

[1] Op. cit., p. 75.

the cervix until it reaches the os internum, and passes into the uterus." I have already stated my dissent from this view, although, at the same time, I admit that it sometimes holds true.

Acute endometritis may, instead of subsiding entirely, very naturally run into this disease.

The effect of sexual intercourse as a causative influence is frequently observed soon after marriage, the first connubial approaches exciting uterine congestion with greater or less intensity. Dr. Tilt[1] remarks with reference to it: "It is useless to disguise the fact, connection has a downright poisonous influence on the generative organs of some women." I cannot believe that the Almighty has ordained a function as essential to the perpetuation of our species which has a downright poisonous influence on the generative organs of a healthy woman. And yet, to a certain extent, the statement is correct, for upon a woman who has enfeebled her system by habits of indolence and luxury, pressed her uterus entirely out of its normal place, and perhaps goes to the nuptial bed with some lurking uterine disorder, the result of imprudence at menstrual epochs, sexual intercourse has indeed such an influence. The taking of food into the stomach exerts no poisonous influence on the digestive system, but the taking of food by a dyspeptic who has abused and injured that organ, does so.

Injuries from sounds, &c., act so evidently in exciting inflammation as to need only mention.

Certain conditions of the blood sometimes produce acute corporeal endometritis, which, as already stated, may pass into the form under consideration. As a complication of the exanthematous diseases, endometritis is well known, and its occurrence with phthisis has been noted by Dr. Gardner in the American edition of Scanzoni. Every practitioner must have noticed it in connection with that affection.

Tumors in the cavity or walls of the uterus very generally produce this disease in consequence of the congestion of the mucous membrane which they cause.

Symptoms.—The symptomatology of corporeal endometritis constitutes one of the most unsatisfactory and obscure subjects in the entire field of Gynæcology. At times its symptoms are so slight and at others so masked and obscure, that the disease often runs a lengthy course without exciting the suspicions of either

[1] Op. cit., p. 234.

physician or patient. Its effects upon the constitution also differ most unaccountably in different cases. Sometimes the disease will continue for ten, fifteen, or twenty years, producing profuse leucorrhœa, menstrual disorders, and nervous derangement, and yet result in no annoyance so grave as to cause the patient to seek medical aid. At others it passes rapidly into areolar hyperplasia, which induces displacement and causes great pain on locomotion, sexual intercourse, and the passage of fæces through the rectum; or results in an ichorous discharge, which creates the most annoying symptoms of vaginitis, cystitis, or pruritus vulvæ. The chief symptoms which usually present themselves in a case of uncomplicated mucous inflammation of the uterine body are:

Leucorrhœa;
Menstrual disorders;
Pain in the back, groins, and hypogastrium;
Nervous disorders;
Tympanites;
Symptoms of pregnancy;
Sterility.

Profuse leucorrhœa of glairy character is one of the chief signs of the affection. This, when very tenacious and thick, is the product of the Nabothian glands, but the lining membrane of the uterus likewise secretes a similar fluid, differing from it chiefly in possessing the qualities mentioned, in a very much less marked degree. But uterine leucorrhœa differs from cervical in other particulars; it is often more or less mixed with blood so as to have a rust-colored appearance, especially for a fortnight after menstruation. This, Dr. Bennet[1] looks upon as being "as characteristic of internal metritis as the rust-colored expectoration is of pneumonia." It is certainly a very reliable and valuable sign. Sometimes the menstrual discharge is regarded by the patient as greatly prolonged, when in reality it is this blood-stained leucorrhœa which follows the process of menstruation, that gives rise to the belief. In some instances the discharge is milky, and at others, and these are the most rebellious cases, perfectly purulent. There is a variety of corporeal endometritis which occurs in old women who have long since ceased to menstruate, in which a watery or creamy pus is secreted. These cases are often accompanied by the most wearing and harassing pruritus vulvæ.

[1] Op. cit., p. 76.

Menstrual disorders are rarely absent. The discharge is sometimes too profuse, even lasting throughout the month and constituting metrorrhagia, or it is very scanty, and shows a marked tendency to cessation.

Where the connective tissue is entirely unaffected, menorrhagia may occur without pain, but this is not common, for that tissue is frequently involved and dysmenorrhœa coexists. Sometimes in these cases, an exfoliation of the entire lining membrane of the cavity of the uterine body occurs at the menstrual periods. This has received the name of the dysmenorrhœal membrane, and is by some regarded as one of the signs of chronic corporeal endometritis.

Pain in the back, groins, and hypogastrium is generally present, and at times a burning sensation over the symphysis pubis proves a source of great discomfort.

Nervous symptoms of greater or less severity generally show themselves before the disease has lasted long. The patient complains of neuralgic headache, especially over the crown, hysterical symptoms, with sadness, tendency to weep, and a feeling of intense isolation and incapacity for any mental effort.

Meteorism is a very common symptom, the connection of which with inflammation of the uterine mucous membrane is not, at first glance, clear. It is probably due to disorder of the nervous influences governing peristalsis and giving tone to the intestinal muscular tissue, which proceeds to such an extent as to result in accumulation of gases in the canal. In the same way it may induce constipation, which is often one of its most obstinate accompaniments.

Symptoms of pregnancy often exist in connection with the disease, and sometimes mislead the physician. Nausea and vomiting are by no means invariably present, but are valuable as positive signs. They appear to result from this disease as they do from occupation of the uterine cavity by the product of conception. Sometimes, in addition to these, there are darkening of the areolæ of the breasts, and enlargement and sensitiveness of the mammary glands. When to these are added abdominal enlargement, from tympanites and irregularity of menstruation, it will be perceived how easily an error might be made.

Sterility is so commonly a result of endometritis that it should be considered as one of its signs. Very often it has been the only symptom that has led to an investigation of the state of the uterus which has determined the existence of the disease. The

affection does not, however, preclude the possibility of conception; it only diminishes the probability.

Physical Signs.—The physical signs are neither numerous nor reliable, and those of real value only will be mentioned. The uterine probe passed into the cavity will often show the length of the uterus to be greater than it would be in health. The mucous lining being gently struck by the probe, pain will be at once complained of, and a few drops of blood with mucus will follow its withdrawal from the cavity. Upon conjoined manipulation, two fingers being placed in the fornix vaginæ, or one behind the uterus in the rectum, and the fingers of the other hand made to depress the anterior wall of the abdomen, sensitiveness will be found in the body of the organ. The recognition of the absence of cervical disease, while at the same time there are profuse uterine leucorrhœa and the other symptoms recorded, will lead us strongly to suspect it. Lastly, dilatation of the os internum, with or without that of the external os, may be taken as a corroborative sign.

Course, Duration, and Termination.—It is very doubtful whether this affection, like that of the cervix, is susceptible of spontaneous cure, or eradication by constitutional means alone. It may be palliated by alterative and tonic influences, diminished in severity and relieved of complications by constitutional means, but I have never seen a case thus cured. If not cured, the tendency of the mucous inflammation is to excite areolar hyperplasia and thus to induce uterine displacements with their attendant evils. The duration of the disease is unlimited, twenty and thirty years often elapsing without its removal. It is astonishing to see how long the affection will remain confined, in some cases, entirely to the mucous membrane and not affect the connective tissue to any appreciable degree; but that it does affect it in exceptional cases, even in the virgin, I feel satisfied is true.

The connective tissue may be affected in two ways by corporeal endometritis; 1st, a hyperplasia, or excess of nutrition, may occur; 2d, an aplasia, or want of nutrition, may take place, and dilatation and distension eventuate.

Complications.—The complications of the disease are cystitis, vaginitis, rectitis, ovaritis, hyperplasia, cellulitis, and pelvic peritonitis.

Treatment.—Special attention should be given to sustaining and improving the general health of the patient, which will always show a marked tendency to depreciation. Good diet, fresh air,

systematic exercise, and avoidance of all circumstances calculated to depress the spirits or harass the mind should be recommended. If practicable, change of air and scene should be brought to our aid, and the patient sent occasionally to some suitable watering-place or country resort. The healthy condition of the nervous and sanguineous systems will be fostered by these measures, and should medicinal tonics be required, iron, the mineral acids, quinine, the bromide of potassium, or nux vomica may be administered. All rich and highly spiced food should be avoided, and the patient should be guarded against habits of indolence and luxury which tend to exhaust the nervous strength.

The uterus should be placed at rest by removal of pressure upon the fundus by clothing, cessation of marital intercourse, avoidance of violent and intemperate exercise, and if necessary, by a sustaining pessary.

The part affected being removed from the vagina on the one hand, and the pelvic and abdominal walls on the other, little advantage results from the emollient applications and depletory means which prove useful where the cervix is diseased. Our chief hope of affording relief must rest upon the general measures just mentioned, and upon the direct application to the diseased surface of alterative remedies.

Medicated Tents.—I know of no plan which promises better results than the use of sponge-tents, medicated as elsewhere advised, when they can be borne. Very long and slim tents are passed completely up to the fundus uteri and allowed to remain for twenty-four hours, when, by a thread attached to them, the patient may remove them without difficulty. Tents medicated with iron, iodine, zinc, potassium, or copper, may be employed once a week with great advantage. Not only does the medicinal substance come fully in contact with the uterine walls, but the pressure exerted by the expanding sponge likewise proves beneficial.[1]

Application of Alteratives.—Récamier was the first who had the boldness to cauterize the cavity of the uterus, which he did by means of nitrate of silver in an ordinary porte-caustique. The practice thus introduced was continued and spread abroad by Robert, Richet, Trousseau, Maisonneuve, and others, and to-day is esteemed one of our most reliable methods for combating this rebellious affection. There are four methods by which it may be practiced: 1st, by the use of solutions painted over the surface;

[1] Some of the best tents that I have ever employed have been prepared by W. J. Porter, 113 Washington Street, Newark, N. J.

2d, by ointments left to melt in utero; 3d, by injections of fluids into the cavity of the body; 4th, by solid caustics. In commencing treatment the practitioner should see that the cervical canal is well opened, in order to admit the free escape of fluids from the cavity above, and the application of substances through it from below. This perviousness, if it do not exist, should be secured by the use of tents before the local treatment is proceeded with. If the uterus be found sensitive to vaginal and rectal touch, the patient should remain in bed for some days before the first application is made, the bowels be kept active by mild saline purgatives, and warm baths or hip-baths with copious vaginal injections employed. If the operator use the ordinary long, cylindrical speculum, he will in the majority of cases fail to accomplish the end in view, reaching the fundus uteri, for through such an instrument, it is always difficult to penetrate so high into the cavity. If, however, he use the Sims speculum, or one of its modifications, or the short, telescopic, cylindrical instrument, he will succeed without effort or delay. The instrument being introduced and the cervix cleansed by the speculum syringe, the operator very gently passes to the fundus Sims's uterine probe and learns the exact course of the canal. Then, placing the flat dressing probe by the side of this, he gives it the exact curve he has ascertained to be that of the uterine canal, and wrapping it with a thin film of cotton passes it to the fundus. This removes a good deal of mucus from the cavity which would otherwise have neutralized the caustic introduced. Removing the cotton from the probe he wraps another piece around it, or, as is better, uses another probe already wrapped, and, dipping this into the fluid caustic which he has determined to use, he passes it directly to the fundus and keeps it still for from thirty seconds to a minute. This should not be repeated, for the astringent action of the caustic makes repetition difficult, and if properly done the first time it will be unnecessary. After this the patient should go to bed and remain perfectly quiet, for three or four days if a strong caustic have been used, for one or two days if a mild one have been employed.

The caustics which may be thus employed are:

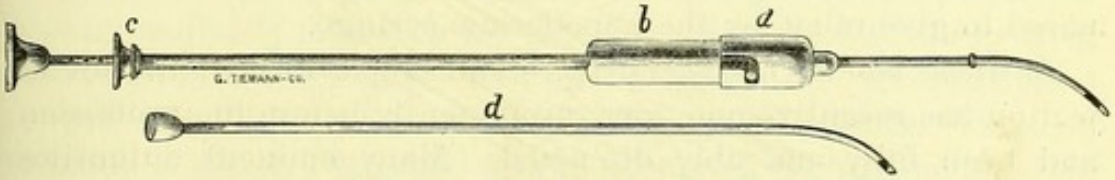
Solution of chromic acid ʒj to ℥j water;
Solution of nitrate of silver ϑj or ʒss. to ℥j water;
Churchill's tincture of iodine ℥ss. to ℥j glycerine;
Saturated solution of sulphate of zinc;
Saturated solution of sulphate of copper;
U. S. D. solution persulphate or perchloride of iron;

Solution of chloride of zinc ʒj to ℥j water;
U. S. D. muriate tincture of iron ʒij to ℥j water.

By the admixture of water, or glycerine, which is better, these may be weakened to any extent desired. Should the saturated solution of strong caustics, like chromic acid, be employed, let the practitioner be sure that there is no excitement about the uterus at the time the application is made, that not one superfluous drop is left upon the cotton, and that the patient remain perfectly quiet after the application. No one, unless familiar with the practice, should resort at first to strong caustics, but make use of one of the milder ones until he acquires the requisite skill. This method of employing fluid caustics was introduced into practice by Prof. Henry Miller, of Louisville. It is one of the most valuable and efficacious at our disposal.

Use of Ointments.—The use of ointments is proceeded with in much the same manner, except that a different instrument is, of course, necessary for their introduction. That which answers the purpose best is the invention of Dr. F. D. Lente. It consists of a syringe with a silver tube attached, as represented in Fig. 83. The ointment to be employed is put into the syringe by a spatula,

Fig. 83.



Lente's ointment syringe.

and the tube being introduced into the uterine cavity the piston is pushed forward and the ointment is forced out. The following are the ointments which are generally thus employed, though any others—as lead, bismuth, calomel, iodine, &c.—might be substituted:

℞.—Argenti nitratis, ʒij;
Belladonnæ ext., ʒj;
Ungt. spermaceti, ℈ij.—M.

℞.—Plumbi acet., ʒij;
Morph. sulphat., gr. iv;
Butyr. cacao, ℥ss.;
Ol. olivæ, q. s.—M.

The Application of Solid Caustic to the Cavity of the Uterus.—The only caustic which should ever be thus employed is the nitrate of

silver, for although one author has advised a similar use of potassa cum calce, no one of whom I have heard has followed his counsel. The use even of lunar caustic gives such great pain, and causes such grave constitutional symptoms, that it never can become a popular therapeutical resource. It is, however, of great value in obstinate cases, and should always be held in reserve. Sometimes the severest uterine colic is produced by it, with nausea, vomiting, and great prostration. So violent have these symptoms been in some cases, that I have been forced to use the hypodermic syringe freely for their relief, and now often employ it before resorting to the method. By Lente's probe the cauterization is accomplished in an easy and effectual manner not attainable by any other method. The nitrate being fused in the little instrument of platinum, represented on page 251, and the tip of the probe coated, the direction of the uterine cavity having been previously ascertained by Sims's probe, it is properly curved and passed in. By it every part of the uterine mucous membrane is thoroughly touched, the probe being kept within the cavity until its envelope has melted off. This application should always be treated as an operation. The patient should be warned of the pain which she will be likely to suffer, and the practitioner remain with her or visit her within an hour after the application has been made, prepared to give relief by the hypodermic syringe.

Injections into the Uterine Cavity.—The subject of intra-uterine injection has recently come very prominently before the profession, and been fully and ably discussed. Many eminent authorities have pronounced in its favor, and reported hundreds of cases in which they have employed it with impunity and benefit. In the practices of many it is, indeed, a routine method of treating corporeal endometritis. While the evidence which has been adduced proves that with proper precautions this means of medication is robbed of its chief dangers, it likewise makes it evident that in careless, inexperienced, or unskilful hands it carries with it manifold and serious perils.

This method of treatment is not a new one, as many have appeared to think, but one of the oldest on record. It is certainly a suspicious circumstance that employed, as it has been at various periods, during 2200 years, it should have, even at our day, as many opponents as it now numbers arrayed against it. It may be suggested that the necessity for allowing escape of the injected fluid has been only recently recognized, and that therefore the safety of the method has been only of late secured; but this is

not so, for in 1833, Mélier of France employed a double canula constructed on the same principle as that of Byrne, to which I shall soon make allusion. In this connection it may not be unprofitable to take a rapid survey of the history of the subject. For most of my facts I am indebted to an exhaustive article by Dr. J. Cohnhein[1] of Berlin, and translated by Dr. Kammerer[2] of this city. Intra-uterine injections were employed and advised by Hippocrates, B. C. 400, for the purposes of washing out bits of retained placenta and medicating the surface affected by catarrh. They are likewise advised by Paulus Ægineta, and as we come down to later times, by Sylvius, Montanus, Ambrose Paré, Bottoni, Roderic a Castro, Mercurialis, Ludovic Mercatus, and Astruc. Otto, a translator of Astruc into German, in a note expresses the opinion, that the fluid does not ordinarily penetrate into the uterine cavity, being prevented by the os internum, and says that, "he knows of cases in which the use of the above 'beautiful remedies' was followed by attacks of severe uterine colic." The method was again advised by Wenceslaus, Collingwood, Berends, and Steinburger, and opposed with apparently equal warmth by Frank and Hourmann. The latter author drew attention to the dangers of the method by reporting a case of severe metroperitonitis, which resulted from a simple injection given for leucorrhœa, and immediately following his case three fatal ones were reported, two in Bretonneau's wards and one in Nélaton's. At a still later period they have been recommended by Récamier, Velpeau, Ricord, Kennedy, Retzius, Routh, Sigmund, Matthews Duncan, Tilt, Braun, Martin, Courty, Nott, Kammerer, and others, and been opposed by Oldham, Mayer, Bessems, H. Bennet, Gosselin, Depaul, and others. Cases of violent uterine colic, accompanied by great prostration, feeble and rapid pulse, faintness and coldness of the extremities, are repeatedly recorded even by the advocates of the method; and peritonitis, ovaritis, and salpingitis, which have been recovered from, have been met with as results of the practice by Hourmann, Leroi d'Etiolles, Landsberg, Oldham, Pédelaborde, Retzius, Becquerel, Noeggerath, myself, and others. Fatal cases of peritonitis have occurred to Bretonneau, Nélaton, Gubiau, Noeggerath, Von Haselberg,[3] Jobert,[4] and others. A case of sudden death from entrance of air into the veins has been

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[1] Beitrage zur Therapie der Chronischen Metritis. Berlin, 1868.

[2] Amer. Jour. Obstet., vol. i, p. 377.

[3] Amer. Jour. Med. Sci., April, 1870, p. 566.

[4] Bennet on the Uterus, p. 287.

met with by Bessems,[1] who in post-mortem examination, "found air-bubbles in the vena cava and heart." Another case ending thus suddenly is reported by Dr. Warner,[2] of Boston, as occurring at the Charity Hospital of St. Louis, where "a small quantity of water injected into the uterus occasioned immediate death. This result was evidently from shock." I do not find any statistical records from Dr. Simpson upon the subject, but the general impression left upon his mind concerning the method is thus plainly stated:[3] "But, mark you, never think or dream of throwing liquids into the interior of the uterus by means of any injecting apparatus, for severe and fatal inflammations are very likely to ensue. Such a result may perhaps be caused by the fluid running along one or other patent Fallopian tube, and escaping into the peritoneum; more probably it may be due to laceration of the mucous membrane and entrance of the fluid into one of the uterine veins; but however it may be produced, the consequences of injecting fluid into the cavity of the womb are so often dangerous and deadly, that the practice has now been given up, I believe, by all accoucheurs." In this passage he alludes to injections into the non-puerperal uterus for dysmenorrhœa. Becquerel[4] reports the practice as applied to six cases of uterine catarrh. "In one case only, the catarrh was diminished; of the remaining five, three could be saved only by energetic antiphlogistic treatment, the effects of the injection being exceedingly severe." Noeggerath reports four cases treated by injections; in the first case, cure was happily effected; in the second, cure was accomplished, but serious and protracted symptoms followed; in the third case, metro-peritonitis was set up, but controlled; and in the fourth case the patient died.

There are two considerations in connection with this subject which must not be lost sight of. One of them is thus stated by Dr. Henry Bennet: "This accident," [fatal peritonitis, due, as he thought, to passage of fluid through the Fallopian tubes], "would probably have occurred much oftener than it has done in the hands of French practitioners, were it not that the natural coarctation of the os internum must have generally prevented the fluid injected from penetrating into the *uterine cavity*." The other is this, that many cases of peritonitis, some fatal and others not

[1] N. Y. Jour. Obstet., vol. i, p. 394.

[2] Boston Gynæcological Journal, vol. ii, p. 286.

[3] Dis. of Women, Am. Ed. p. 110.

[4] Mal. de l'Utérus.

so, which have been due to it have not been reported. One of the former and two of the latter have come to my own knowledge.

The explanation formerly given of the accidents which may follow this procedure, was very naturally the penetration of fluid through the Fallopian tubes into the peritoneum. But, although this does occasionally occur, (see Von Haselberg's case as an example), it has been proved by experiment upon the dead body, as well as by observation of the practice upon the living, that there is a resistance on the part of the tubes which ordinarily prevents it. Experiments to test this matter have been carefully conducted by Vidal, Klemm, and Hennig, and all with the same result. It is probable that entrance is resisted successfully by tubes which are healthy, but that dilatation and atony from salpingitis would render the patient liable to the accident.

The deduction which the evidence elicited forces upon us is self-evident, namely, that at the same time that this method of treatment systematically and carefully resorted to proves a valuable resource in endometrial disease, it is attended by many and great dangers. While it is proved that with certain precautions, and in the hands of one skilled in manipulations of this character, intra-uterine injections may usually be employed with safety and profit, it is equally manifest that a certain number of deaths have been due to it, and that it is frequently followed by excessive pain and grave constitutional symptoms when the essential precautions are neglected. I should strongly recommend the general practitioner who is unfamiliar with the treatment of uterine disorders to avoid their use entirely, except in cases of uncontrollable hemorrhage, in which the cervix is well dilated and no flexure of the uterus exists. When he is induced to essay this plan in the treatment of corporeal endometritis, let him bear in mind that the possibility of easy escape of the fluid injected is not an advantage merely, but an essential for safety.

One very recent advocate of intra-uterine injections with a great deal of naïveté makes the following statement:[1]

"Though most frequently women do not suffer any pain when injections, even of a strong solution of caustic, are made into the womb, yet it sometimes happens that symptoms which give great alarm to inexperienced persons do occur. The patient suddenly cries out, complains of violent colics, of pain in the womb like that of labor; the abdomen

[1] Gautillon on Uterine Catarrh, pamphlet, 1871.

becomes swollen, the face becomes pale, the extremities cold, the pulse small, and the patient is thrown into a state of great depression. These symptoms are sometimes accompanied with great trembling of the limbs and vomiting.

"I have related a case of this kind at the end of this memoir. Such a train of symptoms is undoubtedly alarming in appearance, but is not followed by any fatal result."

I confess to sharing the feelings of those inexperienced persons who are greatly alarmed at the development of this train of symptoms, for that it is alarming not only in appearance, has been more than abundantly proved by the occurrence of death in a number of cases.

The experiments of Vidal, Hennig, and Klemm, force us to admit that passage of fluid through the Fallopian tubes is not as likely an occurrence from intra-uterine injections as one would suppose it would be from theoretical reasoning. Cohnhein, to whose admirable résumé of this subject I am so much indebted, appears to regard them as conclusive. To my mind they are very far from being so. It is important to note that experiments performed on the cadaver are usually applied to healthy uteri and undilated tubes, while the Gynæcologist employs these injections in cases where the endometrial mucous membrane is inflamed, and the Fallopian tubes very often dilated in consequence. Is it not likely that a disease which overcomes the sphincteric action of the os internum uteri would likewise have a similar effect upon that of the metro-tubal orifices? Post-mortem examination proves this to be the case. Then there are a number of cases on record in which such *immediate* inflammatory results followed in the peritoneum, that there can be little doubt as to the connection of cause and effect. Take for example the report of a case by Pédelaborde, in L'Union Médicale for 1850, "in which, three minutes after an injection of a decoction of walnut leaves, severe uterine pains ensued, and in a few hours were followed by acute peritonitis." A similar instance occurred to myself from injection of solution of persulphate of iron. Lastly, in a fatal case occurring to Von Haselberg, the metal iron was detected by chemical tests in one tube. If in a uterus free from disease, whether in the cadaver or the living subject, a syringe be carried up to, but not through, the os internum, and an injection made, the fluid will not enter the cavity of the body—and why? Because corporeal endometritis has not destroyed sphincteric action at the os internum. But in cases of endometritis, where that action is destroyed, a paralyzation having

been effected there by disease, how different is the case. Under such circumstances patients are often unable to use vaginal injections, for the reason that the fluid at once passes into the cavity of the body, and produces violent uterine colics.

These cases are, I claim, precisely parallel, and ignoring the fact upon which I have here laid so much stress, is not only invalidating experiments made to throw light on a point of clinical importance; it is absolutely perverting them to the production of evil.

The medicinal substances which have been thus employed have varied very much with the views of different practitioners. Velpeau employed concentrated solutions of nitrate of silver; Ricord from two to three parts of tincture of iodine to one hundred parts of water; Evory Kennedy twenty to thirty drops of nitrate of mercury; while Sigmund resorts to solutions consisting of half a drachm of nitrate of silver, one drachm of sulphate of copper, one drachm of iodide of potassium with nine grains of iodine, two drachms of chloride of zinc, or three drachms of perchloride of iron, to three ounces of water. Hennig employs pure warm water for a time, then water slightly tinctured with iodine, and lastly, pure tincture of iodine or solutions of silver; Fürst, one drachm of nitrate of silver to two of water; Martin, of Berlin, five grains of aluminate or sulphate of copper to six ounces of distilled water; and Kammerer ten to twenty drops of concentrated solution of chromic acid; Lugol's solution of iodine and iodide of potassium, or pyroligneous acid, in weak solution; or ten grains of sulphate of zinc to one ounce of water.

Before leaving the subject I will embody in a series of propositions the most important facts connected with it.

1. Intra-uterine injections may produce death even when simple and unirritating fluids are employed, by peritonitis due to absorption of the fluid and subsequent phlebitis; passage of fluid into the peritoneum; endometritis (?); or by sudden entrance of air into a vein.

2. Even when no such dire result takes place they may set up severe uterine colic with tendency to collapse from hysterical neuralgia; violent uterine contractions like "after-pains;" intense irritation of uterine and tubal mucous membrane.

3. These dangers may be to a great extent avoided by attention to certain rules, which here follow:

a. Never inject the uterine cavity except with the certainty that the injected fluid can rapidly escape. Therefore always, unless

the os internum be very much dilated, precede the injection by use of a tent, and always use a syringe insuring immediate reflux. The method for employing uterine injections is very simple, but should always be practised with great system and caution. A single tube of silver or elastic material like a catheter, with eyes at the side, may be used, provided the little syringe which projects the fluid be immediately removable so that the means of ingress may at once become the means of egress. We may, however, still more certainly insure egress by another instrument. The necessity for return of the injected fluid is so great that canulæ with double canals or a canal and gutter have been constructed with especial reference to this. The most simple and effectual of these which I have seen is that of Dr. Byrne, of Brooklyn. This consists of a silver gutter, the edges of which, by their projection, prevent its closure by compression from the tissues. At the bottom of this runs a very delicate silver tube. The instrument connects with any ordinary syringe by means of a short piece of India-rubber tubing. When fluid is projected through the tube the gutter not only keeps the cervical canal open but offers a channel for immediate escape of the fluid.

b. The best substances for injections are tincture of iodine, nitrate of silver, sulphate of soda, pyroligneous acid, carbolic acid, and sulphates of zinc, copper, or iron in weak solution. It is best always to begin with the use of weak alkaline injections of warm water, not only to see how tolerant the uterus will prove to the process, but because in the experiments of Klemm on the cadaver, in three out of eighteen cases, blue ink injected through a narrow os with moderate force penetrated the venous system of the uterus and broad ligaments without apparent laceration. After tolerance has been tested, stronger solutions may be used.

c. Always use these solutions at a temperature of at least 85° to 90°.

d. Wash out the cavity with warm fluid before using the stronger application; and in injecting always be sure that there is no air in the syringe, and never eject the fluid which it contains with force.

e. Never employ this method in a sharply flexed uterus before replacement, never just before or after a menstrual period, and never when pelvic peritonitis or peri-uterine cellulitis have recently existed.

f. After the use of this plan let the patient lie down until all

sense of discomfort has passed, and confine her to bed and give opium freely on the first appearance of pain.

4. In uterine colic the most certain and immediate relief will follow the use of morphia by the hypodermic syringe. Astruc advised the addition of narcotics to injected solutions for the prevention of the accident.

5. Lastly, although this plan of treatment, robbed of many of its dangers by the precautionary measures here advised, may be comparatively safe in the hands of specialists skilled in uterine manipulations, it will always remain a hazardous method for the general practitioner who lacks such skill and who employs instruments not entirely suited to the purpose.

The Curette.—In speaking of the pathology of corporeal endometritis it was stated that the diseased membrane in time develops upon its surface granulations, mucous cysts, and mucous polypi. These secondary conditions often result in metrorrhagia or menorrhagia. Not only does the gentle application of the little copper curette without cutting-edge accomplish the removal of these, it produces, when thoroughly applied, an altered state in the entire endometrial membrane, and often accomplishes a great deal for the relief of the disease. In cases of endometritis engrafted upon subinvolution and accompanied by hemorrhage, it is especially applicable.

Intra-uterine Scarification.[1]—This consists of cutting the blood-vessels of the diseased mucous membrane by means of a little knife concealed within a shaft of about the size and shape of a uterine sound. Being carried, sheathed, into the cavity of the body of the uterus, the blade is made to protrude by a screw in the handle, and then by drawing it down an incision is made which involves the mucous and submucous tissues. The instrument of Dr. Pinkham, of Boston, is a very simple and effectual one for this purpose. I have little experience in the use of this means, and I know of no Gynæcologist in New York who resorts to it. Dr. Storer, of Boston, its originator, tells me that he commonly employs it, and that he has seen the best results follow its use. The experience of the gentlemen above mentioned has been sufficient to prove that the method is free from danger, and that it deserves the attention and confidence of Gynæcologists.

[1] An interesting essay upon this subject may be found in "The Journal of the Gynæcological Society of Boston," vol. i.

CHAPTER XVII.

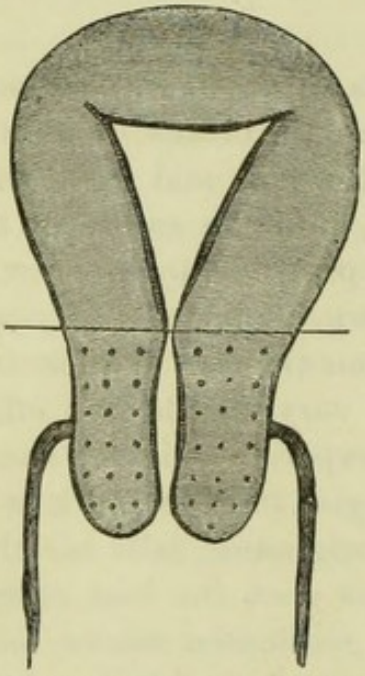
AREOLAR HYPERPLASIA, OR DIFFUSE INTERSTITIAL HYPERTROPHY OF THE UTERUS.

Definition.—The affection which I propose to describe under this name is a disorder of nutrition which very frequently affects the uterus and is characterized by congestion, hypergenesis of the connective tissue of the organ, and hyperæsthesia of its nerves.

Synonym.—It has been described most commonly under the names of chronic inflammation of the uterus or chronic parenchymatous metritis, but has at various times received other appellations, as engorgement, habitual hyperæmia, infarctus, irritable uterus, inflammatory hypertrophy, &c.

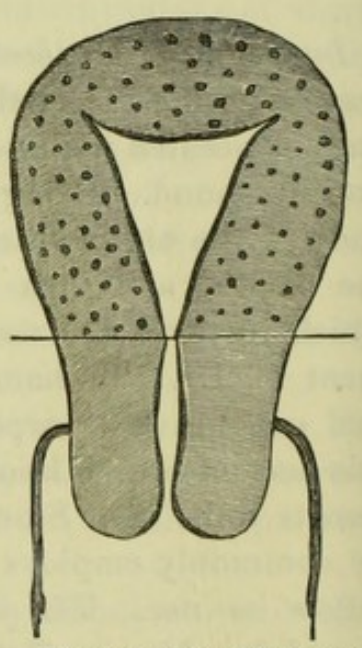
Varieties.—The entire uterus may be affected by it; it may limit itself to the neck extending from the os externum to the os internum; or it may affect the body from the os internum to the fundus. The habitat of hyperplasia limited to the cervix, which

FIG. 84.



The dots represent the site of cervical hyperplasia.

FIG. 85.



The dots show the site of corporeal hyperplasia.

is by far the commonest of the varieties, is represented by Fig. 84, while Fig. 85 represents that of the corporeal variety.

Frequency.—General hypertrophy of the connective tissue of the

entire organ is by no means a very rare affection, occurring as a result of a low grade of inflammation affecting the puerperal uterus. It is, however, less frequent than either of the partial varieties. Of all forms of the disease the cervical variety is decidedly the most frequent. The reason for this is to be found in the facts that cervical endometritis, which in multiparous women proves a frequent source of the disorder, is more common than the kindred affection of the body; that the cervix is peculiarly exposed to mechanical injury from coition, friction against the vaginal walls, and fissures, occurring during parturient distension; and that after childbearing the connective tissue at this point is looser and more permeable than that of the body.

The body of the uterus is so completely removed from contact with mechanical agencies outside of the abdomen that this part of the organ, as already stated, is not so frequently affected by hyperplasia as the corresponding tissue of the cervix. Still it is by no means unfrequently diseased. A large number of cases of obstinate uterine disorders occurring as a remote result of parturition are really of this nature, and the displacements, rebellious leucorrhœa, and other concomitant evils which characterize them, are merely symptoms of the affection. An important fact connected with this state is one to which attention has been drawn by Dr. E. R. Peaslee. It is that where hypertrophy of the connective tissue exists, temporary or transient attacks of active congestion frequently occur and excite acute symptoms from time to time. These pass away, leaving the basis of the affection in its original state, soon to return with all the symptoms of relapse. And thus a series of short but severe exacerbations go on developing themselves in the ordinary course of an attack of the disorder.

Predisposing Causes.—The predisposing causes of this affection should in reference to treatment attract the especial attention of the Gynæcologist. Without a systematic and persevering attempt at their amelioration only palliation will usually be accomplished, and great difficulty will attend all efforts at the cure of the disease by attacking only the immediate and exciting causes. Those influences which predispose to this vice of nutrition are:

A depreciation of the vital forces from any cause;
Constitutional tendency to tubercle, scrofula, or spanæmia;
Parturition;
Puerperal inflammation of the uterus;
Over-exertion after delivery;
Prolonged nervous depression.

It should especially be borne in mind that nulliparity constitutes, to a certain extent, immunity, while utero-gestation abnormally completed, in consequence of puerperal inflammation or the depreciated assimilative functions of the woman, presents the most striking and important feature in the etiology of the affection. I am very sure that in a certain number of cases the production and prolongation of hyperæmia in nulliparous women will be found to induce hypergenesis of connective tissue. This is, however, an exception to a general rule.

Exciting Causes.—The cause of general hyperplasia is usually connected with parturition or abortion. Inflammatory action at that time affecting either the mucous membrane or the parenchyma subsides in great degree, but leaves engrafted upon the organ a tendency to diffuse growth of connective tissue. But both this and the partial varieties of the affection may have their origin in anything which produces either active or passive congestion. The first step in the disorder is always congestion. This resulting in the supply of an excess of nutrition, an excessive growth of connective tissue is the consequence. Among the special causes are:

Parturition or abortion;
Subinvolution;
Displacement;
Endometritis;
Distension by retained fluids;
Neoplasms;
Cardiac disease;
Abdominal tumors pressing on the vena cava;
Excessive sexual intercourse;
Over-exertion during menstruation;

Parturition and abortion induce the disease in several ways. Should any inflammatory action occur before the process of involution or retrograde metamorphosis has been accomplished, that process is delayed, congestion is kept up, and in time the connective tissue undergoes hypertrophy. Even if subinvolution result from no recognizable cause, it is very apt to induce it. The parturient act sometimes, by causing a rupture of the cervix uteri, produces marked hyperplasia of this part. Displacement of the uterus at first results in passive congestion. This being kept up, hypergenesis of connective tissue takes place. Neoplasms, whether they be submucous, subserous or mural, keep up

a constant nervous irritation that induces hyperæmia of active character, which proves the first step towards this affection. In a similar manner excessive indulgence in sexual intercourse, especially near menstrual epochs, may have a like result.

As cardiac diseases and abdominal tumors, which interfere with venous return through the vena cava, produce blood stasis and œdema of the feet, of the labia majora, and of the parts about the vagina, so do they result in the same way in the uterus, and even this purely passive congestion is capable of inducing hypernutrition and hypertrophy of the connective tissue.

It has been already said that in acute endometritis the hyperæmia attending the disease ordinarily extends to the parenchymatous layers immediately subjacent to the diseased mucous membrane, and that in chronic endometritis there is often in the submucous connective tissue an absolute hypertrophy. In some cases the process passes into a diffuse proliferation of the connective tissue of the entire uterine wall. Thus as a result of cervical endometritis we sometimes find cervical hyperplasia resulting, and so with disease in the cavity of the body. Where the uterine parenchyma has never undergone that physiological hypertrophy and retrograde metamorphosis attendant upon utero-gestation, endometritis will continue for a long period without exciting hyperplasia; but where such changes have occurred, the more loose and permeable texture offers itself as an easier prey to the morbid process. Thus cervical endometritis will often continue for years in a virgin without any apparent enlargement of the structure of the neck, while such a result soon follows in a woman who has borne children. This fact has not attracted special attention, and yet it is a point which every practitioner must recognize, when it is brought to his attention, as one which is familiar. Under these circumstances the enlargement is not due to anything absolutely connected with parturition. Parturition has been the predisposing cause; endometritis the exciting.

One very prolific source of the affection is the habitual prolongation of the intense physiological congestion attendant upon ovulation, by over-exertion on the part of the woman. Nature intends that this condition should last only a short time, and any habit of life which keeps it up abnormally long has a decided tendency to induce this affection of the connective tissue.

Symptoms.—It must be remembered that the symptoms which I am about to record as characteristic of this disease are not strictly due to the pathological condition which constitutes its

essence. Many of them arise from conditions which are secondary to this; for example, from temporary active congestions, displacements, pressure of the heavy organ upon pelvic nerves and viscera, &c. The symptoms then, which are due to areolar hyperplasia and its almost inevitable concomitant circumstances, are the following. If the cervix alone be affected there are:

Pain in back and loins;
Pressure on bladder or rectum;
Disordered menstruation;
Difficulty of locomotion;
Nervous disorder;
Pain on sexual intercourse;
Dyspepsia, headache, and languor;
Leucorrhœa from secondary endometritis, or granular degeneration of mucous membrane.

If the disease be general or corporeal, the symptoms generally resemble very closely those of corporeal endometritis. The following are especially indicative of this affection:

A dull, heavy, dragging pain through the pelvis, much increased by locomotion;
Pain on defecation and coition;
Dull pain beginning several days before menstruation, and lasting during that process;
Pain in the mammæ, before and during menstruation;
Darkening of the areolæ of the breasts;
Nausea and vomiting;
Great nervous disturbance;
Pressure on the rectum with tenesmus and hæmorrhoids;
Pressure on the bladder with vesical tenesmus.

I would not convey the impression that these symptoms are distinct from those of corporeal endometritis, and that none of them occur with it. As already stated, the symptoms of the two affections are so frequently interwoven, and to such a degree, that they cannot be completely separated. Where, however, the mucous affection has lasted long, and the connective tissue becomes diseased, the symptoms just detailed superadd themselves to those before existing.

Physical Signs of Cervical Hyperplasia.—Vaginal touch will generally discover that the uterus has descended in the pelvis so that its cervix will rest upon the floor of it. The cervix will be found to

be large, swollen, and painful, and the os may admit the tip of the finger. If the finger be placed under the cervix and it be lifted up, pain will be at once complained of, and if it be introduced into the rectum so as to press upon the cervix as high as the os internum, it will often reveal an exquisite degree of sensitiveness. Under these circumstances the position of the uterus will generally be found to be abnormal. The cervix will in some cases have moved forwards and the body backwards, or the opposite change of place may have occurred.

Physical Signs of Corporeal Hyperplasia.—If two fingers be carried into the vagina and placed in front of the cervix so as to lift the bladder and press against the uterus, while the tips of the fingers of the other hand be made to depress the abdominal walls, the body of the uterus will, unless the woman be very fat, be distinctly felt, should the organ be anteflexed. Should it not be detected, let the two fingers in the vagina be now carried behind the cervix into the fornix vaginæ, and the effort repeated; if the uterus be retroflexed or retroverted, or even in its normal place, it will be detected at once. By these means we may not only learn the size and shape of the organ, but its degree of sensitiveness. This may likewise be accomplished to a certain extent by rectal touch. The uterine probe should then be introduced, the cavity measured, and the sensitiveness of the walls carefully ascertained.

Pathology.—According to the formerly accepted view, the following changes were supposed to have occurred. In the first stage the cervical parenchyma was regarded as gorged with blood, a state of active congestion existing. This was supposed soon to pass into the second stage, consisting in an effusion of lymph, when, unlike a similar process in other parts, the morbid action ceased, or rather did not advance, and unless relieved by treatment, continued stationary for a length of time. The third stage of inflammation in other parts, that of suppuration, was admitted to occur rarely here, or in the parenchyma of the body, but in time all inflammatory action ceasing, the cervix remained large and indurated without sensitiveness, or the effused lymph might be absorbed, and great diminution in size occur with induration. Were this really the case the condition would constitute one of inflammation, even if we restricted ourselves in the use of that ambiguous term to the narrow and precise limits prescribed by Dr. J. Hughes Bennett, when he says, "It should be applied only to that perverted alteration of the vascular tissues, which produces

an exudation of the liquor sanguinis; it is this exudation alone which can be held to unequivocally characterize an inflammation."

Examined more recently, however, by the more certain and less theoretical processes of modern science, all this has come to be looked upon as erroneous. Cases which were formerly regarded as instances of inflammation on account of the existence of enlargement, congestion, and tenderness upon pressure, the microscope now proves to have been instances only of congestion, resulting in hypertrophy of that tissue filling the interstices between the muscular structure of the uterus, and inducing tenderness by pressure upon the nerves. The theory of parenchymatous inflammation as explaining this condition is as old as the science of medicine itself, and it certainly is a peculiar commentary upon it, that now in the most advanced period that that science has ever known, the retention of it not only results in doubt, uncertainty, and skepticism, but absolutely creates polemic discussion, and forms sects and factions, where all should be united for the common good. "All must mourn," says the venerable and eminent Hodge, "over a discrepancy of opinion which bears so directly on the treatment of such painful and distressing maladies." "We cannot but believe," says a reviewer[1] in the New York Medical Journal, "that the time is not far off when this vexed, but important question will be re-opened, and examined in a fair-judging, and not peremptory and dogmatic, spirit, uninfluenced by prejudice, prescription, or tradition; and that, measured by a new standard, and settled by the requirements of a more enlightened knowledge of the laws of life, present differences will be reconciled, hostile opinions conciliated, and the angry voice of adverse factions be heard 'not any more forever.'"

Everywhere throughout the recent and progressive literature of Gynæcology, the foreshadowing of the advancing change in views with regard to this subject will be recognized. The pendulum, swung too far by the hand of Dr. Henry Bennet, is making its inevitable return. That it may stop on safe middle ground must be the hope of all. "The determination of blood to a part here noticed, characterized by dilatation of the arteries, with increased flow of blood through the capillaries, must be distinguished from the congestion of inflammation, characterized by the accumulation and stagnation of red and white corpuscles in the vessels, tending to be abnormally adherent to each other and to the ves-

[1] Loc. cit.

sels," says Dr. H. G. Wright,[1] quoting from Dr. Aitken. "Tested by this standard" (that of Dr. J. Hughes Bennett, already quoted), says Dr. Graily Hewitt,[2] "the uterus is certainly very little liable to 'inflammation;' exudation, and transformations of such exudations, purulent and otherwise, similar to what may be witnessed in other organs of the body, being very rarely witnessed in the parenchyma of the uterus. The morbid processes with which we are familiar as affecting the tissues of the uterus are for the most part alterations of growth, irregularities in growth, slight modifications, in fact, of the processes which follow each other in due succession in the natural condition of things. The word 'inflammation,' used in Dr. J. Hughes Bennett's sense of the word, certainly fails to convey an adequate idea of the modifications observed under such circumstances." "Diffuse growth of connective tissue," says Klob,[3] "constitutes the so-called induration, hitherto considered as a result of parenchymatous inflammation of the uterus. . . . For reasons mentioned, I would also advise a disuse of the term 'chronic inflammation.'" In a discussion[4] upon chronic metritis before the New York Academy of Medicine, Dr. Noeggerath limited the disease to, "growth of cellular tissue both of the body and neck, occurring only during the puerperal state." Dr. Peaslee preferred, "to call the disease under consideration congestion, rather than inflammation, because it has none of the events of inflammation;" and Dr. Kammerer expressed the view that, "chronic inflammation of the substance of the non-puerperal uterus is never met with; what has been described as such is hypertrophy of connective tissue, resulting from long-continued hyperæmia."

These views, which among men who are in the advance in Gynæcology are rapidly gaining ground, are not sustained by analogical reasoning, but by physical proof. I know of nothing which will more surely convince the reader of the necessity for an alteration in our nomenclature concerning this condition, than a perusal of Scanzoni's[5] article upon it. This author, after heading his chapter, "Chronic Parenchymatous Inflammation of the Womb," goes on to say: "The nature of the disease would then be, in an anatomical point of view, an hypertrophy of the cellular tissue."

Under these circumstances, I have ventured to describe the

[1] Uterine Disorders, p. 218.
[2] Dis. of Women, p. 363.
[3] Op. cit., p. 129.
[4] Med. Record, No. 92, p. 475.
[5] Dis. of Females, Am. ed., p. 181.

affection, not under its old appellation, but under that of "areolar hyperplasia," or "diffuse interstitial hypertrophy." If the disease really consists in a proliferation or hypertrophy of the areolar or connective tissue of the uterus, and not in chronic inflammation, it would certainly be advantageous to apply to it some name which would signify that fact. "Areolar hyperplasia"[1] expresses this fact concisely, and hence I have used the name here, while the almost synonymous term, "diffuse interstitial hypertrophy," appears to me to convey as accurately as we could wish, the fact that development of connective tissue constitutes the disease. But the only proof of the appropriateness of newly applied terms, is their adoption. If these be adopted I shall feel that good has resulted from my effort; if their approval be not implied by adoption, I shall admit with regret that I have only helped to render confusion worse confounded.

Sometimes with hypertrophy of the areolar tissue, there is likewise increase in the muscular. Klob declares that, "if this does occur, the connective tissue predominates to such an extent, that the muscular substance is comparatively of not much account." Dr. N. Finn,[2] on the other hand, publishes the following observations, made at the Institute of Pathological Anatomy in St. Petersburg, about the changes of the muscular and connective tissues in chronic metritis:

"1. The normal disposition of the single muscular fibre, as well as of the muscular bundle, remains unchanged.

"2. The muscular fibres do not change in quality, neither is their fatty degeneration a pathognomonic sign of this disease.

"3. The muscular fibres are always extended in both their length and breadth above their normal standard, but more so in the former direction.

"4. The number of fibres is always largely increased.

"5. The amount of connective tissue in the latter stage of the disease is always relatively diminished, but absolutely enlarged, so that the increase of bulk of the uterus is mainly caused by the hyperplasia of the muscular fibres, the augmentation of the connective tissue influencing it but little."

Under the influence of this disease the cavity of the uterus increases in length from one to two or three inches, and the fundus, round, hard, and resisting, may by conjoined manipulation be felt above the symphysis pubis.

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[1] Hypertrophy signifies excessive growth of the elements of a tissue already existing; hyperplasia signifies the development of new tissue.

[2] Am. Jour. Obstet., vol. i, p. 264.

In the first stage of the disease, the hypertrophied areolar tissue is congested, containing absolutely more blood than normal, and the whole of the affected part, neck, body, or entire uterus, is greatly increased in size and weight. As time passes, the second stage of the disorder supervenes, and an opposite state of things is set up. Klob describes it in these words: "The parenchyma on section appears white or of a whitish-red color, deficient in bloodvessels, from compression of the capillaries by the contraction of the newly formed connective tissue, or from partial destruction or obliteration of vessels during the growth of tissue; the firmness of the uterine substance is also increased, simulating the hardness of cartilage, and creaking under the knife." This constitutes a true cirrhosis of the uterus.

Every practitioner must have met with cases in which a large, red, engorged, and soft uterus, examined after an interval of several years, has been found to his surprise, to have become small, densely hard, white, and anæmic, and its cavity diminished in size. Such an organ removed from the body cuts almost like cartilage, and appears when cut almost as dense and bloodless.

Course and Termination.—The length of time which this condition may last is very uncertain. After the connective tissue once becomes thoroughly affected by the disease, it rarely returns to its original condition, but so complete is the relief which may be afforded the patient by removal of those concomitant conditions that attend upon it and increase the discomforts which are due to it, that the patient will often for years imagine herself well. Very suddenly, however, imprudence during menstruation, the act of parturition, over-exertion, or some other influence producing congestion, will produce a relapse which will convince her of her error. It is astonishing to what an extent enlargement of the cervix as a result of areolar hyperplasia will go. Sometimes this part will equal in size a very small orange, and, filling the vagina, will compress the rectum quite forcibly, so as in a great degree to close its canal. Left to itself the disease has no limit, but sometimes passes away leaving the cervix enlarged and very soft and flabby, or very hard and nodulated. At other times an atrophy of the diseased tissue occurs, and the cervix becomes small, hard, and indurated. Usually, in general hyperplasia, the organ becomes displaced, and, unless relieved by art, remains in this condition until the menopause; or contraction of the exuberant tissue takes place, and it returns to its natural size or becomes atrophied.

Differentiation.—Where the cervix alone is affected, the first

point to settle will be whether the enlargement and sensitiveness which are noticed, are due to true cervical hyperplasia, or to congestion, subinvolution, or simple œdema. If the patient be a multiparous woman, if the sensitiveness to pressure be very great, and if endometritis be known to have preceded it, the case is probably one of cervical hyperplasia. If all cases of enlargement of the cervix with tenderness, be carefully put to the test, and a hasty diagnosis be replaced by a cautious one, it will be surprising to see how many will be assigned to this category.

Another point which must be settled before the diagnosis can be considered complete, will be whether the cervix alone is affected, or whether its enlargement is only a part of a general uterine development. To determine this question, two means are at command; first, the examiner introducing one or two fingers under the body of the uterus, and depressing the abdominal walls by the other hand, so as to clasp the fundus, ascertains whether it is larger than it should be, or of normal size and free from sensitiveness. He then passes the uterine probe into the cavity of the body, and measures it. If the uterine cavity is increased in size, the evidence is in favor of the disease having extended to the tissue of the body. Should its size be normal, this is probably not the case.

The walls of the uterus should then be struck by the probe to test the existence of pain. Should pain last for some time after the removal of the probe, it is probable that the tissue of the body is affected; should it not exist at all, the evidence is against that supposition.

Sometimes suspicion of scirrhous cancer in an early period being entertained, it becomes necessary to decide between its existence and that of the second stage of areolar hyperplasia or cirrhosis. Scanzoni doubts the possibility of deciding, but it appears to me that the investigator will usually succeed in doing so, by the following comparison of signs and symptoms.

In Cervical Cirrhosis.	*In Scirrhous Cancer.*
The patient shows no cachexia.	She does.
There is tendency to amenorrhœa.	There is tendency to hemorrhage.
The history usually points to post-partum trouble.	It does not.
It has been preceded by symptoms of uterine enlargement.	It has not.
The cervix feels like dense fibrous tissue.	It feels like cartilage.
The body is perhaps implicated.	It is very rarely so.

When the whole uterus, or the body only of the organ is

affected, the diseases with which areolar hyperplasia may be confounded in its first stage, are:—

Corporeal endometritis;
Pregnancy;
Neoplasms;
Perimetritis.

From all a most careful differentiation should be made; for if in error, the practitioner would not only surely fail in giving relief, but might do great injury. For example, an examination by the probe might produce abortion, or so aggravate periuterine inflammation, as to cause serious and alarming consequences. The introduction of the probe or sound should, for this reason, be practiced with great caution, and only when good reason exists for supposing pregnancy and perimetritis absent.

For distinguishing corporeal from cervical hyperplasia the following will be the means upon which we must rely. We will suppose that we are dealing with a complicated case in which both tissues, mucous and connective, are affected, and not with one of those in which one alone is diseased.

Corporeal Hyperplasia and Endometritis.[1]	*Cervical Hyperplasia and Endometritis.*
Glairy, purulent, and bloody leucorrhœa;	Glairy and very tenacious leucorrhœa, perhaps streaked with blood;
Tympanites, often marked;	None;
Uterine tenesmus;	None;
Nausea and vomiting;	Not common;
Dysmenorrhœa severe, days before flow;	Not severe;
Nervous symptoms grave, despondency and sleeplessness present;	Not so grave, no sleeplessness nor great despondency;
Tendency to exfoliation of mucous lining;	None;
Mammæ painful at epochs;	Not so;
Areolæ darkened.	Not so;
Size of cavity usually increased;	Not so;
Probe gives pain and a few drops of blood;	Does not;
Conjoined manipulation shows sensitiveness of body.	Does not.

Between pregnancy and endometritis with commencing corporeal hyperplasia, which is very apt to become aggravated under the influences of matrimony, there is a chance of error in diagnosis; for in both there are enlargement of the breasts, darkening of the areolæ, enlargement of the uterus, derangement of the nervous system, and nausea and vomiting. In the one, however, menstrua-

[1] I am particularly desirous not to convey the idea that differentiation by these means is always practicable. In presenting them thus, I merely strive to approximate the end in view as nearly as possible.

tion does not cease, there is no kiesteine in the urine, there is great sensitiveness of the body of the uterus, and an abundant leucorrhœa. Dr. Tilt has drawn especial attention to this important fact, in connection with endometritis: "When most of the symptoms of early pregnancy are present," says he, "without menstruation being suspended, in comparatively young women, internal metritis may be suspected."

Neoplasms or fibrous growths in the uterine walls will sometimes, from the peculiar symmetry of their development, completely mislead us, giving uterine enlargement, leucorrhœa of bloody character, &c. I have now in my possession a uterus in the anterior wall of which a fibrous tumor, equal in size to a goose's egg, gives upon superficial examination all the appearances of engorgement of uterine tissue with anteflexion and endometritis. The only way in which a diagnosis could be made under such circumstances would be by the proper use of the uterine sound, and carefully studying the individual case by means of this and conjoined manipulation.

Perimetritis, unless accompanied by endometritis, is unattended by leucorrhœa, and by it the uterus is rendered immovable. The uterine probe, if employed in such a case, should be used with great caution, and would show no sensitiveness of the uterine walls, and no increase in the dimensions of the cavity of the uterus.

Prognosis.—The prognosis in hyperplasia of the entire uterus or of the body alone is unfavorable with regard to cure, though highly favorable with reference to danger to life. Should the patient be approaching the menopause, hope may be held out that, after the functions of the uterus cease, atrophy may occur and relief be obtained. But one cannot be sure even of this, for the monthly discharge may give place to metrorrhagia, or all the symptoms may continue in spite of the menstrual cessation. Under a course of local treatment, combined with one conducted with special reference to the general system, hope may always be held out that, although restoration of the uterus to its normal condition may not be effected, the evils resulting from the complications of this disease can be so fully controlled that comfort will be attained. When the neck of the uterus alone is affected, a favorable prognosis may always be made, for here there are fewer grave complications to be encountered; such, for example, as displacements of aggravated character, corporeal endometritis, menorrhagia, &c. The diseased part is likewise more accessible to local treatment, and is also a much less sensitive and important part of

the organism; I might indeed almost say a less important organ, so distinct are the uterine body and neck physiologically and pathologically. As I have elsewhere stated, the prognosis will depend in a great degree upon the patient. If she be unwilling to sacrifice her inclinations and pleasures, but half fulfil the directions of the attending physician, and clandestinely expose herself to prejudicial influences, the treatment will accomplish nothing. In the case of a reasonable patient, who appreciates what is at stake, and is anxious to regain her health, it may be regarded as favorable.

Complications.—Areolar hyperplasia may give rise to many and serious complications, as, for example, displacements, cystitis, rectitis, cellulitis, endometritis, menstrual disorders, hysteria, dyspepsia, &c.

The question has recently been raised by Dr. Noeggerath as to the causative influence of this disease in the production of cancroid affections. In an essay[1] read before the New York Academy of Medicine in 1869, he reported six cases which he regarded as due to the "transformation of the tissue affected with chronic metritis into epithelioma or cauliflower excrescence." The object of the essay was "to prove that the tissue of the uterus affected with chronic metritis is apt to be transformed into papillary epithelioma." My experience has never furnished me with a case illustrative of the correctness of Dr. Noeggerath's opinion. It certainly cannot be an ordinary sequence of events, for the subject long ago attracted attention, and I know of no recent author who takes similar ground. Klob's[2] opinion is expressed in these words: "What has been said by various authors on the relations of diffuse growth of connective tissue to the development of carcinoma must be considered as a mere hypothesis."

Treatment.—Before going into the details of this subject, I will state a few general propositions concerning it.

1st. The predisposing causes of the disease are connected with depreciation of vital force and the powers of circulation and assimilation; therefore these should especially attract attention.

2d. Hyperæmia is an essential to its production, hence all conditions calculated to produce that state should be avoided.

3d. The main element of the affection is a vice of nutrition, a formative irritation, and our efforts should be directed to overcoming this.

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[1] Med. Record, No. 90, p. 426.

[2] It must be noted that Klob alludes to carcinoma, while Noeggerath limits his statement to epithelioma.

4th. The uterus thus affected is heavier and more sensitive than normal. It is evident that rest, more especially during menstrual epochs, is very desirable for an organ so circumstanced.

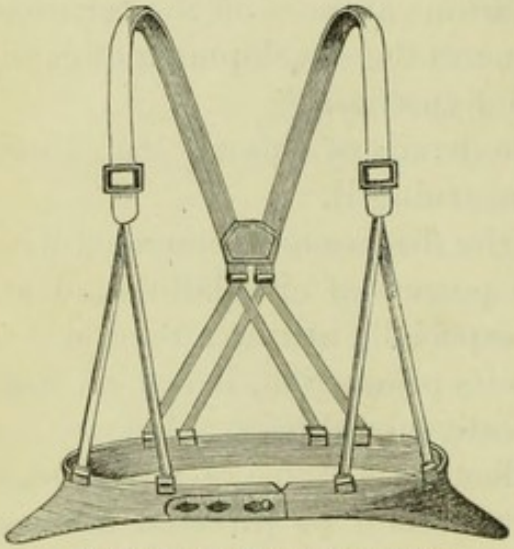
The individual means for furthering these ends may thus be presented:

Rest;
General regimen;
Depletion;
Emollient and sedative applications;
General and local alteratives.

Rest.—The patient should be instructed to take much less exercise than usual, to lie upon her bed or lounge for several hours during the day, and to remain in bed during menstrual periods. It is not necessary or advisable to confine her to bed continuously, for many women become restive under the confinement, and suffer both in mind and body, the sanguineous and nervous systems being impaired by want of fresh air. If the connective tissue be so much affected that the cervix is very painful upon pressure, absolute rest upon the back should be insisted upon, but my impression is that deprivation of fresh air and exercise ordinarily does more harm than is compensated for by the advantages arising from quietude. Every day she should go, unless deterred by some special cause, into the open air, and a limited amount of exercise should be inculcated as a means of keeping up the general health.

The uterus should be placed at rest as much as possible. Its natural tendency under these circumstances is to fall from its position, consequently all pressure should be removed from its fundus by the use of skirt supporters and a well-fitting abdominal bandage. Fig. 86 represents a very excellent skirt supporter, which has been patented by Mr. Bacheller. Abdominal bandages are very unpopular with many practitioners, who believe that they absolutely do harm. I believe otherwise, and regard them as great adjuvants, not in keeping up the uterus, but in supporting the superimposed viscera, which, pressed downwards by tight clothing, and badly supported on account of the relaxation of the abdominal walls, fall directly

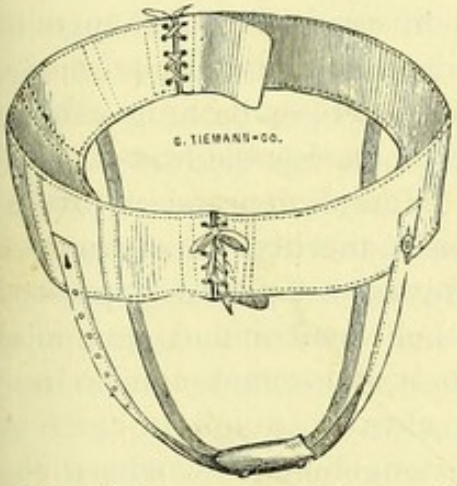
Fig. 86.



Bacheller's skirt supporter.

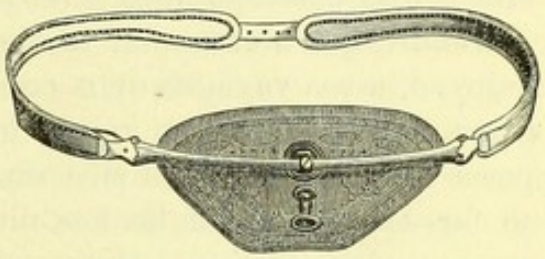
upon the fundus. There is a great variety of abdominal supporters. I have no favorite, for one will accomplish the end in a woman of a certain figure which would be inappropriate for another. Some very simple and efficient supporters, which will answer the purpose in all but emaciated patients, are represented in the accompanying diagrams:

FIG. 87.



Abdominal supporter of jean or silk.

FIG. 88.



Abdominal supporter in which the pad covers the hypogastrium.

Two additional patterns are shown in Chapter IX, upon prolapse of the vagina. That one should be selected which absolutely accomplishes the end in view, namely, sustaining the viscera and supplementing the weakened muscles of the abdomen. In addition to these means of procuring rest for the uterus, the patient should, as far as possible, lead a life of celibacy.

After displacement has occurred, and even before it has done so, great benefit may often be obtained from support rendered by means of a light and well-fitting pessary, the elastic ring of Meigs if there be merely direct descent; Hodge's double lever or one of its varieties if there be retroversion; or an anteversion pessary if the uterus have fallen forwards. The variety of Hodge's pessary which I generally employ is that produced by Dr. Albert Smith of Philadelphia, which will receive notice elsewhere. In some cases the benefit derived from these instruments will be the chief, perhaps the only relief which we can bestow, and even where we cannot cure the disease we may by their use render life much more agreeable by the alleviation of discomfort.

General Regimen.—The diet should be plain and unstimulating, but at the same time nutritious, and in every way calculated to maintain the normal state of the blood. Should spanæmia exist,

ferruginous tonics, alone or combined with vegetable tonics, should be administered. The bowels should be kept in a perfectly normal state, and the skin active. Specific remedies have been, and are still, employed by some practitioners for stimulating absorption of redundant tissue. Foremost amongst these are the iodide or bromide of potassium, iodine and preparations of mercury. Their efficacy is doubtful, although many excellent practitioners rely upon them with confidence.

No other general means compares in result with a change of abode and corresponding change of air, habits, and associations. A removal, for example, to the seaside, where bathing can be enjoyed, a sea voyage, or a residence at an agreeable watering-place, may accomplish much good. Mental depression predisposes to and aggravates this disease most markedly. Aran goes so far as to say that he has almost invariably found it present as an exciting cause. However this be, cheerful and congenial company certainly proves one of the best nervous tonics in a therapeutic point of view, and should always be sought for. A stay in a well-regulated hydropathic establishment, where the patient can have pure air, plain and nutritious food, and agreeable society, together with the strict attention to the general rules of hygiene which characterizes those institutions, will often produce the best effects. Sexual intercourse during the existence of this disease must necessarily be productive of evil, and should be interdicted. There is only one method, as a general rule, by which this can be accomplished, and that is by the separation of husband and wife. If this be impracticable, an injunction of excessive caution should be substituted for a direction for total abstinence, which will be almost certainly disobeyed. By these means we do all in our power to place the inflamed part at rest as we would a fractured bone or inflamed testicle.

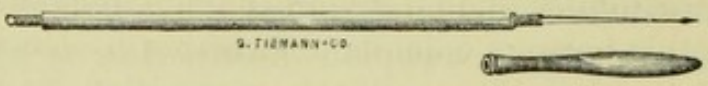
Depletion.—I find myself more rarely every year resorting to leeches and scarifications in the treatment of uterine affections, and although I am not positive of the fact, it appears to me that others, with whose practices I am familiar in this city, are falling into the same habits as myself. Where the body of the uterus is the chief seat of disease, depletion, upon theoretical grounds, should be followed by most excellent results, and yet it is not so. So decided is my experience upon this point that I cannot but believe that that of others must be similar to it. As Nonat has pointed out, in cervical inflammation local depletion is productive of good results, for which we look in vain in corporeal disease.

I have yet to meet with a case of areolar hyperplasia of the body, uncomplicated, be it understood, with cervical disease, which has been materially benefited by the most methodical and systematic local abstraction of blood, unless amenorrhœa was a symptom. In case this be so, a copious abstraction by leeches, during the menstrual epoch, will sometimes give relief. At times the leeches then applied to the cervix will give great pain by their bites, under which circumstances they should at the next period be applied to the perineum. The pain from the bite of leeches at the cervix is sometimes so severe as to lead to the apprehension that one has escaped into the cavity; hence it is important that they should be counted before being placed in the speculum, and on their removal from it.

The three methods by which local depletion of the cervix can be best practiced are leeching, scarification, and cupping. In such a case as that which we are considering, three or four large leeches, or a sufficient number of small ones, to take from three to five ounces of blood, may be applied in the following manner: A cylindrical speculum, of sufficient size to contain the entire vaginal portion of the cervix, being passed and the part thoroughly cleansed, a small pledget of cotton, to which a thread has been attached for removal, should be placed within the os, so as to prevent the entrance of the leeches to the cavity above. A few slight punctures, sufficient to cause a flow of blood, should then be made in the cervix, and all the leeches to be employed thrown in, and the speculum filled at its extremity by a dossil of cotton pushed towards the bleeding surface. The speculum should be watched until they cease sucking, for if left for a very short time, even with the mouth of the instrument filled with cotton, they will escape. After their removal all clots of blood should be removed by a rod wrapped with cotton, the speculum withdrawn, a large sponge squeezed out of warm water placed over the vulva, and the patient directed to remain perfectly quiet. Should there be great pain upon pressing the cervix, or should the leech-bites give excessive pain, as they sometimes do, they should in future be applied by preference to the perineum. Should scarification be employed, a very sharp and narrow bistoury or tenotomy knife may be introduced within the os, and drawn outward towards the vaginal edges of the cervix so as to sever all the superficial vessels over which it passes. I would recommend, in preference to this plan, acupuncture, which may be performed by an ordinary three-sided surgical needle held in the grasp of a pair of for-

ceps, or, still better, by a little spear, the invention of Dr. Buttles, of this city.

Fig. 89.



Buttles's spear-pointed scarificator.

This little instrument, when plunged about one-sixteenth of an inch into the cervix and given a rapid half turn before removal, causes a very free flow of blood should congestion exist. If a sufficient flow does not occur from three or four of its punctures, this can be caused by dry cupping the cervix by a very simple instrument, made of hard rubber, which is introduced through the speculum, the medium size of the cylindrical variety being large enough to admit it. Being passed up to the cervix, the piston is retracted, and so perfect is the working of these instruments, when constructed of hard rubber, that a complete vacuum is pro-

Fig. 90.



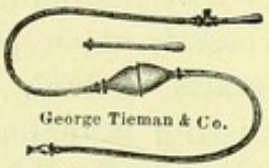
Hard rubber cylinder for dry cupping the cervix uteri.

duced. By using this for a few minutes, and then puncturing, with Buttles's spear, from two to four ounces of blood may readily be drawn. The exhauster should not be used after puncturing, but before it. All that will then be necessary will be to pass a sponge, attached to one of Sims's sponge-holders, over the punctured surface so as to prevent clotting in the mouths of the bleeding vessels. Dr. John Byrne, of Brooklyn, has recently drawn especial attention to still another method, which in some cases answers an excellent purpose. It consists in passing a long, delicate blade, such as that, for instance, of Emmet's or Sims's knife, up to the os internum, and cutting through the mucous membrane, its bloodvessels and the superficial layer of muscular tissue, as it is withdrawn through the os externum. Local depletion by one of these methods may be practiced once or twice a month, the patient for some hours after its adoption being kept perfectly quiet in bed, and directed to employ another antiphlogistic means, the application of emollient and sedative substances to the diseased part.

Emollient and Sedative Applications.—If any tissue of the body be engorged, the application of emollient and sedative substances in the form of simple and anoydyne poultices, of bags of anodyne herbs, as hops or poppies, and of wet compresses, as employed in hydropathy, is, and has been from the earliest times, universally recognized as beneficial. It is upon the same principle that they are applied through the vagina to the cervix uteri by means of pledgets of cotton or lint introduced through the speculum, and by vaginal injections or suppositories. Other means, which are occasionally though much less generally employed, are, the introduction into the vaginal canal of little bags filled with emollient substances, sponges impregnated with simple or anodyne fluids, the vapors of anæsthetic medicines, and the vapor of water, which was recommended even as early as the Arabian school of medicine, Albucasis advising its introduction by a reed passed up the vagina. We are indebted to the recent work of Scanzoni on Diseases of Females for the exposition of the best method of using this important adjuvant in the treatment of uterine affections by injections.

Vaginal Injections.—To be efficient they should be copious and long continued. There are four methods of employing them which I should recommend. Placing in a tub from one to two gallons of water, at as high a temperature as proves comfortable to the patient, she may sit over it upon a board placed across it, or upon a stool placed in it, and inject the water by means of a syringe. The most convenient syringes for the purpose are the Essex and Davidson's. Both of these are provided with a stem about five inches long, which being introduced into the vagina and carried up so as to touch the cervix, throws, when the ball of the instrument is compressed by the disengaged hand of the patient, a steady stream against it. By this means a stream of warm water is made to pour over the cervix for from twenty to thirty minutes, according to the amount of fatigue which the use of the instrument causes the patient. This is a good plan in case the patient is so circumstanced as not to be able to assume the recumbent posture while using the injection. That position adds greatly to the efficiency of the means, and really involves no amount of trouble or annoyance. The patient should lie upon a lounge or low bed, with the buttocks projecting over its edge, and the feet supported upon the floor or upon two chairs. An empty vessel

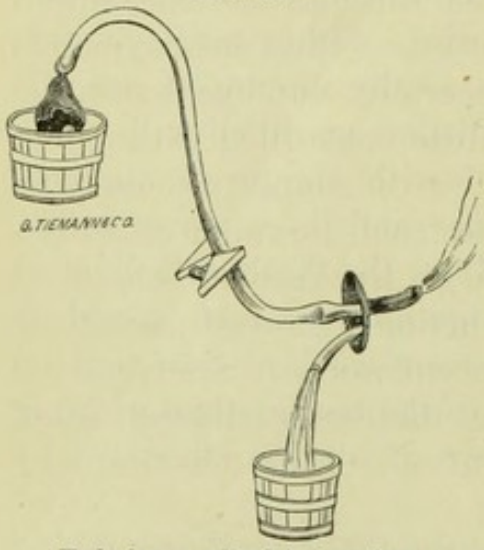
Fig. 91.



Davidson's Syringe.

should be placed on the floor to catch the water escaping from the vagina. While lying thus, an excellent method of employing the injection is this: an ordinary tub or bucket, near the bottom of which a stop-cock has been inserted connecting with an India-rubber or gutta-percha tube about five or six feet long with a metallic stem like that of the Davidson syringe at the end, is placed upon an elevation, as, for example, a chair placed upon a table, or a shelf made for the purpose. The vaginal stem being inserted, the cock is turned by the patient, and for half an hour a stream of water freely bathes the inflamed part, and passing out of the vagina, pours into a tub over which the patient is lying. This avoids all fatigue, and produces a much more prolonged application.

Fig. 92.



Tub for vaginal irrigation.

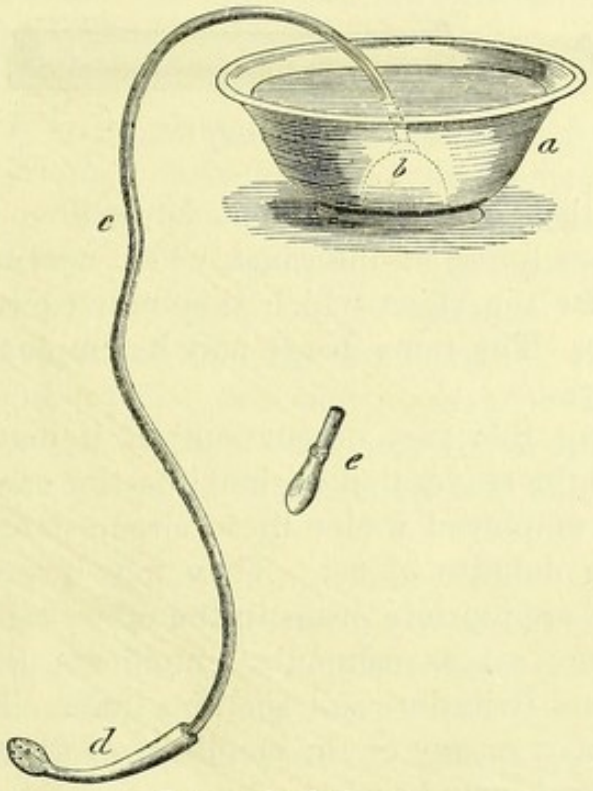
Fig. 93 represents a very ingenious plan of irrigation practiced by Scanzoni: *b* is a cup of lead, *c* a tube of gutta-percha, *e* a nozzle by which suction is practiced so as to fill the tube, *d* is a nozzle for the vagina. After being once filled, the water pours as through a siphon. If the tube is rolled and dipped below the surface of the fluid, it is filled without the action of suction, and the siphon flow is equally well established. The same end is effected by the use of a syringe much in use here, called the fountain syringe. This consists of an India-rubber bag, capable of holding two or three quarts of fluid. This is filled and hung up. Then the patient passing into the vagina the nozzle connected with the lower end of a long flexible tube, running from its bottom, touches a spring and the fluid flows by gravitation.

Lastly, the patient may take a warm hip-bath, or entire bath, night and morning, and use the vaginal injection while in the bath. This method possesses the additional advantages to be derived from general and hip-baths in the treatment of these cases. If the patient cannot be moved in bed without inconvenience, the Davidson's syringe may be employed, while she is lying in bed with the bedpan under the buttocks to receive the escaping fluid.

Warm water is the best, as it is the simplest, most attainable, and cleanest of all the emollients which can be used for this purpose. But it may easily be medicated by addition of laudanum,

half an ounce to the gallon, infusions of linseed, poppies, hops, bran, slippery elm, hyoscyamus, conium, and farina; or by the addition of glycerine, one ounce to the gallon, lime-water or tar-water, both of which last are often very soothing to vaginitis that may exist as a complication, or by ordinary chloride of sodium.

Fig. 93.



Scanzoni's irrigator.

Vaginal Suppositories may be made very useful if employed after and not instead of the injections just described, which are certainly of much greater efficacy. The best menstruum with which they can be compounded is cocoa butter, or, as recommended by Dr. Tilt in his Uterine Therapeutics, a mixture of starch, almond meal, and glycerine, the whole being coated with suet or butter of cocoa. Half a grain of the acetate or sulphate of morphia, one-thirtieth to one-fiftieth of a grain of sulphate of atropia, one grain of the extract of belladonna, or three of opium having been incorporated with these, may be placed against the os and allowed to remain all night, being washed away in the morning by an injection. The instrument which I employ for introducing these is one of hard rubber, represented by Fig. 94. Should there be pain, a sedative suppository may be employed every night after the vaginal injection, but should there be no special indication for it, it is better not to annoy the patient with a multiplicity of applications.

Alteratives.—These may be directly applied by means of a brush, by suppositories placed against the cervix, or by vaginal injections. Churchill's tincture of iodine, solution of persulphate of iron, or strong solutions of sulphate of copper or chloride of zinc, may be painted over the vaginal face of the cervix and

Fig. 94.



Vaginal suppository tube.

carried up to the os internum. This is not done for their action upon the mucous lining of the canal, which we suppose not to be inflamed, but for the effect which they may exert on the nerves and absorbents. The same drugs may be employed by injection and suppository.

Before leaving this part of our subject it may not be out of place to remind the reader that vaginal injections and suppositories should not be employed under these circumstances empirically, but with some definite object. They may prove useful when medicated with appropriate drugs in the following ways:

1st. They may act as calmants, emollients, and detergents, quieting nervous irritation and soothing pain. For these purposes warm water, or any of the emollient or narcotic substances already mentioned, may be used.

2d. They may exert a direct alterative influence on a tissue affected by granular degeneration or erosion, by coming into immediate contact with it. For this end zinc, lead, iron, alum, bismuth, tannin, &c., will prove useful.

3d. They may so affect the nerves governing the nutrition of the part as to check excessive supply of nutrient elements to the connective tissue, and cause absorption of blood elements effused into the cervical parenchyma. To accomplish this we may employ the iodide of potassium, chloride of sodium, sea-water, water at a very high temperature, bromine or iodine in solution.

4th. They may be employed to give tone to the pelvic tissues, which have been relaxed by diseased action that has passed away. For this purpose astringents and cold water will prove most useful.

In the treatment of cervical inflammation these means may be brought to our aid to accomplish any of the objects which have

been mentioned, and our choice should be governed by the special indication.

The ends for which the means thus far mentioned have been employed are these: to cause diminution in the calibre of dilated vessels; to check excessive nutrition and secretion; and to quiet resulting neuralgia.

In spite of all these remedial resources hyperæmia may still continue to exist in the parenchyma, and it will become evident that other and more decided means must be resorted to. Some influence, which may so affect the nerves controlling circulation and nutrition as to produce upon them an action which will overcome the existing sluggishness of circulation and formative irritation, is eminently desirable. We naturally turn most hopefully to that class of local alteratives styled counter-irritants. These, although not employed for mucous inflammation, should it exist in conjunction with the disorder which now engages us, benefit this indirectly; for it, even although originally the cause of areolar hyperplasia, is kept up by the latter, which reacts upon it and causes its prolongation.

One of the best methods for practicing counter-irritation upon the cervix uteri is by blistering, a means for which we are indebted, I believe, to Aran, of Paris. To blister the cervix, a large cylindrical speculum should be used which will take the whole part into its field. The cervix having been cleansed and dried by a soft sponge or dossil of cotton, a camel's-hair brush is dipped into vesicating collodion, which consists of ordinary collodion, commonly known as liquid cuticle in this country, containing in suspension cantharides, and painted over the whole vaginal cervix, no effort being made to avoid the os. There are two preparations of vesicating collodion, one made with ether, the other with acetic acid. The second is the more powerful and the less likely to affect the vagina. In a few seconds after it is painted on the cervix, it forms a hard, insoluble covering, upon which two or three other coats may be at once applied. The whole is then exposed to the air by keeping the speculum in place for a few minutes, a stream of cold water projected upon it, to prevent any escape into the vagina, and the process is finished. In from eight to twelve hours the epithelial covering of the cervix is entirely removed by this, and a free flow of serum takes place as from a blister elsewhere applied. After this the patient should be kept perfectly quiet for several days, cleansing the vagina by warm injections, and as soon as the discharge shows a tendency

to cessation, the blistering should be repeated. The only objections to this method of counter-irritation are the liability to vaginitis and cystitis from escape of the blistering fluid into the vagina and mouth of the urethra, which can readily be avoided; and the pain which is experienced in some cases while vesication is taking place. Another and still better method of destroying

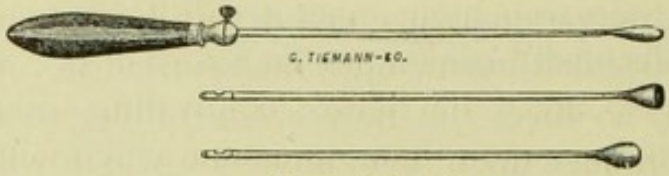


FIG. 95.

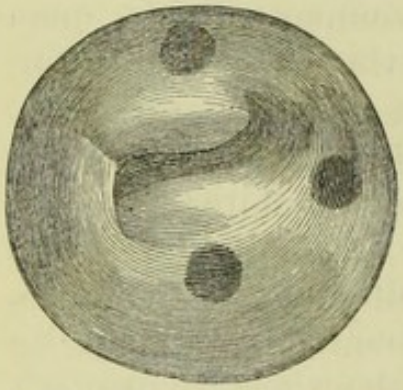
FIG. 96.

FIG. 97.

Cauterizing irons.

the epithelial covering of the cervix and producing serous discharge, is the application to that surface of metal warmed for fifteen seconds in an ordinary spirit-lamp. For this purpose the steel rods, Figs. 95, 96, and 97, used in applying the actual cautery, may be employed. One of these should be held over a spirit-lamp for from ten to twenty seconds, and then held against the cervix for several seconds, a few lines always intervening between the instrument and the os. Upon removing it a pearly white surface will be seen, which is created by death of the mucous membrane at this spot. The iron should again be warmed and applied to another spot, one such point being created on each side of the cervix, making in all three or four, as represented in the illustration. To this method there is no objection. It produces no pain, never affects the surrounding parts, and the destruction of the tissue is so superficial that no induration from cicatricial tissue results. Of all the means of counter-irritation for removing chronic parenchymatous congestion and causing diminution in the size of the uterus by stimulating absorption, this is the most efficient and least objectionable as to consequences.

FIG. 98.



Cervix blistered by the warm iron in three spots.

Vesication may be easily produced by still another method, which is both effectual and simple. By means of a solid stick of nitrate of silver, which is rubbed gently over the whole vaginal portion of the cervix, its epithelial covering is destroyed, soon

sloughs off, and leaves a granulating surface, which may be dressed with any of the alterative substances mentioned above.

For the affection which we are considering, I do not believe that any more violent caustics, escharotics, or counter-irritants should ever be employed. The application of caustic potash, the actual cautery, and the mineral acids, all do so much injury to the tissues, and cause such disastrous consequences in the future when cicatricial contraction occurs, that they should be expunged from practice in these cases. That they answer an excellent purpose as destroyers of tissue in malignant diseases is unquestionable, but here their immediate application is too dangerous, too doubtful, and too much opposed by our pathological knowledge to warrant a resort to them.

The primary action of all the counter-irritants mentioned, both superficial and profound, is not the only one of which we should avail ourselves. What the douche, an electrical current, sinapisms, and friction are as temporary excitants of alterative influence of the nerves to which they are applied, these counter-irritants are more profoundly and more permanently. They go farther than a mere evanescent effect. They produce an alterative influence upon the nerves which govern nutrition, circulation, and secretion, and thus it is that they "modify the vitality" of the part. When the cervix is denuded and its nerves exposed by any of these means, rest in bed or upon a lounge is essential to subsequent benefit. If the patient be allowed to walk about as usual, evil will often result from them in place of good. After denudation, the surface, which has its absorbents, bloodvessels, and nerves exposed, may be acted upon directly by substances brought in contact with it. After vesication, for example, preparations of iodine, iodide of potassium, &c., may be placed against the vesicated surface upon pledgets of cotton, by vaginal injections, or by suppositories. The iodized cotton of Dr. Greenhalgh of London answers so excellent a purpose here that I give the directions for its preparation:

℞.—Potassii iodidi, ℥ij;
Iodini, ℥j;
Glycerinæ, ℥viij.—M. bene.
S. Saturate eight ounces of cotton with this and then carefully dry.

A pledget of cotton prepared in this way with a thread attached should be placed against the cervix.

By means such as those which I have mentioned last, absorption

of the alterative substance employed as a topical application is thoroughly assured.

There is still another channel by which absorbent substances may be directly brought in contact with the diseased tissue. In a very limited number of cases the cavity of the uterus will be found so tolerant of applications, and even of the presence of foreign substances, that alteratives of local character may be employed with safety, but in some cases such means are attended by danger, and are impracticable. The practitioner must, after careful experimentation, determine as to whether they should be resorted to or not, and they should never be used without the fact that they are capable of setting up a train of dangerous symptoms being kept constantly before the mind. When the case is one admitting their use, local alteratives unquestionably accomplish good in this disease. They may be employed in two ways; the os may be fully dilated by tents once every fortnight, and the entire uterine cavity painted over with pure tincture of iodine or a strong solution of the iodide of potassium; or the drug employed may be brought into contact with the walls of the uterus by means of medicated tents. Sponges cut into proper shape for tents, having been soaked for a week or more in a strong solution of the bromide or iodide of potassium, or in the tincture of iodine, are moistened in a solution of gum acacia and compressed in the ordinary way. One of these is passed to the fundus of the uterus at intervals of from ten to fourteen days, and allowed to remain in position, should it not create disturbance, for twenty-four hours. By this means not only do we avail ourselves of the alterative influence of the drug, which is kept for hours in contact with the absorbing surface of the uterus, but we also obtain that which is due to pressure by the expanding tent.

General Alteratives.—Alterative remedies of a general character, as the iodide or bromide of potassium, should always be given a full trial, care being observed not to persist in their employment so long as to impair the tone of the stomach. Sometimes the following prescription appears to be of benefit:

℞.—Tr. cinchonæ comp., ℥v;
Hydrarg. bichloridi, gr. j.—M.
A dessert-spoonful in a claret glassful of water, three times a day.

Should the affection have engrafted itself upon subinvolution, and metrorrhagia or menorrhagia exist, together with enlargement of the uterine cavity, ergot, in moderate doses, may be

administered for several months, in the hope of stimulating contraction and absorption. Of the effects of all these drugs I am forced to speak very guardedly, for my experience does not enable me to express decided confidence in their efficacy.

European writers speak in high terms of the alterative influence of the various watering-places and baths of the Continent, as those of Marienbad, Schwalbach, Brücknau, and Kissingen in Germany, and of Saint Sauveur, Barèges, &c., in Switzerland. None of these equal in reputation the waters of Kreuznach in Germany, the curative property of which is supposed to depend upon the bromide of magnesium which they contain. It is very probable that the hygienic and social influences which surround these places and render them attractive, are to be credited with all the good that they do. Aran, after admitting that the water of Vichy *may* exert some influence, thus pointedly expresses himself with reference to the others: "Whatever be their composition, in whatever countries they may be found, I know of no work in which we can find the approximation to a demonstration in their favor."

It is a well-ascertained fact that when a superficial layer of an organ which is affected by hypertrophy is cut off, a marked tendency to diminution in the bulk of the remaining tissue shows itself. Thus, for example, in that areolar hyperplasia which affects the tonsils, if only the faces of these bodies be shaved off by the knife, the remainder becomes diminished in size. The same thing holds true, although by no means to the same degree, in the uterus. Dr. Sims was, I believe, the first to propose this plan. It has since been adopted by others, and constitutes a valuable method for meeting the requirements of some unmanageable cases. No great amount of tissue need be removed. By a pair of straight scissors, the cervix is slit to the extent of one-fourth of an inch; then by means of a pair curved laterally, almost at a right angle, the lower extremities of the lips are cut off. A raw and bleeding surface is thus left exposed, and the suppurative action set up in this seems to act as a drain upon the uterus.

Counter-irritation to the Abdomen.—Counter-irritation by means of blisters, issues, setons, &c., has long been practiced on the abdominal walls for this affection, and is now regarded with much confidence by many Gynæcologists. In some cases it is at once productive of great benefit, while in others it produces none whatever. The difference of action depends upon the existence or non-existence of periuterine inflammation. Should periuterine

cellulitis or peritonitis exist as a complication of areolar hyperplasia, the beneficial effects of counter-irritation will usually be marked, while if they be absent, the remedy will be fruitless. In employing this means, the practitioner should bear in mind that it is appropriate in the treatment of a complication, and not of the original affection.

CHAPTER XVIII.

ULCERATION OF THE OS AND CERVIX UTERI.

This subject has given rise to a vast deal of discussion and acrimonious dispute among Gynæcologists, of late years; some declaring that it is one of the most frequent of uterine disorders, while others have asserted, with equal positiveness, that it is of extreme rarity. Some have met with it in practice as a lesion of daily occurrence, while others of most extensive experience have never seen it, except of specific character. It must be evident that this discrepancy could not have existed in the facts with which the observers dealt, and equally probable that it must have been technical, a mere difference of statement due to disagreement with regard to nomenclature. Those who denied to a peculiar granular degeneration of the part, the name of "ulcer," found ulceration to exist very rarely, while those who thus defined such a degeneration, reported it as of very common occurrence. Even now, there is much difference of opinion as to the propriety of applying the term ulceration to this state; many still looking upon it only as one of the elements of cervical endometritis, as Dr. Robert Lee did originally. That it is so, appears to me certain; but it assumes such peculiar forms, and becomes of itself so absorbing a subject in a therapeutic point of view, that it appears necessary to treat of it apart. It certainly does not present the features which are generally considered characteristic of the process of ulceration elsewhere, yet as the term fulfils the purpose for which it is employed better than any other, and is too generally

accepted and sanctioned to admit of alteration, I shall make use of it without further discussion, begging the reader at the same time to bear in mind that what is called ulcer here, is called granular degeneration when it occurs under the lids.

Varieties of Cervical Ulceration.

The vaginal surface of the cervix uteri is subject to ulcerations of various types which, according to their character, exert a greater or less influence upon the health of the patient. They may depend upon inflammation originating in the mucous or parenchymatous tissues of the part, may be created by ichorous discharges, the result of inflammation of the cavities of the neck or body, or be due to some peculiar depravity of the blood, creating a vice of nutrition. All the common and generally admitted forms of cervical ulceration may be classed under the following heads:

1st. The granular ulcer;
2d. The follicular ulcer;
3d. The true inflammatory ulcer;
4th. The syphilitic ulcer;
5th. The corroding ulcer;
6th. The cancerous ulcer.

The Granular Ulcer.

This variety of ulcer, which has been described under the names of erosion of the cervix, granular degeneration, and abrasion, consists, as its name implies, in the development of a surface of granular character on the smooth face of the cervix and just within the os.

Frequency.—Of all the varieties of cervical ulceration this is by far the most frequent. Very often it exists for a length of time without any suspicion of its presence arising in the mind of patient or physician, and sometimes without causing symptoms which prove in any great degree annoying. At others, grave constitutional signs may be traced to it and entirely removed by its cure.

Causes.—The great pathological feature, essential for this form of ulceration, is inflammation of the lining membrane of the cervical canal, or of that covering the vaginal face of the cervix. This may be associated with areolar hyperplasia in the submucous tissue, but whether the last exist or not, a certain amount of mucous

inflammation must be present for it to occur. Whatever, then, excites cervical hyperplasia or endometritis may prove indirectly a cause of granular ulceration, but certain influences which exert a deleterious effect directly upon the cervico-vaginal covering and the os, will prove more directly causative.

Examples of such influences are—

Uterine displacements, causing friction against the cervix;
Abuse of sexual intercourse;
Vaginal or uterine leucorrhœa;
The use of pessaries;
Injuries to the os in parturition.

Symptoms.—Should the disease exist, with but slight implication of the subjacent areolar tissue, very few symptoms may be present. Indeed, profuse leucorrhœa is sometimes the only one of which the patient will complain. The fact that other and graver symptoms generally show themselves, is a corroboration of the statement, that disease of the connective tissue and mucous membrane are important elements in such cases; for where we meet with true inflammatory ulceration occurring in procidentia and unattended by uterine inflammation or congestion, it is remarkable how little disturbance is excited by it. Ordinarily, these are the symptoms which will be noticed in a grave case:

Profuse bloody and purulent leucorrhœa;
Pain and hemorrhage after intercourse;
Menorrhagia or metrorrhagia;
Pain on locomotion;
Fixed pain in back and loins;
Tendency to spanæmia;
Nervous disorders and perhaps hysteria.

Physical Signs.—Vaginal touch alone will often serve as a diagnostic means, for by it the cervix is felt to be covered by a velvety or granular surface, which, to the practiced finger, is at once recognizable. But the speculum offers the fullest corroboration or corrects any error committed by this means. By it, the cervix, more especially near the os, is seen to be covered by a mass of pus, which being removed lays bare an intensely red, granular, hemorrhagic-looking space of greater or less extent, closely resembling the inner surface of the eyelids when affected by granular degeneration. The diseased surface does not appear depressed below, but is sometimes even elevated above the surrounding mucous membrane.

Course and Duration.—There is no proof existing that this disease is ever recovered from without surgical interference, although as to this being impossible I am by no means positive. The degenerated surface may go on for an unlimited time pouring out pus, and thus greatly impoverish the blood and cause the gravest constitutional results; or the same unfortunate end may be reached earlier by spread of the morbid action up the canal as far as the os internum.

Pathology.—The granular ulcer is produced by one of three pathological changes in the tissues of the part; removal of epithelium and erosion of villi; removal of epithelium and hypertrophy of villi; or eversion of the cervical mucous membrane. In the first instance, the ulcer is superficial and not hemorrhagic. The epithelial covering is first removed, producing what is called an abrasion, and the villi themselves are destroyed. In the second, after removal of the epithelium, the papillæ or villi increase in size and length, and project forwards like granulations, the larger ones so compressing the smaller as to cause their death by atrophy. Each of these papillæ contains a looped capillary vessel which, becoming enlarged by its hypertrophy, and being entirely unprotected by epithelium, naturally tends to bleed. Sometimes the circulation in the supplying vessels is so much impeded that they become varicose. These two facts have caused the names of bleeding ulcer and varicose ulcer to be applied to the respective states.

At times still another change occurs in this form of ulcer, giving rise to another name. Its surface becomes coated with false membrane, when the ulcer is termed diphtheritic.

Eversion of the cervix is by no means a rare cause of granular ulcer. As a result of inflammatory engorgement, or in consequence of slitting the walls of this canal by surgical procedure, or the act of parturition, its lining membrane prolapses as the mucous membrane of the lids does in ectropion, and if not diseased at the time of displacement, very soon becomes so. At times the hypertrophy, which, under these circumstances, may take place in the crested folds of the everted cervical membrane, produces so great a degree of convolution and projection as to have caused the appellations of fungous ulcer or cock's-comb granulation to be applied to it, according to Dr. Arthur Farre,[1]

[1] Supplement Cyc. Anat. and Phys., p. 695.

though Scanzoni[1] regards this as merely an exaggeration of the villous hypertrophy recently mentioned.

Varieties.—Granular ulcer is the genus to which belong as species the varicose, fungous, bleeding, and diphtheritic ulcers that have been described by various writers. It is hardly necessary to multiply names, to describe the almost endless variations which may develop themselves by papillary hypertrophy.

Prognosis.—The prognosis in these cases is always good, though it may require a great deal of time to effect a cure, for this will not be permanent unless that of the coexisting cervical disease be accomplished.

Treatment.—The cardinal point in the treatment of granular ulceration of the cervix uteri is this, to look upon the ulcer only as a local manifestation of diseased action in the cervix or body, which is the lesion to be treated. We should regard it only as a symptom of a graver and more important morbid state which should always be kept in view, even if the symptoms produced by the ulceration rivet the attention chiefly upon itself. It not unfrequently happens that one symptom of a disease will so distress and harass a patient that remedial measures must be entirely directed to it, although the practitioner be aware of the fact that it depends on disease elsewhere located. An example of this is sometimes presented in the morbid state under consideration, the ulceration itself proving so annoying by its profuse discharge, and interference with the functions of the uterus and locomotion, as to call for prompt relief. When the ulceration is the result of inflammation confined to that portion of the cervical tissue immediately underlying it, the relief of the ulcer by the alterative and counter-irritant action of the means adopted to accomplish it, may effect the cure of the disease producing it, and the fact of the existence of such disease may not be recognized. But when it depends upon the irritation of the discharges from the cavity of the cervix, or body of the uterus, or upon deepseated areolar hyperplasia, cure is more difficult.

Should it be discovered then, upon examination, that corporeal or cervical endometritis, or cervical or general hyperplasia exist, as the main disease, remedial means should be directed to their cure, at the same time that the less important local trouble receives due attention. It may be asked, if this be true, how is it that the mere application of caustics to the ulcer will so often effect a recovery

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[1] Diseases of Females, Am. ed., p. 222.

without regard to other disease? The disorder which most commonly induces granular ulceration is disease of the mucous and submucous tissues at the vaginal extremity of the cervix. The solution of continuity to which the caustics are applied, acts, after their application, as an issue, and they by derivative and alterative influence effect a cure. It is precisely in accordance with this principle that the practitioner, if called to treat a case of cervical hyperplasia, which is unattended by such solution of continuity, creates it by abrading the surface by a blister or the hot iron, and then cures the issue thus caused by such caustics as the nitrate of silver or chromic acid. It is common to hear physicians remark that they are more successful in treating cases of cervical disease accompanied by granular ulceration, than those which are free from it. The key to the explanation has been given above.

Having presented these remarks and sufficiently insisted upon their importance, I now proceed to the consideration of the special treatment of the ulcers themselves. The diseased surface may be reached by three effectual methods; through the speculum, by injections, and by suppositories. Caustic applications made through the speculum exert upon this disease a most decided and unquestionable influence, and should be resorted to in the commencement of treatment. The speculum having been introduced and the cervix cleansed, the solid stick of nitrate of silver, the warm iron, chromic acid, or acid nitrate of mercury should be thoroughly applied.

The caustic treatment will be quite sufficient for ordinary granular degeneration, relieving, when repeated often enough and conjoined with other appropriate treatment, not only this state but the pathological condition which induces it.

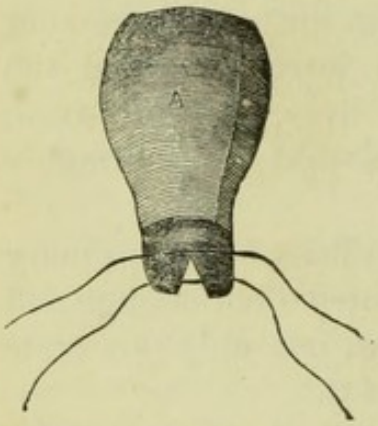
When, however, the exuberant development of villi called, by Evory Kennedy I think, cock's-comb granulation, exists, it is well to snip the growths as close as possible to the mucous membrane by a pair of long-handled scissors, or even to scrape the surface until it is smooth, by means of the curette, before applying the caustic. After this the same caustics may be used as for simple granular ulcer, or the styptic colloid of Richardson, which consists of a strong solution of tannin in gun-cotton collodion, may with great advantage be employed. This substance appears to act not only as a direct alterative, but forming a protective crust over the ulcer, constitutes for it a shield against friction and uterine discharges.

Should eversion of the cervix exist, the hæmorrhoidal mucous

membrane should be at once removed by the scissors, or, if more easily done, by the curette, and should much gaping of the os be present, the actual cautery or lunar caustic be employed. I have spoken so fully elsewhere of the danger of producing cicatricial contractions of the canal and induration of the cervix that it requires no further mention here. In eversion, however, a certain amount of contraction is to be desired. Another excellent method for cauterizing these ulcers is by the gas jet cautery of Acosta, of Paris. Any physician can readily construct one of these. An ordinary India-rubber bag is filled with carburetted hydrogen gas by being fitted to an ordinary gas-burner, a blow-pipe is fastened to the end of a tube connected with the bag, while the escape of gas is prevented by pinching the tube with the fingers. The bag is then compressed, and the gas being ignited at the tip of the blow-pipe, the tiny flame is brought to bear upon the diseased part through the speculum.

When eversion of the cervical mucous membrane is due to slitting of the canal either for surgical purposes or by parturition, the condition may be cured by an operation which consists in paring with long scissors the edges of the cervical fissure and passing deep sutures of silver wire so as to approximate them thoroughly. By this means the os is restored to its integrity, and the everted mucous surfaces being placed face to face, friction against them is prevented.

FIG. 99.



Operation for eversion of cervix.

After any of the applications mentioned, the patient should be kept in bed and directed to use copious injections of warm water twice or three times a day, or this with glycerine, laudanum, or infusion of linseed or bran added to it. At the end of ten days, if one of the more potent caustics have been applied, or a week if one of the milder, the speculum should be again used, when it will be found that the slough which was created has separated and been washed away. Should the surface which now presents itself look healthy, and as if inclined to heal, we may rely for hastening this process upon the milder alteratives, and instead of making another caustic application, leave in contact with it a pledget of cotton saturated with equal parts of glycerine and solution of persulphate of iron, or of glycerine holding tannic acid in

suspension (℥ij of the latter to ℥vj of the former). This pledget should have a string attached to it, in order that the patient may remove it.

Applications should be made not only by the physician, who will probably use the speculum not oftener than once a week, but also by the patient, who should make them daily by injections and suppositories. The former should be thus employed: every night and morning a gallon of tepid or warm water, containing one ounce of glycerine and one drachm of sulphate of zinc, or two of sulphate of alum, acetate of lead, or tannin, should be injected for a period varying from ten to twenty minutes. Or if it be found necessary to employ a stronger astringent solution, a gallon of pure water may be used first, for the time mentioned, and then a medicated solution, one quart in amount, be used for a short time afterwards.

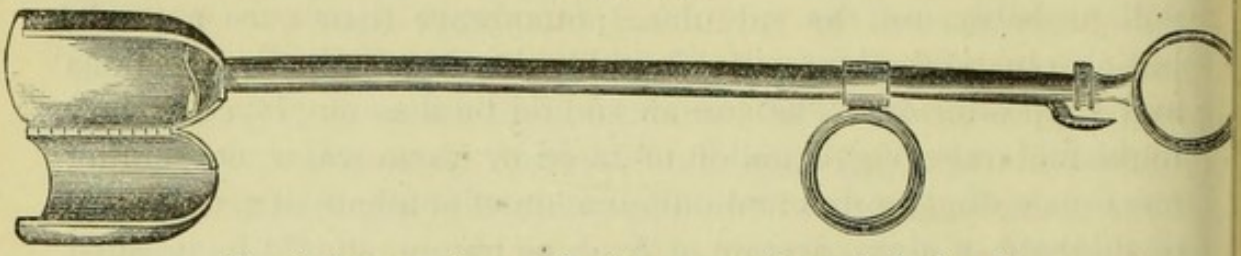
Medicated pessaries or vaginal suppositories may likewise be made of great service. A suppository may be made to contain three grains of oxide of zinc, or of sulphate of alum; ten grains of mercurial ointment; five grains of iodide of lead, or two grains of tannin; to any one of which, should an anodyne be needed, one grain of the extract of belladonna, or half a grain of opium, may be added. These substances may be made into a mass with powdered gum tragacanth, starch, or slippery elm, and glycerine, and the ball covered with cocoa butter. They may be introduced by the finger, but by the use of the vaginal suppository tube, delineated on page 296, there is much greater certainty of their coming in contact with the diseased surface. Suppositories may be employed once or twice a day, but are decidedly more beneficial while the patient confines herself to bed.

Surprise may be felt at the small amount of medicinal substance which I propose to add to each suppository. A great deal of discomfort often arises from larger doses than I have mentioned. I have repeatedly seen patients for whom two grains of tannin thus administered was too large a dose, and who had in consequence to cut each suppository in half before employing it.

Dr. Simpson was in the habit of applying dry powders in the upper part of the vagina, and Dr. Sims introduces a tampon of cotton by means of the instrument represented in Fig. 100. I have found patients complain so much of the difficulty of the introduction of instruments that I have used a simple tube of hard rubber penetrated by a piston. By this every night and morning after the use of copious vaginal injections of tepid water,

substances in powder may be placed in contact with the os, but they will be found to be more disagreeable to the patient than suppositories.

Fig. 100.



Sims's tampon placer. A piston passes through the handle.

But very generally caustic applications must be repeated, and sometimes often repeated, before cure is effected; and a question of importance arises as to the frequency of repetition which is most beneficial. I am convinced that we often apply caustics too frequently, not allowing time for their stimulant effect to be developed. If a caustic is applied to an ulcer on the leg, it is not, unless for special cause, repeated so soon as the slough separates, but the alterative action which it creates is fostered and turned to a good account by subsequent dressing. We should be guided by the same principles in treating cervical ulceration, and in doing so should not cauterize the diseased surface oftener than once a fortnight if it be lightly done, or once a month if after the use of the stronger caustics a sluggish aspect is still maintained.

The Follicular Ulcer.

This form of ulceration, though not so frequent as that last mentioned, is by no means rare. It consists in an inflammation of mucous follicles, which resemble those of the cervical canal, and which are scattered over the vaginal face of the cervix, and exist even in the cavity of the womb. "The cervical mucous cysts are lined by epithelium and basement-membrane. They contain a small quantity of mucus together with granule-cells. Those upon or near the margin of the os uteri may be sometimes observed to contain short papillæ within their margin."[1] A recollection of these facts is essential to a full understanding of the stages of this form of ulceration.

Pathology.—Follicular disease of the cervix shows three entirely different phases: 1st. A number of vesicles, equal in size to a millet-seed and filled with a fluid like honey, is noticed

[1] Cyc. Anat. and Phys., p. 640.

covering the part. These are due to repletion from retention of their secretion. 2d. These cysts are seen open, *i. e.*, they have burst, and a follicular ulcer marks the former site of each. 3d. The papillæ which they contain undergo hypertrophy and cause the appearance of red, elevated, hemorrhagic-looking tubercles in place of the depressed ulcers just mentioned. For the thorough knowledge of these ulcers we are indebted, as for so much else relating to the anatomy and pathology of the uterus, to Dr. Arthur Farre.

Varieties.—It will now be readily perceived how a variety of names have been applied to this disease when examined at different stages. Follicular disease is supposed to be the source of the eruptive affections described by authors as acne, herpes, and aphthæ of the uterus.

Causes.—Like the granular ulcer, it is produced by anything exciting areolar hyperplasia or endometritis, of which it is a complication.

Prognosis.—Like the granular ulcer also, the prognosis with reference to it will depend in a great degree upon that of the disease which underlies it. Should this be severe, a very guarded prognosis should be made as to speedy cure; should it be slight, a favorable prognosis may be made.

Treatment.—The contents of all the cysts should be evacuated, and their cavities thoroughly cauterized by a sharp point of nitrate of silver, chromic acid, or the acid nitrate of mercury. Should the second or third stage exist, the diseased surface should be cauterized thoroughly. Then treatment should be directed to the uterine affection which has produced the disorder. Should areolar hyperplasia or endometritis be found to exist, as they very likely will, the treatment appropriate to them should be adopted.

The True Inflammatory Ulcer.

Very little need be said of this form of cervical ulcer, further than clearly to announce the possibility of its occurrence, and the circumstances under which it is met. In procidentia uteri of long standing it is seldom absent, and the deep excavations, precipitous edges, and inflamed bases of the spots, leave no room for difference of opinion as to their nature. This form of ulcer is very rarely met with, except as the result of direct injury with coexisting parenchymatous congestion or inflammation. Thus it may arise from the injuries resulting from friction in procidentia

and anteversion or retroversion, or from excessive coition, where the cervix is much enlarged and its parenchyma inflamed.

Prognosis and Treatment need not detain us, since both will depend upon the more important uterine affection. Leeching, fomentations, counter-irritants, and rest, should be resorted to, just as if no solution of continuity existed, in a case of parenchymatous disease. If due to procidentia, the ulcerations may be relieved by simply keeping the uterus in place.

The Syphilitic Ulcer.

Frequency.—Syphilis may affect the cervix uteri either as a primary or secondary disorder, though in neither form is it by any means common. It is now a settled fact that true chancre may locate itself upon the cervix, but not the less certain is it that it rarely does so. I have seen but one case in which I felt satisfied that a cervical ulcer was of this character. This was proved by inoculation, the most certain way in which a strictly reliable conclusion can be arrived at, and by corroborative evidence existing in the presence of syphilitic roseola without primary disease elsewhere. Dr. Bennet[1] states, that in his own practice it has been very rarely met with, and quotes in confirmation of his own experience that of Ricord, Cullerier, Gibert, Duparcque, and others. M. Bernutz, who has made, according to Becquerel,[2] a special study of this subject in the hospitals of Paris, describes chancres of the os minutely, dividing them into Hunterian, diphtheritic, and ulcerous, which resemble phagedenic very closely. With regard to secondary affections on the cervix, there has been considerable discussion, some regarding them as quite common, others as very rare. Becquerel, after careful research in l'Ourcine Hospital at Paris, was convinced of their occurrence, and Bernutz describes mucous patches, vegetations, erosions, tubercles, and gummy tumors. I know of no more significant evidence of the rarity of these affections upon the cervix than the fact, that in the most recent work upon syphilis, now before the profession, a work remarkable for the thorough and comprehensive style with which it deals with all relating to that subject, almost no mention is made of syphilitic affections of the cervix. I allude to the work of my colleague, Prof. Bumstead.[3] The author investigates the character of syphilis when affecting all parts of the body, even the

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[1] Bennet on the Uterus, p. 350.

[2] Mal. de l'Utérus, vol. i, p. 169.

[3] Bumstead on Venereal Diseases.

lachrymal sacs, the membrana tympani, &c., but nowhere is any mention made of the disease appearing on the cervix, except a cursory statement, that at Bellevue Hospital he had seen some remarkable instances of mucous patches thus located. The sign of the secondary disorder which we would most naturally expect to find in this site would be the mucous patch, as it is one of the most frequent of all the manifestations of that stage; but we are informed by Messrs. Davasse and Deville,[1] that of one hundred and eighty-six women affected by syphilis, and examined in reference to the location of its lesions, they were found on the cervix uteri but once.

Course and Termination.—The primary affection being located on the cervix, the general system becomes affected as from a chancre on any other part, which, as M. Gosselin has pointed out, instead of passing off rapidly, as it sometimes does, may become an ulcer of ordinary appearance, or assume the fungous type. During its course the cervical chancre has a marked tendency to become covered by false membrane, which Robert[2] first noted, and Bernutz subsequently corroborated. Unless a fact recorded by Förster[3] be carefully borne in mind by the diagnostician, a grievous error may occur in the differentiation of this form of ulcer from that of malignant character. He declares that syphilitic ulcers sometimes destroy tissue so freely as to penetrate into the bladder or rectum.

Differentiation.—For evident reasons this is a matter of great importance, not only as regards therapeutics, but because it may involve a delicate legal question affecting the chastity of the woman.

These are the means of diagnosis in case of chancre:

Border of ulcer precipitous;
Surface of ulcer depressed;
Great tendency to bleed;
Great tendency to false membranous covering;
Rapid development of constitutional symptoms;
Early appearance of roseola;
Transmission by inoculation.

All of these signs are of value, but the only ones upon which a positive opinion could be based are the last three.

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[1] Davasse and Deville, Des Plaques Muqueuses: Arch. Gén. de Méd., 1845, t. ix et x.

[2] Aran. Mal. de l'Utérus, p. 524.

[3] Klob, op. cit., p. 243.

Secondary eruptions, as, for example, mucous patches, vegetations, &c., which appear here will be known by

Their rapid development;
Their connection with constitutional signs;
Simultaneous affection of the vagina;
Absence of chronic cervical inflammation;
The peculiar appearance of secondary eruptions.

It is, however, often very difficult to say with any degree of positiveness whether an ulcer is of this character or not.

Treatment.—This will consist in cases of chancre of the ordinary treatment adopted when such an ulcer affects any other part. In case of secondary affections the patient should be put upon a mercurial course, the surface cauterized, and subsequent dressings made of mercurial preparations, of which the black or yellow wash, mercurial ointment, and calomel, are the best.

The Corroding Ulcer.

This term was applied by Dr. John Clark, of England, to a peculiarly intractable, indeed a uniformly fatal, ulcer, which commences in the mucous membrane of the vaginal face of the cervix, and in process of time destroys that structure and gradually the entire organ.

Although there are many points of similarity between this disease and cancer, there are several in which it differs very essentially from it. Thus, cancer generally gives severe pain, while corroding ulcer does not; cancer involves the surrounding tissues, this rarely does so to any great degree; cancer destroys life rapidly, this does so so slowly, that years may pass before it reaches a fatal issue.

Authorities upon Gynæcology and Pathology are, at present, almost unanimous in reference to the fact that the disease called corroding ulcer is epithelial cancer of ulcerating form, and that it bears to the uterus very much the same relation that lupus or cancroid ulcers do to the face. All this will be fully investigated when the subject of cancer is taken up. It appears out of place to treat of it in the same category with the less important ulcerations of the cervix, and its consideration will be deferred until other malignant affections receive attention.

The Cancerous Ulcer.

All the varieties of cancer, encephaloid, colloid, and scirrhus,

may show themselves in the uterus, which more frequently than any other organ of the body is the seat of their invasion. All these consist in a deposit of a lowly organized material, which subsequently undergoes disintegration. In the destruction of this material the part of the uterus in which it has found its nidus is likewise destroyed, and as it is most commonly in the cervix that it collects, the resulting solution of continuity creates a cancerous ulcer. To one unfamiliar with uterine affection this might at its commencement be mistaken for a benign ulcer, but such an error will rarely be made. Its consideration will be postponed for the subject of cancers, to which it properly belongs.

In addition to these varieties of ulcer of the cervix, a scrofulous ulcer has been described by Lisfranc,[1] Robert,[2] Blatin,[3] Duparcque,[4] and others. More recent works make no mention of it, or if they do, it is only to express disbelief in its existence. Dr. West[5] quotes to prove that the combined testimony of Robin, Lebert, and Hanover is in strong opposition to the occurrence of such an ulcer on the cervix, and Rokitansky,[6] in describing these affections, makes no mention of having met with it. The descriptions given of it by Robert, who has most minutely described it, and of others who record cases, appear so much like those of cancer, that very little doubt will be left in the minds of most readers as to its identity with that class of affections.

The French school of Gynæcology has always laid great stress upon the existence of certain diatheses as resulting in uterine ulcerations, and thus a great number of varieties will be found resulting from a supposed connection with them. Examples of these are the herpetic, scorbutic, scrofulous, dartrous, tuberculous, arthritic, &c.[7] I refer to them not to advise the adoption of the nomenclature, but lest the student in his researches may meet with and be confused by their mention.

In concluding this subject, it may serve a good purpose to present at one view all the varieties of ulcers which have been described by the most recent authors, and to class each species under its proper genus. I would not recommend the student to employ the names of the varieties, for I believe that they can readily be dispensed with, the generic terms fulfilling every practical purpose. To be familiar with the modern literature of the

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[1] Clin. Chirurg., vol. iii, p. 548.
[2] Des Affections du Col de l'Utérus.
[3] Mal. des Femmes, p. 521.
[4] Mal. de la Matrice, vol. i, p. 394.
[5] Op. cit., p. 269.
[6] Op. cit., vol. ii, p. 220.
[7] Blatin and Nivet, op. cit., ch. Ulcération.

subject, however, he should be acquainted with them, as allusion to them will be often met with.

1*st.* *Granular ulcer.*
Fungous or cock's-comb ulcer;
Bleeding ulcer;
Varicose ulcer;
Diphtheritic ulcer.

2*d.* *Follicular ulcer.*
Uterine acne;
" herpes;
" aphthæ.

3*d.* *True inflammatory ulcer.*
Indolent ulcer;
Callous ulcer;
Diphtheritic ulcer.

4*th.* *Syphilitic ulcer.*
Chancre;
Syphilides.

5*th.* *Corroding ulcer.*

6*th.* *Cancerous ulcer.*

CHAPTER XIX.

GENERAL CONSIDERATIONS UPON DISPLACEMENTS OF THE UTERUS.

History.—That the earliest practitioners of medicine were familiar with this subject is abundantly attested by the writings of the Greek and Roman schools. It is distinctly mentioned by Hippocrates, and more clearly and exactly still by Galen and Moschion about the second century of the Christian era. This remark applies not only to prolapse, but also to versions, which were evidently understood. Hippocrates and Moschion even described latero-version, a variety which has not been much noticed by modern writers. There is no evidence, however, that they understood the difference between versions and flexions.

Passing over many centuries, at the middle of the eighteenth we find Gynæcologists paying attention to versions, and even to flexions, of the pregnant uterus, but losing sight of these displacements in the non-pregnant organ. Versions were at that period described by Garthshore, W. Hunter, Jahn, and Desgranges; and flexions by Saxtorph, Witczek, Baudelocque, and Böer.

Denman was the first writer who described flexion of the non-pregnant uterus, which he did in reference to a case of retroflexion, about the year 1800. The wanting link, the description of anterior flexure, was not supplied until M. Améline, of France, described anteflexions in 1827. For our present improved views upon the subject we are indebted more especially to the following observers:

M. Bazin, Paris,	1827.
M. Améline, Paris,	1827.
Mme. Boivin and M. Dugès, Paris,	1833.
Simpson, Edinburgh,	1843.
Amussat, Paris,	1843.
Bennet, Edinburgh,	1845.
Hodge, Philadelphia,	18—.

The facts contributed by these authors have been gradually merged into the common stock of medical knowledge, and admitted into all systematic works on Gynæcology. I have not of course attempted to enumerate all writers upon it, but only those who have accomplished some improvement or suggested original views. Bazin deserves the credit of being one of the earliest modern writers on the subject. Améline not only that, but the additional merit of having been the first to fully describe flexions and differentiate them from versions. Boivin and Dugès introduced the subject into a systematic work upon Gynæcology, and Amussat improved our knowledge of it as it occurs during the pregnant state. But all these results were only foreshadowings of the eminent services of Simpson, who opened the way to diagnosis by introducing the uterine sound. At a still later period Dr. Bennet, by insisting upon the fact, which Lisfranc had stated, but failed to impress out of France, that structural disease is very generally the cause of displacement, accomplished for the subject scarcely less than his compatriot.

In this country the profession is especially indebted for correct views upon the subject to Dewees, Meigs, and Hodge. More

especially has the last of these identified his name with it by important contributions to its pathology and treatment.

Pathological Significance of Versions and Flexions.—The ancients ascribed to these displacements many constitutional evils, as paralysis, hysteria, &c., and even until a very recent period they were credited with a great deal of pelvic pain and functional uterine disturbance, which it was supposed almost universally attended them. Until 1854, this belief prevailed very generally, having the powerful support and indorsement of such men as Velpeau, Simpson, and Valleix. It is true that it was contested by Cruveilhier and Dubois,[1] before the period mentioned; but at that time a spirited discussion arose concerning it in the Academy of Medicine of Paris, which not only threw much doubt upon it, but gave rise to a powerful opposition, in the ranks of which appeared Depaul, H. Bennet, Aran, Becquerel, and others equally eminent. They maintained that these displacements of the womb, if unaccompanied by textural lesion, produced no constitutional disturbance, created, as a rule, no discomfort, and did not deserve the attention in treatment which had been bestowed upon them. They did not believe that the dislocation was the cause of suffering when this existed alone, but looked upon it, in such cases, as an epiphenomenon engrafted upon some more important lesion. Consequently they were opposed to reliance being placed upon support by pessaries as one of the essentials of treatment, as had been done by the other school.

When views supposed to be false are repudiated, those adopting new ones are always apt to run too far into an opposite extreme, and in this instance many have done so. Scanzoni[2] sounds the keynote of this extreme party when he states that, "flexions of the womb do not acquire any importance; nor are followed by any serious dangers, save when they are complicated with an alteration in the texture of the organ."

To refute the first part of this statement we shall not have to seek far, for the same author, ten pages farther on in his work, remarks that, "in well-marked flexion, the canal of the neck is always more or less impermeable, which opposes an insurmountable obstacle to conception." This is an open avowal that flexion is of importance though uncomplicated by alteration in the texture of the uterus, and for further proof I would appeal to the experience of every practitioner, whether he has not seen it a

[1] Goupil, B. & G., op. cit., p. 459.

[2] Op. cit, Amer. ed., p. 112.

cause of severe obstructive dysmenorrhœa. The following propositions present the views upon this subject which I think will be found to bear the test of experience:

1st. Versions and flexions of the womb may exist without causing any symptoms, for in themselves they do not constitute disease. Thus it is that we see the uterus forced completely out of its place by tight clothing, without the production of morbid signs.

2d. By interfering with escape of menstrual blood, by disordering uterine circulation, by causing pressure and friction from contact with surrounding parts, and by creating a barrier to the entrance of seminal fluid, they become as a general rule of great importance and require special attention.

3d. Generally being the results and not the causes of uterine and periuterine diseases, their treatment should be combined with efforts at the alleviation of these states.

4th. Treatment by pessaries, combined with means which remove the weight of the superincumbent intestines, is of great value. By it, even although the primary disease is not affected we may relieve one of its most troublesome symptoms, which often reacts for evil in aggravating and prolonging the affection which caused it. When the displacement has resulted from relaxation of the uterine ligaments, in consequence of increased weight or pressure from the abdominal viscera, pessaries prove a most useful and efficient means of treatment. Even when inflammatory action exists in the endometrium it may become necessary to resort to one to prevent resulting relaxation of uterine supports.

5th. One reason of the great prejudice existing against their use in the minds of many is to be found in the fact, that most of the enlargements of the uterus were attributed unhesitatingly to parenchymatous inflammation. Mechanically lifting an inflamed organ appeared repulsive to reason. So long as the existing inflammation was uncured, efforts appeared to be directed to a side issue, a result and not the root of the disorder. Since it is now known that what was supposed to be chronic metritis is really a vice of nutrition resulting in new formation of connective tissue, this theoretical objection falls to the ground.

6th. Another reason is this: it requires skill, and ingenuity, the result of practice, not only to do good with pessaries, but to apply them without doing absolute harm. In the hands of a physician who has made no special, or, at least, careful study of their use,

and who habitually applies only a half dozen in the course of every year, pessaries are elements of absolute danger. It would be as unreasonable to expect an untaught experimenter to fit the foot comfortably with a shoe, as to hope for efficiency, comfort, and safety from a pessary applied by ignorant hands.

Definition and Synonyms.—The term displacement is applied by British and American writers to any decided removal of the uterus from its normal position, without reference to the direction in which it has been moved, while French writers apply the term displacement only to ascent and descent of the uterus, reserving that of deviation for versions and flexions.

Normal Anatomy.—The uterus is delicately poised in the pelvis, and prevented from descending to its floor by three agencies: the vaginal walls, which abut upon the sphincter vaginæ muscle; a surrounding investment of areolar tissue, which binds it to the bladder, the rectum, and the pelvic walls; and certain ligaments, which attach it to neighboring points of support. The most demonstrable and important of these means is unquestionably the vagina, loss of tone in which will in time generally result in the accident which we are considering. A great deal of support is likewise derived from the connective areolar tissue, which so closely unites the uterus with the rectum and bladder as to involve displacement of these viscera in its descent.

From the posterior face of the neck, there run two folds of peritoneum which go to the rectum. These inclose corresponding bands of fibrous tissue which attach the cervix to the sacrum, and have received the name of utero-sacral ligaments. Their influence, as likewise that of two similar bands connecting the cervix in front with the bladder, cannot be doubted.

These are probably all the influences which unite in prevention of prolapsus in the first and second degrees. When they are entirely overcome and the descent has become complete, the round and broad or lateral ligaments come into action, but not until that has occurred. Some very interesting experiments upon the cadaver instituted by Dr. Henry Savage[1] prove these statements conclusively.

From retroversion, the uterus is prevented by the round ligaments, two fibrous cords which pass from the fundus to the pubes; the broad ligaments, which attach it to the pelvic walls; the two utero-sacral ligaments, which connect the neck with the sacrum; and the two columns of the vagina. Anteversion, which is gener-

[1] On Female Pelvic Organs.

ally associated with flexion, is guarded against by less numerous and less effectual means. The presence of the bladder, the broad, and utero-vesical ligaments, and the columns of the vagina, are the only preventives.

None of these means of suspension are concerned in flexions and inversion, which are combated by forces of entirely different nature. The tissue of the unimpregnated uterus is of such strong, resisting character in the adult female, as to prevent too great a curvature of the body upon the neck either anteriorly, laterally, or posteriorly. It is to this peculiarity of structure that immunity from these conditions is due.

When stimulated by pregnancy or the presence of an intra-uterine growth, the uterine tissue develops rapidly into muscular structure. This keeps the cavity of the organ closed by tonic contractions, and removes the possibility of inversion unless it be accomplished by absolute violence. But when from any cause it is destroyed and the condition of tone is replaced by one of atony, flexion or inversion may occur.

It is manifest that a number of mechanical influences may force an organ thus sustained, upwards, downwards, backwards, laterally, or even bend it upon itself or turn it completely inside out, and that the direction of the impelling force, or nature and position of the loss of support will determine the character of the displacement. The displacements which may thus result have received the following appellations:

Ascent;
Descent or prolapsus;
Anteversion;
Anteflexion;
Retroversion;
Retroflexion;
Lateroversion;
Lateroflexion;
Inversion.

These varieties should not be memorized by the student, for such an effort would be uncalled for. Let him suppose any pear-shaped bag, one of gutta-percha, for instance, suspended by yielding supports in any cavity, and it must be evident that these, and only these changes of location could be impressed upon it.

The general causes producing these results upon the uterus are the following:

1st. Any influence which increases the weight of the uterus;
2d. Any influence which diminishes the supports of the uterus;
3d. Any influence which pushes the uterus out of place;
4th. Any influence which displaces the uterus by traction.

To state this more fully in other words:

1st. The uterine supports are equal to sustaining the organ when of normal weight; but when its weight is increased they naturally fail in their task.

2d. Even if the uterus be no heavier than it should be, it may become displaced from depreciation of that support to which it is entitled, and which was made to sustain it.

3d. If both the uterus and its sustaining powers be perfectly normal, it is evident that direct or powerful pressure may overcome the latter, and force the organ from its place.

4th. It is equally evident that as by a tenaculum fastened in the uterus of the cadaver, we may drag it from its position, so may contracting lymph, or shortened ligaments, effect this in a living body.

All these facts having been premised, a concise view of the special causes of displacements may be thus presented:

1. *Influences increasing weight of uterus.*
   - Congestion;
   - Tumors in the walls or cavity;
   - Pregnancy;
   - Hypertrophy of any of its component parts;
   - Subinvolution;
   - Fluid retained in cavity;
   - Masses of cancer or tubercle.
2. *Influences weakening uterine supports.*
   - Rupture of the perineum;
   - Weakening of vaginal walls;
   - Stretching of uterine ligaments;
   - Want of tone in uterine tissue;
   - Degeneration of uterine tissue.
3. *Influences pressing the uterus out of place.*
   - Tight clothing;
   - Heavy clothing supported on the abdomen;
   - Muscular efforts;
   - Ascites;
   - Abdominal tumors;
   - Abscesses or masses of lymph;
   - Repletion of the bladder.

4. *Influences exerting traction on the uterus.*

Lymph deposited in pelvic areolar tissue;
Lymph deposited on peritoneum of pelvic viscera;
Cicatrices in vaginal walls;
Shortening of uterine ligaments;
Natural shortness of vagina.

The mode of action of each of these causes is so evident as to require no special mention at this time, but they will be particularly alluded to hereafter.

An article of so great value has recently appeared in the London Lancet from the pen of Dr. Alfred Meadows, with reference to the etiology and relative frequency of the various forms of displacements, that I quote *in extenso*.

"Referring to the cases of uterine displacement of all kinds which have come under my care in hospital and private practice during the last three years, to the end of 1867, and of which I have careful notes, I find that the total number observed was 84. Of these, 14 occurred in single women, 70 in married. Of the latter, 15 were sterile, and 55 had been pregnant; of these last, 27 had aborted. The total number of abortions was 63, or an average of $2\frac{1}{3}$ to each person who aborted. The total number of children born was 171, or an average of $3\frac{1}{9}$ to each mother, and the total number of pregnancies was 234, or an average of $4\frac{1}{4}$ to each of the fertile women. The frequency of the several varieties of displacement was as follows: Retroflexion occurred 34 times; in 8 the patient was single, in 26 married. Retroversion was met with in 18 cases; 3 were single, 15 married. Anteflexion occurred 20 times; only 1 of these was single, the rest were married. Anteversion was noticed in 12 cases; 2 of these were single, and 10 married. All these points will be best seen by reference to the following table, which shows also the relative frequency of sterility and fertility, of abortion, of children at term, and of pregnancy, in the several varieties of uterine displacement.

	Retro-flexion.	Retro-version.	Ante-flexion.	Ante-version.
Single,	8	3	1	2
Married,	26	15	19	10
Women sterile,	5	2	6	2
Women fertile,	21	13	13	8
Number of women who aborted,	13	6	3	5
Total number of abortions,	27	23	6	7
Average number of abortions,	$2\frac{1}{13}$	$23\frac{5}{6}$	2	$1\frac{2}{5}$
Total number of children at term,	72	32	49	18
Average number of children,	$3\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{1}{4}$
Total number of pregnancies,	99	55	55	25
Average number of pregnancies,	$4\frac{3}{4}$	$4\frac{1}{4}$	$4\frac{1}{4}$	$3\frac{1}{8}$

"There is one other point of interest which may be gathered from the following table, viz., as to the age at which uterine displacement is most commonly observed. I have here grouped together both the married and single, with the following results:

	Retro-flexion.	Retro-version.	Ante-flexion.	Ante-version.
From 20 to 25 years, . . .	6	4	4	2
From 25 to 30 years, . . .	11	2	7	2
From 30 to 35 years, . . .	9	3	3	5
From 35 to 40 years, . . .	5	5	4	2
From 40 to 45 years, . . .	3	2	1	—
From 45 to 50 years, . . .	—	2	1	1

"I do not of course attach equal importance to the several statistical results observed in the preceding tables; some of these are much more substantial as bases of arguments than others. Doubtless there are some persons who, discrediting all statistics as applied to vital phenomena, or at any rate those having reference to questions of pathology, will be inclined to attribute but little value to any of these results. Still, there are some facts, it appears to me, in the tables above, which can scarcely be disputed, unless other facts can be found to contradict them. Meanwhile, I submit that I am entitled to believe as clinically demonstrated—

"First, that uterine displacements are much more common in married than in single women.

"Secondly, that sterility is very frequently associated with, if it be not caused by these displacements. In the table it is seen that the proportion of sterile to fertile women is as 1 to $3\frac{3}{5}$, which is certainly a much larger proportion than is ordinarily met with among healthy married women. It will further be seen that the proportion varies in the different kinds of displacement thus: in retroflexion it is as 1 to 4.2; in retroversion as 1 to 6.5; in anteflexion as 1 to 2.2; and in anteversion as 1 to 4. Now, it may be thought that the number of facts from which these results are obtained is insufficient for the purpose of arriving at any conclusions. It may be so; but certainly it is remarkable that that condition of the uterus which is thought to be the most nearly normal—namely, anteflexion—is just the one which is more often associated with sterility than any of the other positions. This, it seems to me, is an additional reason for questioning the opinion commonly entertained on this point.

"Thirdly, it appears that abortions are very common in women who have any uterine displacement, 27 out of 55 who had been pregnant. It may perhaps help to a solution of the question whether abortion is a cause or consequence of displacement of the uterus, if we consider the following facts: 1. That at least one-sixth of all the varieties of malposition of the uterus occur in single women. 2. That of the 27 married women who had aborted, in 7 only did it appear from the history to

have had any connection with the displacement. 3. That of 55 pregnant women, 27, or just one-half, aborted 63 times. 4. That of the total number of cases—namely, 84—there are 57 who never aborted, as against 27 who did; the inference being that if abortion did not operate to produce displacement in the larger number, it did not in the smaller.

"Fourthly, we see that the average number of pregnancies, including the abortions, is $4\frac{1}{4}$ for each fertile woman, which is certainly not a low average, and seems suggestive of the idea that frequent gestation may be to some extent a cause of these disorders of the uterus.

"Fifthly, we learn from the second table that a large majority of the cases occur between the ages of twenty-five and thirty-five years—that is, at the time when the uterus is most heavily taxed in the performance of the procreative function. We learn, further, that uterine displacement is rare after the cessation of the catamenial period, only 10 of the 84 cases occurring after the age of forty, and only 4 after that of forty-five. All this, again, strengthens the idea suggested in the preceding paragraph."

This is all that need be said upon the subject of uterine displacements in general. I shall now proceed to complete the outline here sketched, and to go into the details connected with each variety of the affection.

CHAPTER XX.

ASCENT AND DESCENT OF THE UTERUS.

THE appreciation of the present chapter so essentially involves a knowledge of the supports which keep the uterus in position, that I deem it advisable before proceeding to present them to the reader at a glance.

The support of the uterus is accomplished—

1st. By the vagina;
2d. By the areolar tissue of the pelvis;
3d. By juxtaposition with the bladder and rectum;
4th. By the following ligaments;

a. The round ligaments, continuations of uterine tissue,

running downwards from the horns of the uterus, and inserted into the dartoid sacs of labia majora;

b. The utero-vesical ligaments, bands of pelvic fascia, passing from bladder to cervico-corporeal junction, where they attach themselves, and prevent retreat of cervix;

c. The utero-sacral ligaments, formed of hypogastric fascia, extending from posterior surface of cervix, passing backwards to be attached to sacrum, and preventing passage of cervix forwards;

d. The broad ligaments, folds of peritoneum, inclosing areolar tissue, ovarian and round ligaments, and ovaries, preventing lateral, anterior and posterior displacements.

Ascent of the Uterus.

In its normal condition the uterus descends into the pelvic cavity so as to assume a position about two inches from the vulva. If its weight be augmented, it comes much lower than this, and continues to do so as its volume increases, until its development becomes so great that it cannot be accommodated by the pelvis. Then it escapes from the cavity by ascending to a more capacious space above the superior strait. This change occurs in every normal pregnancy. During the first three months the uterus falls in the pelvis, being in a state of prolapse. As the fourth month approaches its volume becomes so great that it can no longer be retained in the pelvic cavity, and then it escapes above the superior strait, where sufficient space is afforded for it to undergo full development. This is not only so in pregnancy; the uterus is similarly affected by morbid growths. When, under these circumstances, it leaves the pelvis, the fact is expressed by the term ascent.

Ascent of the uterus is never an original disease, but the result of some important change connected with that organ, and requires merely a mention. It may occur whenever a tumor is developed in connection with the vagina, rectum, or retro-vaginal cul-de-sac, or when there exists a growth in the walls or cavity of the uterus which renders it too large for accommodation in the pelvis. It never requires treatment, and is of importance only as exciting suspicion of pregnancy, or as an evidence of morbid growth in connection with the organs of generation.

Descent or Prolapsus of the Uterus.

Definition, Synonyms, and Frequency.—The name of this disorder defines its character with sufficient clearness. It is of frequent occurrence, and under the name of Falling of the Womb, is well known to women, and constitutes for them an object of especial dread. As almost all women, after the period of fruitfulness has passed, have an intuitive fear of cancer of the uterus, so do a large number before that time manifest an apprehension of prolapsus. In the one case the anxiety is for life, in the other for usefulness and comfort.

Pathology.—It matters not whether the original cause of the displacement be increase of uterine weight, relaxation of support, or direct force exerted upon the organ, an invariable result of its existence is diminution of the power of the uterine supports. The ligaments are stretched, the vagina distended and doubled upon itself or everted, and the contractile power of the sphincter vaginæ impaired. The displaced organ is generally affected by congestion and inflammation of the mucous lining, its cavity much enlarged, and inflammatory ulcers are found upon the cervix. The vaginal rugæ are effaced, and the lining of the canal exposed to atmospheric influences and friction, looks like the cicatrized surface of scalded skin rather than mucous membrane.

Prolapsus, by its influence in producing hyperæmia, is almost invariably attended by hypertrophy of the areolar tissue of the uterus. This usually affects the neck most markedly, the vaginal or supra-vaginal portion of this part undergoing excessive longitudinal increase.

Varieties.—This displacement may occur very suddenly and unexpectedly, or gradually and by successive steps. As the symptoms of the two varieties differ only in the rapidity and severity of their development, and the second is much the more frequent, I shall direct my remarks chiefly to it, and describe the first in a few words in an appropriate place.

Fig. 101.

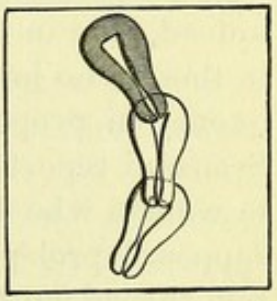


Diagram representing the three degrees of prolapsus.

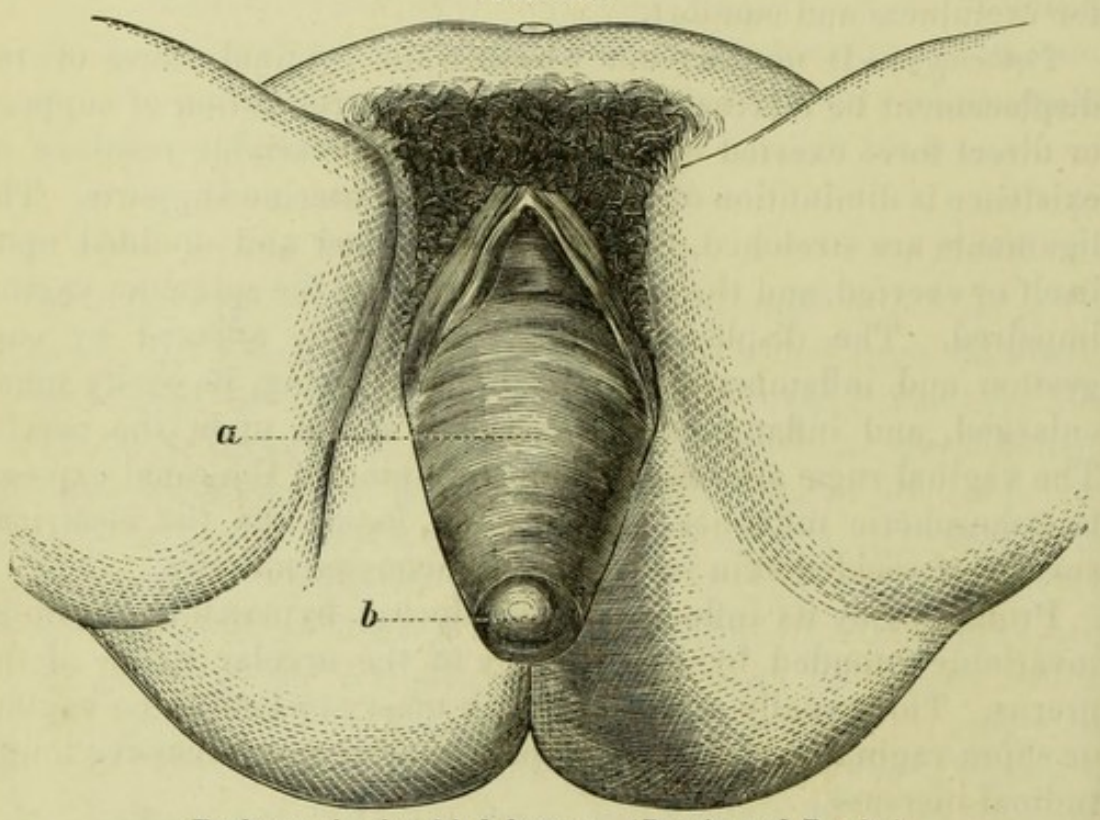
Prolapsus may exist either in the first, second, or third degree, the direction of the uterine axis in each of which is exhibited in Fig. 101.

In the first the uterine axis is unaltered, the organ having merely sunk in the pelvis. In the second the body

has gone towards the sacrum, the cervix having come down upon the resisting ellipse formed by the sphincter vaginæ. In the third the last barrier has been overcome, and either a part or the whole of the uterus hangs between the thighs. This has received the name of procidentia.

Causes.—The causes especially inducing descent of the uterus are most completely combined in the state existing after parturition. The uterus is heavier than usual, the recently distended vagina relaxed and feeble, the uterine ligaments very much

FIG. 102.



Prolapsus in the third degree. (Boivin and Dugès.)

stretched, and the sphincter vaginæ muscle weakened, or permanently injured by rupture of its perineal union. The affection is, indeed, rare in women who have never borne children, less rare in those who have borne one only, and appears to increase in frequency in proportion to the frequency of the parturient process. Scanzoni reports upon 114 cases of prolapsus; of these 99 occurred in women who had borne children. I have seen several cases of supposed prolapsus in young girls, which upon careful investigation turned out to be instances of hypertrophic cervical elongation. It must not be forgotten, however, that it may occur to any female from childhood to old age. I know of no way in which so concise a view of the etiology of prolapsus can be given as by reference

to the classification to which I have already referred under general considerations upon displacements.

a. Examples of causes connected with increased uterine weight:

Tumors, submucous, subserous, or mural;
Pregnancy (rare, but sometimes met with);
Hypertrophy or hyperplasia;
Subinvolution;
Retained fluid.

b. Examples of causes connected with enfeeblement of uterine supports:

Justo-major pelvis;
Rupture of perineum;
Weakening of vaginal walls;
Loss of tone in uterine ligaments.

c. Examples of influences forcing the uterus downwards:

Tumors in abdomen;
Ascites;
Hæmatocele;
Violent muscular efforts;
Tight and heavy clothing.

d. Examples of influences dragging uterus down:

Congenital or acquired shortness of vagina (doubtful);
Prolapse of vagina, cystocele, rectocele.

One very frequent source of the affection which we often see developed in old women is loss of vaginal power from atrophy of the vagina, and absorption of the padding of fat which normally occupies parts of the pelvis, and helps to aid that canal in sustaining the uterus. This condition has been specially mentioned by some of the German pathologists, and attention has been called to its importance by Dr. Barnes, of London.

Course, Duration, and Termination.—The condition is unlimited in its duration, and, unless relieved by art, will continue indefinitely. It impairs the patient's comfort and capacity for exertion, but rarely has a fatal termination, unless by exciting peritoneal inflammation, or pelvic cellulitis, as I have seen it do in several cases. Even in the chronic form of the disease, death has in very rare cases occurred from urinæmia, the result of interference with the ureters. The trigone of the bladder becoming displaced to such an extent that the orifices of the ureters are pressed firmly

against the symphysis pubis by the mass behind it, they become obstructed and distended, and in time hydronephrosis may result. Virchow[1] and Kiwisch[2] both announce this fact. An interesting instance of death thus produced may be found in the twelfth volume of the Transactions of the London Obstetrical Society, reported by Dr. Phillips. A case of fatal irreducible prolapse, recorded by Dr. Alexander Monro, is referred to on page 336. In a case of incarcerated uterus occurring in my own experience, and which will receive further mention elsewhere in this article, I was compelled to resort to a degree of force in returning the displaced organ, which at the time of application I regarded as attended by extreme danger. Had my efforts not succeeded, death would, I feel sure, have resulted; for the uterus and surrounding parts appeared to be about passing into a state of gangrene. This case before I saw it had resisted all the efforts which were applied by three competent physicians. After forcible replacement, the entire lining membrane of the vagina sloughed, and the patient narrowly escaped death from peritonitis, which was excited and ran a violent course. Forcible taxis was resorted to, with a conviction on the part of the attending physicians and myself, that the issue involved either successful restitution of the uterus or death.

Symptoms.—The symptoms of prolapsus are dependent upon two results growing out of the displacement: the mechanical interference of the womb with surrounding parts, and alteration induced in its circulation and tissue by reason of its abnormal position. The uterus may remain even in the third degree of descent without any marked symptoms, but generally congestion, areolar hyperplasia, and ulceration occur, which render it sensitive and intolerant of pressure or friction. At the same time, by dragging upon the bladder, rectum, and all the pelvic areolar tissue and fasciæ, and by protruding between the labia, it produces discomfort and often impedes locomotion to a great extent. The most prominent of the symptoms thus created are the following:

Sensation of dragging and weight in the pelvis;
Rectal and vesical irritation;
Pain in back and loins;
Great fatigue from walking;
Inability to lift weights;
Leucorrhœa and other signs of congestion.

[1] Trans. Obstet. Soc. of Berlin, 1847. [2] Clinical Lectures.

It is a very singular and striking fact, that in prolapsus, even of the third degree, there is very commonly no menstrual disorder, and equally remarkable that sterility does not ordinarily exist. These immunities are probably dependent upon the fact that the uterine catarrh which usually exists is rather the result of a passive congestion of the endometrium than of true inflammation.

Physical Signs.—All the symptoms detailed will only excite suspicion and prompt an examination which will fully elucidate the case. Should the affection exist only in the first degree, the finger passed up the vagina will meet with the os low down in the pelvis and pressing upon its floor. As it is slid upwards in front of the cervix and along the base of the bladder, the resisting anterior wall of the uterus will be clearly distinguished, and it may be found that anteversion or anteflexion exists, complicating prolapsus.

If the second degree have been reached, the os will be found at the ostium vaginæ, prevented from escaping only by the resistance of the sphincter, and the body, instead of lying forwards, will be to some extent retroverted. To determine the degree of prolapsus, more especially in this stage, the patient should be examined standing.

Sight and touch will combine in making a diagnosis in the third degree of falling, rapid and easy, but even here I have known very grievous errors committed. The apparent ease of the diagnosis sometimes causes error by inducing neglect of that caution and watchfulness which, even in the simplest cases of disease, constitute the only safeguard of the physician.

One very curious phenomenon which in the physical investigation of these cases must have struck every practitioner is this: the uterus being procident and a sound introduced, it passes up for the distance of six inches. The organ now being replaced, and again examined by the sound, it is found to measure only four, and this experiment may be repeated any number of times with the same result. The explanation of it is this:[1] simultaneously with hypertrophy, there has been varicose degeneration of the bloodvessels of the cervix and absorption of its proper tissue. This structure being stretched by procidentia, elongates at once, and traction being relaxed by reposition, the neck instantly becomes short. May this fact not explain the experience of Huguier, who found only two cases of true prolapse in sixty reported cases, and of Routh, who in a large experience met with

[1] Klob, op. cit., p. 88.

only three? It seems to me highly probable that these investigators, making their measurements while the uterus was prolapsed to the third degree, concluded that hypertrophic elongation of the supra-vaginal portion existed, when in reality this peculiarly elastic tissue, which was the consequence and not the cause of the descent, was the true pathological condition. Certainly some such explanation must account for the remarkable discrepancy which exists between the results of these two eminent Gynæcologists and the great majority, whose experience is opposed to them.

Differentiation.—In any of its varieties prolapsus uteri may be confounded with fibrous polypus, inversion of the uterus, and hypertrophic elongation of the neck, from all of which, however, it is readily distinguished if the practitioner be awake to the possibility of error. From the first it is known by the presence of the os and cervix, and the general shape of the mass. From the second, by the presence of the os and cervix, and absence of the signs of inversion. The third will readily be recognized by the great length of the cervix, the impossibility of replacing the supposed prolapsed organ, and the great depth of the uterus discovered by the uterine probe.

Prognosis.—The prognosis will depend upon the state of the uterus and vagina. Should the former be much enlarged from a fibrous tumor, or other disorder little amenable to treatment, no amount of support will prove sufficient to sustain it. On the other hand, even if the uterus be nearly normal in weight and volume, the prospect of supporting it will be slight if the vaginal walls be greatly distended and have undergone much atrophy, for the vagina is the only natural uterine support which we can enlist by surgical means. Without treatment, prognosis as to recovery is always very unfavorable.

Complications.—Prolapsus of the uterus in its first and second degrees, and still more frequently in its third, produces the following complications:

Congestion of the uterus and its appendages;
Endometritis and Fallopian salpingitis;
Hypertrophy;
Hypertrophic elongation of the cervix;
Cystocele;
Rectocele.

As soon as the uterus descends into complete prolapse, and to a

less extent when it has reached only the second and third degrees, its tissue becomes congested, and appears swollen, œdematous, soft, and relaxed. In time this passive hyperæmia induces hypertrophy, which affects simultaneously both connective and muscular tissues. Then the walls of the organ may become thick, hard, and more dense. Not only do congestion and hypertrophy affect the parenchyma of the uterus; the mucous membrane and submucous tissue are likewise disordered, and endometritis is an invariable consequence of prolapse. It has been already stated that peculiar changes occur in the cervix. This part becomes particularly soft and relaxed; its vessels become varicose, and the muscular tissue is often absorbed in great degree.

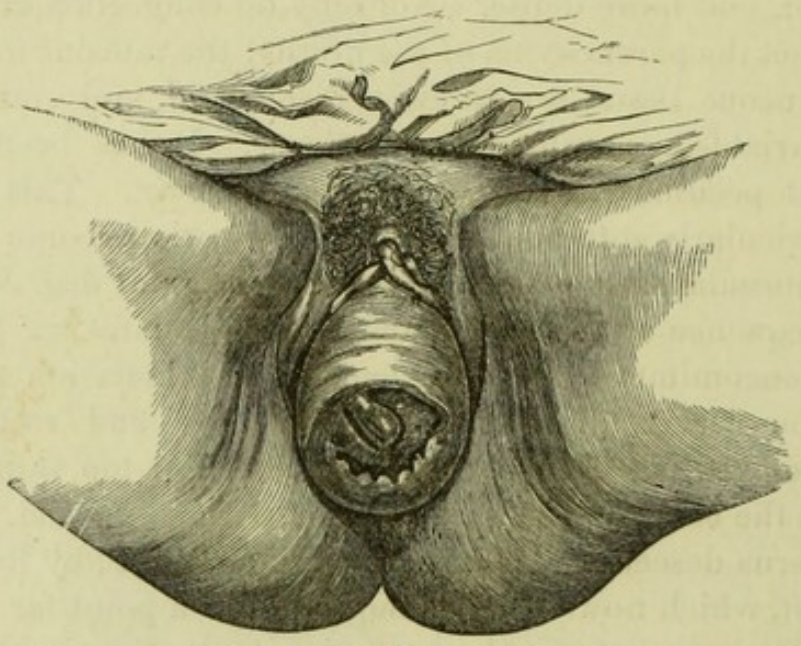
In consequence of these secondary morbid states we generally have as concomitant symptoms, leucorrhœa, dilatation and eversion of the cervix, disorders of the bladder and rectum, and sometimes cystitis. Eversion of the cervix is too important a feature of the condition to be passed by without special mention. As the uterus descends it inverts the vagina. This, by its cervical attachment, which now becomes depressed to a point far below its upper portion, makes constant traction upon the os externum; the principle being the same as that by which the colpeurynter is made to dilate this part for the establishing or expediting the first stage of labor. As this action is prolonged and increased by further descent of the uterus and inversion of the vagina, the cervical canal is rolled out, so as to become completely everted, and the os internum becomes literally the external and only os uteri, the real os externum having disappeared by expansion.

Dislocation of the bladder is accomplished by uterine descent to such an extent that if a catheter be introduced it will pass downwards and backwards. This complication is important, for not only do traction and dislocation tend to the production of cystitis; it is further induced by reflex irritation and by decomposition of urine occurring from retention, after urination, in the pocket formed by the inverted wall of the bladder. By a similar process prolapse of the anterior wall of the rectum occurs, and results in fecal impaction at this point.

So frequent is the occurrence of hypertrophic elongation of the cervix, that in 1858, M. Huguier, of Paris, stated before the Academy of Medicine, in that city, that very generally those cases regarded as descent were not so, but were instances of this elongation which produced eversion of the vagina. In 1860, he published a work in maintenance of this view, and strongly

recommended as a remedy amputation of the neck at half a centimetre below the vaginal attachment in the infra-vaginal variety of the affection, and as near as possible to the vaginal junction in the supra-vaginal form.

Fig. 103.



Uterine mouth everted, bladder pulled down, and peritoneum stretched in both vesico and recto-vaginal cul-de-sacs. (Cruveilhier.)

In a discussion upon this subject before the London Obstetrical Society, reported in the ninth volume of its Transactions, Dr. Routh sustained the views of Huguier. Huguier had, in sixty reputed cases of prolapse in the third degree, found only two true cases; fifty-eight were cases of hypertrophic elongation. Dr. Routh, since the reading of Huguier's remarks, had examined carefully in reference to the subject, and had met with but three cases.

In these cases the surgeon who proposes operating by amputation of the cervix should always bear in mind the pouch-like prolongation downwards of the posterior wall of the bladder and of Douglas's cul-de-sac. Two instances are on record in which these, being drawn within the chain of the ecraseur, were opened into. One of these occurred to Dr. Sims,[1] who thus opened into the peritoneum, and the other to Dr. Alfred Meadows,[1] who opened not only into this cavity, but into the bladder.

Sudden or Acute Prolapsus may come on from any great effort, a fall, or violent contraction of the abdominal muscles, acting upon a uterus which is enlarged by hypertrophy, subinvolution, preg-

[1] London Obstet. Trans., vol. ii, p. 102.

nancy, or tumors. In an instant the patient feels that something has given way within her, becomes prostrate and much alarmed, and suffers pain of expulsive character, as if desirous of forcing something from the pelvis. I have twice seen it occur within a fortnight after delivery from sudden and violent muscular effort, and once in a nulliparous girl of nineteen years, in consequence of a violent muscular effort made to lift a heavy weight. Should reduction not be effected at once, violent pain will be felt over the sacrum and groins, and the degree of traction exerted upon the pelvic peritoneum may result in dangerous inflammation.

Treatment.—The first indication as to treatment is to return the displaced organ to its normal position; the second, to keep it there.

Methods of Replacing the Uterus.—In general no difficulty will attend the performance of the first indication, but in some cases careful and intelligent taxis will be necessary. The best method for applying this is the following: the patient, after thorough evacuation of the bladder and rectum, if this be possible, should be placed upon her knees and elbows, in order to cause gravitation of the pelvic and abdominal viscera towards the diaphragm. She should not kneel upon a soft or yielding bed, into which the knees would sink, but upon the floor or a covered table, for the object of the posture is to elevate the buttocks, and depress the thorax as much as possible. Ten or fifteen minutes should then be allowed to elapse before any efforts are made at reduction. In this time the intense congestion which exists in the pelvic viscera will greatly diminish. The operator then taking the cervix into the grasp of his index, middle, and ring fingers, the tips of which, thoroughly greased, are allowed to slide up as far as the vaginal junction, pushes the uterus firmly and forcibly upwards in coincidence with the axis of the inferior strait. While the right hand is thus employed, the left rests upon the back of the patient and steadies her body. No sudden or violent force is exerted, but by steady pressure, kept up, if necessary, for fifteen, twenty, or thirty minutes, the uterus is restored to its place.

Few cases will resist this kind of effort at reduction, although some may do so. For example, Dr. Alexander Monro has recorded a case in which prolapsus occurred in a child three years of age, which proved irreducible, and resulted in death. I have already referred to a case in which an incarcerated uterus, which appeared upon the point of becoming gangrenous, could not be

reduced by the method described. As no time was to be lost, I produced complete anæsthesia, and then taking the organ firmly in the extremities of the thumb and three fingers, I carried it by main force into position.

Methods of Sustaining the Uterus.—Before pursuing any special course of treatment for this end, the practitioner should endeavor to discover the cause of the descent. If it be due to increase in the weight of the uterus, or to pressure exerted upon it from above, it is evident that the indication will be very different from what it would be if the cause were enfeeblement of its supports. Unfortunately, however, after the disease has existed for some time, it is not possible to fix definitely upon the cause; for even if it were originally increase of uterine weight, the long inversion of the vagina, and stretching of the uterine ligaments involved in its descent, will have destroyed all power in these parts.

If a uterus be found prolapsed, whatever be the original cause of its dislocation, treatment can accomplish a cure only in one of two ways:

1st. By diminishing uterine weight;

2d. By strengthening uterine supports.

As a general rule the practitioner confines himself to neither one of these, but fulfils both indications simultaneously.

Means adapted to Decreasing the Weight of the Uterus.—This is best accomplished by the following means:

Removing weight of clothing by use of skirt-supporters;

Removing weight of intestines by prohibition of tight clothing, use of an abdominal supporter, and avoidance of effort;

Preventing accumulation of urine and fæces;

Removing polypi, tumors, &c., by operation;

Removing uterine inflammation, hypertrophy, and congestion, by appropriate treatment;

Amputation of the neck of the womb.

The skirt-supporter is merely a pair of suspenders that may be contrived by any woman of ordinary ingenuity, and which enables the patient to carry the whole weight of the under garments upon the shoulders. A representation of a very good one will be found on page 288, which prevents constriction while it removes weight.

There are many varieties of the abdominal supporter, some of which, unfortunately, are so constructed as to do absolute harm. Should compression be exerted by them upon the abdomen above

the navel, it will tend to increase pressure upon the uterus, or at least to annul all the benefit of that exerted below this point. The principle upon which these supporters should act is this—they should do just what the patient's hands do when she places them above the pubes, and lifts the abdominal viscera. Some of them are composed simply of bands of thick cloth, others are pads or disks of horn or metal, with encircling bands like those of the hernial truss. Two varieties are represented on page 289. The physician may choose intelligently, if he only bears in mind what it is that he desires to accomplish by them.

During the pursuance of this plan the patient should be limited as to exercise and confined to bed during menstrual epochs, when the uterus is known to be heavier than at other times. Should the accident have immediately followed parturition, she should be kept in the recumbent posture to favor the accomplishment of involution.

Amputation of the Neck.—Sometimes, by applying appropriate treatment to an enlarged cervix, the uterus is in time so much lightened by cure of attendant hyperæmia that relief is effected, but in other cases the hyperæmia is so persistent and rebellious that these means fail, and resort has been had to amputation of the neck. M. Huguier, of Paris, was, in 1848, the first to perform this operation for prolapsus, though it had long before been resorted to for cancer. Since that time it has been performed by many others, after methods which will be described in a chapter devoted to the operation. It must not be supposed that the mere removal of superabundant tissue is relied upon for the diminution of uterine weight. It is rather the derivative and alterative influences set up by amputation of which the surgeon endeavors to avail himself.

Should these means fail, or should we fear lest they alone may be insufficient for the desired result, as will often be the case, we should resort to those which accomplish the second indication.

Means for Strengthening Uterine Supports.—These may be thus enumerated:

The recumbent posture;
Local astringents and tonics;
Perineal support and perineorrhaphy;
Pessaries;
Elytrorrhaphy.[1]

[1] ἐλυτρον, "the vagina," and ραφη, "suture."

It will be noticed that these means are chiefly directed to development of increased power in only one of the supports of the uterus, the vagina. This is not only from the fact that it is the most powerful factor in sustaining it, but also because we have no decided means by which the others can be affected.

The recumbent posture persistently persevered in, accomplishes a great deal of good in cases of prolapsus in the first, and sometimes even in the second degree. The buttocks being elevated, the uterus retreats from the pelvis, and its supports are left entirely at rest. Opportunity is thus afforded the weakened tissues to contract, to gain tone and strength, and in time to resume their functions. The results of posture may be materially increased by simultaneous employment of the following agents.

Astringents and Tonics.—By these means the vaginal walls may be so strengthened as to sustain the uterus for a time, and thus by keeping it out of danger of congestion from interference with circulation, opportunity is given for removal of engorgement or slight hypertrophy.

The astringents most commonly employed are tannin, alum, persulphate of iron, and the bark of the white oak. They may be injected into the vagina in solution or infusion, by means of the ordinary syringe; introduced in suppositories, or applied to the whole canal in powder, by the vaginal suppository tube represented elsewhere.

Tonics may be locally applied by the use of cold hip-baths, douches, sea baths, and by copious vaginal injections of cold water, salt and water, or sea water, which is better. Surf bathing is peculiarly beneficial for this purpose, for it not only acts locally, but improves the tone of the whole system.

Perineal Support.—I have already pointed out the important function of the sphincter vaginæ in closing the mouth of the genital canal and offering a buttress for the support of its walls. When rupture of the perineum occurs, its sphincteric powers are impaired, and the result is sagging of one or both columns of the vagina and coincident descent of the uterus. By firm pressure at the weak spot, by means of a pad or cushion filled with hair, cotton, or air, and combined with an abdominal supporter, to which it may be attached, much relief is sometimes obtained. Where rupture of the perineum appears to have been the origin of prolapsus vaginæ, which has resulted in descent of the uterus, the operation of perineorrhaphy, described on page 129, may prove curative. But both this and episiorrhaphy, described on page 168,

although efficient in cases of prolapsus vaginæ, have proved insufficient where so heavy a weight as the uterus needs support.

Prof. Isaac E. Taylor has recently published a very interesting and important essay upon this subject. He relies in treatment upon the modifying and alterative action of superficial amputation of the lips of the cervix, confining himself to the removal of the lining membrane with a few lines merely of subjacent parenchyma, combined with closure of the perineum in case of rupture, or overdistension of that part by the existing prolapse. The results of this operation in his hands have been excellent, success having been decidedly the rule and failure the exception. I have seen one case thus operated upon by Dr. J. G. Perry of this city, with perfect success up to the time at which I examined it, although a sufficient period had not elapsed since the operation, to allow of final judgment concerning its permanent effects. Dr. Taylor's experience, however, would lead us to place considerable confidence in the permanency of the relief which the procedure affords.

Pessaries.—The plan of giving support to the procident uterus by means of bodies of greater or less density placed in the vagina, and thus palliating the evil, naturally suggested itself to the fathers of medicine, and at present it is still resorted to. The varieties most commonly employed are the ring, the disk, the ovoid, the globular, the sponge, and the air pessary. All of these are open to one great objection, they are palliative and not curative; for while they sustain the prolapsed organ temporarily, by their bulk they prevent the vagina from contracting and in time becoming capable of resuming its duty.

The desideratum is an instrument which will not distend the vagina at the same time that it will support the uterus. Such instruments as those represented in diagrams 104, 107, 111, and 112, relieve the vagina of all labor by assuming its duties without distending it, and thus allow it to regain its former tone and power.

The diagrams on the next page exhibit pessaries which in this form of displacement have commanded the confidence of many. Zwanck's pessary and its modifications I cannot recommend, for the reason that my experience with them has resulted in their disuse. The instruments which I ordinarily employ, and should advise under the circumstances in preference to others, are the elastic ring of Meigs, of sufficient size to avoid depression by the displaced uterus; the largest size of Albert Smith's pessary, represented in Fig. 139, and Cutter's pessary with bulbous attachment, repre-

sented in Fig. 141. I have seen so much damage done to the vaginal wall by the ordinary Cutter's pessary, in such cases, that I look

Fig. 104.

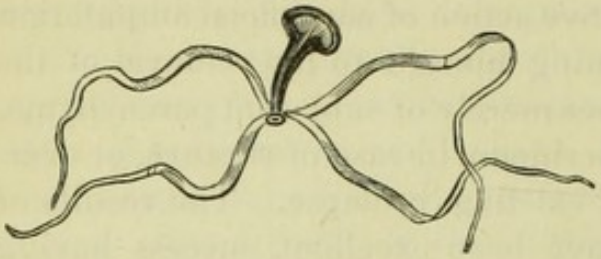


Fig. 105.

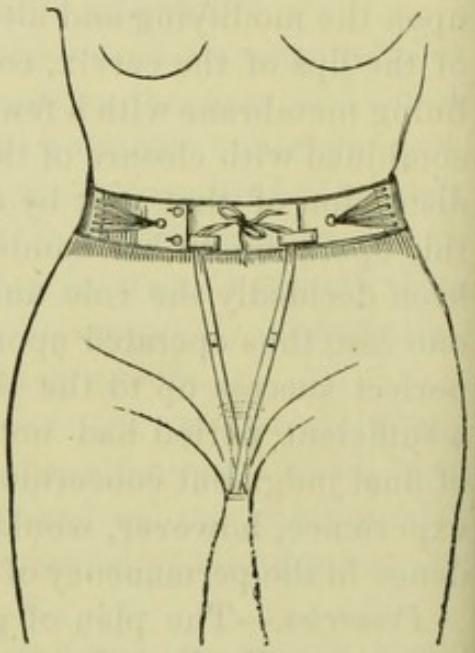
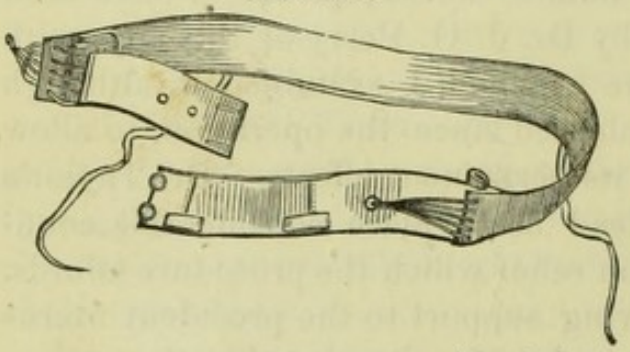


Fig. 106.



Coxeter's pessary.

upon it as very dangerous; but with the large bulb attached, it constitutes the most universally reliable instrument at our command,

Fig. 107.

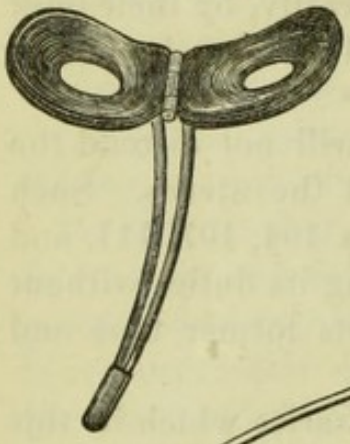
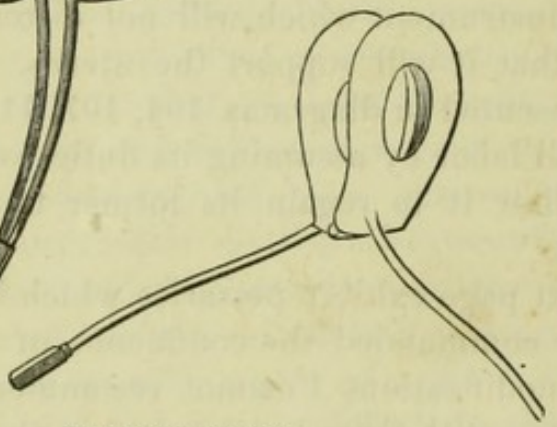
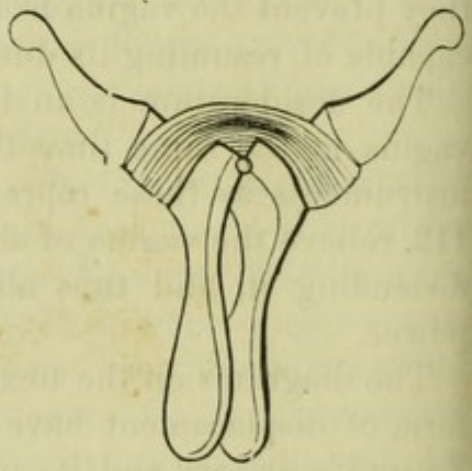


Fig. 108.



Zwanck's pessary.

Fig. 109.

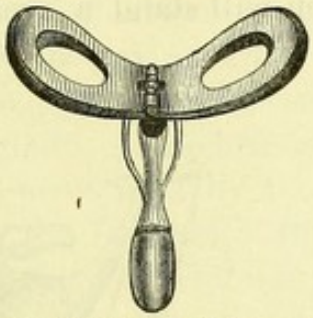


Zwanck's pessary of box-wood.

and is entirely free from danger. By its instrumentality I have succeeded in relieving for long periods inveterate cases of prolapsus, and without it I should feel greatly at a loss. One great advantage connected with it is the possibility of its removal every

night, and its reinsertion in the morning after the vagina has been cleansed by syringing. Patients are apt to become dissatisfied

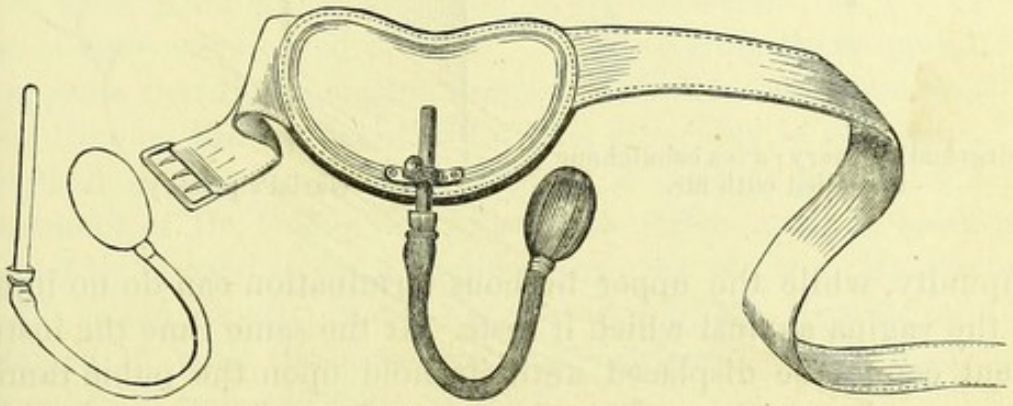
Fig. 110.



Coxeter's modification of Zwanck's pessary.

with it at first, because it chafes the perineum and sometimes the fornix vaginæ, but a little care will soon overcome these difficul-

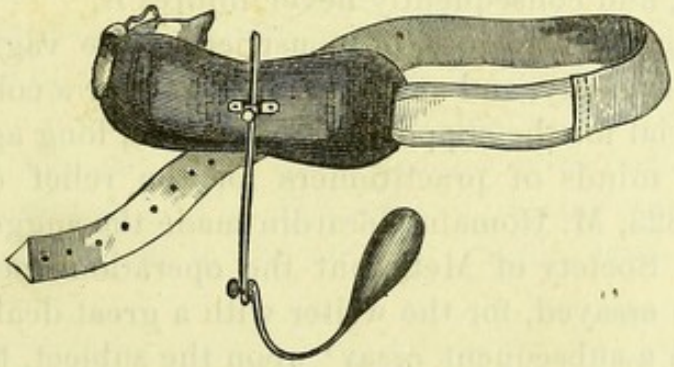
Fig. 111.



Roser's pessary.

ties, and the instrument will become perfectly manageable and, as I have proved by large experience with it, entirely efficient.

Fig. 112.

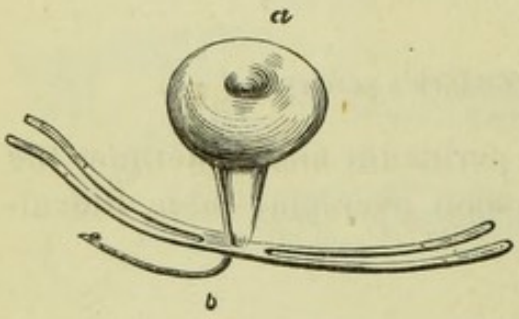


Scanzoni's pessary.

Another pessary, with which I have had less experience, but which has given me great satisfaction during the time in which I

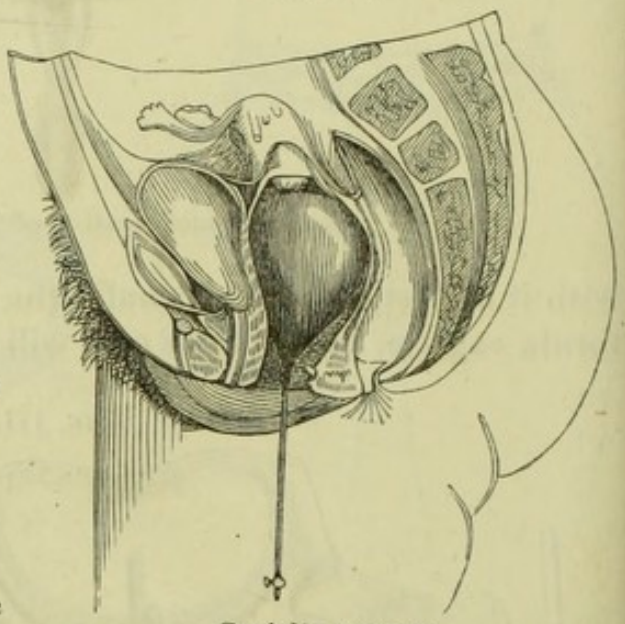
have employed it, is shown in Fig. 140. The principles of the instrument are soon told; it rests by a broad base upon the rami of the pubis, which it clasps, and its upper extremity, which occupies the fornix vaginæ, has a bulbous attachment. The pubis thus made use of as a perch will stand a great deal of pressure with

FIG. 113.



Bourgeaud's pessary; *a* is a caoutchouc bag filled with air.

FIG. 114.



Gariel's pessary.

impunity, while the upper bulbous termination can do no injury to the vagina against which it rests. At the same time the instrument cannot be displaced until its hold upon the pubic rami is overcome by traction. This firmness of position is attained not by the size of the pessary, but by its support; a very narrow instrument will retain its position even under great pressure from the descending uterus. Finally, one advantage which it offers is this, it does not rest upon or against the posterior and inferior vaginal wall, and consequently never injures it.

Elytrorrhaphy.—The idea of constricting the vagina so as to diminish its capacity, and at the same time offer a column of cicatricial material for the support of the uterus, long ago suggested itself to the minds of practitioners for the relief of prolapsus uteri. In 1823, M. Romain Gérardin made the suggestion before the Medical Society of Metz, but the operation does not appear to have been essayed, for the writer with a great deal of patriotic zeal states in a subsequent essay[1] upon the subject, that "his desire had been to put beyond controversy the origin of the oper-

[1] Gazette Médicale, 1835, p. 558.

ation, and to preserve for French surgery the priority of its conception, if not of its execution." While this surgeon was felicitating his country upon the conception of an idea, Dieffenbach, in Germany, and Heming, in England, proved its practicability by absolute performance. Dieffenbach probably operated as early as 1830, as a report of his having done so was published in a foreign journal in June, 1831. In November, 1831, the late Dr. Marshall Hall, of England, published a case, in which at his suggestion it had been performed by Dr. Heming, the translator of Boivin and Dugès on the Diseases of the Uterus, with complete success. Subsequent to this period it was performed, with various modifications, by Fricke, Scanzoni, Velpeau, Roux, Stolz, and others; the operation always consisting in "the removal of a band of vaginal mucous membrane and union of the two lips of the wound in such a manner as to diminish the calibre of the vagina. . . . . Dieffenbach refers to a great number of women who were completely cured by the procedure. . . . . Fricke out of four cases cured three."[1] Judging from these quotations, it appears that the operation has been known and practiced for a long time on the continent of Europe, especially in Germany. In England it has not been resorted to, if we may judge from the statement of Dr. Sims,[2] that after a discussion upon an essay presented by himself to the London Obstetrical Society, Mr. Spencer Wells called his attention to the operation of Mr. Heming, already referred to, with the assertion that "at least one case had been successfully operated upon."

The operation, probably for reasons which I shall mention hereafter, had fallen entirely into disuse when Dr. Sims[3] revived it in 1858, with certain modifications. His operation, which I shall now proceed to describe, differs very essentially from that adopted by his predecessors.

Sims's Operation of Elytrorrhaphy.—The patient being put under the influence of an anæsthetic, is laid upon a table, upon the left side as for an ordinary speculum examination, and Sims's largest speculum introduced. The curved sound, with forked tenaculum points, represented in Fig. 115, is fixed in the cervix uteri and made to cause a fold in the anterior vaginal wall, as shown in Fig. 116.

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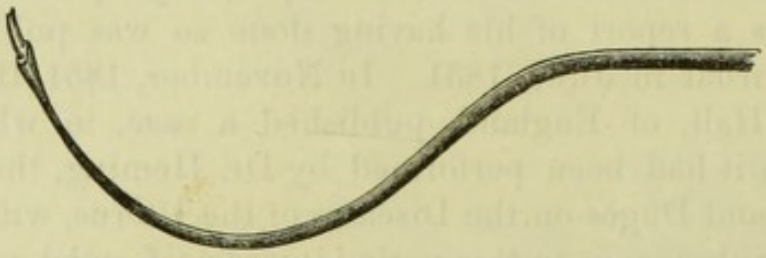
[1] Wieland and Dubrisay, op. cit., p. 533.

[2] Uterine Surgery, p. 312, Am. ed.

[3] Uterine Surgery, Eng. ed., p. 309.

The parts being steadied by this instrument, the operator, by means of two tenacula, folds over the opposite walls of the vagina so as to decide where union is to be effected. Having settled this

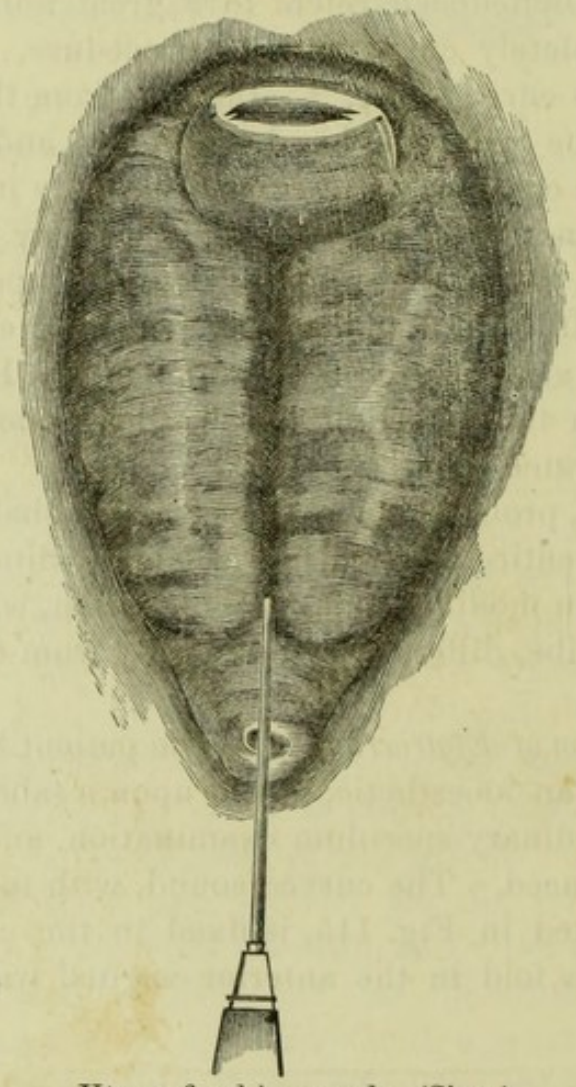
FIG. 115.



Sound with sharp points. (Sims.)

point, the mucous membrane is hooked up by a tenaculum several lines above the meatus and cut by curved scissors. The tenaculum

FIG. 116.

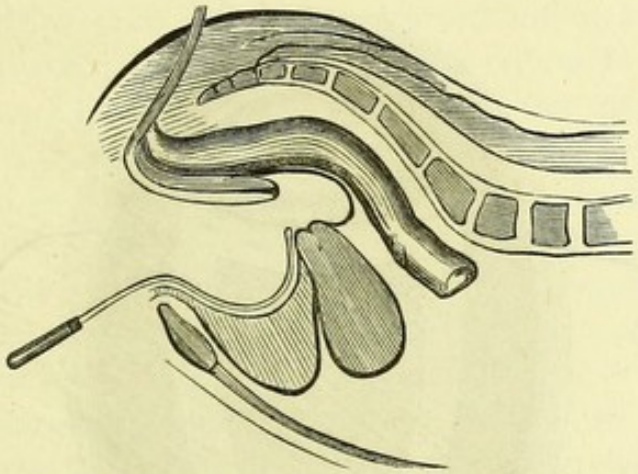


Uterus fixed by sound. (Sims.)

lifting the piece thus cut, and when necessary being again attached to the mucous membrane, the incision is carried upwards

so as to cut out a strip extending to one side of the cervix. Then another furrow is cut in the same manner on the other side, as represented in Fig. 118.

Fig. 117.

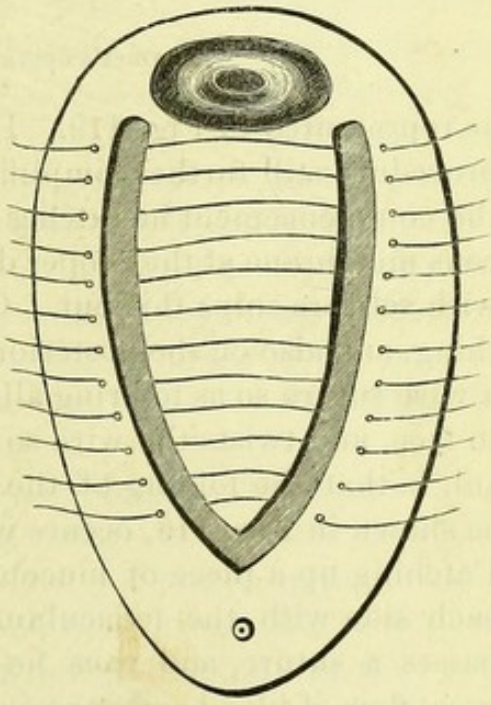


Speculum and sound in position. (Sims.)

The sound being removed, and the cervix pulled down by a small tenaculum, two transverse lines of denudation, not shown in the diagram, nearly uniting the two arms of the V, are made.

Sutures of silk are then inserted after the plan employed in vaginal fistulæ, and by them silver sutures are drawn into position. The passage of sutures should be commenced at the apex of the triangle and continued upwards, the sutures being placed as represented in Fig. 118.

Fig. 118.

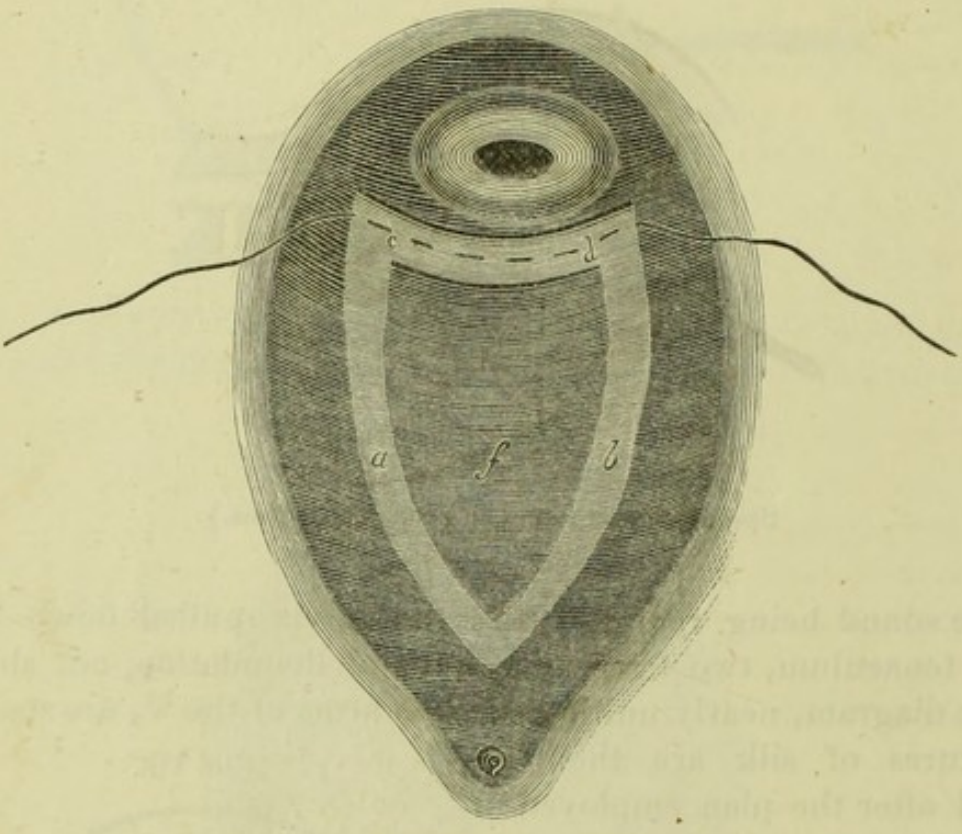


Sims's operation of elytrorrhaphy, sutures in place.

The after-treatment consists in perfect quietude in the horizontal posture, the use of opium, frequent removal of urine by a catheter, and the production of constipation. The lower sutures may be removed in ten days, and the upper in a fortnight. The patient should be kept in the recumbent posture for two or three weeks, and cautioned against immoderate muscular effort for some time afterwards.

Emmet's Operation of Elytrorrhaphy.—Dr. Emmet, finding that the pouch left posterior to the uterine neck by this procedure was sometimes entered by the cervix, improved the operation by closing it,

Fig. 119.



Emmet's operation of elytrorrhaphy.

as represented in Fig. 119. He has since the introduction of this procedure still further simplified it, in the following manner. At the commencement he catches up with a tenaculum a patch of mucous membrane at the proper distance to one side of the cervix, and with scissors snips this out. On the other side he does the same thing, and also on the posterior wall of the cervix. He then passes a wire suture so as to bring all these denuded points together, face to face, and twists the wire so as to hold them together. The result is that the folding of the vagina accomplished by the sound as shown in Fig. 116, occurs without the use of that instrument. Catching up a piece of mucous membrane on the vaginal fold of each side with the tenaculum, he now cuts it out and at once passes a suture, and thus he proceeds, step by step, avoiding a great flow of blood and opposing the abraded surfaces immediately, accurately, and without danger of passing the sutures so that they will not be symmetrical. I have performed the operation on two occasions after this plan, and can bear testimony to its simplicity.

That the operation of elytrorrhaphy has effected excellent results,

there can be no doubt, for the journals of the day contain numerous reports of cases successfully operated upon by slight modifications of it. Its disadvantages are, that it is a very tedious process, difficult of performance for one not familiar with this kind of surgery, and liable to failure even if carefully and thoroughly accomplished. Further than this it is unquestionable, that in a large number of cases expansion of the vagina recurs in time in spite of it. Scanzoni[1] goes so far as to say that the operation always fails. After thirteen experiences with it he says: "From the results obtained in our own cases, we can by no means pronounce favorably on these operations." Courty[2] says, in speaking of the operation, "The majority of surgeons to-day, regard as useless a method of treatment, which is besides not devoid of danger." A reviewer of the New York Medical Journal[3] says: "We have now under our charge, a patient operated upon nine years ago by Sims's method; in a year the cicatrices had given way, and the procidentia returned. Three years ago, she was operated on twice by Emmet's method; in little more than a year the bands gave way, and her condition was worse than before, for the vagina was so deformed by the cicatrices that it became impossible to adjust a pessary." I shall not, however, strive to accumulate evidence of this kind; I have offered this merely to sustain my statement that there are certain disadvantages attaching to the procedure. Having experienced some of these in practice, I have performed a different operation for the same purpose, namely, removing a portion of the entire vaginal wall.[4] Thus far I have resorted to it in five cases only. These have proved successful up to the present time, but no one of them has yet stood the test of a year's trial. I feel sanguine that they will do so, for the reason that by the plan which has been adopted, there is an entire removal of a portion of the vaginal wall, so that if expansion again occurs it must do so not by tearing asunder adherent walls but by stretching the whole canal.

Thomas's Operation for Narrowing the Vagina.—The operation is applied to the anterior wall while the uterus is in a state of prolapsus. The patient having been etherized and placed upon the back, a portion of the vagina, about half an inch to one side of the cervix, is caught up with the tenaculum, and a piece the size of a buck-

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[1] Op. cit., p. 159. [2] Mal de l'Utérus, p. 748. [3] Vol. viii, p. 523.

[4] Removal of portions of the vaginal wall was long ago practiced by Dieffenbach and others. It is only the method of doing it which is mine.

shot cut out with scissors. Through this opening a grooved director is passed directly across the anterior face of the uterus, and between it and the vagina to a point on the other side, corresponding to that which marked the commencement of the operation. Upon this director the vagina is cut transversely. Entering the director now at the middle point of the transverse cut, it is gradually insinuated through the loose areolar tissue between the bladder and the vagina, until it reaches a point near the urethra, when it is withdrawn. This insertion I have found quite easy. An instrument of steel, six inches long, shaped like an ordinary glove stretcher, with limbs equal in size to a No. 9 steel sound, and three inches long, is passed down the channel made by the sound. When the lowest point of this is reached, the blades are thrown apart by approximation of the handles, and a subcutaneous tearing is accomplished, so as to separate the bladder from the vagina over a triangular space, the apex of which is at the urethra and the base at the cervix. If the tissue does not yield readily, the finger is made to aid the stretcher, and the separation is rapidly accomplished. A clamp, three inches long, with blades half an inch wide, and having two rows of teeth, one-sixth of an inch in length, fixed upon their inner faces, is then applied. This clamp, the limbs of which are united by a hinge, admitting a separation of a quarter of an inch at one extremity, is capable of being united by a screw at the other, which can be graduated as to the degree of compression which it accomplishes. The separated vagina is now brought together by a suture at the cervix, which passes through it at the point where the operation was commenced. This being tightened, the free portion of vagina is now folded so as to protrude as two flaps turned face to face. The clamp is now adjusted, with the hinge towards the cervix and the screw towards the urethra, and tightened by the latter. Then the portion of vagina hanging out of the clamp is cut off, and the uterus is replaced, a procedure involving no difficulty. The vagina is then filled with a tampon of cotton wet with solution of alum and carbolic acid. This is applied quite firmly, so as to control any hemorrhage which may occur from the transverse incision near the cervix. The patient is then put to bed, the bladder regularly emptied by the catheter, the bowels kept constipated, and all exercise interdicted for a week or ten days, when the clamp may be removed. The tampon may be taken out at the end of twenty-four hours. Should oozing be observed, another should be inserted, but if not, the vagina may be left free. In one of my cases I have operated

on the posterior as well as the anterior wall. The only difference in the procedure is that the uterus being in the pelvis at the time of operation, the transverse incision would prove difficult of accomplishment, and should not be made. The first opening in the vaginal wall should be made just above the fourchette, and through this the stretcher introduced. After separation of the vagina from the rectum, the clamp is applied and the overlapping vagina cut off.

I am not, of course, in a position to speak with any positiveness of a procedure to which I have resorted but five times, but these are the advantages which I think that it presents. (*a*) It involves not the mere adhesion of the vaginal walls, but entire removal of a portion, and this absolutely narrows the vagina by a cicatricial band, which is not susceptible of being sundered. (*b*) The operation being performed by subcutaneous, or rather submuscular tearing of areolar tissue and compression by clamp, hemorrhage is not likely to occur from these vascular tissues. (*c*) The clamp not being amenable to having its teeth tear out by traction, movements on the part of the patient, coughing, vomiting, &c., are not likely to result in failure as in the ordinary procedure. For this reason too, the vagina can with impunity be examined every day with a small Sims's speculum. (*d*) The entire procedure can always be accomplished by an ordinarily expeditious operator within twenty minutes, which greatly redounds to the advantage of the patient.

My experience thus far with this procedure has acquainted me with but one disadvantage connected with it, that is hemorrhage; but this has always proved controllable by means of a tampon. The clamp should of course be carefully regulated as to the amount of pressure which it is made to exert, in order to avoid interference with the nutrition of the compressed part.

The clamp which I employ may be made either of nickelized steel or of hard rubber. The steel stretcher which I employ may be dispensed with, and the tearing of the areolar tissue accomplished by a sound.[1]

Besides the operations here mentioned as practiced upon the vaginal walls, Episiorrhaphy and Perineorrhaphy, which have been already described, have at various times been resorted to as curative or palliative processes for the affection of which we

[1] I regret to report that since the above was written, two out of my five cases have relapsed.

are treating. These, too, have been variously combined and modified, as, for example, under the names of Inferior Elytrorrhaphy, Elytro-episiorrhaphy, Episio-perineorrhaphy, &c. For fear of confusing the subject by the introduction of details which, although highly interesting, are of no great practical value, I shall not describe these modified procedures, but pass them by with this mention.

Not only have efforts of this kind been made at narrowing the vagina and creating an artificial cicatricial anterior or posterior column for the support of the uterus: the actual cautery, mineral acids, escharotics, ulceration created by galvanic pessaries, and sloughing produced by pressure by forceps, have all been tried for the accomplishment of the much-desired end. I shall not go into the detail of describing these procedures, but refer the reader, who desires further information upon them, to Scanzoni's work upon the Diseases of Females. All these methods have the disadvantages of proving excessively painful, after anæsthetic influence has passed off, and of being more unmanageable and less certain in their results than those accomplished by use of the knife.

CHAPTER XXI.

VERSIONS OF THE UTERUS.

Anteversion.

Definition and Frequency.—This disorder of position consists in an anterior inclination of the uterus, so that the fundus approximates the symphysis pubis and the cervix retreats into the hollow of the sacrum. Although not so frequent as its kindred condition, anteflexion, it is by no means of rare occurrence. At times it presents itself as an annoying complication of areolar hyperplasia or fibroid growths, while at others it is produced without any alteration existing in the uterine parenchyma.

Dr. Churchill[1] opens his chapter upon this subject with these words: "It may be thought somewhat out of place to treat of some of these displacements here, as they are so intimately connected with pregnancy and parturition; but as they do occur independently, it appears to me preferable to travel so far out of the way in order to complete the subject, rather than give a partial view, or omit it altogether." My own experience leads me to an entirely different conclusion from that here recorded by the eminent Irish obstetrician. I meet with versions very commonly in the non-puerperal state. At this time I have under treatment three cases of anteversion, one of which is due to corporeal endometritis, one to a small neoplasm, and a third, which produces very little disturbance, exists without assignable cause. M. Goupil, in 115 examinations of nulliparous women, met with version or flexion 14 times; and in 114 examinations of multiparæ he found it in 36 instances.

The following table is one constructed from the valuable statistical report of Dr. Meadows, already given in full:

Number of cases of displacement examined,					84
"	"	posterior displacement,	52	Retroflexion,	34
				Retroversion,	18
"	"	anterior displacement,	32	Anteflexion,	20
				Anteversion,	12

It is impossible to reconcile the discrepancy of the results obtained by statistical evidence accumulated by different observers. Thus, for example, out of 339 cases of displacements recorded by M. Nonat,[2] the following were the numbers of anterior and posterior inclinations:

Anteversion,	135
Anteflexion,	33
Retroversion,	67
Retroflexion,	14

Scanzoni,[3] in 54 cases of flexions, found 46 anteflexions and only 8 retroflexions.

Subjects of this character belong to that class upon which reasoning and theorizing accomplish no good, but rather the contrary. The only way in which they can be settled is by carefully collected statistics, and one would suppose that this method would be con-

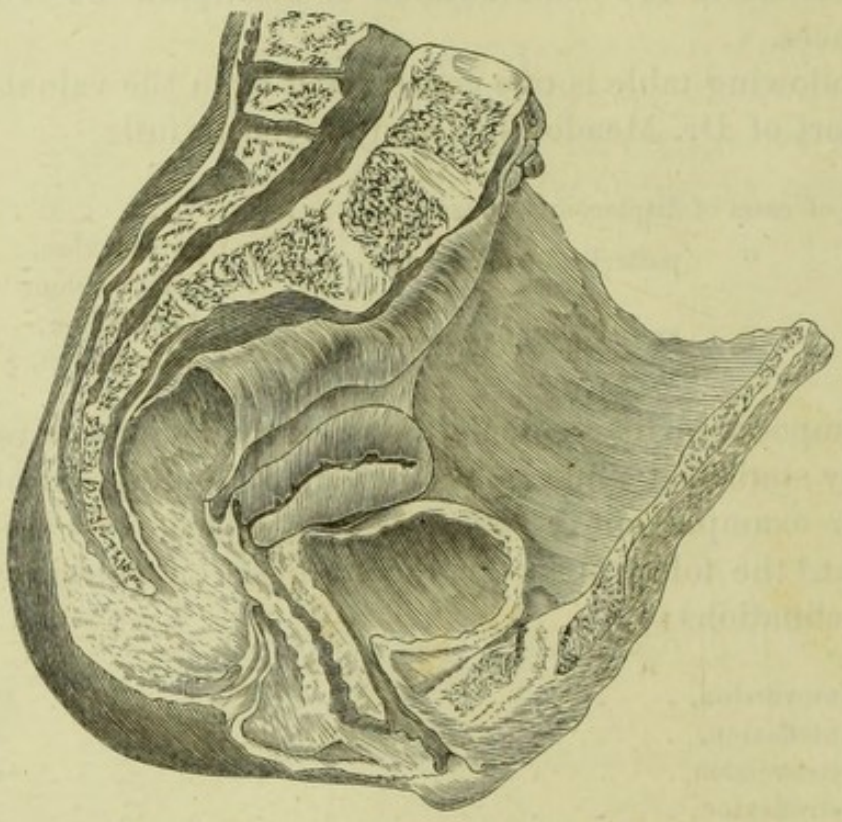
[1] Diseases of Women, Am. ed.
[2] Mal. de l'Utérus, p. 416.
[3] Klob, Patholog. Anat., p. 69.

clusive. Yet we see in the present case how far this is from being the fact. Dr Meadows's most frequent displacement is M. Nonat's and Scanzoni's least frequent! Nothing but discrepancy and doubt result from the comparison of the figures of these three conscientious observers. "There is nothing," said Sydney Smith, "so unreliable as figures, except facts." After such a comparison of statistical evidence one feels inclined to agree with him.

The normal position of the uterus is one of slight anteversion, the axis of the body corresponding with that of the superior strait, which is a line running from the umbilicus, or a little above it, to the coccyx.

The degree of this forward inclination may be so increased by slight causes as to constitute a morbid state. As to the line which

FIG. 120.



Normal position of uterus.[1] (After Breisky.)

separates what is normal from what is abnormal, it is impossible to lay down any exact rule; experience must be our guide. In general terms we may say, that when the long axis of the uterus is found lying across the pelvis, the fundus near the symphysis pubis, and the neck in the hollow of the sacrum, anteversion exists.

M. Panas,[2] from observations on 114 women in the Lourcine

[1] Boston Gynæcol. Jour.

[2] L'Union Med., No. 14, 1869.

Hospital at Paris, arrives at the following conclusions upon this subject:

"(*a.*) Anteflexion of different degrees constitutes in one-third of the cases the physiological state of the uterus. Straight uterus, with axis perpendicular to plane of superior strait, occurred in less than one-half the cases.

"(*b.*) Very probably at age of puberty the uterus has a tendency to rectify any malposition.

"(*c.*) The flexions and inclinations, which may be called physiological in more than half the cases, are slightly pronounced."

The following remarks are the conclusion of an elaborate article in the last number of Archiv für Gynækologie of Berlin on the normal position of the uterus, by Carl Credé, of Leipsic:[1]

"1. Anteflexion in a varying degree is the physiological condition of the uterus in nearly half of all women.

"2. The uterus has its correct physiological position, which is exactly perpendicular to the floor of the pelvis, only in a third of women.

"3. Retro-displacements of the uterus, as retroflexion and retroversion, are the rarest forms of displacements, and therefore of the most pathological importance.

"4. Versions and flexions of the uterus, which can be called physiological in half the cases, are very slight."

Predisposing Causes.—The predisposing causes of this affection are parturition, enfeebled muscular condition, and habits of indolence and inactivity.

The exciting causes may thus be presented:

Influences increasing the weight of the uterus.

Congestion;
Hypertrophy;
Subinvolution;
Neoplasms;
Pregnancy.

Influences forcing the fundus directly forwards.

Violent efforts;
Abdominal effusions;
Abdominal tumors;
Tight clothing.

[1] Boston Med. and Surg. Jour., June 2, 1870.

Influences weakening uterine support.

Prolapsus vaginæ;
Relaxation of broad and utero-vesical ligaments.

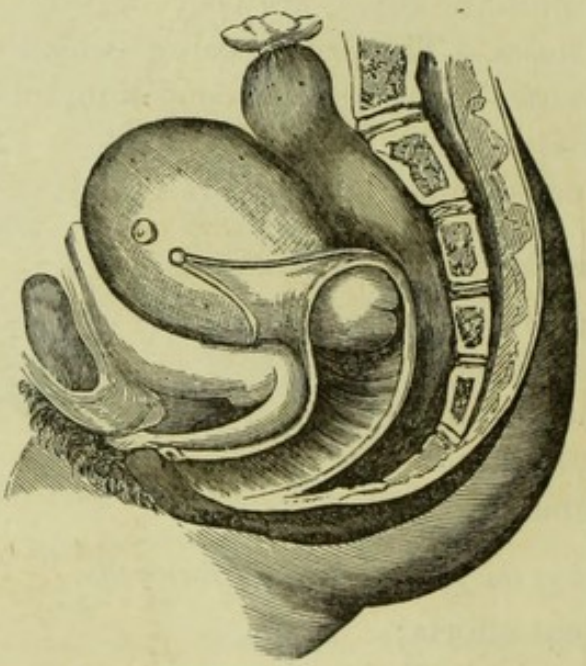
Influences dragging the fundus directly forwards.

False membranes;
Prolapsus vaginæ;
Cystocele;
Shortness of the round ligaments. (?)

A certain number of cases will be found due to areolar hyperplasia, a number by no means inconsiderable to fibrous tumors, some of the most irremediable cases to false membranes, while a few will exist without other apparent cause than direct pressure from some power which forces down the abdominal viscera upon the fundus. The last cause is much aided by laxity of the abdominal walls, which robs the viscera of support.

In early pregnancy, anteversion always exists, the increase of uterine weight due to that condition causing the uterus to fall forwards, as represented in Fig. 121.

FIG. 121.



Position of the pregnant uterus.

Symptoms.—In a certain number of cases anteversion will be found to exist without creating any disturbance either constitutional or local. This, however, is a rare exception to a general rule. By pressure of the os against the posterior vaginal wall,

anteversion commonly induces dysmenorrhœa and sterility, and by pressure of the fundus against the bladder, and the cervix against the rectum, these viscera are irritated and interfered with in their functions. The bladder more especially suffers, sometimes a state bordering upon cystitis being engendered. Pressure upon the rectum more rarely produces tenesmus and a painful, irritable state.

In exceptional cases it is surprising to see to how great an extent locomotion is affected by this condition. My experience furnishes me with four cases where patients were for long periods confined to bed or the lounge on this account. In one of these the patient had not left the house for four years; in another she had scarcely assumed the upright posture for eight months; the third was the counterpart of the second; while in the fourth the patient for twelve years had never walked over a quarter of a mile without serious inconvenience. In each of these cases positive proof was afforded me of the agency of anteversion in producing the disability which existed, by its removal when the uterus was properly sustained by an anteversion pessary, and by relapse at once recurring, when without her knowledge she was left without its support. Not one of these women was suffering from that hysterical condition which so often misleads the physician as to the results of remedies.

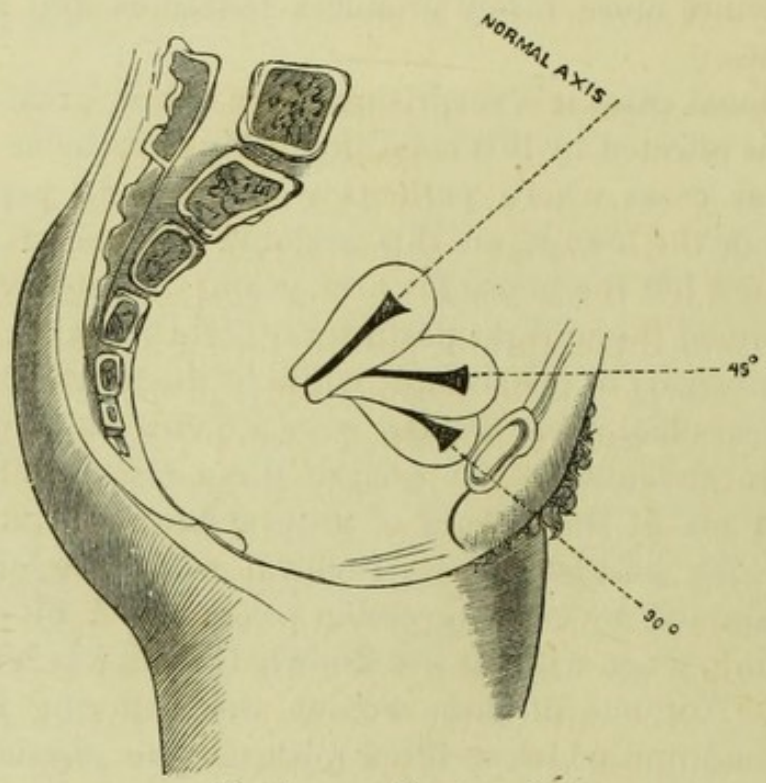
Course, Duration, and Termination.—Even if the exciting cause of the condition be removed, it will usually continue, for the broad and utero-vesical ligaments have by long distension become stretched and enfeebled, while there has been simultaneous contraction in the utero-sacral ligaments from long disuse. The first fail to aid the fallen organ; the last help to keep it out of position by lifting the cervix up against the rectum. Sometimes cure is effected by pregnancy, the displacement disappearing as involution is accomplished. Usually, however, unless the exciting cause of the condition be removed, and the organ be kept in proper position for a year or more, the displacement will continue unabated.

Varieties.—Anteversion may be complete or partial. While there are three degrees of retroversion and of prolapse, there are but two of this displacement, for the axis of the uterine body is naturally inclined so much forwards as to prevent us from including slight increase of inclination under the head of disease.

Fig. 122 will show the varieties referred to; an inclination of 45° representing the first degree, or partial anteversion, and

that of 90° the second degree, or complete anteversion. I have never met with the second degree, although it unquestionably occurs.

Fig. 122.



The degrees of anteversion.

Diagnosis.—When in a case of this displacement vaginal touch is practiced, the patient lying on the back, the index finger passed into the fornix vaginæ discovers that the cervix is absent. A rapid investigation will prove that it is not to be found in the pubic or lateral regions of the pelvis, and deep exploration with two fingers will discover it high up in the hollow of the sacrum. The finger being then passed towards the pubes will come in contact with a hard ridge, which will run towards the symphysis. Conjoined manipulation will prove this to be the body of the uterus, and complete the diagnosis. Should further evidence be required, the uterine probe, very much curved, may be passed into the cavity, though this is rarely necessary and always difficult.

Differentiation.—Capuron[1] tells us that Levret mistook the first case he saw for stone in the bladder, operated for this, and sacrificed the life of the patient. In spite of such a grave mistake at

[1] Mal. des Femmes, p. 202.

the hands of so great an authority, it may be stated that there is no diseased condition with which this should be confounded. The disease inducing the displacement may not be recognized, or some serious error may be made as to its nature, but that does not concern the present subject. The recognition of the mere fact of the anteversion is never difficult, if proper diagnostic means are brought to its elucidation.

Prognosis.—The prognosis as to any serious injury which will arise from the displacement is decidedly good, although there are many inconveniences and discomforts connected with it, such, for example, as vesical and rectal irritation, neuralgia in consequence of compression of the nerves, and difficulty in locomotion; none of these, however, go on to a dangerous degree of development. If the condition be not treated by mechanical means, it will prove entirely incurable; but by these the prospect of great improvement and even of complete cure is very good. Important and early evidences of improvement resulting from mechanical treatment are frequently obtained in disappearance of dysmenorrhœa and sterility. It is often difficult to remove the exciting cause of anteversion, and even should this be accomplished, the uterus is so prone to retain the abnormal position in which it has been long kept, that great difficulty attends its retention in normal position. One of the reasons for this is the fact, already stated, that the uterine ligaments readily alter their proportion under certain influences. Thus during pregnancy they are all elongated; in posterior displacements the utero-sacral ligaments are stretched; and in anterior inclination the utero-vesical ligaments are similarly affected. As the antithesis of this fact, prolonged absence of function causes contraction in these structures; thus in anteversion the utero-sacral ligaments are generally shortened, and there can be no doubt that the round ligaments are similarly altered.

Treatment.—The first point which the practitioner should settle before commencing treatment, is whether the displacement is the main source of existing morbid phenomena, or whether these are due to some disease which underlies that condition. If he be led to regard the disorder of position as the disease, its rectification by artificial support must constitute the chief object of his attention. But if he view it merely as a result of endometritis, fibrous tumor, or pelvic peritonitis, his only hope of relieving it must rest in the cure of the special disorder which is its source. It should not be concluded, however, that treatment by artificial

support must be confined to cases of pure, uncomplicated displacement, for it is very often required where this is the result of other disease. We are called upon to alleviate one of the most annoying symptoms of disease here, as we are in so many other instances. Pessaries are frequently applied to the uterus as splints are to a fractured bone, not as a means of cure, but as adjuvants in treatment, by which rest and freedom from pain can be procured while the healing process advances.

Means for Reduction.—In the restoration of an anteverted uterus to its place, difficulty will rarely be experienced, for unlike retroversion, the displacement does not often become complete. Even when it does so, reduction may be thus accomplished.

The bladder having been emptied by the catheter, the patient should be placed upon her back on a hard bed or table, and all tight clothing removed from the abdomen. Her shoulders should be unsupported, and her buttocks elevated by lifting the foot of the table. The operator having oiled two fingers should then pass them into the vagina, and press their tips against the body of the uterus, which will have forced the walls of the bladder down before it. The fingers of the left hand being thus employed, the right should be laid upon the abdomen, so as to push up the abdominal viscera and uterus when reduction is attempted. The patient is now directed to fill the lungs with air, and then to expel it gently by a prolonged expiratory act. As this expiration is being finished, the operator presses up the body of the uterus by the fingers in the vagina, and the abdominal viscera and fundus by the hand on the abdomen. He will generally succeed at once in replacing the organ. Should he not do so, he should repeat the process as above described, until the end is attained. Of course where the dislocation is partial, restoration may be much more easily effected; but in this case it accomplishes nothing, for no sooner does the force applied cease, than the organ again falls out of place. In such a case the fundus is lifted by bimanual manipulation, then the hand on the abdomen keeping it up, the finger in the vagina is placed behind the cervix, and this part is pulled forwards towards the symphysis.

Some practitioners rely for cure upon the daily restoration of an anteverted or retroverted uterus, but hopes thus based will prove delusive. Where the version is complete and sudden, a return to the normal position may be final; but never have I, in

a single instance, seen it so result where the displacement was incomplete and chronic.

Means for Retaining the Uterus in Position.—For this purpose we have the five following means:

The dorsal decubitus;
Prolonged retention of urine;
Removal of pressure from the abdomen;
The abdominal supporter;
Pessaries;
Elytrorrhaphy.

The dorsal decubitus in cases occurring suddenly, as, for example, during pregnancy or after labor, is of great value, but in chronic cases it cannot be relied on, for the patient should not be confined to bed. Even in these, however, when practiced for two or three hours at mid-day, it gives great relief.

Prolonged retention of urine was first recommended by Piorry. It is a means of no great value, but is certainly worthy of trial.

Removal of abdominal pressure, by prohibition of tight clothing, of heavy skirts supported by the hips, and of all constricting bands which cause a substitution of abdominal for thoracic respiration, is too often neglected in these cases. It is a means of great value, and often gives more relief than any other at our command.

The Abdominal Supporter.—In proportion to the disadvantages resulting from corseting the upper segment of the trunk, are the advantages to be derived, in these cases, from thus acting upon the lower. When the abdominal walls are lax and yielding, and do not properly sustain the viscera, they fall upon the fundus uteri, and tend to produce and keep up anterior obliquity.

No one can deny that by a well-fitting abdominal supporter, tone is given to the lax walls, and that the intestines, not the uterus, are sustained. I have already stated that many are prejudiced against this means, and decry it as absolutely injurious; but I see it too plainly and certainly productive of good results in daily practice to admit of any doubt in my mind concerning it. Dr. J. C. Nott offers a very plausible explanation of the fact that in some women benefit follows their use, while in others, absolute injury results from their employment. "If the patient be emaciated," says he, "and the abdominal walls retracted or even flattened, the supporter will depress and not sustain the uterus. On

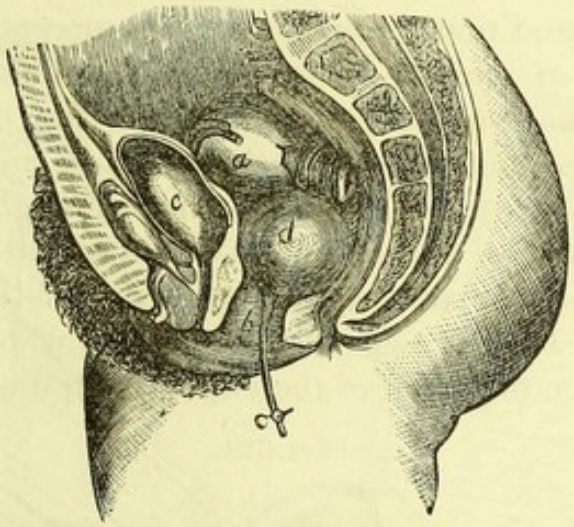
the other hand, if the woman be corpulent, the greatest support will be yielded by its application." I have employed for this purpose with very great advantage, in addition to a pessary, an abdominal pad or truss, which is at the same time simple, inexpensive, and efficient. It consists of an ovoid block of oak, pine or cork, five inches long, by four inches wide. This is convex upon the surface to be placed next the body, and flat on the opposite side, and is held in place by a slender strip of steel covered with leather, like an ordinary male truss. The pressure made resembles that of the hand, and as soon as patients become accustomed to it, which it should be borne in mind may take a little time, gives great comfort.

Pessaries.—In some cases a certain amount of relief will be obtained from merely lifting up the displaced organ in the pelvis without rectifying the anterior displacement, and for one who is not familiar with the use of anteversion pessaries, or has not at his command facilities for procuring good instruments, I really think that this, in the commencement of treatment, if not throughout its entire course, is the safer and better plan. This remark, which may excite surprise here, will be elaborated in a more appropriate place. Lifting the uterus may be accomplished by the ordinary ring pessary or Gariel's air pessary, and the simultaneous use of the abdominal pad which was last described. If the pad be used alone, and when the fundus uteri is below or behind the symphysis pubis, no good will result from it; but if the uterus be lifted so that the fundus becomes amenable to direct pressure, the benefit felt will often be very great. Fig. 123 shows the anteverted uterus lifted from below, and makes it evident how abdominal pressure then becomes of service.

What is desired of a pessary in replacing the anteverted uterus is this: to make steady pressure on the base of the bladder above the cervico-corporeal junction, and at the same time not to injure the vagina by direct pressure at this point or by that transmitted to the posterior wall which acts as the fulcrum. It is by no means easy to make an instrument answer these requirements; it may either keep the uterus in place at the expense of a degree of force, which will create solution of continuity in the vagina, or it may, when possessed of too little power, allow the fundus in spite of it to fall forwards. The use of pessaries for this displacement requires a vast deal more skill, mechanical ingenuity, and patience than is necessary in those of posterior variety. Even with all these, cases will commonly occur in which the parts will be injured

by pressure; and without them the means is one attended by absolute danger. These are the reasons which prompted me to say that merely lifting the uterus might prove a more appropriate plan for one deprived of all the facilities which the cases require.

Fig. 123.

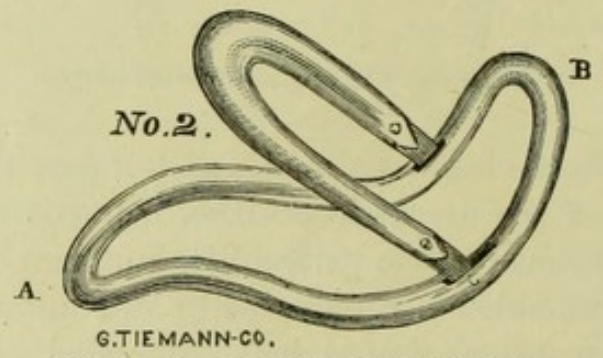


Air pessary lifting anteverted uterus.

The diagnosis having been made, and it having been decided that retention of the uterus in position is not attended by danger on account of former pelvic peritonitis, and that the displacement results from no condition removable by operation, as polypus, for example, the treatment should be commenced in this way. The intestines should be evacuated by a cathartic, all weight removed from the fundus by abdominal supporter and skirt supporter, and the patient enjoined to take very moderate exercise and to avoid all violent efforts. Every night and morning she should use the warm vaginal douche, not only at first, but throughout the duration of treatment, to prevent irritation from it. Every second or third day, for a week before the introduction of a pessary, the uterine repositor should be introduced, the uterus gently thrown into a state of retroversion, and maintained in it for two or three minutes at a time. At the end of this period the anteversion pessary represented in Fig. 124 should be introduced, and the patient allowed to get up and walk about. Should it give no pain, she may wear it home even if going to a distance from the practitioner's residence, for she can herself remove it on the first menace of injury. On the next day the instrument should be examined. If it have given pain or have left its mark upon the vaginal walls, it should be changed at once; if not, it may be left for three days; then for a week; then for a month; and afterwards for a still

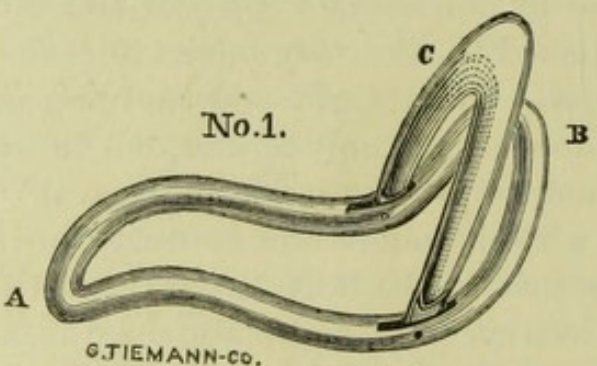
longer time, two months, for example, without examination. The pessary here advised is represented closed for introduction in Fig. 125, and open as it should be in the vagina in Fig. 124; the bow which sustains the fundus is large and smooth, so as not to injure the vaginal wall. When the pessary is drawn upon by means of its lower branch, this bow flaps back of itself against the base of the pessary, and thus the instrument is susceptible of removal. The possibility of removal by the patient should always be made essential in an anteversion pessary, for she may go away after its introduction and suffer agony in a few hours, and should she be unable to remove it, cellular inflammation might result. Even if she obtain medical aid, it is often very difficult for a physician ignorant of the peculiar construction of one of these instruments to remove it. I never consent to a patient who is wearing one leaving my office to go out of the city without first making myself

FIG. 124.



Thomas's anteversion pessary open.

FIG. 125.



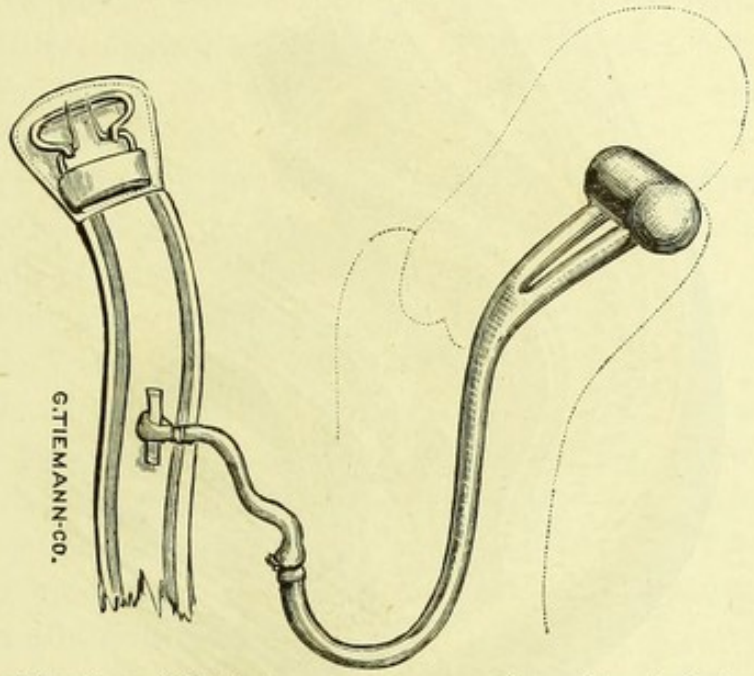
Thomas's anteversion pessary closed.

sure of her ability to remove it herself. The pessary here represented is introduced closed and carried to and just under the cervix, then by the index finger the anterior arm or bow is thrown forward; the cervix falls behind it; the fundus upon it; and the posterior bow goes behind it, into the fornix. It requires a certain amount of practice to use this and all other anteversion pessaries.

Let us suppose that the patient is unable to wear a pessary of

this kind, what then is to be done? I am in the habit of employing in such cases an instrument made by a modification of Cutter's retroversion pessary, and represented in Fig. 126.

Fig. 126.



Modification of Cutter's pessary supporting anteverted uterus.

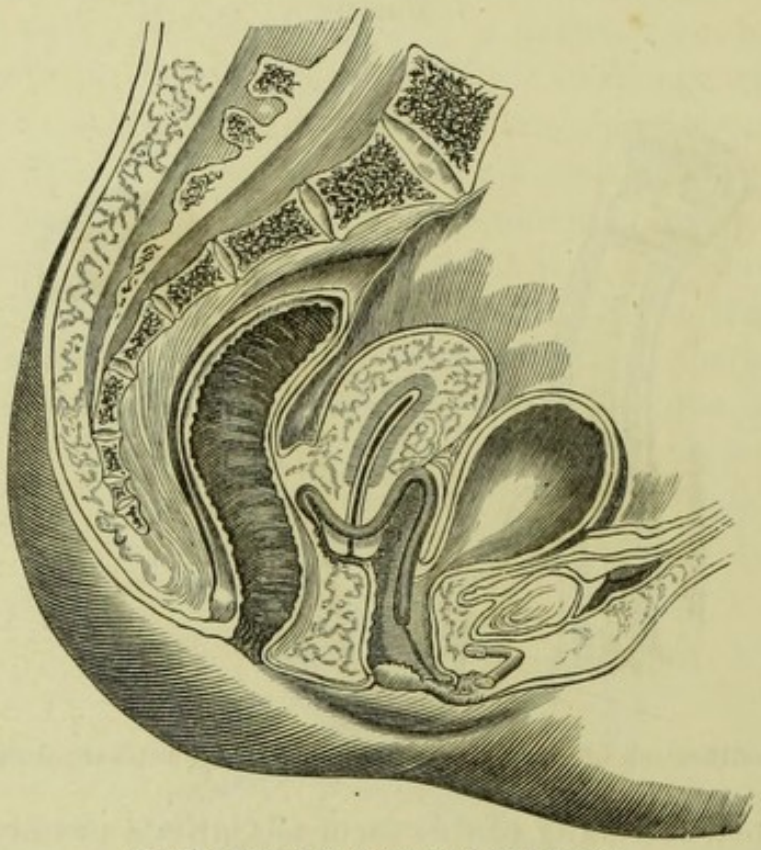
The upper extremity of this form of Cutter's pessary has a bulb attached to it, and is so bent forwards as to strike the base of the bladder, anterior to the cervix. This is introduced, and its method of introduction and removal fully explained to the patient. She is instructed to remove it at bedtime every night, and replace it before rising in the morning. By it the cervix is pulled forwards, the utero-sacral ligaments stretched, a tolerance of a foreign body established, and a pouch or pocket created anterior to the cervix, which will accommodate in time the anterior bow of the pessary shown in Fig. 125. The bulb pessary with external attachment is, then, only a preparatory instrument for that shown in Fig. 125.

After the former has been used for a month or so, the latter will generally be applicable. One having experience with these two instruments can almost always tell without experimentation which will be appropriate. If there be a pouch anterior to the cervix when the base of the bladder is pressed up by the finger, the internal pessary will be tolerated. If there be none, and the tissue resist pressure by the finger, it cannot be employed until space has been created by the other instrument.

Fig. 127 represents a very ingenious anteversion pessary recommended by Dr. Graily Hewitt. I have very little experience with

it, but the testimony of those who have employed it is, like that of its inventor, strongly in its favor.

Fig. 127.



Graily Hewitt's anteversion pessary.

I would especially impress upon my readers the importance of not relying exclusively upon any one of these pessaries or internal supporters. Their use should be combined with external means calculated to remove pressure from the fundus. By this combination the happiest results may be confidently anticipated in efforts at relief of this often distressing accident.

Before concluding, let me recapitulate the most important of the maxims embodied in this chapter.

1st. Never begin treating an anteverted uterus mechanically until satisfied that no periuterine inflammation exists; that bad symptoms present are due to the displacement; and that no condition susceptible of removal by medical or surgical means requires earlier and more prominent attention than retention of the uterus in position.

2d. Before using a pessary, act thoroughly on the intestinal canal, use warm vaginal injections freely, and replace the uterus repeatedly with the repositor, holding it in retroversion.

3d. Never rely on any vaginal support alone, but aid it by avoidance of all pressure from above, and by using an abdominal pad.

4th. Pessaries are of the greatest value in treating anteversions,

but require much more skill, are attended by greater danger, and are more apt to need frequent alteration than when used in posterior displacements. There is no comparison in the relative amount of difficulty in applying this means to the two affections.

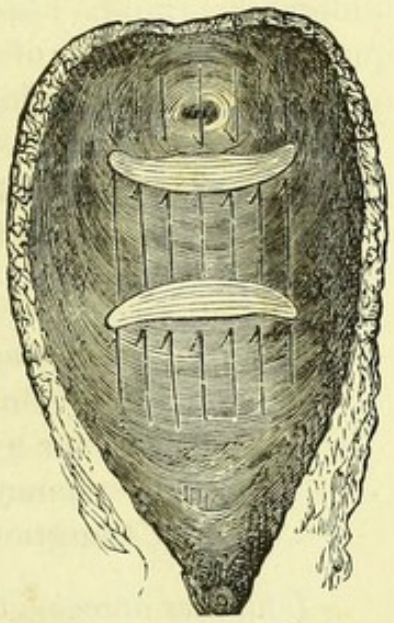
5th. Never use an anteversion pessary which the patient cannot remove; always examine frequently to see if injury is being done to the vaginal walls, and never let a patient wearing one pass entirely out of observation.

6th. If no sufficient pouch exist anterior to the cervix for the accommodation of an internal pessary, create one by use of the external bulb pessary.

At the same time that I speak so strongly of the difficulties surrounding the treatment of these cases, and so repeatedly point out the dangers attending it, I must make this statement for those who have been discouraged by repeated failures with them. Were I asked from the treatment of what class of uterine diseases I experienced the greatest satisfaction, and felt that I had accomplished most good for my patients, I should unhesitatingly reply—anteversion of the uterus.

Elytrorrhaphy.—Should these means fail, we may resort to an operation recommended by Dr. Sims as having been successful in his hands, which consists in shortening the anterior wall of the vagina. This operation applied to the purpose indicated, has as yet been very little tried, but it is worthy of attention from the facts that it commends itself to the reason, and comes to us indorsed by excellent authority. It is thus described by Dr. Sims: two surfaces a half inch wide and running nearly across the anterior wall of the vagina, the one in juxtaposition with the cervix, and the other an inch and a half or more anterior to it, are to be denuded of mucous membrane. They are then brought into apposition by silver sutures, the patient put to bed, and the stationary catheter introduced. At the end of a fortnight the sutures may be removed, when the wall operated upon will be found shortened, so as to draw the cervix towards the symphysis. It is represented by Fig. 128.

Fig. 128.

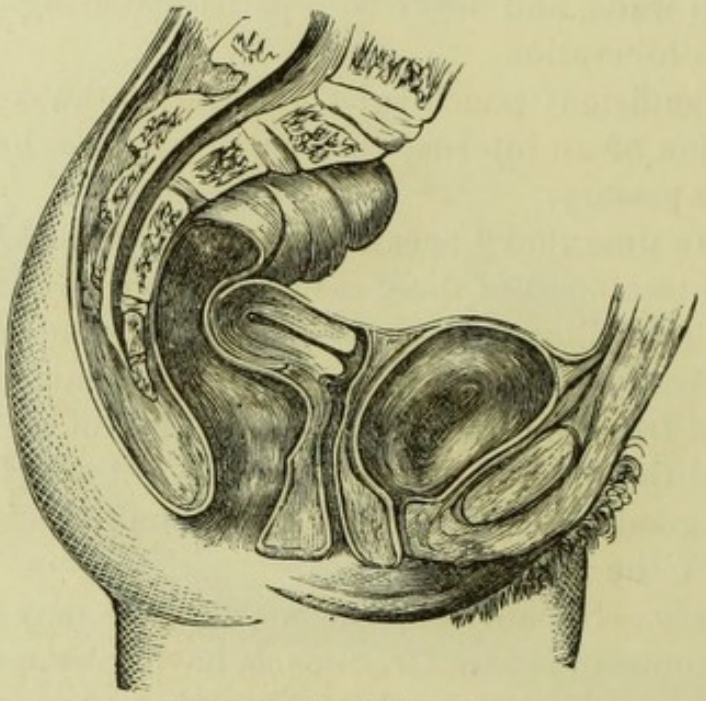


Operation for shortening anterior vaginal wall. (Sims.)

Retroversion.

Definition and Frequency.—Retroversion consists in a posterior inclination of the uterus, so that the fundus approaches the sacrum

FIG. 129.



Retroversion of the uterus.

and the cervix advances towards the symphysis pubis. As an idiopathic primary lesion, it is of extreme rarity, but it is frequently symptomatic of inflammatory disease, areolar hyperplasia, or other states which increase the weight of the uterus.

Predisposing Causes.—The predisposing causes are parturition, general muscular debility, habits of indolence and inactivity.

Exciting Causes.—These may be classified under four heads :

Influences increasing uterine weight.

Neoplasms;
Subinvolution;
Areolar hyperplasia;
Pregnancy;
Congestion.

Influences dragging the uterus out of place.

Adhesions from pelvic peritonitis or periuterine cellulitis;
Rectocele.

Influences forcibly displacing the uterus by direct pressure.

Severe succussion by blows or falls;
Muscular efforts;
Distended bladder;
Tumors;
Tight bandaging after parturition;
Tight and heavy clothing.

Influences weakening uterine supports.

Pregnancy;
Relaxation of vagina;
Rupture of perineum.

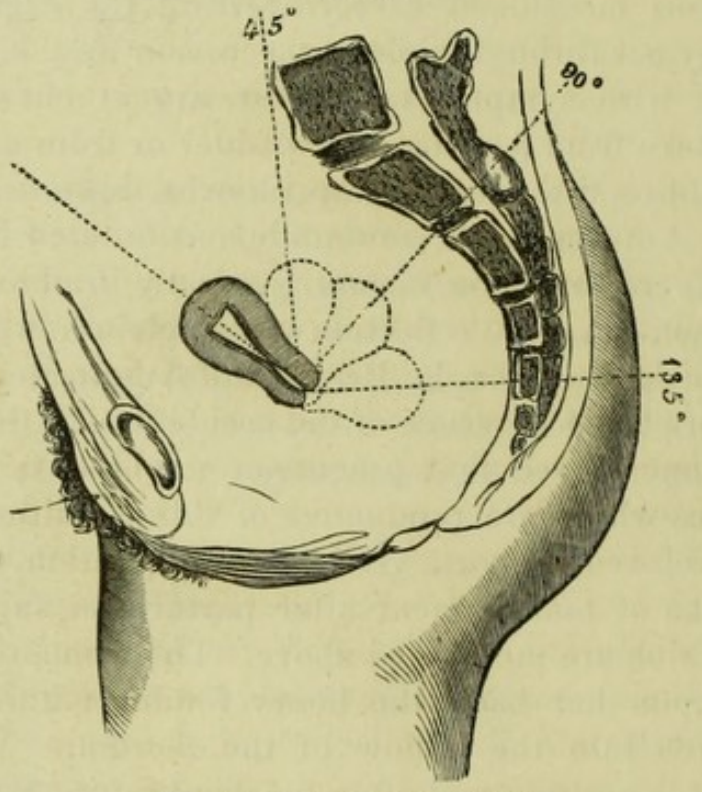
As might be presumed from the natural anterior obliquity of the uterus, anteversion not unfrequently occurs as an idiopathic lesion, resulting from pressure of superincumbent viscera forced down upon the fundus by tight clothing or muscular efforts. Of retroversion this is seldom true. It generally depends upon some pathological state in the uterus or its appendages. The third class of causes mentioned as retroverting the organ by direct pressure, may act through violent succussion and induce sudden displacement with symptoms of most urgent character. Prolonged pressure from a distended bladder or from a tumor anterior to or above the uterus, may likewise induce gradual displacement. Anteversion is commonly encountered in unmarried women, while retroversion occurs generally in those who have borne children. A little reflection will explain how the management of parturient women, by British and American practitioners, at least, favors the occurrence of the accident. In the first place, it must be remembered that pregnancy combines in itself two of the influences which are productive of this condition, increased weight and relaxed support. It is no exaggeration to assert that the usual plan of management after parturition supplies one of the others which are mentioned above. The woman lying almost constantly upon her back, the heavy fundus naturally tends to fall backwards into the hollow of the sacrum. Many nurses insist upon this position and often for days refuse the patient the privilege of lying upon the side. But this is not all, many a nurse's reputation among ladies rests upon her capacity for "preserving the figure" by tight bandaging. A powerful woman will often expend her whole force in making the bandage as tight as

possible to accomplish this purpose. No one who has watched the process can doubt its influence in displacing the uterus by direct pressure. There is no practice connected with the lying-in room, to which so much of almost superstition attaches as to the use of the obstetric bandage for preservation of the figure and prevention of hemorrhage. This is a repetition of what I have elsewhere stated, but the importance of the subject in my mind, must be my excuse for dwelling upon it here.

Varieties of Retroversion.—It may exist in slight degree, the uterine axis inclining so as to make with that of the superior strait an angle of 45°; or it may incline to 90°, thus lying across the pelvis; or the cervix may be thrown up and the fundus descend so as to form an angle of 135°. These varieties constitute the first, second, and third degrees of retroversion.

Symptoms.—Although retroversion is often itself a symptom, it creates disturbances which without its existence would not have shown themselves. For this reason it is difficult to determine what elements of the case are due to it, and what depend

FIG. 130.



The degrees of retroversion.

upon the disorder producing it. It may exist without adding anything to the catalogue of symptoms, as proved by the fact that its removal accomplishes nothing in the way of relief; but

very often it creates tenesmus of bladder and rectum, together with a low grade of inflammation in the lining membrane of these viscera; fixed, gnawing pain in the back; discomfort in locomotion; and pain in defecation. But these are not sufficient for diagnosis, and often do not excite suspicion of its existence. It is generally discovered by vaginal touch. These remarks do not apply to sudden retroversion, the result of succussion, in which variety the symptoms are marked and severe. The patient falls to the ground and is unable to rise, experiences the severest pelvic pain, suffers from suppression of urine and fæces, and is often in such agony that the face is bathed with perspiration and the pulse becomes weak and fluttering.

Physical Signs.—The finger being introduced into the vagina discovers an absence of the cervix from its usual place, and upon further investigation finds it near the symphysis pubis. Upon passing the finger backwards to the sacrum it meets a resisting ridge which ends in a hard, round mass, resting upon the rectum. The size, rotundity, and distinctness of this will depend upon the degree of the displacement. In the first degree the resisting line but no tumor will be felt; in the second, a slightly rounded mass; and in the third, the fundus with its characteristic form will be perceived. Should doubt remain as to the nature of the mass thus felt, rectal touch, the uterine probe, and conjoined manipulation will remove it.

Differentiation.—This affection may be confounded with fibrous tumor on the posterior uterine wall, and the results of pelvic peritonitis or cellulitis. A little attention to the direction of the uterine axis as demonstrated by the position of the cervix, the use of conjoined manipulation, and the passage of the uterine probe will usually settle the question at once.

Prognosis.—The prognosis of retroversion, unless the uterus be bound down by false membranes, is decidedly favorable if appropriate means be resorted to for its cure.

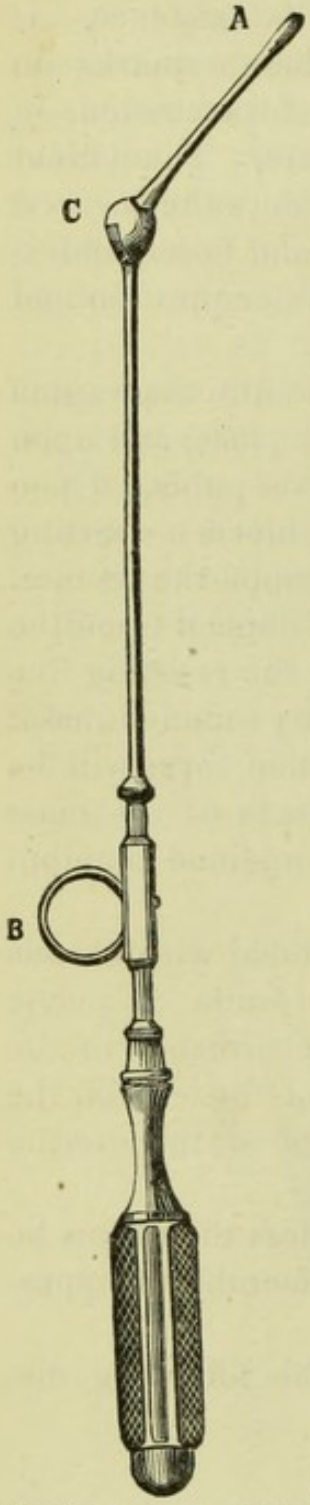
Results.—This displacement may produce the following disorders:

Dysmenorrhœa;
Sterility;
Cystitis;
Rectitis.

Treatment.—The first indication is to restore the uterus to its place, the second to prevent its again becoming displaced.

Means for Reduction.—The bladder and rectum having been evacuated, and the clothing loosened, the patient is made to kneel upon a hard surface, and to place the sternum as closely as possible in contact with the plane which supports her. The practitioner then oiling two fingers carries them into the vagina and against the fundus. He then directs the patient to fill the chest with air, and expel it completely. As she does so, he forcibly elevates the fundus and restores it to its place. Should this plan fail, the buttocks should be still more elevated by placing cushions under the knees, and the attempt repeated.

Fig. 131.



Sims's uterine repositor.

Should this powerful and usually efficient method fail, I would strongly urge against efforts being made by introduction of instruments for restitution into the uterus. If they exert less force, they will not be effectual; if more, they may penetrate the uterus and create peritonitis. Besides, in a case resisting the plan detailed, there will probably be found to be adhesions as the source of the difficulty. Under these circumstances, Kuchenmeister[1] has from extended experience advised the introduction of the colpeurynter, filled with water every day, for as long a time as the patient can bear it. Steady hydrostatic pressure often in this way accomplishes safely what sudden force would do with danger to the patient.

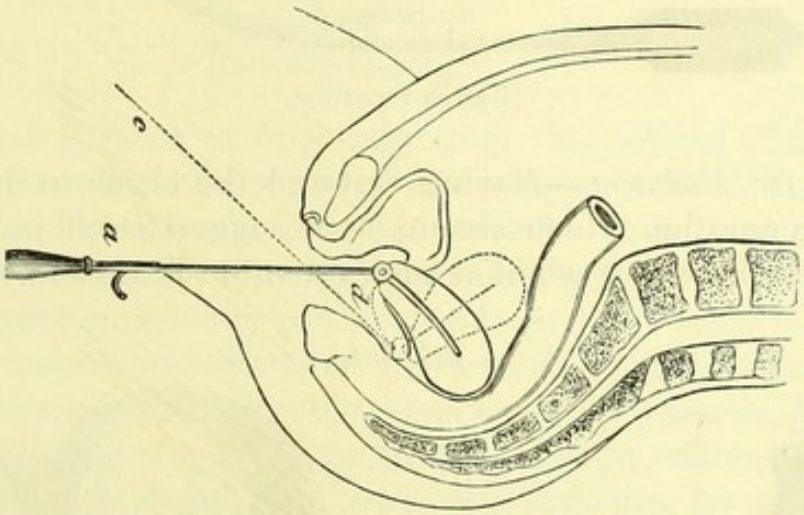
In cases requiring the application of much less force, Sims's repositor is an excellent instrument for the purpose, and should be employed. This instrument, which is represented by Fig. 131, consists of a short metal sound, A, terminating in a ball, C. The ball is clasped by a straight shaft, moves upon a pivot running through its centre, and is perforated by seven holes. Through the shaft runs a rod which is projected by a concealed spring, that

[1] Am. Jour. Med. Sci., July, 1870, p. 275.

is governed by the finger passed through the ring, B. The ball can be made to revolve so that the sound describes a half circle, by withdrawing the stop-rod which runs through the shaft and depressing the instrument.

Fig. 132 represents the instrument introduced, and reposition being accomplished by retracting the stop-rod and depressing the ball.

Fig. 132.



Replacing a retroverted uterus. (Sims.)

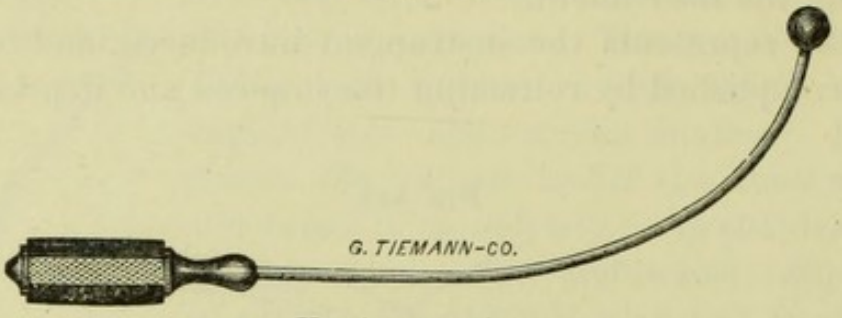
Another very efficient instrument for this purpose is the repositor of the late Prof. G. T. Elliot. This consists of a jointed rod acted upon by a screw at one end and covered over with elastic webbing, similar to that employed in the manufacture of catheters. By means of the screw the desired curve is given the instrument to enable it to pass into the uterus, then by reversing the action the displaced organ is lifted to its normal position.

In the majority of instances reposition is perfectly practicable by conjoined manipulation or rectal taxis, or by means of two sponge-holders, or the repositor represented in Fig. 133, which consists of a steel rod ending in a hard rubber bulb which passes into the fornix vaginæ.

Good results will often attend carrying a sponge staff up the rectum and another up the vagina, so as to make pressure upon the displaced fundus, after the plan adopted by Dr. Bond, of Philadelphia, in his ingenious repositor, which is represented in Prof. Meigs's work on Midwifery. In replacing a uterus in this or any other malposition, the operator should never forget that inflammatory action may have caused an effusion of lymph around it which resists its removal, and that if these adhesions be violently

ruptured, cellulitis or peritonitis may result. Fig. 134 shows a uterus thus bound down.

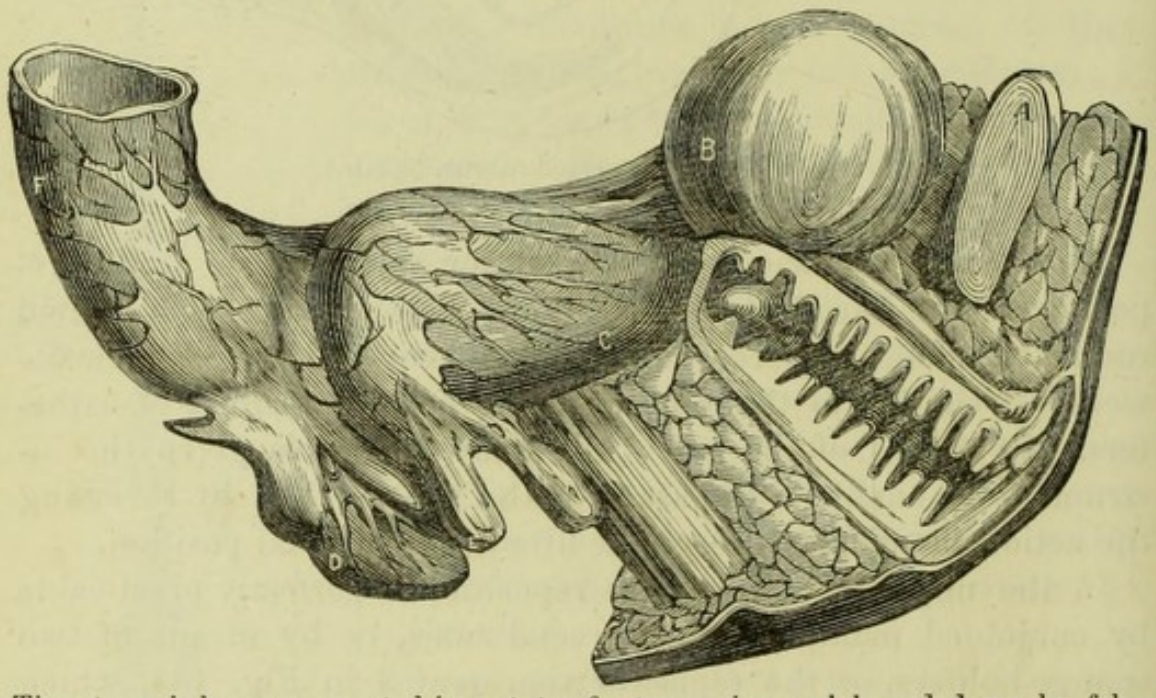
Fig. 133.



Uterine repositor.

Means for Retention.—Having restored the organ to its normal place, the question which should next suggest itself is not how to retain it there, but whether such retention is advisable, practic-

Fig. 134.



The uterus is here represented in a state of retroversion and bound down by false membranous attachments. (Picard.)

able, and void of danger; whether the patient is suffering from symptoms especially referable to the displacement, or this is merely a sign of existing disease, upon which it exerts no influence. If it be regarded as a symptom which is doing no evil of itself, the disease of which it is a result should be treated in the hope that this symptom will vanish with the disappearance of its other concomitants. Thus if endometritis exist, it should be cured; if a polypus, it should be removed, &c. But if the primary

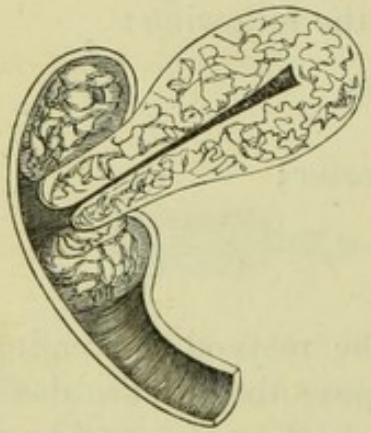
disorder have disappeared and this one of its results remain, or if the original disease be still present, and the displacement be regarded as aggravating it, and adding to the discomfort of the patient, an effort should be made to overcome it by local means. Our resources for accomplishing this are the following:

Abdominal decubitus;
The tampon;
The abdominal supporter;
Pessaries;
Perineorrhaphy.

For the purpose of fully exhibiting the method of treating a chronic case of this disorder, I will suppose that we are dealing with one of rebellious character, in which there is considerable tenderness about the uterus, so that it will not tolerate the pressure of a pessary sufficiently powerful to keep it in position. A preparatory course of treatment is necessary, as in the case of anteversion, before resorting to a pessary. The bowels should be evacuated; the vagina syringed with warm water night and morning; all weight taken from the abdomen by a skirt supporter, an abdominal supporter, and avoidance of all muscular efforts; and the uterus be replaced and held in the condition of complete anteversion for two or three minutes, once in every forty-eight hours, for a week or more. After a week has been allotted to these efforts at preparation for the permanent sustaining of the displaced organ, a tampon of carbolized cotton, or sponge saturated with glycerine, should be applied in the following way: the uterus being held in a state of complete anteversion by means of the uterine repositor, a roll of cotton about the size of a small hen's egg, or an egg-sponge moistened with carbolized glycerine, should be carefully pushed as far as it will go into the fornix vaginæ. Then a large roll of cotton should be placed below the cervix and a little anterior to it (not behind it, as the first one was), but so arranged as to lift this part up into the hollow of the sacrum against the roll, which has now become invisible, in the fornix vaginæ. The subcervical tampon not only pushes back the cervix, which was before its introduction near the symphysis pubis, but it still further elevates the supercervical roll, which thus pushes the fundus farther and farther upwards until it topples over forwards by its own weight, uninterfered with as it is by pressure from above, and aided by the abdominal decubitus which should be observed by the patient. The accompany-

ing diagram will explain the action of these two portions of the tampon *when properly applied.* If instead of being thus applied, the ordinary tampon be employed, and the lower portion of the vagina be filled, nothing is accomplished but elevation of the retroverted organ. What we desire to produce is anteversion. After the introduction of the subcervical pad as shown in the figure, the vagina is filled with cotton to keep this in place, as well as to elevate the whole uterus, and bring gravitation to our aid in throwing the body forwards. The tampon may be retained for forty-eight hours without inconvenience, if the material of which it is composed be properly prepared by means of antiseptic drugs. This is of so much importance that I shall here describe the manner in which cotton should be prepared.

FIG. 135.



A large mass of fine cotton should be kept immersed for three or four days in a saturated solution of bicarbonate of soda, and then taken out and thoroughly dried in the sun. When a wad of this is to be used, it should be saturated in a solution of half a drachm of crystals of carbolic acid to one quart of water, then squeezed, dipped in glycerine, slightly squeezed again, and applied. Thus prepared, the tampon is not only antiseptic in its properties, it proves an excellent method for treating chronic and even subacute vaginitis, while it is decidedly beneficial in its effects upon the so-called ulcer of the cervix.

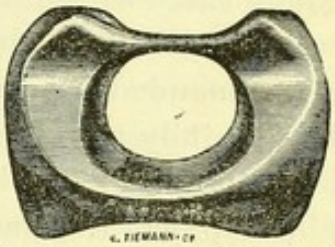
During the use of this means the patient may go about and attend to her usual avocations, although if everything be favorable, it is better to confine her to the abdominal decubitus.

Should the residence of the patient be out of the city, or her pecuniary condition render it impossible for her to be treated as here advised, the plan may be imitated by one less effectual, but much less troublesome to patient and physician. The uterus being thrown into anteversion by the repositor, or two fingers introduced into the fornix, while the patient is in the left lateral position, Hurd's pessary, described on page 395, or Hoffman's pessary may be introduced, for the purpose of gently elevating the fundus by an obtuse body introduced into the space just occupied by the fingers. These instruments should be watched,

for they sometimes incarcerate the neck. They should likewise be kept very clean by copious and frequent vaginal douching.

After the methods thus far described have been pursued for a fortnight or three weeks most cases will tolerate a well-adjusted pessary; but where this tolerance is not developed, the medicated tampon should be employed until it be so. In one very aggravated case, sent to me by Dr. J. C. Hutchison, of Brooklyn, I employed this means persistently for a month or more before any pessary could be used. After that time complete relief was afforded by the instrument represented in Fig. 141, although for eighteen months previous the uterus had utterly refused to tolerate any artificial support, and presented in its displaced body all those conditions of tenderness, enlargement, nervous irritability, &c., generally supposed to characterize chronic inflammation.

FIG. 136.



Hoffman's inflated, soft rubber pessary shaped like the pelvis.

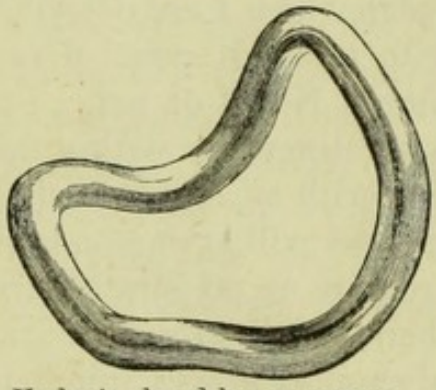
One important point in connection with this method of replacing the uterus is this. The round ligaments are attached to the horns of the organ, and at the vulva. If the retroverted or retroflexed uterus be left in malposition and simply pushed up, the ligaments will inevitably increase and insure the continuance of the displacement. If, on the other hand, the body be thrown forwards and kept in anterior position until the organ be lifted, the round ligaments become tense and tend to act remedially on posterior deviations. A little thought will convince the reader of the truth of this statement. It is upon this action of the round ligaments that I in part depend for the benefit of the plan which I am describing.

It may be asked whether I propose to treat all cases of retroversion in this manner in the beginning. No; I do not. I prefaced these remarks upon preparatory treatment by stating that I supposed the practitioner to be dealing with an aggravated case and one intolerant of support. Many cases will at once admit of the use of a retroversion pessary and require no preparatory treatment. There are, however, many others which do require it and in which immediate resort to artificial support proves injudicious and dangerous. Some may suppose that a great deal of time must be consumed by this preparatory treatment which is not necessary for the relief of the case. If preparatory treatment be not necessary, it should not be resorted to; if it be necessary, time

will be gained and not lost by its adoption. At least let me urge this advice: when the most carefully adjusted pessaries create discomfort, let a month be devoted to the treatment by tampon which I have described, and at its end let pessaries be again tried. Many cases will be found to yield to mechanical treatment which were rebellious to it before, and more certainly so if the means recommended for removing pressure upon the fundus from above be faithfully put in practice. Some of the most gratifying results of Gynæcology will be found to arise from a cautious, patient, and philosophical treatment of these cases. But let no one suppose that a careless filling of the vagina with cotton is likely to perform all this. If the plan which I am urging be used unintelligently and roughly, it will do harm and not good, and result in annoyance and not comfort to the patient.

It has been now decided, we will suppose, to try the effects of a retroversion pessary. Which of the many varieties at our command shall be selected? I have but three to advise, although I shall mention a larger number. It will be observed that I very decidedly prefer a modification of Prof. Hodge's pessary to the original instrument. While doing this I do not wish to overlook the fact that to this practitioner Gynæcology is more indebted for a scientific plan for supporting the uterus affected by posterior displacement than to any other who has given his efforts to the subject. All the varieties of lever pessary now employed are modifications of his original and most valuable idea, and act upon the principle which it developed.

FIG. 137.



Hodge's closed lever pessary.

FIG. 138.



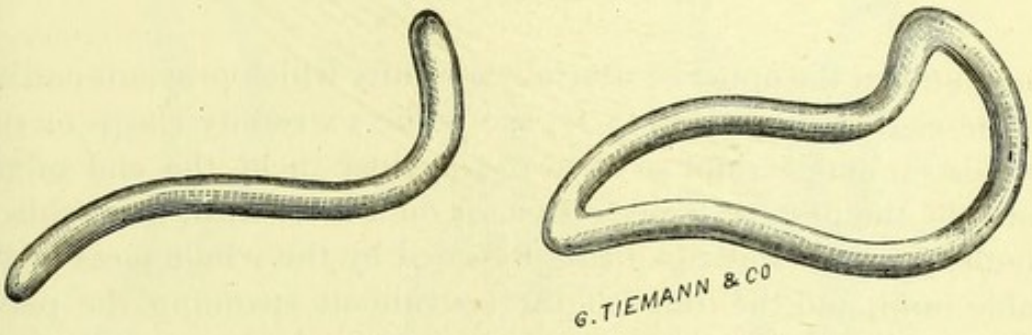
Hodge's open lever pessary.

The rule which has been observed with reference to other mechanical inventions has not, however, been wanting here; subsequent labors based upon the original thought have greatly im-

proved its application. Thus, there are varieties of retroversion pessaries which are as far superior to Prof. Hodge's model as there are varieties of repeating firearms superior to Colt's original conception.

Until two years ago I very commonly employed Hodge's pessary, and always kept a large supply on hand. I used this as a rule in retroversion, and other varieties only exceptionally. About that time my attention was drawn by Dr. James L. Brown to the great superiority of the modification of this instrument by Dr. Albert Smith, of Philadelphia, and at his solicitation I made trial of it. Since that time I have done, what many of my acquaintance who have tried it, have also done, I have employed it universally where formerly I used Hodge's instrument. The Albert Smith pessary is shown in Fig. 139. It is longer, less expanded, and much more pointed at the pubic extremity than Hodge's. While the latter rests against the rami of the pubes, the former rests between them.

FIG. 139.

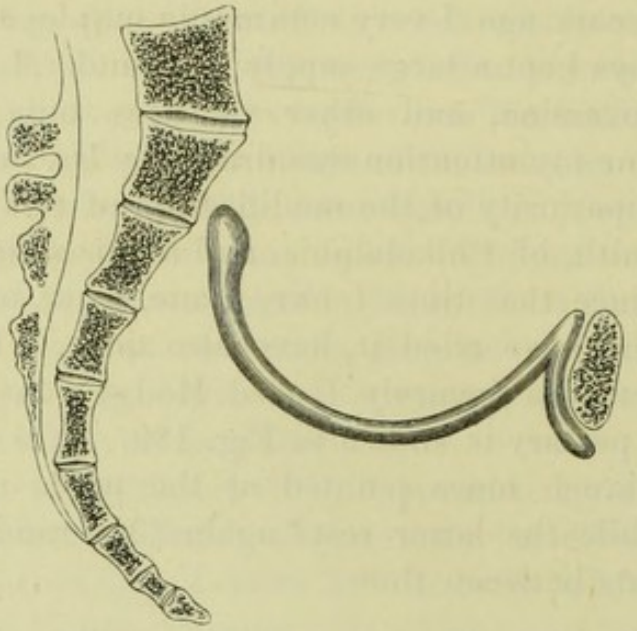


Albert Smith's pessary.

This pessary is that which I usually try first in retroversion. In a certain number of cases it fails for the following reasons. The displaced body is so heavy and presses so forcibly downwards that a pessary of ordinary size is driven out of the vagina, or so low down as to allow descent of the fundus. This might be obviated by employing an instrument of large size and great expansion of limbs, but this the vagina cannot tolerate. It sets up ulceration and creates pain from pressure and distension. In other words, without a very firm base the uterus forces out the instrument; with a sufficiently firm base to resist this, ulceration from excessive pressure results. To meet this difficulty I have constructed and employed the instrument shown by Fig. 140, and in every case in which I have tried it I have obtained excellent

results. The principles upon which this instrument depends for its advantages in obviating these difficulties are these: (*a*) there is a

Fig. 140.



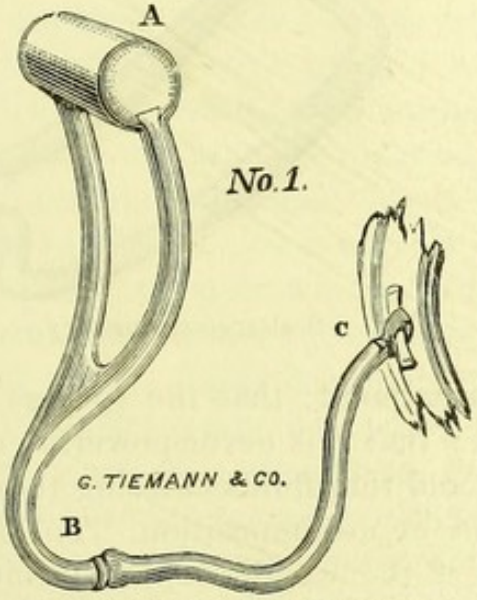
Thomas's retroversion pessary.

small bulb at the upper or uterine extremity which prevents cutting of the vagina by pressure; (*b*) the pubic extremity clasps or surrounds the pubic rami so as to rest against them, the end of the limbs of the pessary being above, or on a level with, the brim of the pelvis; (*c*) a buttress being afforded by the whole faces of the pubic rami, and the limbs of the instrument spanning the pelvis like a bridge, no pressure is exerted upon the lower wall of the vagina; retention of the instrument is accomplished not by capacity, but by position; (*d*) however great the pressure, no interference with the urethra ever occurs, and the instrument can be very easily removed by the patient in case of discomfort.

In a certain number of cases so very great is the pressure exerted by the displaced uterus, that no purely internal support will answer the purpose of sustaining it, for the point against which the pubic or uterine extremity of the instrument rests will, in spite of every precaution, become ulcerated. Under these circumstances I have obtained the most gratifying results from the use of an alteration of Cutter's retroversion pessary, intended to obviate a difficulty which I found attend that excellent instrument, that of cutting through the fornix vagina. If no great amount of pressure is to be borne, Cutter's pessary is not necessary, for

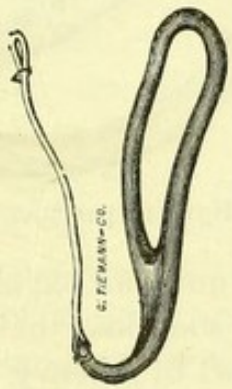
an intra-vaginal instrument will answer the purpose; if great pressure is to be borne, the point of his instrument endangers the tissues. For this reason I have affixed to the top of Cutter's pessary bulbs of different sizes—some as large as a hickory nut—for the object is not only to prevent cutting of the vagina, but to place behind the displaced fundus a mass which will make it fall forwards by *displacement*, and not by pressure. My alteration of this instrument is insignificant; the entire credit of it belongs to Dr. Cutter, to whom I personally feel indebted for affording me so valuable and simple a method for meeting the difficulties of aggravated retroversion. Did time and occasion suit, I could cite a number of very bad cases of this difficulty, which had for years resisted treatment by ordinary pessaries, and which have readily yielded to the use of the bulb pessary exhibited in Fig. 141.

Fig. 141.



Modification of Cutter's pessary.

Fig. 142.



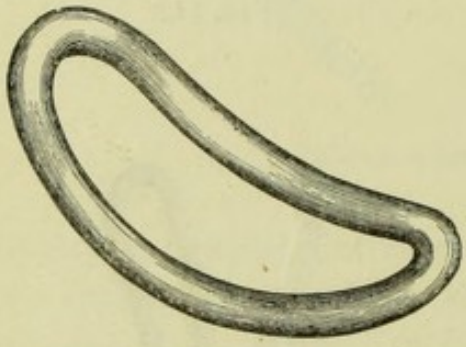
Cutter's pessary.

The inferior extremity of this pessary arches backwards over the coccyx, and attaches to an elastic cord which passes upwards over the sacrum to a girdle around the waist. It is a painless and efficient method of giving support, and will gain a high reputation on account of these qualities in posterior displacements. The class of cases to which it is especially applicable, is that in which the displacement is due to enfeeblement of the posterior vaginal walls from rupture of the perineum or other cause. When employed for posterior displacements, the upper extremity of the instrument simply lies in the fornix vaginæ, the cervix of course not entering the fenestra.

This instrument should be removed every night and reinserted every morning. It may be said that this will prove difficult of accomplishment for the patient. Out of several hundred cases in which I have used it, I have never found an instance of failure in this respect. The patient will very often become disaffected towards the instrument from its chafing the perineum. By a little patience, covering the points which rub with greased lint, and leaving the pessary out until the irritated part be healed, the feeling will soon pass away.

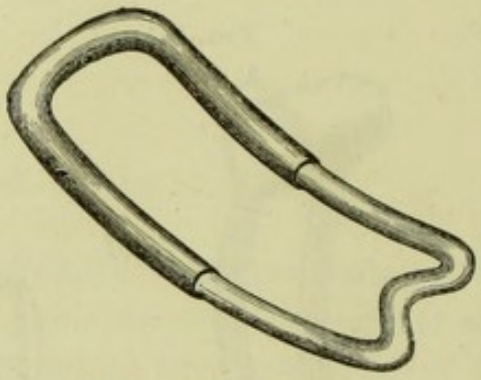
These are the instruments which I recommend for retroversion of the uterus. There are other varieties, however, which often answer an excellent purpose. Examples of two of them are given in Figs. 143 and 144. The objection to Scattergood's pessary are,

FIG. 143.



Hewitt's pessary.

FIG. 144.



Scattergood's pessary.

that it is quite an expensive instrument; that the springs in the branches soon lose their power; that it is never powerful enough for support of a heavy uterus; and that fluids entering the hollow limbs become excessively fetid by decomposition. To Hewitt's pessary there is no objection, if the weight to be sustained be slight. If it be at all great, this instrument is utterly inadequate to cope with it. It is not simply inefficient; it is in such cases a dangerous instrument, for resting against the soft parts covering the symphysis it may, as I have seen it do, cut directly through.

Lastly, in cases where very little pressure is exerted by the retroverted body, and where retroversion is accompanied by marked descent, an ordinary elastic ring, like that of Prof. Meigs, will often be found to be very serviceable. Messrs. Tiemann & Co. have recently modified Meigs's ring pessary by making it of a very delicate ring of whalebone covered by India-rubber. It is so elastic as to assume any shape required by the pelvis, and answers an excellent purpose in patients who are so sensitive as not to be able to bear a less pliable support.

If the posterior vaginal wall need support, which it has lost from rupture of the perineum, the operation of perineorrhaphy may be of great service. For the description of this operation the reader is referred to page 129.

Fig. 145.



Meigs's ring pessary.

After the introduction of every pessary, the position of the uterine body should be at once examined, either by the probe, by conjoined manipulation, or by both, to ascertain whether it be efficient or not. If it be not so, the instrument is imperfect, for the object is not to go through the form of introducing a pessary; it is to rectify the malposition. At the next and at every subsequent visit of the patient, this examination should be made before removal of the instrument, in order to test the effect of time and movement upon the position of the supported uterus.

I do not know that any better opportunity than the present will occur, for offering some general remarks upon the use of pessaries. Uterine pessaries hold a prominent position among surgical appliances, as a means of procuring palliative and curative results. Like all other mechanical means, which are powerful for good, they are capable of doing a great deal of harm. Were I asked at the present moment whether I believed that in the aggregate, they accomplished more good or evil, I should be forced to give a doubtful reply. Their injurious consequences I would attribute, not to the instruments themselves, but to the improper manner in which they are very often used, and the carelessness with which they are allowed to remain *in sitû*, without observation. If splints were applied to broken bones, and never examined until union was effected, their utility would soon become doubtful. Pessaries should be carefully watched, for they sometimes create cellulitis, peritonitis, vesico, recto, and utero-vaginal fistulæ. In some cases they have been known to pass completely out of the vagina, into the rectum or bladder. Some years ago a case entered the service of Prof. L. A. Sayre, of the Bellevue Hospital Medical College, presenting very obscure symptoms of uterine disease. Examination proving that some foreign substance existed in utero, Prof. Sayre dilated the cervical canal, and extracted a globe pessary which had migrated from the vagina into the uterus, and been retained there for a length of time.

Whatever instrument be employed it should sustain the displaced uterus, without creating pain or discomfort. Should any

such inconvenience be produced, it should be at once removed, for the most violent cellulitis may result. While a pessary is kept in the vagina, cleanliness should be secured by daily vaginal injections, and at intervals, not exceeding two months, it should be removed, examined and reintroduced.

One of the difficulties attending the use of these instruments in general practice, unquestionably arises from the fact that a great deal of experience is necessary before any one can use them with certainty of accomplishing good results. But another is due to the practitioner having only a small supply from which to choose. He who habitually employs this means, should have at his disposal a large and varied assortment, and should possess sufficient mechanical ingenuity to mould and adapt these to the special requirements of cases which may present themselves. The hard rubber pessary may be given any shape after being heated, and Sims's block tin ring may be readily moulded by the fingers.

Whether a suit for malpractice has ever arisen on account of injury done by a pessary, I cannot say, but I can easily imagine such a source of litigation. Every practitioner should bear in mind, that injury done by a pessary, does not argue ignorance on the part of its introducer. When one removes, as every Gynæcologist must often do, a pessary from a position in the pelvis in which it has become imbedded, and finds as its result, a ragged, ulcerative tract existing, he is very apt to conclude hastily that the instrument was improperly applied. This is by no means true. I have repeatedly removed pessaries under these circumstances, which had been introduced by the most competent Gynæcologists. How common it is to find a pessary which one has carefully introduced, turned completely upside down at the end of a week. The migratory and evolutionary performances of the vaginal pessary are truly wonderful. These facts being recognized and admitted by all, the evident deduction is that it is unjust, as it is unprofessional, to expose to a patient at the expense of an absent colleague, every lesion which these difficult instruments may have created. To tell a patient that the instrument she wears has made a deep ulcer in the vagina, is to tell her that her attending physician has been guilty of a gross blunder; for "ulcer" in the popular mind, means anything that is frightful in the way of lesion, from erythema to true carcinoma. And although the statement is perfectly true, he who makes it knows that the same accident has occurred to himself many times, that a week of rest will entirely efface it, and that almost no real damage has occurred

to the patient from its creation. If it be not a matter of courtesy, but of professional honor, to protect the interests of a brother practitioner, as far as the patient is concerned, how much more must it be so, where the question concerns his reputation with the public upon whose esteem his usefulness depends!

Two years ago a case in point occurred to me, which was so instructive in this connection, that I venture to detail it. A lady called upon me for treatment for anteversion, after having been for some months under the care of an advertising charlatan of this country. Upon removing a very coarse and clumsy retroversion pessary, I found a deep and ragged ulcer which had penetrated by its lower extremity into the tissue intervening between the vagina and bladder. It was deep, large, and ragged. The temptation was very strong to expose the user of this instrument, and to make the ulcer the text of a discourse upon the employment of ignorant pretenders by the public, but upon second thought I refrained, put the patient upon appropriate treatment, and as she lived out of town, directed her to return in three weeks. At the end of that time she reappeared, and as the ulcer had healed, and all vaginal irritation had disappeared, I inserted an anteversion pessary, and sent the patient home, directing her to see me again in a week, as that proved to be the earliest moment at which it would be practicable. In a week she returned, and to my mortification I found that pressure of the uterus upon the pessary had created a large and ragged ulcer. The only difference between that created by myself and by the charlatan, was that the former was a little the larger and more vicious in appearance.

It is this very danger which now makes me so scrupulous about examining an anteversion pessary repeatedly during the first ten days of its sojourn in the vagina.

In spite of all its attendant evils, the use of the pessary is one of the most important points in Gynæcology, and every practitioner of that art should make it a faithful, special, and constant study. I confess that when I am told, as I sometimes am by physicians, that they never use pessaries, because they are so strongly prejudiced against them, the question always arises in my mind, then how and why do you treat uterine diseases? How pessaries can be dispensed with is to me one of the unfathomable mysteries of gynæcological practice. And why any one should practice an art and ignore a means which, properly mastered, constitutes one of the most powerful and reliable of its resources, is equally incomprehensible.

CHAPTER XXII.

FLEXIONS OF THE UTERUS.

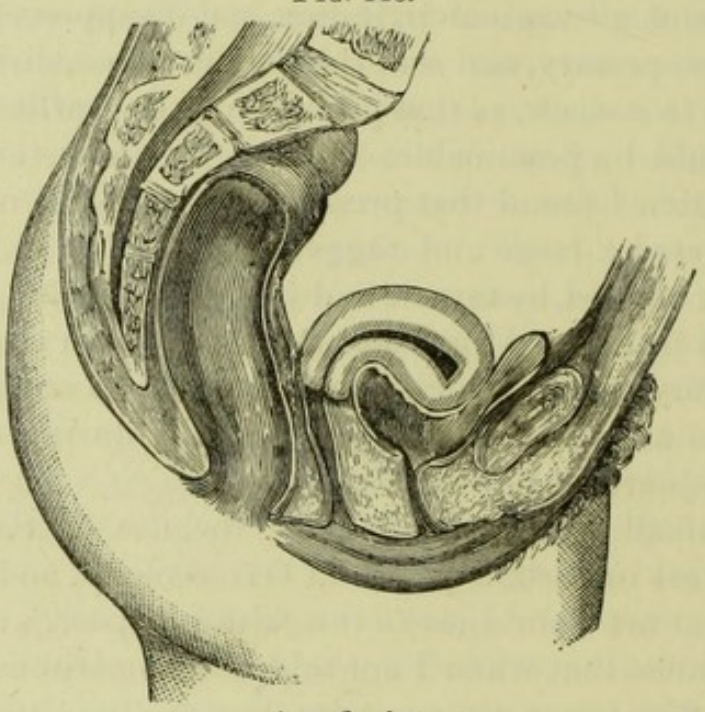
The uterus may be flexed upon itself anteriorly, posteriorly, or laterally, giving rise to the disorders known as—

Anteflexion;
Retroflexion;
Latero-flexion.

Anteflexion.

Definition and Frequency.—This, which is one of the most frequent of all uterine displacements, consists in a bending of the

Fig. 146.



Anteflexion.

organ so that the fundus, the cervix, or both, are bent more or less sharply forwards.

Before puberty it is so frequent as to have been considered by Boulard, Verneuil, Follin, and others, as physiological. Whether it be so or not, this at least is proved, that before that time it does not constitute, nor depend upon, a morbid state. At that

period of life it is probably due to the want of tone and power which characterizes undeveloped uterine tissue, for even when anteflexion does not exist, the organ is generally otherwise displaced. Thus, M. Soudry,[1] in 71 post-mortem examinations of infants, found the uterus anteflexed 41 times, anteverted 11 times, retroverted 15 times, retroflexed twice, and retroverted with anteflexion twice. We may conclude from the evidence at present upon record:

1st. That anteflexion is the rule during early childhood;

2d. That it is quite frequent in nulliparous as well as multiparous women.

Varieties.—There are three forms of anteflexion: first, corporeal flexion; second, cervical flexion; third, cervico-corporeal flexion.

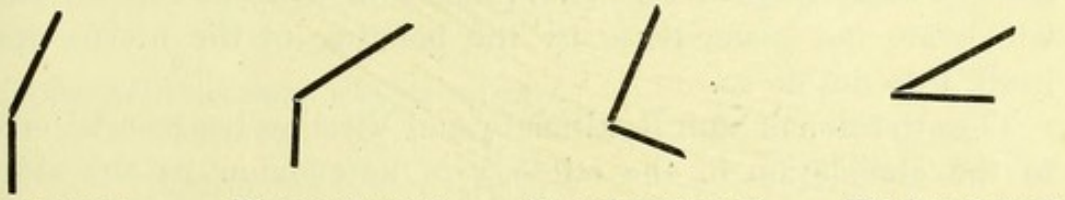
1st. The cervix being normal in position the body is flexed;

2d. The body being normal in position the cervix is flexed;

3d. Both are flexed forwards.

The lines represented in Fig. 147 will serve to show the deviations which may affect the axes of body and cervix.

Fig. 147.



Normal axes. First variety of flexion. Second variety of flexion. Third variety of flexion.

These varieties are neither arbitrary nor unnecessary. The existence of each may readily be verified at the bedside, and treatment should always be materially modified by the peculiarity of the deviation. It appears to me that a neglect of them and the fixation of attention upon flexure of the body alone has seriously retarded progress in treatment. No one can intelligently treat anteflexion without regard being had to the variety of the disorder to which he is called upon to adapt his mechanical appliances.

Pathology.—To a certain extent anteflexion of the body of the uterus is prevented by the support yielded by the broad ligaments, which, passing from each side of that organ to the pelvic walls, sustain the weight of the fundus. The influence of these structures has, however, been greatly exaggerated with reference both to

[1] Aran, op. cit., p. 981.

this accident and to retroflexion. That they are decidedly efficient in keeping the uterus upright and preventing versions, no one can for a moment doubt, but an examination of the pelvic organs of the cadaver will, I think, convince the examiner that their power does not extend to a material prevention of reduplication of the uterus upon itself. This is chiefly accomplished by the inherent strength and resistance of the proper tissue of the organ. Suppose a uterus to be composed of gutta-percha instead of muscle; the material forming the walls of the neck will support the fundus when the pear-shaped bag is held by the stem or narrow part. To carry the simile further, so long as the proper tissue of the stem or neck remains normally strong, flexion will be impossible unless its resistance be overcome by direct physical force exerted by pressure or traction. But if some influence be brought to bear locally, so as to soften the part sustaining the fundus, it is evident that as the gutta-percha wall grows weak, there may be a flexion of the fundus from its own weight. It will be said that these views represent the uterus as supported by the vagina only, and leave out of consideration the broad ligaments which sustain the fundus. If these ligaments were tightly drawn cords, I could admit their action, but as they are merely lax folds which are not made tense by the bending of the uterus upon itself, I do not do so.

The attention of both Rokitansky and Virchow has been directed to the elucidation of the etiology of anteflexion by the aid of pathological anatomy. They differed as to their conclusions; the former looking upon flexure as due to weakening of the thick, submucous connective tissue which he regarded as constituting the framework of the uterus. This relaxation or enfeeblement he thought was ordinarily due to endometritis or to degeneration of the Nabothian follicles, which indirectly affected the subjacent fibrous tissue, creating in it an atrophy and replacement by a weaker and less dense areolar tissue. Virchow regards this atrophy of strong submucous fibrous tissue, and generation in its stead of areolar tissue, as a result and not a cause of the deviation. He attributes anteflexion in the great majority of cases to shortness of the round ligaments or to false membranous adhesions. One very strong argument in favor of the correctness of Rokitansky's view is to be found in the fact that anteflexion is common in very young and is sometimes met with in very old women. In the former there is known to be much less of the strong submucous fibrous tissue alluded to, on the anterior than on the posterior

wall, and in the latter there is an absolute enfeeblement of the whole uterine structure by reason of senile atrophy. In both cases the natural anterior curvature of the uterus helps to make this accident more likely than posterior displacement.

We accept the position then that loss of tone in one of the uterine walls is the pathological state which constitutes the basis upon which certain exciting causes create anteflexion. But this condition once being excited, evils of serious character are very apt soon to develop themselves. Occlusion being created at the os internum, mucus collects in utero, becomes decomposed and irritating, and reacts upon the endometrium, creating endometritis and salpingitis. Sudden bending of the uterine vessels prevents venous return from the uterine to the hypogastric veins, and from this result passive congestion, œdema, nervous irritability, and areolar hyperplasia. Through the channel of the tube, or by pressure from the flexed body, pelvic peritonitis is easily excited; a fact which should always be borne in mind in manipulations and treatment of this condition.

Causes.—One of the functions of the cervix uteri is to support the body, and for the performance of this it is abundantly competent, unless its powers be impaired by one of the following influences:

Influences weakening uterine support.

Endometritis;
Pregnancy;
Fatty degeneration;
Areolar hyperplasia.

Influences increasing the weight of the fundus.

Enlargement of the body;
Pregnancy;
Tumors;
Accumulation of fluid in utero.

Influences pushing the fundus or cervix forwards.

Abdominal tumors;
Ascites;
Fecal accumulation;
Tight clothing;
Muscular efforts.

Influences exerting traction forwards.

False membranes from pelvic peritonitis or peri-uterine cellulitis;
Shortness of round ligaments.

Of the first class of causes, inflammation affecting the mucous membrane of the neck, and creating areolar hyperplasia in the parenchyma, more especially, as Klob has pointed out, near the os internum, and thus impairing its strength, is, according to my experience, one of the most frequent. Virchow, as I have stated, denies its agency, as he likewise does the agency of fatty degeneration, observed by Scanzoni, at the point of flexure. The influence of parturition, abortion, and pregnancy has been admitted by all authorities.

Areolar hyperplasia, which results in atrophy of the muscular and submucous fibrous structure of the uterus and their replacement by hypertrophied areolar tissue, creates a marked tendency to this deviation by substituting a lax and feeble for a dense and powerful substance. Klob declares that this weakening of stronger tissue, and replacement by that which is weaker, occurs more especially near the os internum, as I have just remarked.

The varieties coming under the head of the second set of causes are all universally admitted, as are also those belonging to the third. Fecal impaction may sometimes produce flexion of the body, and frequently causes the cervix to bend sharply forwards. The fourth set of causes is beyond question, in autopsies the uterus being often found thus bound in a state of flexion.

The etiology of cervical flexion is somewhat different from that of corporeal. It is, I feel satisfied, generally induced by pressure directly exerted upon the uterus by tight clothing, which forces it against the concave surface of the vagina. This surface gives the impinging part a slant forwards, and keeps it thus bent. Habitual constipation increases this vicious curve, and the two causes combined often result in this unmanageable form of the affection. This explains the fact, which all must have noticed, that in pure corporeal flexion the uterus is often high up in the pelvis, while in that of cervical form it is almost invariably low down. It likewise explains what my observation leads me to regard as a fact, that in nulliparous women the cervical and cervico-corporeal varieties preponderate in frequency over the corporeal form, which is generally met with in multiparous women.

There is still another pathological element which enters into the etiology of cervical flexion, and explains the phenomena with regard to them, which I have just mentioned. The uterus being forced downwards by influences exerting themselves upon the abdomen, if the utero-vesical ligaments be lax and yielding, corporeal flexion will occur, the cervix retreating under pressure.

If, however, these ligaments keep the cervix in close contact with the bladder, cervico-corporeal or pure cervical flexion will be developed. Parturition does more to stretch these ligaments than anything else, and thus cervical flexion is not so generally met with in women who have gone through that process as in those who have not. Corporeal flexion is the variety seen after parturition; the cervical and cervico-corporeal forms, those which we see in nulliparous women. Not only is this fact interesting in reference to pathology; it has an important bearing upon the treatment of cervical flexions. He who would treat these cases successfully must systematically stretch the ligaments which keep the cervix in an anterior position, and by this means strive to change the form to that of corporeal flexion.

Symptoms.—Anteflexion, pure and simple, that is, uncomplicated by other disease, is not accompanied by symptoms, unless it so obstruct the uterine canal as to prevent ingress and egress of fluids. Unless such obstruction exist, the symptoms attending it will be due to hyperæmia or endometritis, and not to the mere displacement.

Diagnosis.—As the finger passes into the vagina and touches the cervix, nothing abnormal will be discovered. But as it sweeps along the anterior wall of the uterus, about the os internum a protuberance will be met with which presses upon the bladder. The finger which has thus far explored being kept in contact with this mass, the disengaged hand should then be laid upon the abdomen and made to depress the anterior abdominal wall so as to approximate the finger in the vagina. By this means the shape, size, and sensitiveness of the body may be ascertained. The diagnostician is, however, still in doubt whether the enlargement may not be one due to fibrous tumor or cellulitis. This point he settles by placing the patient on the side, introducing Sims's speculum and gently probing the uterus to the fundus. Giving to the probe the curve which by vaginal touch he has been informed is that of the uterus, he carefully passes it in. Should it not proceed without obstruction, he withdraws it, alters the curve, and tries again. Having introduced it, he learns the course of the uterine canal, its length, and the sensitiveness of its walls. Should the probe have entered the mass felt in the vagina, that mass is the uterine body. Should it go in the normal axis or backwards, it is not the uterine body, but some growth in contact with it. In pure cervical flexion the neck will be felt sharply bent forwards, and in the double form both neck and body will be found flexed.

Prognosis.—The prognosis as to cure will depend upon certain circumstances which I will proceed to enumerate.

(*a.*) It is better in multiparous than in nulliparous women, because the vagina in the former more readily admits of the use of mechanical supports.

(*b.*) It is better in pure corporeal anteflexion than in those varieties in which the cervix is affected.

(*c.*) Where the cervix is thrown far back and lifted high in the pelvis, the prognosis is decidedly unfavorable, and more especially if there exist only a scanty vaginal pouch anterior to the neck.

(*d.*) If the flexure readily yield to extension by the probe, the prognosis is favorable. When it has become permanent and does not yield, prognosis is unfavorable.

(*e.*) Of all cases, the prognosis is most unfavorable in those in which the vagina joins the cervix very low down, near the os externum, and where the uterus is held high in the pelvis.

As regards the general health of the patient, the prognosis is not bad, but areolar hyperplasia of the uterine body may result from it, and its consequences commonly are sterility, cystic irritability, dysmenorrhœa, and leucorrhœa. Fortunately, if its evil results can be prevented or removed, the flexure need create no anxiety,—for in itself it is not of great importance.

Treatment.—The indications for treatment are very simple: to restore and retain the flexed part, or, failing in this, to remove any obstruction created by the flexion, while the malposition is allowed to continue. The fulfilment of the first alone is unimportant, as the part restored to position falls out of it, as soon as the restoring power is removed. It must be borne in mind that flexions are unlike versions in respect to rapidity of production. Versions commonly occur suddenly from some violent disturbing influence, under which circumstances they are susceptible of immediate relief. We have proof that flexions are sometimes thus induced, though by no means commonly so, unless occurring during pregnancy. They are usually the consequences of influences long kept up, and can rarely be overcome with any reasonable hope that they will not immediately recur.

Means for Preventing a Recurrence.—And now arises the important question, are there any means at our command by which anteflexion can be counteracted? Its answer is this: direct and immediate prevention is beyond attainment by any safe means at our command, but, indirectly, we may by perseverance accomplish it. Should the practitioner discover, for example, that endome-

tritis is the source of the evil, it should be treated; if it result from pregnancy, the dorsal decubitus should be observed until the causative influence has passed away; and if it arise from atrophy of the parenchyma, growth should be stimulated by sponge-tents, the galvanic current, &c. If tight clothing or abdominal weight appear to have produced the flexion, the remedy is self-evident, as it is, likewise, if the neck have been sharply bent forward by habitual fecal impaction.

The propriety of this course is very evident, but in practice it unfortunately often fails in effecting a cure. The disorder which has been productive of the lesion may be removed, and yet the result remain. Under these circumstances, or where flexion exists so as to produce dysmenorrhœa and sterility, without the coexistence of any other morbid state, what are we to do for its relief? It is evident that but two courses are open to us, to maintain the displaced part, or to leave it in its abnormal position, and prevent as far as possible its resulting evils.

In speaking of the treatment of versions, a variety of means for their relief were enumerated. These prove less efficacious in anteflexion. Abdominal and vaginal supports are available when the flexion is corporeal and yields easily, and in relieving a certain amount of version which commonly complicates flexions. They avail nothing in obviating the flexion if it be unyielding and affect the neck or this part and the body. Recognizing our poverty of resources in cases of version, M. Velpeau,[1] between thirty and forty years ago, conceived the very plausible idea of restoring the uterine axis to its normal direction, by introducing a stem to the fundus, and retaining it there. After experiment he abandoned it, and subsequently Amussat followed in his steps, both in essaying and casting it aside. In 1848, Prof. Simpson again brought it into notice in versions and flexions, and met with a warm ally in M. Valleix, of Paris. The instrument known as the intra-uterine, or stem pessary, unquestionably counteracts directly and immediately both versions and flexions. But it has been found to cause peritonitis and death in a number of instances, and in consequence it has been almost entirely abandoned. In this city, I am led to believe that it is very rarely employed, from the fact that I never hear it mentioned as a resource, and that at a recent discussion upon displacements in the Obstetrical Society, it was never once alluded to. In an essay read before the New York

[1] Discussion in Acad. de Méd., reported in Charleston Med. Journ., 1853.

State Medical Society, four years ago, Dr. Peaslee advocated its use, and stated that in his hands it has produced good results.

It is beyond question that in exceptional cases, and in such cautious hands as those of the writer last alluded to, the stem pessary may be productive of good, but a faithful trial of the instrument for twenty years by capable practitioners in different parts of the world, has not resulted in a verdict in its favor. It is difficult to explain the encomiums once showered upon it by its advocates, and the remarkable cures reported from the use of an instrument now viewed with disfavor by the great majority of practitioners. Nonat seems to have solved the paradox in declaring that, carried away by enthusiasm, "ils se sont laissés aller trop facilement sur le terrain glissant des illusions." Yet who will hesitate to indorse the sentiment expressed by Malgaigne, in the discussion upon the subject in the Academy of Medicine in Paris, in 1852, that, "a treatment which Amussat, Velpeau, Simpson, Huguier, and Valleix had tried, cannot, should not, be considered as repugnant to common sense."

At a medical convention held in Innsbruch,[1] Germany, in September, 1869, this subject received some attention. Spæth, of Vienna, expressed his belief in the disadvantages of the intra-uterine treatment of flexions, although he has found in some cases a total insensibility and an absence of reaction from the wearing of intra-uterine instruments. Hugenberger, of St. Petersburg, advocated the use of Simpson's pessary in flexions, and declared his experience to be, that it was not only tolerated, but did great good when properly applied and retained for a sufficiently long time.

Intra-uterine pessaries should be used with the greatest caution; the uterus should be prepared for tolerance of the foreign substance by trials of one, two, or three hours for a week before the introduction of one, and afterwards the patient should be carefully watched in order that the instrument may be removed on the first symptom of endometritis. Even the most ardent advocates of stem pessaries will admit the necessity for these precautions, and even their bitterest opponents must allow that with them as a safeguard, in certain cases they should be resorted to. To cast them entirely aside when such high authority recommends them, would be irrational and unjustifiable.

Figs. 148 and 149 represent the intra-uterine pessaries most commonly employed.

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[1] Am. Jour. Obstet., vol. iii, p. 180.

Although I have deemed it my duty to place the facts connected with the use of these instruments before the reader, I confess that in practice, although I have occasionally employed them, I place no reliance upon and avoid them whenever it is possible, on account of the dangers which attend upon their use. I feel confident, too, that by simpler and safer means I accomplish better and more certain results in these cases.

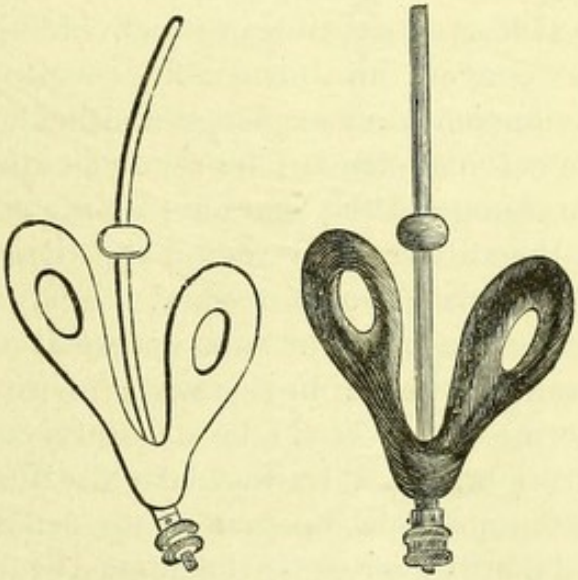
Let me first suppose that the case which presents itself is one of favorable character. The cervix is not very high up in the pelvis, the body only is flexed, the flexion yields to force applied, the vagina is capacious, and the anterior vaginal pouch is not small. Steady and persistent pressure kept up upon the base of the bladder, just below the fundus, by the anteversion pessary represented in Fig. 126, or by that shown in Fig. 124, will often give complete relief.

FIG. 148.



Peaslee's stem pessary.

FIG. 149.



Detschy's stem pessary. (Wieland and Dubrisay.)

While they are being used, all weight should be removed from the abdomen by an abdominal and a skirt supporter, the rectum should be carefully kept empty, and the patient directed to retain urine as long as possible. These cases are not only relievable by these means; they are unquestionably curable. After the deviation has been rectified, conception is more likely to occur than it was before, and its occurrence will usually be a great desideratum.

If the case be one of graver character; if the cervix alone or

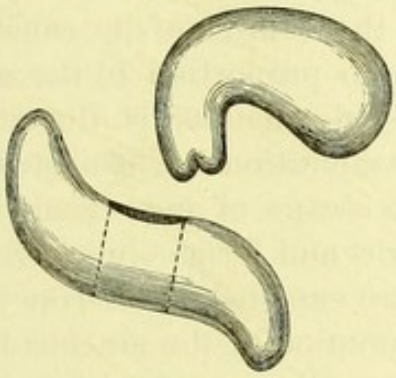
with the body, be flexed, and the flexure be unyielding, the prognosis as to cure will be not nearly so good, while the means which should be adopted are entirely different. In the first case, these were applied to the body; here they should be addressed to the cervix. There is no doubt of the fact, that in spite of treatment, a certain number of these cases prove incurable, except by the use of the knife.

In the treatment of such a case, the practitioner must bear in mind, that three indications must be fulfilled for the accomplishment of the cure of the case; first, stretching of the utero-vesical ligaments, in order that the cervix may retreat towards the sacrum; second, bending the neck into the proper axis, and third, the erection of the body. His earliest efforts should look to the accomplishment of the first of these; his subsequent ones to the second and third. It may be asked why such special attention should be given to the modification of a condition which is not an abnormal one—the length of the utero-vesical ligaments. My reply is this: a simple corporeal flexion is very generally curable, or at least susceptible of relief. If we can stretch these ligaments, we convert an intractable cervico-corporeal into a corporeal flexion, and thus exchange a difficult for a simpler case. Once let the cervical element be removed and two advantages are gained, the change in the character of the case just mentioned, and space in the ante-cervical region for the accommodation of the end of the vaginal prop or pessary.

The treatment of such a case as that which I have instanced, should be begun in this way: at intervals of five or six days, the uterine canal should be straightened by use of a tent of sponge or sea-tangle, introduced to the fundus by first being bent to accommodate the course of the canal. As this expands it slowly and gently overcomes the flexure by direct extension. This should be repeated in ordinary cases about four or five times. The same thing may be accomplished by the introduction of Elliot's uterine repositor in state of flexion, and then extending it by acting upon the screw at its base. This is a more rapid and less safe plan than the use of tents. After the utero-vesical ligaments and uterine parenchyma have been stretched in this way, and the canal temporarily straightened four or five times, the pessary of Dr. Hurd of West Point, Miss., should be introduced. This instrument, which is shown in Fig. 150, consists of a smooth block of hard rubber, or of a shell of the same material, which exactly fits and fills the vagina, and has an opening or canal run-

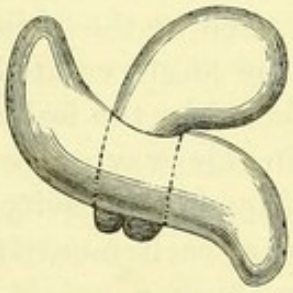
ning through its centre which receives the cervix uteri. It passes as readily into the vagina when greased as the cylindrical speculum does, and the cervix slipping into its canal is held as if in splints, and thus bent backwards. There is no other pessary with which I am acquainted that performs this function. It answers

Fig. 150.



Hurd's pessary.

Fig. 151.



Hurd's pessary. Uterus in position.

excellently in all cases, except those which belong to the most incurable of all classes of anteflexions, namely, in those where the vagina joins the cervix very low down near to the os externum. In these the cervix cannot project into the canal, and hence the splint-like action of the instrument is not developed. There is one precaution to be observed in reference to Hurd's pessary; if the instrument employed be too small, the cervix may be incarcerated. There are three sizes of the instrument, and a proper one should be selected. In all cases too it should be carefully watched during its sojourn in the vagina, that this accident may be avoided.

When cervico-corporeal and not simply cervical flexure exists, the use of Hurd's pessary should be alternated with that of one of those represented in Figs. 124 and 126. But the first not only splints the neck and thus gives it its proper direction; it also stretches the ligaments, and by its anterior and superior face lifts the flexed body.

By a careful appreciation of the character of the flexion, whether it be corporeal or cervical, and a resort to the method of treatment here advised, I have succeeded in relieving many of the most obstinate cases of this deviation. The treatment of this form of displacement always requires, however, great patience and perseverance.

Means of Obviating the Consequences of Flexion.—The reader should bear in mind these facts:

1st. That flexion as an independent condition is sometimes incurable; but that, in compensation, uncomplicated flexion is often not productive of symptoms, and calls for no treatment;

2d. That when complicated by morbid states, flexion may be much relieved by their removal;

3d. That when flexion occasions evil symptoms mechanically, we may frequently remove these by surgical interference.

If a piece of stiff tubing be bent, the calibre of its canal will be obliterated at the point of flexure in proportion to the acuteness of the angle created. In the same manner is the uterine canal affected by the lesion under consideration. The obstruction created in this way prevents the free escape of menstrual blood, which distends the cavity of the uterus and forms clots within it, and these at each menstrual period are expelled by uterine tenesmus. In consequence of this, inflammation of the mucous lining of the uterus arises, that in time may produce areolar hyperplasia, which favors further displacement by the increase of uterine weight attending it. The effort required for expelling clotted menstrual blood constitutes painful menstruation, and the same obstruction which retards egress of fluids interferes with ingress and prevents conception. Thus it is that we so often meet with the following conditions complicating flexions, sometimes as its causes, but at others as its results:

Endometritis;
Areolar hyperplasia;
Version;
Dysmenorrhœa;
Sterility.

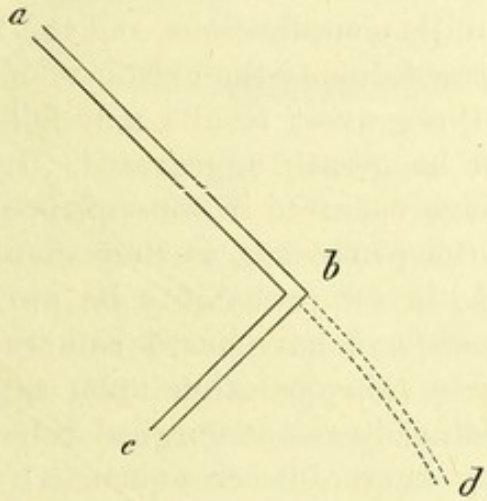
Having been forced to accept the displacement as an irremediable evil, we now endeavor to strike at the source of the pathological series which results from it by overcoming obstruction at the point of flexure; in other words, by substituting a straight for a crooked canal. This can be accomplished by cutting through one wall of the cervix.

If the posterior wall, in a case of anteflexion, be cut towards the vaginal junction so that a probe will pass into the uterus in the direction of the line *a d*, the obstruction resulting from the existence of an angle will be removed, and thus fluids may have free entrance and exit. The mechanical principle of the procedure is explained by Fig. 152.

The operation, which is extremely simple, is thus performed.

The patient being placed in position, and Sims's speculum introduced, the cervix is seized and held firmly by a tenaculum. Then, by means of a pair of long-handled scissors, an incision is made

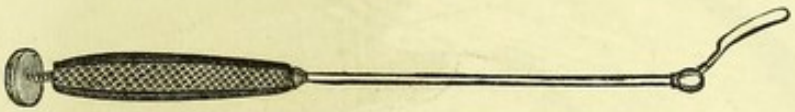
FIG. 152.



Creation of new uterine axis. *a b* represents the axis of the body; *b c* represents the axis of the neck; *b d* represents the axis created by incision.

as far as can be conveniently done without involving the vaginal junction, which will probably be as far as the point *b* in Fig. 152.

FIG. 153.



Sims's knife.

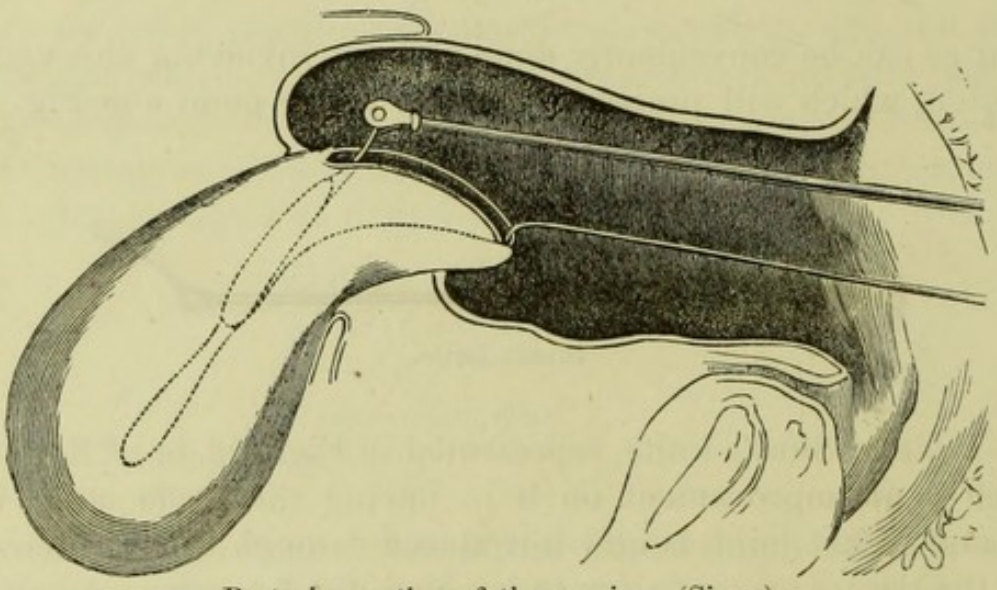
The blade of Sims's knife, represented in Fig. 153, or of Emmet's, which is an improvement on it in having the blade move by a ball-and-socket joint, is now introduced through the os internum, and the tissues are cut so as to lay open the posterior wall of the cervix. A little shoulder will, as Dr. Emmet has pointed out, be generally found to exist on the anterior wall of the canal. To this the blade of the knife should now be turned, and it should be cut through. Fig. 154 explains the operation.

After the operation is completed, a roll of cotton saturated with glycerine should, by means of the instrument represented in Fig. 76, be left in the canal, and a tampon of cotton be placed in the vagina to prevent hemorrhage, which sometimes follows. The patient should be kept in bed for a week or ten days, and once in twenty-four hours the dressing should be removed and the lips of the wound separated by the uterine sound, which

should be gently passed into the cavity of the uterus on each occasion. By this means the evils recorded as most frequently accompanying flexions may often be very markedly mitigated and sometimes entirely removed.

Should an error be made as to the etiology of the displacement or the recognition of its complications, and this apparently trifling operation be performed during the existence of peri-uterine cellulitis or peritonitis, the gravest results may follow, and the sufferings of the patient be greatly aggravated. Indeed, had all the fatal cases which have occurred in consequence of this operation been published to the profession, as they should have been, the list would, I think, in all probability be an appalling one. I myself know of three, and have heard rumors of several others. It may be asked why this operation upon a part of the uterus which does not ordinarily resent surgical interference should so often be followed by dangerous consequences? My conviction is,

Fig. 154.



Posterior section of the cervix. (Sims.)

that the operation *per se* is not attended by great danger. It is the performance of it when pelvic peritonitis exists in chronic form that has caused it to produce such bad results. Even a minor operation, performed in the face of a condition which should interdict the use of the uterine probe, may set up a train of symptoms which may lead to a fatal issue.

I have so often found the slit in the posterior wall, made after Sims's method, heal up for a great part of its extent some months after the patient has passed out of observation, that I now resort to a different procedure. By means of the double scissors repre-

sented in Fig. 155, I cut by one stroke a strip of tissue one-eighth of an inch wide, and extending from the os externum to the os

Fig. 155.



internum. Having removed this, I then cut by the same instrument a small piece out of the upper extremity of the incision, as the instrument always slips downwards a little and fails to cut as high as is desirable. Should there be any difficulty in introducing one blade of this into the cervix, snipping the os externum with scissors will remove it. By this means I have obtained much more permanent results than by the single incision. Dr. Nott has gone farther than this, and in these cases removed the entire posterior wall of the cervix, as near as possible to the utero-vaginal junction.

After operation, to prevent early contraction of the cervical canal, various plugs have been suggested. That shown in Fig. 156 will, I think, answer the purpose very well. It consists of a

Fig. 156.



tube of hard rubber, two inches long, and perforated by small openings at its upper extremity. Within this is placed a delicate steel spring, with two little spurs attached near the lower extremity, and projecting through holes in the tube for about the sixteenth of an inch. The extremities of this spring project from the lower extremity of the tube. When this tube is to be introduced, the projecting extremities of the spring are seized and compressed by forceps, the little spurs retreat, and the instrument is inserted. As soon as the forceps are removed, the spring expands, drives the spurs out of the holes on the side of the tube, and they prevent the displacement of the tube until the forceps again compress the projecting extremities.

Retroflexion.

Definition and Frequency.—Retroflexion is said to exist when the body of the uterus is bent towards the sacrum so as to create an angle on the posterior wall.

Judging from the statistics of Dr. Meadows, this form of deviation is the most frequent of all the anterior and posterior displacements. Out of 84 cases of these varieties, retroflexion occurred 34 times, while retroversion occurred 18 times, anteversion 12 times, and anteflexion 20 times. Thus, according to the evidence collected by him, retroflexion is one-third more frequent than anteflexion, almost three times as common as anteversion, and almost twice as common as retroversion. Nonat,[1] on the other hand, met with it only 14 times in 339 cases of displacement, and Scanzoni in 54 cases of flexions found 46 anteflexions and only 8 retroflexions.

At the same time that every observer must admit the uncertainty attending a reference to his general impressions upon such a subject, he is, in view of the very discrepancy to which I have referred, almost forced to appeal to his own experience, unrecorded though it may be in figures. Mine is that I meet with retroversion more frequently than with any other displacement, and that next in order of frequency come anteversion, anteflexion, and retroflexion.

While anteflexion is so frequent in the virgin state as to have been regarded as a physiological condition, retroflexion rarely occurs.

Pathology.—Retroflexion is most frequently the result of some influence which weakens the tone of the uterine walls, but, even when this is normal, any force directly applied may overcome it and produce a flexure.

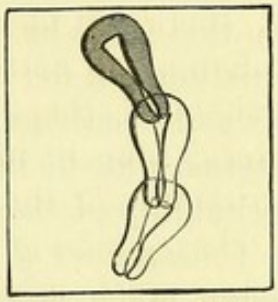
One reason why we should anticipate that retroflexion would be less frequent than anteflexion, is that the natural anterior obliquity of the uterus favors the latter and opposes the former displacement. Another is the fact that the former is more thoroughly guarded against by ligamentous support; the round ligaments, running as they do from the horns of the uterus to the vulva, decidedly tending to prevent its occurrence. Not only do they do this; the uterus being kept by them in anterior inclination, should softening of its structure occur, or any direct force be exerted upon it, naturally bends forwards.

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[1] Op. cit.

If this be so, it may be asked why endometritis with areolar hyperplasia so frequently results in retroflexion as well as in anteflexion. It does so because the first effect of the increased uterine weight attending that disease is descent of the uterus. This relaxes the round ligaments, tends to bring the uterine axis in coincidence with that of the middle of the pelvis, and favors retroflexion. Fig. 157 will explain this. For a time the tendency is to descent and coincident retroversion. This continues until the progress of the cervix is checked by the utero-sacral ligaments. Then the heavy body bends the weakened tissue at the os internum, and retroflexion results.

Fig. 157.



The uterus descending changes its axis.

Varieties.—This displacement has been divided into varieties dependent upon degree of intensity. These are so entirely arbitrary that they may as well be ignored.

Causes.—The special causes may be thus presented:

Influences weakening uterine support.

Endometritis;
Areolar hyperplasia;
Parturition;
Pregnancy;
Fatty degeneration;
Sudden and violent efforts.

Influences increasing uterine weight.

Areolar hyperplasia of body;
Pregnancy;
Subinvolution;
Fibrous tumors;
Intra-uterine accumulation of fluid.

Influences pushing the fundus or cervix backwards.

Abdominal or uterine tumors;
Habitually distended bladder;
Fecal masses above the fundus.

Influences exerting traction backwards.

False membranes.

At the same time that all these causes must be admitted, it will generally be found that retroflexion is due to endometritis, which

has produced chronic congestion or areolar hyperplasia, and increased the weight of the body of the uterus.

Symptoms.—If the angle produced be sufficient to obliterate the uterine canal, dysmenorrhœa and sterility will result. If it be not so, there will be no symptoms except those due to disordered circulation and nervous compression,—uterine and pelvic neuralgia. I should perhaps except uterine colic, a violent tenesmus of the uterus, due to imprisonment of mucus by the obstruction, and irritability of the rectum.

Consequences of Retroflexion.—The post-uterine peritoneal space being much more extensive than the anterior, retroflexion proceeds to a more aggravated degree than anteflexion. The body sometimes descends to the upper extremity of the vagina, and instances are recorded by Rokitansky and Schott in which it has penetrated the walls of the rectum and vagina, and forced itself into these canals. This of course is a very rare occurrence, but it is worthy of mention as showing how great is the pressure which a retroflexed uterus may exert. The ordinary consequences of the affection are—

Dysmenorrhœa;
Endometritis;
Sterility;
Areolar hyperplasia;
Pelvic peritonitis.

As rare complications may also be recorded, hæmatometra and hydrometra from imprisonment of fluids by obliteration by flexure at the os internum. Should pregnancy occur during the existence of this deviation or retroflexion complicate pregnancy, and the fundus be incarcerated below the promontory of the sacrum, abortion will result. This cause of that accident is by no means rare.

Diagnosis.—The diagnosis is made by the following means:

Vaginal touch;
Conjoined manipulation;
Rectal touch;
The uterine probe.

The patient lying on the back, the index finger is introduced to the cervix, which is found in its normal place. It is then swept over the base of the bladder, where nothing abnormal is observed. Then it is passed into the fornix vaginæ, and here a round tumor continuous with the ridge of the cervix is discovered. The dis-

engaged hand is then placed on the abdomen, and made to approximate the finger in the vagina, so as to grasp the body of the uterus. If the patient be thin, this will yield good results, but not otherwise. The finger should now be carried into the rectum, in order to study further the character of the tumor pressing upon this canal. The patient being then placed upon her side and the speculum introduced, the uterine probe, which has been curved in accordance with the direction impressed on the mind by the sense of touch, is gently passed into the uterine cavity to the fundus, which completes the diagnosis.

Differentiation.—Retroflexion may be confounded with fecal impaction, fibrous tumors, cellulitis or peritonitis, and a prolapsed and enlarged ovary. The careful practice of the four diagnostic methods mentioned, will remove all doubt.

Treatment.—If the displacement should be simple and uncomplicated, as will sometimes be the case, it will require treatment in reference to obstruction to the ingress and egress of fluids, and to the nervous and circulatory disorders which are mechanically excited. If it be a concomitant of any disease, this at the same time with the symptomatic displacement should receive attention. In many cases the displacement, although a result of endometritis, reacts upon this condition, aggravating it and preventing, or, at least, retarding cure. Under these circumstances not only must the original affection receive attention; its chief symptom should do so at the same time.

In replacing the flexed part no great degree of difficulty is generally experienced. The patient being placed in the knee-elbow position, or upon the left side, two fingers of the right hand should be slid along the posterior vaginal wall until they reach the tumor felt pressing upon the rectum. Then the perineum being lifted so as to admit air into the vagina, the fundus is steadily pushed upwards to its place. This plan will almost always yield success. Should it not do so, Sims's speculum should be introduced, and the malposition rectified by two sponge-holders. This method will very rarely fail. If it do so, Sims's repositor should be employed, as explained when treating of anteflexion.

When it is proposed to sustain the flexed organ, all weight should be removed from the hips by a skirt supporter, tight dressing prohibited, and the patient cautioned against all muscular efforts. The abdominal walls, if lax, should be strengthened by an abdominal supporter, and a pessary adjusted so as to give direct

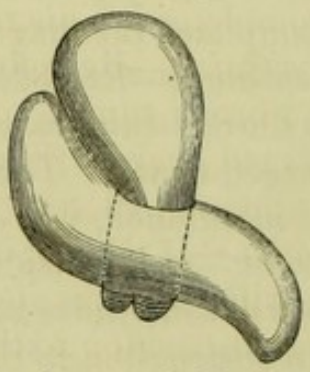
support to the displaced part. Any one of those advised in retroversion may accomplish this result. Albert Smith's, Hewitt's, or Scattergood's, are peculiarly applicable. In obstinate cases, or those in which tenderness of the flexed body interdicts the use of these instruments, Hurd's pessary, Fig. 158, will be found to answer an excellent purpose.

Fig. 158.



Hurd's pessary.

Fig. 159.



Retroflexed uterus in Hurd's pessary.

The inflated soft rubber pessary of Hoffman, Fig. 136, is also a serviceable temporary instrument under such circumstances. But where tenderness is excessive, it will often be found to be the wiser course to pack the fornix with medicated cotton or sponge, and elevate the whole uterus, as advised in treating of retroversion. By employing this method for a time, a pessary will soon be tolerated.

If these means be faithfully and perseveringly resorted to, I feel confident that a resort to the dangerous intra-uterine stem will become very infrequent.

Lateroflexion.

Sometimes the uterus is flexed to the right or left side as a consequence of inflammatory disease, increased weight, or direct pressure. This variety of displacement rarely attains to such a degree, however, as to result in obstruction of the uterine canal. Its chief importance is connected with diagnosis, for it may readily be mistaken for periuterine inflammation or a fibrous tumor. The practice of conjoined manipulation and the use of the uterine probe will generally settle the point.

Treatment.—The treatment of lateroflexion should be conducted upon precisely the same principles which guide us in reference to anteflexion and retroflexion.

Compound Flexions.—Besides the simple varieties of flexion mentioned, we meet with combinations of them. Thus we may find a uterus flexed forwards and laterally; backwards and forwards; backwards and laterally, &c.

These varieties are known as—

Retro-anteflexion;
Retro-lateroflexion;
Ante-retroflexion;
Latero-anteflexion, &c.

The student need not memorize these, but merely keeping in mind the fact that such combinations are possible, he will readily recognize them at the bedside if he have mastered the three chief forms already treated of.

As I have elsewhere alluded to the statistics of Nonat[1] upon the relative frequency of displacements, it may not be uninteresting to give his full table before closing this subject.

NONAT'S STATISTICAL TABLE.

Number of cases examined,		339
Anteversion,	135	
Retroversion,	67	
Anteflexion,	33	
Retroflexion,	14	
Lateroflexion,	1	
Retro-anteflexion,	10	
Prolapsus,	2	
Retro-lateroflexion,	1	
Retro-lateroversion,	2	
Ante-retroflexion,	2	
Lateroversion,	1	
Latero-anteflexion,	4	
Ante-lateroflexion,	2	
Not specified,	65	

[1] Op. cit., p. 416.

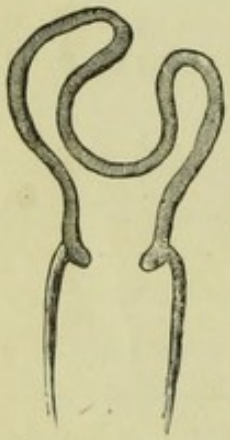
CHAPTER XXIII.

INVERSION OF THE UTERUS.

Definition.—This dangerous and infrequent form of displacement consists in the turning of the uterus inside out. As the bottom of a bag may be pushed through its mouth, so that the inner surface becomes the outer, so may that of the uterus, and the occurrence of such an accident constitutes the disease which we are considering.

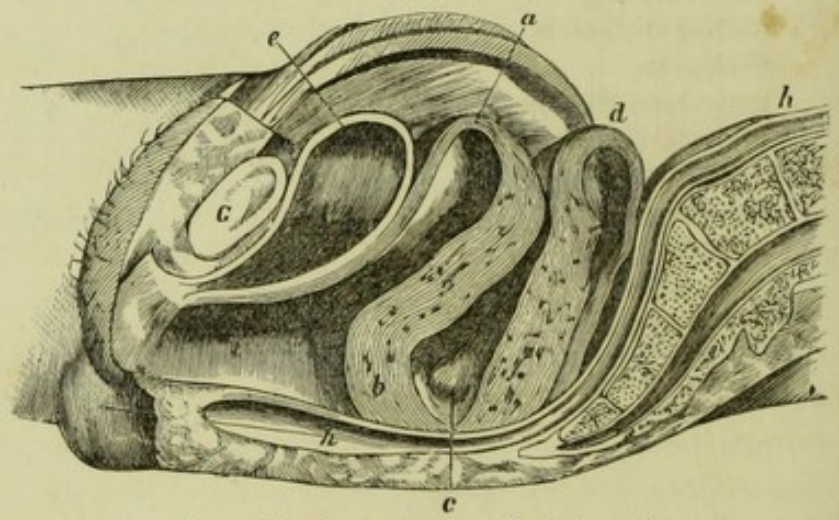
Varieties.—Writers differ in classifying the varieties of the affection, some describing three and some four forms. For practical purposes all these may be brought under two heads,—partial and complete. In the first the body has become depressed, but has not passed through the os. In the second the uterus has been turned completely inside out, and the inverted fundus and body hang in the vagina or between the thighs, "*velut scrotum*,"

Fig. 160.



Partial inversion.

Fig. 161.



Complete inversion. (Horteloup.)

as it has been expressed by Hippocrates. Fig. 160 represents the first, and Fig. 161 the second form of the accident.

In addition to these varieties the accident must be divided into acute and chronic, or sudden and gradual inversion, as it occurs rapidly or slowly.

Normal Anatomy.—In treating of flexions of the uterus, it was remarked that they are chiefly prevented by the resisting nature of the parenchyma of the cervix which supports the fundus and body. A similar function on the part of the entire uterine structure keeps the cavities of the neck and body closed, and prevents inversion. Should that power, which in the pregnant uterus we call contractility, and in the non-pregnant, tone, be to any great degree impaired, the body of the organ, bereft of support, will incline to one side or the other. Should it be entirely abolished, the fundus under the influence of traction or downward pressure may pass through the unresisting os and escape into the vagina, constituting inversion. I once saw this perfectly illustrated in a cadaver upon which I was called to perform version soon after death. As I extracted the child the flaccid uterus followed it directly and was completely inverted.

Pathology.—The accident depends for its production upon two elements—

1st. Relaxation and inertia of the uterine walls;
2d. Downward traction or pressure.

The first of these may be a primary and original state, or it may be induced by the second after months of exhausting action. For example, after labor the uterine walls may remain lax and atonic from inherent inertia; or their tissue in the non-pregnant state may be firm and resisting, yet in time be overcome by the traction and dilatation exerted by a large fibrous polypus attached to the fundus.

Mechanism.—It is generally supposed that the part of the fundus which first undergoes inversion is the middle. This is denied by Kiwisch, who maintains that one horn first inverts itself and is followed by the fundus, the other horn, and then the entire body. I have met with one case which proves incontestably that, even if this be not a rule, inversion at least occurs in this manner sometimes. A patient who for several years had suffered from menorrhagia, applied to Prof. C. A. Budd, of this city, for treatment. Upon examination he discovered what he supposed to be a fibrous polypus equal in size to a hen's egg attached to the uterine cavity near the entrance of the right Fallopian tube. Carefully differentiating this, as he supposed, from partial inversion, he applied the écraseur and removed it, when he discovered that he had removed one horn of the uterus with a part of the corresponding Fallopian tube and round ligament. The case, which

was one of partial inversion, was not susceptible of diagnosis. The menorrhagia attending it was entirely relieved by the operation, the patient rapidly recovering.

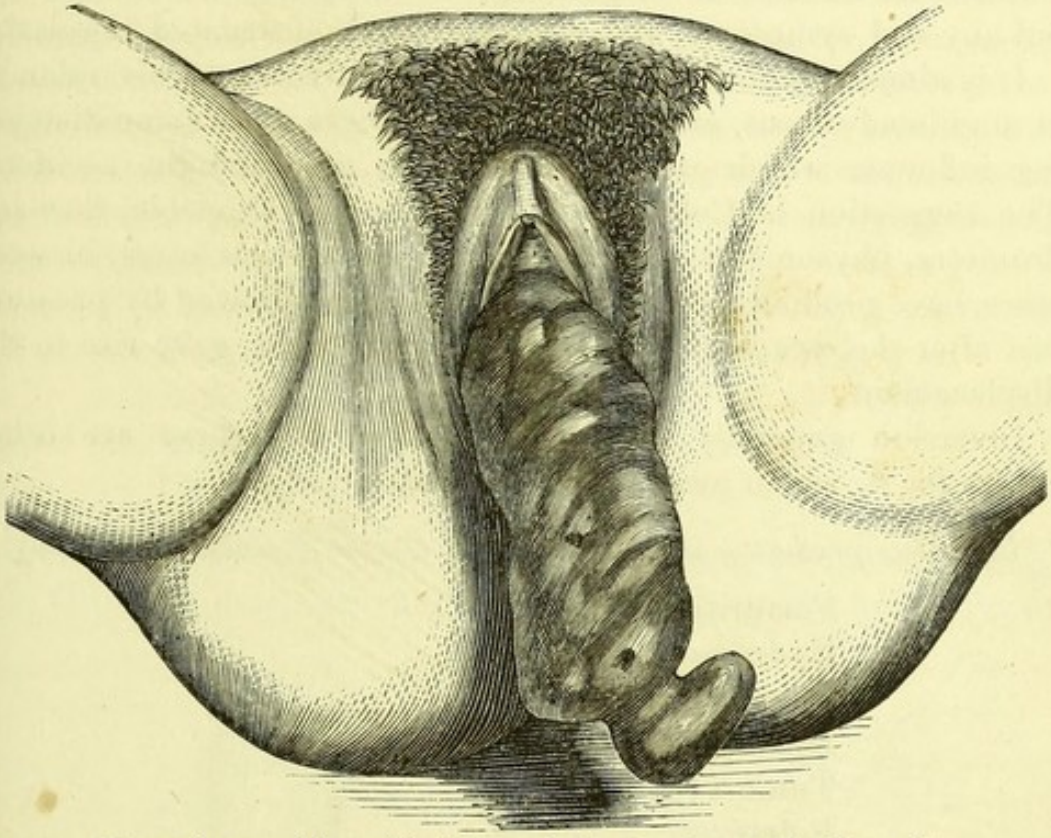
When the accident begins in this way, the inverted horn pulls down the other parts, with greater or less rapidity, and thus the method of occurrence may be lost sight of. Rokitansky, in speaking of irregular post-partum uterine contraction, thus describes partial inversion, with which he has twice met: "We must here mention a very singular circumstance which may, on account of the consequent danger, become important, and may even be misunderstood in post-mortem examinations; it is paralysis of the placental portion of the uterus occurring at the same time that the surrounding parts go through the ordinary processes of reduction. It induces a very peculiar appearance. The part which gave attachment to the placenta is forced into the cavity of the uterus by the contraction of the surrounding tissue, so as to project in the shape of a conical tumor, and a slight indentation is noticed at the corresponding point of the external uterine surface. The close resemblance of the paralyzed segment of the uterus to a fibrous polypus may easily induce a mistake in the diagnosis, and nothing but a minute examination of the tissue can solve the question. The affection always causes hemorrhage, which lasts for several weeks after childbirth, and proves fatal by the consequent exhaustion."

Dr. Duncan, of Edinburgh, maintains that the uterus is liable to a species of reverse, or, if I may so express it, an inverted contraction of its muscular fibre after delivery, which causes inversion. I have seen nothing to make me accord with this view.

Causes.—Anything which produces distension and relaxation of the tissue of the uterus prepares the way for inversion so completely that a very trifling exciting cause may produce it. For example, any decided traction or pressure exerted upon the fundus of a uterus thus affected, even to a limited degree, may directly result in it. Traction and relaxation, when combined, are evidently sufficient for the induction of the accident, and it is generally to a union of the two that it is due. The question now arises whether either of them alone can cause it. With reference to the efficiency of the second element, the answer may be affirmative, since, with complete relaxation, inversion may occur from a very insignificant exciting cause, as coughing, sneezing, or a change of posture. But as to the possibility of any amount of

force inverting the non-pregnant and undilated uterus there is much doubt. At first thought every one will feel inclined to express a decidedly negative opinion, but the evidence on record in favor of such a possibility is too strong to be entirely ignored. A portion of it is therefore laid before the reader.

Fig. 162.



Uterus inverted by a fibroid attached to fundus. (McClintock)

Puzos,[1] in 1744, read before the Academy of Medicine of Paris a memoir in which he declared that he had seen the accident in women who had never borne children. Boyer[2] cites a similar example in a female whose uterus contained no foreign body, and Daillez[3] tells us that Baudelocque met with a case in a girl fifteen years of age, in whom clandestine delivery could not have occurred, since a perfect hymen existed.

Prof. Willard Parker, of New York, places at my disposal the following case. A young woman who had borne one child, seven or eight years previously, but had never had any recognized uterine disease, while making a violent effort in rolling tenpins, suddenly felt something give way within her, after which she suf-

[1] Colombat on Females. Meigs, p. 182.

[2] Traité des Mal. Chirurgicales.

[3] Colombat, op. cit.

fered the most intense pain and became completely disabled. Dr. Parker being called to see her, after a hasty examination coincided with the opinion of the attending physician, that a polypus had been suddenly expelled and was hanging in the vagina. Impressed with this belief he removed the whole mass, when, to his surprise, he found that he held in his hands the inverted uterus with its tubes and ligaments. The patient recovered without any bad symptoms, and subsequently menstruated regularly.

It is almost impossible to admit the occurrence of inversion in an undilated uterus, and probably in all these cases some distending influence which escaped observation preceded the accident. The suggestion of Colombat is certainly very plausible, that hydrometra, physometra, or retention of the menses must, in such cases, have produced dilatation, which, being followed by pressure just after the escape of the contained air or fluid, gave rise to the displacement.

Inversion generally follows parturition, but there are other causes for it, which may be thus tabulated:

Influences producing inversion through uterine distension and atony.

Parturition;
Hydrometra;
Physometra;
Hæmatometra;
Tumors;
Polypi;
Hydatids.

Influences producing inversion by exertion of pressure or traction.

Traction on placenta;
Traction by polypi or tumors;
Sudden delivery of child by traction;
Muscular efforts when relaxation exists.

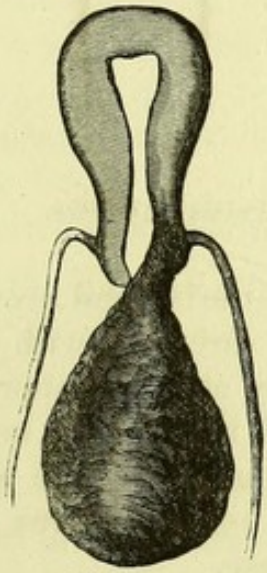
Instances of its production by all these causes are on record, though the greatest number of cases has followed parturition. Of 400 cases collected by Dr. Crosse of Norwich, England, 350 followed delivery, and of the remaining 50, forty were due to polypi. This disproportionate frequency does not, however, invalidate the fact that the other causes mentioned have resulted, and may result in the accident. Most frequently it occurs very soon after delivery, though Aué and Baudelocque report its having taken place on the third, and Leblanc on the tenth day.

Symptoms.—Should inversion occur suddenly, as for instance after delivery, the patient will complain of discomfort about the vulva, faintness and nervous disturbance. Hemorrhage and tendency to collapse will show themselves, and unless proper treatment be adopted at an early period, death may ensue. A physical examination will at once settle the diagnosis, for a large, flabby, globular mass, perhaps with the placenta attached to it, will be found in the vagina, if the condition be incomplete, or between the thighs of the patient if it be complete. But very often no diagnosis will have been made at the time of its occurrence, and months, perhaps years, afterwards, the physician will be called upon to determine the character of the case, which will probably present the following symptoms:

Occasional or constant hemorrhage;
Dragging pains in back and loins;
Difficulty in locomotion;
Difficulty in defecation and micturition;
Chlorosis and its accompanying evils.

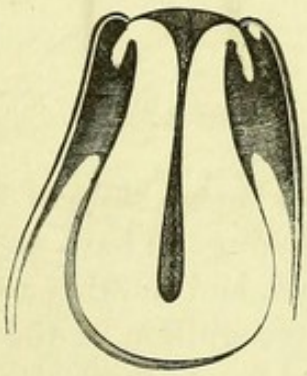
Physical Signs.—All these symptoms belong as much to polypus, fibrous tumor, and cancer, as to inversion, and to determine

FIG. 163.



Polypus.

FIG. 164.



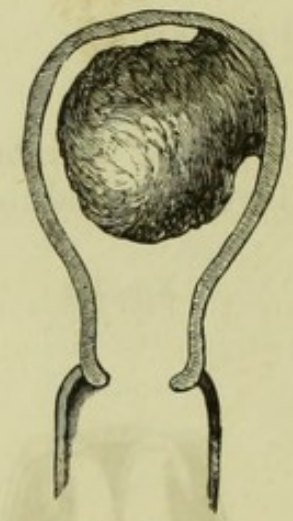
Inversion.

their true cause, physical exploration is indispensable. Should the inversion be complete, the finger being introduced into the vagina will meet with a tumor which the examiner will at once know is either the displaced body of the uterus or a polypus, and his attention will be directed to their differentiation.

IF IT BE A POLYPUS,	IF IT BE INVERSION,
The probe will pass by its side into the uterus.	The probe will be arrested at the neck;
Conjoined manipulation will reveal the uterine body;	Conjoined manipulation will reveal a ring where one horn of the uterus should be;
Rectal touch will reveal the uterus;	Rectal touch will not reveal the uterus;
Recto-vesical exploration will reveal the uterus;	Recto-vesical exploration will not reveal the uterus;
The pedicle will probably be small.	The pedicle will be large.

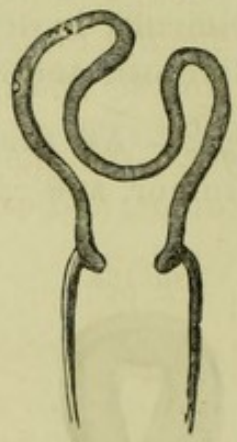
In certain very rare cases, a large fibrous tumor growing from one lip of the cervix, will lead to the belief in inversion in the following manner: the pedicle setting up inflammation in the cervical canal complete adhesion takes place, so that a probe can nowhere be passed. An examination of Fig. 163, will readily

Fig 165.



Sessile fibroid.

Fig. 166.



Partial inversion.

explain how such a state of things might arise, and prove exceedingly perplexing. I have seen two such cases, one with Dr. Byrne of Brooklyn, and another with Dr. Ross at my clinique, in both of which recognition of the presence of the uterine body above, emboldened me to work the probe through the tissue around the pedicle of the growth, causing it to enter the uterus, and thus prove incontestably the nature of the case.

Should the inversion be incomplete, diagnosis will always prove difficult, and in fat women often impossible. Differentiation from a fibrous tumor will depend upon the following signs:

IF IT BE A FIBROID GROWTH,	IF IT BE PARTIAL INVERSION,
The probe will show increase of uterine cavity;	The probe will show diminution of uterine cavity;
Conjoined manipulation will reveal rotund body of uterus;	Conjoined manipulation will reveal small abdominal ring;
It will have come on very gradually;	It will have occurred more suddenly;
It will have no reference to parturition.	It usually follows parturition.

Course, Duration, and Termination.—All these are very variable. The accident occurring after delivery may rapidly, unless relieved, produce death by hemorrhage and exhaustion; or it may continue for many years, giving very little annoyance; or, again, it may render the life of the patient miserable on account of hemorrhage and other attending symptoms, and nevertheless last for years. As a rule it may be stated that inversion continues until relieved by treatment, and yet even this is not without exceptions. The womb has been known under these circumstances to replace itself by its own contractions when the accident has occurred after labor. Prof. Meigs minutely reports an instance where such spontaneous reposition took place more than two years after the occurrence of the accident, and Dr. Jason Huckins, of Maine, gives me the account of an undoubted instance taking place about two months after inversion. Even admitting these and other cases, spontaneous reduction must be regarded only as a curiosity, and not as a process to be anticipated.

Prognosis.—The prognosis of chronic inversion is at all times grave. Repeated and prolonged hemorrhages prostrate the patient, and expose her to all the risks of the worst forms of uterine polypi. But not only is she exposed to dangers inherent to the displacement from which she suffers; those attendant upon an erroneous diagnosis are very great. To one alive to the possibility of confounding the condition with fibrous polypus, the methods of differentiation are numerous and reliable; but to the rapid and careless diagnostician, who does not allow that possibility to enter his mind, and consequently does not carefully weigh the evidences in favor of and against it, there is a great likelihood of error.

One who is aware of the great frequency with which amputation of the inverted uterus has been practiced, under the impression that a fibrous polypus was being removed, cannot but wonder that errors of diagnosis have so often occurred, when so many methods of differentiation were at command. The explanation is that to which I have referred, namely, that the possibility of error was

not entertained. Out of fifty-eight cases of inversion of which a report is given hereafter, and in which amputation was practiced, seven were mistaken for polypi.

Even where a correct diagnosis has been made, still another danger menaces the patient; that of rupture of the vagina in efforts made at reduction of the inverted organ. A small hand, a cautious, unexcitable mind, and constant vigilance during all efforts by taxis, must be combined with thorough knowledge of the subject, to avoid this imminent danger. Even with this combination, it is a matter of surprise to me, from my experience with these cases, that the accident has not occurred much oftener, and I confess that I should prefer to trust a patient in whom I felt great interest to the operation of abdominal section, which is hereafter described, than to that of prolonged taxis at the hands of a rough, unintelligent, and inexperienced practitioner. To one thinking upon this subject for the first time, this position will appear exaggerated and indefensible; but I assume it after mature reflection.

When the prospect of returning the uterus seems brightest, the practitioner is sometimes disappointed by the existence of adhesions. Thus Velpeau,[1] after the removal of a polypus attached to an inverted uterus, was completely foiled in restoring it, and the patient died from peritonitis.

Treatment.—In the treatment of inversion, three methods have been adopted.

1st. The organ has been left in malposition; hemorrhage being controlled by hæmostatic means.

2d. The displaced organ has been amputated.

3d. The inversion has been reduced by taxis, by elastic vaginal pressure, or by a combination of the two.

Methods of Checking Hemorrhage, the Uterus being left in situ.—Should the operator fail in repeated attempts at reduction, it becomes a question whether he should amputate the displaced organ or leave it in its abnormal position and endeavor to combat the evils resulting. The greatest of these is unquestionably hemorrhage, which steadily exhausts the patient; but others of less moment arise from dragging of the uterus upon its ligaments and the mechanical inconvenience of a tumor in the vagina. If the patient be near the menopause, both of these may diminish by atrophy and cessation of menstruation. Should she be young,

[1] Becquerel, op. cit., p. 306.

artificial means may, in a limited degree, accomplish the same results.

The most vascular growths, such, for example, as hæmorrhoids and nævi, may be diminished in size and rendered non-hemorrhagic by astringents or caustics, which destroy their superficial varicose vessels and leave a less vascular tissue beneath. The inverted uterus may be similarly acted upon, not only in checking hemorrhage, but in producing atrophy, and thus removing, to a certain extent, the two sources of suffering.

Solutions of alum, tannin, persulphate of iron, or acetate of lead may with advantage be injected into the vagina so as to bathe the uterus freely, or they may be placed in contact with it by means of pledgets of cotton. Should these fail in checking the flow, a plan, proposed by Aran, of applying caustics to the whole bleeding surface may be resorted to. The tumor being drawn down and exposed to view as much as possible, its surface is seared by the actual cautery or touched by potassa cum calce or the mineral acids. The organ, after being bathed in a neutralizing fluid, is then enveloped in lint, so as to protect the vaginal walls, and placed within the pelvis. I have never seen the method employed, but would not hesitate in an appropriate case to venture upon it. Aran declares that not only is hemorrhage checked by it, but great diminution of the tumor effected. The procedure recommends itself as eminently rational, and when it is remembered that the only recognized alternative is amputation, the propriety of giving it consideration must be admitted.

Many cases are on record in which the uterine mucous membrane has become altered so as to resemble skin, and in which the patients have lived without suffering for many years. Dr. Alexander H. Stevens had one case under observation for more than thirty years; Dr. Charles A. Lee diagnosticated one which had remained undetected for twenty-five years; and the works of older writers offer many other examples. If we can bring about a similar condition by artificial means and avoid the operation of ablation, we will certainly be acting in the best interests of the patient. It is for this purpose that cauterization offers itself as a resource.

Methods of Amputating.—Although it cannot be denied that instances may present themselves in which, from impossibility of returning the inverted uterus, removal of the whole organ is indicated, it is equally undeniable that the operation has been resorted to very often upon insufficient grounds and before efforts at reduction had been fairly tried. Tyler Smith succeeded after

persevering for eight days, and Dr. Emmet, in one instance, labored incessantly for four hours, when success crowned his efforts. In the hands of many practitioners both these cases would have been treated by amputation before success was attained. Amputation of the inverted uterus will surely be less frequently performed in the future than it has been in the past. It is destined to assume among operative procedures its proper place as a last resort. In addition to its own manifest and inherent dangers it must ever present these great objections:

1st. Hernia of the abdominal or pelvic viscera may take place into the inverted sac and cannot be detected;

2d. It usually produces emansio-mensium and its train of evils;

3d. It necessarily results in sterility.

It is impossible to conceive of circumstances which would justify the procedure before full consultation with the most able counsel attainable.

Removal of the uterus, although attended by great danger, often ends in recovery. Radford, J. C. Clarke,[1] and others have reported cases in which an inverted uterus has sloughed off from strangulation without a fatal issue, and Osiander for many years showed a patient in his lecture-room from whom, after delivery, the midwife tore away not only the placenta but the inverted uterus to which it was attached. The most comprehensive view of the results of amputation is presented us by Dr. West in the following table:

		Recovered.	Died.	Operation abandoned.
Uterus removed by ligature, ...	45	33	10	2
" " " knife or écraseur, . .	5	3	2	
" " " knife or écraseur, preceded by the ligature, . .	9	6	3	
	59	42	15	2

Four methods of amputation have been employed; by the knife, the ligature, the écraseur, and a combination of the ligature with either of the others. The ligature is objectionable, because it is slow in action, leaves a putrefying mass for a long time in contact with the vaginal walls, and exposes to peritonitis and septicæmia. The use of the knife exposes to the danger of hemorrhage. Galvano-cautery is the only means which is superior to the écraseur, which in great degree prevents hemorrhage, at the same time that it is rapid and certain in its action. In applying its chain around

[1] Dublin Journal, 1837.

the upper portion of the tumor, the organ should be drawn down as far as possible through the vulva.

If amputation become necessary soon after delivery, when great vascularity exists, the ligature may be applied for thirty-six or forty-eight hours, after the plan pursued by Dr. McClintock, of Dublin, and then the écraseur resorted to. Or should the galvano-caustic be accessible, it might advantageously be made to replace any other method.

Should the stump remaining after removal by any method show signs of hemorrhage, the white-hot iron should be passed over its surface through the speculum. A tampon should be avoided, lest blood collecting above it might separate the lips of the wound and enter the peritoneal cavity.

In the American Journal of Obstetrics for August, 1868, appears a *résumé* upon the subject of uterine amputation, translated from the "Beitræge zur Geburtskunde und Gynæcologie," which possesses so much interest in this connection that I place it before the reader.

Record of Removal of the Inverted Uterus by Ligation, Excision, and by both combined.

1.—Removal by Ligation.

a. *Cases terminating successfully.*

I. 1767. Faivre, Journ. de Méd., 1767, Août-Labrevoit, l. c., p. 49. Patient nineteen years old, irreplaceable inversion after birth; threatening gangrene. Separation of uterus on twenty-seventh day.

II. 1824. Rheineck, Siebold's Journ. Bd. 5, p. 628. Inversion of one month's standing. The ligated tumor soon (?) separated.

III. 1818. Newnham (an essay on inversio uteri. London, 1818.) Inversion caused by a neoplasma (polypus or fungus hæmatodes). Uterus separated on seventh day.

IV. 1828. Staub, Schweiz. Zeitschr. fuer Natur u. Heilkunde. Bd. iii, h. 1. Inversion caused by a large polypus; the latter was excised, the uterus ligated.

V. 1835. Bouchet, of Lyon (Jacquemier, Manuel des Accouch.), tom. ii, p. 580.

VI. (?) Gooch, ibid. Inversion existing for three years. Ligature cut through on fourteenth day.

VII. 1840. Harrison, London Med. Gaz., 1840, April. Uterus separated on fourteenth day.

VIII. 1836. Bloxam, Gaz. Méd., 1837. Labrevoit, l. c., p. 50. The

inverted uterus was supposed to be a polypus. Ligature removed on sixteenth day; every month a bloody discharge.

IX. 1837. Kuttler, Œsterr. Jahrb. Bd. xi, s. 3. Inversion after eleventh pregnancy; the ligated uterus separated after three days. Patient is reported to have menstruated again.

X. 1838. J. Williams, Lancet et Gaz. Méd., 1839. Ligature.

XI. 1843. Esselmann, Tenness. Soc. West. Journ. of Med. and Surg., 1843, Aug. Breslau, l. c. Inversion of twelve years' standing, believed to be a polypus. Ligated uterus came off on eighteenth day.

XII. 1846. Greyson, Lond. Med. Gaz., 1846, Feb. 20, p. 342. Inversion after a difficult birth; ligated uterus came off on ninth day.

XIII. 1852. Betschler, Beitr. zur Gynæk. Bd. i, p. ii. Inversion existing for one year. Ligature cut through on fourteenth day.

XIV. 1855. Oldham, Guy's Hosp. Rep., Ser. iii, 1. Inversion after difficult labor. Ligature came off on twenty-second day.

XV. 1861. Courty, Labrevoit, l. c., p. 51. The ligated uterus came off on thirtieth day.

XVI. 1863. Dale, Gaz. Méd., 1863. Inversion with cancer. Ligature. Cancer recurred after two months; death.

b. *Cases terminating fatally.*

XVII. 1784. Lammonier, Rec. per. de la Soc. de Méd. de Paris, 1798. T. iv. Labrevoit, l. c., p. 52. Inversion caused by a polypus. Repeated ligations. Death after one month.

XVIII. 1816. M. A. Petetin Lyon, Journ. Gén. de Méd. T. i, vi, p. 128. Labrevoit, l. c., p. 52. Inversion, existing since three months; considered a polypus. Ligation. Death on fifth day.

XIX. 1824. Quoted by Boyer in his Traité de Mal. Chir. Inversion mistaken for a polypus. Ligature cut through on twenty-sixth day. Death ensued on thirty-eighth, in consequence of septicæmia.

XX. 1830. Symonds, London Med. Gaz., 1830, Nov. Incomplete inversion, believed to be a polypus. Tumor came off on fifteenth day; death on twenty-third day.

XXI. 1852. Deroubiax, Gaz. Méd. de Paris. 1853. 27 Août. Inversion of eight months. Ligature broke on twelfth day. Death on twenty-third day, with diphtheritic symptoms.

XXII. 1855. Coats, Assoc. Med. Journ., July, 1855. Inversion existing for half a year. Death on sixteenth day after application of ligature.

XXIII. 1860. Betschler, Beiträge zur Gynækologie. Bd. i, p. 7. Inversion caused by a fibroid tumor. The ligature came off on twentieth day; death on twenty-fourth day.

2.—Removal of Inverted Uterus by Excision.

a. *Cases terminating successfully.*

XXIV. 1839. Luytgareus, Ann. de la Soc. de Méd. de Gaud. 1839. Inversion caused by a large broadly attached polypus. Cutting of the pedicle, ligation of the arteries. Healed in ten days, menstruation afterwards.

XXV. 1844. Michalowsky, Journal de la Méd. de Montpellier, May, 1845. Inversion existing since thirteen months. Tumor cut off with scissors. Recovery in fourteen days.

b. *Cases terminating unsuccessfully.*

XXVI. 1678. Arnoult, de la Motte Tr. d'accoucheur, p. 806. Death after a few days.

XXVII. 1788. Deleirye, Labrevoit, l. c., p. 52. Death on third day.

XXVIII. 1858. Aran, Lect. Cliniq. sur les Mal. de l'Utérus. Removal of inverted uterus with écraseur. Death in fifty-nine hours.

XXIX. 1859. McClintock, Tr. Prat. de Mal. de Femmes. Paris, 1835. Puerperal inversion of one year's standing. Removed with the écraseur; death after fifty-nine hours.

XXX. 1864. Wilson, Edinburgh Journal. Labrevoit, l. c., p. 53. Inversion caused by a polypus; removed with the écraseur.

XXXI. 1861. Veit, Winkel's Path. and Therap. des Wochemb. p. 99. Inversion after birth, existing after birth seven months. Removed with the écraseur.

3.—Removal of Inverted Uterus by Ligation and Excision.

a. *Cases terminating successfully.*

XXXII. 16—. Vicuseium, Tract. de liquorib. Labrevoit, l. c., p. 49. Ligation, followed by removal with the knife. Patient lived for fifteen days.

XXXIII. 1787. Desault and Baudelocque, Rec. per de la Société. Méd. de Paris. 1791. Inversion caused by a polypus; double ligation, afterwards removed below by the knife.

XXXIV. 1802. Alex. Hunter, Hufeland's Journ., 1802, Maerz. Ligation and, after six hours, excision.

XXXV. 1804. Chevalier, Merrimann, die Regelwidrige Geburt. Deutsch von Kilian, p. 309. Ligation; after twenty days, amputation. Patient lived for several days.

XXXVI. 1806. Clarke, Edinb. Med. and Surg. Journ., 1806, t. ii. Inversion caused by and believed to be a polypus. Ligation and amputation.

XXXVII. 1811. Baxter, Annal. de Litér. Méd. Etrang. Gaud, 1811, Juillet. Inversion of five weeks. Ligation followed by amputation. Menstruation returned twice.

XXXVIII. 1818. Windsor, Med.-Chir. Transact., 1819. Puerperal inversion existing since a year and a half. Double ligation. Amputation after twelve days. Stump healed in two and a half months.

XXXIX. 1820. Roettger, Walther u. Graefe Journ., Bd. xxiii, p. 203. Inversion, after repeated removals of polypi, believed to be another polypus, by a barber, who intended removing it by pieces. Fundus cut off. Roettger placed a ligature around it to stop the hemorrhage, and cut the tumor away below. Ligature came away after three weeks. Menstruation is said to have appeared again.

XL. 1821. Weber, Siebold's Journ., bd. v, s. 2. Inversion caused by a polypus. Ligation, followed by amputation.

XLI. 1831. Laserre, Froriep's Notiz., 1836, Jan., p. 116. Puerperal inversion of one and a half year's standing. Ligation; after eight days, amputation. Recovery after four weeks.

XLII. 1835. Cook, Lancet, 1846, Jan. 16. Puerperal inversion; ligation, followed in three weeks by amputation.

XLIII. 1836. W. Mooz, Lancet, 1836, vol. ii. Puerperal inversion; ligature: amputation after three weeks.

XLIV. 1840. Portal, Filiatre Sebezio, 1841, Feb. Gaz. Méd., 1841, No. 16. Inversion of four years' standing; ligation; amputation after a few days. Recovery in twenty-nine days.

XLV. 1842. Betschler, Beitr. zur Gynækologie, bd. i, p. 2. Inversion caused by a broad fibroid tumor, attached to the fundus. Ligation, followed after fifteen days by removal with the knife.

XLVI. 1842. Juergeues, M. Horten, Dissert. de Uteri Invers., Dorpat, 1853. Inversion caused by a polypus; ligation with silver wire; excision on fourteenth day.

XLVII. 1843. Crosse, Archiv. Gén. de Méd., 1848, Fevrier. Puerperal inversion since one month; ligature; amputation after five days; recovery after four weeks.

XLVIII. 1848. Johnson, ibidem. Puerperal inversion of five years' standing. Ligation, followed after twenty-eight days by amputation. Patient recovered after six weeks.

XLIX. 1848. Hublier, Bull. de l'Acad. de Méd., 1848, No. 41. Puerperal inversion existing for two months.

L. 1849. Higgins, Monthly Journal, 1855, No. 134. Puerperal inversion of twenty years. Ligation; excision with a bistoury; quick and complete recovery.

LI. 1854. Gredding, Gaz. des Hôpitaux, 1855, No. 134. Inversion caused by a broad fibroid tumor; ligation, followed immediately by amputation; three sutures inserted.

LII. 1859. McClintock, Dublin Journal, xxvii, Feb. 1859, p. 137. Puerperal inversion. Ligature remained for forty-eight hours. Removal by the écraseur in the groove formed by ligation.

LIII. 1863. Sheppard, Med. Times, 1863. Ligation and excision

b. *Cases terminating unsuccessfully.*

LIV. 1803. Watkinson, Journ. der Ausland, Med. Lit., 1803, Jan., p. 84. Ligation, followed by immediate excision. Ligature slid off the stump; fatal hemorrhage.

LV. 1836. Meerholdt, Dissertatio de Uteri Inversione, Dorpat, 1836. Puerperal, of one year's standing. Ligation; amputation; soon signs of internal hemorrhage with consecutive peritonitis, terminating fatally on nineteenth day.

LVI. 1840. Velpeau, Gaz. des Hôp., 1840, Mai, No. 36. Incomplete puerperal inversion; ligation, followed by excision. Death after seventy-two hours.

LVII. 1850. Reported by Engel, in Zeitschr. des Deutsch. Chirurg. Vereins. Bd. iv, p. 43. Patient suffered from polypus for three years, which was ligated.

LVIII. 1867. Scanzoni. Inversion caused by an intra-parietal fibroid tumor; ligation with Maisonneuve's constrictor, followed immediately by excision with the bistoury. Death ensued on seventh day.

From this exhaustive *résumé*, embodying fifty-eight cases of amputation, it will be seen that eighteen terminated fatally; nearly one-third of the entire number submitted to operation.

Methods of Replacing the Uterus.—It is not certainly known whether the condition of inversion of the uterus was properly understood before the time of Ambrose Paré. Since his epoch it has been fully described by his successors, and all its pathological features, its various symptoms, and its manifold dangers, have been thoroughly appreciated. From the time of Paré, who lived about the middle of the seventeenth century, to our own, although great advances were made in the scientific departments of the subject, very little was attained in the way of treatment. The possibility of replacing by taxis a uterus recently inverted was known, but for cases in which the organ had been displaced for years, or even for months, no resource existed except amputation.

It is certainly one of the many triumphs of which the Gynæcology of the nineteenth century can boast, that this accident has been proved to be amenable to conservative measures, and that taxis has been shown to be capable of effecting a cure, and preventing a resort to a mutilating surgical procedure. There can be no doubt that the urgency of the symptoms which attend upon inversion is sometimes so great that a resort to amputation, after failure by other means, is rendered perfectly legitimate. But, on the other hand, every surgeon must shrink from a procedure

which destroys his patient's capacity for the performance of two of her most important physiological functions, and no one can view it in any other light than that of a last resource.

So far as I have been able to ascertain, the first cases of chronic inversion which were successfully reduced by taxis are those mentioned by Colombat[1] in the following passage: "Dr. Daillez reports in his dissertation that the surgeon, Labarre De Benzeville, had effected the reduction as late as the eighth month, and Baudelocque after eight years." In later times the first successful case occurred in 1847.[2] The inversion had lasted more than a year, when M. Valentin, by introducing one hand into the vagina, and making counter-pressure by the other over the abdomen, succeeded in reducing the displaced fundus in ten minutes. In 1852, Mr. Canney[2] in the same manner effected reduction in a case of five months' standing, and in the same year M. Berrier[3] accomplished it in one which had existed for fifteen months. Four years after this Dr. Tyler Smith, of London, effected reduction in a case of twelve years' standing, by combining taxis with pressure through the vagina by a caoutchouc bag filled with air. More than a week was consumed before his persevering efforts were crowned with success. Cases of cure effected by taxis alone, or combined with pressure by bags of air or water placed in the vagina, were after this rapidly reported from different parts of the world. Most notable among these were the cases of White, of Buffalo, in 1858, of fifteen years' standing, and Noeggerath, of New York, in 1859, of thirteen years' standing. Within the past ten years cures have multiplied so rapidly as to preclude the mention of individual cases in a work of the character of this.

In cases of sudden inversion the accident should be relieved as soon as possible, for experience has shown that the longer the interval between the occurrence and the adoption of means for reduction, the greater the difficulties attending its accomplishment. Should the placenta or a large tumor be attached to the body, the propriety of its removal must be at once considered. If this should seem easy, the patient's strength be good, and no severe hemorrhage exist, it should be removed as rapidly as possible. But should the opposite conditions prevail, it would be wiser to

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[1] Colombat, Am. ed., p. 186.

[2] Quoted from Ranking's Abstract, vol. 7, by G. Hewitt.

[3] Courty, Mal. de l'Utérus, p. 797.

insure the woman against immediate peril, and deal with the complication after she has rallied.

The hands being dipped in warm water and thoroughly oiled, the mass, if external to the body, should be grasped in both palms and one of two methods of reduction essayed. The uterine body should be indented so as to push up first the part which first escaped, or the whole body should be pressed upwards so as to reinvert the pedicle of the mass, and thus return the fundus last. The first procedure will be favored by relaxation of the organ; the second by contraction, and the operator should bear this fact in mind during his manipulations. Should tetanic spasm of the uterine fibres exist so as to resist replacement, an anæsthetic should be employed without delay.

Dr. Dewees, of Philadelphia, advised that in case a partial inversion resisted reposition it should be promptly changed to a complete one. This he found tended to diminish hemorrhage, while it did not increase the difficulty of replacement.

Taxis has been practiced for the reduction of chronic inversion certainly since the beginning of this century, and perhaps before that time, in two entirely distinct methods. First, the manipulations of the operator are directed to the constricting cervix, in order to overcome resistance there, and to return first the parts which last escaped. Second, these manipulations are directed to the body, in order to return first the parts which escaped first. The first of these methods is thus described by Capuron:[1] "If the orifice be not sufficiently dilated to allow the inverted portion to return easily, it is a better plan to take the tumor in the palm of the hand, with the fingers distributed around its pedicle, and to reduce first the portion which was inverted last, as if we were dealing with a hernia." "We encounter at this point," says Aran,[2] "two opinions which have arisen in relation to the reduction of the uterus inverted during labor; one party desiring to return first the parts which escaped last, subjecting the uterus to a general compression, so as to soften it to a certain extent and force it to pass the orifice little by little, commencing with the least voluminous parts. . . . . Arrived at the tumor, if the operator wishes to employ the first method, he kneads it so as to soften it, and cause it to pass more easily through the constricted orifice in which he engages his fingers." Becquerel[3] describes

[1] Mal. des Femmes, 2d ed., p. 510.
[2] Mal. de l'Utérus, p. 901.
[3] Mal. de l'Utérus, tome 2, p. 314.

it thus: "It is advisable, as far as practicable, to return first the parts which last escaped; for in this way we dilate in advance the muscular fibres which oppose reduction. (P. Dubois Danyau). . . . . M. Velpeau considers this the best method."

The second method of taxis consists, not in manipulating the "constricted orifice in which he engages his fingers," so as to "dilate in advance the muscular fibres which oppose reduction," as Aran and Becquerel express it; but in dimpling or indenting the fundus itself, so as to make of the indented or invaginated portion a species of wedge, which is forced into the cervical constriction. In recent cases of inversion, occurring, as the vast majority of these cases do, after labor, 350 out of 400 reported by Crosse having done so, the centre of the fundus may be indented and carried up through the cervical canal; and even in chronic cases such an invagination is much more practicable than one would theoretically suppose. As a general rule, however, my impression is that the manipulations practiced on the fundus act, not in this way, but in overcoming cervical resistance, and thus accomplishing in a more indirect and imperfect way what the French method, styled the method of Viardel by Becquerel, does by engagement of the fingers within, and direct expansion of, the cervical constriction.

Dr. Emil Noeggerath, of this city, has offered a modification of the second plan, which I have resorted to with success on two occasions, and which I regard as one of the most valuable suggestions which has been made of late years with reference to the subject. His method consists in compressing the uterine body opposite to each horn, so as to indent one of these, and thus offer to the cervical canal a wedge, which passes up and is followed rapidly by the other horn and the whole body.

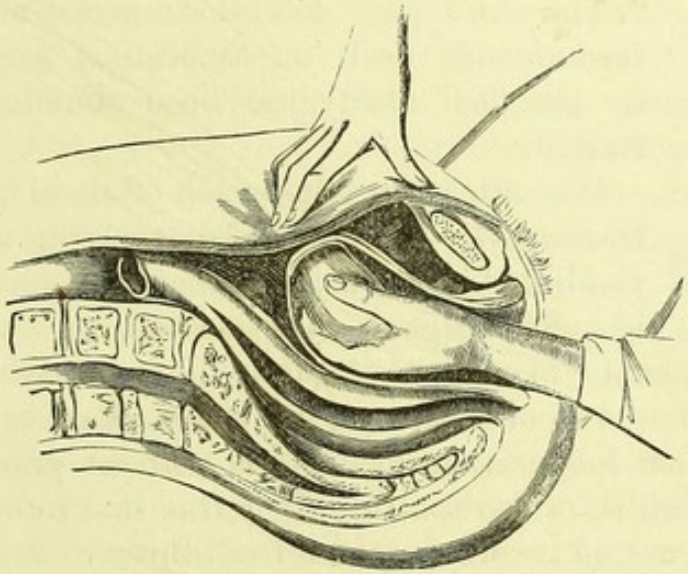
My experience in the reduction of three out of five cases has been this: the first result of manipulation has been to overcome the resistance of the cervix, so that the whole of this part turned over and enfolded the body, further progress being stopped by resistance at the os internum; then one horn has gradually become indented, and thus the second part of the process of replacement has been effected.

Having now considered the various methods of taxis we will proceed to their practical application in the reduction of chronic inversion.

The diagnosis having been clearly made and reduction determined upon, the bowels and bladder should be emptied, and the

patient put under the influence of an anæsthetic, and laid on her back upon a strong table. The operator should always be attended by three or four reliable counsellors, upon whom he may call not only for advice but physical aid. As Prof. George T. Elliot has pointed out, the strength of one man will often fail to accomplish what that of several, replacing each other in rapid succession will readily effect. Having thoroughly oiled one hand, the nails of which have been pared, the operator should slowly dilate the vagina so as to introduce it, and grasp in its palm the entire tumor. The other hand should be laid upon the abdomen so as to press just over the ring which marks the non-inverted cervix, and oppose the force exerted through the vagina, so as to prevent too great stretching of this canal.

FIG. 167.



Reducing an inverted uterus. (Sims.)

In a case of four years' standing, which I attended with Dr. Joseph Worster, of this city, and which had been subjected to eight attempts previous to my seeing it, each varying in duration from two to three hours, I suggested substituting for the hand a cone of boxwood four inches long. The patient being very thin, this could readily be inserted into the abdominal ring of the uterus, and it was gradually forced down into the inverted fundus for such a distance as to dilate the cervix and allow reposition. Fig. 168 represents the shape of the boxwood plug employed.

In overcoming chronic inversion of the uterus the three methods of manipulation already mentioned may be tried in succession :

1st. The method of encircling by the fingers the constricting neck and forcing up first the tissue which came forth last.

2d. The method of indenting the fundus and thus returning first the part which first escaped.

3d. The method of Noeggerath, by indenting the cornua, by pressure over the lateral surfaces of the tumor so as to re-invert one or both of these parts, thus imitating inversely the method of occurrence, according to the theory of Kiwisch.

Fig. 168.



Plug for making counter-pressure in inversion.

The first of these methods is an excellent one, and should be attempted before any efforts are made at returning the body.

The second method is especially applicable to acute cases, but may unquestionably be applied to those which are chronic.

The third plan deserves especial attention, and recommends itself on theoretical grounds, while its practical utility has been abundantly demonstrated.

One after the other each of these plans should be tried, the operator not persevering too long, but yielding his place to another as soon as his hand becomes fatigued or benumbed.

It is impossible to set an absolute limit to the time which should be allotted to one attempt, but these efforts cannot be persisted in much longer than two hours without great danger of metritis, cellulitis, or peritonitis. It is true that numbers of successful cases are on record in which from three to five hours have been spent in continuous exertion before success was accomplished, and in which no unfavorable symptoms have arisen; but a safer and more judicious course would be to desist after a reasonable effort, secure what has been gained by pressure from a caoutchouc bag in the vagina, or closing the os uteri by silver sutures as practiced by Emmet, administer a large dose of opium, and make another attempt in thirty-six or forty-eight hours. Manipulation should then be cautiously repeated for about the same period, and again, in case of failure, followed by the air bag, or closure by suture. Should no signs of inflammation show themselves, there could be no valid objection to extending this plan of treatment over a period of time indefinitely long. With the facts now before us we are warranted in asserting that henceforth the operation of amputation will be limited to the small number of cases in

which the condition of the patient is such as to render delay and manipulation alike impracticable.

The resistance offered to the return of the fundus is generally not in the vaginal portion of the neck, which remains in its normal position, but in that which is inverted and undergoes a certain amount of atrophy that diminishes its calibre. Should it be recognized that resistance is due to constriction exerted by the fibres of the vaginal cervix, a pair of long, blunt-pointed scissors should be carried up upon the fingers and these fibres snipped at two or three points. Then the efforts at manipulation should be renewed.

Elastic Pressure.—In the intervals of time intervening between all efforts at reposition, the vagina should be filled with a caoutchouc bag, which should be distended with water and kept in position by a strong T bandage. Or this method of making steady, systematic, and prolonged pressure may be made to replace taxis entirely. By it alone an inverted uterus will often be reduced. This method certainly possesses great advantages over taxis in this, that it is more gentle and safe. It is a well-known fact, too, that animal tissues will yield more certainly to long-continued gentle pressure than they will to sudden, desultory, and more violent ones. This plan was introduced into practice by Dr. Tyler Smith, and experience has demonstrated that it is one of the most valuable, if not the most valuable, which has been discovered. Few cases will resist it.

Abdominal Section as a Substitute for Amputation.—In November, 1869, I published an account of a case successfully treated after all other means, except amputation, had been resorted to, by abdominal section and intra-abdominal dilatation of the cervical ring. I trust that its transference from the Journal[1] in which it appeared to these pages may not prove tedious or unprofitable to my readers.

Case.—On the 10th of June, 1869, I received a letter from Mr. B., of Louisville, Kentucky, detailing the following facts:

He stated that his wife, aged twenty-three years, a native of Indiana, had enjoyed good health until twenty-one months before that date. At that time she bore a child, and since then she had been an invalid.

Menorrhagia of most profuse character had occurred at each menstrual period, and for its relief she had sought medical aid.

[1] Amer. Jour. Obstetrics and Dis. of Women and Children.

The physician who was consulted prescribed astringents and hæmostatics, but did not explore the vagina for the cause of the difficulty. Eight months after her labor, she fortunately applied to Prof. Henry Miller, of Louisville, the accomplished author of "Miller's Principles and Practice of Obstetrics." This gentleman at once recognized the nature of the difficulty, and proceeded to apply the proper remedy. On five occasions he anæsthetized the patient with chloroform, and employed taxis for an hour and a half. Each effort thus made was followed by the systematic employment of pressure by means of the vaginal air pessary. All his efforts were of no avail. The patient became exhausted and discouraged, and leaving Louisville, sought the aid of Prof. Theophilus Parvin, of Indianapolis.

Prof. Parvin made five determined and prolonged attempts, each one lasting from four to six hours, the patient during their continuance being under the influence of ether, and each being systematically followed by the air pessary. All these efforts resulted in failure, and the patient, exhausted and almost desperate, returned to her home in Kentucky. Here she met with Dr. W. M. Allen, who advised her to make still another trial, and, in accordance with his counsel, she came to me about the last of August.

Upon Mrs. B.'s arrival in this city I was away, but saw her on the 1st of September. When Mr. B. had written to me, asking for a frank statement as to what hope I could hold out, my reply was, that after Profs. Miller and Parvin had failed, I was inclined to promise nothing. My mind, however, was so possessed by the idea that belladonna, the warm douche, and the abdominal plug, by which I had twice succeeded, once in a rebellious case, and once very rapidly in a simple one, would succeed in this, that I urged him at least to let me make an effort.

I found Mrs. B. to be a delicate, fragile blonde, weighing about ninety pounds, very pale and exsanguinated from profuse menorrhagia, which had occurred at intervals for twenty-one months, and much disheartened by the failure of her eminent medical advisers.

The patient was rapidly brought under the full influence of belladonna, administered by rectal suppository, and the warm douche was employed three times daily, for an hour each time. At the end of a week she was anæsthetized with ether, placed upon the back upon a table, and, aided by Drs. Nott, Metcalfe, and Walker, I proceeded to make my first attempt at reduction by

taxis. For one hour I tried faithfully all the varieties of taxis to which allusion has been made, and made counter-pressure by the abdominal plug, but all to no purpose. The cervix expanded nearly up to the os internum, but no further would it yield.

Filling the vagina with a caoutchouc bag, and distending this with very warm water, she was now put into bed. On the next day, at the same hour, exactly the same procedure was gone through with. The result was the same, and at the conclusion of the attempt the bag was replaced, filled with warm water, and on the next day the third trial was made.

At the end of the hour no advance was obtained, and I now began to share in the opinion of Dr. Miller, that adhesions existed within the sac, and that no amount of taxis would ever reduce the displaced fundus.

For cases in which reduction has been so far effected that the fundus can be pushed up to a level with the external os, Dr. Emmet has advised and practiced a method which appears to me to be most excellent. It consists in closure of the os externum by silver sutures, so that the fundus, imprisoned in the cavity of the neck, tends to dilate the constriction near the os internum. At a subsequent period the stitches are removed and taxis is practiced again. I should have resorted to this plan here, but the fundus was never sufficiently high to admit of its retention in this way. Dr. Emmet's method will be found described at length in the "Amer. Jour. of the Med. Sciences" for January, 1868.

On the next day we met again, in the case of Mrs. B. Being desirous of giving the patient the advantage of every resource which would save her from a dangerous capital operation, I went to the consultation prepared to offer two suggestions: the first was that I should pass a delicate tenotome through the fundus, carry it up through the cervical canal, and incise its four sides so as to cut through the constriction existing there, and due to the fibres near the os internum; the second was, that I should draw the uterus outside the body and cut downward through the mucous membrane. The patient having been anæsthetized, I manipulated as usual, except that I employed greater force, for twenty minutes. At the end of this time, no progress being observed, we consulted upon my propositions, and, with the acquiescence of my colleagues, I pushed the uterus up as far as it would go, then, fixing by my finger the point of constriction, I drew it down, and cut down through the tissue of the neck, the incision first involving the

mucous membrane and extending down toward the subjacent peritoneum, as recommended by Aran.[1]

No sooner was the knife withdrawn than a free jet of blood was projected from an artery which appeared nearly equal in size to the radial. This jet was not per saltum, but steady, as it is often seen to be from small arteries located in dense fibrous tissue. I presume that I cut the circular artery of the neck, which had become increased in size by the displacement of the uterus. For a half hour we strove to ligate this. Upwards of a dozen ligatures were one after another applied, but the vessel had retracted into the brittle tissue of the uterus, and could not be tied. Dr. Walker went for the actual cautery, but before his return the flow was checked by Dr. Nott's passing a suture through both lips of the wound, and bringing them forcibly together. Of course all efforts at taxis were at an end, for the present; nor did I think it wise or warrantable again to renew them; for fourteen efforts had now been made without any promise of success.

The case then presented itself in the following aspect. Here was a patient whose exsanguinated condition and tendency to profuse hemorrhages demanded relief from an evil that would soon destroy her life, which on more than one occasion had been in danger from excessive flooding. Taxis had been tried fourteen times, some efforts lasting from five to six hours, and only one less than an hour. The constriction which resisted reduction had been cut at infinite risk, and all had failed. The only recognized operation which now offered itself was amputation, and at the thought of this the patient revolted.

Under these circumstances I proposed an operation which throughout the progress of the case I had kept in reserve, and which, two years before it, I had fully elaborated in my mind. It was, that I should make an incision two inches in length through the abdominal walls and peritoneum, just over the cervical ring; pass into this ring a steel dilator, made on the principle of a glove-stretcher; stretch the constriction; and return the uterus to its place. The propriety of the operation being concurred in by my colleagues, it was explained to Mr. B., and all its important bearings made clear to the patient herself, of whom I had seen enough to know that her unflinching courage was equal to any trial which promised release from the unfortunate state which for

[1] Mal. de l'Utérus, p. 906.

nearly two years had embittered her life and destroyed her usefulness.

After ligation of the circular artery, the mucous membrane of the uterus sloughed extensively, and the patient appeared much exhausted. In a week from this time, however, she was in a fit condition for the operation proposed, and it was appointed to take place on the 16th of September.

An instrument very similar to that represented in Fig. 170 was promptly executed for me by Messrs. Darrow & Co., of No. 1217 Broadway, and I obtained a small anal speculum, and a dilator for stricture of the rectum, to be employed, should sufficient dilatation not be accomplished by the instrument alluded to.

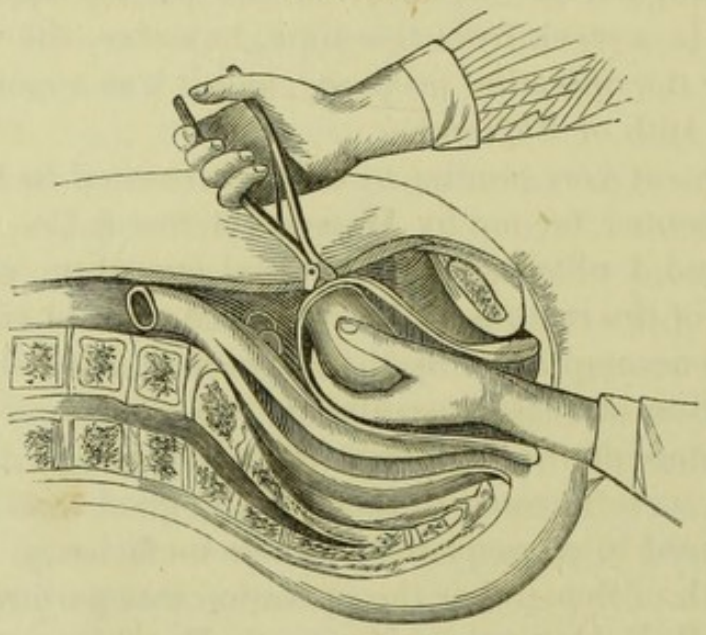
The selection of these instruments was of course based upon theoretical ideas of the requirements of the case. As the sequel proved, they were unequal to them, and a good deal of difficulty was experienced in consequence of their inefficiency.

On the 16th of September the operation was performed in presence of Drs. R. P. Howard, of Montreal; Hutchison, of Brooklyn; S. W. Francis, of Newport; and Nott, Sabine, Metcalfe, Markoe, G. T. Elliot, Noeggerath, James L. Brown, and Walker, of New York. The patient having been put under the influence of ether, Dr. Metcalfe introduced his hand into the vagina, and lifted the uterus so that I could detect the cervical ring against the abdominal wall. I then slowly cut down upon the median line, as for an exploratory incision in ovariotomy, and, leaving the wound exposed to the air until all oozing had ceased, cut into the peritoneum. I then inserted my finger into the uterine sac, and found no adhesion whatever to exist. Replacing Dr. Metcalfe's hand by my left hand, I now inserted the steel dilator, and, in the manner represented in Fig. 169, dilated the stricture.

The dilatation was exceedingly easy and rapid, but I found that as I withdrew the dilator, the tissue of the organ would at once contract. After dilating the stricture fully, I partially returned the uterus, after some effort, in the same manner in which reduction was accomplished in a previous case. Drawing it down to the vulva, I rapidly pushed it up, and was gratified at finding that it was nearly replaced. Drawing it down again, this time outside of the body, to my dismay, I discovered that the artery, cut one week before, was spouting freely. I now saw that success must be attained at once, or that it would elude my grasp when just within it. Actuated by this feeling, I rapidly returned the organ, and was delighted to find one horn rise into place. But the addi-

tional force employed was a little more than the vagina could bear, and one finger passed through between the uterus and bladder.

Fig. 169.



Replacement of uterus by dilatation through abdomen.

One horn was still inverted. Passing the dilator into this, I stretched it open, and instantly the uterus resumed its normal position.

The time of the operation was noted by Dr. Samuel W. Francis as follows: patient under ether, 1 hour and 2 minutes; time occupied in opening peritoneum, 19 minutes; time occupied in returning uterus, 27 minutes.

After this the patient rallied rapidly, and her delight at learning that the obstinate inversion had been really overcome unquestionably acted as a stimulant to recovery.

The abdominal wound was closed by four silver sutures, involving the peritoneum, and dressed with cold water. The vaginal rent was not interfered with.

On the next day the artery, which had already given so much trouble, began to give forth blood so freely into the vagina and through the vaginal rent into the peritoneum, that I thought the hemorrhage would end fatally. The pulse ran up to 160 to the minute, the face and extremities became cold, and so imminent did the danger of exhaustion appear to me that all preparations were made for transfusion.

Before resorting to this measure, I tried to check the flow by elevating the foot of the bed two feet, so as to throw the whole aortic column of blood back upon the heart, and applied a bag

filled with tannin against the os uteri. These measures happily succeeded, and hemorrhage ceased entirely.

Subsequent to this period, the patient recovered without a single unfavorable sign; the peritoneal edge of the abdominal wound healed by first intention, and on the eighth day after the operation she left her bed for the lounge.

This operation was by no means perfect. The instruments which I employed for dilatation were, I found too late, inefficient, and means for keeping open the constriction, after removal of the dilator, were entirely wanting. I feel very sure that were I to essay it again, which I should not hesitate to do *in a case which had resisted all minor means, as taxis, vaginal pressure*, &c., and for which no resource but amputation remained, I should succeed more rapidly, easily, and with less risk to my patient.

In reading the description of such an operation as this, the first idea which is likely to take possession of the mind is that of its being an unwarrantably bold procedure. This I think is an error. Explorative incisions for ovariotomy prove that the dread which was formerly entertained about opening the peritoneum was much greater than it should be. And if the reader will bear in mind the statistics already given, which prove that one-third or one-fourth of all operations for amputation of the inverted uterus end fatally, even while essaying, not cure, but palliation of symptoms at the cost of the uterus itself, he must admit that there are good grounds for questioning this conclusion, arrived at without mature reflection.

For the credit of the operation, imperfect as it was, the following facts must be borne in mind by the reader. The difficulties which attended it were none of them inherent to it, but depended upon want of experience as to its various requirements. The patient was subjected to it in a state of great exhaustion from other operations. The evils which followed it, and wellnigh frustrated its results, were due, not to it, but to section of the neck, performed a week before, and to accidental rupture of the vagina, which is not rare as a result of manipulation by the ordinary method of taxis. So far as the operation itself was concerned, the patient recovered without an untoward symptom.

In five weeks the patient returned to Kentucky, where she remained, perfectly well in every respect. She informed me by letter, after some months, that she had gained so much flesh that I would not be able to recognize her, that her menstrual function was perfectly normal, and that she had no disagreeable symptoms

remaining. About a year after the operation she became pregnant and advanced without any noteworthy symptom to the eighth month of utero-gestation. At this time, as I am informed, after eating some oysters, imported from the Eastern States in a tin can, she was suddenly affected by the symptoms of cholera morbus, and died within twenty-four hours.

Since this time I have met with but one case, and that very recently, in which I have felt justified in repeating this procedure, and this, although it demonstrated more completely than the first the perfect simplicity and efficiency of the method, as far as concerns its mechanical features, unfortunately terminated fatally from peritonitis.

Case 2.—Mrs. M., an Irish woman, æt. 23, in the lower walks of life, was delivered eight months before I saw her. The delivery was natural up to the third stage, but at this time violent hemorrhage occurred. After delivery of the placenta this continued, and during the fortnight succeeding labor, the patient declares that she very nearly flooded to death. Gradually this profuse flow ceased, or rather diminished very much, and she left her bed, and resumed her avocations. Ever since her delivery, however, Mrs. M. had had menorrhagia and metrorrhagia with very few intervals of cessation, and when I saw her she was exsanguinated to an alarming degree, excessively pallid, and apparently quite weak. The patient was put under my care by Dr. Olcott, of Brooklyn, who had been called to her about two months before I saw her, and had then made the diagnosis of inversion. Dr. Olcott, who had previously treated two cases of inversion by taxis, one successfully and the other unsuccessfully, placed her under my care for the purpose of having this operation performed, as he had exhausted the ordinary means, elastic pressure and taxis, without avail. His last effort had been a very persistent one, and was continued by himself and two associates, who frequently replaced him, for two hours. After this, the patient came so near dying from peritonitis, that the Doctor did not wish to repeat, or have repeated, these attempts.

I operated in the presence of Drs. Olcott, James L. Brown, Hallam, Walker, Fisk, and Vermilyea. The patient having been etherized and laid upon a table covered with blankets, I made an incision two inches long through the median line, and gradually cut into the peritoneum. Introducing one finger into the sac of the inverted uterus I inserted the dilator, and in sixteen minutes withdrew it, and with an ease which surprised us all,

replaced the uterus. The body did not at once go into its place, but as I withdrew the dilator about one inch of the neck reinverted itself. I then replaced the dilator, stretched the next point of constriction very gently, and at once another inch or thereabout was returned, and thus inch by inch all was returned except the right horn. A few minutes of gentle stretching soon allowed this to pass into place, and the operation was completed. The abdominal wound was closed with silver sutures, and the patient given ten drops of Magendie's solution by the hypodermic syringe, and put to bed. As she had resisted all persuasions to enter my service in the Stranger's Hospital, Dr. Vermilyea very kindly consented to remain at her house and watch her, as no one in her family could be relied upon. She did perfectly well for forty-eight hours, but at the expiration of that time peritonitis developed itself, and proceeded to a fatal issue.

This case, although ending thus, demonstrated to my satisfaction that the mechanical features of this operation are all that could be desired. The yielding of the cervical ring under gentle distension was easy and rapid, and return of the inverted body equally so.

I have neither the desire nor intention of entering into any special pleading for the procedure which I have described, for I am perfectly willing to let it stand or fall upon its merits. If it really be what I sincerely believe it to be, it will surely take its stand as a useful surgical resource. If I be mistaken in its value, I shall cheerfully acquiesce in its condemnation. Before leaving the subject, it would be well for me to keep before the reader's mind certain facts connected with it.

This procedure, let it be remembered, is not offered as a method of treating inversion of the uterus, but as a substitute for amputation. Few cases will, I think, resist elastic pressure and judicious taxis; but that some will do so cannot be questioned. It is to save these few cases from amputation that I suggest abdominal section.

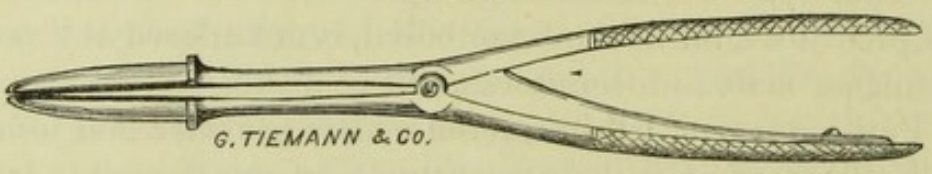
One of the cases operated on in this way has proved fatal. Let it not be forgotten that a certain number of those cases treated by elastic pressure and by taxis likewise do so, for as in my second case these operations are often performed upon exsanguinated women whose blood is impoverished. One instance of death after reduction by elastic pressure is recorded by Dr. Tait in the eleventh volume of the London Obstetrical Transactions, while one of the earliest on record reduced by taxis, that of Dr. White, of Buffalo, likewise ended fatally.

If, like the first here recorded, a case should prove rebellious to taxis repeatedly and intelligently applied, and to prolonged and powerful elastic pressure, what is to be done? Only two courses have until this time been open to us; one to leave the case unrelieved, the other to perform amputation. In the elaborate report of cases of inversion given in this chapter the results in fifty-eight cases of amputation are given. By this statement it will be seen that nearly one-third of all operated upon died, and let it not be forgotten that this number died, not in being cured, not in an effort, even, at attaining perfect health, but in an attempt at purchasing immunity from a series of dangerous and annoying symptoms at the price of that organ of which Hippocrates says, "Propter uterum est mulier."

We know that ordinarily a short incision made through the peritoneum is not excessively dangerous, consequently the question which suggests itself to the operator about to amputate is this: Is it best to remove the uterus, the woman standing a little more than two chances out of three for life, and with a certainty of sterility and all those difficulties in the future which are the consequences of amenorrhœa, or at least of very imperfect menstruation? Or is it best to incur the risks of a short abdominal section, with the almost certainty of successfully replacing the inverted uterus and preserving it for the future performance of its functions?

Should abdominal section be selected, I should advise the use of the dilator represented in Fig. 170.

Fig. 170.



This should be very gently applied, not for the dilatation of the whole cervical canal, but for its upper extremity only. As soon as that is stretched and an inch or so of the cervix returned, it should be reapplied and another portion stretched. Then a little more of the inverted tissue will return. And thus inch by inch the whole uterus should be replaced.

CHAPTER XXIV.

PERI-UTERINE CELLULITIS.

History.—The history of this affection presents one of those examples, which are often repeated in medical literature, of a subject which was once understood being subsequently completely overlooked and forgotten.

There can be little doubt that it is to this disease that allusion was made by Archigenes, who flourished in the second century, and whose account of it was subsequently repeated by Oribasius in the fourth, and Aëtius and Paul of Ægina in the sixth and seventh. The last two unquestionably refer to it under the head of "Abscess of the Womb," for in one passage Paulus especially speaks of cases in which the "aposteme is seated about the mouth of the uterus."

The modern history of the subject may be thus stated:

Described by	Richard Wiseman,[1] England, as "Distempers of the uterus in childbed," .	1679.
"	" Nichs. Puzos,[2] France, "Dépôts Laiteux,"	1743.
"	" Bourdon, a pupil of Récamier, "Fluctuating tumor of true pelvis," . .	1841.
"	" Doherty, Ireland, "Chronic inflammation of the appendages of uterus," .	1843.
"	" Marchal de Calvi, "Intra-pelvic phlegmonous abscess,"	1844.
"	" Churchill,[3] Ireland, as "Abscess of uterine appendages,"	1844.
"	" Lever, England, ...	1844.

It will thus be seen that after being appreciated, then entirely forgotten, then for a second time signalized, the knowledge of this affection languished for nearly two centuries, to be suddenly restored by the efforts of four investigators who entered the field

[1] McClintock, "Diseases of Women," p. 1.

[2] Drs. West and McClintock date the appearance of Puzos, "Traité d'Accouchement," 1759. They are probably in error, as Bernutz and Nonat both date it 1743.

[3] West, "Diseases of Women," Am. ed., p. 310.

almost simultaneously. It would be unjust to a conscientious observer, M. Auguste Nonat, not to mention the great influence which his writings have had in advancing our knowledge, but when he commenced his investigations in Hôpital Cochin, in 1846, the morbid state which he subsequently did so much to elucidate, had already received considerable attention in Great Britain.

Definition, Synonyms, and Frequency.—This disease, which is now known to be one of frequent occurrence, consists in an inflammation of the adipose and areolar tissue lying behind, in front of, and at the sides of the uterus, and extending up between the layers of serous membrane which make the broad ligaments. It has been described by different writers under the following titles: perimetritis, parametritis, peri-uterine phlegmon, inflammation of the broad ligaments, pelvic abscess, and pelvic cellulitis. The last term, which was applied to it by Sir James Simpson, indicates the nature and seat of the disease; but it is open to the grave objection of being too general in its application, and not sufficiently confining within proper limits a distinct and well-defined affection.

Normal Anatomy.—"The sub-peritoneal pelvic tissue," says Dr. Savage, in his beautiful work entitled "Illustrations of the Female Pelvic Organs," "fills up all that part of the pelvic cavity between the pelvic 'roof' and floor of the pelvis, which is not occupied by the viscera, and is the sole bond of union between them." Any one can satisfy himself as to the abundance of loose cellular tissue in the pelvis, by even a rough dissection. It will be found in the broad ligaments in great abundance, separating their contents, between the vagina and rectum, the rectum and sacrum, the uterus and bladder, the bladder and abdominal parietes, and investing the psoas and iliac muscles. The relations of the urethra and rectum to this tissue are peculiar, each being isolated in a sheath or canal which may be removed with ease.[1]

Everywhere around the pelvic organs cellular tissue exists except between the peritoneum and uterus. Here so little is discoverable that some have ventured to deny its existence, while all admit that over the body of that organ it is difficult of demonstration. Dr. Farre[2] declares that along the median line and over the whole fundus he has found the peritoneum inseparable from the uterus, except after prolonged maceration. On the sides of the organ and at the cervix the connection is not so intimate,

[1] Savage, op. cit.

[2] Cyc. Anat. and Phys., Sup., p. 631.

loose cellular tissue existing at these points to such an extent as to permit of the investing membrane gliding upon the uterus. M. Goupil,[1] who has made a special study of this tissue, declares that it is so small in amount at the point of contact of the peritoneum and vagina, and in front and rear of the uterus, that, "its presence can scarcely be determined."

Pathology.—According to the wide range given to the affection by the majority of English pathologists, this tissue is the seat of the disease under consideration, which may affect any or all of its parts. Drs. West, Simpson, and most British writers, except Dr. Bennet, adopt this view and regard as instances of the affection any inflammation of the cellular tissue within the pelvis. But this evidently leads to great confusion. It is certainly not conducive to clearness of comprehension to blend the description of iliac, psoas, and peri-rectal abscesses with this disease.

French writers,[2] on the contrary, regard as instances of peri-uterine cellulitis only inflammation of the cellular tissue of the broad ligaments and of that immediately in contact with the uterus at its junction with the vagina and bladder. While admitting that inflammation originating here may spread, by continuity of structure, to other areolar tracts in the pelvis, they regard these as complications, designating them by different appellations, and do not admit them as elements of this affection. This is the definition which I would adopt, and to express it clearly have employed the term peri-uterine, in place of pelvic, cellulitis.

Peri-uterine cellulitis has three stages: 1st, the stage of active congestion; 2d, that of effusion of liquor sanguinis; 3d, that of suppuration. In its course it may be likened to an ordinary furuncle; at first there is simple congestion accompanied by pain, heat, and swelling; then liquor sanguinis is effused, which creates hardness and tension, and lastly suppuration occurs, and ends the morbid process, unless one of two other terminations take place. Resolution may occur, or, in place of suppuration, the areolar tissue involved may be destroyed, as it so generally is in anthrax and phlegmonous erysipelas, and come forth as a sloughing mass.

The term phlegmon, now almost obsolete with us, but still in use on the continent of Europe, signifying inflammation of areolar tissue, is strictly applicable to this affection. Its course is similar to that of areolar inflammations in other parts of the body, and its three stages are identical with theirs.

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[1] Becquerel, p. 441, vol. i. [2] Aran, Mal. de l'Utérus, p. 675.

The usual, indeed the almost invariable, seat of peri-uterine cellulitis is the areolar tissue of the broad ligaments, and generally that of one side only is affected.

In a certain number of cases where no affection of the areolar tissue of the broad ligaments exists, circumscribed tumors, in immediate contact with the womb, have long been noticed. Lisfranc supposed them to be due to partial parenchymatous metritis, "engorgements," which had resulted in enlargement of one part of the organ, and no one contradicted him until M. Nonat,[1] about the year 1849, described them as being due to phlegmonous inflammation in the areolar tissue immediately around the uterus, *i. e.*, between the cervix and rectum, the cervix and bladder, and immediately by the side of the neck. The existence of this variety of cellulitis has been denied by M. Bernutz, who sustains his position by abundant argument. In reference to it, I will merely say here, that there are, so far as my knowledge extends, only two cases of such limited cellulitis substantiated by autopsic evidence, one reported by M. Demarquay,[2] the other by M. Simon.[3] There are many in which abscesses in the broad ligaments have pointed anteriorly or posteriorly to the cervix, but these come within a different category. The broad ligaments and their entire contents, cellular tissue, ovaries, and Fallopian tubes, are more frequently affected than any other parts, and M. Aran goes so far as to say that the collections of pus occurring in peri-uterine cellulitis "belong more particularly to the ovaries and tubes." In post-mortem examinations these parts are often found imbedded in a mass of effused material, the ovaries, one or both, in a state of suppuration, and the tubes inflamed and filled with pus, or constricted at both uterine and ovarian extremities and dilated by sero-purulent material so as to constitute tubal dropsy. I have examined the post-mortem reports of cases by a number of authorities with reference to this point, and rejecting only those in which the examination was made in too careless a manner to allow of their admission, I present them in the following table:

No. of Cases.	Authority.	Seat of Purulent Collection.
1.	M. Nonat.	Behind the uterus connecting with suppurating cyst in left ovary; small abscess in right ovary.
2.	M. Nonat.	Between uterus and rectum extending into broad ligaments of both sides.
3.	M. Nonat.	On left side extending from uterus to ilium.

[1] Op. cit., p. 237. [2] Gazette des Hôpitaux, April 17, 1858.

[3] Bull. de la Soc. Anat. de Paris.

No. of Cases.	Authority.	Seat of Purulent Collection.
4.	M. Nonat.	Behind uterus and vagina extending into left broad ligament; another the size of a hen's egg just behind the uterus, opening into a third, very large, extending to sigmoid flexure and into broad ligament.
5.	Dr. West.	Left broad ligament.
6.	Dr. West.	Opposite right sacro-iliac synchondrosis under psoas muscle, another to the left of and behind the rectum.
7.	Dr. West.	Left broad ligament.
8.	Dr. McClintock.	Left broad ligament.
9.	M. Demarquay.	In cellular tissue between uterus and rectum and also in recto-uterine pouch of peritoneum.
10.	M. Simon.	Size of a small orange between the bladder and uterus sending conoidal prolongation into left broad ligament. Its limits were as follows: base of bladder in front; neck and body of uterus behind; peritoneum above; vagina below: at the sides it ran off into the broad ligaments.
11.	M. Aran.	Left broad ligament.
12.	M. Aran.	Left ovary, right tube, with pelvic adhesions throughout.
13.	M. Bourdon.	Size of an apple in left broad ligament.
14.	M. Aran.	At side of uterus and in the left broad ligament.

It will thus be seen that of this number, which is large when it is remembered that the disease rarely ends in death, but two cases present instances of cellulitis, uncomplicated by disease of the cellular tissue of the broad ligaments, ovaries, or tubes. One of these, that of Simon, is conclusive of the possibility of such disease; that of Demarquay is doubtful, for with the abscess in the cellular tissue, there was also one in the cul de-sac of Douglas. The purulent collections in this disease may be results of morbid action in the cellular tissue, the ovaries, or the Fallopian tubes. In other words, with the disease known as cellulitis we often, indeed generally, have other affections, some of them, in the present state of our knowledge, not separable from it, which attend upon it as complications.

Complications.—The complications of peri-uterine cellulitis are—

Pelvic peritonitis;
Ovaritis;
Fallopian salpingitis;[1]
Endometritis.

[1] σαλπιγξ, "a tube."

The occurrence of these complications with cellulitis is so frequent that they may, at least the first three, almost be regarded as elements of it, when it exists in severity. They are, indeed, universally present where the tissue of the broad ligaments is seriously involved, as will be seen by reference to autopsic evidence contained in any of the works upon the subject. The fact of the frequent coexistence of endometritis should be especially noted, for great injury may be done by local treatment of it, under the supposition that it is the cause of symptoms which in reality are the results of cellulitis.

Course, Duration, and Termination.—It is necessary that I should here inform the reader that the account which I shall give of this part of our subject will differ essentially from that generally found in systematic works, for the reason that, regarding pelvic cellulitis and pelvic peritonitis, which are usually treated of synonymously, as different affections, I shall attempt to describe them separately. Cellulitis proper, that is, uncomplicated by other diseases, rarely passes into a chronic state, but usually in the course of two or three weeks passes off by resolution or ends in suppuration, the former being much the more frequent termination. Any one of its usual complications, however, peritonitis, endometritis, ovaritis, or salpingitis, may pass into that condition, and thus leave the impression upon the mind of the observer that the original affection has done so. Or one or more abscesses may discharge themselves by long sinuses which fail to allow of their complete evacuation, and may continue to pour out pus for months or even years. In saying that cellulitis rarely becomes chronic, I look upon chronic pelvic abscesses rather as one of its results than one of its stages. If the case be of acute character and occur as a sequel of parturition, suppuration may take place in a few days, but ordinarily, even under these circumstances, it does not occur for two or three weeks. In a chronic case the effused matter may remain hard, resisting, and ligneous for months, without showing signs of softening, but such instances are exceptions to the rule. After suppuration has occurred the disease may follow one of three courses.

1st. The accumulated pus may discharge itself and the abscess gradually dry up and disappear.

2d. The empty sac, lined by pyogenic membrane, may for an unlimited time go on pouring out pus.

3d. Small abscesses may form and discharge in one part, then

others may do so in another, until the whole pelvic areolar tissue is perforated by them and by fistulous tracts connecting them.

There are various outlets for the imprisoned purulent accumulation:

1st. Through the abdominal walls or saphenous openings;

2d. Through the pelvic viscera, bladder, rectum, vagina, urethra, or uterus;

3d. Through the floor of the pelvis near the anus;

4th. Through the pelvic foramina, obturator, or sacro-ischiatic;

5th. Through the pelvic roof into the peritoneal cavity.

Sometimes the purulent collection burrows into the surrounding tissues and evacuates itself at a distance. In one case which I saw with Dr. Echeverria, it passed through the sciatic foramen, and burrowing upwards and forwards, came forth near the great trochanter. It may thus take so eccentric a course as to mislead the practitioner as to the seat of the abscess.

The most frequent channels of evacuation are the vagina and rectum, in the non-puerperal form, and probably the abdominal walls in the puerperal, or at least the results of Dr. McClintock's[1] carefully noted cases would lead us to believe so. In 37 puerperal cases treated by him which ended in suppuration, 20 abscesses discharged in the iliac regions, 2 above the pubes, 1 in the inguinal region, and 1 beside the anus. Of the remaining 13, 6 were discharged per vaginam, 5 per anum, and 2 burst into the bladder. In the non-puerperal variety it is extremely rare for the abscess to discharge externally, and fortunately in both forms it is rare for it to burst into the peritoneum.

Prognosis.—A guarded prognosis should always be made as to the time of recovery, for no amount of experience can foresee the course of the affection; whether the effused liquor sanguinis will disappear by absorption in three weeks; whether the discharge of one abscess will end the patient's suffering; or whether a chronic induration will exist for a great length of time. But fortunately it may be stated, that the prospects as to life, are decidedly favorable, though in cases occurring just after parturition, there is always some danger from general peritonitis.

Causes.—The disease usually occurs as a result of one of the following causes:

Parturition or abortion;

Inflammation of uterus or ovaries;

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[1] Op. cit.

Direct injury from coition, caustics, pessaries, operations, or blows.

Parturition or abortion produces, according to statistics, from one-half to two-thirds of all the cases. Even this large proportion I believe to fall short of the truth, from the fact that those collecting the statistics from which the deductions were drawn, made no distinction between this disease and pelvic peritonitis. Cellulitis will very rarely be met with except after the parturient process. It is true that when the puerperal state exists as a predisposing cause, exposure to cold, fatigue, over-exertion, &c., will excite it; but under these circumstances they are merely immediate and exciting influences. The great causative power is the puerperal condition.

Inflammation of the Ovaries or Uterus.—It is rare to meet with the affection in a non-puerperal patient, as the result of exposure, unless she be suffering from disease of these organs. Aran believes disease in the ovaries to be "almost always the cause." It is certain that these organs are generally diseased where the affection exists, but it is difficult to determine whether as a complication, or as the first link in the chain. In the histories of fourteen autopsies which I have collected, the state of the ovaries is mentioned in ten. Out of these they were affected by inflammation in seven. In some of the seven cases, abscesses existed; in others their tissue was destroyed, and in others they had entirely disappeared. Any chronic or acute disease of either the uterine parenchyma or mucous lining, may also result in it, and I have more than once seen it follow applications of mild character to the cavity of the uterus.

Direct injury is by no means a rare cause in the non-puerperal cases, though it generally proves active in those suffering from previous uterine or ovarian disorders. Thus it may follow operations upon the neck or body of the uterus, slitting the neck for flexion or contraction, for example, or simple dilatation by a tent. It may result from efforts at removal of intra-uterine growths, and one fatal case that I have met followed the ligation of hæmorrhoids.

The important fact, that this disease is usually not an idiopathic affection but one symptomatic of uterine or ovarian inflammation has been especially insisted on by Dr. Matthews Duncan, who first drew attention to it as early as 1853.

Symptoms.—The acute form, and more especially that occurring

after parturition, is usually ushered in by very decided symptoms, of which the most constant are the following:

Chill;
Increased local heat;
Pain;
Fever;
Dysuria;
Painful defecation;
Metrorrhagia.

The chill, though sometimes absent, is a very general symptom. No sooner does it pass off than the pulse rises to 110 or 120, increased heat is felt in the hypogastric region, and pain, which for a number of hours or perhaps days before was just perceptible, comes on with considerable violence. With these symptoms, there will be others pointing to the rectum and bladder, and should the affection exist in a menstruating woman the flow may be much increased. Even when the patient is not menstruating, uterine hemorrhage sometimes, though not frequently, comes on.

But he who awaits these symptoms for diagnosis will be led into many errors of omission, for subacute cases very generally, and acute cases sometimes, fully develop themselves without them.

All cases may be brought under three heads as to severity of symptoms:

1st. Cases accompanied by chill, fever, pain, and ordinary signs of inflammation;

2d. Those accompanied by pain without chill or fever;

3d. Those marked by scarcely any symptoms except extreme feebleness and some sense of pulsation and weight about the pelvis, with hectic fever towards evening.

Cases which have assumed the chronic form will present themselves with such a history as this: a patient who was delivered one, two, or three months ago has not recovered her strength, but is very feeble, has no appetite, and feels nervous, depressed, and feverish towards evening. She has no absolute pain, but fears that something is wrong about the womb, for now and then she feels a sensation of throbbing, tension, and weight about that organ, which is increased by defecation, urination, and walking. This incites to physical exploration, which establishes the diagnosis.

Physical Signs.—Physical exploration is the means on which we must rely for a rapid and certain determination of the character of these cases. Should the finger be introduced into the vagina

during the first stage, the parts will be found to be very warm and perhaps a feeling of puffiness may be detected. Upon pressing in different directions great sensitiveness will be observed, and by conjoined manipulation a particularly sensitive point will be detected on one side of the uterus.

As the second stage, or stage of effusion, advances, induration occurs in the areolar tissue affected, and then by careful vaginal touch combined with external manipulation a tumor as large as a walnut, a goose's egg, or an orange, may be detected in one of the broad ligaments, upon one side of the cervix, or on one wall of the vagina.

But the examiner must not suppose that the mere introduction of the finger into the vagina will accomplish a discovery which often requires the greatest care and most thoughtful attention in examination. The finger being passed up to the cervix and the other hand placed upon the hypogastrium so as to make counter-pressure, it should be carefully pressed into Douglas's cul-de-sac and all around the cervix over the base of the bladder and as far as possible towards the fundus. Then it should be made in a similarly careful manner to traverse the sides of the pelvis where the broad ligaments are placed, and last of all, those parts below the pelvic roof. For one sufficiently practiced in this kind of examination this procedure will generally be sufficient to determine the existence of even a very small point of induration on the sides or in front of the uterus. Sometimes, where it is posterior to that organ, a rectal exploration will throw much additional light upon the case.

Should the disease have advanced to its third stage, in addition to the signs already noted, the uterus, which, as already mentioned, is generally displaced, is now pushed far from its normal position, in a direction opposite to the accumulated pus. Sometimes it lies upon the floor of the pelvis, at others it is in a state of anteversion, retroversion, or lateroversion, and, more rarely, sharply flexed, the body having remained movable after the cervix has become fixed.

Into whatever malposition it has been forced it remains to a certain extent immovable, from fixation by adhesive lymph. But this fixation is by no means so complete, so universal, as in pelvic peritonitis. I feel satisfied that I have seen two unquestionable cases in which no fixation of the uterus existed at all. This, however, is very rare. Nonat has even gone so far as to declare that the phlegmonous mass itself may be movable, and Dr. Duncan

reports one case which appears to verify this statement. I have never seen an instance in which this mass was not firmly fixed.

Differentiation.—The diseases with which it may be confounded are—

Fibrous tumors;
Hæmatocele;
Pelvic peritonitis.

Fibrous tumors are painless, free from tenderness, and movable in the pelvis. They are unaccompanied by chill, fever, and other signs of inflammation, and are closely attached to the uterus, so as to form part of it. The tumors resulting from cellulitis are the contrary of all this, and appear firmly attached, like bony growths, to the walls of the pelvis.

Hæmatocele occurs suddenly with uterine hemorrhage, and is not marked by signs of inflammation, but by prostration, coldness, and other symptoms of loss of blood. The tumor created is soft in the beginning and grows hard; that of cellulitis is hard in the beginning and tends to softening.

Pelvic peritonitis shows the ordinary signs of peritoneal inflammation, great tendency to relapse at menstrual periods, excessive pain and tenderness, and produces no distinct tumor in the beginning, but hardening of the whole pelvic roof. Later, a small tumor may be discovered, but it is very high up and attached to the uterus and not to the pelvic walls. The uterus is less movable than in cellulitis, and when the body is fixed the cervix sometimes moves under pressure.

Consequences of Cellulitis.—The remote results of this affection are so grave, that even if there were no dangers immediately connected with it, they would stamp its occurrence as a great disaster. The ovaries are at times destroyed by suppurative action; at others they undergo an atrophy, the result of inflammation, and the Fallopian tubes are often left impervious. The uterus is often permanently displaced in consequence of strong adhesions which bind it in a bad position. From this results the fact, that although the disease be cured, the patient is often left incapacitated for some of the most important physiological functions. Sterility, amenorrhœa, dysmenorrhœa, menorrhagia, tubal dropsy,[1] and displacements may remain to attest the gravity of the original disease, and continue for an unlimited time a source of suffering for the patient and discouragement for the physician.

[1] Aran, op. cit., p. 638.

Treatment.—Should the practitioner be called in the acute stage, before effusion has occurred, or after its occurrence and before its complete organization, leeches should be at once applied over the hypogastrium. After leeching, warm poultices of powdered flax-seed should be applied every third or fourth hour over the hypogastrium, the bowels kept constipated, and febrile action, should it exist, be quieted by refrigerants and direct sedatives, as tincture of veratrum viride or tincture of aconite. The patient should at the same time be brought under the quieting influence of opium, which throughout the acute stage of the affection should be steadily kept up. It accomplishes these results: it relieves pain, diminishes the severity of the inflammatory process, keeps the bowels constipated, produces sleep, and creates general nervous quietude. If when first seen the patient be suffering very severely, ten drops of Magendie's solution of morphia may be injected by the hypodermic syringe into the cellular tissue of the thigh.

Absolute rest should be enjoined, the patient not being allowed to sit up in bed for a moment, upon any pretext whatever. Were I limited to one remedial resource in this affection, I should choose this in preference to all others, but to accomplish anything it must be absolutely enforced.

The diet of the patient should be mild and unstimulating, consisting of milk with farinaceous substances, and tea or coffee.

As soon as the acute symptoms have passed, and vaginal touch informs us that the effused material is becoming thoroughly organized, a further effort should be made to break up the morbid train before it passes on to suppuration or into chronic induration, by the application of a blister, six by eight inches, over the hypogastrium. This should not be applied before febrile action and the most acute symptoms have disappeared.

Some excellent authorities, among others Sir James Simpson, object to blistering for fear of strangury resulting. I have never had to do otherwise than congratulate myself on its employment. Should the case tend to an acute course, and suppuration be impending, this should be encouraged by constant poulticing.

As soon as the acuteness of the attack has passed, until which time attention should be turned to quieting the general symptoms of inflammation, it is advised by the best authorities that the iodide or bromide of potassium should be administered, the former in five-grain doses repeated every third or fourth hour, or the latter in doses of ten, fifteen, or even twenty grains, at the same intervals. At the same time that I am not prepared to

deny the utility of these drugs, I confess that I have never been able to persuade myself that they really accomplish any good result. There is no more certain method of disgorging the veins of the pelvis and lower bowel than by acting upon the liver, which governs the outlet of the portal system, with which they are connected, and this can most readily be done by mercurial cathartics. Thus occasionally used, the mercurials prove of great benefit in relieving congestion, which is a leading element of the disease. But in doing this we are not developing the specific action of these medicines, which here act as a subordinate, and not the chief element of treatment. The production of ptyalism should be avoided, since it is by no means certain that it is of any benefit, and by impoverishing the blood at the commencement of what may become an exhausting disease it may do absolute injury. As the acuteness of the affection subsides the bowels should be kept free by laxative medicines, and the occasional use of a mercurial in this capacity is indicated. It may be necessary to repeat the application of leeches, and the repetition of the blister is often called for before the case ends in suppuration or passes into the chronic stage.

While the patient remains in bed, warm poultices, or towels wrung out of warm water and covered by oil silk, should be worn over the hypogastrium. An additional emollient remedy of great value remains to be mentioned. It is the persevering use of the warm douche for fifteen or twenty minutes, night and morning, after the manner already advised. The fluid used should be as warm as the patient can bear it, and may be slightly medicated by the addition of chloride of sodium, tincture of iodine, or iodide of potassium. The injections stimulate the absorbents, and, at the same time, quiet inflammatory action, in the performance of which functions they are invaluable in these cases.

As the third stage of the disease, or the stage of suppuration, merges into pelvic abscess, it will be best to postpone the consideration of its management to the chapter in which that subject is treated. I will merely state here that after an abscess has formed and evacuated itself, great care should be taken not to allow the patient to exert herself for several weeks, for fear of a relapse, and even after she has left the house and begun to exercise regularly, during two or three menstrual periods she should confine herself to bed.

CHAPTER XXV.

PELVIC PERITONITIS.

Definition.—Inflammation involving the peritoneum covering the female pelvic viscera, and limited to it, receives the name of pelvic peritonitis. It must not be supposed that by this definition is meant simply that form of peritoneal inflammation arising in the pelvis and spreading into general peritonitis, which has long been described as metro-peritonitis. The disease that we are now considering is one usually strictly limited to the pelvis, presenting symptoms peculiar to itself, and rarely passing into the general form of the same disorder.

History.—Long before pelvic cellulitis was known, peritonitis, limited to the serous covering of the pelvic organs, had attracted attention, and its clinical resemblance to cellulitis, as subsequently described, fully noted. Thus Morgagni[1] relates a case in which, thirty days after delivery, the right ovary and tube were adherent to the colon and almost destroyed by an abscess. Nauche, in his work of Diseases of the Uterus, published at Paris in 1816, described inflammation of the uterus as affecting, first, the mucous membrane, second, the parenchyma, and third, the serous covering. In 1828, Mad. Boivin credited the adhesions resulting from this affection and binding the uterus down, with a large number of abortions attributed to other causes, and, in 1833, she described immobility of the uterus, for which she gave as causes, peritonitis, metro-peritonitis, and pelvic abscess. In 1839, Grisolle[2] distinctly stated that "there are cases of circumscribed peritonitis which, producing a tumor appreciable to sight and to touch, may lead to the belief in the existence of phlegmon," *i. e.*, a tumor the result of inflammation of areolar tissue. Lisfranc,[3] writing ten years after Boivin and Dugès, copies their description very closely in his article on, "Fixité de la Matrice," without referring to them, and like them attributes it to peritonitis or metro-peritonitis.

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[1] Artic. 22, epist. 46. Nonat, op. cit., p. 234.

[2] Bernutz and Goupil, op. cit., p 398

[3] Clin. Med., vol. iii, p. 514.

Although these facts were known and universally admitted, they attracted little notice, and after the description of pelvic cellulitis by Doherty and Marchal de Calvi, pelvic peritonitis was almost entirely lost sight of. This was due to the fact that the enthusiasm created by the description of a long-forgotten affection, caused observers to look upon the results of peritonitis as those of cellulitis, and to describe them as such. Thus the matter rested until 1857, when M. Bernutz, in a treatise written in concert with M. Goupil, not only drew especial notice to it, but took the position that inflammation of the cellular tissue immediately around the uterus, described by Nonat as "phlegmon périutérin," or what would strictly be termed, in our nomenclature, "peri-uterine cellulitis," did not exist as a pathological reality, but that the lesions ascribed to it were absolutely due to pelvic peritonitis.

These views, published at first in the "Archiv. Gén. de Méd.,"[1] are fully elaborated in the admirable work[2] of these observers more recently brought forth. They do not touch the general subject of peri-uterine cellulitis as it exists in the broad ligaments, subperitoneal tissue, and around the rectum, but only that variety supposed to have its seat in the areolar tissue between the uterus and peritoneum.

It has been already stated that M. Bernutz was incited to his investigations by certain views advanced by M. Nonat as to the pathology of peri-uterine induration, which sometimes goes on to suppuration. But his researches served not merely to settle this comparatively unimportant point, they proved the fact, for which the investigator appears to have been himself entirely unprepared in the beginning, that many of those cases regarded as instances of non-puerperal cellulitis are in reality not phlegmonous but peritoneal inflammations. Since the publication of these views I have directed my attention particularly to this point, and from careful observation, both clinical and post mortem, feel warranted in recording the conclusions at which I have arrived in the following propositions:

1st. Peri-uterine cellulitis is very rare in the non-pregnant woman, while pelvic peritonitis is exceedingly common;

2d. A very large proportion of the cases now regarded as instances of cellulitis are really those of pelvic peritonitis;

3d. The two affections are entirely distinct from each other,

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[1] Archiv. Gén., 1857.

[2] Clin. Med. des Femmes, 1862.

and should not be confounded simply because they often complicate each other. They may be compared to serous and parenchymatous inflammation of the lungs, pleurisy, and pneumonia. Like them they are separate and distinct, like them affect different kinds of structure, and like them generally complicate each other.

4th. They may usually be readily differentiated from each other, and *a neglect of the effort* at such thorough diagnosis is as reprehensible as a similar want of care in determining between pericarditis and endocarditis.

M. Bernutz cites the results of five autopsies[1] by himself, and between twenty and thirty by others which presented all the signs of pelvic peritonitis and none of cellulitis, although during life the symptoms and signs generally attributed to the latter disease were present. As an example conveying some idea of the close clinical resemblance between his cases found in autopsy to be peritonitis and those ordinarly regarded as cellulitis, I quote the salient points in his sixth observation.

Patient 33, lymphatic temperament, entered hospital November 24th for feebleness, pain in the back, emaciation, and dysmenorrhœa. After a while loss of appetite, increase of pain, and chills appeared. By touch the uterus was found completely fixed, low down in the pelvis and inclined to the right side, and attached to it a very sensitive tumor the size of a hen's egg, extending behind the womb. On the 15th of December this tumor was as large as a turkey's egg. February 1st: tumor only the size of a pigeon's egg; a circumscribed tumor on the left attached to uterus and to the walls of the pelvis. March 23d: uterus movable and tumor reduced to the size of a little nut. April 4th: she died, and autopsy showed tubercular pelvic peritonitis, evidenced by tubercular deposit, lymph, pus, firm old adhesions, ovaries imbedded in false membrane and nearly destroyed.

I had often been struck by the great similarity between peritonitis and many of the cases of what, until enlightened by M. Bernutz, I had regarded as cellulitis, and by the fact that they occasionally ran into general peritonitis without any apparent emptying of purulent collections into the peritoneal sac, but I never had an opportunity of examining such a case post-mortem until the following, of which I give only a short sketch here, as it is elsewhere[2] fully related.

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[1] I have rejected a number of the cases reported, because not sufficiently conclusive.

[2] Chap. on Ovaritis.

Mrs. M., aged 35, married, but never pregnant, was under my care, during the winter, at the Woman's Hospital, for anteflexion of the uterus, the result, as I supposed, of peri-uterine cellulitis. August 6th: I was called to see her in consultation with Dr. Roth, her family physician, and found her suffering from severe pelvic pain, constant vomiting, and fever. Upon vaginal touch I found the uterus immovably fixed and the pelvic roof as hard as a board. The pelvic tissue was everywhere hard and resisting, and the physical signs of what I had habitually styled cellulitis were present. About a week afterwards the patient died suddenly and unexpectedly, and I made an autopsy in presence of Drs. Roth and J. C. Smith. No general peritonitis existed; the left ovary presented a sac the size of a hen's egg, filled with pus; the pelvic peritoneum was intensely inflamed and the uterus bound down by old false membranes, bands of which matted all the parts together. The vermiform appendage was bound to the right ovary and the caput coli lay just below the uterus. No trace of inflammation could be discovered in the pelvic cellular tissue except, of course, that in immediate contact with the ovary.

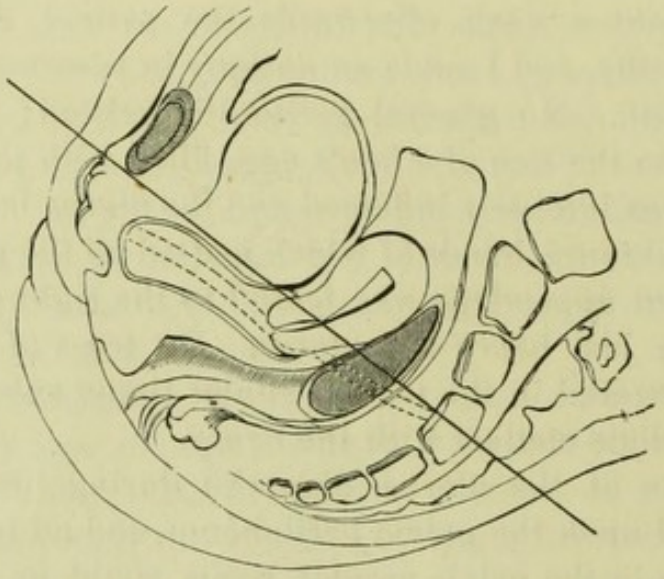
The fixation of the uterus, observed during life, was due to lymph effused upon the pelvic peritoneum, and no trace of inflammatory action in the pelvic areolar tissue could be discovered as accounting for it. It is true that the left ovary, enveloped by the layers of the broad ligament, was inflamed, and that a certain amount of inflammation existed in the cellular tissue immediately surrounding it, but this did not extend. There could be no question of the facts which are here stated.

Frequency.—A reference to the autopsic notes of cases of cellulitis, for example those recorded by West, Nonat, Aran, and McClintock, will give abundant evidence of the almost universal attendance of this complication upon it. But, even without the existence of that disease, Aran found it in greater or less degree in fifty-five per cent. of cadavers of women examined in his service. This proves that peritonitis, limited to the pelvic viscera, is a common affection, and one which is very generally overlooked. It is probably to its occurrence that are due so many of those attacks of violent hypogastric pain occurring with menstruation, or just after it, accompanied by vomiting and slight febrile action, and which are generally treated by domestic remedies and viewed as cramps or uterine colics.

Pathology.—The disease runs its course here, as peritoneal inflammation does elsewhere, in three stages. With the first there

are simple engorgement and turgescence of the vessels, producing redness, dryness, and pain. In the second stage an entirely different state of things will be found to exist, to comprehend which fully, the reader must bear in mind what is meant by the "roof of the pelvis." If a plane be passed backwards from a point just under the pubic arch, through the cervix uteri at the attachment of the vagina, to the sacrum at the attachment of the utero-sacral

FIG. 171.



The straight line represents approximatively the roof of the pelvis; the dotted line represents it more exactly.

ligaments, it will correctly represent this roof, which is thus formed by the vesico-vaginal septum, the lower extremity of the uterus, which projects, as it were, through a hole in the roof, the upper part of the fornix vaginæ, and the utero-sacral ligaments. Above the plane, the organs of reproduction float, as Nonat expresses it, "in an atmosphere of cellular tissue." Let the reader suppose that instead of this yielding, springy tissue, these organs were fixed in their places by having a fluid mixture of plaster of Paris poured around, among, and over them, which had afterwards become solid, and he may form a correct idea of what vaginal exploration will yield to the sense of touch in the second stage. The roof of the pelvis is hard, ligneous, and as if composed of a "deal board," to which Prof. Doherty likens it. The uterus, which is generally much displaced, is immovable, and all its appendages appear fixed by some solid, surrounding element.

This, the second, stage consists in a collection of plastic lymph on the surface of the peritoneum, and of serous, purulent, or sero-purulent fluid in its most dependent parts.

In the third stage the fluid, if serous, is absorbed; if purulent, discharged, and the exuded lymph undergoes organization and subsequently contraction. This binds the uterus, its appendages and some of the intestines together in a mass, which yields all the physical signs of a tumor.

Causes.—Its causes are as follows:

Peri-uterine cellulitis;
Parturition or abortion;
Gonorrhœa;
Endometritis, ovaritis, or salpingitis;
Escape of fluids into the peritoneum;
Traumatic influences;
Imprudence during menstruation;
Tuberculous or cancerous deposit.

Its frequent dependence on the first needs no further mention.

As a result of parturition or abortion, it is so well known as to make the exhibition of proof here almost unnecessary. Reference may be made, however, to 53 autopsies by Aran,[1] in which out of 38 women who had borne children, 24 presented evidences of its previous existence, while out of 15 who were nulliparous, only 5 did so.

Gonorrhœa, by passing into the uterus and through the Fallopian tubes, is a fruitful source of the affection. According to M. Bernutz 28 out of 99 of his cases had this origin. I have had a very distinct case under treatment, which was produced in a lady two weeks after marriage, the disease having been contracted by her husband four days before, and showing itself in him on the very day of the ceremony.

It would be strange if ovaritis and endometritis did not, at times, cause pelvic peritonitis. That they frequently do so, is abundantly demonstrated by autopsies made after their existence both in the puerperal and non-puerperal states.

Salpingitis causes it not only by the extension of inflammation along the mucous, into the serous membrane which is continuous with it, but by emptying its accumulated pus into the peritoneal cavity.

Escape of fluid into the peritoneum is an undisputed cause of this, as of general peritonitis. I myself produced a well-marked case which almost terminated fatally, by injecting a solution of

[1] Op. cit., 718.

persulphate of iron into the uterine cavity. The passage of the fluid through the tubes could not be questioned, for agonizing pain came on in less than three minutes, and continued up to the development of inflammation. This danger has caused the almost entire abandonment of intra-uterine injections on the part of the majority of practitioners in New York, and I think elsewhere, unless the cervix be previously dilated by tents. But many other sources from which fluid may enter the peritoneum exist; as, for example, rupture of an ovarian cyst, discharge of tubal dropsy, or of a pelvic abscess, intra-peritoneal hemorrhage, regurgitation of obstructed menstrual blood, &c.

Traumatic agencies, as blows, falls, injury during labor, punctures, &c., may result in partial, as they do in general inflammation of the peritoneum.

Imprudence during Menstruation.—During the performance of a physiological function which involves rupture of the peritoneum and produces hemorrhage, which must pass to the uterus by a narrow tube not permanently in immediate contact with the ovary, any degree of exposure must evidently tend to inflammation in the ruptured part. Of M. Bernutz's 99 cases, 20 were thus produced.

Tubercles deposited in the part, either on the peritoneum, or in the tissue of the tubes or uterus, may, as they do elsewhere, result in secondary inflammation, and cancerous or cancroid degeneration would be still more likely to produce the same result.

Varieties.—This affection may assume either an acute or chronic form, though when it constitutes the principal disease it generally, in the beginning, presents the features of the former. When it occurs as a complication of cellulitis, tuberculosis, or uterine disease, it assumes from the beginning the chronic type. Very often those cases which are destined to assume the chronic form present themselves thus: the patient states, that on one or several occasions, after miscarriage, or during menstruation, perhaps, she has had severe cramping pain in the lower bowel, which she supposed to be due to some intestinal disorder, but the effects of which have never entirely passed off. This she believes to be the case from the fact that ever since the primary attack she has suffered from pain in locomotion, dysmenorrhœa, leucorrhœa, and perhaps menorrhagia. In spite of these symptoms, she attends to her usual avocations and fulfils all her functions as a wife. The history pointing to disease of the pelvic viscera, an examination is instituted which discovers the existence of the affection we are considering.

Symptoms.—The acute form shows itself by—

Pelvic pain and tenderness;
Fever;
Nausea and vomiting;
Anxious facies;
Mental disturbance.

When a severe acute attack sets in it may cause either a chill, or a sensation of coldness so slight that the patient will not recall its occurrence unless her attention be especially directed to it; or pain and fever may show themselves without this symptom.

Pain is at times only moderate, but at others most severe. It may occur in paroxysms, which create the greatest agony and prostrate the patient by their severity. I have seen it amount to agony equal to that arising from the passage of a biliary calculus, causing the patient to roll in bed, seize the bedclothes in the teeth, and cry aloud most piteously. As a rule it is not so violent as this. Pain may show itself quite early in the disease, or may be preceded for several days by pelvic uneasiness and weight.

Tenderness over the whole hypogastrium accompanies it to such a degree, that even the weight of the bedclothes is intolerable, and the patient, to relieve it, lies upon the back with the legs flexed in order to relax the abdominal muscles.

The pulse shows in slight cases very little, and in severe cases a considerable amount of febrile action. It is small and wiry, and increases in rapidity to 110 or 120 to the minute.

Nausea and vomiting are common symptoms, though they do not generally exist to such a degree as to prove very annoying.

The facies is peculiarly anxious, and is sometimes rendered very striking by the appearance of dark circles around the eyes.

I have generally noticed in acute cases that the mind is markedly disturbed, as if the patient instinctively dreaded some serious disease, and even in chronic cases there is a decided tendency to slight mental alienation. In several cases I have seen this advance to absolute insanity.

It may justly be observed that these are the symptoms which mark general peritonitis. This is true; it is merely the slighter degree of severity and the localization of pain and tenderness, which will point to the partial nature of the affection.

With reference to general peritonitis, it may be stated that, on the one hand, it, of all diseases, may declare itself by the most

numerous and characteristic symptoms, or, on the other, run its fearful course with the greatest obscurity, so as to mislead the most careful diagnostician, even up to its latest stages. If this be true as to the general disorder, how much more must it be so as to the local. Thus it is that we find the subacute and chronic forms passing off without recognition, and the fact that they have existed is known only by the discovery of firm adhesions over the whole pelvic roof in post-mortem examinations. In these varieties, there is less pain and tenderness and less tendency to nausea and febrile action than in the acute. Sometimes, indeed, there is merely a sense of local discomfort, increasing to pain at menstrual periods, accompanied by fever towards evening, by difficulty in locomotion, and by a general sense of feebleness and malaise. This remarkable absence of symptoms in pelvic peritonitis was announced by Aran, and Dr. Duncan[1] expresses himself upon it in these words: "I might adduce cases of gonorrhœal ovaritis commencing in healthy young girls, and ending in the fusion of all the parts in the pelvis into a solid immovable mass, without the patient losing a cheerful, and even gay visage, or making any great complaint of pain, unless interrogated closely, and then alleging the chief suffering to be from irritable bladder."

Physical Signs.—Should an examination be made during the first stage, nothing will be ascertained but the existence of sensitiveness upon pressure in the vaginal cul-de-sac and upon lifting the uterus. Tenderness will likewise be demonstrated by pressure on the hypogastrium. None of that doughy, œdematous, puffy feel which accompanies cellulitis will be discovered by vaginal touch. Should the disease run its course as one of those very insignificant attacks, which produce no grave symptoms and are scarcely recognizable, no other physical signs will present themselves at this or any other period. Should it be one of graver character, a sense of resistance merely, or a tumefaction like an ill-defined tumor, may be felt in the recto-vaginal space or at the side of the uterus. Or if very little lymph and much sero-pus have been the result of the inflammatory action, a sense of fluctuation may be detected very early. The uterus is always more or less interfered with in its mobility, and in severe cases it is absolutely immovable. This explains how Lisfranc and Boivin applied to it the name of "fixity" or "immobility" of the uterus.

I have stated that a tumor is commonly felt posterior to, or at

[1] "Perimetritis and Parametritis," p. 78.

one side of the uterus. This tumor, which is formed by agglutination of the pelvic and abdominal viscera, is extremely sensitive to touch.

If the disease go on to formation of pus, the sense of tumefaction may disappear as this discharges itself, but if the effused lymph become thoroughly organized, it remains hard and resisting for a length of time. This accumulation almost invariably displaces the uterus, sometimes by pressing it in an opposite direction, sometimes by drawing it towards itself as the lymph contracts.

In a case which I saw some years ago with the late Prof. George T. Elliot, we were much puzzled for a short time before its fatal issue, by the existence in the fornix vaginæ of a pouch, apparently filled with fluid, all the surrounding parts being unattached and no sense of tumefaction or resistance being discoverable. The patient died suddenly from general peritonitis, and upon post-mortem examination, conducted by Prof. J. W. S. Gouley, we found, first, a small piece of fetid placenta in utero, the result of a recent abortion; second, an abscess of the right ovary, which had created general peritonitis by emptying itself into the peritoneum; and third, pelvic peritonitis, which had evidently existed for more than a week. It had created a purulent collection in Douglas's cul-de-sac, which was limited to this space by false membranes, that formed for it a complete roof. This accumulation, it was, which gave the sensation above described.

In another case, sent to me by Prof. J. C. Hutchinson, of Brooklyn, the uterus was found firmly bound to the sacrum by a hard, resisting mass, which was very sensitive. There was considerable corporeal endometritis, and I incautiously applied to the uterine cavity tincture of iodine, and as a result the most violent pelvic peritonitis developed itself, which almost became general. In ten days after its inception, a soft, fluctuating pouch formed in the fornix vaginæ, which became so painful that I tapped it with an exploring needle and drew off about an ounce of clear serum, much to the patient's relief.

Course, Duration, and Termination.—In no disease can these be more variable and uncertain than in that under consideration. A great similarity exists between its phases and those of pleuritis. As in that affection we have shades of difference, varying from the ordinary "stitch in the side," which results from inflammation of a portion of the pleura not larger perhaps than a silver half dollar, to empyema and tubercular pleuritis, which may continue

till death by pulmonary consumption or pneumothorax closes the scene, so may we have in pelvic peritonitis like variations. It may run its course unobserved, leaving evidence of its existence only in adhesions found post mortem. It may pass through its first two stages in three or four weeks, leaving the uterus permanently displaced by the continuance of the third. It may reappear with a certain amount of acutenes at menstrual periods, causing them to be very painful. It may, if due to tubercular deposit, continue so as to exhaust the patient slowly. It may produce a purulent collection, which, by emptying itself into the peritoneum through the adhesions thrown around it, may create general peritonitis, or this last may result from the spread of morbid action from the pelvic to the general serous membrane.

Differentiation.—The diseases with which this is most likely to be confounded are—

Peri-uterine cellulitis;
Pelvic hæmatocele;
Fibrous tumors.

Peri-uterine Cellulitis.—Differentiation between these two affections is in some cases simple enough, but in others it is impossible. Difficulty will occur when cellulitis affects, and is confined to, the tissue most immediate to the uterus, but this we know to be very rare. Our suspicions will often be turned into the proper channel by the cause of the attack. Cellulitis will very rarely occur except after parturition, abortion, or an operation on the pelvic viscera. Peritonitis will usually result from exposure during menstruation, disease of the ovaries, or escape of fluid into the peritoneum. Should the attack occur as a result of gonorrhœa, it is probably due to serous and not cellular inflammation, a fact which the anatomical relations would lead us *à priori* to anticipate, and which is fully substantiated by statistics. West and Arán credit gonorrhœa with the causation of cellulitis in from one to two cases in a hundred, and Bernutz declares it active in twenty-eight out of a hundred of peritonitis.

Other signs[1] by which we may arrive at a decision may thus be tabulated:

[1] I would especially declare that I do not offer them as certain or even perfectly reliable means of differentiation. In many cases, so closely are cellulitis and peritonitis connected that no separation of the two is possible, while even when this is not so the means here given may fail in differentiation.

Peri-uterine Cellulitis.	*Pelvic Peritonitis.*
1. Tumor easily reached, generally found to one side of the uterus, and may be felt above pelvic brim;	1. Tumor if discoverable very high, only in vaginal cul-de-sac, does not extend above superior strait;
2. Tendency to suppuration;	2. Suppuration less common;
3. Abdominal tenderness chiefly over one iliac fossa;	3. Abdominal tenderness excessive above brim of pelvis;
4. Tumefaction generally noticed laterally in the pelvis;	4. Generally noticed near or upon the median line;
5. Tendency to monthly relapses not marked;	5. Tendency to relapse every month very marked;
6. Retraction of thigh not rare;	6. Retraction of thigh rarely occurs;
7. Pain severe and steady;	7. Pain excessive and often paroxysmal;
8. Facies not much altered;	8. Facies very anxious;
9. Nausea and vomiting not excessive;	9. Nausea and vomiting often excessive;
10. Does not necessarily displace uterus;	10. Displaces uterus as a rule;
11. Uterus fixed to limited extent.	11. Uterus immovable on all sides.

Pelvic Hæmatocele.—From this it may be distinguished by the great suddenness of appearance of hæmatocele, absence of signs of inflammation, presence of those of hemorrhage, and by the much greater dimensions of the tumor, which unlike that of peritonitis is at first rather soft and gradually becomes hard. The occurrence of bloody flow will likewise point to hæmatocele. Two facts in this connection must not be lost sight of: one, the rarity of hæmatocele and frequency of pelvic peritonitis; the other, that the former will sometimes excite the latter, and thus that both may exist together.

Fibrous Tumors.—These will generally be known by their producing no pain, presenting no sensitiveness on pressure, no sense of œdema, no signs of inflammation nor rapidity of development. They are likewise movable and cause no fixation of the uterus.

Importance of Differentiating Peritonitis from Cellulitis.—The importance of differentiating this disease from cellulitis rests in part upon the fact that it admits of less local interference. Sometimes the passage of a uterine sound, an application to the cavity, or even the use of a cold vaginal injection which by accident has entered the uterus, have been known to destroy life by causing peritonitis which has extended to the whole cavity. It is likewise important in reference to prognosis as to the course of the affection and its remote results. Lastly, it should not be forgotten that progress in the comprehension of the diseases of all organs must be preceded by a careful and systematic separation of them,

one from the other. As the study of acute cardiac affections under the common name of carditis could never have accomplished what that of each of its varieties has done, so could not investigation of these affections, undivided into their proper classes.

Prognosis.—If the case follow parturition or abortion, the prognosis will be rendered graver by that fact. Otherwise it will be governed in great degree by the general symptoms. Should these show great intensity of inflammation, and constitutional disturbance be evidenced by excessive nausea and vomiting, quick pulse, anxious facies, &c.; in other words, should the symptoms point to the probable spread of the disease over the whole serous sac, the ordinary prognosis of peritonitis may be made. In cases of chronic type, occurring in the non-puerperal state, it is decidedly favorable, unless the disease exist in a scrofulous or tuberculous patient, or show a tendency to severe monthly relapses. Another fact, which will increase the gravity of prognosis, is the existence of purulent effusion in place of lymph and serum as the result of the inflammatory action.

Results.—The common results of the disease, which remain long after it has passed away, or perhaps permanently, are destruction of the ovaries by abscess or atrophy; obliteration or dropsy of the tubes of Fallopius; and fixation of the womb in malposition, by organization of false membranes. As consequences of these lesions follow very naturally, amenorrhœa, dysmenorrhœa, and sterility.

Treatment.—Should the medical attendant be called in the first stages, leeches, if they can be tolerated, should be applied over the hypogastrium, and a poultice, as warm as can be borne, should follow them immediately. The patient should be brought fully under the influence of opium by mouth, rectum, or the hypodermic syringe, and perfect rest should be enjoined. No cathartic medicine should be given, as it interferes with quietude, and it is well to keep the bladder empty by the catheter. Milk, beef-tea, and other plain, nutritious and unstimulating food should be prescribed.

The sovereign remedy for this affection is opium, not in small, but in large and repeated doses, carried to the point of producing the quietude which is necessary for the favorable progress of the case. Sometimes this condition will be produced by one grain of opium, in powder, or quarter of a grain of sulphate of morphia every two or three hours, but in many cases half a grain of sulphate of mor-

phia will be repeated every two or three hours for a long time before perfect quietude is obtained. The inexperienced employer of this drug in these doses will fear dangerous narcotism, but in New York, under the tuition of Alonzo Clark, to whom we are indebted for this practice, we employ it with the greatest confidence. Let the physician avoid all other drugs and give opium thus freely in one or two cases of this affection, and he will appreciate its value.

In the second and third stages, where lymph has been the chief and perhaps the only product of inflammation, we must rely upon counter-irritants, and I know of none to be compared with the blister. One made of Spanish flies, four by six inches in dimensions, should be applied over the hypogastrium and its abrasion dressed with savine ointment. As soon as it heals entirely, another should be applied directly over the newly-formed skin, and this may be repeated every ten or fourteen days with great advantage. I have known patients who dreaded them in the beginning beg for them after experiencing the relief which they gave. Should the patient be rendered so nervous by this remedy that it cannot be employed, or should any other reason prevent its use, superficial nitric acid issues may be applied over the iliac regions and kept open by issue peas or occasional cauterization with solid nitrate of silver. The blister is to pelvic peritonitis what it is to pleuritis, the most rapid and efficient of remedial agencies.

Another very excellent method for producing counter-irritation is by tincture of iodine painted over the hypogastrium once in twenty-four hours for weeks.

Treatment of Chronic Cases.—The affection having passed into the chronic stage, or originated with all the appearances of chronic disease, a different course of management becomes advisable. The patient should not be so strictly confined to bed nor dieted. She has entered upon an invalid course which may last for months or for years, and in making a strenuous effort to cure her local disorder we may sap her general health and do her irretrievable injury. On the other hand, she should not attend to her household cares, nor take exercise to any great degree; but remaining in bed or on a lounge most of the time, go out in the fresh air for an hour or two daily. Her diet should be of the most nutritious character, stimulants should be allowed in moderation, and the impoverished blood resulting from a combination of circumstances prejudicial to hæmatosis, combated by change of air and the use of vegetable and mineral tonics, especially iron.

One of the most important questions in the management of chronic cases is that of the amount of exercise to be allowed, and the strictness of confinement to be practiced. No absolute rule can be laid down in reference to these points, for each case will call for special guidance, based upon careful experiment. In general terms it may be stated that when motion does not produce pain or discomfort, the patient should ride in an easy carriage for two or three hours daily. In those cases which are still more free from local trouble, she may walk with moderation; while in others which present elements of acuteness, no motion whatever should be allowed.

Sometimes the patient will even bear removal from home to the sea-side or some watering-place during the summer. If this be so, a locality should be chosen that is accessible by other means than railroad travel, which is peculiarly prejudicial. One great and ever recurring difficulty in this connection arises from the great tendency of patients, allowed to take exercise, to commit indiscretions by overtaxing themselves. This becomes so great at times, as to make it advisable to confine to bed one who would be benefited by moderate exercise, in order to avoid danger from her imprudence. The fact should never be lost sight of that the pelvic peritoneum forms a part, a sheath, as it were, of the suspensory ligaments of the uterus. The fibrous structure of the round, broad, sacral, and vesical ligaments is covered by it, so that dragging of the uterus upon them puts the peritoneum upon the stretch and strongly tends to excite renewed action there.

Of all influences which act in a directly prejudicial manner upon these cases, sexual intercourse is the most decided, and its absolute interdiction should be made one of the first rules laid down for their management.

Should acute exacerbations occur in chronic cases, the use of local depletion would be indicated, but as a plan to be strictly pursued with reference to cure it is highly objectionable on account of the spanæmia which it induces.

If it be deemed advisable to keep up the use of the iodide or bromide of potassium, the results of which are, however, doubtful, they may, with advantage, be combined with iron and vegetable tonics, as in the following prescriptions:

℞.—Potassii iodidi, ʒiii.
Ferri iodidi syr., ℥ii.
Tr. calombæ, ℥vi.—M.
A dessertspoonful (ʒij) in water three times a day.

℞.—Potassii bromidi, ʒv.
Vini ferri dulcis, ℥iv.
Tr. calombæ, ℥iv.—M.
A dessertspoonful in water three times a day.

Should collections of pus or serum be evacuated? The important bearings of this question are manifest, but unfortunately no definite answer can be given to it. In evacuating these collections the peritoneal cavity is not exposed to entrance of air, for a false, membranous roof covers the collection, but there is always danger in perforating the delicate and easily inflamed serous sac. I have elsewhere reported a case in which I drew off one or two ounces of serum under these circumstances to the great relief of the patient, who rapidly improved and did well. It is the only case in which I have ventured to invade the peritoneum under these circumstances, though I have repeatedly evacuated pelvic abscesses resulting from cellulitis. The safest rule for practice will be this: if in spite of the sero-purulent collection the patient be doing well and do not suffer from the local trouble, it should be left to empty itself spontaneously. If, on the other hand, the patient suffer from the collection and be not progressing favorably, it should be evacuated.

Methods of Evacuation.—Evacuation may be accomplished by a small trocar and canula, or by a guarded bistoury or tenotomy knife. After evacuation the sac may be carefully washed out with a weak solution of carbolic acid in warm water, or of tr. of iodine in the same menstruum.

CHAPTER XXVI.

PELVIC ABSCESS.

Definition.—Upon this point little need be said, as any purulent collection originating in, and not simply passing through, the pelvis, comes under this head, regardless of its cause.

Pathology.—There are three sources of pelvic abscess: 1st, breaking down of tuberculous material deposited in any of the tissues of the pelvis; 2d, suppurative action taking place in the walls of a cavity formed by an hæmatocele or ovarian cyst; 3d, inflammatory suppuration in the areolar tissue, the ovaries, or tubes, the pelvic peritoneum, or the parenchyma of the uterus itself. Of all these sources the third is decidedly the most frequently met with, and is most generally the result of cellulitis, occurring after parturition or in the non-puerperal state. Under the latter circumstances cellular inflammation may be primary, or secondary to irritation from some foreign body, as the débris of an extra-uterine fœtus, a hard substance in the vermiform appendix, or a fibrous tumor of the uterus.

Causes.—Any influence which induces cellulitis, or either of the other two pathological conditions mentioned, may prove immediately causative of abscess. As remote causes may be mentioned the tuberculous, scrofulous, and syphilitic diatheses; great depression of the vital energies from any cause, as impure air, like that of a hospital; the puerperal state, and pyæmia.

Symptoms.—These will not differ essentially from those of abscess elsewhere. When pus is forming, violent chills, followed by fever, with profuse sweating, are likely to occur. Then a feeling of prostration with throbbing pain in the pelvis, pressure upon the rectum and bladder, and sometimes interference with urination, present themselves. Pain down the thigh, which may be mistaken for sciatica, will also at times be noticed.

Physical Signs.—By abdominal palpation, combined with rectal or vaginal touch, a fluctuating tumor will be felt, presenting the ordinary physical signs of purulent collections elsewhere.

Course, Duration, and Termination.—Pelvic abscesses may evacuate themselves through any part of the floor of the pelvis, through its roof into the peritoneum, through any one of its walls by means of foramina, through any of the pelvic viscera, or by several of these channels at the same time. They may open by free outlet or by a long sinuous tract, which renders prognosis as to cure extremely grave. The most favorable points for evacuation are through the vagina and rectum. Next to these comes, in point of favorable prognosis, evacuation through the abdominal walls. Nonat declares that when the collection "opens simultaneously into the intestine and bladder, death is almost inevitable." In the "Charleston Medical Journal," for 1853, I published a fatal case of this character with autopsy. Sometimes, when left to

themselves, these abscesses will go on to recovery without delay, opening into and discharging themselves through some of the parts mentioned and gradually contracting and disappearing. If deprived of the assistance of art, they may burrow deeply into the tissues, open by long fistulous tracts into some organ, as the large intestine or sigmoid flexure, or discharge into the peritoneum.

Sometimes, even when the opening at first is large, it contracts so as to allow only an imperfect discharge of the contents of the sac. Then hectic fever arises, and the patient either leads a miserable existence for years from the constant fetid flow, or is worn out by exhaustion or septicæmia. At other times these collections of pus will remain imprisoned for a long period, without any attempt at escape.

Differentiation.—The morbid states with which this condition may be confounded are these:

Pelvic hæmatocele;
Extra-uterine pregnancy;
Displaced ovarian cyst;
Hydrometra;
Tubal dropsy.

The first of these being a hemorrhage, gives certain symptoms characteristic of that accident, as prostration, coldness of the surface, great suddenness of appearance, &c.; and absence of chill, heat, fever, and other signs which are likely to accompany abscess.

With the second, the signs of pregnancy exist, and as early as the fourth month fœtal movements may be detected, while the perfect health of the patient with absence of menstruation will excite suspicion as to the character of the affection.

Around abscesses, even of tubercular character, there is always a wall of lymph thrown up which would not be present in a displaced ovarian cyst. All the rational signs of suppuration would likewise be absent in the latter.

He who confounds the distended body of the womb with abscess would surely be very culpable, for the spherical shape of the body and the light obtainable from the uterine probe should be guides by which to avoid error.

Tubal dropsy is generally the result of inflammatory action affecting the Fallopian tubes and closing both uterine and ovarian extremities, at the same time that it causes a secretion, which

distends the intermediate canal. The fluctuating tumor thus resulting being produced by inflammation and being often attached, in consequence, to the surrounding parts, would offer difficulties in diagnosis which might well prove insurmountable. If an error were made, however, no evil would result from it.

Prognosis.—The prognosis will depend upon the following circumstances: it will be favorable if the abscess be superficial, point upon a mucous tract, open low down in the pelvis by free exit, and give forth pus which has no offensive odor. Should it be deep-seated, open by a long tract, give forth fetid pus, open high up and by two points of exit, as, for example, the bladder and bowel, or abdominal wall and bowel, the prognosis is decidedly unfavorable, unless the case can be so altered by surgical interference as to change its character.

Treatment.—Nothing can be done in these cases by specific medication, by which I mean that directed especially to relief of the existing morbid condition. All of our efforts should be directed to supporting the vital forces, which are always much prostrated by the process of suppuration. The patient should take the most nutritious diet, as much animal food as she can digest, eggs, milk, fresh vegetables, and malt liquors. Whiskey or brandy should be allowed her, and the blood state should be improved as much as possible by vegetable and mineral tonics. Those most especially suited to the condition are preparations of cinchona, and of iron, as, for instance, the following pill:

℞.—Quiniæ sulphat., ℈ij.
Ferri sulphat., ℈j.
Acid. sulph. arom., gtt. x.
Mucilage acaciæ, q. s.—M. et ft. pil. No. xx.
S.—One to be taken three times a day before meals.

But it is to surgery that we must look most confidently for aid, and in this connection arises the important question as to the propriety of opening such abscesses, the best point for evacuation, and the time for interference.

Is it best to open them?—Should an abscess in the pelvis show a rapid tendency to point and discharge through a favorable channel, at the same time that no distressing or dangerous symptoms show themselves, it would be the part of wisdom to await the action of nature, for all must admit that there are few localities in the body into which it is more hazardous to cut than this. Even under these circumstances, however, there is danger in delay. Sir James Simpson relates a case which he saw with Dr.

Zeigler one day when the abscess pointed decidedly towards the vagina and rectum very low down. Feeling sure that it must soon discharge, they left it till the next day, but before that time, to their surprise, it had burst into the peritoneum. This danger, as evidenced by statistics, is not great, and as experience goes to prove that the knife is often employed too early, rather than too late, I should strongly recommend the delay of surgical interference as long as possible. If it be delayed, the tissues intervening between the pus and the point of introduction of the instrument become broken down, and thus a tract or sinus is avoided; if two or three abscesses exist near each other, we give time for them to coalesce; and the mass of lymph poured out is liquefied by the suppurative process. Should the knife be resorted to too soon, all these advantages will be lost.

Let us suppose a different case, that the patient is suffering grave constitutional signs from the abscess. The answer to the question of the propriety of interference resolves itself into this: if the pus can be certainly, easily and safely reached, it should be evacuated. Should the abscess be deeply seated, on the other hand, so as to make the operation difficult and uncertain, it would expose the patient to hazards greater than those attendant upon delay.

The Best Point for Evacuation.—To whatever surface the point of the abscess is nearest, that will, as a general rule, be the best for its evacuation. If there be a choice, the locations at which it will most likely point should be chosen in this order: 1st, the vagina; 2d, the rectum; 3d, the abdominal walls.

The Proper Time for Evacuation.—If possible, the operation should be delayed until all the lymph effused has been softened down, until all the abscesses have coalesced, and until the accumulated pus has broken down the mass of tissue between itself and the channel of evacuation.

Methods of Operating.—The propriety of opening the abscess having been determined upon, the operator, if he intend reaching it through the vagina or rectum, should carefully investigate, by touch, as to the presence upon their walls of large bloodvessels, the opening of which might prove a source of serious hemorrhage. The patient being placed on the left side and Sims's speculum introduced, if the abscess be superficial, a trocar and canula may be plunged into it. If it be deeply seated, a bistoury may be employed, not to plunge in, but to cut line by line through the overlying tissues until it is reached. An anæsthetic should

always be administered, as perfect quietude is essential to safety. If the opening made be large enough to admit the finger, it should be passed in, and by it any tract leading into an adjoining abscess should be enlarged, and any sloughing tissue met, removed. After this, should there be any fear of closure of the canal just opened, its walls may be touched by nitrate of silver, or painted with solution of persulphate of iron, or a sponge-tent, or piece of gum-elastic catheter may be left in it.

If it be thought best to select the abdominal surface as the point of evacuation, all danger of escape of pus into the peritoneum should be avoided by following the suggestion of Récamier with reference to hepatic cysts, namely, causing adhesion of the layers of the serous membrane by a nitric acid issue over the point of selection. The trocar may be plunged through the centre of the issue without the danger just mentioned.

Should the operator open any large vessel in the vaginal walls, hemorrhage may be checked by applications of persulphate of iron, the vaginal tampon, or, should these not prove effectual, the actual cautery.

Means for Causing Closure of the Sac.—Sometimes, after the evacuation of these abscesses, their sacs will not close, but, remaining open for months and even years, go on pouring out large quantities of pus.

The causes of their not closing are these,—the existence of sinuses, which will not allow their complete evacuation; a peculiar condition of their walls from the existence of a membrane, called by Delpech, pyogenic, which tends to prolong suppuration; or the passage into the sac of air or fæces from the intestines, or urine from the bladder.

Of these the first is decidedly the most frequent, and should be met by dilatation of the tract leading to the abscess, by tents of sponge or laminaria, or enlargement by the knife.

Should the abscess have a short and free outlet, the sac should be injected two or three times a week with tincture of iodine, at first in solution, afterwards pure; or by solution of persulphate of iron, weakened by admixture with twice its bulk of water.

In case of entrance of fæces, air, or urine into the diseased part, a counter-opening should be made which will allow their free escape, and the part kept as clean as possible by injection of tepid water. Then the fecal or urinary fistula allowing the vicarious discharge should be cured by appropriate means.

CHAPTER XXVII.

PELVIC HÆMATOCELE.

Definition and Synonyms.—Under this and the synonymous titles of retro-uterine hæmatocele, peri-uterine hæmatoma, and bloody tumor of the pelvis, has been described an accumulation of blood in the pelvic cavity either above or below the peritoneum.

History.—Although an attempt has been made to prove that the ancients were cognizant of this affection, the proof of such a fact is not satisfactory. The earliest allusion made to it is contained in the works of Ruysch, of Amsterdam, who wrote in 1737. After this, little attention was paid to it until the time of Récamier, although mention of it was made by Frank, Deneux, and some others.

In 1831, Récamier, under the impression that he was opening an abscess, cut into a tumor behind the uterus and gave exit to a large amount of black, grumous blood, and about ten years afterwards Bourdon, one of his pupils, published another case occurring in his practice.

A tabular view of the names of those who have been chiefly instrumental in elucidating the subject and systematizing our knowledge upon it is here presented:

Récamier,	1831,	"Lancette Française;"
Velpeau,	1843,	"Recherches sur les Cavités Closes;"
Bernutz,	1848,	"Archives de Médecine;"
Vigues.	1850,	"Des Tumeurs Sanguines de l'Excav. Pelvienne;"
Nélaton,	1851,	"Gazette des Hôpitaux;"
Nonat,	1851,	"Thèses de Cestan, Gallardo, et Prost;"
Huguier,	1851,	Lecture before Surgical Society of Paris;
Gallard,	1855,	"Union Médicale;"
Voisin,	1858,	"De l'Hématocèle Rétro-Utérine."

I have not endeavored to record the names of all who have made valuable contributions in France, for had I done so, the list would have been a long one. Those only are referred to who have been foremost in advancing our knowledge.

It will thus be seen that we are indebted to France for the early literature of pelvic hæmatocele. Germany has contributed

little towards it. In Great Britain, Dr. Tilt was the first to publish upon it, and in America, Prof. Gunning S. Bedford reported the first case which I can find recorded. More recently, we are indebted to Dr. Byrne, of Brooklyn, for a faithful report of several cases. Prior to the year 1851, although it had attracted some attention, it was not well understood even in France, for, in 1850, we find Malgaigne cutting into an hæmatocele under the impression that he was enucleating a fibrous tumor, and losing his patient from hemorrhage.

Pathology.—The definition of hæmatocele has no relation whatever to the cause of the hemorrhage which gives material for the bloody tumor. The disease consists in the collection of a mass of blood in the pelvis, either above or below its roof. Whatever be its source, such a collection constitutes the affection which engages us. Ordinarily, we find that the flow giving rise to it takes its origin from one of the three following sources:

1st. Direct escape of blood from vessels in or near the pelvis;
2d. Reflux of blood from the uterus or tubes;
3d. Transudation of blood in consequence of dyscrasia.

It is evident that hæmatocele is not a disease, but a symptom of a number of pathological conditions. As, however, the source of the hemorrhage which results in the bloody tumor very often cannot be ascertained, we are forced to deal with its most prominent and significant sign, taking this as an exponent of a state which is beyond the possibility of diagnosis.

In works upon practice written twenty years ago, we find dropsy treated of as a disease. In those of to-day it is regarded only as a legitimate result of renal, cardiac, or hepatic disease. Obstetric writers, even as late as ten years ago, described puerperal convulsions as a disease incident to parturition. Those writing ten years hence will probably regard them, as many do to-day, as one of the numerous consequences of renal disease. We may with good reason hope that the time will come when a similar improvement in description, based upon an advance in our knowledge of pathology, may connect itself with hæmatocele, but at present the etiology is often impossible.

The special sources of the hemorrhage inducing the affection, which have been revealed by post-mortem examinations, may thus be presented at a glance.

1. *Rupture of bloodvessels in the pelvis.*

   Utero-ovarian;
   Varicose veins of broad ligaments;
   Aneurism of artery;
   Vessels of extra-uterine ovisac.

2. *Rupture of pelvic viscera.*

   Ovaries;
   Fallopian tubes.

3. *Reflux of blood from the uterus.*

   Reflux of menstrual blood.

4. *Transudation from dyscrasia.*

   Purpura;
   Scorbutus;
   Chlorosis.

All of these causes have been proved by post-mortem research to have resulted in hæmatocele, but it cannot be questioned that rupture of any bloodvessel which empties its contents into the peritoneum might also do so. Blood poured into the peritoneum from rupture of the spleen, for example, would gravitate towards Douglas's cul-de-sac, because it is the most dependent portion of that membrane, and coagulating would give all the signs of a bloody tumor in that locality. At times the affection is indicative of serious internal lesion, rupture of the ovary or tube; at others it results merely from imperviousness of the cervical or tubal canal, which prevents the advance of menstrual blood and causes it to regurgitate into the peritoneum; while in still a third class of cases, it is created by pouring out of impoverished and diseased blood from the vessels of the peritoneum. The last condition has been described as hemorrhagic peritonitis.

Whatever be the source of the blood, it collects either in the most dependent part of the peritoneum, or in the pelvic areolar tissue beneath it. Here it remains for a time fluid, then undergoes partial coagulation, becoming a grumous mass like currant jelly, and lastly, all the fluid being absorbed, a hard, resisting tumor composed of fibrinous material remains. Should the collection have occurred in the peritoneum, its boundaries will be the walls of that cavity laterally and below, while a localized peritonitis forms for it a roof of effused lymph. If it collect in the areolar tissue of the pelvis, the effused blood will make its

own nidus by percolating the loose structure and mechanically creating a space in it.

In either of these positions it is entirely absorbed and reduced to a hard, firm tumor, which remains for a long time, or is discharged by the vagina or rectum, or into the peritoneum. The last point of evacuation is fortunately rare. Nonat[1] quotes Dupuytren for this very ingenious and plausible explanation of the method of such absorption, which he likens to the process of digestion. The vessels of the cyst which are in contact with the mass remove its fluid portion, and thus its hard surface comes in apposition with the sac. This excites effusion of serum, which softens the fibrinous wall and renders it susceptible of absorption, which soon occurs. Then again contact excites a flow of fluid, and again this is removed, until the whole mass is diminished or completely absorbed.

Causes.—A glance at the recognized causes of the disease will make it evident that congestion of the pelvic organs must, in an eminent degree, predispose to it. This explains the fact that it has been found to have occurred most frequently during the period of uterine activity and especially during a menstrual epoch.

The predisposing causes are—

The period of uterine activity, 15 to 45;
Disordered blood state, plethora or anæmia;
The menstrual epoch;
Chronic uterine or ovarian disease;
The hemorrhagic diathesis.

The exciting causes are—

Sudden checking of menstrual flow;
Blows or falls;
Excessive or intemperate coition;
Obstruction of cervical canal;
Obstruction of Fallopian tubes;
Violent efforts;
Diseases impoverishing the blood.

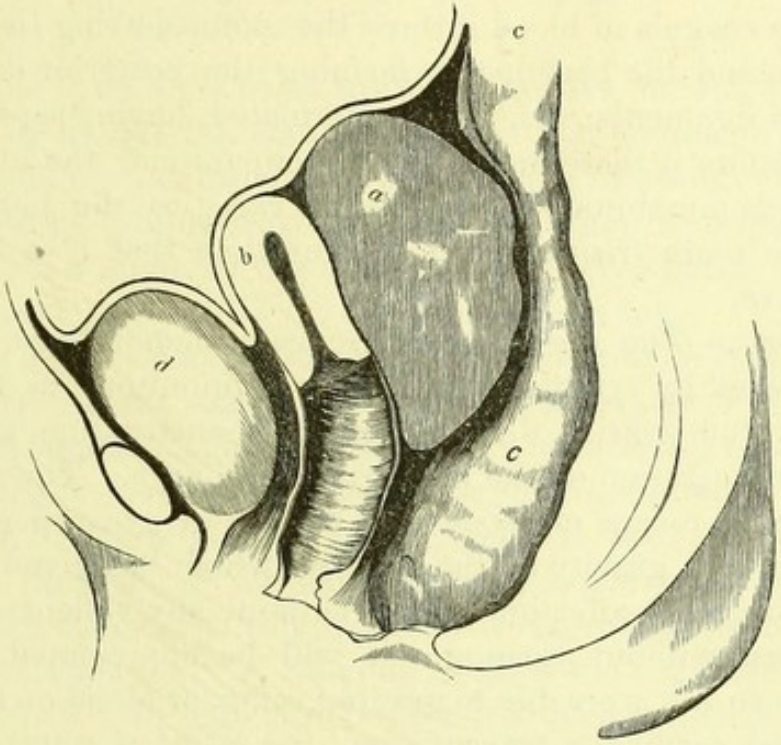
Varieties.—There are two forms of the affection, subperitoneal and peritoneal, which are represented by Figs. 172 and 173.

The occurrence of the former has been denied by Aran, Voisin,

[1] Op. cit., p. 344.

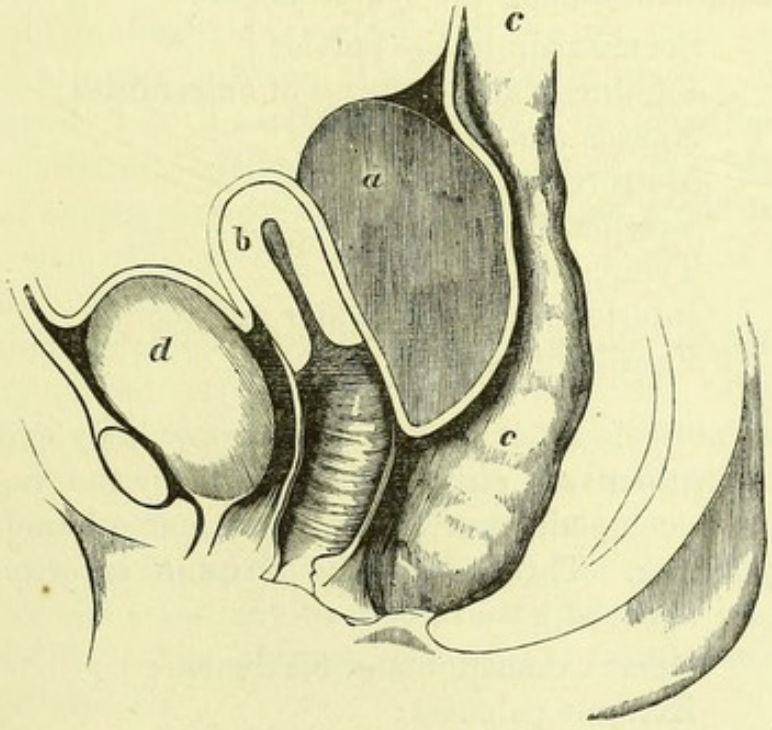
and others, but reports of autopsies substantiating it, by Simpson, Nonat, and others, place it beyond doubt. Who, for example,

Fig. 172.



Subperitoneal hæmatocele. *b* uterus, *c* intestine, *d* bladder; *a* represents the large mass of coagulated blood which has lifted the peritoneum above it. (Simpson.)

Fig. 173.



Peritoneal hæmatocele. *d* bladder, *b* uterus, *c* intestine; *a* represents a large blood clot in the most dependent portion of peritoneum.

can question such autopsic notes as the following by Prof. Simpson,[1] explanatory of the case represented in Fig. 172: "On dissection I found the reflection of the peritoneum between the uterus and rectum raised up, as shown in this diagram, and a large mass of broken coagula of blood formed the tumor, having been extravasated behind the peritoneum forming the posterior covering of the broad ligaments, and, as it accumulated, having separated and pushed before it that portion of peritoneum and the utero-rectal fold of this membrane." Of the two varieties the peritoneal is much the more frequent, at the same time that it is by far the more grave.

Symptoms.—The absolute occurrence of hemorrhage is generally preceded by symptoms which are premonitory, as fixed, dull pain over the ovaries, derangement of menstruation, metrorrhagia, or prolongation of the menstrual discharge. The symptoms of the actual escape of blood will depend in great degree upon the nature and gravity of the accident which has given rise to it.

Sometimes the affection occurs without any violent symptoms and almost without warning. It will be appreciated that this would be so if it were due to gradual reflux of blood on account of constricted cervix, or transudation, the result of purpura. Frequently a sudden manifestation of symptoms occurs, and the accident is announced as rapidly as is cerebral apoplexy.

Most prominent among the symptoms are—

Severe pain in the pelvis;
Faintness, and coldness of extremities;
Nausea and vomiting;
Metrorrhagia;
Uterine tenesmus;
Tympanites;
Interference with bladder and rectum;
Febrile reaction.

The patient feels as if a large and heavy body exists in the pelvis, and instinctively strives to expel it by the vagina. At times the pain complained of is very acute; at others it is a dull and heavy aching. These symptoms abate in severity in a few days and are replaced by—

Great exhaustion and feebleness;
Extreme paleness;

[1] Simpson on Diseases of Women, p. 262.

Tendency to chilliness;
Constipation;
Suppression of urine;
Great tympanites;
Apyrexia.

All these symptoms point to two facts: 1st, sudden and excessive loss of blood; 2d, the existence of some substance in the pelvis which mechanically interferes with its viscera. A part of them might be produced by menorrhagia, a part by sudden retroversion; but a union of the whole will strongly excite suspicion of hæmatocele, and call for a physical exploration.

Physical Signs.—Vaginal touch reveals a tumor, which is generally posterior to the vagina, and which, to a greater or less extent, closes that canal. This is generally very marked, especially in the subperitoneal form of the disease, but sometimes, to detect the tumor, the finger must be carried into the fornix vaginæ. The mass thus felt, if the examination be made within a day or two after its formation, will be found to be soft, smooth, and obscurely fluctuating. If a number of days have elapsed before it be touched, it will give the impression of irregularity, due to coagula surrounded by fluid blood. The uterus will be found pressed out of its position, generally upwards and forwards, so that the cervix will be above the symphysis. Sometimes, however, it is forced out of the median line to one side.

Nonat[1] dogmatically announces that the uterus is never found between the tumor and the rectum, that is to say, behind the mass of blood; but Chassaignac[2] reports a case in which the sanguineous collection existed entirely between the bladder and uterus, and consequently must have forced that organ backwards.

Rectal touch will merely show that the bowel is closed by pressure from the tumor.

Abdominal palpation will reveal the presence of a hard mass which may extend only up to the superior strait, or as high as the navel. In cases where a small quantity of blood has been effused, and more especially where this has collected under and not in the peritoneum, an abdominal tumor may not be discovered.

By the aid of conjoined manipulation the shape, extent, and character of the mass may be further ascertained.

Differentiation.—The diseases with which hæmatocele may be confounded are—

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[1] Op. cit., p. 342.

[2] Courty, Mal. de l'Utérus, p. 912.

Pelvic cellulitis or abscess;
Retroversion;
Extra-uterine pregnancy;
Fibrous tumor;
Dislocated ovarian cyst;
Cancerous deposit in pelvic tissue.

Cellulitis and abscess generally follow parturition, present a tumor of small size, develop slowly and with signs of inflammation, and become soft as they develop. The contrary is true in reference to hæmatocele.

Retroversion may present the signs due to the mechanical results of hæmatocele, but not those due to loss of blood. If pregnancy coexist, conjoined manipulation will usually suffice for diagnosis. If it should not, the uterine probe will elucidate the case.

Extra-uterine pregnancy does not develop suddenly, but slowly, and is characterized by all the signs of pregnancy. In place of metrorrhagia there is usually, though not always, amenorrhœa.

Fibrous tumors grow slowly, are painless, and move with the uterus. They are irregular and hard.

Displaced ovarian cysts are painless, show no signs of hemorrhage, and cause no constitutional disturbance or metrorrhagia.

Cancer in the pelvis is rare, and could hardly cause error of diagnosis. Its slow development, the absence of sudden and severe symptoms, absence of metrorrhagia, presence of cachexia, and general feebleness, will serve as correct guides.

It is always of great importance with reference both to prognosis and treatment to determine whether the case be one of peritoneal or subperitoneal form. Differentiation would probably be practicable by the following comparison of symptoms:

Peritoneal Hæmatocele.	*Subperitoneal Hæmatocele.*
Tumor high in pelvis and abdomen;	Tumor low and towards floor of pelvis;
Constitutional disturbance very great;	Not so;
Bladder and rectum often undisturbed;	Bladder and rectum interfered with;
Peritonitis marked;	Not so;
Uterus pressed forwards or to one side;	Uterus elevated;
Vagina not completely closed;	Vagina occluded;
Vaginal mucous membrane of normal hue.	Vaginal mucous membrane of violet color.

Course, Duration, and Termination.—Hemorrhage from the sources enunciated as those of hæmatocele, may be so great as to destroy life immediately. Five such instances are recorded

by Voisin, and Ollivier d'Angers[1] mentions two in which death occurred in half an hour from rupture of a varicose utero-ovarian vein. Such a termination is, however, decidedly exceptional. The tumor generally disappears by absorption, is discharged by the rectum or vagina, or remains a hard, indurated mass for years afterwards. Discharge is most frequently followed by recovery, but sometimes putrefaction occurs in the walls of the sac, septicæmia takes place, and death ensues. The process of absorption may be accomplished in three weeks, or six months may elapse before it is complete.

Prognosis.—The prognosis is governed by the severity of the attack, but in general it is favorable. Death may result, but such an issue is rare. Of nine cases that I have seen, one ended fatally from general peritonitis, and eight recovered. Even this proportion of deaths is large. Nonat out of fifteen cases lost but one.

The following fatal case, showing how suddenly they may terminate, is reported by Dr. E. Pearl in the Lancet for October, 1870: "H. P., aged thirty-one, married, the mother of three children, the youngest aged ten months, had one miscarriage about two years ago. Her present baby was weaned at six weeks; since that time she has been regular till the beginning of August, when she passed a week over her usual time; then she had a slight menstrual discharge, which continued till September 5th, a period of three weeks. During the last few months she has complained frequently of severe pain in her back, which has obliged her sometimes to keep her bed.

"On September 6th she was in her usual health, and between 2 and 3 P.M. she went up stairs to dress, carrying her baby in one arm, and a jug of water in the other hand. Whilst brushing her hair she became suddenly faint, and felt a 'pain all over her.' I saw her for the first time about 5 P.M. She was in a state of collapse; sensible; countenance pallid; eyes sunken; pulse at the wrist scarcely perceptible. She had vomited two or three times simply half-digested food. She complained of great pain at the pit of the stomach and between the shoulders, with a feeling of suffocation. She said she thought she had a miscarriage. A vaginal examination showed there was no uterine discharge whatever. The vagina was cool; its upper walls somewhat tender to the touch, soft and bulging. Brandy, opium, and ether were administered freely, but she gradually sank, and died at 12.30 A.M.

[1] Noeggerath, Bul. N. Y. Acad. Med., vol. i, p. 577.

on September 7th, about nine hours and a half after the commencement of the attack.

"A partial post-mortem examination of the body was made in the afternoon of September 7th. The cavity of the peritoneum contained a large quantity of fluid blood, and the pelvis was literally full of dark clots. The right ovary was a cyst about the size of a small orange, and surrounded by a plexus of large veins; the left ovary was also a cyst about the size of a walnut. There were also numerous large veins in the tissues behind the bladder and in front of the rectum. All the other pelvic and the abdominal organs were healthy."

In cases of peritoneal form a graver prognosis is called for than in the subperitoneal, for evident reasons; and where a great deal of blood has been lost the dangers are greater than where the amount has been more limited. This is true not only from the fact that an excessive flow might cause death from exhaustion, but because the removal of so large an amount of coagulum, whether by absorption or discharge, must necessarily expose the patient to great dangers.

Complications.—The complications of the affection are—

Peri-uterine cellulitis;
Pelvic peritonitis;
Displacement.

Results.—These complications, by leaving the uterus bound in a vicious attitude by false membranes, often induce as results, which may remain permanently—

Dysmenorrhœa;
Sterility;[1]
Tendency to abortion.

Treatment.—It will be rare that the physician will be called upon to resort to treatment before the amount of blood which is destined to be lost has collected in the pelvis. He will, however, often be present to witness the great constitutional disturbance and excessive prostration and pain which immediately follow the hemorrhage. The diagnosis being made, the indications of treatment will be simple enough:

1st. To check tendency to further loss;
2d. To prevent death from prostration;
3d. To relieve pain.

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[1] Courty, op. cit., p. 917.

To accomplish the first indication, perfect rest should be immediately secured. The clothes should be loosened, but no time spent in their removal, and the patient kept quiet upon the back. A bladder of ice, or cloths soaked in cold water, should be laid over the hypogastrium, and cold fluids given to drink if nausea should not exist as a symptom.

In the fulfilment of the second indication, alcoholic stimulants and opiates should be freely used. Iced champagne or cold brandy and water should be given, and with them should be combined a solution of the sulphate of morphia or some fluid preparation of opium. In great nervous prostration, and more particularly when this has resulted from hemorrhage, opium proves a far more reliable and rapid stimulant than alcohol. In hæmatocele it is peculiarly applicable for the additional reason that it accomplishes at the same time the third indication, the relief of pain.

Should pain be very severe or nausea exist, Magendie's solution of morphia should be injected hypodermically in the amount of ten minims, which may be repeated in thirty minutes if it fail to give relief.

As soon as reaction has been fully established the attention of the practitioner should be turned to the decision of this important point, whether the accumulated blood should be evacuated or whether the case should be allowed to proceed without such interference.

Surgical Treatment.—Récamier, in introducing the subject to the profession, inaugurated the practice of evacuating such tumors, and Nélaton indorsed and popularized it. But experience taught Nélaton that the procedure was not judicious, and "to-day he proscribes it in an almost absolute manner."[1] Immediate surgical interference presses its claims in consideration of the facts that—

1st. It is capable of cutting short a lengthy and dangerous disorder;

2d. It may save the patient from the dangers incident to absorption as well as discharge;

3d. It removes from the peritoneum or pelvic cellular tissue a foreign body, which, undisturbed, would prove the focus of inflammation.

It is not surprising that it was the favorite plan in the infancy

[1] Nonat, op. cit.

of the subject. When, however, pathologists had had an opportunity of studying the natural history of the affection it was as naturally abandoned for the following reasons:

1st. It was discovered that, when not interfered with, hæmatocele very generally passes away rapidly.

2d. It was discovered that the dangers of puncture were greater than those of the tumor left undisturbed.

3d. Medical means were found to exert a marked controlling influence over its complications.

Of course the special circumstances of each case must be the guide as to interference of this sort. In general terms all that can safely be stated is this: if great and prolonged pain threaten to exhaust the patient; if the tumor be still fluid; if, for any reason, rupture of a subperitoneal tumor into the peritoneum be threatened; and if the case be an unquestionable instance of the subperitoneal form, evacuation may be advantageously resorted to. Indeed, under such circumstances, a neglect of this means would be culpable. Without such indications surgical interference should be avoided, and reliance placed upon medical resources, for it should be borne in mind that the collection of blood is usually in the peritoneum, and that incision of this membrane in addition to its own inherent dangers would always expose to those arising from admission of air.

Methods of Operating.—The patient being placed upon the back, as if for lithotomy, a trocar and canula may be held in the right hand, guided to the most fluctuating and dependent part of the mass and plunged in. Or, the patient lying on the left side, the perineum and a part of the posterior vaginal wall may be lifted by Sims's speculum, and an incision made into the wall of the tumor by a tenotomy knife or small bistoury. Through the opening thus made, one or two fingers should be introduced and the clots removed. After evacuation by either method, the nozzle of a syringe should be introduced into the sac and a stream of tepid water, or of this with a very small amount of carbolic acid, should be very gently and cautiously made to wash out the cavity remaining. This should be repeated once or twice in twenty-four hours, for prevention of septicæmia.

Medical Treatment.—Reaction having taken place, perfect rest should be insisted upon. The patient should not rise from bed even for the calls of nature, the bladder being emptied by the catheter and the rectum by enemata, if necessary. Should the patient's strength permit of local abstraction of blood, leeches

should be applied to the hypogastrium, and after their removal warm poultices of ground linseed should be constantly kept over the part. Pain should be quieted by opiates, and all the functions supervised.

After the abatement of acute symptoms, a blister, four by six inches, should, unless some contra-indication exist, be applied over the hypogastrium, and this may with advantage be repeated every ten or twelve days. Its results will often be very marked, and although apparently harsh practice, it prevents much suffering, while it causes but little.

If the stomach be not much disordered, the iodide or bromide of potassium in moderate doses may be employed. Should any tendency to hectic fever show itself or a tonic be needed, quinine, alone or combined with iron, will serve an excellent purpose.

CHAPTER XXVIII.

MYO-FIBROMATA OR FIBROID TUMORS OF THE UTERUS.

Definition and Synonyms.—The parenchyma of the uterus is liable to undergo a localized hypertrophy, which results in the production of two varieties of tumors; the fibrous and the fibro-cystic. The first, which is one of the most frequent pathological conditions to which this organ is subject, will now receive attention, while the second and much rarer form, will be treated of in a separate section.

By the older writers fibrous tumors were styled tubercula, steatomata, sarcomata, &c. Since their true nature has been more carefully studied by aid of the microscope and been understood, they have been described under the names of fibrous tumors, uterine fibroids, fibroma, and more recently, by Virchow, myoma. I have adopted the terms which head this chapter, following the example of Billroth for the first, and of Klob for the second, for

the reason that neither that of fibroma nor myoma alone, expresses the existing pathological condition. Billroth[1] rejects the latter name, which signifies that these growths consist in hypertrophy of muscular substance; and at the same time he refuses to admit the former, as that conveys the equally incorrect idea that they are constructed of connective tissue. Fibroid (*fibrosus* and εἶδος) resembling fibrous tissue, is at least not calculated to mislead, while myo-fibroma expresses the exact truth.

History.—Until the time of Dr. William Hunter, who wrote towards the close of the eighteenth century, the true nature of uterine fibroids was not appreciated. They were confounded with malignant growths, of which they were regarded as a variety. He described them under the name of fleshy tubercle, and contributed greatly to the knowledge of their pathology; but it was not until the writings of Chambon,[2] Baillie, Bayle, and others, that the subject was fully elucidated. Sir Charles Clarke, in 1814, wrote an excellent chapter upon them, which would almost answer the requirements of our day.

Pathology.—Surprise that any confusion should have existed between these tumors and cancerous growths, will cease when the statement is made that their identity is boldly assumed by so careful an observer as Dr. Ashwell, as late as 1844. He gives five reasons for his belief, which he declares appear to him, "conclusive." His reasoning has failed to convince others, no writer since his time having adopted the view which Dr. Hunter succeeded in abolishing, and no fact in Gynæcology is now more fully settled than that of the non-malignancy of these tumors.

Until recently the question has not been settled as to the possibility of their undergoing cancerous degeneration. Bayle and Lobstein have declared that they never do so, and the researches of Cruveilhier and Lebert tend to support the view; while Kiwisch, Atlee,[3] and Simpson, believe that malignant degeneration occurs in very rare cases. "In 1862," says Klob,[4] "a singular specimen was added to the Salzburg Museum. From a fibroid tumor the size of a child's head, situated in the posterior walls of the uterus, carcinoma had undoubtedly been developed without any other portion of the body being affected, and I am therefore constrained to allow the possibility of such a transition, although I cannot

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[1] Surg. Pathol., p. 583.
[2] Mal. de l'Utérus.
[3] McClintock, Diseases of Women.
[4] Op. cit., p. 173.

recall a second case of this kind either in the literature of the subject or in my rather extensive experience."

Although this case seems to settle the matter of possibility at least, it must not be forgotten that beyond doubt such a change of type is exceedingly rare. It is in this connection a fact worthy of note that in the negress, in whom fibroid tumors are so common as to be regarded by some as almost universally met with after the thirtieth year, carcinomatous affections of the uterus are very rarely seen.

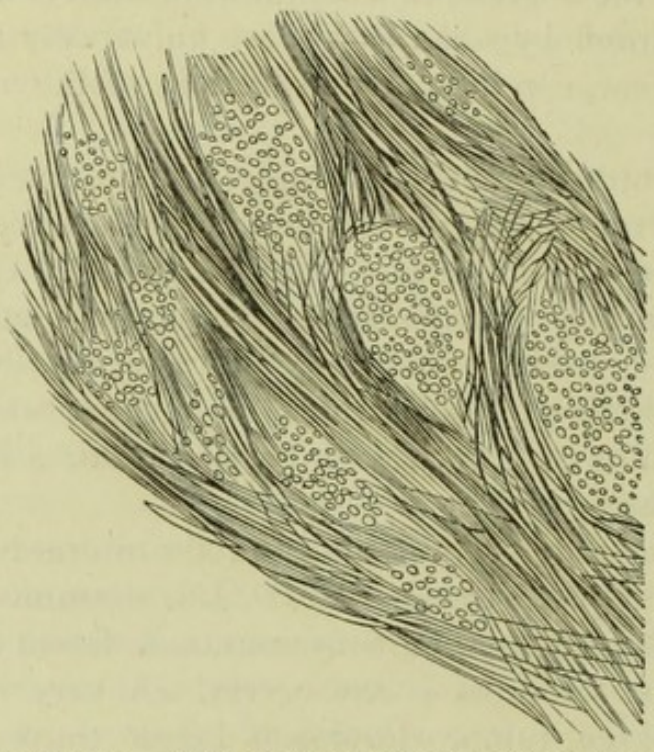
Uterine fibroids may develop singly, and ordinarily they do not attain to a very great size. Sometimes, however, they exist in great numbers, and grow to a very large size. Courty reports one weighing fifty pounds, and Dupuytren another weighing twenty-five. I exhibited some years ago to the New York Pathological Society, the uterus of a negress which contained thirty-five tumors of every size between that of a fœtal head and that of a marble.

Fibroids may develop in any part of the uterus; but the usual site is in the body or fundus. Mr. S. Lee examined seventy-four preparations in the London museums, and found that the rarest of all locations for them is the cervix. A very interesting instance of a large tumor developed below the os internum is reported by Dr. Murray, in the sixth volume of the London Obstetrical Transactions. Their structure differs very greatly not only from their original development being different, but from their being susceptible of several diseased states, which will very soon be mentioned, and which produce their characteristic alterations. The typical form is that of hard, resisting fibrous tissue, which creaks under the knife. Under the microscope this is found to consist of long, fine fibres, generally united in bundles; of fusiform fibre-cells analogous to fibro-plastic elements; and of round or elliptic granules of small size; the whole being bound together by fine intercellular substance.

They consist of the hypertrophied elements of the uterus, to which organ they are strictly homologous. In the majority of cases, it is declared by recent pathological investigators, that connective tissue preponderates in their construction, but there is always a certain degree of muscular hypertrophy concerned in their development, hence Billroth's objection to the terms fibroma and myoma. In some cases the amount of muscular exceeds that of connective tissue in their construction.

This, which may be styled the normal type of uterine fibroid, is departed from by formation of cysts in the midst of the fibrous tissue, which constitutes the tumor one of fibro-cystic character. They are liable to a variety of diseases, among which the most

FIG. 174.



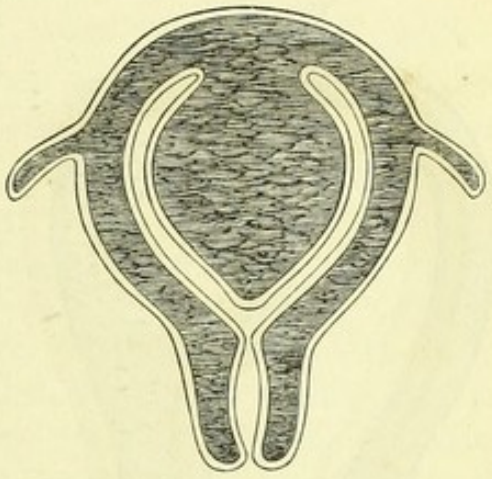
Uterine fibroma. Oblique longitudinal section of muscular cell-bundles. (Billroth.)

frequent are œdema, inflammation, gangrene, fatty, colloid, and calcareous degeneration and apoplexy. The last consists in rupture of small bloodvessels within the mass, and consequent accumulation of blood.

Very rarely the whole mass becomes a ball of calcareous matter, which projecting in utero, and becoming detached from its uterine attachment, is sometimes discharged per vaginam. This is the disease which was described by old writers as uterine calculus. The uterine attachment of fibroids of compound character is sometimes the seat of a species of varicose degeneration of the small vessels, which causes the structure to resemble erectile tissue. Tumors thus affected have been styled by Virchow, telangiectatic tumors. This vascular structure readily bleeds, and in one case I saw it the cause of a small hæmatocele. But large vessels are likewise discovered in the pedicles of fibroids; Caillard reporting one the size of the radial artery. Klob has met with but one such vessel, which was the size of the uterine artery.

Varieties.—Klob divides these growths into two classes—simple and compound. The first consists of one tumor, which is generally spherical, and which is connected by loose connective tissue with the uterus. The second is a compound tumor, made up of a number of small fibroids, connected by loose connective tissue. The second variety is more vascular than the first, and its surface is nodulated and not smooth. Both these classes present themselves clinically in three varieties, which are created by the locality of the growths in the walls of the uterus. If they lie under the mucous membrane projecting into the uterus, they are called submucous; if under the peritoneum, subserous; if in the wall of the uterus, interstitial. Figures 175, 176, and 177, represent these forms.

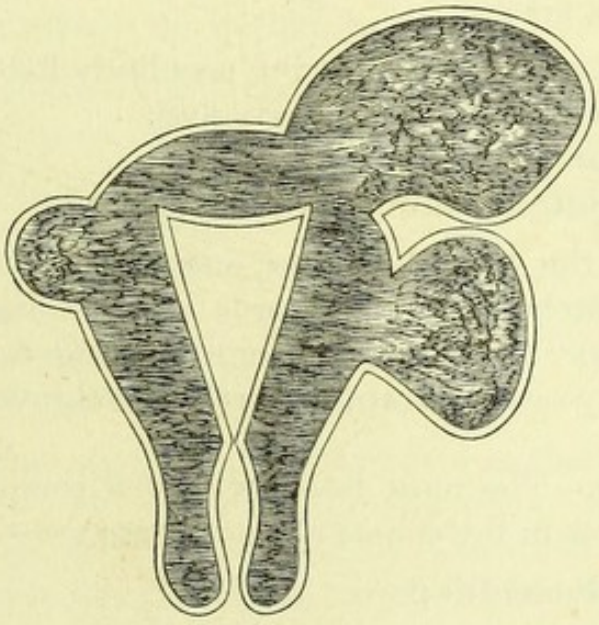
Fig. 175.



Submucous fibroid becoming pedunculated.

If a tumor be situated in the wall of the uterus, it may remain there until it assumes large dimensions. Should it be near its

Fig. 176.

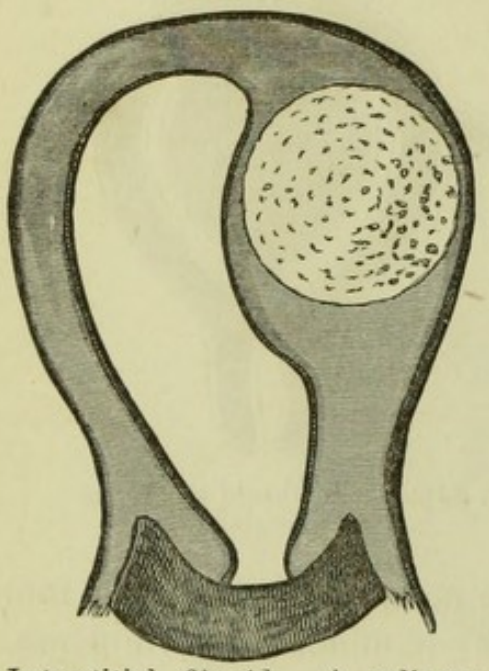


Subserous fibroids.

mucous or serous lining, it is subjected to contractile efforts on the part of the surrounding parenchyma, which are excited by

its presence, and which often in time force it towards the uterine or abdominal cavity. Sometimes its connection with the mother tissue is kept up by a broad base; sometimes it is limited to a long, slender pedicle, which, in the case of the subperitoneal varieties, allows of great mobility. Should the mass be forced into the uterine cavity, and gradually assume a slender, pedunculated attachment, it receives the name of fibrous polypus, which is therefore a variety of submucous fibroid.

Fig. 177.



Interstitial fibroid. A solitary tumor is seen developed within one wall of the uterus.

Subperitoneal uterine tumors have been known to perform the most singular migrations. The pedicle being broken, they have at times been found rolling about freely in the peritoneum, and at others, having set up adhesive inflammation, they have been found detached from the uterus, and attached to some other abdominal viscus.

Causes.—The predisposing causes, or rather those generally regarded as such, are:

Race, the African being peculiarly liable;
Age, from thirty to forty-five;
Sterility;
Menstrual disorders of long standing.

Concerning the exciting causes, one writing in the year 1871, may, unfortunately, quote the words of Sir Charles Clarke, recorded in 1814: "Nothing is known respecting the cause of this disease." Fifty-seven years of research have thrown no light upon its etiology.

Complications.—The most frequent of the complications which show themselves in the course of the disease are—

Endometritis;
Displacement;
Cystitis;
Obstruction of the rectum;
Hæmorrhoids;

Pelvic peritonitis;
Areolar hyperplasia;
Atrophy of uterine walls.

Every one who has made autopsies upon cases, in which uterine fibroids have existed, must have been struck by the fact of the varied appearance of the walls of the uterus. Where several tumors exist the uterine cavity is sometimes so perverted and rendered so tortuous that it cannot be traced, while in cases where a large number of tumors are formed, the whole uterus seems to have disappeared, its place being usurped by tumors. In the case already cited, in which I counted thirty-five tumors, no trace of the uterus could be discovered by the naked eye, above the os internum. In some cases the vice of nutrition set up by the presence of these growths results in thickening of the uterine walls by the establishment of interstitial hypertrophy, in others localized points of thickening exist, while in others still, the wall of the uterus may become so attenuated by distension and atrophy as to leave only a thin film to represent the former walls. This distended and attenuated organ is that which Walter has styled the "membranous uterus."

Symptoms.—This enumeration of complications is a sufficient explanation of the great number of rational signs which present themselves, for not only do we meet with the symptoms of fibroid tumors, but with those of a variety of disorders which they excite. Most prominent among the symptoms are—

Menorrhagia or metrorrhagia;
Irritability of bladder and rectum;
Pain throughout the pelvis;
Uterine tenesmus;
Profuse leucorrhœa;
Dysmenorrhœa;
Signs of pressure on crural nerves and vessels;
Watery discharge from uterus.

These symptoms are not equally common to the three varieties of the affection. Subperitoneal tumors often, and interstitial tumors sometimes, are accompanied by none, or at least by very few of them. It is the submucous variety which most constantly and prominently develops them.

Physical Signs.—Although the rational signs are so numerous and striking, they can never do more than excite a suspicion, which leads to investigation by physical means.

In the case of a large tumor no difficulty in diagnosis will present itself; for the results of vaginal touch, abdominal palpation, and conjoined manipulation will be so decided as to settle the character of the case definitively. When, however, a growth of small size exists, great difficulties will often attend diagnosis, which may be delayed until the case has been under observation for a long time. A thorough examination involves full and careful exploration, by touch, of the anterior and posterior surfaces of the uterus, as well as of its cavity to the fundus.

To examine the posterior wall the patient should be placed upon the back. The examiner then depressing the uterus powerfully by one hand placed over the hypogastrium, should sweep the index finger of the other over that wall, first by vaginal and then by rectal touch. While the finger is lying under the uterus, in the vagina or rectum, the fingers of the hand on the abdomen should be made to depress its walls so as to sweep from the fundus over the anterior surface down to the cervix. The finger under the uterus lifting it up will offer itself as an opposing force to the hand on the abdomen. This manœuvre will expose to examination the outer surface of the uterus, unless the patient be very fat.

Should this be so, a tenaculum may be fastened in the cervix and the uterus drawn down by it so that the posterior wall will be within reach of rectal touch, and the anterior wall of vaginal exploration when the finger is pressed firmly against the base of the bladder.

For investigating the interior surface of the uterus the neck should be fully dilated by tents of sponge or sea-tangle, and immediately upon their removal, the uterus being depressed as for examination of the outer surface, the finger should be carried up to the fundus. Even without dilatation the presence of submucous tumors may often be detected by careful examination by the uterine probe, and the attachment of a tumor may thus be ascertained.

Differentiation.—The diseases which may be confounded with fibrous tumors are—

Peri-uterine cellulitis or abscess;
Pelvic hæmatocele;
Anteflexion or retroflexion;
Ovarian tumors;
Fecal impaction.

The tumor created by cellulitis is usually immovable, very

sensitive, accompanied by fever, comes on suddenly, and fixes the uterus. A fibroid tumor is the opposite of this in every respect.

Hæmatocele occurs suddenly with violent symptoms. The tumor is sensitive and immovable, at first semi-fluid, and accompanied by tympanites, and constitutional disturbance. Fibroid tumors show no such symptoms.

Flexion may be determined by the uterine probe, and differentiation established between it and fibroids by conjoined manipulation and rectal touch.

Ovarian tumors of solid form are the only ones which usually give difficulty in diagnosis. They are unaccompanied by menorrhagia, can be pushed from side to side without affecting the position of the uterus as ascertained by vaginal touch, and are not themselves affected by movement of the uterus by means of the uterine sound. In cases where an ovarian tumor is firmly attached to the uterus, differentiation is not only difficult but often impossible.

Fecal impaction presents a tumor which can be indented by pressure, is generally in the caput coli, does not move with the uterus, gives severe intestinal pain and disorder, and exerts little influence on the functions of the uterus.

Prognosis.—The practitioner cannot be too cautious or display too much reticence in pronouncing the prognosis of uterine fibroids. There are few diseases in which the young physician will be led into greater error or be made to regret more decidedly an overconfident prediction. Fibroid tumors, unless of great size, rarely end fatally, however gloomy the prospect may appear when they are first discovered. And yet death from them is not so infrequent as to warrant an entirely favorable prognosis.

Frequency.—These facts are to a certain degree corroborated by an examination into their frequency. Were they as dangerous as is sometimes supposed, a large number of deaths would be annually produced by them, for, to use the words of McClintock, "without question the most frequent organic disease of the uterus, if we except inflammation and its effects, is fibrous tumor." Bayle estimated that of all women dying beyond thirty-five years of age, twenty per cent. were thus affected. Even supposing that his assumption was an exaggerated one, an idea of the frequency of the affection may be gathered from the fact of his venturing upon it, and surprise at it will be modified when the following extract is read from Klob.[1] In speaking of their frequency, he says, "At the

[1] Op. cit., p. 177.

climacteric period, it is such that undoubtedly 40 per cent. of the uteri of females, who die after the fiftieth year, contain fibroid tumors."

Let the diagnostician who has discovered a uterine fibroid, and feels prompted to give a grave prognosis concerning it, bear these facts in mind, and he may be prevented from injuring his patient's comfort, and his own reputation.

Course, Duration, and Termination.—As already stated, these growths may attain the enormous weight of fifty pounds. Fortunately they very rarely reach such dimensions, but even when they do not, they sometimes exhaust the patient by metrorrhagia, leucorrhœa, hydrorrhœa, and a low grade of constitutional irritation, often attended by hectic fever. But this termination, like the preceding, is exceptional. Having attained a moderate size they generally remain stationary, or increase slowly until the menopause, creating considerable inconvenience and depreciating the patient's strength by hemorrhage. Then undergoing a certain degree of atrophy with the cessation of uterine and ovarian functions, they cease to be, to any great degree, a source of annoyance, or at least of danger. Even during the age of uterine activity, nature may, unaided, effect a cure by the following means:

Absorption or atrophy;
Direct expulsion by rupture of attachment;
Sloughing, from deprivation of nutrition, or inflammation;
Calcareous degeneration;
Gangrene.

The tumor is sometimes deprived of nutrition by inflammatory action occurring in the vascular structure of the uterine attachment, which has already been described, collections of pus being sometimes discovered in it.

Throughout their existence these tumors sympathize in the uterine changes which attend upon these three conditions; menstruation, utero-gestation, and the menopause. With the occurrence of menstruation they, like the tissue of the uterus, become congested, enlarged, and sensitive. During pregnancy their component muscular fibres grow, and probably undergo retrograde metamorphosis after delivery. As senile atrophy succeeds the change of life, their nutrition is impaired, and fatty and calcareous degeneration are apt to occur.

Sometimes fluid collections take place within these masses, some morbid process destroying their tissue as if by liquefaction.

The fluid thus collecting may be purulent, watery, or sanguineous. In some cases a colloid degeneration is said by pathologists to occur in or near the centre of the mass, which softens down and liquefies the fibroid tissue. In others, an apoplexy takes place, which creates the initial cavity, and this is subsequently found filled with the débris of the clot and with turbid serum.

Palliative Treatment.—In the vast majority of cases the efforts of the practitioner are limited to palliation of the evils resulting from the growth. These will generally be due to either one or all of the three following conditions which result from it: displacement of the uterus, pressure on surrounding organs and parts, and menorrhagia or metrorrhagia. The first will often be greatly relieved by restitution of the displaced organ, and its retention at, or even above, the superior strait. This may be accomplished by the ordinary means of replacement, and the use of the bulb pessary (Fig. 141), in difficult cases, or of one of the varieties of intra-vaginal, anteversion, or retroversion pessaries, in less obstinate ones. By a properly adjusted pessary, aided by complete removal of weight and constriction from the abdomen, and the use of an efficient abdominal pad, the second set of evils may be ameliorated. Relief of the third generally proves difficult, and not rarely impossible. The presence of the fibroid in utero keeps up congestion of the endometrium, and this results in leucorrhœa, hydrorrhœa, and menorrhagia. Fortunately, good can generally be, to a limited extent, at least, effected by rest in the recumbent posture during the menstrual periods; the use of anti-hemorrhagic agents, as elixir of vitriol, tincture of cannabis indica, gallic acid, &c.; and the use of the tampon after a sufficient loss has occurred to meet the demands of ovulation. The practice of applying a tampon of cotton impregnated with solution of alum after a menorrhagic flow has, under these circumstances, lasted for four or five days, I have often resorted to, and never with any but good results. Without some such controlling influence, the patient will sometimes become greatly exsanguinated. While these means are being adopted the bowels should be kept regular, and the functions of the skin, kidneys, and liver, carefully supervised.

It has been found that hemorrhage due to this course is often greatly limited by section of the neck, a practice which was first inaugurated by Nélaton, Brown, and McClintock. In some not very explicable manner, cutting through the cervical canal by deep incisions on its sides exerts a good influence in controlling this

form of hemorrhage. A still more powerful effect will follow incision directly through the investing coat of the tumor itself, so as to cut its capsule, its superficial layer of fibres, and its superficial bloodvessels.

Curative Treatment.—Surgical means should be resorted to only under two circumstances: 1st, where the growth is so located as to render removal easy and safe; 2d, where the disease is threatening the patient's life. In the removal of these growths the practitioner imitates the processes by which nature accomplishes a cure. Bringing to his aid the first three of her methods which have been mentioned, he adds to them others which she never develops.

Uterine fibroids, whether submucous, subperitoneal, or interstitial, may sometimes be removed by one of the following means:

Absorption;
Excision;
Ecrasement;
Enucleation;
Sloughing;
Incision;
Gastrotomy.

Absorption.—Whether their absorption can be excited by any medicines at our command is very doubtful. Tumors have in certain instances been known to disappear while drugs have been employed, and perhaps they did so in consequence of their use. But no such effect can be looked for with any confidence. Indeed, with our present experience, such a result must be regarded as decidedly exceptional. Scanzoni, after advising those medicines which are most popular as stimulants of absorption, says, "We do not remember a single case in which, with the means indicated, or with others, we have obtained the complete cure of a fibrous body." Whatever drugs be tried for this purpose should be continued for many months, and even a year or two, before the trial can be considered fairly made, for their action is never immediate. Those in greatest esteem are iodine, the iodide and bromide of potassium, and the waters of certain mineral springs, as Kreuznach, Kissingen, Krankenheil, &c. All these may be employed externally in the form of hip-baths as well as internally.

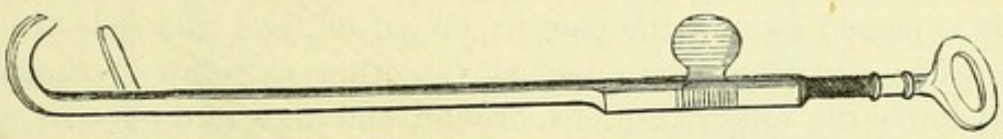
Among medicines none promise so well as the iodide and bromide of potassium. These should be given for a length of time, one or two years, for example, in doses of from five to ten grains, three times a day.

In the case of small submucous tumors absorption is sometimes effected by pressure from the fœtus in utero, and the same result is attainable by systematic pressure by tents of sponge or sea-tangle. Thus far very few successes have been reported, but the plan certainly promises good results, and is worthy of trial.

Excision.—Should a small submucous fibroid project into the uterine cavity, it may be removed by the severance of its attachment, by means of the knife, scissors, or other cutting instrument.

If it be within reach of the knife or scissors, after dilatation of the cervix by tents, it may be removed by them. In case it be attached higher in the uterine cavity, the polyptome of Aveling may be made to answer a good purpose (Fig. 178).

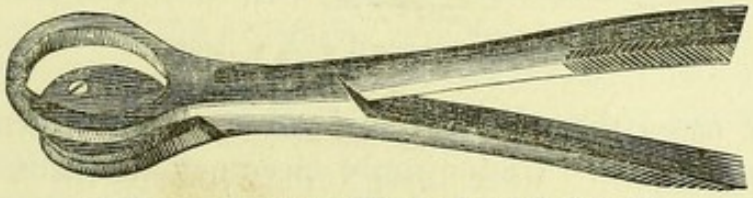
FIG. 178.



Aveling's polyptome.

Removal may likewise be accomplished by the forceps of Nélaton, represented in Fig. 179, or by long-handled curved scissors, by which as much as can be got within their blades should be cut away. In this way, piece by piece, a large portion of the growth may be excised, or at least so much of it removed as to impair its circulation, and impede its growth. This method of removal is, however, much more applicable to those fibrous growths which, instead of preserving extensive connection with the uterus and coming under the head of tumors, have only an attachment by a pedicle and are therefore classed with polypi.

FIG. 179.

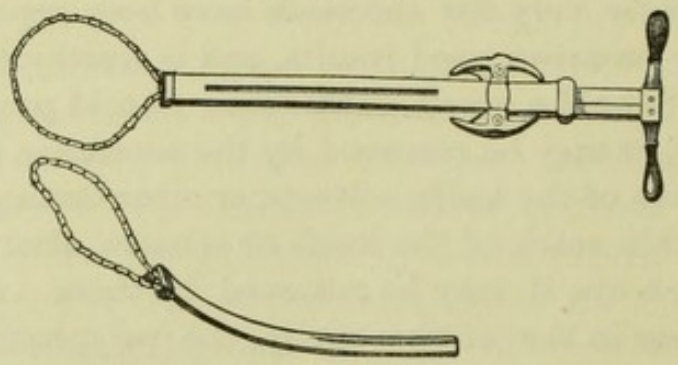


Nélaton's forceps. (Wieland and Dubrisay.)

Ecrasement.—In many cases in which excision may be practiced, écrasement becomes possible and should be preferred. The operation consists in cutting off the mass, as near its attachment as possible, by the écraseur. This instrument, the invention of M. Chassaignac, of Paris, consists of a flattened tube of steel which

has two rods of the same metal passing through it to its upper extremity (Fig. 180.)

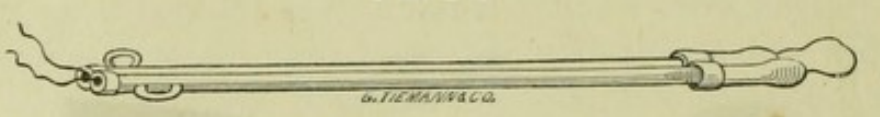
Fig. 180.



The écraseur, straight and curved.

To the end of each of these the extremity of a chain is attached. This is passed around the part to be cut off, and the rods are retracted by a ratchet movement at the other extremity. Steadily and slowly the chain tightens around the mass and cuts its way through it. The écraseur not only presents the great advantage of preventing hemorrhage, but experience proves that after its use inflammatory action is much less likely to occur than after that of cutting instruments. Should the tumor be small and have passed out of the uterus into the vagina, the chain of the écraseur may be passed over it as a noose, by the fingers. If it be small and inside the uterus, or if the tumor be of great size, whether in the vagina or uterus, it may be necessary first to pass a cord around it by means of canulæ, and in this way to draw in place the chain, which may be subsequently attached to the écraseur, as represented in Fig. 181.

Fig. 181.



Gooch's canulæ armed with a ligature.

In many cases the use of the écraseur is so difficult that it becomes ineffectual. Under these circumstances the wire rope écraseur of Dr. Braxton Hicks answers a most excellent purpose. Its contracting wire is stiff, small, and manageable, and thus we may be able to ensnare a tumor which was unattainable by Chassaignac's instrument.

Should the tumor be very large and fill the vagina completely, there are two methods by which it may be entirely removed: 1st, it may be drawn down by obstetric forceps and delivered; 2d, it

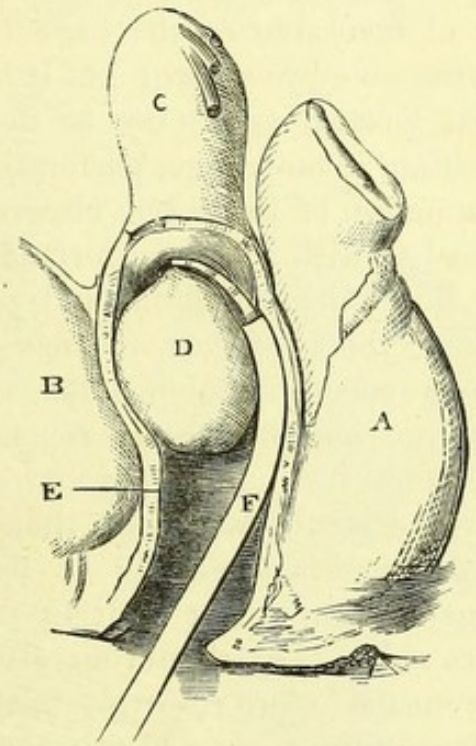
may be cut away, piece by piece, until its base be reached. By the first plan the uterus is temporarily inverted, the morbid growth removed by the knife, scissors, or écraseur, and the uterus

Fig. 182.



A tumor encircled by Gooch's canulæ.

Fig. 183.



The écraseur at work.

replaced, after the stump, should it bleed, has been seared by the white-hot iron. This process was first advised and practiced by Desault and Herbineaux. Prof. Isaac E. Taylor, of this city, has several times resorted to it, and in two cases I have thus succeeded in removing very large growths. The second plan is best carried out by the aid of the écraseur. As much of the tumor as can be secured is seized in the chain and removed. Then another portion is engaged, and so on until a great part or the whole of the mass is cut away.

Enucleation.—Excision is applicable to small submucous growths near the cervix, and écrasement is only practicable when the attachment of the tumor is smaller than its body, and thus affords a surface for the support of the chain. Where neither of these conditions exist, or where the tumor is interstitial, resort must be had to other means. It has been stated that the attachment of submucous and even interstitial neoplasms to the uterine wall is

not firm, they being surrounded by a layer of loose cellular tissue. This fact suggested many years ago, to the mind of Velpeau, the possibility of enucleating them, and in 1840, M. Amussat put the theory into practice. Since that time the operation has been resorted to by many surgeons, among the most successful of whom may be mentioned Dr. Atlee, of Philadelphia. A sufficient number of favorable results have been attained by it to render it a warrantable procedure; but it is unquestionably one attended by great hazard, as it may be destructive to life by inducing exhaustion, hemorrhage, perforation of the uterus, pyæmia, or inflammation of the pelvic viscera. Dr. West reports twenty-eight cases in which it was performed, fourteen of which proved fatal.

"Peritonitis, phlebitis, and pyæmia," says Dr. West,[1] in estimating the prospects of success held out by enucleation, "the consequences of violence done to the uterus of women exhausted by large and frequently repeated floodings, are dangers from which but few have altogether escaped; under which I fear that correct statistics will show that most have succumbed." But the great dangers attending its performance should not deter the surgeon from resort to it in suitable cases, which absolutely require aid. They should merely induce him to exhaust all palliative means before resorting to this, which should be looked upon, in large tumors, as a last resource.

The steps of the operation are as follows:

1st. The cervix should be fully dilated by tents, or freely incised in two or three places, as practiced by Dupuytren, Amussat, and Baker Brown.

2d. After checking hemorrhage, if any be created by incision, should this have been resorted to, the vagina being dilated by Sims's speculum, and the tumor held firmly by tooth forceps, an incision is made over its surface and through its capsule. This may be either straight or crucial.

3d. The fingers, or a blunt instrument, being passed into the opening thus made are swept around the mass, so as to sever its attachments and turn it out of its bed. At the same time it is lifted from below upwards by the forceps. If the mass be removed, all clots should be washed out of the uterus by a stream of water, and the patient quieted by full doses of opium.

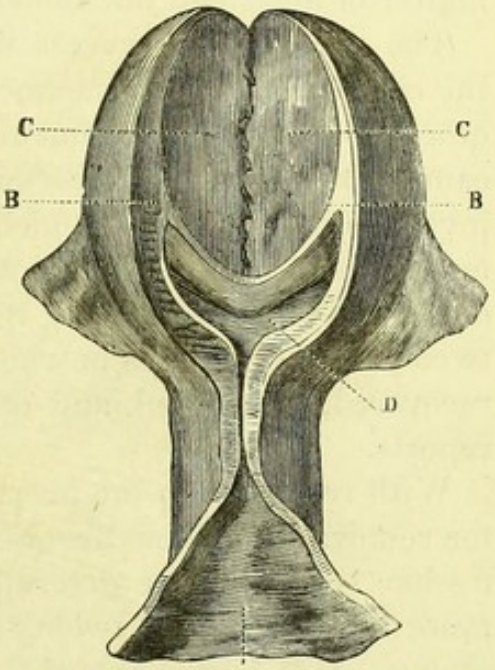
Sometimes a middle course may be followed with advantage in such a case as that represented in Fig. 184, for example. The

[1] Dis. Women, Eng. ed., p. 305.

os being dilated or incised, a long crucial incision is made over the presenting part of the tumor, and the lips of the capsule separated by the finger, in the hope that the body of the tumor may present through this species of os, and be expelled by uterine efforts. A most interesting case in which this occurred is recorded by Dr. Grimsdale, in the Liverpool Med. and Surg. Journal for January, 1857.

Sloughing.—Mr. I. Baker Brown, of London, has proposed in imitation of a process sometimes naturally set up in fibroids, to create the tendency to sloughing by cutting a deep, circular hole in them and filling this with oiled lint. This he has styled gouging, and reports a number of cases successfully treated by the plan. We are informed by Dr. Sims[1] in his recent work, however, that, "Mr. Baker Brown does not now mutilate the fibroid, but satisfies himself with simply incising the os and cervix uteri."

FIG. 184.



Submucous fibroid. (Wieland and Dubrisay.)

The dangers which must result from the presence of a large sloughing mass in the uterus are manifest, but it is equally so that in such a case as that represented in Fig. 184, it may become necessary to incur the attending risks rather than allow the patient to die from the continuance of the disease.

Incision.—In cases in which it is found impracticable to effect removal, and in which the operator is averse to the dangerous procedure of establishing sloughing, the best results will sometimes follow the making of deep crucial or transverse incisions directly into the mass of the tumor. These may be made by bistoury or scissors. Blood flows freely at first, but the remote effect is always to diminish hemorrhage. This plan unquestionably impairs the nutrition and impedes the growth of the tumor. It should be repeated at intervals of two or three weeks.

Gastrotomy.—Subperitoneal tumors are much less amenable to

[1] Op. cit., p. 121.

surgical treatment than those which are submucous, but in compensation they are less injurious in their results. In some cases, however, they excite so many evil symptoms as to call for removal—and this has been effected by incision through the abdominal walls. The operation is truly a formidable one, and yet, since it has been repeatedly successful in cases susceptible of no other means of relief, it is worthy of consideration. Indeed, should the steady decadence of the patient's strength make it certain that a fatal issue must soon ensue, the operation in the case of a pedunculated subperitoneal tumor would become a matter of duty, and not remain one of choice.

The prospects of success from it will depend very much upon the character of the attachments of the tumors to the uterus and other viscera of the abdomen. Unfortunately the extent of these cannot be accurately ascertained before abdominal section and investigation by touch, which of itself involves risk. This is by no means so considerable as would at first be supposed, and where doubt exists it should be resorted to. Dr. John Clay reports twenty-three instances in which it was adopted. Of these, sixteen recovered, three died, and of four no account was given in the reports.

With reference to the propriety of the operation of gastrotomy for removal of uterine fibroids the opinion of the mass of the profession is at present determinedly adverse. And yet it is not more so than it was twenty years ago with reference to ovariotomy. It is highly probable that when experience has rendered the operation safer than at present it will be resorted to for the same reasons which to-day cause us to perform extirpation of the ovarian sac, and be regarded, as that operation is, as a practicable and expedient procedure. Not only is this opinion sustained by recent statistics, it is foreshadowed in the modified opinions expressed by late writers. M. Courty, after stating the unfavorable results of the operation and the adverse impression concerning it left by them, goes on to add: "But recent operations tend to modify our opinion on this point as they have done upon ovariotomy."[1] In saying this he appears to have anticipated what the future will bring forth. It is true that thus far statistical evidence does not favor it, but Prof. Storer declares, "that the mortality of the earlier uterine extirpations was no greater than that in many isolated groups of the other operation."

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[1] Op. cit., p. 977.

It is not venturing too much, even now, to say that if the fibroid be pedunculated and unattached, its removal is not much more dangerous than the ordinary operation of ovariotomy. If it be completely amalgamated with the uterus, or so bound to neighboring parts that removal proves very difficult, the operation may be abandoned, the patient having, without great risk, availed herself of the only chance of cure. Even if the removal of the neoplasm involve that of the uterus and ovaries, we may still indulge in a hope of saving our patient, as the following table, arranged by Prof. H. R. Storer,[1] will prove:

	Operations.	Deaths.
Clay,	3	2
Heath,	1	1
Burnham,	9	7
Kimball,	3	2
Parkman,	1	1
Peaslee,	1	1
Koeberle,	1	0
Baker Brown,	1	1
Wells,	1	1
Sands,	1	1
Buckingham,	1	1
Storer,	1	0
	24	18

Percentage of recoveries 1 in 4, or 25 per cent.

The statistics here displayed, although showing, as they do, a large mortality, would, I fear, lead one to take a more favorable view of the results of this operation than enlarging experience will warrant. Since their publication the uterus has been removed in this country with the following results:

	Operations.	Deaths.
Storer,[2] of Boston,	4	4
Cutter,[2] of Newark,	2	2
Wood,[3] of Cincinnati,	1	1
Hackenberg,[3] of Hudson,	1	1
Atlee,[3] Philadelphia,	2	1
Weber,[3] Cleveland,	1	1
	11	10

No operator should undertake gastrotomy for uterine neoplasms without being prepared, if necessary, to remove the uterus with

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[1] "On removal of the womb and both ovaries."

[2] Personal communication. [3] N. Y. Med. Record, Jan. 18, 1868.

the tumor, for sometimes the connection is so intimate that an exact localization of the tumor is out of the power of the most skilful diagnostician. Indeed, even after removal of the mass from the body, its relations to the uterus are often discovered only after patient and intelligent search. Dr. Farre tells of a specimen preserved in one of the London museums as a solid ovarian tumor which, upon careful examination, he proved to be uterine by tracing the Fallopian tubes into it. It was also in this way that the nature of the tumor removed by Dr. Storer was identified; Prof. Ellis, after very minute examination, distinctly discovering the entrance of the tubes into the cavity of the body and thus settling the matter.

The operation is performed in exactly the same manner as ovariotomy, and for particulars concerning it the reader is referred to the chapter describing that procedure. The accidents which have generally produced a fatal termination in cases of gastrotomy are as follows:

1st. Primary or secondary shock or collapse;
2d. Hemorrhage;
3d. Peritonitis;
4th. Septicæmia.

As Prof. Storer points out, we are now possessed of means for limiting the first; the improved methods of hæmostasis at our command diminish the danger of the second; and the knowledge of the fact that carefully cleansing the peritoneum of blood and other fluids markedly diminishes the probability of the occurrence of the third and fourth, will in future aid in avoiding them.

I have endeavored to lay the facts connected with gastrotomy for uterine neoplasms before the reader in their true light, carefully avoiding any partial or prejudiced representation concerning them. What position the future will assign to the operation no one can at present declare, but of this we may even now be sure, that they are culpably barring the way to advancement who refuse to attempt the only plan by which life may, at times, be saved, and screen themselves from blame in so doing by casting censure and reproach upon those who endeavor to afford the patient every chance for life.

CHAPTER XXIX.

CYSTO-FIBROMATA, OR FIBRO-CYSTIC TUMORS OF THE UTERUS.

Definition, Synonyms, and Frequency.—Solid tumors of the uterus, whether benign or malignant, may undergo cystic degeneration, that is to say, within the structure of a solid tumor cysts may develop, which, distending the space in which they first form, gradually increase in size, and it may be in number, until what was formerly a solid growth becomes in certain parts filled with fluid. Thus we may have cysto-sarcoma, cysto-fibroma, cysto-chondroma, or cysto-carcinoma.

The form of composite uterine tumor which we are now considering has been described by different authors under the names of cysto-fibroma, cysto-sarcoma, cystoid, and fibro-cystic tumor. It has attracted separate and special attention only of late years, and even at the present time, in most systematic treatises upon Gynæcology, it receives only a passing notice. German pathologists have been chiefly instrumental in drawing attention to it, and yet in the elaborate work of Scanzoni the subject is disposed of in six lines. It must not be supposed that this form of tumor compares in frequency with the simple fibroid, or that cystic degeneration often affects this. It is not a matter of common occurrence, but sufficiently common, certainly, to demand especial consideration at the hands of the Gynæcologist.

Pathology.—Pathologists describe a variety of methods by which spaces may be created within fibroid tumors, which, subsequently becoming lined by a fluid-secreting membrane, are filled with serous, sero-sanguinolent, or sero-purulent material. "Within some fibroid tumors," says Klob,[1] "cavities may be found, which may have occurred in several ways. They either result from a dropsical condition, or the connective tissue of the tumor undergoes colloid metamorphosis (mucous degeneration), commencing at the centre of the tumor, and in consequence of which its substance liquefies into an albumino-serous fluid. Finally, hemorrhages into the substance of a tumor may lead to the formation of cavities

[1] Op. cit., p. 168.

similar to the so-called 'apoplectic cysts.'" In speaking of neoplastic cysts, Billroth[1] says, "These result mostly from softening of tissue previously diseased by cell-infiltration, or a firm tumor substance. As soon as the new formation has separated into sac and fluid contents, in some cases a secretion from the inner wall of the sac begins, so that the softening cyst becomes a secretion or exudation-cyst, and thus grows. Any tissue rich in cells may be transformed into a cyst by mucous metamorphosis of the protoplasm, or, as others express it, by separation of the mucous substance through cells without any connection with development of mucous glands." He then goes on to liken the process by which fluid spaces are created in chondromata and fibromata to the formation of the joints in the limbs of the fœtus by mucous softening of the cartilage tissue, of which the bones of the limbs are formed. Furthermore he declares that "the often slit-shaped, smooth-walled cysts with serous, or sero-mucous contents which occur in uterine myomata, are possibly enormously dilated lymph spaces."

It will be seen that the term cystic degeneration is rather loosely applied to this affection, for the fluid collections taking place are rather results of liquefaction than of true cyst development. Nevertheless I shall adhere to its use.

Cystic degeneration affects submucous or interstitial fibroids less frequently than those which are subserous. The following case reported by Dr. Sims, which he considers one of this degeneration in a submucous fibroid, is worthy of citation. It is represented in Fig. 185, and is described by him in these words: "I passed a trocar into it at its lowest point, and in the direction of its long axis, and there were discharged more than twenty ounces of a colored serum. The puncture was enlarged for two inches to prevent its closing. There was at once a sensible diminution in the size and tension of the abdomen. The discharge kept up for some time; and this, together with occasional injections into the very fundus of the uterus, with the liquor ferri persulphatis, diluted with three or four parts of water, arrested very promptly the hemorrhages, and the patient was dismissed in two months in a very comfortable condition, and with strength enough to walk six or eight miles."

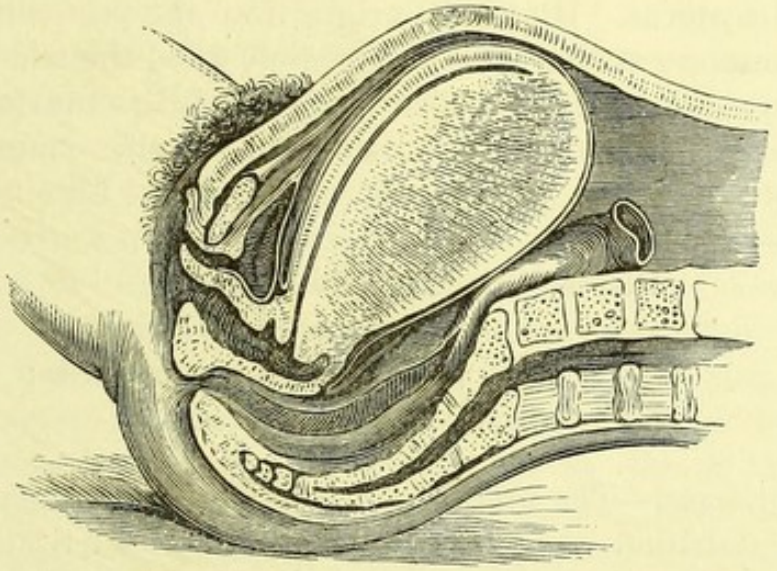
As the records of cases of fibro-cystic tumors are not very commonly met with in the literature of this subject, I shall make reference to a few of them. Kiwisch[2] described one which filled the

[1] Op. cit., p. 621.

[2] Klob, op. cit., p. 182.

whole pelvic cavity, and extended as high as the ensiform cartilage. It took its rise from the posterior uterine wall; had as its base a fibroid tumor the size of the head, which was enveloped in uterine

FIG. 185.



Submucous fibroid. A large tumor is attached to posterior wall from os to fundus. A channel is seen to extend from the os along anterior wall. (Sims.)

substance; and weighed forty-six pounds. Cruveilhier[1] mentions a similar one. Spencer Wells[2] speaks of two cases. In one the tumor was connected with the right side of the fundus by a broad band; its solid portion weighed sixteen pounds; its fluid portion twenty-six; and a semifluid material four pounds. The uterus was twice its natural size. In the other there were two tumors, both of which had a uterine attachment, and consisted of solid and fluid elements. In the year 1864, I removed one which was connected by a short pedicle with the right horn of the uterus. The tumor, when placed upon a table, after removal, and palpated, was so deceptive in its apparent yielding of fluctuation, that it was even then declared to contain fluid which had not been reached by the trocar, and this view was entertained until it was bisected. It was found that it consisted of loose fibrous elements, forming numerous loculi, about the size of a hickory nut, which were filled with a honey-like material. After section had allowed what was computed as about three pounds of this material to flow away, the tumor weighed a little more than fourteen pounds. Another very striking instance of this affection I saw submitted to opera-

[1] Klob, op. cit., p. 182.

[2] Diseases of Ovaries, p. 354.

tion by Dr. James L. Little of this city. The tumor, which yielded very obscure fluctuation, filled the entire abdominal cavity, and was composed of a network of fibrous tissue, constituting spaces varying in size from that of an apple to that of a cocoanut, which were filled with colloid material. This growth sprung from the neck of the uterus. It took its origin from the post-cervical wall, and the tumor growing from this pedicle filled the whole abdominal cavity, and was before operation regarded as ovarian.

Symptoms.—Fibro-cystic tumors do not vary in symptoms from subperitoneal fibroid growths of equal size. Like them they produce—

Displacements of the uterus;
Pressure on rectum and bladder;
Endometritis, if they project inwards;
Menorrhagia in some cases.

Physical Signs.—The uterus is usually found to be enlarged from excess of nutrition resulting from the formative irritation due to the propinquity and connections of the tumor. The sensation yielded by bimanual manipulation and by palpation is not that of a hard, solid, and resisting mass, but an obscurely fluctuating sensation is discovered. It is common in such cases to find a certain number of examiners inclining to the theory of fluidity, and others to that of solidity in the growth. If an explorative tapping be practiced by the hypodermic syringe, a very small amount of fluid, which is usually viscid or turbid, will be withdrawn from some places, while no fluid whatever will appear from others.

Differentiation.—The conditions with which this form of tumor will most likely be confounded are—

Pregnancy;
Cysts of the ovary;
Cystic adenoma of the ovary;
Fibroid tumors of the uterus.

From the first it may be known by absence of the gastric and mammary symptoms of that condition, by menstruation not only continuing but showing a tendency to increase in amount and frequency, and by the duration of the tumor beyond nine months.

The means of differentiating it from ovarian diseases will engage us when considering those affections.

From fibroid tumors these will be known by their yielding obscure fluctuation, assuming larger proportions, and yielding fluid to the exploring trocar.

It must by no means be supposed that diagnosis of these tumors is either easy or certain. In many cases only an explorative incision will settle the question.

Course, Duration, and Termination.—This form of tumor runs a very slow course. Much graver and more rapid in development than the pure fibroid, it is less dangerous and develops more slowly than the kindred condition of the ovaries. I have now under observation two very large tumors supposed to be of this kind. One of them has existed for eleven years, and yet the patient still performs the functions of nurse in a hospital. It is true that her abdomen is immensely distended, and that she moves about with difficulty, but thus far she has not been completely incapacitated. In the second case the tumor has existed for about five years. It is now quite large, but the patient about a year ago, after an attack of illness which was supposed by her physician to be peritonitis, began to improve, and is now reported to me as being better than she was before.

Although this is the slow course of the affection in some cases, in others it exhausts the patient by constitutional irritation, the result of mechanical interference with other organs, menorrhagia, and deprivation of exercise and fresh air.

Prognosis.—The prognosis is unfavorable. Relief by medication is in the present state of therapeutics unattainable, and the operation of gastrotomy is much less promising when performed for uterine than for ovarian tumors.

Treatment.—Nothing more need be said in reference to this subject than has been already said in connection with uterine fibroids, to which the reader is referred.

CHAPTER XXX.

UTERINE POLYPI.

Definition.—A uterine polypus is a tumor covered by the mucous membrane of the uterus and attached to that organ by a pedicle or stem.

History.—While so many uterine disorders of greater obscurity are described by the earliest medical writers, this, the diagnosis of which is often so self-evident and positive, attracted little attention. Hippocrates, Celsus, Galen, and even Aëtius make no mention of it. By Moschion it was described in the third century, and called pulps or polypus, but it was certainly neither well understood nor treated in his time, and we get no clear accounts of it until the revival of this branch of learning by the French School in the seventeenth century. Then Guillemeau, and subsequently Levret, threw much light upon it, and in the latter part of the eighteenth and beginning of the nineteenth centuries many others contributed to place our knowledge upon its present basis.

Varieties.—The student will meet with much difficulty in arriving at definite ideas concerning the varieties of uterine polypi. Almost all authors differ in their classification, and the number of names which have at various times been applied to them is too large even for repetition. Let it be borne in mind that since these tumors are formed by excessive development of one of the tissues existing permanently or temporarily in the uterus, there are but four elements which can give rise to them: the muscular tissue; the connective tissue; the glands of the organ, or some foreign mass which is retained in the uterus. It is true that by some a species of vascular polypus formed from development of the blood-vessels, a species of telangiectasis, has been described, but it is probable that this is only a form of the mucous variety. All classifications of these growths are to a great extent arbitrary, and hence in the present state of pathology none can become universal. That which I shall adopt is this:

1st. Cellular polypi;
2d. Glandular "
3d. Fibrous "
4th. Fibrinous "

Each of these genera includes several species, the chief of which may thus be tabulated:

Cellular Polypi include,

Fibro-cellular	polypi;
Soft	"
Mucous	"
Vascular	"
Cellulo-vascular	"

Glandular Polypi include,

Vesicular	"
Cystic	"
Channelled	"
Tubular	"

Fibrous Polypi include,

Hard	"
Muscular	"
Fibro-cystic	"

Fibrinous Polypi include,

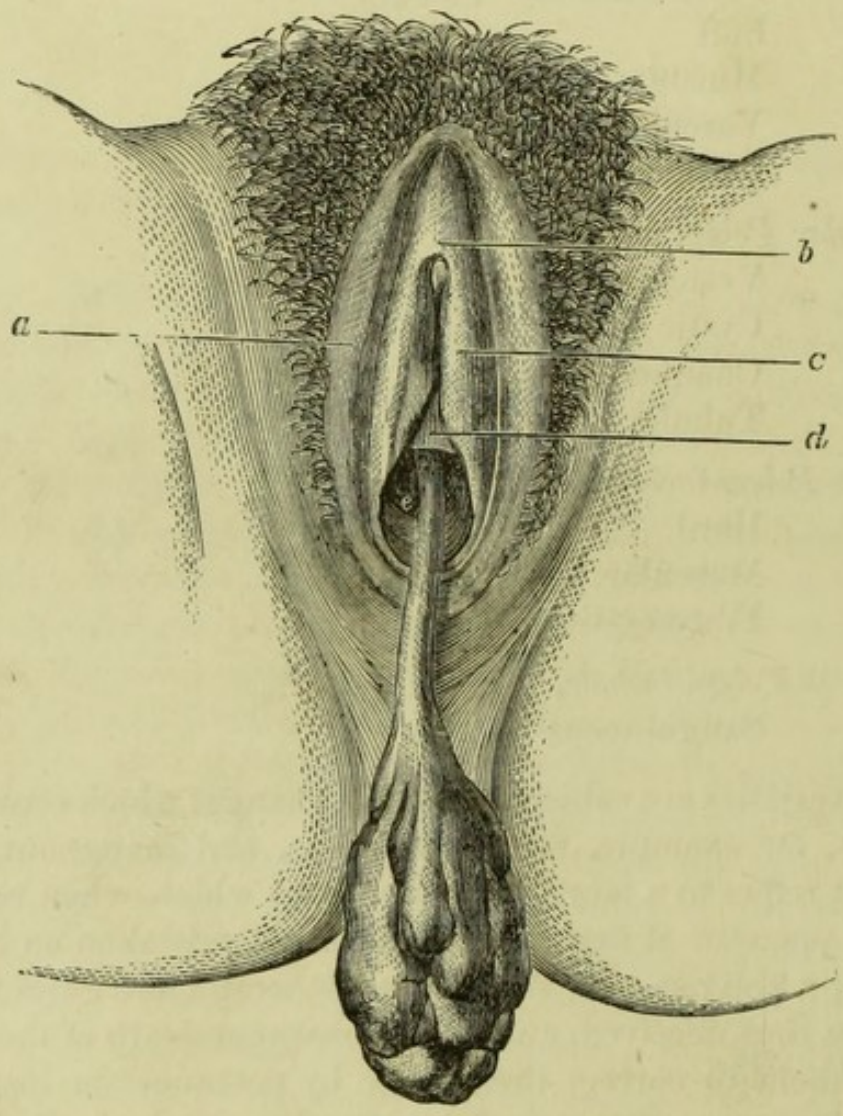
Sanguineous	"

These varieties are subject to morbid changes which create other forms, as, for example, fatty, calcareous, and malignant polypi. Colombat refers to a large, hollow polypus which, when removed, leads the operator at first to fear that he has mistaken an inverted uterus for a polypus. He states that Richerand and Jules Cloquet were once thus deceived, until the subsequent death of the patient enabled them to correct their error by post-mortem inspection. Mme. Boivin represents one of this character, as shown in Plate 19 of her work. She calls it hollow polypus; declares that before its removal by M. Dubois it was regarded as inversion by several physicians, and accounts for it by supposing that some plastic element had coated the uterus and been ripped off, except at its cervical attachment, and had become inverted by menstrual fluid collecting above. Some months ago Dr. Henschel presented to the New York Obstetrical Society a hollow polypus which was attached to the cervix by three points. It was referred to Dr. Noeggerath for examination and report, and his method of accounting for it was similar to that of Mme. Boivin in the case just mentioned.

Pathological Anatomy.—The cellular polypus is a tumor, generally of pear shape, varying in size from a marble to a hen's egg.

It is covered over by mucous membrane, and consists within of cellular tissue in a state of hypertrophy or hypergenesis. Its

Fig. 186.



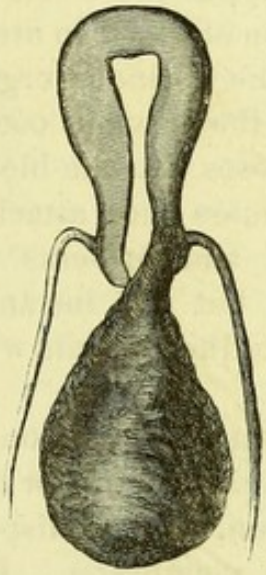
A cellular polypus with long pedicle. (Boivin and Dugès)

attachment is generally, though not always, to one wall of the cervix, and in its structure there appears a certain amount of cervical fibrous tissue. Sometimes the pedicle of this variety is very long and slender, so that it hangs outside of the vulva. Fig. 186 exactly represents one sent to me by Dr. Crane, of Elizabeth, N. J., for corroborative diagnosis, and which was afterwards removed by him.

The glandular polypus consists in hypertrophy of the Nabothian glands or, according to Dr. Farre, of the utricular follicles. Several follicles are enlarged, and, being bound together by connective tissue, make up a tumor of pediculated form. It may

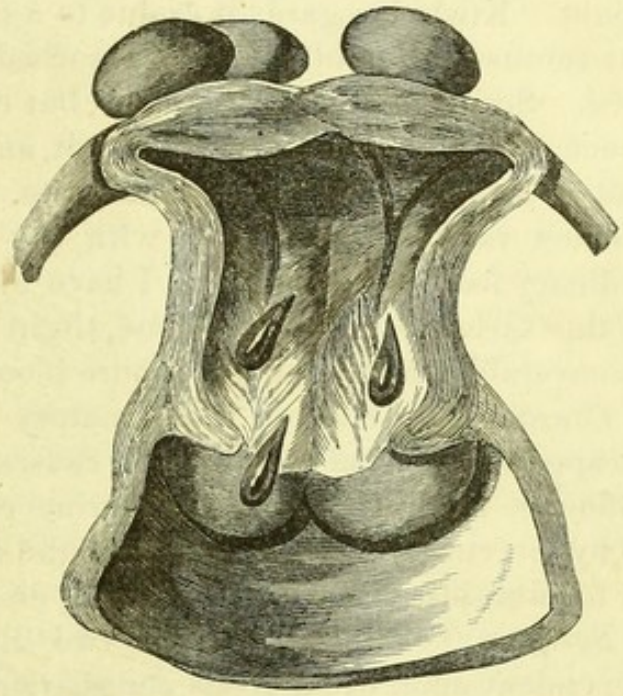
arise either from the cervix or body, but very generally grows from the former, and is commonly gregarious.

Fig. 187.



A cellular polypus attached within the cervix uteri.

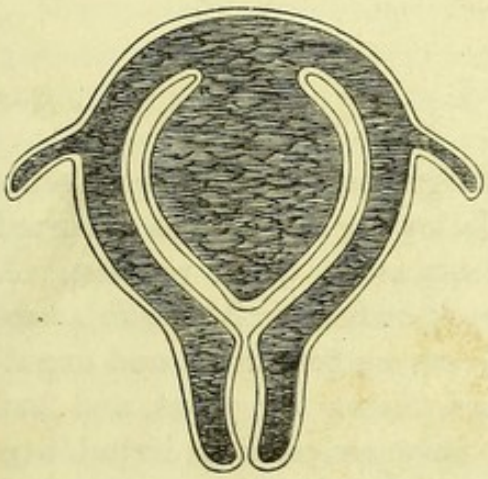
Fig. 188.



Glandular polypi within the cervical canal. (Boivin and Dugès.)

The fibrous polypus is a submucous fibroid, resembling closely those which are subserous and interstitial. Slowly extruded from

Fig. 189.



Fibrous polypus growing from fundus.

Fig. 190.



Fibrous polypus growing from lip of cervix.[1]

the uterine parenchyma by its contraction, the tumor gradually

[1] Of this form I have met with but two instances. This cut is taken from nature, and accurately represents my two cases.

acquires a pedicle and becomes the form of polypus under consideration. Fibrous polypi usually arise from the body of the uterus, though they are sometimes attached to the rim of the os.

About the very existence of the fibrinous polypus there is some doubt. Kiwisch regards it as due to a collection of blood in utero, the serous portion of which is absorbed and the fibrinous organized. Scanzoni accepts this view, but regards the previous occurrence of pregnancy as necessary to it, and supposes that the blood-clot is attached to the placental site. The mass thus attached obtains vascular connection with the uterus, and presents the ordinary features of polypi. I have met with but two instances of this variety of polypus; in one, slight traces of the placenta were discoverable; the other was a pure blood-clot.

Causes.—Any chronic inflammatory action, any obstruction to escape of menstrual blood which causes uterine tenesmus, or any influence tending to keep up uterine congestion, will predispose to hypergenesis of the elements of the mucous membrane. But as for fibroids, so for fibrous polypi, no positive cause is known.

Symptoms.—Polypi occasion two classes of symptoms; one dependent upon the mucous congestion which their presence excites, the other upon the mechanical obstruction which they offer to the escape of menstrual blood. These two influences result in the following signs:

Leucorrhœa;
Pain in back and loins;
Menorrhagia;
Metrorrhagia;
Hydrorrhœa;
Dysmenorrhœa.

The last of these is not a frequent sign, but sometimes presents itself prominently, as it did in the following case which occurred before we understood the use of tents as we do at present. A lady came from a distance to put herself under Dr. Metcalfe's care for dysmenorrhœa, characterized by severe tenesmus and expulsion of clots. These symptoms had lasted for years, and had resulted in emaciation, and great nervousness and irritability. In time she came under my care; was treated by me for nearly a year, and went home unrelieved. At her next menstrual period she sent for the physician of the neighborhood, who examined by touch, detected in the vagina a small polypus which hung by a stem from the uterus, and twisted it off to her complete and permanent relief. This had been at last expelled after

having rested upon the os internum, and acted as a ball valve for years. The uterus had been repeatedly examined before, but nothing could be discovered.

Physical Signs.—These will depend in great degree upon the size and location of the growth. Should it be in the cavity of the body, and small, no signs will be afforded by the touch or speculum; if, however, the body be explored by the probe, this will be found to be deflected by it. The cavity will be discovered to be much congested, and a copious flow of blood will often follow the withdrawal of the instrument. Should the tumor be large, the body will also be found to be displaced, increased in size, and the cervix somewhat dilated. Should the attachment of the tumor be cervical, it can often be felt hanging from the canal or in the os uteri. But no examination for uterine polypi can be considered complete until the cervix has been fully dilated by tents, and careful exploration been made by sight, touch, and the probe. Even then a number of attempts will often be requisite before small growths are detected.

Differentiation.—Polypi must be differentiated from fibrous tumors even after the discovery of an intra-uterine growth has been made. The symptoms to which these affections give rise are very similar, and it is by physical means alone that differentiation can be effected. These means are the use of tents, the probe, and touch. By them, the mobility of the tumor, the point of its attachment, and the breadth of its base, may all be definitely determined.

Course and Termination.—Nature may cure a utérine polypus by ejecting the mass with so much force as to fracture its attachment and disconnect it from the uterus; or calcification or sloughing may occur. But none of these results can be looked for with any confidence. In the majority of instances, without surgical interference, steadily advancing anæmia will ultimately destroy life.

Prognosis.—The prognosis is generally good, depending, of course, upon the possibility of removal.

Complications.—Polypi if so small as not to greatly increase the weight of the uterus, create but two complications, endometritis and metrorrhagia, which may go on to the production of fatal anæmia. If they be so large as to increase the size and weight of the uterus, displacements, with their attendant irritation of rectum and bladder, may show themselves.

Treatment.—This may be either palliative or curative, and it is as necessary for the practitioner to familiarize himself with one as

with the other. Many a patient suffering from intra-corporeal polypus, has had life cut short by intemperate efforts at its removal, who by a systematic and patient course of palliative treatment might not only have lived for years but have ended her disease by expelling the tumor into the vagina and rendering it accessible to safe removal. There are few men of large experience, who cannot recall such instances of the unfortunate results of injudicious practice, either in their own experience or that of some one else. When the young practitioner reads the brilliant record of an os dilated, an instrument carried to the fundus, a tumor clipped off, and a case of metrorrhagia cured, he feels almost culpable if he have a case under treatment and do not follow a similar course; as he sees his patient's pale face every day demanding a cure, he is often hurried into a resolve to run every risk to effect one. But he who is familiar with this kind of practice knows that it in reality involves many dangers, and that successful cases have a proneness for creeping into literature which does not characterize fatal issues.

I would be distinctly understood, as not rejecting the practice of dilating the cervix and removing intra-corporeal polypi by instruments carried to the fundus. I merely desire to insist upon the fact that such a course is highly dangerous; that it should be undertaken only when the safety of the patient demands it, and that its proper performance requires skill and experience.

Whenever it is practicable, all manipulation should be delayed until expulsion of the tumor into the vagina is obtained; but, unfortunately, operative procedure is often called for before this can be effected. Then the operator has no choice. He is forced to proceed to removal of the growth even at a disadvantage and at a risk to his patient. If the os internum be fully dilated, the opening of the external os will not prove difficult of accomplishment. Slitting the neck or dilating it will usually be sufficient to bring the growth within reach of a tenaculum which will draw it forth. But where both are to be opened there is great danger involved in the process, for not only are we called upon to assume those connected with and dependent upon the use of tents; we have to do so in a pathological condition peculiarly liable to be complicated by endometritis and pelvic peritonitis. I have seen several deaths due to these efforts, and I always inaugurate them with a certain amount of anxiety. Fig. 175 represents a case of fibrous polypus existing in a patient sent to me by Dr. J. C. Dalton, who has at the same time subperitoneal tumors. To make a

diagnosis of the cause of profuse hemorrhages, which I could not attribute to the subperitoneal growths, I dilated the cervix very cautiously, and explored with the finger. The result was a violent attack of peritonitis which very nearly proved fatal.

About two years ago I saw a lady in consultation with Dr. Frothingham, of Carmansville, who was suffering from the existence of a submucous fibroid which produced severe retroflexion and constant metrorrhagia. She came to this city and was put under my care. After a few weeks I succeeded in replacing and retaining the uterus, and at once she became comfortable, was enabled to walk with ease, which she had not done before for months, and the metrorrhagia sensibly decreased. I have watched her now for two years, controlling hemorrhage by the tampon and internal means, keeping the uterus in position, and waiting for the expulsion of the tumor, which the uterus has for some time been forcing down violently; and yet I dare not expose this patient to the risks of dilatation with the attendant efforts necessary for the delivery of the growth. Were her life in danger I should not hesitate, but it is not; she is comfortable and her dangerous symptoms are readily controlled. My observation of her constitutional tendencies makes me dread interference so long as the os internum remains closed. As soon as this becomes dilated the external os will be readily distended or cut. I have referred to the case not on account of any intrinsic interest connected with it, but to show the reader how grave a matter I regard the dilatation of the whole cervical canal to be when the end in view is extraction of a submucous fibroid. The case represented by Fig. 175 is now doing very well, the uterus being in good position and hemorrhage at menstrual epochs controlled; yet she still carries a submucous fibroid, as large as a hen's egg, in the uterus. I literally prefer to have her bear the ills she has than fly to others which may be greater.

Palliative Treatment.—As I have said a great deal in connection with the treatment of submucous fibroids, which would have to be repeated here if I went into the detailed consideration of this subject, I shall limit myself to a concise recapitulation.

1st. Replace the uterus if it be displaced, and keep it in position by means of an appropriate pessary, at the same time that all pressure is taken from the fundus by avoidance of tight clothing, and all violent muscular efforts, and by the use of skirt and abdominal supporters.

2d. Keep the patient in bed at menstrual periods, urging her to

avoid warm drinks, and to use cold and acid ones. Give cannabis indica, opium, gallic acid, ergot, or elixir of vitriol during the periods. After a menstrual epoch has lasted four or five days, use a tampon saturated with solution of alum or tannin, removing it immediately if there be any threat of regurgitation through the tubes.

3d. Keep the bowels regular, and avoid fatigue and over-exhaustion at all times.

4th. Repair the damage done to the blood by nutritious food, and that done to the nervous system by bitter tonics and nervines, avoiding the use of iron which increases the tendency to hemorrhage.

5th. Every night at bedtime, during the inter-menstrual period, have the vagina syringed with tepid water, and a suppository of tannin and butter of cocoa inserted by the patient as high as the os externum.

Curative Treatment.—There are three positions in which a polypus may be found: above the contracted os internum, above the contracted os externum, or in the vagina. The first position presents the gravest difficulties in the management of these cases, the second presents much less serious difficulties, while the third may, with our present appliances, be almost said to present none.

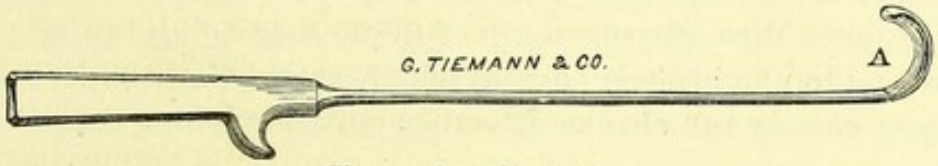
If it be discovered that the cervical canal has been dilated by the weight and wedge-like action of the polypus aided by uterine contraction, the walls of the cervix may be slit on each side nearly to the vaginal junction, and a tenaculum fixed in the tumor by which it may gently be drawn out of the uterus. Or by means of tents the resisting os may be dilated so as to admit the smallest size of Barnes's dilator, and by this further expansion may be effected. After this, if the tumor can be seized, it may be drawn out, or ergot in full doses may be given to cause its expulsion. If it be found necessary to seek the pedicle at or near the fundus, it may be severed by the same means which we adopt in case the tumor hang in the vagina, namely,

Excision;
Torsion;
Ligature;
Ecrasement;
The galvano-caustic wire.

Should the pedicle be within reach of knife or scissors, it may be divided; or if higher in the uterus, the polyptome (Fig. 191)

may be employed. Should the growths be so small as not to be susceptible of seizure, they may be scraped from their attachment by the curette; and should they be small and possess slender

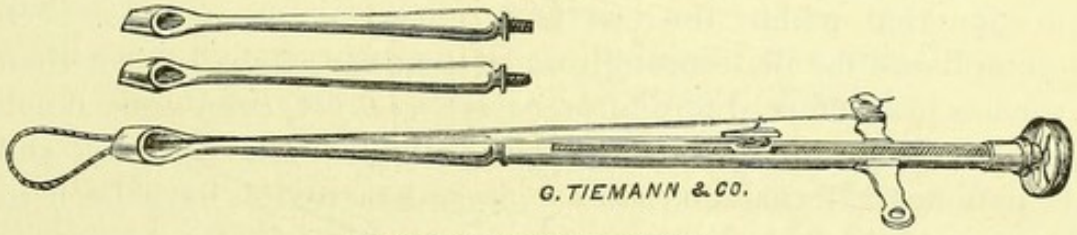
Fig. 191.



Simpson's polyptome.

pedicles, they may be seized with forceps and twisted off. The ligature, lately so popular, is now rarely employed; the tardiness of its action, and the fetid discharge which it excites, rendering it objectionable and dangerous. Ecrasement constitutes the safest and most expeditious of all the operations. Sometimes, however, great difficulty attends the encircling of the tumor by the chain of the instrument. To effect this, it is often necessary to encircle the mass first by means of a ligature passed by Gooch's canulæ, and then to draw the chain into position by tying it to the end of this, as represented in the chapter on fibroids. Under these circumstances Hicks's wire rope écraseur (Fig. 192) constitutes an

Fig. 192.



Hicks's wire rope écraseur.

excellent substitute. The polyptome of Simpson or that of Aveling often answers a good purpose in these cases.

When the polypus is of hard, fibrous character, and fills the uterus so completely that the pedicle cannot be reached, those portions which are within reach may be cut away piecemeal by Nelaton's forceps, constructed for this purpose, or by ordinary curved scissors. Or if this be impracticable, deep incisions may be made into its structure in the hope of impairing its nutrition and destroying its vitality. Dr. Gooch long ago announced that when a ligature is applied around one of these growths, that part above as well as below its constriction often died. It is with a hope of such a result that we make use of these means. I have, however, cut through the centre of a fibrous polypus and

found the attached portion continue to flourish as before operation.

When a large fibrous polypus presents its pedicle in such a way that it can be encircled by the galvano-caustic wire, this instrument should be employed. It not only cuts without the application of force through the hardest tissue, but being brought to a white heat by the electric current which passes through it, it sears the open vessels and checks or rather prevents hemorrhage.

CHAPTER XXXI.

CANCER OF THE UTERUS.

Few subjects present themselves to the writer of a systematic treatise on Gynæcology which offer such difficulties and so many perplexities as that which we now undertake. Although it was known to the physicians of the most ancient times, we are indebted to them for little in connection with it, except portions of the imperfect nomenclature which now attaches to it. It is beyond question that within the last half century much more has been accomplished for the thorough understanding of the subject than ever has been done at any former time, and yet, even now, much doubt and uncertainty exist as to its pathogeny, its varieties, and its pathological characteristics. I confess that I have been in doubt as to the best arrangement of the subject for the advantage of the student. From an anatomical standpoint, cancerous and cancroid affections should not, with the light which we at present possess, be separated. In both we find the characteristics of malignancy, and the microscope shows the same type of cell and connective tissue structure. It is evident too that the physical aspects of the varieties of carcinoma depend upon varying proportions, and anatomical arrangement of their component parts. Thus, a scirrhous cancer is one in which the fibrous elements greatly preponderate; a medullary cancer one in which the cell element is in excess; and a gelatinous or colloid cancer one in which this peculiar material develops in the alveoli of the fibrous framework of the growth. Epithelial cancer is a form of the affection in which the morbid element usually develops on the surface of the uterus, and where the base or point of attachment is ordinarily super-

ficially diseased. Nevertheless, here, as in true carcinoma, the microscope reveals evidences of malignancy. Before proceeding then to the details of this subject let me premise this fact, that all the affections to be here treated of, whether they be called cancer, cancroid, or epithelioma, are really malignant in character, and differ as to malignancy only in degree; that one form tends to pass rapidly into another of graver type; and that in all, if allowed to proceed uninterfered with, systemic intoxication is only a question of time.

It is quite comprehensible how the pathologist in view of these facts would treat of all these affections under the generic name of carcinoma, but we are not studying as pathologists here. We regard the subject from a clinical standpoint, and in view of the fact that varying anatomical proportions in these growths powerfully influence prognosis and treatment, it will, I think, be safer and more profitable for us to make the following subdivisions.

Malignant disease may affect the uterus in two forms, cancer and cancroid.

The varieties of each may be presented at a glance by the following table:

Malignant Diseases of Uterus,	Cancer or Carcinoma,	Scirrhus or Fibrous Cancer,[1]
		Encephaloid or Medullary Cancer,
		Colloid or Gelatinous Cancer.
	Cancroid or Epithelioma,	Ulcerating Epithelioma,
		Vegetating Epithelioma.

Each of these will in turn engage our attention, the present chapter being devoted to cancer.

Definition and Synonyms of Cancer of the Uterus.—This disease, which has been described under the synonymous terms of carcinoma uteri, and ulcerated carcinoma, may be defined as a disease of the uterine structure characterized by (*a*) proliferation of areolar tissue; (*b*) excessive generation of cells; (*c*) tendency to molecular death, invasion of neighboring parts and return if removed by surgical means; and (*d*) constitutional implication usually progressing until the death of the person affected.

Frequency.—Cancer is an affection of frequent occurrence, and

[1] Although to be systematic I have deemed it best to adopt these conventional terms, the student must not imagine that it is always an easy matter to classify a uterine cancer under one of them. Very commonly a growth showing the features represented in Fig. 193 will be met with, which occupies a middle ground between cancer and cancroid, and is neither scirrhus, encephaloid, nor colloid, nor yet vegetating epithelioma.

is more frequently seen in the uterus than in any other organ. According to Rokitansky,[1] the following average scale may be adopted as representing the preference of cancer for various organs. "First the uterus, the female breast, the stomach, the large intestine, and especially the rectum; next comes cancer of the lymphatic glands," &c. The following quotations will fully display the relative frequency of cancer of the uterus.

Of all cases of cancer in females, the uterus is affected in ⅔, Kiwisch.[2]
" 9118 " " " " was " 2996, Tanchou.[3]
" 8746 " " " " " " 3000, Simpson.[4]
" 5122 " " " " " " 113, Wagner.[5]

Statistics prove that cancer is nearly three times more frequent in women than in men, and more than three times more frequently met with in the uterus than in any other organ of the female.

History.—M. Becquerel asserts that, "in spite of its great frequency, cancer of the uterus is not a disease of which the history has been long known." That it was not understood as we understand it to-day, is most true; but the ancients surely had a certain degree of knowledge concerning its clinical features. Hippocrates—de Morbis Mulierum—describes it at length, declaring it to be incurable. Archigenes wrote a chapter upon it, describing the ulcerated and non-ulcerated forms and the peculiarities of the discharges. His article is preserved by Aëtius, who entitles it, "De Cancris Uteri," and is copied verbatim by Paul of Ægina without the slightest acknowledgment. The Arabians likewise were familiar with it, Alsaharavius, Haly Abbas, and Rhazes, all alluding to its prognosis and treatment in a manner which leads us to believe that they understood its true nature.

Upon the revival of Gynæcology in France, the disease was confounded with fibrous tumors and interstitial hypertrophy. Astruc described "scirrhus" as the result of abortion, in 1766, and the confusion which attached to his description extended long after him. It characterized the times of Récamier and Lisfranc, and even so late as our own period we see the view indorsed by Ashwell, Montgomery, Duparcque, and many others. Messrs. Blatin and Nivet,[6] in expressing their belief that scirrhus results from chronic inflammation of the parenchyma, append the following footnote: "Paul of Ægina, Galen, Andral, Broussais, Bres-

[1] Sydenham Trans., vol. i, p. 198, Am. ed.
[2] Klob, op. cit., p. 205.
[3] Rech. Sur. les Tumeur du Sein, p. 218.
[4] Clin. Lect., p. 42.
[5] N. Y. Med. Journ., vol. ix, p. 561.
[6] Mal. des Femmes, Paris, 1842.

chet and Ferrus, Piorry, Bouillaud, &c., place scirrhus among the terminations of chronic inflammation; some of them, however, admit the existence of a predisposition."

For the proper differentiation of true malignant disease from benign neoplasms and the results of inflammation of the uterus we are indebted to no one so much as to Dr. Henry Bennet, of London.

Although there are many points connected with the subject which are still undecided, the following may be laid down as generally accepted truths:

1st. Cancer of the uterus bears no similarity to fibrous tumors, polypi, or parenchymatous engorgements;

2d. It probably arises from a constitutional vice, and is not the result of chronic inflammation or any other purely local condition;

3d. In very rare cases spontaneous and even artificial cures have been effected, but tendency to return after ablation is strong.

Pathology.—The affection *probably* originates in some peculiar blood state which we do not at present understand and which results in a local deposit of a morbid element. Rokitansky[1] regards the abnormal condition of the blood as consisting mainly in a preponderance of albumen and a hypinosis or diminution of fibrine. But there is a party which opposes this idea and regards the disorder as dependent, not upon constitutional but local vice. This view has been ably sustained by Mr. C. H. Moore,[2] who takes the position that cancer is not dependent upon any pre-existent constitutional state of disease, but that it takes its rise as a local affection, and subsequently taints or poisons the system. Where a blow or injury results in malignant disease, he believes that a diathesis or constitutional tendency to cancer must have existed.

Whatever be the peculiar state which gives rise to cancerous deposit, it is certain that any form of the affection may arise from one and the same disorder. This is proved by the facts that several deposits of different varieties may coincidently exist, that one form may change into another, and that one being removed by surgical means a different one may replace it.

As there is doubt as to the general condition which results in carcinoma, so is there as to the method in which the local deposit takes place. Certain pathologists, of whom M. Robin, of Paris, may be taken as a representative, believe that under the influence

[1] Path. Anat., Am. ed., vol. i, p. 197.

[2] Brit. Med. Journ., Aug., 1865.

of a constitutional vice, which exerts a baneful influence over nutrition and formation, a fluid blastema is transmitted from the blood into the connective tissue of the uterus. From this molecules arrange themselves and form the anatomical elements of cancer. Another party, of which Virchow[1] was the founder, maintain that the proliferation of connective tissue and hypergenesis of cells both arise from repeated subdivision of connective tissue corpuscles. These go, some to creation of tissue, some to filling brood-spaces, and others to formation of epithelium. Still another party, headed by Remak[1] and Waldeyer,[1] hold that all cancerous disease in the uterus takes its origin from the epithelium lining glands which dip into the parenchyma. The cancer cells are due to perverted action of normal epithelial production, while the stroma comes from proliferation of the interstitial substance or connective tissue of the uterus.

Any part of the organ may be affected, but the disease shows a decided preference for the neck. The order of frequency in which the parts are primarily selected is this: 1st. The parenchymatous structure of the neck. 2d. The cervical mucous membrane. 3d. The mucous membrane of the body. 4th. The parenchyma of the body.

The submucous tissue of the neck having been first affected, the disease spreads from this point, invades the whole neck, and sometimes the body of the uterus, the ovaries, vagina, bladder, and intermediate tissue. Even the bones of the pelvis may be attacked. For a varying length of time the deposition goes on, then without assignable cause the lowly organized mass begins to die, and ulceration or molecular death occurs. The detritus gives rise to a fetid, ichorous, and bloody discharge, which excoriates the vulva and thighs and renders the patient disagreeable to herself and all around her.

The disease extends to neighboring and distant organs by several methods: first, by continuous growth; second, by absorption of contagious fluid or cell elements from the cancer by the lymphatics and transmission to the glands and other parts; and third, by venous absorption.[2]

So rare is it to meet with the scirrhous form of uterine cancer that some writers have doubted its existence. Rokitansky admits the possibility of its occurrence, but regards it as extremely un-

[1] See an able and interesting résumé on this subject in the N. Y. Med. Jour. for September, 1869, by Prof. W. T. Lusk, M.D., to which I am much indebted.

[2] Robert Barns, Sydenham Year-Book Med. and Surg., 1864, p. 401.

common. The reason of this is the fact that scirrhus is probably the earliest form assumed by the disease, and at this period few symptoms showing themselves, no examination is sought by either physician or patient. I have met with two, and I think three, undoubted instances of it; to the history of one of which I shall make allusion.

Dr. Treskatis brought to my clinique at the College of Physicians and Surgeons a woman between forty and fifty years of age who had been for some time suffering from leucorrhœa and menorrhagia. Upon examination by touch, I found the cervix very large and exceedingly hard and resisting. The speculum revealed no abrasion except two little points about the size of pin-heads, which bled freely when brushed with a sponge. The facts that the patient had shown no previous symptoms of uterine disease which could have resulted in interstitial hypertrophy, that there was no intra-uterine cause for menorrhagia discoverable, and that the hardness of the neck was excessive, I ventured upon the diagnosis of scirrhous cancer. This case was kept under observation by Dr. Treskatis, who subsequently reported that it had fully developed itself into an unquestionable one of carcinoma, as evidenced by softening, ulceration, the microscopic signs, &c. Klob[1] maintains that the disease "in the majority of cases occurs in a fibrous medullary form, that is, in the rare cases in which we are enabled to recognize and study the primary condition of the carcinomatous growth in the dead body, we find that form which is described under the name of fibrous carcinoma or scirrhus, whilst in those cases in which the disease proves fatal, we generally meet with the distinct medullary variety of carcinoma."

After the first or hard and fibrous stage of the disease has lasted for some time, prolific generation of cells occurs. These fill the alveolar spaces in the framework of connective tissue, which spaces burst and communicate with each other, and the whole mass grows large and soft.

After still greater growth, these overcrowded cell spaces open, the large vessels supplying them give forth blood freely, and ulceration becomes established.

As this last stage advances, the bladder is affected by an extension of the morbid matter to its base. Then the rectum, the lymphatic vessels and glands of the pelvis, the neurilemma of the sacral nerves may become invaded, and the morbid action spread to all the tissues of the pelvic cavity. The frequency with which

[1] Op. cit., p. 192.

different parts are affected may be judged of by the following facts given by Dr. Arnott[1] of the Middlesex Hospital:

In 34 cases	there was	observed	no secondary deposit.	
" 20	"	"	cancerous affection of	lymphatic glands.
" 5	"	"	" "	the ovaries.
" 3	"	"	" "	the liver.
" 2	"	"	" "	the lungs.
" 1	"	"	" "	the heart.
" 1	"	"	" "	the breasts.
" 1	"	"	" "	the peritoneum.

Predisposing Causes.—Those predisposing causes which are generally admitted may be thus enumerated:

Hereditary tendency;
Middle or advanced life;
Race, the African enjoying partial immunity;
Repeated parturition;
General depreciation of vital forces.

Hereditary tendency, once generally admitted as a fruitful predisposing cause, is now questioned by many. Mr. Moore, whose views I have already quoted, doubts it very decidedly, as do others.

Lebert found	evidences	of	hereditary	tendency	in	14	out of	102 cases.
Paget	"	"	"	"		78	"	322 "
Sibley	"	"	"	"		33	"	305 "

Although cases have been reported at the extremes of womanhood, it is generally admitted that few occur before twenty and after sixty. The most fruitful period is from 40 to 50; the next from 30 to 40; the next from 20 to 30; and the next from 50 to 60.

Scanzoni gives the ages of 108 cases treated by him.

4	were	between	20 and 25.	45	were	between	40 and 45.
4	"	"	25 and 30.	15	"	"	45 and 50.
17	"	"	30 and 35.	4	"	"	50 and 55.
18	"	"	35 and 40.	1	was	"	55 and 60.

The youngest was 23 and the oldest 59 years of age.

The black races appear to enjoy to a limited extent immunity from this disease when compared with the white.

Prof. Barker in an interesting essay upon this subject, published in the Transactions of the New York Academy of Medicine for 1870, cites the following statistics by Prof. J. J. Chisolm of Baltimore:

Registrar's report in South Carolina for 1859—
In 2423 deaths among whites, 21 were of cancer;
" 7277 " " blacks, 29 " "

[1] Half-Yearly Compendium, Philadelphia, Jan., 1871, p. 458.

Judging from these statistics the exemption of the black races is by no means so complete as the general impressions of many practitioners appear to argue.

Cancer of the uterus is more frequently observed among multiparæ than nulliparæ. Of Scanzoni's 108 cases—

6	had	been	delivered	11	times.
3	"	"	"	10	"
2	"	"	"	9	"
14	"	"	"	8	"
13	"	"	"	7	"
21	"	"	"	6	"
10	"	"	"	5	"
3	"	"	"	4	"

The results of Mr. Sibley's investigations in the Middlesex Hospital go to prove this fact. He found that the average number of children borne by women suffering from this disease was 30 per cent. in advance of the average number of all marriages.

Although it is maintained by some, Mr. C. H. Moore, for example, that cancer as commonly affects persons in perfect health as it does the weak, it is generally admitted that depreciating influences exerted upon the general system have a predisposing effect. Among these may be especially mentioned grief and mental anxiety, (observed by Scanzoni 84 times in 108 cases,) overlactation, the existence of any diathetic state, life in a large city, and the state of spanæmia, engendered by hard labor, exposure, insufficient food, or vicious habits.

Exciting Causes.—The exciting causes are entirely unknown. As has been already stated, the view entertained by many a few years ago, that cancer is often a result of chronic inflammation, is now generally repudiated. In my own experience I have yet to find a case even remotely sustaining such a position. Dr. Noeggerath[1] has recently read before the New York Academy of Medicine an important essay upon this subject, in which he maintains the connection as cause and effect between chronic metritis and cancroid. He related six cases substantiating his position, in which the transformation of the tissue affected by chronic metritis into epithelioma was traced step by step. Dr. Noeggerath, it must be observed, does not claim this origin for carcinoma, but for epithelioma.

Symptoms.—The disease may pass through its period of inception and make considerable progress towards a fatal issue without developing any symptoms which attract the attention of the patient. Or only slight leucorrhœa and hemorrhage may exist, which may

[1] Med. Record, No. 90, p. 425, et seq.

have been passed over as trivial circumstances, not deserving treatment or investigation. Usually the following symptoms develop themselves and become more and more prominent as destruction of the exudation advances:

Pain through the pelvis;
Tenderness upon movement or coition;
Menorrhagia and metrorrhagia;
Ichorous and fetid leucorrhœa;
Hydrorrhœa;
Dark, grumous discharge;
Constitutional debility;
Pallor and cachectic facies;
Vesico-vaginal or recto-vaginal fistulæ.

Pain and tenderness are not nearly so constant or severe as is often supposed, and they may both be entirely absent.

Menorrhagia and metrorrhagia may exist even before ulceration has occurred, resulting then from congestion of the mucous membrane. But it is not until after the inauguration of the process of destruction that they become alarming or excessive.

Ichorous, watery, and grumous discharges very generally mark the advance of the disease. The first of these discharges produces erythema, erosions, vaginitis, and sometimes a strong sexual appetite. The second exhausts the patient by draughts made upon the serum of the blood. The third creates fetor, and sometimes results in septicæmia, for the material giving color and odor to the flow is a putrilage formed by the detritus from the decaying uterus.

Constitutional debility and cachectic facies are the results, in part, of the malignant toxæmia which is the basis of the disorder, in part of exhaustion produced by loss of blood or some of its elements. Should the walls of the rectum and bladder become implicated, as they very often do, the functions of these viscera are deranged, and the fæces or urine, or both, pour out through the vagina, increasing the misery of the patient.

Physical Signs.—Suspicion is generally first aroused and physical exploration prompted by these three symptoms,—menorrhagia, fetid discharge, and ichorous leucorrhœa. They belong to the second or ulcerative stage of the affection, and, as Dr. Henry Bennet has well established, it is almost invariably in this stage that the physician is consulted. Before the occurrence of this stage no symptom usually exists which calls for physical exploration.

I have seen but two cases which I am positive were incipient or non-ulcerated scirrhous cancer. In these the diagnosis was made

by the peculiarly hard, nodular sensation yielded by the cervix, and in one by the coincident implication of the vagina. I feel sure, however, that he who ventures upon a decision as to the nature of the disease at this period must expose himself to great risk of error. The mere fact of the cervix being excessively hard and nodular is not enough to warrant a diagnosis. This must be accompanied by other reliable signs, as menorrhagia, hydrorrhœa, and constitutional failure, to make a positive conclusion admissible. After ulceration has occurred, diagnosis, to an experienced examiner, is as simple and certain as it is obscure and uncertain before it. The finger discovers an absolute destruction of tissue, and finds the walls of the deep and ragged ulcer producing it, covered over with a crumbling, brittle mass, interference with which causes hemorrhage. The uterus is often fixed by secondary cellulitis, or diffuse deposit of cancerous matter, and the walls of the vagina near the uterine junction participate in the deposit. Sometimes there is a stricture of the rectum, which especially engages the attention of the patient, who suspects no disease of the uterus or vagina.

It is difficult to describe to another the peculiar sensation yielded by an ulcerating cancer, but it is easy to appreciate it by touch. He who carefully explores one case and marks the hard, unyielding border and brittle surface, with its marked tendency to crumble and produce hemorrhage, will rarely fail to recognize another.

Nevertheless, it is in all cases safe, and in some essential, to remove a small portion of the cancerous material if it can be done without creating great flow of blood, for examination with the microscope. And now arises the question, what are the microscopic tests of cancer? This subject is one which I cannot overlook, and yet one with which I must deal as cursorily as is consistent with a concise statement of the existing views of pathologists upon it. I can, I think, most readily do this by a series of propositions.

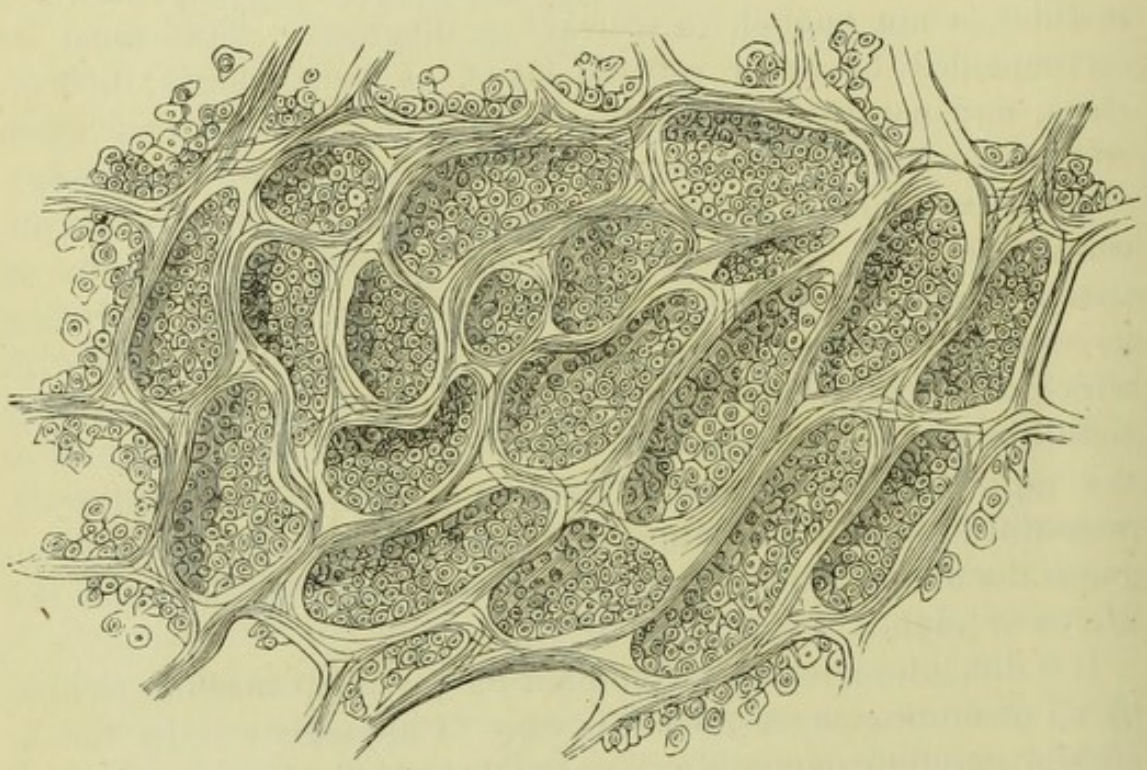
1. There is no typical cancer cell, which, separated from its surroundings and viewed as an entity, enables a microscopist to pronounce upon a growth.

2. There are certain combinations of cells, alveoli, and stroma, which do enable a microscopist to pronounce an opinion as to the benignity or malignancy of a growth.

3. This combination consists, in general terms, in the existence of a fibrous stroma, containing ovoid alveolar spaces, filled with masses of cells, with large single or multiple nuclei, and all bearing more or less closely a resemblance to epithelium.

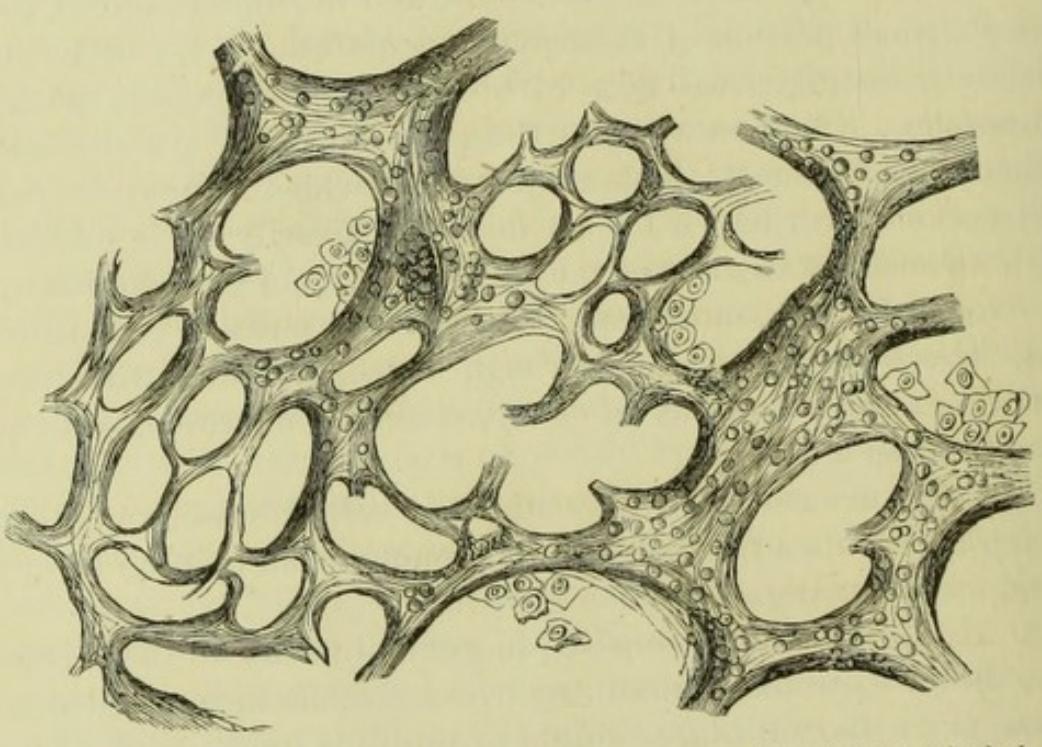
In this connection the two following illustrations from Billroth showing the arrangement of cellular and connective tissue elements will prove instructive.

FIG. 193.



Cancer of mamma; stroma and cells. (Billroth.)

FIG. 194.



Connective tissue framework of cancer of mamma. Brushed-out alcohol preparation. (Billroth.)

Differentiation.—Upon theoretical grounds it might be supposed that the diagnosis of ulcerated cancer would be so simple that few errors would occur in reference to it. This is far from the truth. A skilful diagnostician would, indeed, generally arrive at a correct conclusion, but I know of no disease of the genital organs of the female, unless it be pelvic peritonitis, which so frequently gives rise to errors of diagnosis. It may be confounded with

Papillary hypertrophy of the cervix (cock's comb ulcer);
Projecting fibrous polypus;
Uterine fibroids;
Bleeding ulcer;
Syphilitic ulcer;
Areolar hyperplasia of cervix with metrorrhagia.

It would be a waste of time to enter into detail as to the methods for differentiating cancer from each of these, for the differentiation must depend upon care in investigation, thoroughness of examination, and upon time, which in most cases will clear up all doubt.

It should be remembered that the diagnostician, however skilful he may be, who bases an opinion upon the sensation of hardness and resistance in the cervix, is running a great risk of error. Let it be borne in mind, too, that syphilitic ulcers have been known to eat into the bladder and rectum and create very much such a state of things in the vagina as carcinoma develops.

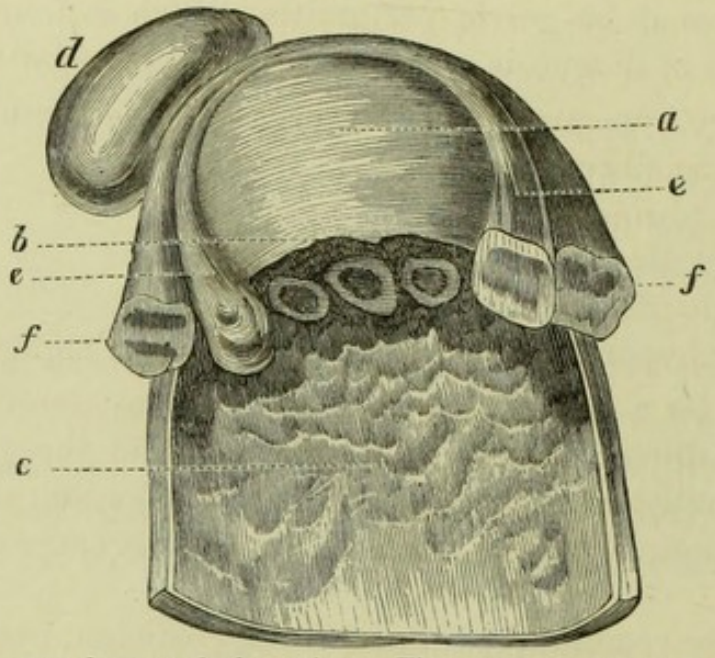
Prognosis.—The prognosis is pre-eminently unfavorable. Not only is it so from the fact that the disorder is cancerous, but because that form which often affects the uterus belongs to the most rapid and dangerous of its varieties. "Medullary carcinoma," says Rokitansky, "is, both in its development and in its subsequent course, the most acute of all cancers."

In some cases death will ensue in from three to six months, while in others it may not occur for five, six, or seven years. The prognosis should be governed in great degree by the character of the initial affection: true carcinoma, which begins with profound implication of subjacent parenchyma, runs a more rapid course than epithelioma, which often involves only superficial portions of it. The general experience as to the duration of cancer of the uterus may be inferred from the following citation of authorities:

Simpson gives as an average,		. . . .	2 to 2½ years.
Lebert	"	"	about 16 months.
West	"	"	about 15 months.
Barker	"	"	3 years and 8 months.

The discrepancy between the results of the last observer and of the others quoted may depend upon the fact of his making his statistics apply both to epithelioma and to true cancer. This

FIG. 195.



Cancer in extreme degree of ulceration. The cervix is represented as entirely destroyed and the disease advancing into the body. (Boivin and Duges.)

probability is strengthened by his allusion to a case[1] of eleven years' standing, in which the patient is still in such health as to visit her friends, attend church, and occasionally go to the opera. Even in true carcinoma the disease may last for six or seven years; but such a duration is an exception to the rule.

The termination of cancer of the uterus, if the disease be uninterfered with, is very generally a fatal one, although it is admitted that there is a *possibility* that the mass may slough away, the surface heal over, and the patient recover. Scanzoni, Rokitansky, Kiwisch, Virchow, and Klob, all announce this fact, strange though it may appear to one who has always taken a more gloomy view. "The cases of spontaneous recovery from uterine cancer," says Rokitansky,[2] "are of extreme rarity, but they do occur." "In opposition to the above phenomena, which inevitably lead to death," says Klob,[3] "the universally acknowledged possibility of spontaneous recovery from uterine cancer is interesting." Let it be remembered that these authors distinguish between cancer and cancroid, and are here writing of the former.

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[1] Jour. of Obstet., &c., vol. iii, p. 531.

[2] Op. cit., vol. ii, p. 228.

[3] Op. cit., p. 203.

Under these circumstances the whole vaginal portion of the cervix usually sloughs off, and the os internum becomes the os externum. Instances of spontaneous recovery from true carcinoma are so rare and interesting that I introduce the history of a case recorded by Prof. Habit, of Vienna, which will be found epitomized in the Syd. Soc. Year-Book for 1864, at page 401:

"The patient, æt. 53, had borne two children, the last seventeen years ago. Menstruation appeared at eighteen and ceased at forty-six, but four years after this hemorrhage came on, and recurred regularly at monthly intervals. This was moderate in amount, and her health was not at first affected. In the intervals there was a profuse, offensive, and shreddy discharge, with frequent micturition. Two months before admission into the Imperial Hospital of Vienna, profuse hemorrhage occurred, and at the same time she suffered from lumbar and hypogastric pains. Sleepless, emaciated, and enfeebled, she was at length unable to leave her bed. The vagina was filled with large granulations and fungous growths, the vaginal portion was fissured, the cervix funnel-shaped, and its surface soft and ulcerated, while the uterus itself was fixed. From the great tendency to hemorrhage, the examination with the speculum was omitted. A profuse, thin, and most offensive ichorous discharge was constant.

"The diagnosis was ulcerating medullary carcinoma of the uterus and vagina. The treatment was merely directed to relieve the symptoms. Gradually, however, the general health improved, and pain and discharge ceased. Seven weeks after admission, examination per vaginam disclosed a solid, cicatrizing mass filling up the vagina. This mass consisted of easily-bleeding, normal, and healthy granulations. No opening could be found either with the finger or with the finest uterine sound. The uterus could not be felt through the rectum nor through the abdominal walls. A catheter passed into the bladder could be distinctly felt by the finger in the rectum. The author thinks this should be added to the very rare cases of healing of cancer which are described by Rokitansky, Kiwisch, Scanzoni, and Virchow."

When death, which is the almost inevitable issue of cancer, does occur, it is usually due to hemorrhage, irritative fever which assumes a typhoid form, septicæmia, anæmia, or some one or more of the numerous complications which I now come to enumerate.

Complications.—The following are the complications which most frequently accompany the disease:

Septicæmia from absorption of putrid fluid;
Cellulitis;
Hydronephrosis;

Peritonitis;
Tetanus;
Phlebitis;
Embolism;
Cancer in lymphatic glands or other organs.

In rare cases, as has been pointed out by Beatty, Cruveilhier, and others, cancerous degeneration obstructs the ureters, and produces, in this way, uræmic poisoning. Dr. Theophilus Parvin records an instance of this character in which for a week no urine found its way into the bladder, and the symptoms of uræmia were well marked.

Treatment.—The indications for treatment are these:

To amputate or destroy the diseased part;
To affect the constitution;
To check hemorrhage;
To relieve pain;
To correct fetor;
To sustain the general strength.

Amputation, which in cancroid disease is often indicated, is usually practiced here only as a forlorn hope. Indeed it is but rarely practicable in true cancer to accomplish complete removal, from its rapid tendency to involve adjacent parts. And experience also proves that this operation is attended by grave dangers, and at best is likely to prove only palliative. Nevertheless it is unquestionably correct as a principle in practice to remove a cancerous neck whenever by so doing ablation of the entire disease can be secured. Although cancer of the uterus is in itself no more malignant in type than that of the mamma, it is much more difficult of entire removal for the reason that its existence is generally ascertained later in the progress of the case, and thus it has involved deeper layers of parenchyma and has encroached more upon neighboring organs. It may not, however, be uninteresting to quote here a table by Mr. Birkett[1] showing the results in the duration of life of removal of the breast in 150 women affected by cancer of that organ.

[1] Graily Hewitt, op. cit., p. 574.

Of the 150 patients who had it removed, there survived—

Under 1 year,	8	Above 10 years,	2
Over 1 "	24	" 11 "	2
" 2 "	38	" 12 "	1
" 3 "	17	" 13 "	1
" 4 "	21	" 14 "	2
" 5 "	7	" 15 "	1
" 6 "	5	About 23 "	1
" 7 "	10	" 29 "	1
" 8 "	4	" 32 "	1
" 9 "	4		

When amputation is impracticable, or rather inadvisable, from advance of the malignant deposit into the parenchyma, out of reach of the surgeon's instruments, the only remaining radical resource is to destroy the existing disease by violent caustics. This means has been resorted to since the earliest times, but the results have been so unsatisfactory that few employ them with any frequency now. It is true that a certain number of successful cases have been recorded. Thus Prof. Barker in the essay already alluded to mentions two, and Dr. Mettauer,[1] of Virginia, records another. I look upon the importance of these cases as so great that I place them before the reader. Dr. Barker says of the case which he reports:

"She was cachectic and very feeble, and for more than a year she had been suffering from severe and frequently recurring pains, repeated and profuse hemorrhage, with a constant, sanious and extremely offensive discharge. The cervix was much enlarged, with a jagged, irregular surface, and the uterus was fixed and immovable in the pelvic cavity. My opinion as to the nature of the case coincided with that which had been expressed by those who had seen her before (cancer of the womb), and, of course, my prognosis was most unfavorable. But with the hope of diminishing the vaginal discharge and the extremely offensive odor, and that by accomplishing this I should make her journey home more comfortable, I decided to apply the acid nitrate of mercury freely to the ulcerated surface of the cervix.

"Some two weeks afterwards, I received a letter of bitter reproach from her husband, in which he said that soon after her return her mouth became very sore, and her physicians declared it to be the worst case of salivation that they had ever seen. Several of her teeth had come out, and the discharges from the vagina had increased enormously, with which she had thrown off masses of putrid and horribly offensive substances, so that it was difficult to remain in the room with her. The

[1] Boston Med. and Surg. Jour., March 10th, 1870.

letter closed by saying: 'Before you receive this my dear wife will have left me, and I shall always bear in my heart the feeling that you by your experiments have greatly added to her suffering and shortened her days.' A few months afterwards I received a letter from him of quite a different tenor. She had quite recovered her health, and the disease was apparently cured. I have twice, within a few years, had the opportunity of making a vaginal examination of this lady. At the upper portion of the vagina a puckered, cicatricial indentation can be felt and seen by the speculum, but nothing like the cervix or body of the uterus can be felt through the vaginal walls. Through the rectum I am able to detect what I suppose to be the remains of the body of the uterus. She is now fifty-nine years of age, fat and stout, and in robust health."

Dr. Mettauer's case is related in the following words:

"The subject of this case was a negress, aged about thirty-five, married, but had never conceived, and who had for years suffered from uterine irregularities. . . . . When examined per vaginam, the os and cervix, as well as a large portion of the body of the uterus, had disappeared entirely, as they could not be discovered by the most careful examination by the *toucher*, and the chasm remaining would have readily received an egg of moderate size. The examination caused some hemorrhage as well as pain, and the woman represented that bleeding was of frequent occurrence. The health of the patient was greatly impaired, as emaciation and debility had nearly rendered her helpless. So appalling was the condition of this poor woman, that the writer, after a full examination, determined to discard the case, believing it utterly hopeless. The entreaties of the woman, however, induced him to alter his resolution, and, merely to quiet her distress, his consent to undertake to treat the case was yielded. After regulating the bowels, and the use for several days of soothing vaginal injections, it was determined to use the acid nitrate of mercury to the ulcerated uterus, which was applied by saturating cotton-lint with it, and then conveying the tampon-like body thus medicated to the affected parts through the expanded three-bladed speculum. The lint was heavily charged with the nitrate, but not to supersaturation, and carefully pressed into the ulcer. Over this was laid a thick pledget of lint saturated with salt water, carefully packed around the first dossil. . . . . In three days violent salivation came on, which continued over a month, during which there was no examination of the vagina or ulcer. The lint came away during this time, but it was not known when. . . . . The condition of the uterus was examined into the fifth week after the acid nitrate was applied, and most unexpectedly was found to have healed entirely, but no os, cervix, or appreciable body could be discovered, and all discharge had ceased. From this time the general health rapidly improved, and in two months the woman was apparently restored to sound health, her recovery being greatly promoted

by the daily use of iodide of iron and a generous diet. She lived four years after this severe trial, enjoying good health most of the time, but finally died of some acute disease of the nature of which the writer has never been informed."

The caustics which answer the best purpose are the actual cautery applied by iron rods brought to a white heat, or by the galvano-caustic, the acid nitrate of mercury, the gas jet cautery, potassa fusa, saturated solution of chromic acid, and, according to Dr. Routh,[1] a solution of bromine, five to ten grains, to fifty minims spirit of wine. Whatever be the caustic employed in this manner, it should be so applied as to destroy completely the morbid deposit. Otherwise, no hope of cure can be based upon its application. I have employed every one of these means in carcinoma, but thus far, I regret to say, that in no case have I seen anything approximating improvement from their use, while I have more than once been forced to deplore my having had recourse to them. It is not to be denied, however, that in such desperate circumstances any remedy, however hazardous it may be, should be tried which has even in a few cases been of service. Every one must see the necessity of a clear distinction being made between epithelioma and true carcinoma before reports of cures of "cancer" are accepted as reliable.

Constitutional Treatment.—Nothing is more important for a practitioner in the treatment of morbid states than to have in his mind a clear and distinct line drawn between those means which repair the ravages of disease, sustain and soothe the system under its deleterious influences, and put it in a condition to allow nature to strive for recovery on the one hand; and those which by some specific action cure the affection on the other. A confusion of these two ideas has done mischief in causing hypermedication, and in creating erroneous conclusions as to the value of drugs. In cancer a variety of drugs have at various times since the birth of Christ, and indeed before it, been vaunted as exerting a specific influence. As examples, for I have not space to mention one tithe of the whole, mercury, iodine, arsenic, hemlock, bromine, gold, silver, and other drugs, have had their day. After a fair trial having been given to each, but one conclusion can be drawn by a writer of the present time, namely, that we appear to be as far removed from the discovery of a cure for cancer as were our forefathers.

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[1] Transactions London Obstet. Soc., vol. viii, p. 290.

Hemorrhage may be checked by rest during menstruation; astringent vaginal injections; and the use of styptics, by suppository and by application to the bleeding surface upon pledgets of cotton. Should the patient employ the syringe, the most appropriate styptics will be the sulphate of alum, infusions of tannin or oak bark, or a solution of the persulphate of iron, twenty or thirty drops to a pint of water. Should the practitioner make the application himself, a bit of cotton saturated with strong solution of alum, or a little muslin bag filled with tannin or powdered alum may be placed against the os. In doing this the use of the speculum should be avoided if possible, for its introduction always tends to excite hemorrhage. In checking a flow due to this disease, the tampon should be resorted to only in case of absolute necessity, for its introduction often does great injury, and its removal would almost inevitably excite the flow which had been temporarily checked. For the same reason I do not use persulphate and perchloride of iron, except in case of dangerous hemorrhage; the removal of the pledget with which they are applied being often injurious. There is another reason why these solutions should be employed with caution. The latter has been known to produce a gangrenous state of the vagina.

But all these are minor means, and fall far short of the careful use of caustics which produce only a superficial slough, and for a time seal up the mouths of the bleeding vessels. Once in every two or three weeks the surface of the diseased mass may be lightly touched, after being cleansed by syringing with cold water, by the actual cautery, acid nitrate of mercury, or chemically pure nitric acid. Care must be taken not to create a deep slough, lest this being cast off the peritoneal cavity may be opened into.

The relief of pain should be accomplished by the free, unrestricted use of opium by the mouth, the rectum, the vagina, or under the skin. I often encourage my patients to become opium eaters, and urge them to obtain as complete relief as the use of this drug can afford. In place of opium other narcotics may be tried, but there is none which compares with it for efficiency. In some cases the hydrate of chloral in scruple doses will be found to answer an excellent purpose, either as an alternate or a substitute for opium. It produces sleep, quiets pain, and is free from those consequences which render opium frequently objectionable.

When opium produces the painful results noticed where an idiosyncrasy exists against it, the persistent use of it will often effect a tolerance.

It is wonderful to see how large amounts may be consumed, not only without danger, but with absolute benefit, for relief of the pains of cancer. Pinel is said to have administered to a woman at La Charité, 120 grains of solid opium in twenty-four hours; Marc allowed a patient to take 62 grains of morphine in the same time; and Monges and La Roche, of Philadelphia, gave three pints of laudanum in twenty-four hours, and kept up its administration at this rate for three months. Dr. Knight, of New Haven, had a patient who consumed three drachms of morphine in twenty-four hours, and continued the use of this drug for a considerable time in amounts almost equal to this.[1]

The fetor of the discharges may be, to a great extent, corrected by the use of vaginal injections containing disinfectant substances in solution. Solution of carbolic acid from one to two drachms to a pint of water, Labarraque's solution of soda in the same proportion, one drachm of powdered persulphate of iron to the pint, or a weak solution of the iodide of lead, will prove very useful. Of all these, carbolic acid is the most certain and effectual.

The general strength should meantime be maintained by fresh air, residence in the country, generous food, alcoholic stimulants, iron and bitter tonics, while the mind should be kept cheerful by lively company, and avoidance of the society of those who encourage conversation concerning the existing disease. As the digestion is weak, the most digestible substances should constitute the staple diet, and very often a patient who will become emaciated upon solid food and a mixed diet will improve upon the exclusive use of milk, beef-tea, and similar substances. So marked is this fact, that the milk diet strictly adhered to has been regarded, by many non-professional persons, as a means of cure for cancer. Iron should be freely administered to repair the damage done to the blood by those influences which establish the peculiar cachexia that attends the disease. Quinine answers excellently as a tonic, a general roborant, and a remedy for the neuralgic pains, which are often exceedingly annoying.

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[1] These facts are recorded in Dr. Calkin's very interesting and valuable work on "Opium and the Opium Habit." Lippincott & Co., Philadelphia.

CHAPTER XXXII.

CANCROID, EPITHELIOMA, OR EPITHELIAL CANCER OF THE UTERUS.

Pathologists, who closely studied the histological and clinical features of malignant diseases, were in time so much impressed by certain distinctions between different forms that they deemed it necessary to divide them into two separate classes: those which were essentially true cancer, and those which were (εἶδος) like unto, though not identical with, that terrible malady. In 1846, Lebert gave to these growths the name of "cancroid" for the reason just given, and in 1852, Hannover, from the fact that this variety of disease was known to consist in a morbid hypergenesis of normal epithelium, called them "epithelioma."

For a long time after this distinction was made, the current of opinion appeared to set in favor of making a wide distinction between the two affections; one being looked upon as a disease having its origin in a peculiar deposit or generation of material in the parenchyma of the affected organ, and the other as one limited to a morbid proliferation of epithelium. More recently a different feeling has prevailed, pathologists strongly inclining to the view that cancroid growths are really members of the family of cancers, differing from them histologically chiefly in the extent of parenchymatous involvement and the superficiality of their alveoli. On their part, clinicists noticed very marked differences, chief among which are tardiness of systemic poisoning in cancroids, and slighter tendency to return of the disease after amputation. Rokitansky[1] said of them: "In many cases, however, notwithstanding precisely the same morphological and chemical relations, they accord so entirely in all their manifestations with the cancers, that we classify them with these as a further variety of medullary carcinoma, to which in their lineaments also they approximate the most nearly. This occurrence we believe to be limited to the mucous membranes and the common integuments." Virchow, whose investigations have been later than those of Rokitansky, regards epithelioma as well as cancer as due to a generation of normal cells excited into a morbid activity by the unknown influence which constitutes the cause of cancerous affections. He[2]

[1] Op. cit., vol. i, p. 217.

[2] Klob, op. cit., p. 19.

has demonstrated the development of cancroid substance within the uterine walls as well as upon its mucous membrane.

As I wish to be very clear upon this point, I state the chief fact embodied above in other words before proceeding.

Cancer of the uterus, like the same disease in other parts of the body, has two distinct stages, that of formation and that of destructive ulceration. In the first of these a generation of heterologous material takes place in the interstitial portions of the structure affected, and as the second period becomes established a connection is formed with the surface by ulceration. In certain cases the morbid influence, instead of exciting interstitial deposit, is exerted upon the mucous membrane itself, affecting its production of epithelial cells. In such cases less deposit occurs in the tissue underlying the mucous membrane. To this class the names of epithelial cancer, epithelioma, corroding ulcer, and cauliflower excrescence, have been applied. As Mr. M. H. Collis[1] remarks, its special name is unimportant, "if its difference from cancer and its analogies to it be kept clearly in view."

In the commencement of each variety of malignant disease the pathological differences would be easily recognized; but as epithelioma advances, and the subjacent tissues become involved, a differentiation would often become not only difficult but impossible. The chief histological distinctions existing between cancer and epithelioma are, I believe, the following:

Cancer.	*Epithelioma.*
The growth involves the uterine wall deeply;	The growth is in the form of large papillæ or of superficial ulcers;
It consists of a well-marked alveolar stroma containing large epithelial cells;	The papillæ are formed of a central stroma covered with epithelium. Nests of epithelium are formed in the stroma of the papillæ and at their bases;
It has a marked tendency to ulcerate, and to invade surrounding tissues.	The ulcerating form consists of a superficial ulcer, of which the floors and walls are infiltrated with small round cells.

The chief differences observed clinically may be thus presented:

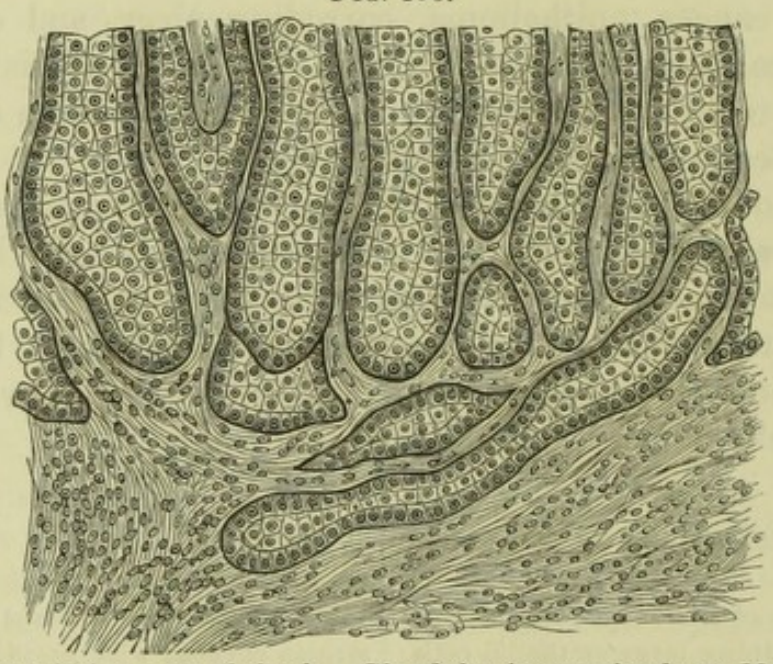
Cancer.	*Epithelioma.*
Is generated in the parenchyma;	Usually begins with slight interstitial implication;
Almost invariably returns if removed;	Does not return so surely;
Is *probably* from the first a constitutional disease;	Is at first a local evil;
Soon affects neighboring parts;	Slowly affects neighboring parts;
Runs usually a very rapid course.	Progresses slowly.

[1] On Cancers and Tumors.

There is a great difference between the prognosis of the two diseases if both be recognized early. Even under these favorable circumstances cancer when removed usually returns, while epithelioma is sometimes entirely cured by operation.

Although I have thus striven to impress the differences, both clinical and pathological, between the two great varieties of cancer, I must guard the student against the belief that cancroid long remains a local disease. A common event is that it rapidly passes into a constitutional condition, that the parenchyma is simultaneously affected by medullary cancer, or that while cancroid develops in one part cancer does so in another. The similarity of the diseases is further shown by the occasional development of medullary cancer after the removal of an epithelial growth.

FIG. 196.



Flat epithelial cancer of cheek. Glandular ingrowth of rete Malpighii into connective tissue. (Billroth.)

Varieties.—Epithelial cancer may affect the uterus in two entirely different forms. The first is characterized by a strong tendency to ulceration even before the fact of heterologous generation can be recognized; the second by formation of a tumor or fungus-like mass which at a later period is attacked by ulceration. These forms I would designate as—

Ulcerating epithelioma;
Vegetating epithelioma.

Ulcerating Epithelioma, or Corroding Ulcer of the Uterus.

Definition.—The term corroding ulcer was applied by Dr. John Clarke, of London, and subsequently by his brother Sir Charles

Mansfield Clarke, to a form of ulcer of the cervix in which nothing but rapid destruction of tissue is noticed as a pathological lesion; in which there is no hardness of the part affected, no induration nor inflammation of surrounding organs; nothing but molecular death in the cervix uteri, and disappearance of its structure as if by liquefaction.

Synonyms.—It has been described under the names of phagedenic ulcer, diffuse ulcerative cancer, epithelial cancer, and cancroid of the uterus.

Frequency.—All authorities agree that this affection is comparatively rare. Dr. Ashwell[1] remarks: "For one case of corroding ulcer we meet with ninety or a hundred of cancer of the uterus;" and he further states that in the appropriate ward at Guy's Hospital at the time of his writing, not one example of the malady had appeared. In five hundred recorded cases of uterine disease in that hospital not one case of corroding ulcer was to be found. This is the experience of all authors who make their reports, not from clinical, but from careful post-mortem evidence. Those who rely upon clinical observations alone report the disease much more frequently; but it is highly probable that, as Scanzoni[2] remarks, an error has been made in such cases with reference to its anatomical characteristics. It should be borne in mind that many cases proved by the microscope in post-mortem inspection to be unquestionably cancerous, have run a course very similar to the epithelial form of the affection. Ashwell states that on several occasions where a diagnosis of corroding ulcer had been made, post-mortem examination gave evidence of true cancer; and Scanzoni tells of a case occurring in the clinique, at Prague, in which at an autopsy all present were inclined to reverse their diagnosis of cancer and adopt that of corroding ulcer, until the matter was settled by discovery of cancerous elements. It is only in view of these facts that I can account for the frequent reports of this disease made in public societies and private conversations in this city. I have myself met with two cases presenting clinically all the characteristic signs of corroding ulcer, but in neither was autopsic evidence obtained. Two very interesting cases are reported by Dr. Gardner,[3] in the American edition of Scanzoni, in one of which merely the peritoneal shell of the uterus existed at the time of death; yet both are invalidated for science by want of microscopical investigation.

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[1] Dis. of Women, p. 318. [2] Op. cit., p. 226. [3] Op. cit., p. 228.

Pathology.—Pathologists are now very generally agreed that this affection is a variety of epithelial cancer, as the following table will prove. In preparing it no author is quoted who wrote over twenty-five years ago.

Authority.	*Opinion as to Pathology.*	*Where reported.*
Dr. West, . .	Epithelial cancer, . .	West on Diseases of Females, p. 270.
Dr. Graily Hewitt,	A form of cancer, . .	Hewitt on Diseases of Women, Amer. ed., p. 211.
Dr. Churchill, .	"Essentially different" from cancer, ...	Churchill on Diseases of Women, p. 208.
M. Aran, . .	Diffuse ulcerating cancer, .	Aran, Mal. de l'Utérus, p. 937.
Dr. Scanzoni, .	Decomposed medullary cancer, ...	Scanzoni on Diseases of Females, p. 227.
M. Nonat, . .	Epithelial cancer, . .	Nonat, Mal. de l'Utérus, p. 521.
M. Becquerel, .	Epithelial cancer, . .	Becquerel, Mal. de l'Utérus, tom. ii, p. 209.
Dr. Ashwell, . .	Similar to lupus, . . .	Ashwell on Diseases of Females, p. 319.
Dr. H. Bennet, .	Epithelial cancer, . .	Bennet on Uterus, p. 386.
Dr. Tilt, . .	No allusion to it, . . .	Uterine and Ovarian Inflammation.
Dr. Byford, . .	Epithelial cancer, . .	Byford, Med. and Surg. Treat. of Women
Dr. Lever, . .	Malignant ulcer, . . .	Lever on the Diseases of the Uterus, p. 149.
Dr. Kiwisch, . .	Decomposed medullary cancer, ...	Scanzoni, Dis. of Females, p. 227.
M. Colombat de L'Isère,	Compares it to noli me tangere, ...	On Females.
M. Courty, . .	Epithelial cancer, . .	Mal. de l'Utérus, p. 875.

Rokitansky[1] says: "We also find primary and syphilitic ulcers, cancerous ulcers that have resulted from the fusion of cancerous morbid growths, the so-called phagedenic ulcer of the os tincæ, Clarke's corroding ulcer. The latter may be compared to the phagedenic, cancerous sore of the skin; without having a morbid growth for its base it gradually destroys the cervix and even the greater part of the uterus, and may extend to the rectum and bladder."

The course of the disease would lead to the belief that immediately upon the generation of the cells which constitute the great

[1] Path. Anat., Sydenham ed., vol. ii, p. 220.

feature of epithelioma death at once occurs, and they pass away as a detritus, the result of an apparent liquefaction.

Mode of Development.—On this point nothing is known. The infrequency of the disease and the fact that the physician is called after it has progressed for some time, will explain our ignorance. No better proof of the uncertainty attaching to this point can be given than the fact that Kiwisch and Scanzoni[1] both regard the ulcer as the base of a decomposed encephaloid cancer.

Course, Termination, and Prognosis.—Like cancer the inevitable tendency of this affection is to death. As the process of destruction advances through the mucous membrane into the parenchyma beneath it, and profuse hemorrhages occur, the patient is gradually exhausted, and as the peritoneum in time becomes invaded, peritonitis of fatal type is excited. Unlike cancer, however, its course is often slow, and years may pass before death results. Upon these facts, and the additional one that the disease is in its commencement a local affection, a prognosis of very grave character, though somewhat less grave than that of cancer, may be confidently based.

Symptoms.—The symptoms which mark its development are very similar to those of cancer, from which it can never be diagnosticated except by physical means. The most prominent are—

Hemorrhage;
Fetid, ichorous, and watery discharge;
Pain in back and pelvis;
Emaciation;
Slight fever;

The character of the pain is much insisted upon by Sir Charles Clarke as diagnostic. He declares that it is hot and burning, but not lancinating. Little reliance can be placed upon this sign, and to arrive at a diagnosis, physical examination is always necessary.

Physical Signs.—Upon vaginal touch an ulcer, whose base is covered by minute and unequal projections, is found to have eaten away the cervix to a greater or less extent. Besides this nothing is discovered. The uterus is movable, no hardness is found above the ulcer, and no glandular or other induration exists in the pelvis.

A corroding or gnawing ulcer, "ulcère rongeant," is found to have devoured a part or the whole of the cervix, and beyond this nothing is ascertainable.

Differentiation.—It may be confounded with granular ulcer,

[1] Op. cit., p. 227. Am. ed.

syphilitic ulcer, and ulcerated cancer. From the first two it may be known by its fetid and ichorous discharges, profuse hemorrhages, extensive destruction, and the peculiarly gritty feel of its surface. The differentiation from cancer is so difficult, and at the same time important, as to call for a comparison of symptoms.

In Cancer.	*In Corroding Ulcer.*
Constitution profoundly involved;	Not so profoundly affected;
There is deposit in the uterus and other pelvic organs;	There is no deposit in the uterus or other organs;
Uterus is somewhat immovable;	Uterus is movable;
Vagina generally affected;	Vagina free from disease;
Other organs often affected;	No other organs affected;
Bladder and rectum often opened into.	Rarely so.

Causes.—On this subject nothing is known.

Treatment.—Should the disease be detected early, and sufficient grounds be discovered for a positive diagnosis, the propriety of complete removal of the cervix by amputation cannot be questioned. If the disease be cancer, and not epithelioma, the operative procedure will generally fail in effecting a cure, but will probably not hasten a fatal issue. If it be the latter, a cure may be accomplished.

If it be thought best not to resort to amputation, cauterization, by means of the actual cautery, acid nitrate of mercury, or potassa cum calce, should be made to destroy the diseased surface as deeply as may prove compatible with safety, in the hope that as the slough separates a healthy, granulating base may replace the old and vicious one. Dr. Churchill thus speaks of the use of strong nitric acid as a caustic: "I have found it relieve pain, arrest hemorrhage, and restrain the discharges. In one case, hopeless when I first saw her, life was prolonged for three years under this treatment." If by these means the rapid progress of the disease may be checked, as we have every reason to believe that it may, it is incumbent upon the practitioner to essay them even when not absolutely positive of the correctness of his diagnosis, for besides them we have no others that ever prove curative. Should they fail, all that remains for us to do is to palliate the evils arising from the disease.

The vagina should be kept clean, and irritation within it relieved by frequent syringing with tepid water containing in admixture carbolic acid, Labarraque's solution, glycerine, or some other disinfectant. The violence of the hemorrhage should be controlled by pledgets of cotton saturated with solution of the persulphate

of iron and laid against the bleeding surface, and pain should be relieved by vaginal or rectal suppositories of opium or belladonna. At the same time that these local means are being resorted to, the general state of the patient should be improved by fresh air, carefully regulated exercise, nutritious food, tonics, and chalybeates.

Before leaving this subject for the consideration of vegetating epithelioma, let me remind the reader that all varieties of cancroid growths ultimately ulcerate. The prefix, "ulcerating," as here employed, applies only to that variety whose primary feature is to break down in this way.

Vegetating Epithelioma, or Malignant Papilloma.

Definition and Synonyms.—This peculiar affection, which has been at different times described under a variety of names, has the following characteristic features: it consists in the growth of a lowly organized tumor, which creates hemorrhage, fetid discharge, and hydrorrhœa. Its microscopic features are those of epithelioma, and it has a marked tendency to return, but if completely removed at an early period of development may not do so.

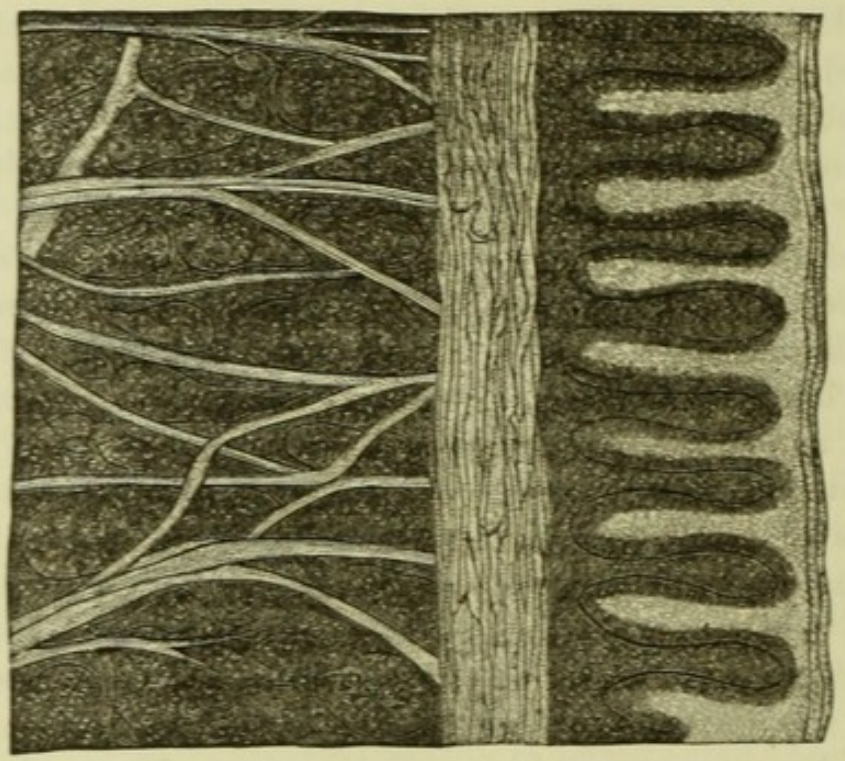
Normal Anatomy.—Before studying the pathology of this disease, it is necessary to have a definite idea concerning the normal anatomy of the mucous membrane of the vaginal extremity of the cervix, which is its usual seat. The researches of Dr. Franz Kilian, of Bonn, and of Drs. Tyler Smith, Hassall, and Jones, of London, have proved that this part is covered over by papillæ, which stand forth like a fringe. Each villus is covered by pavement-epithelium, and contains within itself a looped vessel which passes to its extremity, then returns and inosculates with the bloodvessels of neighboring villi. Sometimes two or three vascular loops will be found in the same villus, if of large size. Each villus thus projecting from the mucous membrane is covered, over its whole surface, by pavement-epithelium.

Pathology.—The disease which we are considering consists in an extraordinary development of these villi, an increase of their vessels, and a great activity in the growth of the cells which cover them, a "proliferation," as it is termed by Virchow. A morbid influence, the nature of which is unknown to us, stimulates the activity of cell growth, so that cells thickly cover the villi. "These growths," says Prof. J. H. Bennet, "speaking generally, are almost wholly composed of epithelial scales." In addition, the

villi increase in size and length, their bloodvessels enlarge, and a true papilloma or papillary tumor is inaugurated. "The gall-nut which arises in consequence of the puncture of an insect, the tuberous swellings which mark the spots on a tree when a bough has been cut off, and the wall-like elevation which forms around the border of the wounded surface, produced by cutting down a tree, and which ultimately covers in the surface, all of them depend upon a proliferation of cells just as abundant, and often just as rapid as that which we perceive in a tumor of a proliferating part of the human body."[1] Fig. 197 represents one of these growths in section.

It must not be supposed that these masses are supplied with blood only by the vessels of the villi. These ramify outside of

FIG. 197.



Transverse section of a vegetating epithelioma. (Virchow.)

their proper canals, and, running into the mass of cells, allow of transudation of serum, which constitutes the watery discharge so characteristic of the disease, and, being ruptured, give forth a profuse flow of blood.

These tumors, commencing as papillary hypertrophies on the cervix or os, are at first local, but in time affect the constitution.

[1] Virchow, Cellular Pathology.

They are sometimes engrafted upon true cancerous deposit in the cervical parenchyma.

Their most frequent site is the vaginal portion of the cervix, but from this point the morbid process may spread into the uterine cavity or down into the vagina. An important, indeed a vital question as to such growths is this: is every cauliflower excrescence a malignant disease? Virchow, than whom we know of no better authority, is decidedly of opinion that it is not. "The pathological importance of a papillary tumor," says he, "is, at least as far as I know, determined by the condition of its basis-substance, or by that of the parenchyma of the villi themselves; and a formation can only be pronounced to be cancroid or carcinoma when, in addition to the growth of the surface, the peculiar degenerations which characterize these two kinds of tumors take place also in the deeper layers or in the villi themselves."

Virchow then believes that some tumors, resembling in every outward aspect cauliflower excrescence, are really non-malignant papillomata. The difference between these and the real epithelioma is to be found by microscopic examination of the submucous tissue. In the one case it is healthy, in the other diseased. "Whilst," says Klob, "in the benign form, simply an arborescent framework is covered by a more or less thick layer of basement-epithelium, in the cancroid tumor, so-called *cancroid alveoli*, are developed in the substance proper of the tumor, and also in the 'parent tissue,' which is affected with hyperplasia of connective tissue."

This opinion, arrived at by these learned German pathologists by careful microscopic research, was maintained as a result of clinical observation many years ago by Dr. Gooch, who said: "I do not believe that any man can tell infallibly by touch whether a tumor in the vagina is a malignant excrescence, which is to grow again, or a benign one, which, if removed, will never return."

The pathological condition that we have thus far described may be styled the first stage of the disease. In time ulceration occurs in the mass thus created, which rapidly breaking down its tissue, opens large and numerous vessels, and destroys life by long-continued and profuse hemorrhages.

Klob[1] describes two forms of malignant papilloma; one which goes on to the creation of a tumor of some size and then breaks down; the other, which consists merely of small nodules upon the

[1] Op. cit., p. 189.

cervix, which rapidly ulcerate and eat away this part, and in time the body of the uterus.

These tumors may grow first from the vaginal portion of the cervix, second from the cervical canal, and third from the mucous membrane of the body of the uterus.

Predisposing Causes.—It is probable that those causes which influence the production of carcinoma may likewise prove predisposing in reference to this disease. To avoid a repetition of them here, the reader is referred to page 524.

Causes.—The same dearth of precise knowledge which attends the etiology of malignant disease of other forms attaches to this.

Symptoms.—The chief symptoms are these:

Discharge of bloody water like the washings of beef;
Hemorrhage;
Profound spanæmia;
Œdematous swellings;
Gastric disorder, vomiting, and dyspepsia:
In time, fetid discharge.

The discharge of water is sometimes so profuse as to saturate a large number of towels during each day.

Hemorrhage sometimes follows slight injuries, as coition, &c., in the beginning, but soon occurs spontaneously and profusely.

The other symptoms enumerated are not properly symptoms of the disease, but of one of its results, hemorrhage.

Physical Signs.—These are of the utmost importance for diagnosis, for without them no decision can be reached.

Vaginal touch reveals a nodulated tumor which is generally attached to one lip of the os. This is not smooth and even, like a fibroid growth, but soft and uneven like the uterine surface of the placenta. Upon slight tactile interference it will bleed freely and it will show a marked tendency to crumble under firm pressure.

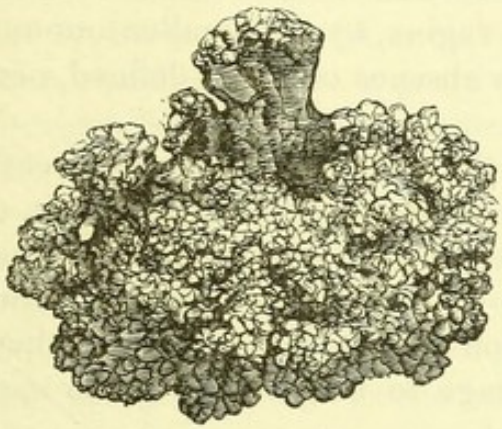
Differentiation.—Malignant papilloma may be confounded with—

Syphilitic vegetations;
Retained placenta;
Simple papilloma;
Cancer.

Syphilitic vegetations will be known by their dependence upon a constitutional vice, which demonstrates itself by other signs, and by their readily yielding to specific treatment.

A retained placenta may mislead the practitioner, but a differentiation will readily be accomplished by microscopic examination of a portion of the mass and by dilatation of the cervix by sponge-tents.

Fig. 198.



Vegetating epithelioma. (Simpson.)

Simple Papilloma.—The authority of Virchow has been already quoted to prove how difficult is a differentiation from this disease in the commencement. Indeed, Scanzoni declares that Virchow is of opinion that "the excrescence is at first a simple papillary tumor, which afterwards passes into a cancroid state." At the same time that differentiation is difficult in such a case, its great importance as affecting the validity of deductions, as to treatment, must be evident. The following quotation from Graily Hewitt's[1] excellent work will illustrate this remark. In speaking of the fatality and duration of cancerous and cancroid affections, he says, "One of the most valuable facts in this connection is given by Sir J. Y. Simpson in his 'Lectures on Diseases of Women.' The patient, the subject of the case, had a large cauliflower excrescence, the size of an egg, removed eighteen years previously. Since that period she has had five children, and was still alive. With reference to this case it should be stated that no 'caudate or spindle-shaped bodies' were found in the tumor removed." Now if we are to accept the revelations upon this subject made by recent investigators, of what real value is such a case? It is more likely to mislead than to guide the reader correctly. Klob,[2] while guarding against the fallacy of judging by external appearances, gives

[1] Op. cit., p. 578.

[2] Op. cit., p. 187.

this method of differentiation: "In simple papilloma there is a framework covered merely by a thick layer of basement-epithelium; in malignant papilloma there are alveoli filled with cells constituting the so-called 'brood-cavities.'"

Cancer in any of its varieties may usually be recognized by induration of the tissue above the nodulated, exuberant mass which projects into the vagina, by the smaller amount of profuse watery discharge, and by absence of a well-defined, non-ulcerated, vaginal tumor.

Prognosis.—If the disease be discovered early enough for complete removal to be effected, the prognosis is, although not good, not absolutely desperate; otherwise it is eminently unfavorable.

Frequency.—So great is the discrepancy between the statements of authorities upon this point, that I quote them with some doubt as to the advantage to be gained from an appeal to such contradictory testimony.

Epithelial cancer, of the vegetating, as of the ulcerating form is stated by many authors to be comparatively rare. Dr. West, in 120 cases of malignant disease, met with it only ten times, while encephaloid cancer existed one hundred and eight times. Becquerel,[1] speaking especially of what has been called "cauliflower excrescence," goes so far as to treat the question of frequency in these words: "If this malady really exists, no one will deny that it is very rare, or I have been little favored by chance, for I have studied uterine diseases for ten years, and have never met with a single case." Wagner regards it as rare, and Barker declares that out of 487 cases of malignant disease which have come under his observation but 27 were of this type, 460 being cases of true carcinoma. This represents sufficiently one side of the question; let us now examine the other.

Virchow[2] regards cancroid affections as constituting the majority of cases of so-called uterine cancer. Hewitt[3] declares that "the form of cancer usually witnessed in the uterus is the medullary cancer. The 'epithelial' comes next in order of frequency." Courty[4] begins his remarks upon this subject thus: "Epithelioma of the vaginal portion of the neck, perhaps the most frequent of uterine cancers," &c.

My own experience as to the frequency of the affection differs so markedly from that of those authors, who regard this variety

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[1] Mal. de l'Utérus, vol. ii, p. 214.

[2] Lusk's résumé, N. Y. Med. Jour., Sep., 1869, p. 567.

[3] Op. cit., p. 575.

[4] Traité prat. des Mal. de l'Utérus, &c., p. 875.

as rare, that I am at a loss to account for the discrepancy. It is, according to my observation, by no means rare; for, as I look back through my practice, I can recall a large number of cases which were undoubtedly of this character. So far indeed from looking upon this variety of malignant degeneration of the uterus as an uncommon one, I am not surprised at the opinions of Virchow and Courty as to its frequency of occurrence. I have no written records from which to draw a positive deduction, but this is the less to be regretted when we see how much at variance those observers are who rely upon figures for their conclusions. This great difference of opinion is most likely due not to difference in experience, but to the fact that some observers style cancer what others call cancroid.

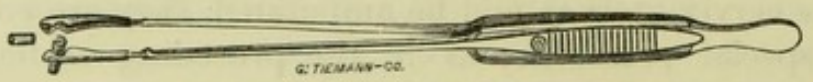
Treatment.—Should amputation of the neck promise entire removal of the morbid tissue, it should at once be accomplished by the écraseur, the curved scissors, or the galvano-caustic. It may be well for me to state here that when, in speaking of methods by which the cervix uteri should be amputated, they are enumerated without special preference as in the preceding sentence; it is done under the supposition that the galvano-caustic apparatus is not attainable. In all cases in which this instrument is at hand it should by preference be employed.

If from any cause amputation be impracticable, the growth should be destroyed as completely as possible by the actual or galvanic cautery, potassa cum calce, one of the mineral acids, or the gas jet cautery. The last, which is the invention of Dr. Acosta, of Paris, is applied by means of a metal tube attached to one of gutta-percha, which connects with a reservoir of the ordinary gas used for lighting buildings. Through the end of the metallic tube a minute jet escapes, which being lighted, is brought in contact with the morbid growth through a double speculum between the walls of which a stream of cold water is kept circulating by means of a syringe which is attached. It soon destroys the surface entirely, and possesses certain advantages not attaching to other methods, but it is infinitely less manageable than the white hot iron, and can only be employed through the double speculum. The heat generated by it is so intense that a single speculum would burn the vagina.

Method of Applying Potassa cum Calce.—This preparation, consisting of two parts of lime to one of caustic potash, or two of the latter to one of the former, as Dr. Bennet uses it, is so far preferable to pure caustic potash that I shall speak of it to the exclusion

of the more powerful escharotic. It was formerly used as Vienna paste, until M. Filhos prepared it in the form of a stick, at the same time rendering it much more powerful by combining two parts of quicklime with one of the caustic potash, instead of from thirty to fifty, as was done in the paste. A large cylindrical speculum having been introduced, and the cervix cleansed and completely dried, a dossil of cotton soaked in vinegar and squeezed almost dry should be forced, by means of the long-shanked speculum forceps, into the os. A large supply, similarly soaked and squeezed, should then be pressed around the neck between it and the rim of the instrument. As acetic acid neutralizes caustic potash, this will protect all the tissues which we wish to avoid injuring. A stick of caustic should now be taken in the grasp of a caustic-holder and applied to the cervix. It should remain in contact with one point for from five to ten seconds, then be removed and

FIG. 199.



Sims's caustic-holder.

brought in contact with an adjoining part until all the desired surface is cauterized.

A stream of fluid, consisting of equal parts of vinegar and water, should then be repeatedly thrown against the cervix by the speculum syringe, a piece of cotton with a string attached and saturated thoroughly with the same be laid against it, and the speculum removed. After this the patient should be kept perfectly quiet, and pain relieved promptly by full doses of opium, by mouth or rectum; for this operation is sometimes followed by metritis, pelvic cellulitis, or peritonitis, and I have in one case known tetanus occur with a fatal issue. There is not great danger of these results; but it is not the less true that they may occur, and it is the duty of the practitioner to be forewarned against the possibility. The application of this escharotic should always be regarded and treated as an operation, and the patient should distinctly understand that it is no trivial affair, to be lightly dealt with.

Mode of Applying the Actual Cautery.—Very little preparation is necessary for the use of this caustic. The iron being brought to a white heat by placing it in a fire, or still better in the flame of a Russian spirit-lamp, which the operator may always have at hand,

and which gives the powerful aid of a blow-pipe, by its ingenious mechanism, is passed up through a cylindrical speculum composed of metal, horn, ivory, or wood, the last being the best, and pressed for a few seconds against the cervix at some distance from the os. As soon as the tissue touched is destroyed, the cautery is brought in contact with another point, until the desired amount of destruction is accomplished. A stream of water is then thrown against the cervix, a roll of cotton saturated with glycerine is introduced, the speculum withdrawn, and the patient kept in bed and directed to cleanse the vagina by warm injections.

Should the disease have involved so much of the uterus that complete removal is impossible, the physician will be forced to limit his interference to the fulfilment of these three indications:

Controlling hemorrhage;
Correcting fetor;
Sustaining the general strength.

The first may be to a limited extent accomplished by the application of pledgets of cotton or the use of vaginal injections medicated with the persulphate of iron, alum, or tannin. Or the same result may be attained by passing a cylindrical speculum, and introducing through this fifteen or twenty grains of tannic acid against the cervix. This plan, which was suggested to me by Dr. S. R. Percy, has proved, in my hands, an excellent one.

The second indication may be fulfilled by injections into the vagina of water medicated by carbolic acid, Labarraque's solution, the sulphate of iron, or other disinfectants.

The third indication will require tonics, good diet, fresh air, and stimulants.

CHAPTER XXXIII.

CANCER OF THE BODY OF THE UTERUS.

It has been elsewhere mentioned that the order of frequency with which the various parts of the uterus are selected as primary seats of cancer is this:[1] 1st, the cervical parenchyma; 2d, the cervical mucous membrane; 3d, the mucous membrane of the body; 4th, the parenchyma of the body. It is not stated that these parts are affected with this relative frequency, but that they are thus selected as primary seats of deposit; thus, although the parenchyma of the body is affected in almost all cases of carcinoma, it is usually invaded secondarily, not primarily. When the mucous membrane of neck or body is the primary seat of malignant disease, it is probably epithelioma which usually invades it, and thus it is that we find remarks made about uterine carcinoma, generally having reference to that disease in the parenchyma of the cervix, for primary invasion of the corporeal parenchyma is known to be quite rare.

Post-mortem evidence puts it beyond doubt, however, that the form of cancer which develops commonly in the cervical parenchyma may likewise do so in that of the body. The most marked feature of the affection thus making its appearance is the obscurity which attends diagnosis. For a long time only thickening of one uterine wall is recognized, and this it would be very difficult to distinguish from fibroid degeneration. But in time the interstitial or parenchymatous growth projects either into the peritoneum or cavity of the uterus, when either peritonitis or the symptoms of hemorrhage, &c., show themselves. As the disease advances these grave local symptoms, accompanied by depreciation of strength, cachectic appearance, and uterine hemorrhage, will lead to an examination of the uterus, when enlargement without that hardness characteristic of fibroid growths would probably lead to a correct diagnosis even where the cervix is perfectly healthy.

Frequency.—Although cancer developed in this locality has at-

[1] I have stated elsewhere that this is a doubtful point. Here I acquiesce in what I presume to be the prevalent opinion.

tracted very little attention, it is by no means exceedingly rare. Dr. West has met with it in two out of one hundred and twenty cases of malignant uterine disease, and Sir James Simpson looks upon the frequency as represented by two out of every thirty cases. I have met with six cases, to the notes of which I shall make reference in this article.

Varieties.—Cancer may develop in medullary form within the parenchyma of the uterine body, or it may affect the lining membrane in the form of vegetating epithelioma.

Symptoms.—These may be thus presented:

Hemorrhage, especially if occurring after the menopause;
Depreciation of vital forces;
Cachectic appearance;
Fetid discharge;
Pains of severe and lancinating character.

These symptoms having led to examination of the uterus, the following physical signs will probably be recognized:

Enlargement and hardening of uterine body noticed by bimanual palpation;
Increased capacity of uterus ascertained by the probe;
Profuse hemorrhage upon probing;
Uterine[1] tenesmus with dilatation of os;
Recognition of peculiar intra-uterine growth by introduction of finger;
Microscopic evidence of cancer.

Differentiation.—When the rational and physical signs here enumerated are carefully developed and considered, a very probable diagnosis may be arrived at. Errors of diagnosis are common in reference to this disease at the hands of practitioners who are not familiar with the subject, or who rely too firmly upon one or two of these signs or symptoms. I have seen each one of the following conditions mistaken for cancer of the body, and some of them I have known to have repeatedly caused erroneous diagnosis:

A sloughing fibroid;
A placenta three months retained;
A sponge left by accident in utero;
Syphilitic disease of pelvic bones;
Peri-uterine cellulitis or peritonitis;

[1] Courty, op. cit., p. 880.

Cystic degeneration of chorion (hydatids);
Fibroid tumors or polypi;
Entero-vaginal fistula;
Intra-uterine fungosities.

I do not deem it necessary to go into detail upon the means necessary for accomplishing the differentiation of these affections from malignant diseases. It will suffice to say that in cases in which doubt exists after careful investigation by all the other means here recommended, removal of a small portion of the mass and its examination by the microscope will prove of the greatest assistance, and will probably decide the question. It may be of service to practitioners at a distance from cities in which competent microscopists reside to state that in sending specimens for examination, the best preservative menstruum consists of glycerine diluted with water. Alcohol, carbolic acid, and similar fluids contract and harden the structure to such an extent as to render them unfit for examination.

The removal of a portion of intra-uterine cancerous growth may be accomplished in three ways. The simplest, and consequently the best, is to introduce a silver male catheter, turn it around once or twice, and then withdraw it. Upon blowing through the manual extremity a piece of the growth large enough for examination will generally be obtained, for these masses are usually very friable. Should none of the growth be obtained in this way, a curette may be passed gently into the uterus, and greater force applied for the detachment of a portion. Should even this fail the os should be dilated by tents, and the desired specimen obtained either by the finger, a wire loop curette, or a pair of long-handled scissors.

Prognosis.—A certain diagnosis having once been made the prognosis is unfortunately not a doubtful one as to the final issue. Even where epithelioma attacks the vaginal cervix prognosis is not good; still less is it so where ablation of the diseased part, which alone constitutes ground for hope, cannot be accomplished. The prognosis as to duration is not, however, as bad as one might suppose if the corporeal affection appear to be cancroid, and not cancerous. I have under observation now a lady in whose case the diagnosis of vegetating epithelioma of the body was made by the microscope four years ago. Her case is now advancing more rapidly than it has heretofore done towards a fatal issue, but during the period mentioned she has performed all the ordinary functions of life. In all cases it may be said that malignant disease of

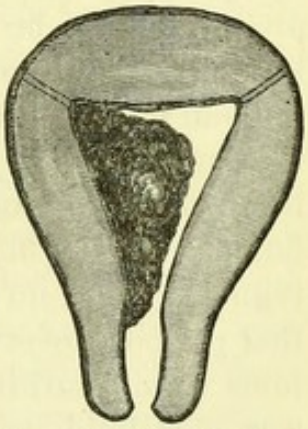
the body demands a graver prognosis than that of the cervix. The first affects a part of the uterus of which important functions are demanded; the second does not. The first affects a tissue on every side in close relation with peritoneum; the second does not. The first has no large base offering itself for gradual destruction; the second has. The first pours its ichorous secretions into a cavity lined by mucous membrane which may retain and absorb them; the second has the large vagina at hand to act as a sewer.

Cases of cancer confined to the body and not implicating the cervix have been so rarely reported that I introduce here short memoranda of the six cases with which I have met.

Case 1.—A multiparous woman, of the middle class, aged about 40 years, had suffered from menorrhagia, metrorrhagia, hydrorrhœa, and fetid discharge, for about eighteen months. I saw her with Prof. Charles A. Budd, and found her pale, weak, thin, and cachectic in appearance. The uterus was as large as the pregnant organ in the third month, and the os dilated. As the finger was passed in, a spongy, friable mass was felt, as represented in Fig. 200. Some months after this Dr. Budd reported to me her death, without the development of other symptoms.

This was probably a case of vegetating epithelioma, belonging to that class described by E. Wagner as medullary fungus of the uterus.

Fig. 200.



Cancroid of the body of the uterus.

Case 2.—This case was reported to me as cancer of the body by Dr. James L. Brown, my clinical assistant at the clinique for diseases of women in the College of Physicians and Surgeons. A woman beyond the menopause presented herself at the clinique with the statement that although nine or ten years had elapsed since the entire cessation of her menstrual function, she was again flowing at irregular intervals. There was no hydrorrhœa nor fetid discharge, and no pain nor discomfort. Upon physical exploration all that could be discovered was enlargement of the uterus, and increase of the capacity of the body with hemorrhage upon probing.

I differed from Dr. Brown as to the diagnosis, and lectured upon the case before the class as probably one of uterine fibroid. From time to time the patient returned, and as she did not improve I finally dilated the cervical canal, and passing in the finger discovered a brittle and friable mass filling the cavity like a fibrous poly-

pus. Its surface appeared to the touch to be covered by mucous membrane, but the density of the tumor was so slight that it readily broke down under pressure by the finger. This case after a time gave all the evidences of true malignant disease, and ended fatally.

Case 3.—Was brought to my clinique by Dr. George W. Robinson, and was in almost all respects identical with the last. I scraped from the cavity a large piece of the growth, and this being examined by Dr. H. B. Sands, was pronounced to be cancerous.

Case 4.—I saw with Dr. Freeman, of West Farms. The uterus was as large as a pregnant organ of four months; the finger readily entered the cervix, and a very large mass of spongy fungous material was found filling the cavity. A portion of this being removed was examined by Dr. Francis Delafield, but he was unable to decide as to its character. The case presented the ordinary symptoms of malignant disease of the body, fetid discharge, hemorrhage, pain, cachexia, &c., and in six weeks after I saw it ended fatally. This case closely resembled that first related here.

Case 5.—A physician of Montreal brought me a lady for examination, of whom I learned this history. She had for months suffered from menorrhagia, when a silver catheter being introduced into the uterine cavity a small friable body came forth in its eye. This was examined by a competent microscopist and pronounced to be malignant. When I first saw her I did not know of this fact, and for diagnosis dilated the cervix, and finding fungoid masses studding the walls of the cavity, scraped them out thoroughly by the curette. Suspecting no malignancy in the case they were not examined by the microscope, and the lady went home. For eighteen months she was entirely well, menstruated regularly, with no profuseness, and got strong and stout. After that period, however, her physician discovered that her bad symptoms were returning, and in addition learned that the discharge was now fetid, and that violent expulsive uterine contractions occurred occasionally. At the end of two years I again dilated the cervical canal, and found a great deal more fungoid material adhering to the walls. This I again entirely removed by the wire-loop curette, and this time had it carefully examined by Dr. Edward Curtis, microscopist to the Stranger's Hospital, who reported it to be malignant.

Case 6.—I saw with Drs. Smith and Skene, of Brooklyn. The patient had been delivered five months previously, and had had uterine hemorrhage ever since. The cervix having been dilated,

a soft mass was found filling the cavity of the body, and was supposed to be a portion of retained placenta, and removed. It immediately returned, and removal was several times practiced. When I saw the patient I discovered in utero a fungoid mass about the size of an English walnut, soft and smooth, but lobulated to the touch. As the patient was much exhausted by repeated hemorrhages none of this was removed for examination, but the diagnosis of cancer was made. The discharges, which had been fetid from the first, were not excessively so at this time. The patient sunk in three months, and died.

CHAPTER XXXIV.

FIBRO-PLASTIC AND RECURRENT FIBROID TUMORS.

Between cancer on the one hand and myo-fibroma or fibroid tumors on the other, there is a doubtful, debatable ground, which is occupied by two peculiar growths which possess certain peculiarities belonging to each affection. These are styled Fibro-plastic and Recurrent Fibroid Tumors.

Presenting in many respects the ordinary physical aspects of benign fibroid growths, these tumors demonstrate a marked tendency to return after ablation. Even after repeated and thorough removal, they again and again recur, until their real character is in this way discovered. Another peculiar and dangerous characteristic, which marks their difference from benign fibroids, consists in their tendency to burst their capsular envelopes and throw out fungoid growths, which show a marked tendency to undergo molecular death and disappear by ulceration. This process saps the vital forces of the patient by repeated and prolonged hemorrhages, and by opening the mouths of absorbent vessels for the entrance of septic elements into the blood.

Although for the practitioner there is little difference between the two varieties of tumor of which we are treating, it appears to me to be better to make a rapid reference to each.

Fibro-plastic Tumors.

Of this variety there are several subdivisions, as, for example, the myeloid, fibro-nucleated, &c. That form of polypus termed malignant probably also comes under this head.

Pathology.—Although having like cancer an interstitial origin, and being like it accompanied by proliferation of connective tissue, this form of tumor differs from it both clinically and anatomically. The characteristic cell is smaller and has a smaller nucleus. The cells of this growth are, however, larger than those of any other lymph-tumor excepting cancer. They are of an oval form with one elongated extremity, and flask-shaped, as Mr. Paget has expressed it. Mr. Collis declares that as soon as the tumor is fully distended, its covering, whether of skin or of mucous membrane, gives way and an ulcer is formed, from which a fungus protrudes, which by hemorrhage and discharge exhausts the patient's strength.

Clinically this difference is noticed between it and cancer. While the latter is developed as the result of a vitiated blood state, the former exists for some time without affecting the system, and may, before such a result has occurred, be removed without return. But its tendency to return is marked, and the secondary growths are always more malignant in character than the primary.

Upon section fibro-plastic tumors leave a clear white surface uncovered by fluid, and quite hard to the touch.

Recurrent Fibroid Tumors.

Definition.—This term has been applied by Mr. Paget to a tumor in many respects resembling fibrous tumors, and yet endowed with the unfortunate feature of recurrence after removal, and tendency to ulceration, and fungous degeneration.

Pathology.—"These growths," says Mr. Collis, "are of a firm, elastic feel, a more or less globular outline, and lobed sometimes by the pressure of an intersecting fascia or band. They are unattended by any special pain, and free from glandular or constitutional complication." Like the fibro-plastic tumor they ultimately ulcerate, and a free flow of blood occurs. Then a fungous growth protrudes, which by hemorrhage and discharge, exhausts the patient. Under the microscope the elements of this form of tumor appear to be elongated, caudate cells, interspersed with free nuclei and young cells.

For most of the facts connected with the pathology of these tumors, I am indebted to the work of Mr. M. H. Collis, of Dublin, upon Cancer and Tumors, to which I would refer the reader.

For the pathologist there is much to study in the various forms of uterine tumors belonging to this class. For the Gynæcologist there is less, for the following are the only facts connected with the subject which are of clinical importance:

1st. That there is a class of tumors resembling fibroids, yet presenting a tendency to ulcerate, develop fungus, and persistently refuse to heal.

2d. That this class, if removed, is almost as prone to return as cancer itself.

3d. That if this variety of tumor be removed in its incipiency, the system may possibly be left unimplicated, while, if allowed to remain *in sitû* for a long time, it will become involved.

Prognosis.—The prognosis is unfavorable, although there is a possibility that no return may take place after removal, if this be practicable.

Frequency.—Fortunately recurrent fibroid tumors very rarely develop themselves in the uterus. Lebert declares that they may do so, and Dr. West mentions several cases. I have myself met with but two cases, concerning which I felt positive, and even in these the conclusion was supported by clinical evidence alone. One of these I saw in consultation with Prof. Budd. The tumor, hard and elastic, was attached to the inner wall of the cervix, and extended upwards towards the cavity. It presented to the touch a hard, carcinomatous resistance, not unlike that of a fibroid, and although not larger than a walnut, had completely undermined the patient's strength. It was in time attacked by ulceration, from which profuse hemorrhage occurred, and destroyed life.

CHAPTER XXXV.

DISEASES RESULTING FROM PREGNANCY.

In the non-pregnant state, the parenchyma of the uterus consists of fibrous tissue, resembling that of fibroid tumors, with fibre cells disseminated throughout it; and the cavity of the organ is lined by a mucous membrane so indistinct that within the present century its very existence has been contested. No sooner does "fixation of the impregnated ovum,"[1] or conception, occur, than the fibre cells begin to elongate themselves into powerful muscular fibres, the mucous membrane actively generates cells, and the uterus rapidly enlarges to meet the wants of its increasing contents.

When the period of pregnancy is terminated by labor, and diminution of the enlarged uterus proceeds in accordance with given laws, the organ chiefly concerned in the process is left in a state of perfect health. But a variety of accidents may occur which will entail disease upon it. The fœtus may be expelled or become atrophied, and the membranes continue to grow; even a small portion of retained chorion may undergo cystic or hydatidiform degeneration; or the child being born at full term, the uterus may not return to its original size, or may diminish too much and become atrophied.

The diseases resulting from such abnormal conditions are—

Moles;
Hydatids;
Subinvolution;
Superinvolution.

Uterine Moles.

Definition.—By this term is meant the existence in the cavity of the uterus of a fleshy mass which cannot be classed among tumors or polypi.

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[1] Prof. C. D. Meigs.

The appellation of mole is neither elegant nor appropriate, but it is sanctioned by use for so great a length of time that it is difficult to alter, and impossible to discard it.

History.—Ancient medical literature teems with theories, hypotheses, I might almost say fables, upon this subject. It would be unprofitable even to enumerate the extravagant and baseless surmises indulged in upon it, but as an example I will mention that Aristotle,[1] Hippocrates, Galen, and the Latin authors regarded moles as due to want of virtue in the seminal fluid, or to a superabundance of menstrual blood.

A certain superstition has attached to them even in modern times; thus Capuron quotes Mahon for the following very curious assertion. "The housewives believe that moles not only take the forms of certain animals, but that they even walk, run, fly, try to hide themselves, even to re-enter the womb from which they came; indeed, if no obstacle be offered, they will kill the woman just delivered of them." Levret pointed out the fact that they are only the retained fœtal shell, which, by the establishment of a low grade of nutrition, continues to exist.

Pathology.—As the fœtus passes into the uterus it is enveloped by its proper membranes, the amnion and chorion, and these are surrounded by a prolongation of the hypertrophied mucous lining of the organ, called the decidua reflexa. Between the end of the second and the end of the third month the placenta is formed and the villi of the chorion not engaged in its development become atrophied. Before that time the fœtal shell is quite thick, and is everywhere in close communication with the uterine walls.

Many adverse influences may destroy the life of the fœtus, and generally, as a result, the whole of the products of conception are swept away by uterine contraction. But sometimes the shell of membranes clings to its attachment, and for an unlimited period holds its position in utero. This, absorbing nourishment from the uterine vessels, becomes to a certain extent organized, and constitutes the disease under consideration. When expelled from the uterus a mole is usually found to be somewhat ovoid in shape, and to resemble the product of conception at the second month. It differs from this, however, in its deep brown color and apparent lack of vitality.

Causes.—There are many intra-uterine growths and collections which, being cast off, may be mistaken for moles, as, for example,

[1] Capuron, Mal. des Femmes, p. 268.

masses of coagulated blood, polypi, decidual membranes, &c., but it is very doubtful whether a true mole ever exists except as a result of conception. Why the fœtal investments should be cast off in some cases, while in others they remain and undergo degeneration, it is impossible to say.

Symptoms.—The condition generally announces itself by these symptoms:

Menorrhagia or metrorrhagia;
Hypogastric weight and uneasiness;
Uterine tenesmus;
Slight constitutional disturbance;
Cessation of signs of pregnancy.

Physical Signs.—Vaginal touch will reveal the fact that the uterus is enlarged, and the uterine probe may assure us that its cavity contains some solid substance, but the removal and examination by the microscope of a portion of the mass, will alone enlighten us as to its character. The diagnosis of uterine moles is very obscure and often uncertain. When a patient who has exhibited all the signs of pregnancy suddenly ceases to do so and presents those just enumerated, it may be suspected. A more accurate diagnosis than this can rarely be attained unless a piece of the mass be obtained for examination. The condition being suspected, the cervix should be dilated by tents, and uterine action excited by ergot in order to settle the question.

Differentiation.—This disease may be confounded with

Fibrous tumor;
Cancer of the body;
Subinvolution.

From all these conditions the differentiation may be positively accomplished in one way and one way only,—dilatation of the cervix by tents, removal of a small portion of the mass, and examination of this by the microscope.

To the finger passed into the uterus, a fibrous tumor is hard, smooth, and resisting, while a mole is soft, spongy, and yielding to the touch.

Cancer will be known by the peculiar sensation yielded to touch, its fetid discharges, the constitutional implication attending it, and its microscopical characteristics.

Subinvolution demonstrates upon exploration the fact that the uterus is empty. It also follows delivery, while a mole rarely does so.

Prognosis.—The prognosis is favorable.

Treatment.—The cervical canal should be fully dilated by tents, and an effort made to arouse uterine contraction by persistent use of ergot. Should this fail, the mass should be cautiously removed by the large uterine scoop, or by traction by means of the placental forceps.

Cystic Degeneration of the Chorion, or Uterine Hydatids.

Definition.—The chorion remaining attached to the uterine walls after expulsion or death of the embryo, sometimes undergoes a peculiar metamorphosis which receives this appellation. True hydatids, that is cysts due to the presence of the acephalocyst, are very rarely met with in the uterus. Their extreme rarity may be judged of from the fact that Rokitansky declares that he has never discovered them but once. Dr. Graily Hewitt[1] believes that when they exist in the uterine cavity, it is probable that they are discharged into the peritoneum from rupture of a cyst in the liver, and thence pass through the uterine wall. Not only do the grape-like cysts, making up what is commonly known as uterine hydatids, differ from true hydatids in absence of the acephalocyst, they are also unlike in their appearance and formation. The former consist of little sacs in a series, as if strung together; the latter are closed sacs, one within another.

Synonyms.—The affection has been described under the names already given, and under those of vesicular mole, in contradistinction to fleshy mole just considered, hydatidiform mole, and hydatid pregnancy. In most works it is described as only a variety of mole.

Pathology.—It is probable that after the end of the third month, no such degeneration can occur in the secundines, for after that period the placenta is formed, the villi which existed at its site become vascular, and those over other parts of the surface of the fœtal sac undergo atrophy. It is true that at the period of parturition, masses of these sacs have, in rare instances, been expelled, but in such cases it is probable that some portion of the chorion had begun to degenerate at an early period of conception.

Remaining in connection with the uterine walls after the expulsion of the fœtus, and absorbing nourishment which it no longer appropriates, the villi undergo a kind of dropsical swelling, which results in the grape-like bodies styled hydatids.

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[1] Op. cit., p. 75.

Causes.—We know of no influences which excite this form of degeneration in a retained chorion.

Symptoms.—Sometimes the disease demonstrates its presence by all the signs of pregnancy, abdominal enlargement being one of the most prominent. Suspicion of the existence of something abnormal is very generally excited at an early period by some or all of the following signs:

Discharge of clear or bloody water;
Hemorrhage;
Uterine tenesmus;
Constitutional disturbance;
Discharge of little cysts.

Physical Signs.—Vaginal touch will reveal the uterus enlarged, and the os patulous, as if the cavity of the organ were filled with something, and conjoined manipulation will prove this to be fluid and not solid.

If with these signs, the fact could be ascertained, that cysts had been discharged, the diagnosis would be complete. If not, the cervix should be dilated by tents, in order that the cavity of the body may be explored by touch, or that a portion of the mass may be removed for inspection.

Differentiation.—This disease might very readily be confounded with—

Pregnancy;
Polypus;
Cancer of the body of the uterus.

From pregnancy it could generally be distinguished by the very rapid development of the uterus, the presence of watery and bloody discharges, and the absence of quickening, ballottement, and other signs of that state.

From polypus a differentiation could readily be made by tents, and the uterine sound.

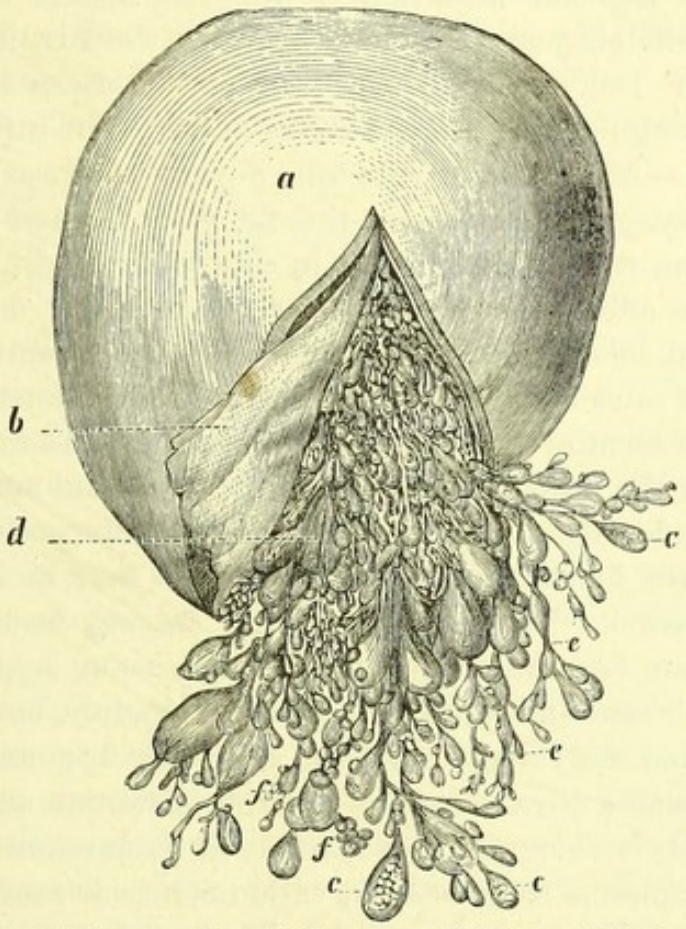
Cancer would be known by fetid discharge, great constitutional decadence, and the much smaller size of the uterus than in hydatids.

Prognosis.—If the case were one of true hydatids due to the acephalocyst, the prognosis would be very grave. If it were proved to be one of cystic degeneration of the chorion, it would be favorable.

Treatment.—The treatment should consist, 1st, in full dilatation

of the cervical canal by tents and Barnes's dilators; and 2d, in causing the expulsion of the mass by the administration of ergot,

Fig. 201.



Cystic degeneration of chorion. (Boivin and Dugés.)

or the introduction of the scoop, a looped wire, or other appropriate instrument, into the uterus.

Subinvolution of the Uterus.

Definition.—By this term is signified the fact that the retrograde metamorphosis, by which the uterus, enlarged from pregnancy, returns to its original size, stops short of completion, and leaves the organ larger than it should be.

History.—It is only within the last twenty years that we have understood the processes by which the uterus, an organ measuring three inches, in the short space of nine months enlarges so as to contain a child or even two or three children, and then within two months after delivery, undergoes so rapid an absorption as to return to its original size. The credit of elucidating the subject

belongs chiefly to Germany, for it is to Virchow, Franz Kilian, Hesch, Kölliker, and Retzius that we are most indebted.

The important pathological bearing of the subject was developed by Sir James Simpson, who, in 1852, published the first article which drew especial attention to it. His article was entitled, "Morbid Deficiency and Morbid Excess in the Involution of the Uterus after Delivery." Since that period these have become generally recognized as uterine states of no great infrequency.

Pathology.—After delivery the fully developed fibres of the uterus undergo a fatty degeneration; the fat thus formed is absorbed, and the organ rapidly diminishes in size and weight. This fatty degeneration affects the organ after the fourth day subsequent to delivery, and according to Heschl, the commencement of a new formation of muscular fibres is recognized in the fourth week after labor, in the form of nuclei and caudate cells. At the end of the eighth week the uterus has returned to its normal state. Certain untoward influences may retard or check this process, and the uterus remain flabby and large, when it is said to be in a state of subinvolution. This condition after having lasted for a certain time may become complicated with areolar hyperplasia, the result of habitual and long-continued congestion, but it must not be confounded with that condition, nor with hypertrophy of the uterine muscular fibre. It is an entirely different state. At the moment of its occurrence, that is to say at the moment when retrograde development is arrested by endometritis or some such cause, the muscular fibres are large and filled with fat. They simply remain so, and the uterus in consequence remains large and heavy. Subinvolution is not the result of diseased action; it is the consequence of an arrest of a physiological process. Dr. H. G. Wright[1] says of it, "Pathologically it closely corresponds with that state of the heart structure so admirably described by Dr. Richard Quain, and commonly known as fatty degeneration." The process by which nature was in the act of reducing the uterus to its non-pregnant status has been checked by a morbid agency, and in consequence what was a transition stage becomes a permanent one.

Causes.—The most prominent of these are the following:

Metritis or endometritis;
Uterine congestion;
Uterine atony.

Inflammation of the uterine parenchyma, or mucous membrane,

[1] Uterine Disorders, p. 222.

whatever be its cause, retards and checks involution, and is the most frequent source of subinvolution.

Congestion is often induced after delivery by too early exertion, abuse of coition, and constipation.

Uterine atony, by allowing the sinuses of the uterus to remain open after labor, favors a sluggish circulation, a lax fibre, and tends to produce the disorder which we are considering.

Symptoms.—The disease presents the following symptoms:

Menorrhagia or metrorrhagia;
Leucorrhœa of watery character;
Pain in the pelvis, back, and thighs.

Prognosis.—The prognosis as regards the life and health of the patient is good, but it is not so favorable as to rapid recovery. To a certain extent it will depend upon the patient's ability to yield to treatment, and allow the means at our command a fair opportunity to exert their influence.

Results.—Unless it be cured, subinvolution will very likely result in displacement and areolar hyperplasia, with their long list of discomforts.

Treatment.—With subinvolution of the uterus will be found to exist, either as cause or effect, generally as the former, endometritis alone, or with some of its consequences, such as fungous degeneration of the villi, small mucous polypi, &c. These will generally require treatment. The cervix having been dilated by tents, which of itself exerts an alterative influence upon nutrition, examination of the condition of the uterine mucous membrane should be made. Should it be discovered to have upon its surface hypertrophic growths of the characters mentioned, the curette should be very gently, but thoroughly applied. Should it be found to be free of them, it should be freely painted over with the tincture of iodine, or the compound tincture diluted with alcohol. This should be repeated at intervals of ten or fourteen days. At the same time all superfluous weight should be removed from the fundus of the enlarged uterus, and support be given by means of a well-fitting pessary should any tendency to displacement exist. The general health should be improved by tonics, fresh air, cheerful society, and an occasional visit to chalybeate springs. As specific stimulators to absorption, the iodide and bromide of potassium should be given, and continued for a long time.

There is no doubt that by removing endometritis and its results, relieving congestion by support and avoidance of pressure, and

improvement of the general health by general tonics, a great deal can be done for the improvement of the patient suffering from sub-involution. But it is decidedly questionable whether with the means at our command we can insure the return of an enlarged uterus to its original size. Sometimes even where this cannot be accomplished, the muscular atony resulting from the disease may be improved by ergot, electricity, strychnine, the shower bath, sea-bathing, &c.

Superinvolution of the Uterus.

Definition.—This term has been applied by Prof. Simpson to an excessive involution, which, by causing too great absorption, produces atrophy of the uterus.

Pathology.—Little need be said on this point. The disorder consists merely in the excessive performance of the physiological process by which the parturient uterus is restored to its original size, and which, when kept within proper limits, is essential to a healthy state of this organ.

Causes.—These are not clearly defined, but it is probable that derangement of involution by inflammatory action is the chief.

Symptoms.—At times the uterus becomes so atrophied that complete amenorrhœa is the result. At others great diminution in the freedom of the menstrual discharge is caused. In either case those numerous and grave symptoms dependent upon non-performance of the menstrual function may develop themselves and prove extremely annoying. Even epilepsy may be thus engendered.

Physical Signs.—Upon vaginal examination the uterus is discovered high up in the pelvis, very small, and so light that it may be lifted by the slightest touch. Conjoined manipulation will probably fail to detect the organ, or if it do so will demonstrate its small size. When the speculum is introduced and the cavity of the uterus measured by the probe, it will be found to be very much diminished. Sometimes, from the os externum to the fundus, the organ will measure only two inches. Ocular demonstration will likewise be afforded that the cervix is much smaller than is normal and its canal less capacious.

These means will usually be sufficient to determine the question of diagnosis. Should any doubt still remain, the uterus may be fixed by a tenaculum passed through the speculum into the tissue of the neck, and touch be practiced by the rectum. This will define very perfectly the volume of the body.

Differentiation.—Superinvolution can be confounded with no other condition than undeveloped uterus, and from this the rational history will at once differentiate it. The former comes on after perfect performance of menstruation and after parturition. The latter is associated with a long history of amenorrhœa or emansio-mensium, and does not connect itself as a sequel with parturition.

Results.—The great evils resulting from this condition are the imperfect performance or absence of menstruation and their accompanying train of symptoms; nervous derangement, hysteria, neuralgia, &c.

Treatment.—This consists in local mechanical means calculated to develop the atrophied uterus, and general measures directed towards putting the system into as robust a state as possible.

Once or twice a month a tent of sponge or sea-tangle should be introduced and allowed to distend the uterus to its utmost capacity, in order to stimulate its growth. After this has been done for some months the probe may show an increase of length of the cavity, and an attempt at menstruation may be noticed at each period of ovulation. An intra-uterine galvanic stem may then be introduced and worn constantly, if it should not produce too much irritation.

When the galvanic pessary is resorted to the instrument should be removed and examined at least as often as once a month to avoid the occurrence of incrustation.

If it be possible to recognize the periods at which ovulation is accomplished, the sympathetic process of menstruation should be excited by passing a strong current of electricity through the uterus and ovaries, the use of irritant enemata, and the application of warmth and moisture to the pelvis and feet by means of hip-baths and pediluvia.

CHAPTER XXXVI.

ON SOME OF THE MOST IMPORTANT RESULTS OF UTERINE DISEASE.

Definition.—There are certain conditions which usually result from uterine affections, and which, although in themselves not diseases, but rather symptoms, or sequelæ, claim especial notice on account of their importance. Those which will occupy our attention are—

Dysmenorrhœa;
Menorrhagia;
Metrorrhagia;
Amenorrhœa;
Sterility;
Leucorrhœa.

It may be said that some of these may depend upon ovarian or other disorder, and that they are none of them necessarily dependent upon uterine disease. I admit this, but as they all in the great majority of cases do depend upon disease of the uterus, and as I enter upon their consideration here for convenience of study and not because of their pathological connections alone, I adhere to the present plan.

Dysmenorrhœa.

The process of menstruation, by which the human female discharges from the uterus a certain amount of blood once in every lunar month, depends upon three phenomena which are intimately connected together: 1st, the spontaneous escape of one or more ovules from the ovaries; 2d, engorgement of the erectile vascular stratum surrounding and supplying the uterus; and 3d, rupture of the vessels supplying the endometrium, together with rapid desquamation of its epithelial cells. Until the year 1821, when Power first broached the subject, the connection between ovulation and menstruation was unsuspected. Even then it was not established until the writings of Negrier in 1840. After this the investigations of Pouchet, Bischoff, Coste, and Raciborski soon silenced almost all controversy, and caused the general acceptance of the theory. There are now those who doubt the connection of the two phenomena, but I believe that I am correct in saying that

they are decidedly in the minority, and that the ovular theory is at present almost universally admitted. That menstruation sometimes occurs after removal of both ovaries I know by experience in one of my own cases of ovariotomy, and Dr. Ritchie[1] has proved that it may occur without ovulation, as ovulation often takes place without it. But this is not the time for an examination into the merits of the lengthy discussion which has taken place concerning the subject.[2] I prefer to avoid it and to express the view which I believe now to prevail, and to which I give my own adherence.

We assume then that the extrusion of one or more ovules from the ovaries, which takes place under some unknown influence, is the exciting cause of menstruation; let us inquire into its mode of action. The uterus is surrounded by a network of fine and tortuous vessels, which envelop it as a stratum or layer, extending through the broad ligaments to the ovaries. Outside of this vascular network delicate muscular fibres, extending from the uterus, run, encircling its vessels. When an ovule begins to approach the circumference of the ovary, congestion of this organ occurs in consequence of irritation. This irritant effect is transmitted to the muscular layer surrounding the vascular network in and around the uterus. It contracts, impedes sanguineous flow, and causes engorgement, which in the membrane lining the uterus, and in all probability in that lining the tubes, causes a rupture and flow of blood into the uterine cavity. This engorgement constitutes the "erection" alluded to by Rouget in his "Recherches sur les organes érectiles de la Femme." Blood flowing from ruptured vessels collects in utero, whence it flows through the cervix into the vagina and from thence it passes out of the vulva.

When all the elements connected with this process are in a perfectly normal state, it occurs without creating other discomfort than a sense of fulness about the pelvis, slight pain in the back and loins, and a general sense of lethargy. But if an abnormal condition should exist, either in the structure from which the blood pours into the uterus, in any of the surrounding parts or organs which undergo congestion, or in the canal by which it passes into the vagina, menstruation often becomes excessively painful, and in some cases undermines the health by the intensity of suffering which it induces. This state receives the name of dysmenorrhœa, a term derived from δυς, difficult, μην, a month, and ρεω, I flow.

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[1] Ovarian Physiology and Pathology.

[2] I have three times performed double ovariotomy. In all the cases menstruation has ceased. In one it occurred twice before cessation.

Pathology.—Any condition, whether general or local, affecting the structure of the uterine walls, the ovaries, or the surrounding areolar or serous tissues, so as to render the nerves supplying these parts morbidly sensitive, may produce pain in connection with the first part of the process. Anything impeding the escape of blood from the uterus or vagina may produce it by interference with the second part. For example, a general condition resulting in neuralgia of the uterine or pelvic nerves, or a local inflammation altering their state might readily create pain in the first stage, while either a natural or acquired stricture of the cervix would probably complicate the second in the same way.

Varieties.—Dysmenorrhœa has been divided into—

Neuralgic dysmenorrhœa;
Congestive "
Inflammatory "
Obstructive "
Membranous "

Seat of Pain in Dysmenorrhœa.—Upon this point our knowledge is not certain. It is probable that in the first three varieties the pain is seated in the uterus, in the ovaries, or in the cellular tissue or peritoneum surrounding the pelvic viscera. Some of the most intractable cases with which I have met have been due to pelvic peritonitis, which, even after inflammatory action has subsided, has left the nerves supplying these parts in so sensitive a state that pain, or even a recrudescence of inflammation styled menstrual pelvic peritonitis, is excited in them by the process of menstrual congestion. It is often very difficult to decide as to the exact seat of pain. Even a physical exploration instituted during the period may fail to enlighten us.

The practitioner who regards dysmenorrhœa as a disease, and applies to every case a uniform plan of treatment, will rarely meet with success in its management. Each case should be viewed as a symptom of an abnormal condition which should, as far as possible, be discovered and removed. Although even when acting thus, instances will occur in which he may be baffled, it will be gratifying to perceive how rare these will be. The great importance of differentiating the varieties mentioned, and adopting appropriate plans of treatment, calls for a separate study of each.

Neuralgic Dysmenorrhœa.

This variety depends upon no appreciable organic disorder of the uterus or its appendages, but merely upon a peculiar state of the nerves, which, under the stimulating influence of congestion, produces pain.

Causes.—There is a variety of agencies which at times so alter the healthy state of the nerves of the stomach as to produce in them, at each period of digestion, pain, which is called gastralgia or gastrodynia. Similar agencies may occasion neuralgia of the nerves of the eye, or of those supplying the tissues of the head and face. In like manner they may affect the uterine nerves whenever these are inordinately excited from menstrual congestion. The same patient who from slight excitement or fatigue develops supra-orbital neuralgia, will often, from the same causes, suffer from neuralgic dysmenorrhœa.

The causes which generally induce it are—

The neuralgic diathesis;
Chlorosis or plethora;
Certain toxæmiæ, as malaria, gout, and rheumatism;
Luxurious and enervating habits;
Habits deteriorating the nervous system, as onanism or excessive venery.

Symptoms.—Pain may show itself before the flow has been established, and disappear as soon as it comes on; or it may continue with varying intensity throughout the duration of the menstrual discharge. The patient usually complains of a sharp, fixed pain over the pelvis, down the loins, or in some distant part of the body. I once saw a patient who during each period suffered intensely from neuralgic pain on the outer side of one little finger, and I have one now who before the flow is established experiences for several days a violent pain at the root of the nose.

Differentiation.—When the pain is felt in the uterus, it presents nothing expulsive in its character; the flow of blood is steady, and not interrupted, and no clots are discharged by spasmodic efforts. These facts distinguish neuralgic from obstructive dysmenorrhœa.

From the congestive form it is differentiated by absence of constitutional disturbance, by its gradual and not sudden occurrence, and by its being habitual and not exceptional. It may be distinguished from the inflammatory variety, by absence of the ordinary

signs of endometritis, and of ovarian and peri-uterine inflammation. There is also absence of leucorrhœa and pain, as well as of the physical signs of inflammation, in the intervals of menstruation.

Prognosis.—If a patient affected by neuralgic dysmenorrhœa be able and willing to effect a decided alteration in her mode of life, the prospect of recovery is good. Should no such change be attainable, it is decidedly unfavorable.

Treatment.—The first duty of the physician should be to discover the cause of the development of neuralgia in the performance of the menstrual function, and the second to endeavor to remove this. Neuralgia of the face and head is rarely a primary affection, and consequently resists remedies directed especially to it. It generally results from some focus of irritation, as, for example, a decayed tooth, or a plug of hard wax in the ear, or from some blood poisoning; and when the cause is removed it disappears. So with the disorder which we are considering.

If the rheumatic or gouty diathesis exist, it should be treated by colchicum, guaiac, and vapor baths. The skin should be kept warm and active by wearing flannel over the whole body in winter, and a mild, equable climate should be chosen during the cold months of the year. Should a delicate state of the nervous system have been engendered by habits of luxury, indolence, or dissipation, the patient should be sent to the country, where an out-of-door life, horseback exercise, early hours of retiring, and plain, wholesome food, may exert a decidedly alterative influence. Chlorosis and plethora should be treated, the one by ferruginous and nervous tonics, fresh air, food, and cheerful surroundings; the other by strict diet, venesection, cathartics, and other depleting means. Malarial toxæmia should be treated by change of residence, quinine, and iron. A sea-voyage will often accomplish an excellent result in neuralgic dysmenorrhœa by its alterative influence, whatever be the cause of the neuralgic state.

In addition to these general means, benefit may be obtained from the use of some which are local. The occasional passage to the fundus of the uterus of a uterine sound or silver catheter, the retention in utero of the galvanic pessary, which will be described when speaking of amenorrhœa, and the use of tents of sponge or sea-tangle, will often prove very serviceable.

Parturition often accomplishes an excellent result, and in many cases cures the affection entirely.

Besides these means there are certain anti-neuralgic remedies which act more or less as specifics in this form of dysmenorrhœa.

Foremost amongst these is apiol, a yellowish, oily substance, obtained from the pretroselinum sativum by the action of alcohol and filtration with animal charcoal. It is prepared by Joret and Homolle, of France, in the form of capsules, and is sold by druggists throughout this country. The dose of these is one capsule night and morning during menstruation. The tincture of cannabis indica, in doses of twenty-five drops every fourth hour while pain is severe, is often beneficial, as is also the hydrate of chloral in scruple doses every eight hours. Where a spasmodic element appears to exist in addition to the neuralgic, suppositories of butter of cocoa containing each the quarter of a grain of extract of belladonna will often give great relief; they should not be repeated oftener than once in every eight hours. Under these circumstances, too, great benefit will often follow the use of enemata of tr. of assafœtida, two to four drachms in a gill of warm water.

Congestive Dysmenorrhœa.

Definition.—At each menstrual epoch an active congestion occurs in the mucous membranes of the Fallopian tubes and uterus as well as in the ovaries, and, probably, to a less degree in all the pelvic tissues. When any abnormal influence renders this excessive, it naturally produces pain in the nerves intervening between the distended vessels. This has received the name of congestive dysmenorrhœa, which has been synonymously described as accidental dysmenorrhœa.

Causes.—It may result from the following causes:

Plethora;
Exposure to cold;
Sudden mental disturbance;
Sluggishness of portal circulation;
Displacement of the uterus;
Fibrous tumors;
Areolar hyperplasia;
Subinvolution.

Any one of these causes, without exciting true inflammation, may keep up a state of hyperæmia in the uterine vessels, which, being augmented at menstrual epochs, creates pressure upon the neighboring nerves and consequently pain.

Symptoms.—A patient who has previously menstruated painlessly is seized during a period with severe pelvic pain accompa-

nied by diminution or cessation of the discharge and considerable constitutional disturbance. The pulse becomes full and rapid, the skin hot and dry, and the eyes suffused. There is severe pain in the head, with nervousness, restlessness, and sometimes, though rarely, a little delirium. There may be in addition rectal and vesical tenesmus and diarrhœa.

Differentiation.—The constitutional disturbance and suddenness of the attack will mark its difference from the neuralgic and obstructive forms, as the absence of signs of inflammation in the intervals will do from the inflammatory.

The membranous has, of course, its distinctive sign in the cast of the uterine cavity.

Prognosis.—Unless the cause of the disorder be the existence of an obstinate displacement or of a fibroid, the prognosis is always favorable.

Treatment.—As in the neuralgic variety, the source of the evil should be carefully ascertained before remedial measures are adopted. If it be due to plethora, the lancet, cathartics, strict diet, exercise, and fresh air will be indicated. Should the attack be accidental and have occurred from exposure to cold and moisture, opiates, diaphoretics, and sedatives will give speedy relief. In case a sluggishness of the portal circulation exist, this should be stimulated to greater energy by mercurial cathartics and a change in the habits of life from sedentary to active. A displaced uterus is often kept in a constant state of congestion, which can be relieved only by properly sustaining the organ. This, according to my experience, is the most frequent of all the causes for congestive dysmenorrhœa. In some cases a slight degree of retroversion or anteversion will produce it, while in others direct descent will be found to be its cause. In many of these cases it will, upon recognition of the displacement, be scarcely credited by the practitioner that it is sufficient to be productive of the result. Yet replacement of the uterus, and removal of superincumbent weight by means of a skirt supporter and abdominal pad, will give such complete relief as to put all doubts at rest. If a fibrous tumor be the cause, a cure will depend upon its susceptibility of removal.

Inflammatory Dysmenorrhœa.

Definition.—In a great many cases inflammation of the uterine mucous membrane is the cause of dysmenorrhœa. The existence of disease in this part causes, perhaps, little pain until the

erethism engendered by menstruation occurs. Then great local excitement takes place and dysmenorrhœa shows itself.

Causes.—It may result from almost any pelvic inflammation. More especially it is connected with—

Endometritis;
Peri-uterine cellulitis;
Pelvic peritonitis;
Ovaritis.

Symptoms.—As the flow begins, or before that time, the patient suffers from dull, heavy, fixed pelvic pain, which lasts until the process is ended, and often even after it has done so.

Differentiation.—It may be differentiated from the other varieties alluded to, by pain during the intervals, leucorrhœa, inability to make exertion, and absence of the positive signs attending the other forms.

Prognosis.—This will depend upon the prognosis of the inflammation which has given rise to it. If that can be removed, the dysmenorrhœa, which is one of its symptoms, will disappear; if not, it will continue without material diminution.

Treatment.—Little need be said upon this point, for treatment must be directed not to one symptom, but to the disease which produces the whole train. If the root of the evil be endometritis of neck or body, appropriate treatment must be directed to these affections. If ovaritis or cellulitis be the apparent cause of the difficulty, these diseases must receive attention.

Obstructive Dysmenorrhœa.

If after the collection of blood in the uterus, any obstruction exist which prevents its escape into and through the vagina, a violent spasmodic pain is excited which often amounts to uterine tenesmus. To this form of painful menstruation the name of obstructive dysmenorrhœa has been applied. The obstruction may exist in the os or cervix uteri, in the vagina, or at the vulva, where that canal is partially closed by the hymen.

Pathology.—If any organ be filled with fluid beyond the point of tolerance, as, for example, the bladder, stomach, or large intestine, violent contractions of the distended fibres, which make up its walls, are excited, and spasmodic efforts, which have received the name of tenesmus, are established. If evacuation result from these, relief is obtained; if not, they continue for a long time. When occurring in the uterus, they present the symptoms which characterize the affection which now engages us.

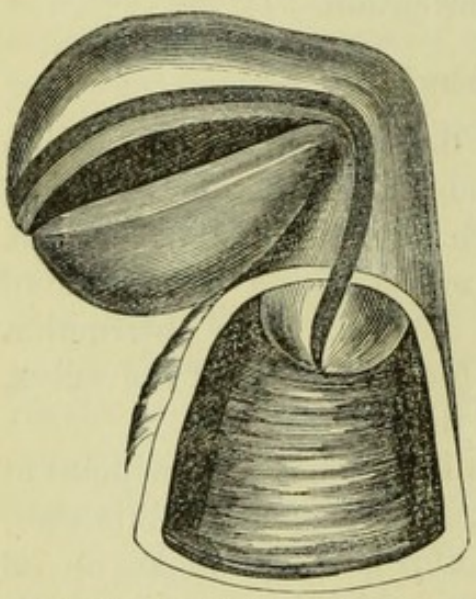
Causes.—The special causes of such obstruction are—

Contraction of the cervical canal;
Flexion or version of the uterus;
Vaginal stricture;
Small polypus in utero;
Obturator hymen;
A fibroid in the parenchyma of the neck.

Any one of these causes may produce the result by partially occluding the cervical canal, so as to allow an escape of fluid imperfectly and painfully. Contraction of the cervix may be congenital, or may result from inflammation of the mucous lining of the canal, diminution of its calibre by contraction of lymph poured out into the parenchyma, or from the use of strong caustics within the os. The last cause is a prolific one, the condition seldom failing to result from the passage of the actual cautery or potassa cum calce into the canal of the cervix. Flexion obstructs the canal by creating an angle in its course. Let a tube of gutta-percha be slightly curved and no obstruction will exist, but if it be sharply bent upon itself, complete occlusion will occur. Fig. 202 will make the action of this cause clear.

Versions much more rarely produce the difficulty, but sometimes, the os being, by reason of the displacement, pressed very firmly against one wall of the vagina, a partial obstruction is produced.

FIG. 202.



Flexion productive of dysmenorrhœa. The canal of the cervix is occluded at the os internum.

Some time ago a young girl presented herself at my clinique, at the College of Physicians and Surgeons, declaring that at every menstrual epoch she suffered from the most intense bearing down pains, which exhausted her greatly. Upon examination I found a partial closure of the vagina, the result of sloughing during typhus fever, which had produced an accumulation of blood above it. This excited uterine contraction, and each effort caused the expulsion of a small amount of the fluid collected above the stricture. In like manner the hymen may prevent free escape and produce uterine tenesmus.

Sometimes a small polypus comes down to the os internum and rests upon it, obstructing the egress of fluid, but permitting the passage of a probe into the uterine body. It acts upon the principle of the ball valve, and by so doing produces the worst features of obstructive dysmenorrhœa.

Symptoms.—After menstruation has continued for some hours, and sufficient blood has been collected in the uterus to distend it, a severe spasmodic pain occurs over the pelvis, which has been styled "uterine colic." This rapidly passes into a violent expulsive effort like the contractions attending miscarriage, which in time causes the passage of a certain amount of blood. Then all pain ceases for a time, until further distension and obstruction occur, when the process by which the uterus empties itself is repeated.

It will be clear to the observer that the difficulty develops itself by these steps:

1st. Some obstruction causes collection of blood in the uterus;

2d. This excites uterine contraction by distension;

3d. Uterine contraction, to a limited degree, frees the uterus and gives ease.

This is the pathology of the condition, whether the obstruction exist in the vagina, at the vulva, or in the cervical canal. If it exist at the latter point, the efforts of the uterus will generally expel first a small clot, and then a gush of imprisoned blood will follow, much to the patient's relief.

Differentiation.—The symptoms just related are so marked and decided that little difficulty will generally be experienced in determining as to the pathology of the case. Before such a decision is arrived at, however, physical exploration must place the matter beyond a doubt. The absolute obstruction must be demonstrated by difficulty in the introduction of a probe into the cavity of the uterus. Should the obstruction exist in the vagina, the finger will detect it, and if in the cervix, the probe will do so with almost as great precision.

Prognosis.—This will depend entirely upon our ability to overcome the mechanical obstacle. Should it not be possible to remove this, the constantly repeated distension of the uterine cavity and consequent effort required for emptying it, will frequently result in endometritis.

Treatment of Cervical Constriction.—Should it be discovered that the cause of difficulty consists in congenital or acquired constriction of the cervical canal, the condition may be remedied by two

methods, dilatation and incision, the means for accomplishing which may be thus presented at a glance:

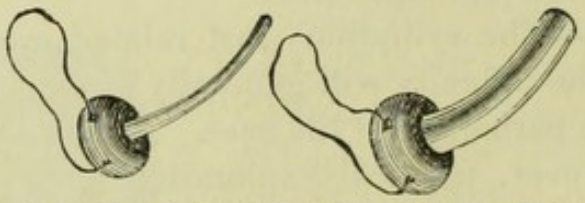
Dilatation.
- By sounds;
- By tents;
- By expanding instruments.

Incision.
- Simpson's method;
- Sims's method;
- Combined method.

In cases of cervical constriction the narrowing of the canal is much more marked at the os externum than at any other part, though in some instances the cavity of the neck may be constricted even up to the os internum.

About the year 1832, Dr. Mackintosh, of Edinburgh, established the practice of dilating such canals by metallic rods, as is done in stricture of the urethra. His plan was to introduce a very small sound, leave it for a short time in position, and then follow it by others gradually increasing in volume. He declares, in reporting upon the practice, that out of twenty-seven cases, twenty-four cures were effected. The sounds by which dilatation may be best accomplished are represented by Fig. 203. They consist of hard rubber,

Fig. 203



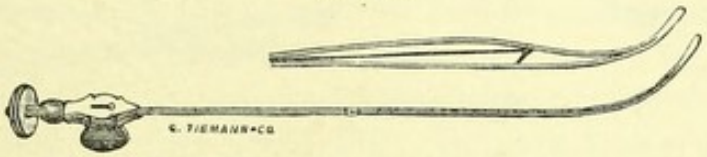
Sounds of hard rubber or metal for dilating the cervix.

are of twelve graduated sizes, and may, by boiling in water, be bent to any curve which is found desirable to effect an entrance through the os internum. Dilatation by their means should be slowly and cautiously accomplished. A sound being passed should be left in position for fifteen or twenty minutes, and upon its removal another should be inserted, until the distension deemed practicable at one sitting is attained.

There can be no question as to the efficacy of this plan, though it is probable that some of the cases relieved by Dr. Mackintosh were instances of neuralgic and not obstructive dysmenorrhœa. Although it may be effectual I should not recommend its general

employment, because it is tedious, painful, and uncertain, and because we have other methods which are far superior to it. Should it be determined to essay dilatation, the use of tents of sponge or sea-tangle is preferable to the plan just alluded to. They should be employed once a week until the required dilatation is attained.

Fig. 204.

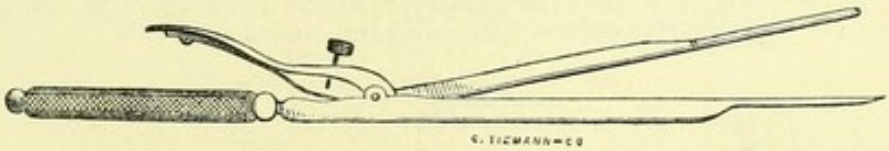


Priestly's dilator for the cervix.

But even this means fails very often, and in place of it rapid dilatation by instruments, which are represented by that of Dr. Priestly, Fig. 204, has been advised. Their action is too injurious to the tissues, however, to be safe, and they are by no means so promising of good result as the use of cutting instruments.

In 1843, Prof. Simpson, of Edinburgh, advocated and practiced cutting through the walls of the cervix, and thus gaining space without dilatation. He employed a single-bladed hysterotome, represented in Fig. 205.

Fig. 205.



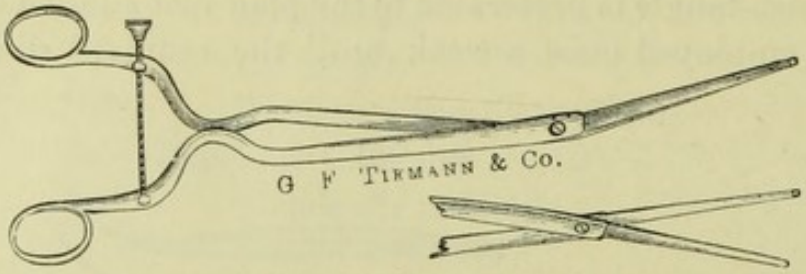
Simpson's hysterotome.

This instrument is introduced without a speculum, the patient lying on her left side. The hysterotome, with its blade concealed is guided by the index finger up to, and if necessary, as is very rarely the case, through the os internum. If the cervical canal be too small to admit it, previous dilatation should be practiced by tents. Being placed in position the blade is thrown out, the force being increased as it is withdrawn to the os externum. By thus increasing the pressure upon the handle of the blade, the incision is made wider at the lower than at the upper part of the canal. The instrument is then reintroduced and the other side incised in a similar manner, and the surface is brushed over with the solution of persulphate of iron.

To accomplish the incision of both sides simultaneously, Mr.

Stohlman, of this city, has added a second blade, as is represented in Fig. 206.

Fig. 206.



Stohlman's hysterotome.

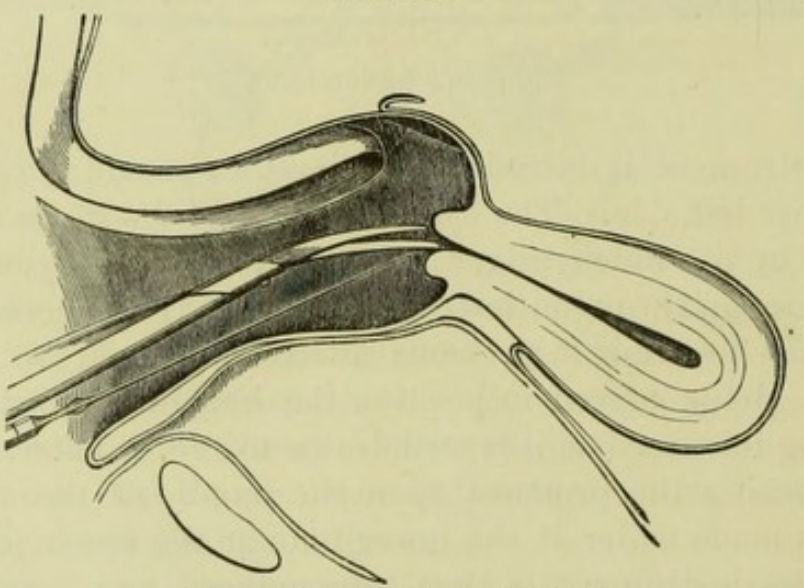
Since Dr. Simpson introduced this plan of treatment a variety of procedures has been recommended, but very little improvement had been attained until the introduction of Dr. Marion Sims's method. This consists in the following steps:

1st. The patient is placed on the left side and the speculum introduced.

2d. The uterus being fixed by a tenaculum, one wall of the cervix is cut with a pair of long scissors, one blade of which is passed into the cervical canal until the other reaches nearly to the vaginal junction. In like manner the other wall is incised.

3d. The blood being washed away by sponge probangs, a blunt-pointed knife, which can be placed at different angles with its handle by a movable joint, already shown in Fig. 153, is passed

Fig. 207.



Cervical hysterotomy. (Sims.)

up, the tissue above the reach of the scissors cut, and the os internum severed on each side.

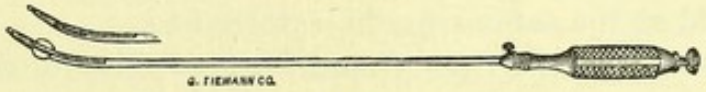
4th. A roll of cotton saturated with glycerine is put into the wound, and a vaginal tampon applied. The operation is shown in Fig. 207.

The patient is kept in bed for ten days after the operation. In twenty-four hours the tampon should be removed, and on the third day the lips of the wound should be separated by a sound, and the cotton and glycerine dressing reapplied. This should then be done daily, or the cervix will rapidly contract and become as small as before the operation.

The results of incision of the cervix, when practiced in suitable cases, are generally very gratifying. In cases, however, in which the cervical tissue has undergone atrophy, or become hard and contracted, it is often impossible to keep the canal pervious. It gradually contracts in spite of all that can be done to oppose its doing so.

A very simple and useful modification of the operations of Simpson and Sims is to make a very superficial incision through the submucous layers of the parenchyma from the os internum through the whole course of the canal, and then dilate by sponge or sea-tangle tents. This may be done by introducing Sims's knife, or by such a hysterotome as that represented at Fig. 208.

Fig. 208.



White's hysterotome.

This instrument was invented thirteen years ago by Dr. Octavius White, of this city, and has been frequently employed since by a number of practitioners. Being introduced up to the os internum, two blades are thrown out by an action governed by a screw at the end of the handle, and it is then withdrawn. After its removal a tent of sponge or sea-tangle is introduced, and a wad of cotton applied so as to keep it in place. The tent need not be renewed oftener than every second day, and this should be repeated for seven or eight days. Dr. Arango informs me that he always employs a bit of gum elastic catheter instead of a tent, and with equally good results.

Treatment of Cases Dependent upon Flexion or Version.—Should version be the cause of dysmenorrhœa, it should be relieved by the means already mentioned when speaking of that displacement. If, as is sometimes the case, the difficulty be due to flexion, and

more particularly to anteflexion, two indications offer themselves for its relief: 1st, to straighten the bent canal by keeping the body of the uterus erect; 2d, to effect the same end by surgical operation.

If a uterus be flexed below the vaginal junction, it is evident that obstruction to the menstrual flow will occur at the point of flexure, and equally evident that an incision through both sides of the canal would not overcome this by straightening it, while a single incision through the posterior wall would do so. In 1862, Dr. Sims conceived and practiced such an operation successfully. This will be found described in Fig. 154. It is unquestionably the procedure most applicable to the relief of dysmenorrhœa due to flexion, and although usually resorted to for anterior displacements, it may, by cutting the anterior wall, be employed for those which are posterior.

Treatment of Vaginal Stricture.—This condition, which may be congenital, or induced by syphilitic or cancerous disease, or by sloughing, if so complete as entirely to obstruct the canal, produces amenorrhœa. If it be a pervious stricture, it may result in dysmenorrhœa.

The affection may be treated by three methods: dilatation by large bougies, dilatation by tents, and incision. If syphilis be ascertained to be the basis of the local disorder, constitutional means should at the same time be resorted to.

Treatment of Dysmenorrhœa from Polypus.—Should the presence of a small polypus be discovered, the cervix should be dilated by tents and the growth removed.

Treatment of Obturator Hymen and Fibroids.—The first should be freely incised, and the second removed if possible.

Membranous Dysmenorrhœa.

Definition.—This variety of dysmenorrhœa consists in the expulsion of a hollow mould of the uterine cavity, at menstrual periods, which is found upon microscopical examination to consist of the lining membrane of the uterus itself. This mould may be entire, representing the triangular cavity of the body of the uterus with its three openings, two at the points of entrance of the Fallopian tubes and one at the os internum, or it may come away piecemeal as shreds or strips of mucous membrane.

Observers, since the time of Morgagni, have recognized this form of disordered menstruation, but looked upon the mould cast off as formed of false membrane, and as being a result of croupy

or diphtheritic endometritis. For the true explanation of the phenomenon we are indebted to Simpson, Oldham, and Virchow.

Pathology.—Dr. Oldham's opinion, which strikes me as the most rational, not only upon theoretical grounds, but from close observation of those cases which have come under my notice, is that at some time during the intermenstrual period, the entire lining membrane of the uterus is lifted from its base and separated, so as to be ready for extrusion at one of the next menstrual crises. Virchow declares that a deciduous membrane, similar to that of pregnancy, forms, and for this membrane he proposes the name of the "menstrual decidua." Dr. Oldham believed that congestion of the ovaries gave rise to this remarkable phenomenon, by transmitting an irritant influence to the uterus. However inaugurated, this process appears to prepare the membrane gradually for complete detachment and extrusion at a menstrual period, when it is expelled. Simpson, denying the causative influence of inflammation in the production of the menstrual decidua, regards it as a product natural to the uterus as to function, but unnatural as to time, circumstances, and frequency of development.

An entire membranous cast, when washed and examined by the naked eye, is found to be triangular with three openings, two at its upper angles and one at its lower. Its external face is soft and irregular, and everywhere shows small perforations, which are openings of utricular follicles. The inner face is free from inequalities, and feels like mucous membrane. These sacs are usually extruded as they lie in utero, but sometimes they are inverted. In one instance I have known such a sac to become inverted and expelled into the vagina, but the cervical extremity holding its attachment at the os internum, the inverted bag hung like a polypus in the vagina. A similar case is recorded by Mme. Boivin.

Under the microscope the cast is found to consist of the lining membrane of the uterus, hypertrophied in all its elements almost exactly as it is in pregnancy. Indeed, as I shall soon show, the most skilful microscopists cannot distinguish one from the other. The vessels of the mucous membrane are increased in size, capacity, and number, a proliferation has taken place in its epithelial cells, and great development has occurred in the utricular glands, the mouths of which are visible even to the naked eye.

Etiology.—This part of our subject constitutes one of its most important and interesting points, but, unfortunately, that diversity of opinion which always characterizes unsettled questions is found to exist here. Our want of accurate information depends upon

the fact that the true pathology of the condition is not known. Some, with Oldham and Tilt, regard it as a result of ovarian disease; others, with Raciborski, Lebert, Handfield Jones, and Simpson, look upon it as a pure desquamation or exfoliation of the uterine mucous membrane for which no cause can be assigned; while Klob and others are convnced that it is an exudation, the result of endometritis, thus for etiology returning to the position assumed by our forefathers and differing from them only as to pathology. I shall satisfy myself with a simple record of the views which have been and are received, and a mention of some of the authorities who adhere to them.

1. It was formerly believed that a layer of plastic lymph was, as a result of endometritis, thrown out over the uterine wall, which, becoming organized, constituted the cast of the uterus. This belief was entertained by Montgomery, Dewees, Siebold, Frank, Naegelé, Desormeaux, and others.

2. It is now regarded as an exfoliation of the entire mucous membrane of the uterine body, due to congestion and irritation transmitted to the uterus. This view, conceived by Oldham, is entertained by Semelaigne and others.

3. The pathological explanation just mentioned being adopted, the cause of the occurrence of the exfoliation is attributed, in the words of Scanzoni[1], to "a considerable hyperæmia of the walls of the uterus, which is followed by an excess in the development of the mucous membrane." This theory is adopted by Courty, Hegar, Eigenbrodt, and others. The last two authorities have proposed for it the name of "dysmenorrhœa apoplectica."[2]

4. Prof. Simpson[3] attributed the exfoliation "to an exaggeration of a normal condition, or to an exalted degree of a physiological action." Dr. Mandl declares that Rokitansky, Robin, Mayer, and others adopt this view. He further attributes the same belief to Klob, Courty, and Braun, but in this I think that he is in error.

5. It is regarded as due to an inflammatory condition by Klob,[4] who declares that "those pathologists were not far from the truth who described such cases as endometritis." This view is indorsed by Tilt,[5] Braun,[6] and others.

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[1] Op. cit., p. 348.

[2] For my citations of authorities on this subject, especially those of Germany, I rely upon a very valuable article by Dr. Mandl, of Vienna, translated in the N. Y. Obstet. Journ., vol. 2, p. 402. To this essay I am much indebted.

[3] Clin. Lect. on Dis. of Women, Am. ed , p. 109.

[4] Op. cit., p. 237.

[5] Lancet, 1853.

[6] Expression of opinion in Dr. Mandl's case. See his article, p. 413.

6. By some the membrane is regarded as due to a deciduous formation excited by conception which has just been established, or is ovular in its character. The first of these views is maintained by Hausman,[1] and admitted in some cases by Rokitansky,[2] and the second was advanced by Raciborski.

From my observation of this affection I cannot attribute it to endometritis, for evidence of the existence of that disease was entirely wanting in three cases out of four. Even if it exist with marked displacement, it must not be concluded that these conditions have necessarily produced exfoliation, for they are commonly present as results in cases in which dysmenorrhœa of membranous type has lasted long without evidence of their existence.

Frequency.—I cannot regard the disease as one of frequent occurrence, for in my experience I have met with it but four times. It is true that I have seen a number of cases which had been regarded as of this character, but most of them proved not to be so upon closer examination. Scanzoni reports twenty-one cases.

Differentiation.—The diseases with which this may be confounded are—

Early abortions;
Blood casts, or fibrinous moulds of the uterus;
Exfoliation of the vaginal mucous membrane;
Diphtheritic endometritis.

From the first of these the differentiation can only be accomplished by the progress of the case, the repetition of the process, and the entire absence of the symptoms of pregnancy. The great difficulty which attends determination of the character of one specimen may be gathered from two quotations from Dr. Mandl's article already often alluded to. They are from reports by Wedl and Rokitansky, who exposed *specimens from the same patient* to the microscope. Wedl's[3] report ends in these words: "This proves that the membranes belong to the decidua and chorion, and are parts of an ovum of the first few weeks of pregnancy." Rokitansky's[4] report contains this passage: "The development of the mucous membrane is in excess of its usual menstrual degree. It is not, however, connected with conception."

Blood casts will readily be recognized by the microscope. No elements of uterine mucous membrane are discovered.

The microscope, too, will readily show the nature of false mem-

[1] Mandl's article, p. 407.
[2] Klob, op. cit., p. 237.
[3] Mandl, loc. cit., p. 415.
[4] Mandl, loc. cit., p. 416.

branous casts of the uterine body, and of exfoliations of the vagina due to what Dr. Tyler Smith has styled epithelial vaginitis, or to contact with perchloride or persulphate of iron.

Symptoms.—With the commencement of the menstrual flow there are steady pains, which increase as this progresses until they become violent and expulsive like those of abortion. In a patient whom I have seen with Dr. Walser, of Staten Island, they are so excessive that she cannot find words to express her dread of their recurrence. Under these the os gradually dilates, and the membrane is forced out into the vagina. Then there is commonly a tendency to menorrhagia, which however soon disappears, and the patient has passed through the attack. For some time after it has passed off there are symptoms of endometritis, purulent and sanguineo-purulent discharges. Sometimes, according to Huchard and Labadie-Lagrave, who have written an excellent article upon this subject in the Archives Générales for July, 1870, membranous dysmenorrhœa becomes complicated by diphtheritic endometritis, which is engrafted upon an attack of endometritis set up by the affection which we are considering.

Pain occurring with the commencement of menstruation ends only with the discharge of the exfoliated membrane. This membrane, as has been already mentioned, is pathognomonic of the kind of dysmenorrhœa which exists, and serves to differentiate it clearly from all other varieties. The appearance of the membrane is represented in Fig. 209.

Prognosis.—The prognosis as to cure is extremely unfavorable, although cases, not only of complete cure, but instances in which in advanced stages of the disease conception has occurred, have been reported by Siebold,[1] Tyler Smith, D'Outrepont, and others.

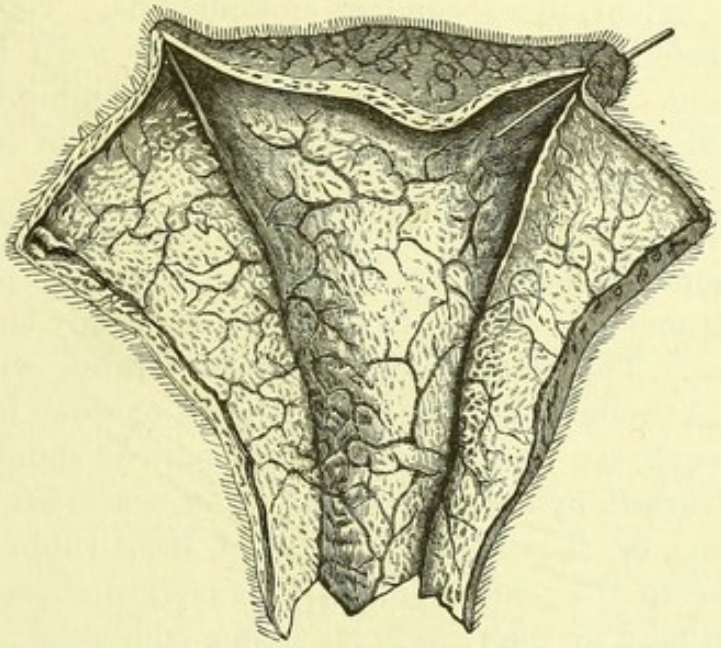
Treatment.—When the etiology and pathogenesis of a disease are unknown, it is astonishing to see how various, contradictory, and energetic, treatment usually is. Deficiency of knowledge in these respects rarely results in an expectant plan of treatment. It commonly induces excessive vigor of interference. In the disease which we are now considering, the actual cautery has been freely applied to the cervix, while solid nitrate of silver and other caustics have been carried up to the fundus.

Uncertain as we are as to the pathology of the disorder, little can be said with any positiveness as to treatment. For relief of the violent pains which attend the attack, nothing compares in

[1] Mandl, loc. cit., p. 423.

quickness, certainty, and efficiency, with the injection of morphia by the hypodermic syringe. If this use of the drug be not inadmissible on account of constitutional intolerance, it should be resorted to once in every eight or every twelve hours. Should there be any objection to its use, the pains of the attack should be quieted by inhalations of sulphuric ether carried only to the point of producing quiescence of the nervous system, not sleep or unconsciousness.

FIG. 209.



Dysmenorrhœal membrane. (Coste.)

If uterine or ovarian disease be detected, it should be treated in accordance with general rules. If no such cause for the exfoliation be discovered, applications of alterative character may be made to the uterine mucous membrane, as tincture of iodine, chromic or carbolic acid, solution of nitrate of silver, or solution of persulphate of iron. Should displacement exist, it should be relieved, upon the principle that if we cannot cure a disorder, it is at least wise to relieve its most prominent complications and disagreeable symptoms. The meagreness of this advice as to treatment of so distressing a malady is but too apparent to me, but there is no help for it, as it arises from an absolute want of knowledge as to more certain therapeutic resources.

In treating of the subject of dysmenorrhœa I have accepted all the varieties which are generally indicated by authorities, because I believe that by their adoption a more thorough investigation of the subject is secured, and because experience leads me to think that a recollection of them at the bedside will aid the practitioner

in classification and treatment. It must not, however, be supposed that every case of dysmenorrhœa will prove susceptible of strict limitation to one of these varieties. Such an anticipation will lead to disappointment and distrust of this classification. Many, indeed most, cases demonstrate the existence of more than one disturbing element. Thus, for example, retroversion occurring in a debilitated, weak, and nervous woman, whose blood is impoverished, might cause a dysmenorrhœa, due in part to mechanical obstruction, in part to neuralgia, in part to congestion, and, perhaps even to a certain extent, to a secondary endometritis. Too much must not be expected from any classification, and it must be borne in mind that one of the great ends in view, in adopting this style of arrangement, is the attainment of thoroughness of investigation and facility of remembrance.

In view of the fact which I have just mentioned, it is well for the practitioner to have at his disposal some general plan of treatment which may be resorted to in cases not readily susceptible of classification. The following is one which I think will be found effectual. As soon as menstruation begins, or some hours before if its approach can be recognized, the patient should go to bed and apply warmth by bottles of warm water, warm bricks wrapped in dry flannel, or, as is better, by bags of India-rubber filled with warm water to the feet, abdomen, and sacrum alternately. She should then take by the rectum an enema composed as follows:

℞. Tr. Assafœtidæ, ℥ss.
Tr. Belladonnæ, gtt. xx.
Tr. Opii, gtt. x.
Aquæ Tepidæ, ℥iiiss.—M.
S. Throw the whole into the rectum and retain.

If the patient have any decided objection to the use of an enema, the following prescription will be found very useful:

℞. Chloral Hydrat., ʒij.
Chloroformi, ʒj.
Morphiæ Sulphat., gr. iss.
Syrupi Aurantii Cort., ℥iij.—M.
S. A dessert-spoonful in a wineglassful of sweetened water every four hours while in pain.

The following suppository will sometimes prove useful in place of the enema:

℞. Belladonnæ Ext., gr. j.
Opii Pulv., gr. iij.
Assafœtidæ Gum, ʒj.
Butyr Cacao, q. s.
M. et ft. supposit. No. vi.
S. One by the bowel night and morning while suffering.

CHAPTER XXXVII.

MENORRHAGIA AND METRORRHAGIA.

Definition.—The first of these terms is employed for the designation of a profuse and excessive flow of blood at the menstrual periods; the second for any flow of blood, whether profuse or not, during the intervals. A patient who menstruates too profusely is said to suffer from menorrhagia, while one who loses blood not only at menstrual periods but in the intervals is said to suffer from metrorrhagia.

Frequency.—Both of these conditions are necessarily frequent, for they are both symptomatic of a large number of organic affections of the uterus.

Pathology.—Anything which induces a state of active or passive congestion of the parenchyma or mucous membrane of the uterus, or any growth, which, having a vascular connection with that organ, allows a flow of blood from its own surface, may produce one of these disorders.

Causes.—The conditions which most frequently occasion both these forms of uterine hemorrhage are—

Congestion;
Areolar hyperplasia;
Polypus;
Ulceration;
Fibrous tumors;
Cancer;
Retained products of conception;
Fungous degeneration of uterine mucous membrane;
Inversion of the uterus;
Hæmatocele;
Subinvolution.

Congestion of the uterus is very common at the period of the menopause, or as a result of violent muscular efforts. It may likewise occur as a consequence of abortion, an impeded hepatic circulation, endometritis, areolar hyperplasia, or displacements.

Retention of some of the products of conception is very frequently a cause. The placenta may remain unaltered, the fœtal envelope may become a mole, or the chorion may undergo degeneration, and uterine hydatids, as they are erroneously called, collect within the uterus.

Fungous degeneration of the lining membrane of the uterus is not an infrequent source of both varieties of hemorrhage. The vegetations thus created, which consist in an hypertrophy of the mucous membrane, were described by Récamier, who advised and practiced scraping them off by means of a steel instrument. M. Aran, who has written a most excellent article upon them in his work on the *Diseases of the Uterus*, thus describes them: "They present themselves in two entirely different forms. In the first and most common form they are tumors, ordinarily sessile, continuous with the mucous membrane by a base sometimes as large as themselves. They vary in size from that of a grain of wheat or a little pea to that of a large pea and even of a small strawberry or a large raspberry. The last are often pediculated." These are styled cellulo-vascular vegetations, and may exist in any part of the cavity of the uterus. Generally they do not exceed two or three in number, and are found in the cavity of the body. "In the second form they are a species of pediculated vegetations resembling in appearance those follicular polypi which are so common in the neck of the uterus. They vary in size from that of a grain of wheat to that of a pea." These are called cellulo-fibrous vegetations. Both varieties generally result from chronic inflammation of the mucous lining of the uterus, and their presence has given rise to the appellation of hemorrhagic metritis, as descriptive of certain forms of uterine inflammation attended by metrorrhagia.

Sometimes after an abortion, at other times after labor at full term, hemorrhage will steadily continue without any assignable cause. If the cervical canal be dilated little fungoid growths will be found attached to a circumscribed portion of the uterine wall, which being removed by the curette, the flow will at once cease. I have no positive evidence of the truth of this view, for, although I have often had these growths microscopically examined, I have not obtained it in this way; but from this variety of fungoid growths following so closely upon the parturient act, it appears probable that they arise from minute portions of placenta, which, remaining attached, draw their nourishment from the uterine vessels. Klob[1] mentions

[1] Op. cit., p. 139.

a peculiar kind of flat vascular elevation which occurs upon the mucous membrane of the uterus which I have never seen. "These puffed elevations are red, shiny, velvety, and smooth; on scraping them with a knife a milky fluid exudes from them, which, under the microscope, exhibits nothing but the glandular epithelium of the uterus, sometimes transparent vesicles and colloid bodies of varying size." They are very vascular. Klob declares that in the case of a woman 36 years of age death occurred from metrorrhagia. He examined the uterus post mortem, and "was unable to find anything except such a vegetation of mucous membrane, about one inch thick and one and a half inches in diameter."

It is astonishing how profuse and constant a flow will sometimes result from very small and apparently insignificant vegetations. Some years ago I had an opportunity of examining post mortem a patient of Dr. Louis Elsberg, of this city, of whom this history was given. The patient had suffered for years from menorrhagia and occasionally from metrorrhagia. On many occasions Dr. Elsberg had resorted to the tampon, and on several had been forced to plug the cervix with considerable force to prevent death from the excessive flow. Upon inspection I found nothing to account for the condition but three fungous projections, which were situated just above the os internum. They resembled somewhat the warty growths sometimes seen upon the glans penis, except that their papillary character was not so marked. Unfortunately they were destroyed before they could be examined by the microscope. It may be suggested that some other cause might have existed, but none such was discovered upon careful investigation. The uterus, ovaries, and pelvic tissues appeared to be in a perfectly normal condition.

Differentiation.—This is at once the most important and most difficult of the physician's duties in reference to the symptoms which we are considering. If he be too easily persuaded to look upon the loss as one of the results of the "change of life," or even of primary idiopathic congestion, much time may be lost before his error is corrected. Should he forget that he is dealing with a symptom, and look upon the condition as a disease, he will often not merely lose time, but, in the end, entirely fail in giving relief; for the empirical practice of confining such patients to bed and relying upon astringents, cold applications, and narcotics, will commonly be found to be ineffectual.

In every case, unless the cause be palpable, it is advisable to

examine systematically the entire uterus and its surrounding tissues in the following manner:

1st. The cervix should be investigated by touch, the speculum, and the uterine probe.

2d. The anterior and posterior walls, and the fundus and sides of the uterus, should be examined by conjoined manipulation, palpation, and rectal touch.

3d. The whole pelvis should be explored by conjoined manipulation, rectal touch, and palpation.

4th. The cervix should be dilated by tents, and the cavity of the body explored by the introduction of the index finger and by the uterine probe.

In many instances a diagnosis can be made only by these means; but by their aid, if fully developed, very few cases will baffle research.

Tents offer us a most valuable means for diagnosis and treatment, but the practitioner must be very sure to open the os internum by them so that the finger may pass to the fundus. In many cases when it is supposed that a full investigation of the uterine cavity has been made, the os internum has never been passed by the finger, which consequently explores only the cervical canal. It will not infrequently require three and even four tents to open the cavity of the body fully to the finger.

Prognosis.—This will depend upon the cause of the affection. Should this be clearly ascertainable and curable, it will, of course, differ very much from what it would be if the opposite facts obtained.

Results.—Menorrhagia, and more markedly still, metrorrhagia, if unchecked, may result in—

Sterility;
Hydræmia;
Hysteria;
Dyspepsia;
Extreme emaciation;
Death.

Treatment.—This is palliative and curative. The treatment of a profuse flow of blood from the uterus, as from any other part of the body, should always consist primarily in checking it.

In a case of menorrhagia, the patient should be kept perfectly quiet upon her back; cloths wrung out of cold water should be laid over the uterus, vulva, and thighs; cold, acidulated drinks, as

iced lemonade, solution of elixir of vitriol in ice-water, &c., should be given freely; and the ingestion of all warm fluids strictly interdicted. In addition, the apartment should be kept cool, the foot of the bedstead elevated about twelve inches, the nervous system quieted by opium, or an appropriate substitute, and all conversation prohibited.

Certain general hæmostatics should always be tried; among the chief of which are, sulphuric acid, gallic acid, ergot, and tincture of cannabis indica. The last is one of the best at our command.

In mild cases this may suffice, but in severe ones it will not. Then the speculum should be introduced and the vagina filled with a tampon. This will rarely fail. But in certain cases, as, for instance, those of cancer of the neck, it will do so. Under these circumstances a soft sponge or a roll of cotton, should be soaked in water and squeezed nearly dry. Then twenty or thirty drops of solution of persulphate of iron, (not more,) should be dropped upon it, after which it should be packed up against the os, and the tampon placed against it. Or a small linen bag may be filled with powdered alum, placed in contact with the cervix, and held in place by a tampon; or two drachms of tannin may be left free against the part. To these means almost all cases will temporarily yield.

Before a case of menorrhagia is subjected to this course of management, this point must be carefully considered: some women naturally flow very freely at menstrual epochs, and are not injured by the loss. It is their peculiarity, and not an evidence of an abnormal state, and it should be decided whether or not treatment be required.

In reference to metrorrhagia, it is equally important to bear in mind that some women, during the early months of pregnancy, have a steady flow of blood, and before a tent is employed, or probing the uterus is resorted to, this state should be carefully eliminated.

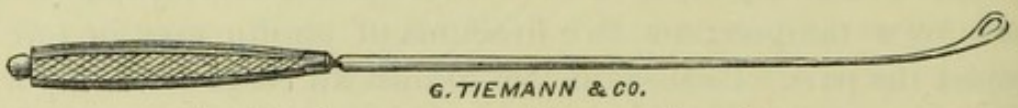
If the existence of congestion, polypus, ulceration, fibroids, cancer, inversion, hæmatocele, retention of products of conception, subinvolution or inflammatory hypertrophy, be ascertained to be the cause of the hemorrhage, the curative treatment of the symptom should be entirely subordinated to that of the disease which produces it, and as those affections have been elsewhere considered, the reader is referred to other parts of the work for rules for their management. It may be well to state here that in the case of subinvolution, the free use of ergot will be found a valu-

able adjuvant to the means already enumerated for palliative treatment, and that it may prove serviceable as a curative agent. In the treatment of uterine congestion the occasional use of an active mercurial purgative or the systematic and steady employment of the same class of medicines in small doses will often prove highly beneficial.

Treatment of Fungous Degeneration of the Uterine Mucous Membrane.—If this condition be clearly diagnosticated, not surmised, but fully determined upon by rational or physical signs, the whole uterine canal should be fully dilated at intervals of about a week, in the hope that pressure from the tents will cause an atrophy of the morbid growths. Should this plan, persisted in for a reasonable time, fail, full dilatation should be secured and the whole mucous lining of the uterus scraped gently by the curette, represented in Fig. 210.

After this, at intervals of a week, the cervix should be dilated and the whole cavity painted freely over with solution of persul-

FIG. 210.



Curette of copper wire without cutting edge.

phate of iron; a strong solution of nitrate of silver; or the tincture of iodine, according to Dr. Churchill's formula. After dilatation of the neck it is not very dangerous to inject into the cavity of the body any of the fluids just mentioned, as they flow out immediately, and this plan may be resorted to. Even when employed with this precaution, however, the fluid injected should not be thrown from the syringe in a jet, but be allowed to flow from it drop by drop. Thus applied, the solution of iron and tincture of iodine should be diluted with one-half or two-thirds of water.

Empirical Treatment of Menorrhagia.—Sometimes we are called upon to treat this condition empirically, in consequence of the fact that all our efforts have failed to enlighten us as to its cause. At the same time that I would inveigh against such a course being inconsiderately followed, I deem it best to point out the general plan of management which would be most appropriate under such circumstances.

The patient should be required to lead a plain, simple life, to keep as much as possible in the open air, and to avoid stimulating food and beverages. Should plethora exist, the blood should be

attenuated by diet, exercise, and the lancet. The bowels should be kept perfectly regular and the skin active. The whole uterine canal, from os to fundus, should be repeatedly dilated, in the hope of producing an alterative action upon the mucous membrane, and subsequently injected or painted with tincture of iodine, solution of persulphate of iron, tannin and glycerine, or nitrate of silver. This should be repeated at appropriate intervals. At the same time astringents and acids should be administered, and in case of uterine enlargement ergot should be given. One after the other the vegetable astringents, as, for example, tannin and gallic acid; and those of the mineral kingdom, as sulphuric, nitric, and muriatic acid, should be faithfully tried internally, in the hope that their hæmostatic powers may arrest the flow by acting through the general circulation. The tr. of cannabis indica should likewise be fully tried. At bedtime every night a suppository consisting of four grains of tannin with butter of cocoa, should be placed by the patient against the cervix.

CHAPTER XXXVIII.

AMENORRHŒA.

Definition.—Amenorrhœa, a term derived from α, privative, μην, "a month," and ῥεω, "I flow," implies an absence of the menstrual flow in a woman in whom it should naturally exist. Such an absence before puberty, after the menopause, or during pregnancy and lactation, is the normal condition, and hence does not come within the definition.

Frequency.—It is an affection of great frequency among women who live luxurious and indolent lives, and disorder the nervous and sanguineous systems by neglect of those habits which keep them in a state of health. Hence it is very frequently encountered among the members of the higher classes of civilized society all over the world.

Varieties.—If the habitual monthly discharge be suddenly checked, the disorder is styled suppressio-mensium, and if the discharge have never appeared in a woman who ought to menstruate regularly, it is called emansio-mensium.

Pathology.—That the discharge of blood, which occurring at monthly periods constitutes menstruation, is a true hemorrhage dependent upon the process of ovulation, is now regarded as a settled fact by most progressive physiologists. In accordance with a law of nature which we recognize in its effects but cannot explain, once in every twenty-eight days one or more ovules in each ovary burst their envelopes, and entering the Fallopian tubes pass downwards to the uterus. This eruption of ovules produces in the ovaries congestion and nervous exaltation, which continue until the process is completed.

No sooner are these organs thus affected than, through the instrumentality of the ganglionic system of nerves connecting them with the uterus, that organ sympathetically undergoes congestion likewise. The whole uterus becomes heavy and descends perceptibly in the pelvis: its mucous membrane is swollen and turgid, and the vessels which supply it dilate under an excessive hyperæmia, as do those of the conjunctiva in conjunctivitis; then a rupture occurs and relief is obtained by hemorrhage. For the proper performance of the function three elements must exist in a perfect state of integrity: 1st, the uterus, ovaries, and vagina must be perfect in form and vigor; 2d, the blood must be in its normal state; and 3d, the nervous system governing the relations between the uterus and ovaries must be unimpaired in tone.

Any influence disordering one or more of these may check ovulation, the great moving cause of the function; prevent the degree of sympathetic congestion necessary for rupture of uterine vessels; or oppose the discharge of blood which has been effused.

The non-performance of the function of menstruation was formerly, and even now is by some, regarded as productive of many constitutional evils, as, for example, chlorosis, phthisis, dropsical effusions, &c. It is highly probable that in these deductions the effect has been mistaken for the cause. The impoverished blood, and nervous derangement attendant upon these affections, result in failure of the function. No proof exists which can substantiate the view that amenorrhœa ever induces permanent lesion of any organ in the body.

Causes.—After what has been already stated, the causes of the affection may be tabulated without fear of confusing the reader.

Amenorrhœa may result from any of the following conditions:

Abnormal states of organs of generation.

Absence of uterus;
" " ovaries;
Rudimentary uterus or ovaries;
Occlusion of uterus;
" " vagina;
Metritis or endometritis;
Superinvolution;
Pelvic peritonitis;
Atrophy of both ovaries;
Cystic degeneration of both ovaries.

Abnormal states of the blood.

Chlorosis;
Plethora;
Blood state of phthisis;
" " of cirrhosis;
" " Bright's disease, &c.

Abnormal state of ganglionic nervous system.

Atony from mental depression;
" " indolence and luxury;
" " want of fresh air and exercise;
" " constitutional diseases, as phthisis, &c.

Complete absence of the internal organs of generation is very infrequent, though a rudimentary condition is less rare. With reference to absence of the uterus, Scanzoni remarks: "On carefully analyzing the reported cases of entire absence of the womb, we find that almost always some rudiments of this organ still exist, so that authenticated and unquestionable instances of this anomaly are extremely rare." He further declares that he has never been able to authenticate a single case. I have seen one instance, presented by Prof. I. E. Taylor to the Obstetrical Society of this city, in which no trace of the uterus could be detected upon the closest scrutiny of the parts removed post mortem.

Absence of both ovaries is quite rare. They are more frequently found to be in a rudimentary condition resembling their fœtal state.

The vagina may be occluded by an obturator hymen, contrac-

tion from inflammation and sloughing, or from congenital or acquired atresia.

So likewise may the canal of the cervix uteri be congenitally or accidentally closed.

What I have styled atony of the nervous system, has been well described by Prof. Hodge, of Philadelphia, under the name of sedation. It consists in a decrease of the excitability, vigor, and activity of the nervous agency which controls the functions of different organs, and has for its cause physical and moral influences, some of which have been enumerated. Some of the functions which are under the control of the ganglionic system, are the action of the heart, digestion, peristalsis, and regulation of animal heat. In one leading a natural and healthy life, in the country for example, all these are likely to be normally performed; but if the same individual remove to a crowded city, lead the life of a student, exhaust his nerve power by late hours, bad air, and mental efforts, all of them rapidly become deranged. He suffers from palpitation of the heart, dyspepsia, coldness of hands and feet, and constipation. This change usually occurs slowly, but sometimes it does so rapidly, as from a sea voyage or any very violent mental strain. In a similar manner the processes of ovulation and menstruation are affected by it, in some cases gradually, in others with great rapidity.

Differentiation.—Before treatment is instituted for this condition, it must be carefully differentiated from—

Pregnancy;
The menopause;
Tardy menstruation.

The first will be readily recognized by its characteristic signs, if suspicion be awakened, and they be investigated. Very often no such suspicion arising, the criminal desires of some women are gratified, and the hopes of others blighted through the unintentional induction of abortion by the treatment adopted.

The law with regard to the menopause is, that it should occur between the ages of forty and fifty, but it is sometimes delayed until sixty or seventy, and at others takes place at a very early age. It may occur as early as the twenty-first year, and in twenty-seven out of forty-nine cases of early cessation collected by Dr. Tilt,[1] it took place from the twenty-seventh to the thirty-ninth year. The absence of sensations of discomfort at the

[1] On Uterine and Ovarian Inflammation, p. 54.

periods when the menses should occur, will help to lead the practitioner to a correct conclusion as to the character of the case.

Sometimes mothers will be much alarmed by absence of the function in girls of seventeen and eighteen years. It should be remembered that it is not very rare for it to be delayed until those ages. Differentiation should be accomplished in this case as in the last.

Treatment.—From what has been already said, it is manifest that amenorrhœa is not a disease, but a symptom of some local or general disorder, and it follows that all efforts directed simply to re-establishment of the absent function, must necessarily be empirical. The cause should be discovered, and, if possible, removed. Should it be susceptible of removal, the method appropriate for accomplishing this will be evident, while if it depend upon an incurable condition, scarcely less benefit will be gained by the avoidance of means previously practiced in the vain hope of establishing the flow, and by our ability to place the mind of the patient beyond the harassing influence of suspense.

If the uterus be found to be absent, all that can be done will be to abstract a sufficient amount of blood from the arm by venesection if necessary, to relieve the urgent symptoms attending each epoch.

Should endometritis or peritonitis exist, they, and not this one symptom which may attend them, should be treated.

Occlusion of the vagina or cervix should be treated by surgical means, the barrier being overcome by the knife, scissors, or trocar.

In case a rudimentary or atrophied uterus, or superinvolution be discovered as the source of the affection, the uterus should be developed by local stimulation and distension. Once every week or every two weeks it should be fully distended by a tent, in order that an increase of nutrition and consequent increase of volume and capacity may be excited. When this plan is not in operation, an intra-uterine galvanic pessary may be kept in utero for the furtherance of the same end. It is astonishing how much development may be obtained by a persevering practice of this plan. In many instances it will restore the uterus to its original size, and cause a return of the menstrual flow. But it often requires considerable time to bring about so favorable a result; even years may elapse before it is fully attained.

If it be decided that the non-performance of the function is due to plethora, anæmia, or chlorosis, these states should be treated, the first by venesection, strict diet, exercise, and a life in the

open air; the second and third by change of air, rich food, exercise, and ferruginous tonics. In plethora, Prof. Bedford speaks highly of the abstraction of blood from the arm at intervals of a month, the abstraction being performed between the menstrual epochs.

Should some grave constitutional condition like tuberculosis or the others mentioned, be found to be the main morbid state, it, and not its resulting symptom, should attract attention.

An atonic state of the nervous system governing menstruation should be treated by resort to a general tonic course. Among the means applicable to its removal may be especially mentioned, exercise on foot and horseback, rowing, calisthenics, sea-bathing, nutritious food, and nervous tonics of medicinal character, as nux vomica, strychnine, quinine, and the general use of electricity. It is in this class of cases that many drugs and prescriptions styled emmenagogue have often succeeded in restoring the function even when used empirically. A state of general nervous atony is frequently attended by chlorosis and always by constipation. The nervous disorder and two of its resulting symptoms may be favorably affected by the stereotyped combination of aloes, iron, and myrrh or nux vomica; and the sluggish nerve power may be temporarily excited to the performance of its duties by the administration of tansy, rue, ergot, or savine. But it is not through desultory means of this character that a cure can be anticipated with any confidence. A more comprehensive plan directed to the improvement of the patient's constitution should be adopted and systematically pursued. As general means those already mentioned will always be found highly useful. If the patient while at home cannot be prevailed upon to practice sufficient self-denial to avoid what is injurious, or be made to develop the energy necessary to follow a course which requires effort, she may, with great advantage, be placed for a time in a well-regulated hydropathic establishment, where the early hours of retiring, simple food, exercise, society, pure air, and bathing, will accomplish a roborant effect which will prove of great value in the cure of the affection.

But not merely should constitutional means be adopted. After the general condition has been improved, local stimuli may be resorted to with great benefit. Those which will be found to be most efficient are—

Passage of the sound;
Tents;

Cupping;
Electricity;
Stimulating enemata;
Baths.

In their action these means probably exert an influence not only on the uterus, but sometimes by their stimulating effects excite the process of ovulation. The sound should be passed up to the fundus once every day for three or four days before the expected flow, or if the process of ovulation do not demonstrate its existence, it may be passed once a week throughout the month. At the same periods tents of sponge or sea-tangle may be used; the former of which, from their irritating influence on the uterine mucous membrane, are preferable.

The cervix uteri may, by the application of an exhauster or dry cup, have a marked hyperæmia excited within it, which extends to the uterine body and replaces that which should have occurred from physiological causes. A very simple method for producing it is to inclose the cervix within the mouth of the cylinder of hard rubber represented in Fig. 211, and then exhaust the air by withdrawing the piston.

Fig. 211.



Syringe for dry cupping the cervix.

Before the introduction of this instrument the uterus should be exposed by means of the speculum. In this way I have repeatedly drawn, without effort, one or two drachms of blood through the mucous lining of the neck.

Electricity is a means of some value. One pole of a battery may be applied over the lower portion of the spine and the other passed over the hypogastrium, placed in contact with the cervix, or even carried, by means of a wire covered, except for its terminal three inches, with a gum-elastic catheter, up to the fundus of the uterus. For the purpose of keeping up a mild but steady current within the uterus, Prof. Simpson has advised a stem composed of copper for one-half its length and zinc for the other half, which is passed up to the fundus. It has an ovoid disk at its lower extremity upon which the cervix rests. Dr. Noeggerath has made an improvement in this by having the stem composed

of two parallel pieces of copper and zinc, instead of two short pieces of these metals united at the centre of the stem. As these instruments must be left in place while the patient walks about, there is always danger of their injuring the walls of the uterus and exciting inflammation. To avoid this I have employed a stem composed of alternate beads of copper and zinc, held together by a copper wire, which passes through the centre of each, and is secured to the uppermost and to the vaginal disk below. This may, by any movement of the uterus, be bent at the required angle, and consequently can do no injury. (Fig. 212.)

Fig. 212.



Galvanic pessary.

As an excitant of the menstrual flow, enemata of very warm water impregnated with chloride of sodium, aloes, or soap, constitute a valuable resource. Not only does the medicinal substance irritate the uterine nerves, the warm fluid brought into close contact with the uterus also excites a flow of blood to it. Hip-baths and pediluvia have long been resorted to for the purpose of exciting menstruation. They should be prolonged, and as warm as the patient can bear them. In addition to these means, copious injections of warm water may with benefit be thrown into the vagina, one or even two gallons being, by means of a proper syringe, projected against the os uteri.

Reasoning from analogy and from our knowledge of the physiology of menstruation, we are unquestionably warranted in the deduction that in a certain number of cases amenorrhœa is due to non-performance of the function of ovulation. It would be difficult to give clinical evidence of the fact, but it might be strongly surmised, when none of the symptoms usually attendant upon this process present themselves at monthly periods. The means by which it should be treated are those already advised, for any of the causes mentioned may produce that variety of the affection which is due to non-performance of ovarian functions, in the same manner that they give rise to that form depending upon the incapacity of the uterus.

CHAPTER XXXIX.

LEUCORRHŒA.

Definition.—This affection, the name of which is derived from λευκος, "white," and ῥεω, "I flow," consists in a whitish, yellowish, or greenish mucous discharge from the vagina.

Synonyms.—It has been, in modern times, described under the names of fluor albus, blennorrhœa, pertes blanches, fleurs blanches, and whites. In ancient literature the variety of names which was applied to it may be judged of when it is stated that over fifty appellations were at different times employed in designating it.

Frequency.—No disease or symptom in the whole list of female ills is so common. Probably no woman ever goes through life without at some period, and for a variable time, suffering from it. It is only when it becomes annoying by its constancy, abundance, or irritating properties, that it attracts attention and causes the patient to seek assistance.

History.—In the earliest writings of the Greek school and throughout Roman and Arabian medical literature, abundant descriptions of this disorder may be found. Hippocrates described it, pointing out as among its symptoms, puffiness of the face, paleness, and enlargement of the abdomen. He evinces a familiarity with its treatment by an admission of the difficulty of curing it. Aretæus of Cappadocia, in the first century, mentioned the varieties of leucorrhœa, as to color, quantity, &c., and Aëtius and Paul of Ægina speak of two forms of the affection, red and white flux. For the latter, Aëtius recommends gestation, vociferation, walking, &c. The Arabians, Haly Abbas, and Alsaharavius, wrote upon the subject, but advanced nothing new.

As in ancient times, so also in modern, it has attracted a great deal of attention, and until the establishment of the present school of Gynæcology by Récamier, was treated of as a disease rather than as a symptom. Even long after this period it was commonly regarded as a disease; the result of constitutional debility, or the index of an impure blood state. For the views which are now entertained concerning it, we are indebted to no one so much as

to Dr. J. H. Bennet, of London, who, by his forcible reasoning, supported by clinical evidence, clearly demonstrated its dependence as a symptom upon some local lesion. Dr. Tyler Smith, in an elaborate essay upon the subject, has also done much to elucidate certain points in its pathology, which before his time had been undeveloped.

Pathology.—As a discharge of mucus or muco-pus is a symptom of urethritis, bronchitis, nasal catarrh, and faucitis, so is it a symptom of inflammation of the vagina and lining membrane of the uterus and Fallopian tubes. Whatever influence is capable of creating it elsewhere may give rise to it here, and in this position it is, as it is elsewhere, only an isolated sign of a pathological state. It is not by any means, however, always an evidence of inflammatory action. As many individuals upon exposure to cold will freely discharge mucus from the nostrils without any inflammation existing, so will many women suffer from leucorrhœa from any cause producing a temporary congestion of the mucous membrane. But in these cases the disease is temporary, following or preceding the menstrual congestion, or arising from fatigue or exhaustion. When it becomes permanent and the discharge grows profuse or acrid, its connection with a morbid state is rendered probable. At such times it is always a symptom of some abnormal condition of the uterus, Fallopian tubes, or vagina, and its presence should lead to an investigation of these organs.

Any agency which moderately increases vascular activity in a secreting organ, tends to augment the amount of its secretion. I say moderately increases, because an excessive turgescence, such as attends upon acute inflammation, checks secretion entirely. Such an influence being exerted upon any part of the mucous covering of the generative canal of the female, an excessive flow of plasma, together with a rapid exfoliation of epithelial cells and the formation of pus-corpuscles, results.

Varieties.—Leucorrhœa is divided into two varieties, according to its origin,—vaginal and uterine. Either of these may exist separately, or the two may coexist. If it be vaginal, it may continue as such for a length of time, or pass upwards into the uterus and tubes. If the inflammatory action producing the discharge be confined to the uterine mucous membrane, it may remain so without complicating the vagina, but that canal receiving the products of uterine secretion is generally excited into morbid action. A similar result may frequently be observed in nasal catarrh in children, the upper lip being bereft of its epithelial investment,

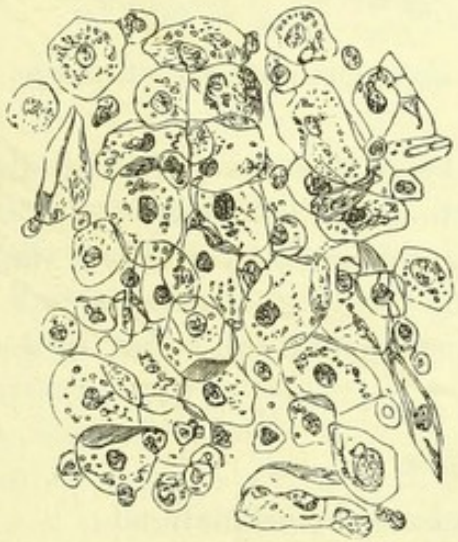
and a papular or vesicular eruption excited over the neighboring parts of the face.

Vaginal leucorrhœa consists of a white, creamy, purulent-looking fluid, which is composed, according to Dr. Tyler Smith, of the following elements:

Acid plasma;
Scaly epithelium;
Pus-corpuscles;
Blood-globules;
Fatty matter.

Under the microscope it appears as represented in Fig. 213.

Fig. 213.



Vaginal leucorrhœa under the microscope. (Smith.)

That arising from the canal of the cervix is thick, tenacious, and ropy, like the white of egg, and consists of—

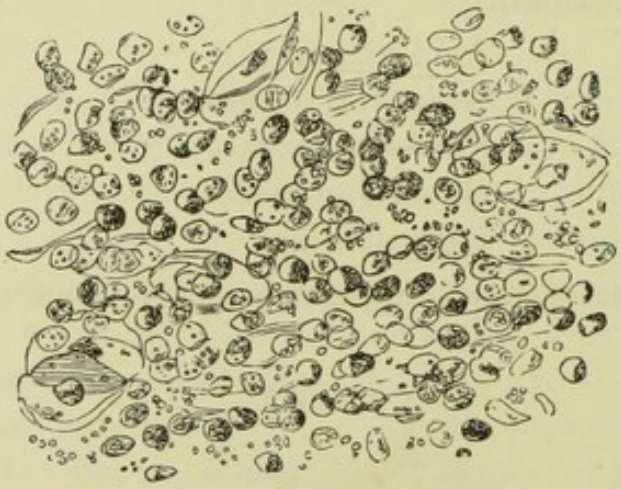
Alkaline plasma;
Mucous corpuscles;
Altered cylindrical epithelium;
Pus-corpuscles;
Blood-globules;
Fatty particles.

Examined by the microscope it presents the appearance shown in (Fig. 214).

That arising from the body of the uterus resembles the cervical form, except that it is less gelatinous, less ropy, and more likely to be tinged with blood. But the secretion of uterine leucorrhœa,

when acted upon by the acid secretion of the vagina, assumes a curdy appearance like boiled starch.

Fig. 214.



Cervical leucorrhœa under the microscope. (Smith.)

Causes.—It has been customary to treat of the causes of this affection under two heads, constitutional and local. They may be more correctly appreciated by dividing them into those causes which produce it by creating congestion, and those causing it by inflammation, for no agency can result in it except by these two methods.

Causes by Congestion.

Disordered menstruation;
Fibroids or polypi;
Prolonged lactation;
Rectal irritation;
Vesical irritation;
Gestation;
Parturition;
Excessive coition;
Anæmia.

Causes by Inflammation.

Endometritis, corporeal or cervical;
Granular degeneration;
Ulceration;
Fibroids or polypi;
Gonorrhœa;
Inversion of the uterus.

It will thus be seen that the disorder may in some instances be a trivial matter, which, by a judicious combination of general and local means, will rapidly disappear, while in many others it is merely an attendant circumstance of some grave pathological state of the uterus or vagina.

Prognosis.—This will depend in great degree upon the cause. If this can be readily removed, the prognosis will be favorable; while if it be connected with some serious organic lesion, it will not be so.

Results.—Uterine leucorrhœa often results in—

Sterility;
Vaginitis;
Pruritus vulvæ;
Vulvitis.

Dr. Tyler Smith, in the work just referred to, declares that it is even the cause of parenchymatous disease, granular degeneration, and hypertrophy. It is much more probable that the endometritis which results in the discharge also produces by disordering nutrition the other diseases mentioned.

Treatment.—The treatment of leucorrhœa should consist in the treatment of the disorder which has induced it. It should never be dealt with empirically. If a vaginal discharge exist, and an astringent injection be employed, it may effect a cure; but let the practitioner bear in mind in using it, that he is treating by it either congestion or inflammation of the genital tract, and not one of the symptoms of these affections.

The first care should be to determine whether the disorder is uterine or vaginal; the second whether it is due to congestion or inflammation. If it be vaginal, it may be relieved by injections; if uterine, injections will do no good except in preventing vaginal implication. Should it be decided that the affection results from vaginal disease of inflammatory type, the ordinary treatment for vaginitis, which has been elsewhere described, should be adopted. If it be regarded as due to a chronic congestion of the vaginal mucous membrane, tone should be given to its weakened and distended vessels by astringent substances employed by injection. The best astringents for this purpose are the persulphate of iron, alum, tannin, infusion of oak bark, zinc, and lead. In cases in which astringents do not appear to effect a good result, emollients, as glycerine, boiled starch, infusion of lin-

seed, slippery elm, or similar substances mixed with water, will often prove beneficial.

Should the attack be due to uterine congestion, that condition should be as far as possible removed by appropriate means. In case investigation proves that some uterine lesion, as, for example, endometritis, or granular degeneration, has given rise to it, the existing disorder should receive attention.

In the treatment of chronic inflammatory states of the uterus, it will often be found of benefit to use astringent injections. These act not only by securing cleanliness, but by hardening the vaginal mucous membrane and rendering it less liable to disease. To enter more minutely into the treatment of leucorrhœa, would be to defeat the main object which I have had in view, that of subordinating the consideration of this disorder to that of the diseased states which produce it.

CHAPTER XL.

STERILITY.

Definition and Synonyms.—This term, which is derived from στερεος, "barren," and implies an incapacity for conception, is synonymously entitled Barrenness and Infecundity.

History.—Throughout medical literature, from the earliest periods to the present, it has attracted special attention, and been the subject of dissertations by all authors who have touched upon the affections peculiar to females. The frequent reference made to it by Biblical writers as a reproach to women, is too well known to require special mention.

Causes.—To comprehend the pathology of sterility, the physiology of conception must be clearly understood. In the act of coition the male organ, being introduced into the vagina, projects into and against the cervix a fluid, consisting of a thick, watery portion, holding in suspension large numbers of ciliated cells which have the power of moving by ciliary action. The bulk of

this fluid pours down into the vagina, but many of the cells which it contains pass upwards into the body of the uterus, and through the Fallopian tubes as far as the ovaries. Should they come in contact with an ovule, impregnation may take place in the ovaries, Fallopian tubes, or uterus. When the impregnated ovule attaches itself to the uterus, the mucous membrane of this organ undergoes exuberant development, and throws around it an envelope called the decidua reflexa. Further than this, the process does not concern us, for conception has then followed impregnation, fixation of the impregnated ovum having occurred.

These facts being kept in mind, it becomes evident that a variety of influences may interfere with the performance of this delicate and subtle process. For its accomplishment three things are necessary—

1st. The possibility of the entrance of seminal fluid into the uterus;

2d. The possibility of the entrance of an ovule into the uterus;

3d. The absence of influences destructive to the vitality of the semen, and preventive of fixation of the ovule upon the uterine wall.

Should these three conditions be perfect no woman will be sterile. She may not bear children, but the incapacity may attach to the male and not to her; or having conceived, she may have suffered from consecutive abortions, which have been mistaken for attacks of menorrhagia.

The special causes of sterility may be thus presented:

1. *Absence of some essential organ.*

   Ovaries;
   Tubes;
   Uterus;
   Vagina.

2. *Interference with passage of semen into uterus.*

   Obturator hymen;
   Vaginismus;
   Atresia vaginæ;
   Occlusion of cervical canal;
   Conical shape of cervix;
   Cervical endometritis;
   Polypi or fibroids;
   Displacements.

3. *Interference with passage of ovule into uterus.*
   - Obliteration of tubes;
   - Displacement of tubes.

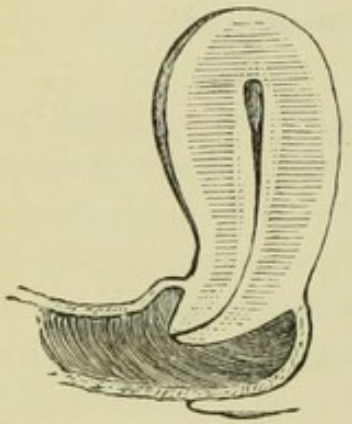
4. *Interference with vitality of semen, or fixation of ovule.*
   - Corporeal or cervical endometritis;
   - Membranous dysmenorrhœa;
   - Menorrhagia;
   - Metrorrhagia;
   - Abnormal growths;
   - Vaginitis;
   - Areolar hyperplasia.

The mode of action of most of these causes is so self-evident as to make anything more than their mention unnecessary. Some of them, however, require special explanation.

Vaginismus is an appellation which has been given of late years to a hyperæsthetic state of the ostium vaginæ, which results in spasm of its sphincter. This interferes with the entrance of the male organ, and consequently of seminal fluid into the vaginal canal; indeed, in aggravated cases, it entirely precludes sexual approaches. The affection is by no means rare, and is a fruitful source of sterility.

An abnormal shape of the cervix has been pointed out by Dr. Sims as a frequent cause of infecundity. If this part be too long, so as to curl or bend upon itself, it is evident that it may not admit seminal fluid through its canal. But even a slighter degree of elongation, in which the cervix has a conical shape, has been observed to be frequently followed by that condition. My own experience leads me very positively to the conclusion that, excepting endometritis, this is the most common of all the causes, and fortunately one of the most remediable. Fig. 215 represents the variety of conoid cervix, generally met with as productive of sterility.

Fig. 215.



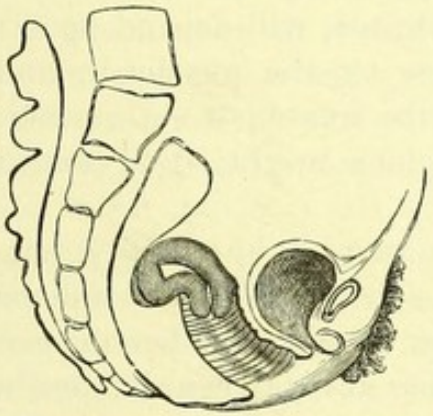
Conoid cervix. (Sims.)

Endometritis, whether it be cervical or corporeal, fills the uterine canal with a thick, tenacious mucus, which often prevents the entrance of seminal fluid.

Flexions of the uterus, by producing bending of the cervical canal, and versions, by pressing the os against one wall of the vagina so as to close it as if by a valve, may entirely obstruct the passage to the uterus. Figs. 216 and 217 exhibit this very clearly.

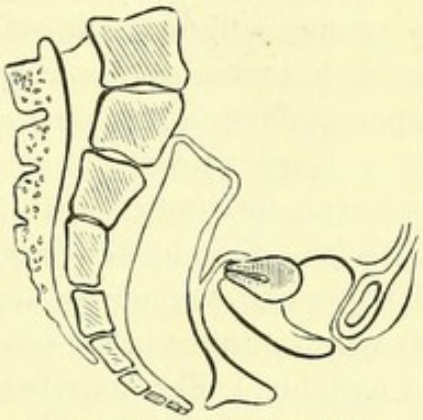
Obliteration and displacement of the tubes frequently result from pelvic peritonitis, and thus that affection often entails sterility of the most irremediable character. The second stage of the disease

Fig. 216.



Flexion a cause of sterility.

Fig. 217.



Version a cause of sterility.

consists in effusion of lymph, which in time undergoes contraction, and either closes these canals or draws them out of place.

Membranous dysmenorrhœa, or rather the tendency to exfoliation of uterine mucous membrane which characterizes it, so alters the uterine surface as to render it inapt for the fixation of the ovum.

Menorrhagia and metrorrhagia may result in the washing away of the ovum after impregnation and before fixation. The normal menstrual hemorrhage occurs before the entrance of the ovule into the uterus. If it be excessive and prolonged, it may remove the ovule entirely, and in the same way metrorrhagia may remove the impregnated ovum. An abortion does not occur under these circumstances, for although impregnation may have taken place, conception has not done so.

Abnormal growths of any form which fill the uterine cavity, as, for example, fibroids, polypi, hydatids, or moles, may so interfere with the attachment of the ovum to the uterus, as to prevent conception even when impregnation has occurred.

Differentiation.—Before it is determined that a woman is sterile, the sexual capacity of the husband should be ascertained. Men are averse to the confession of impotence, and will often allow the supposition of sterility on the part of their wives to be maintained rather than admit the truth. In two cases I have used an anæsthetic, ruptured the hymen, and distended the vagina, under the impression that sterility of several years' standing was due to the impossibility of the accomplishment of intercourse, and have sub-

sequently discovered that the husbands of my patients were entirely impotent, and had been so before marriage.

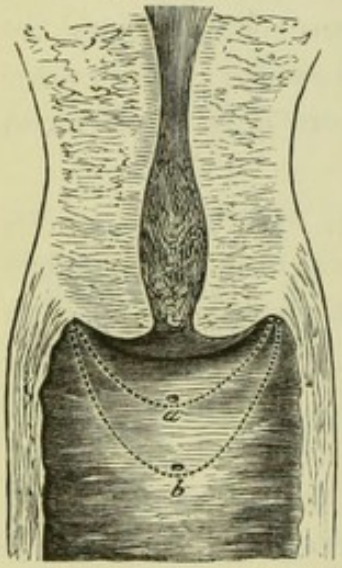
Prognosis.—In reference to a disorder which may be produced by such a variety of causes, no positive prognosis can be given, for its cure will depend in great degree upon the removal of the agency which produces it. Much, too, will depend upon the thorough investigation of the causes by the physician, and a proper understanding on his part, of the treatment. Unquestionably a large proportion of sterile women might, by appropriate treatment, be made fruitful.

Results.—No physical results are produced by sterility, but its existence will frequently depress the spirits and sadden a disposition which, under other circumstances, would have been cheerful and equable. The married woman has always regarded and will forever view this incapacity as a reproach to her womanhood, and no amount of argument can make her accept it with resignation.

Treatment.—The treatment of sterility consists in the removal of its causes. Many of these are not susceptible of remedy, while the means of treating others are so evident that special mention may be confined to a few. Obturator hymen, vaginismus, atresia vaginæ, and occlusion of the cervical canal should be treated by the surgical operations appropriate to each.

In case the vaginal cervix should, to only a limited extent, be too projecting or conical, the bilateral operation for its enlargement should be practiced after the method advised by Prof. Simpson for dysmenorrhœa. If a slight constriction of the cervical canal appears to be the cause of the condition, dilatation by tents may be essayed in place of a surgical procedure. In an aggravated case, when the neck projects markedly and is decidedly conoidal in shape, both these means are insufficient; amputation then becomes necessary. The diagram (Fig. 218) shows the amount of tissue which should be removed. After this has been recovered from, the bilateral operation for cervical hysterotomy is often necessary before cure is effected. In this connection the chapters upon dysmenorrhœa and amputation of the cervix should be referred to.

Fig. 218.



The dotted lines show the excess of tissue in the cervix. (Sims.)

Endometritis, whether of body or cervix, should be appropri-

ately treated, and abnormal growths should be dealt with as if sterility did not exist.

If a displacement be discovered and replacement and retention be possible, they should be practiced. But if in case of flexion this be impossible, the uterine canal should be rendered as straight as is practicable, by the cervical incision recommended by Dr. Sims for dysmenorrhœa. Menorrhagia and metrorrhagia should be treated upon the plan recommended in the chapter upon those subjects, and the patient be advised to keep very quiet and to avoid warm and stimulating beverages during menstrual epochs.

A remark made in connection with the treatment of leucorrhœa may, with propriety, be repeated here, namely, that to enter more minutely into the study of special remedial measures would tend to divert the mind of the reader from a point which I regard as of paramount importance, namely, that this affection is only a symptom which should be reached through the malady which induces it.

In spite of the fact that we have at our disposal many valuable resources for the removal of the causes which create sterility, were I asked to mention the part of the field of Gynæcology which yielded me the least satisfaction and the greatest disappointment, I should cite this.

CHAPTER XLI.

AMPUTATION OF THE NECK OF THE UTERUS.

Under certain circumstances where it is impossible to overcome morbid conditions of the cervix uteri by caustic and alterative applications, amputation of this part is practiced. As a description of the operation has not been called forth by any division of our subject which has thus far been treated, it will be well to allot a place to it here before leaving the consideration of uterine and taking up that of ovarian diseases.

History.—Ambrose Paré[1] was the first surgeon who advised

1 Œuvres d'Ambroise Paré, lib. xxiv, p. 1012.

amputation of the cervix. He recommended it in malignant growths of the part, to which, he says, "we may apply the speculum matricis, in order to see more easily." It is reported upon insufficient authority, to have been performed as early as 1652, by Tulpius, of Amsterdam, and in 1766, by La Peyronie. Daniel Turner,[1] of London, in 1736, reported an instance in which the neck of a prolapsed uterus was amputated by means of a razor in the hands of the patient herself, who was insane. The recovery of the woman was evidently regarded as a wonderful circumstance. In 1802, the operation was systematized by Osiander, who performed it twenty-three times, and after this it was resorted to by Dupuytren, Récamier, Hervez de Chegoin, and others. It was, however, in the hands of Lisfranc that it attracted special attention, and in consequence of his enthusiasm, it was for a time regarded as a means which was destined to accomplish a vast deal of good. His reports of its results were most favorable, and he described its dangers as slight. But soon after his publications upon it there appeared a counter-report from the young physician[2] who took charge of many of his cases and was familiar with all, which cast discredit upon all the master's statements. By Pauly, the truth was, as Becquerel expresses it, "brutally revealed," and it was entirely at variance with the representations of Lisfranc. Since that time the operation has to a great degree fallen into disrepute, but is still resorted to in appropriate cases, and has now as advocates Simpson, Huguier, Sims, and others of equal eminence.

Dangers.—The dangers of the procedure are the following:

Primary hemorrhage;
Secondary hemorrhage;
Peritonitis;
Cellulitis;
Tetanus.

The statistics of the operation have not as yet been carefully collected. Lisfranc reported 99 operations and only two deaths, but these statements Pauly renders more than doubtful. Huguier reports 13 operations and no deaths; Sims over 50 operations and one death; and Simpson 8 operations and one death.

Conditions Demanding Amputation.—The conditions which usually demand the operation are the following:

Cancroid tumor of the cervix;
Epithelial cancer of the cervix;

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[1] N. Y. Med. Jour., vol. v, No. 5.

[2] Pauly, Maladies de l'Utérus, Paris, 1836.

Cancer strictly localized;
Great enlargement from cervical hyperplasia;
Longitudinal cervical hypertrophy;
Conical and projecting cervix.

One of these conditions, longitudinal cervical hypertrophy, not having previously received special mention, requires it here. The cervix may be congenitally very much elongated, either above or below the vaginal junction. Generally it undergoes hypertrophic elongation from a simple formative irritation, a low grade of cervical endometritis, congestion long kept up, or prolapsus in the third degree. Under these circumstances the neck grows very long, so as to rest between the labia or even to project for a number of inches from the body, and has in some instances been mistaken for the penis. By means of the touch, conjoined manipulation, the speculum, and the probe, a diagnosis can readily be made. It was this condition which M. Huguier, some years ago, maintained deceived practitioners into the belief in prolapsus uteri.

Varieties of the Operation.—In some cases, as in cancer, for example, it is necessary to remove the entire cervix and even as much tissue as possible from that portion of the organ above the vaginal attachment. In others, only half of the vaginal portion requires ablation, while in still another set of cases, only the removal of a thin section of the hypertrophied lips is called for.

Methods of Performance.—The operation may be performed by the following methods:

By the bistoury or scissors;
By the écraseur;
By the galvano-caustic.

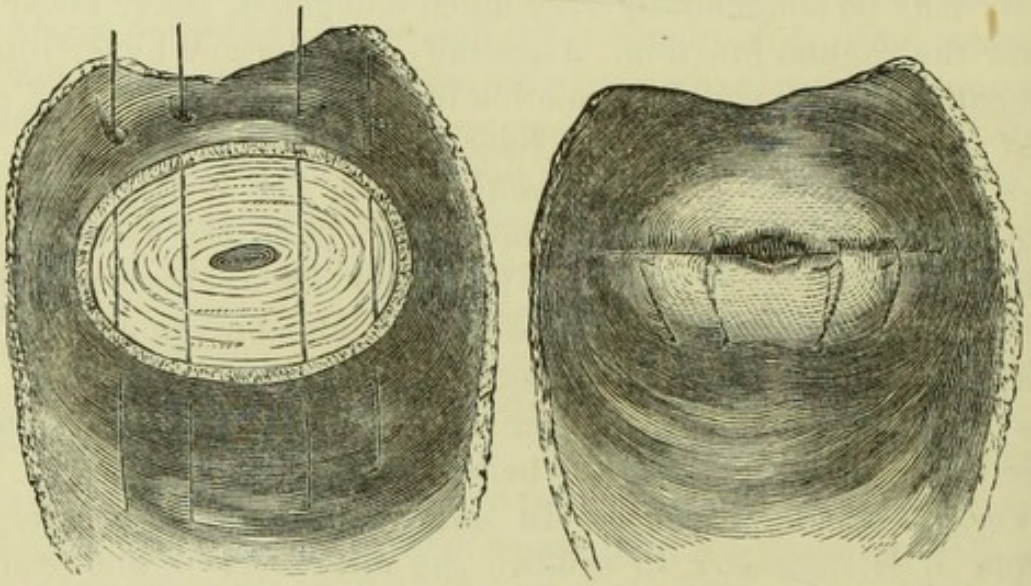
Operation by Bistoury or Scissors.—When performed by the first method, the patient should be placed upon the left side and Sims's speculum employed. The cervix being slit bilaterally, one lip is seized and cut off as near the vaginal junction as is deemed advisable, and then the other is removed in a similar manner. Formerly the operation was completed at this point, but Dr. Sims has introduced the practice of drawing down the mucous membrane and stitching it, as shown in Fig. 219, with silver sutures, so as to cover the stump, as that of the arm or thigh is covered by skin after amputation of those parts. The scissors most appropriate for this operation will be found to be those bent at a right angle, as represented in Fig. 220.

When the stump is covered by mucous membrane, after the

plan of Sims, recovery is much more rapid than when granulation is allowed to accomplish the cure.

Operation by the Écraseur.—In operating by this method, if the uterus be prolapsed, or if the degree of longitudinal hypertrophy be so excessive as to cause full protrusion of the cervix, or if such

Fig. 219.



Covering stump of cervix with mucous membrane. (Sims.)

protrusion be attainable by moderate traction, the patient may be placed on the back. If the uterus be high up in the pelvis and strong traction be necessary to depress it, the best position will be

Fig. 220.



Uterine scissors, bent nearly at a right angle.

found to be that advised when scissors or the bistoury are employed, the speculum being used. The passage of the chain will be found to be very simple, and the part should be slowly cut through.

In using the écraseur for this purpose, great care should be observed not to allow of too great dragging of the chain upon the neck without cutting. If attention be not given to this point, the peritoneum may be opened or the bladder involved.

Operation by the Galvano-Caustic.—The galvano-caustic consists simply of an instrument which enables the operator to engage any part in a loop of wire which, being connected with a powerful galvanic battery, becomes white hot and cuts its way through. A

German instrument (Grennett's) has been very generally employed in this city. Figs. 221 and 222 represent the manual portion of the instrument.

Fig. 221.

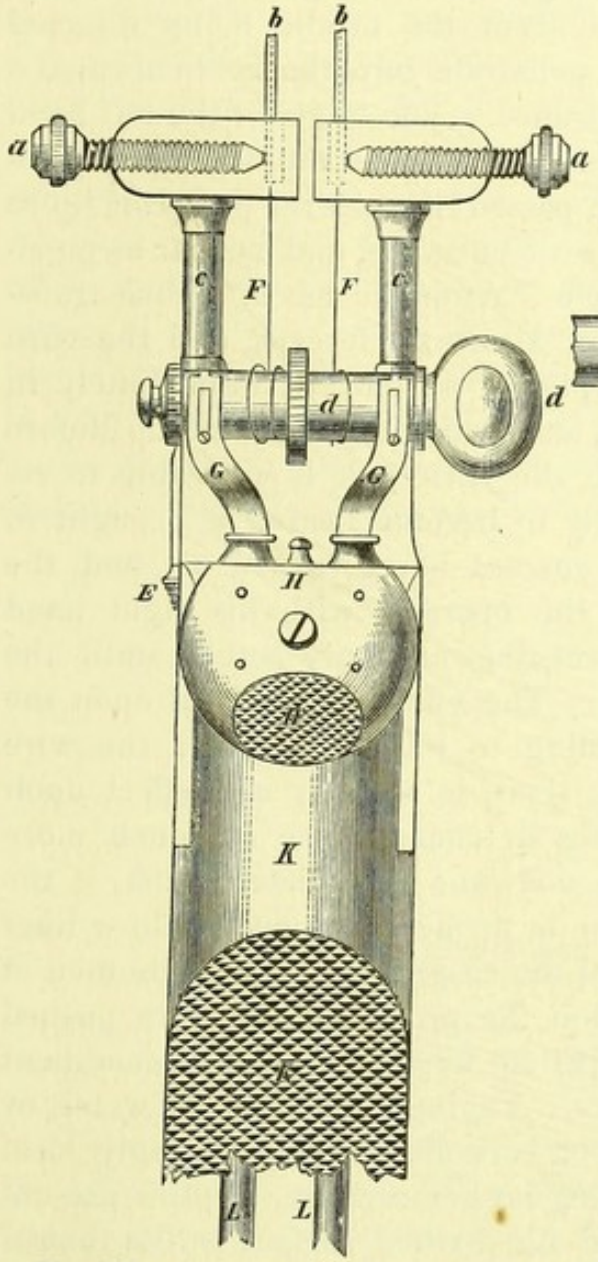


Fig. 222.

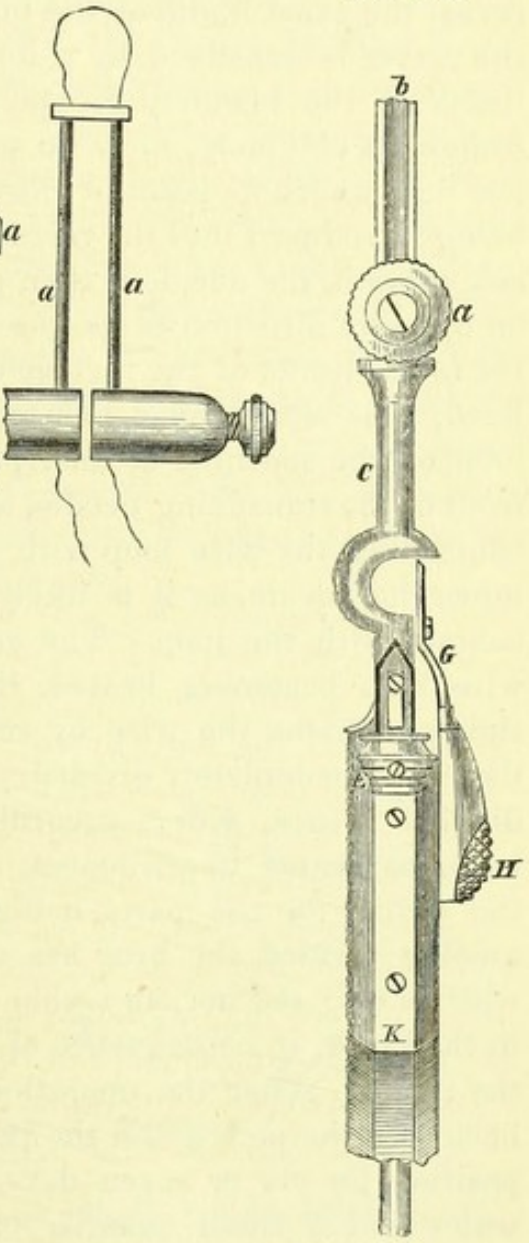


Fig. 221.—Galvano-caustic apparatus. *b b*, wire loop. *a*, *a*, canulæ. *a*, screw to fasten the canulæ in place. *b*, canulæ through which the wire passes. *c*, metallic supports. *d*, ivory screw around which the wire is wound to diminish the loop. *E*, brake to ivory screw. *F*, wire forming the loop. *G*, springs for connecting the supports and canulæ with the battery current. *H*, thumb slide to connect or break current. *K*, bone handle through which pass the connecting wires, *L L*.

The wire loop is connected with the battery by passing through two metallic canulæ, which are inserted in the cross-pieces and fastened in place by the screws, *a*. A bone handle enables the operator to hold the instrument without interfering with the current, and by means of the thumb slide, *H*, he may connect or disconnect the wire with the battery.

Fig. 222.—Side view of the galvano-caustic apparatus.

The patient having been put under the influence of chloroform or ether, is placed in a position similar to that for the operation of perineal section; a sound is then introduced into the bladder in order to ascertain the extent of coexisting cystocele, and to reveal the exact limits of the bladder. Then the anterior lip of the cervix is transfixed by a long needle, immediately below the limits of the bladder, the point of the needle being directed somewhat obliquely, so as to penetrate into the cervical canal a few lines above its point of entrance. The finger of the left hand being introduced into the rectum to ascertain the degree of rectocele present, the needle is then passed through the posterior lip in an opposite direction to its line of entrance, and as near as possible to the limits of the rectocele. After the cervix is thus transfixed, it is seized by a pair of Muzeux's forceps, and the wire loop of the machine is then passed around it, immediately in front of the transfixing needle, and moderately tightened. Before connecting the wire loop with the battery it is advisable to remove the needle, as it is likely to become heated if brought in contact with the loop. The current being turned on, and the wire loop becoming heated, the operator with his right hand slowly tightens the wire by turning an ivory screw, until the tissues are completely divided. The effect of the heat upon the divided tissues, differs according to its intensity; if the wire becomes heated to whiteness, there is scarcely any effect upon the tissue, for the parts being in consequence so much more quickly divided the heat has not time to radiate, whilst, if the wire be only red hot, an eschar is formed from one to three lines in thickness, in consequence of the coagulation of the albumen of the tissue. After the operation the prolapsed parts are pushed back into the pelvis, and the patient kept quiet in the recumbent position for six or seven days. Vaginal injections of water, or water and a small quantity of carbolic acid, is the only local treatment applied. There being no hemorrhage, styptics are unnecessary. The appearance of the divided surface is like that of a raw potato cut with a dull, rough, and slightly rusty knife.

My experience in the use of this instrument for amputation of the uterus and parts about the vulva is quite large, and I feel convinced that where the galvano-caustic is obtainable it should by all means receive the preference over either the scissors or the écraseur. After the use of the first of these, hemorrhage of uncontrollable character is apt to occur, and the second not only crushes the tissues, but sometimes draws into the field of amputation im-

portant surrounding parts. In this way Dr. Sims once cut into Douglas's cul-de-sac, and Dr. Meadows not only opened this cavity, but at the same time the bladder.

I would state, for the benefit of American practitioners, that a very excellent, simple, and efficient apparatus is now constructed by Messrs. C. T. & J. N. Chester, No. 104 Centre St., New York, at a cost of $110. It is very simple in construction, easy to manage, and not liable to get out of order. The battery consists of a box, eleven inches square, and the same in depth, which is charged with a chromic acid solution (made by the action of sulphuric acid or bichromate of potassa). There is a cover to this box, from which are dependent eight pairs of plates (zinc and carbon). This cover is raised and lowered by means of a windlass, so that the power of the battery may be graduated by the depth to which the plates are immersed. The power of Chester's battery is expressed in the statement that it will heat five inches of No. 15 platina wire.

An excellent instrument can likewise be obtained from the Galvano-Faradaic Company, New York.

CHAPTER XLII.

DISEASES OF THE OVARIES.

History.—Ancient literature is singularly barren upon the subject of ovarian diseases. That the functions of these organs were known to early anatomists, there is no doubt, for as early as 200 B. C. the operation of castration of female animals is alluded to by Aristotle, and in the second century A. C. they were described by Galen under the name of "testes muliebres." As to the influence exerted by them upon menstruation, they were not informed, for they attributed that process, according to Aristotle, to a superfluity in the blood, an opinion which was entertained even by Hippocrates. The works of Aëtius make no mention whatever of ovarian disorders, and those of Paul of Ægina are equally silent.

When it is borne in mind that the ovular theory of menstruation dates back for its origin to the labors of Négrier, Gendrin, Bischoff, Pouchet, and others of our own time, and that the operation of ovariotomy was never systematically performed before the year 1809, it will be appreciated how recently the profession even in modern times has fully grappled with the subject.

During the past ten or fifteen years full amends have been made for this delay in progress, for since that time no portion of the field of Gynæcology has received more attention or been more thoroughly investigated than that which now engages us. Not only have most of the diseased conditions of the ovaries been satisfactorily investigated, and the diagnosis of them reduced to a scientific system; for the most frequent and important of them surgical means have been instituted with such success as to have given procedures of the most appalling character and undoubted dangers, the position of legitimate and justifiable operations. The recent literature of ovarian pathology and surgery is now enriched by the contributions of so many capable observers, that it is almost invidious to particularize the most prominent. It may be stated, however, that Tilt, Wells, Clay, Keith, and Farre, in Great Britain; Négrier, Pouchet, Coste, and Aran, in France; Scanzoni, Kiwisch, Rokitanksy, and Virchow, in Germany; and McDowell, Atlee, Peaslee, Kimball, and Dunlap, in America, are they to whose labors we are most indebted. Unfortunately there is one set of ovarian affections with reference to which these statements are not true,—those of inflammatory character. Our means of diagnosis of ovaritis, both acute and chronic, is, in spite of all the advances alluded to, so elementary and unreliable that the result is discordance of views, and uncertainty as to pathology and therapeutics. It was probably the contemplation of this fact which led Scanzoni to open his article upon diseases of the ovaries with the following sentence: "If we felicitate ourselves upon the progress which has been made during the last few years, in the diagnosis and treatment of the diseases of the uterus, we should, on the other hand, remember that the labors of gynæcologists in respect to the diseases of the ovaries have been almost fruitless in practical results."

In illustration of the difficulties attending the diagnosis of ovarian diseases, I introduce a table which I have constructed from Hennig's[1] report of one hundred post-mortem examinations made by him, with special reference to this point.

[1] Catarrh of Sexual Organs of the Female. By Carl Hennig.

"If we now turn our attention," says he, "to the diseases of the ovaries, it is a fact of great value, in reference to diagnosis, that in ten out of one hundred cases, the diseased state of the ovary was, or might have been, recognized during life—more frequently by rectal exploration than by vaginal or abdominal." On the other hand, out of 81 bodies, a diseased condition of the ovaries was found in 53, a proof of how frequently disease of the ovaries cannot be recognized during life. The diseased condition was more frequent in one ovary alone than in both (three-fourths of the cases).

	No. of cases diseased.	Cysts.	Cystosarcoma and cystoids.	Hypertrophic enlargement.	Exudation on ovary.	Fibroids.	Dermoids.	Fibro-cartilaginous Cyst.
Out of eighty-one cases, ...	53							
" " "		30						
" " "			5					
" " "				1				
" " "					6			
" " "						9		
" " "							1	
" " "								1

Anatomy of the Ovaries.—The ovaries are two follicular glands about the shape and size of small almonds, situated one on each side of the uterus. So dependent are they upon the position of the uterus and surrounding viscera that they have really no fixed place. They are usually found in the lateral and posterior parts of the true pelvis, about an inch from the uterus, and just below the point where the Fallopian tubes enter that organ, the left being in close proximity with the rectum. Each ovary is attached to the peritoneum, which connects it with adjacent structures, and is firmly united with the uterus by means of a fibrous cord arising from the horn of each side.

The Fallopian tube of each side is connected with the ovary by one fimbria, and acts at periods of ovulation as its excretory duct.[1] The surface of the ovary is not covered by peritoneum, for, arrived at the circumference of these organs, this membrane loses its characteristic appearances, and the only trace of it which is discoverable is a layer of basement-epithelium. Around the circumference of the ovaries a cortical portion exists, whose duty it is to generate the Graafian follicles. Within this is a fibrous structure, composed of muscular fibres, cellular tissue, vessels and nerves,

[1] For details with regard to these curious and recently discovered facts, the reader is referred to essays by Otto Schrone, Henle, and Sappey.

which receives the name of stroma. Removed from the stroma and examined with care by the microscope, each of the Graafian vesicles is found to consist of a sac, called the tunic, which is filled with fluid, the liquor folliculi, in which is contained the ovum or egg, which is the female contribution to conception.

It is now an accepted fact with most physiologists, although still contested by some, that the periodical discharge of blood from the uterus, which is called menstruation, is merely a uterine symptom of the discharge of one of the ova from the ovary by rupture of a follicle. After the period of puberty has arrived, one or more of the follicles of each ovary burst every month by the following process: a congestion or hyperæmia occurring in the ovary for some reason beyond our comprehension, causes an excessive secretion by the walls of the follicle, in which a miniature dropsy takes place. This goes on to rupture, and escape of the liquor folliculi, blood, granular cells lining the ovisac, and the ovum. The nervous supply to both uterus and ovaries is excited by this, and one of the results of such excitement is contraction of the delicate middle layer of uterine fibres which surround the network of minute vessels enveloping and penetrating the uterine structure. This throws the vascular apparatus into a state of erection. Great engorgement occurs on the surface of the uterine mucous membrane, and probably on that lining the Fallopian tubes; they rupture and a flow of blood takes place. Three elements are concerned in this discharge: 1st, ovarian irritation excited by ovulation and transmitted to the nerves governing the muscles constituting the middle coat of uterine fibres; 2d, erection of the uterine vascular system; 3d, consequent rupture of the bloodvessels of the mucous membrane of the uterus and escape of blood. The ovisac being thus emptied a clot of blood soon forms within it, then an hypertrophy of the cells lining it occurs, and the corpus luteum is formed.

If the examiner hold up one of the broad ligaments between himself and the light, a small plexus of white, crooked tubes will be seen forming a cone, the apex of which is directed towards the hilus of the ovary. It measures about an inch in breadth, and consists of about twenty tubes which are filled with a clear fluid. This is the organ of Rosenmüller, which has recently been minutely described by Kobelt under the name of the par-ovarium, and is supposed by him to be an exaggeration of the Wolffian body. The exact location of the par-ovaria is this: they lie beneath the ovaries and between the ultimate folds of the perito-

neum covering the fimbriated extremities of the Fallopian tubes, which have received the name of the alæ vespertilionum.

The ovaries are supplied with blood through the spermatic arteries, which, upon arriving at the margin of the pelvis, pass inwards between the layers of the broad ligaments, and thus reach their lower border. Their nervous supply is not extensive, and is derived from the renal plexus.

The ovary presents its most perfect type in the young virgin, when its dimensions are greatest and its surface undeformed by the numerous cicatrices which appear at a later period. The dimensions of this organ are greater than they are during early virgin life only during and for six weeks after the process of utero-gestation. Hennig, who has made a special and exceedingly minute study of this point, declares that pregnancy increases the length but not the breadth nor the thickness of the organ. Utero-gestation, which leaves the uterus larger than it was before, has the contrary effect upon the ovaries, which after its accomplishment diminish in size never again to attain their former dimensions while in a state of health.

Some of Hennig's measurements I here give; they apply to the average dimensions and position of the ovaries, the measurements being given in centimeters. Let the reader remember that 12 lines make an inch, and that one centimeter is equal to about 4 lines; in other words, that 1 centimeter is $\frac{1}{3}$ of an inch, and he will readily appreciate Hennig's measurements.

SIZE AND POSITION OF THE OVARIES AT DIFFERENT PERIODS OF LIFE AND IN VARIOUS SOCIAL CONDITIONS.

	Childhood.	Virgins.	Unchaste.	Married.	Nullipara.	Puerperal.	Widows.	Divorced.	Menopause.	Old Age.
Length of the ovary, . . .	1.3–3.2	Right, 3.8	3.4	3.	2.5	4.4	3.5	3.5	3.1	2.9
		Left, 3.7	3.8	2.8	2.4	5.5	3.2	3.1	2.5	2.7
Breadth of the ovary, . .	0.2–1.4	Right, 1.9	1.8	1.7	1.2	1.3	1.6	1.4	1.5	1.1
		Left, 1.5	1.7	1.5	1.2	1.4	1.7	1.4	1.4	1.
Thickness of the ovary, .	0.2–0.6	Right, 1.	0.9	1.	0.8	0.8	0.8	0.9	0 8	0.8
		Left, 1.	0.9	0.9	1.1	0.9	0.8	1.	0.8	0.9
Distance from uterus, .	Right, 1. –4.	Right, 3.4	4.4	4.7	5.5	8.	3.8	4.	4.	4.
	Left, 1.2–3.7	Left, 3.3	4.5	4.7	5.	7.	4.2	4.2	3.7	4.5
Number of cicatrices, .	Right, 0.	Right, 6.	14.	21.	22.	8.	24.	17.	15.	14.
	Left, 0.	Left, 9.	13.	21.	21.	8.	26.	18.	24.	11.

Although the above figures speak for themselves, they call for some remarks. In the first place we will contrast two extremes:

		7 month fœtus.	Woman, 81 years of age.
Length of ovary,	Right, . . .	1.1 centimeters.	1.9 centimeters.
	Left, . . .	1.05 "	2.2 "
Breadth of ovary,	Right, . . .	0.4 "	0.9 "
	Left, . . .	0.35 "	0.9 "
Thickness of ovary,	Right, . . .	0.15 "	0.85 "
	Left, . . .	0.2 "	0.65 "
Distance from uterus,	Right, . . .	0 4 "	6.5 "
	Left, . . .	0.4 "	4.5 "

Number of cicatrices, { Right, 12. / Left, 13.

Varieties of Ovarian Disease.—Any one or all of the tissues which have been mentioned may be affected by disease, or the position of the ovary may be altered to such an extent as to constitute a morbid state. The following table presents a list of the disorders of these glands which will now receive special attention:

Absence;
Imperfect development;
Atrophy;
Hypertrophy;
Apoplexy;
Inflammation;
Tumors.

Absence.

One or both of the ovaries may be congenitally absent, but such a condition is very rare. When it does exist, it is generally only a part of a complete want of genital development which is manifested not only by these organs but by the parts making up the vulva, the vagina, and the uterus. Kiwisch declares that it has been most frequently observed in the bodies of newly-born infants who were not viable on account of complicated deformities.

When the ovaries are removed from a young woman her whole aspect changes. The breasts become flat, the features and voice masculine, and beard appears upon the face; or rather, such have been the results in the few instances in which the experiment has been tried, as, for example, in the celebrated case in which Percival Pott extirpated both ovaries, which were lodged in the inguinal canals. But where there is congenital absence, such is not the case; the woman is generally small in stature, her figure undeveloped, as if the period of girlhood were abnormally prolonged, and the genital system imperfect, as already mentioned.

Although a certain diagnosis can only be arrived at post-mor-

tem, a legitimate deduction may be drawn during life which may guide us in prognosis and treatment. Indeed, one of the greatest benefits which can accrue from a correct conclusion will consist in the avoidance of all efforts which, being vainly addressed to exciting the performance of the functions of the ovaries, deteriorate the state of the patient. Should the general condition of the patient, the undeveloped state of the vulva, vagina, and uterus, and the entire absence of the menstrual crisis combine as evidences of the condition, a diagnosis is admissible.

Imperfect Development.

This condition, which consists in persistence of the fœtal state of these organs after the period of puberty when rapid development should have occurred, is by no means so rare as that just mentioned. It may exist on one side only, though it generally affects both. As in the case of absence, a certain conclusion is not easy, and as in that case, also, we draw a presumptive conclusion from want of development in the other organs of generation, absence of the usual signs of the menstrual crisis, and lack of general constitutional vigor and development.

As examples of cases susceptible of such an explanation I record the histories of two with which I have recently met. The first is that of Miss F., referred to me by Dr. Rodenstein, of Manhattanville. She is twenty-four years of age, and yet has the appearance of a girl of thirteen. Indeed, it is difficult to believe the statement that she is more than that age. The features, limbs, mode of expression, and general deportment are those of a child. She has never menstruated nor shown any evidences of a tendency to do so. Physical exploration shows the vulva in the state of early girlhood, the mons veneris destitute of hair, the labia thin, and the vagina so small and narrow that the little finger only can be introduced, and that causes great suffering. The canal being short as well as narrow, the uterus can be touched, and is found like a little nut in the vagina, so light that its weight is scarcely perceptible.

The second case is one which I saw with Prof. W. H. Thompson. The patient is eighteen years old, and has never menstruated. Previous to the treatment established by Dr. Thompson, she suffered greatly from epileptic seizures, which have evidently impaired the force of her intellect, but during the past two months she has been free from them.

The girl is slow in her movements, childish in manner, and stupid in replying to questions. Upon physical exploration, the

vulva, vagina, and uterus are found fully and perfectly developed, the latter giving by measurement with the uterine probe, two and a half inches. Nothing can be elicited with reference to the ovaries by physical means, but the rational signs mentioned, together with the fact that all the appearances of girlhood are combined with entire absence of any apparent effort at ovulation, render the supposition that the ovaries are undeveloped, or fœtal, highly probable.

Sometimes cases will be met with in which masculine development, emansio-mensium, and sterility, will lead to a diagnosis of absence of the ovaries, but which will subsequently undergo a change and give all the evidences of the presence and efficiency of these organs. One such case, which occurred in the practice of Dr. Metcalfe and myself, is worthy of record. Mrs. B., a large, muscular, and handsome woman, had menstruated very irregularly and scantily for ten or fifteen years. Sometimes the menstrual discharge would be entirely absent for months, then it would at long and irregular intervals show itself for a day. Her health was not affected by this in any way. She presented, however, many signs of masculinity; the voice was harsh, the breasts flat, and the chin covered with a sparse beard. After having been married for years she became pregnant, and in due time bore a child, subsequent to which she menstruated more regularly and plentifully, and has since borne two children.

Treatment.—Should the ovaries be congenitally absent, it is evident that art can do nothing to remedy the evil. Should they exist in an undeveloped or fœtal state, it is possible that by a proper stimulus applied to them by the most direct means in our power, growth and maturity may be fostered, unless the condition be one of aggravated arrest of development. The means which are most likely to accomplish this are:

General tonics;
Uterine irritation;
Electricity;
Marriage.

The sanguineous and nervous systems should both be brought into as perfect a state of health as possible by ferruginous and bitter tonics, fresh air, exercise, change of scene, and a general observance of the laws of hygiene.

The most direct method for irritating the ovaries is through the uterus, with which so close a sympathy exists. For this purpose tents may be occasionally resorted to as often, for instance, as

once or twice a fortnight or month. This not only prepares the uterus for its part of the process, menstruation, but causes a hyperæmia in the ovaries, which we know to be the physiological forerunner of ovulation.

Electricity may be employed by placing one pole of a battery over the spine and one over the ovaries, or, as is better, by carrying a sound, protected where it touches the vagina, to the fundus uteri, connecting this with a battery and passing the other pole over the ovaries. An intra-uterine galvanic pessary may likewise answer a good purpose.

The ovarian irritation and congestion incident to the marital act will sometimes excite ovulation, not at the moment of coition, as was formerly supposed, but remotely.

Atrophy of the Ovaries.—At a period, varying from the fortieth to the forty-fifth year, the ovaries are destined to undergo atrophy. They diminish in volume, become wrinkled, the Graafian follicles disappear, and the stroma becomes dense and non-vascular. This is a physiological process, and marks what is termed the menopause, or period of menstrual cessation. Sometimes this process sets in at a very early period, owing to some abnormal condition which has excited it, and produces the same results as those following it when it takes place at the normal time.

Causes.—With regard to the special causes of this occurrence very little is absolutely known, further than the fact that it sometimes occurs from pelvic inflammations. It is probable that acute ovaritis may produce it, and it is certain that, at times, it results from pelvic peritonitis and cellulitis.

The following case which presented itself at my clinique some time ago is illustrative of this fact. Mary G., a healthy young Irish woman, aged 24 years, stated that she had a miscarriage at the third menstrual period, five years before, in Albany. Three days after the product of conception had been cast off, she was taken with a chill, with violent pain over the abdomen, and was declared by her physician to have inflammation of the bowels. Of this attack she nearly died, but after a confinement to bed for six weeks grew better. For two years after this she had irregular, painful, and profuse menstruation. As she expressed it, whenever she became fatigued or excited, flooding would come on. After this time the menstrual periods disappeared, and she now applied for relief on account of amenorrhœa of three years' standing. Physical exploration revealed the uterus in normal position though diminished in size to about two inches. Nothing could be ascertained about the ovaries.

The view which I took of the case was that pelvic peritonitis and acute ovaritis originally existed; these left the parts in such a state that for two years metrorrhagia and menorrhagia occurred; then subsequent contraction occurring in the effused lymph in and around the ovaries, atrophy resulted with its usual consequence, amenorrhœa.

The peculiarly destructive influence exerted upon the ovaries by pelvic peritonitis will be impressed upon any one who makes an autopsy in a patient who has died of that affection, or who reads the reports of others. Very often the ovaries cannot be discovered in the mass of "putrilage" which occupies their site.

Treatment.—An attempt may be made, by the means recommended in the treatment of undeveloped ovaries, to excite ovulation in any part of the glands which may still be capable of performing the function. But it should not be persisted in if not at once attended by good results, for inflammatory action may be excited by it. When these means are essayed, great caution should be observed and their influence developed only to a limited degree.

Hypertrophy of the Ovaries.

When from prolonged congestion, or a low grade of inflammation which does not go on to the production of suppuration, the nutrition of the ovarian tissues is kept up to a maximum degree, these organs undergo enlargement from increase in the amount of their parenchyma, and hypertrophy, is said to exist. Kiwisch declares that under these circumstances complete atrophy of the follicles always occurs, and thus ovaries which appear excessively developed may evidence the same functional disability as those which are entirely atrophied. There is a marked difference between this state and that enlargement which results from mere effusion of lymph, a consequence of inflammatory engorgement. The latter is only one of the stages of inflammation; but if the excess of nutriment which reaches the part become organized, appropriated, as it were, by the organ in which it exists, as one of its component parts, then the case belongs to the former category. Although, then, hypertrophy is not an immediate, it may be a remote result of inflammation, as has been pointed out by Kiwisch. Rokitansky disposes of the subject in a few words, merely stating that this condition may be one of the results of hyperæmia, and Wedl makes no allusion to it.

Dr. Bright describes an instance of this affection in which the ovaries were as large as kidneys, and of solid, fleshy consistence,

unlike malignant disease. The symptoms attending this case are given below.

The symptoms of ovarian hypertrophy are very obscure, and very little is known concerning the clinical history of the affection. A sense of weight in the iliac regions and groins, discomfort upon locomotion, and disorders of menstruation may be assumed to be symptomatic of its existence so far as rational signs are concerned. To go further than this would be risking the admission of mere theory, where only clinical facts should have weight. The following is the history of Dr. Bright's case. "The woman had borne children, and when past the menstrual period of life, was seized with pains which were referred to the uterus. These continued more or less acute for two months, when a considerable, indurated substance was perceptible in the regio pubis, referable, as was considered, to a morbid state of the uterus. After this time a difficulty in making water added greatly to her suffering; indeed it amounted to inability in the erect position of the body, but the recumbent posture sensibly removed the only impediment to its discharge. From anxiety, which her intolerable pain induced, or from a combination of circumstances, she became the most emaciated object I ever witnessed. Jaundice supervened, attended with ascites, and in this precarious situation, some one being consulted, took up the idea of its being a scirrhous liver, and recommended a moderate ptyalism to be raised and supported. The hardened substance before mentioned was considered by him as a continuation of the liver. Mercury, however, was only given in small quantities, and soon after she began its use, death closed the scene."

This history is given for what it is worth. It is certainly a remarkable one, supposing that Dr. Bright was correct in regarding the disease as being non-malignant; but it cannot be looked upon as typical of the course of an affection, the prognosis of which is by no means unfavorable.

As the rational signs of hypertrophy are so meagre, it is fortunate that those which are physical are much more reliable. The increase of size and weight dependent upon the disease, very often displaces the ovary, when it is discovered by conjoined manipulation as a slightly sensitive body, usually about the size of a walnut, in Douglas's cul-de-sac, or by the side of the uterus. Even if the ovary or ovaries affected keep their normal position, careful manipulation will, unless the patient be very fat, discover their enlargement. Should they be fully within reach of investigation by touch, and doubt exist as to the nature of the tumor felt, the facts of their

becoming very turgid and sensitive during menstrual epochs, and diminishing in size and sensibility after these periods have passed, will serve to settle the question.

Treatment.—An attempt should be made to stimulate absorption by the persevering use of iodine, in the form of tincture or ointment, over the hypogastrium and over the whole surface of the vagina, where it may be painted through the speculum; and irrigation per vaginam by warm water holding in solution iodine, chloride of sodium, or iodide of potassium. The use of the iodides internally, of sea bathing, and of mineral waters internally and externally, and observance of quietude during menstrual periods, when congestion adds itself to the existing disease, also constitute useful measures.

Ovarian Apoplexy.

Definition.—The word apoplexy is very loosely employed in reference to sanguineous effusions in all the organs of the body, some signifying by it sudden vascular rupture, while others apply it to interstitial hemorrhage occurring even very slowly. This has created confusion of description, and certainly added difficulty to the clear comprehension of the pathological states to which it has been synonymously applied. Thus, in describing ovarian apoplexy, Kiwisch[1] divides it into primary and secondary, considering as examples of the latter, hemorrhage from the walls of a cyst which fills it slowly with blood, or hemorrhage the result of tapping. The two conditions should be regarded as essentially different, and I would offer this as the proper definition of our subject. Apoplexy of the ovary consists in a rapid effusion into its tissue of blood, which results from sudden rupture of one or more of its larger vessels.

The ovaries present the only example in the animal economy of apoplexy occurring as a physiological act. At each menstrual period, as an ovule leaves its nidus, an apoplexy from the vessels of the tunic of the ovisac occurs as a necessary consequence. It is this which, upon subsequent alteration, constitutes the corpus luteum. Generally these hemorrhages are self-limiting, and their effects rapidly disappear; in some cases, however, the bleeding continues too long or returns after cessation, and then the collection of blood sometimes reaches the size of a man's fist or of a child's head.[2] In some instances the tunica albuginea of the ovary is completely ruptured, when the effused blood pours into the most

[1] Op. cit., p. 232.

[2] Kiwisch, op. cit., p. 232.

dependent portion of the pelvic cavity, constituting pelvic hæmatocele.

Symptoms.—The occurrence of apoplexy is often ascertained only in autopsy, no signs existing during life by which it can be positively diagnosticated. The symptoms which will usually point to its existence are sudden and violent pain over the region of one ovary, with sense of great exhaustion, nausea, and vomiting. These symptoms, if combined with enlargement and tenderness of one ovary, as ascertained by conjoined manipulation, will be sufficient to render a diagnosis warrantable if the patient's health has previously been good.

Prognosis.—The great danger from the accident is peritonitis, arising either from implication of the peritoneal fold which makes the broad ligament, or from rupture of the cortical portion of the ovary and occurrence of hæmatocele.

Treatment.—Should there be symptoms of peritonitis, leeches should be applied, and followed by poultices or a blister. Beyond this, all that can be done is to keep the patient quiet in the recumbent posture, and prevent all muscular effort until absorption occurs.

Displacement of the Ovaries.

The extreme mobility of these glands and the laxity of their supports have already been remarked upon. Any influence which increases their weight, draws upon them directly, or acts upon them by traction through a neighboring organ, may cause them to leave their position, and even in rare cases to pass out of the pelvis in the form of hernia. For example, they may be displaced by inflammation, hypertrophy, ovarian fœtation, &c., which cause increase of weight; or they may be acted upon by contractions of effused lymph, resulting from pelvic peritonitis; contraction of the ovarian ligaments, &c., drawing them out of place; or they may be affected by displacement of the uterus, pregnancy, or hernia of any of the abdominal viscera acting upon them by means of traction. A hernia of the ovary alone is very rare; it is almost always attended by hernia of the Fallopian tube, or some portion of the intestines or omentum.

The ovaries often fall, when their weight is increased, into the cul-de-sac of Douglas. More rarely they pass into the inguinal canals, or through them into the dartoid sacs of the labia majora. Here they show a monthly intumescence, which creates great local disturbance, and keeps the part swollen, heated, and tender, until

ovulation is passed. Deneux[1] declares that they may enter the femoral, umbilical, and ischiatic openings, or form a part of ventral hernia, and Kiwisch has reported a case in which one entered the foramen ovale. The accident is rarely important in its results except in reference to excluding the suspicion of other forms of tumor, and avoiding the danger of surgical interference under a mistaken diagnosis.

Treatment.—The treatment consists in returning the displaced part by taxis, and keeping it *in sitû* by a properly constructed truss, pessary, or bandage. Should the gland be bound in its false position by strong membranes, the propriety of its removal might be considered, in case serious inconvenience resulted from the displacement.

Ovaritis.

Definition.—By this term is meant an inflammation of the tissue comprising the ovaries, which has been described by some authors under the name of Oophoritis. A dogmatic treatise upon ovaritis in the non-puerperal woman is, in the present state of science, impossible. So much concerning the disease is unsettled, and such utterly discordant views are entertained upon it by the most reliable authorities, that too great caution cannot be observed in treating of the subject, lest theories constructed upon analogical reasoning be made to pass current in the mind of the reader for facts faithfully observed at the bedside and in the dead-house. No writer should attempt its description without determining, as Aran did, when he penned the following sentence: "I leave out of consideration all the fantastic descriptions of ovaritis which have been constructed in the library by physicians who were more remarkable for brilliancy of imagination than knowledge of the disease." Our knowledge of the subject is at least so far advanced as to make a *thesis* upon it entirely inadmissible.

Varieties.—Ovaritis may be either puerperal or non-puerperal. The first does not concern our present investigation, and we put it out of consideration. The non-puerperal form of the disease has been divided into acute and chronic, which will now engage us in order.

Acute Ovaritis.

This affection, though very common as a result of parturition or abortion, is, except as a complication of pelvic peritonitis, or cellulitis, quite rare in the non-puerperal woman. Mme. Boivin[2]

[1] Recherches sur la Hernie de l'Ovaire. [2] Op. cit.

even goes so far as to say that, "it would be difficult to point to a single well-authenticated case out of the condition of pregnancy." Dr. West[1] remarks that, "acute inflammation of the substance of the unimpregnated ovary is of such rare occurrence that no case has come under my own care, and but one has presented itself to my observation." Prof. Fordyce Barker[2] says, "I doubt very much if I have ever seen a clear, well-marked case, and I have been for years looking for its existence in the dead-house." There can be no question of the truth of these statements as regards pure, uncomplicated inflammation of the ovary, but ovaritis of acute character going on to suppuration or production of a diffluent state of the stroma, is by no means rare as a complication of pelvic cellulitis or peritonitis. One of the greatest dangers to be feared from these diseases is injury or destruction of the ovaries, and it is probable that few cases of cellulitis and none of peritonitis run their course without involving them to a greater or less extent. It is likewise probable that pelvic peritonitis is frequently excited by some trouble originating in the ovaries, which are closely in contact with the peritoneum making up the broad ligaments and covering the pelvic roof. The intimate relation of these three parts, the ovaries, the pelvic peritoneum, and the pelvic areolar tissue, accounts for the fact that uncomplicated acute ovaritis is rarely met with.

In proof of this statement let me point to the condition of the ovaries in the autopsies of peri-uterine cellulitis reported by Aran. In almost all instances they were diseased, and they generally contained pus. So common was this lesion that Aran was persuaded that "the purulent collections which, as a consequence of peri-uterine inflammation, discharge themselves into the peritoneum or into the organs in the neighborhood of which they are placed, rectum, bladder, vagina, &c., sometimes even by the surface, belong more particularly to the ovary or tube."

Since the writings of Aran, no one has done so much to put in a strong and proper light, the intimate relations existing between suppuration, inflammation of the ovaries, and pelvic peritonitis and cellulitis, as Dr. Matthews Duncan. He regards these peri-uterine inflammations as always symptomatic affections; as secondary to uterine, tubal or ovarian disease, or noxious discharges entering the peritoneal cavity through the tubes. At the same time that I differ from Dr. Duncan in looking upon peri-uterine inflamma-

[1] Op. cit., p. 473.

[2] Bul. N. Y. Acad. Med., vol. i, p. 549.

tion as more frequently primary than he does, and as frequently resulting in acute or chronic ovaritis and abscess, I am at the same time willing to place the highest estimate upon his opinions.

Authors have divided acute ovaritis into parenchymatous, follicular, and peritoneal, but in an affection, the mere recognition of which is so difficult, it is hardly wise to refine upon its peculiarities. The form of the affection here styled peritoneal is really not ovaritis but peritonitis of the very character of which we are speaking; from which to parenchymatous and follicular disease there is only one step. As an example of ovaritis complicated with peritonitis in a non-pregnant woman, I avail myself of the kindness of Dr. Roth, and record the following history prepared by him:

"M. S., æt. 35, married ten years, had a miscarriage nine years ago. Since that time has suffered from dysmenorrhœa and gastric disorder, which was styled dyspepsia. Two years ago she applied to me, and I found her suffering from profuse fluor albus and retroflexion of the womb. Under use of caustics and tonics she improved very much, and treatment was stopped. I did not see her again until August 1st, 1866, when I found her in a convulsion. After it had passed off she vomited constantly, complained of great pain in the bowels, was very thirsty, and the pulse was near a hundred. Opium was freely administered. On the next day the pulse was over one hundred; skin hot and dry; and she complained of severe pain in back and loins, and over left iliac fossa. I made a vaginal examination by touch, but could discover nothing except that the vagina was very hot and dry. Aug. 3. No great change, except that the abdomen became tympanitic. Aug. 4. She lost about five ounces of blood per vaginam; symptoms unchanged. Aug. 6. She was seen in consultation by Prof. Thomas, who diagnosticated pelvic peritonitis with probable acute ovaritis on left side, and anticipated formation of an abscess near or in the ovary. By his advice a large blister was applied over the hypogastrium, and opium given in very large doses. The case went on in this way until Aug. 11th, when she suddenly vomited a large amount of bile, became collapsed, and died that night.

"*Autopsy eighteen hours after death.*—The peritoneum covering the pelvic viscera was covered with a recent lymph, and between the organs a great deal of puriform serum existed. Abdominal peritoneum healthy. The left ovary, which was agglutinated to the intestines, tubes, and uterus, was about the size of a hen's egg. In its removal it was broken, and several ounces of pure pus es-

caped. No evidences of cellulitis could be discovered upon careful dissection. Other organs healthy."

The interest of the following case, for the history of which I am indebted to Dr. Jerome C. Smith, will warrant its introduction:

"M. A., aged eighteen, first menstruated at the age of thirteen years. Had not been in good health for a year previous, having every four weeks violent headache, flushed face, pain in back and abdomen continuing about twenty-four hours. Her physician ascribed it to the expected appearance of the catamenia, and prescribed a chalybeate. The catamenia appeared on an occasion of her receiving a very severe fright, and was profuse, lasting about six days. This condition, with no inconvenience except slight pain in the back, occurred at each regular period for five months. At this time, while menstruating, she took a river bath of fresh water, which occasioned immediate suppression with violent pain. Domestic remedies were used, producing a slight reappearance, but on all subsequent occasions the menses were very scanty, never lasting more than four days, and accompanied with considerable pain. The character of the discharge was also altered. From this period there were irregularities, and at one time, a year later, complete suppression for four months. Dewees's tincture of guaiac was administered, and not proving efficacious, chalybeates were used with benefit.

"The patient menstruated July 4, 1865, which for the first time was a few days premature. July 22d, while on a visit in the country, she took a long walk, and then going in a small boat took the oar and rowed two miles, an exercise to which she was entirely unaccustomed. While rowing, the catamenia appeared—only eighteen days after her last period—and continued less than two days. The next appearance was August 16th, three days premature, and continued until the morning of the 17th, when there was a sudden suppression accompanied with violent pain. Warm drinks and brandy were administered, and the feet immersed in hot mustard water. Domestic remedies failing, the family physician was called and arrived in the evening. She then complained of an aching sensation in the limbs, and there was some fever. The physician ordered ice to be applied along the spinal ganglia, to be constantly renewed until the catamenia reappeared, and gave her some 'fever mixture.' After midnight, the patient feeling very uncomfortable and desiring to sleep, the ice was discontinued until the doctor's morning visit, when he ordered it to be reapplied for two hours and then taken off, allow-

ing the patient to rest for two hours, and this course to be continued till the flow should appear, with the addition, if there should be pain, of the application to the abdomen of cloths wrung out of hot water, during the two-hour intervals when the ice was not applied. This was done faithfully until the menses appeared very scantily, disappearing when the ice was discontinued, and reappearing again on another application, still scantily. Her physician regarded her then as requiring no other medical treatment further than a cathartic, and discharged the patient, directing that he should be sent for if she should not be as well the next day. The cathartic produced numerous evacuations during several successive hours. The following day, as she had considerable fever, the physician was sent for, and ordered quinine pills and renewed the fever mixture. When she complained of pain, the nurse put the feet in hot water, or applied hot cloths to the abdomen.

"On Monday, the fifth day, she complained of considerable pain, and the doctor was again sent for, and ordered every two hours pills containing opium gr. ss., pulv. ipecac. comp. gr. ij, which constipated the bowels. A cathartic was given, producing active diarrhœa with tenesmus. The discharges soon became mucous and tenesmus increased, and pills containing hydrarg. chl. mitis gr. $\frac{1}{4}$, opii gr. $\frac{1}{3}$, plumbi acetat. gr. iss., were ordered. The mucous discharges continued thereafter with some variation and great tenesmus. Oleum ricini, with tr. opii, was directed to be given in the evening. There was no tympanites. Pain and fever increased to an alarming extent. The castor oil and laudanum were given as ordered. At midnight the patient was seized with an agonizing pain in the abdomen, and immediately became slightly delirious.

"From this time the countenance changed, the extremities grew cold, and could not be warmed, though vigorous means were resorted to by her nurse. In the morning the physician was astonished to find her moribund. He now, for the first time, discovered the serious nature of the disease. The most vigorous measures were unavailing, for she died at twelve o'clock on the tenth day of the disease.

"*Autopsy forty-eight hours after death.*—The abdomen was opened and revealed agglutination of the intestines everywhere, with an effusion of several ounces of pus mixed to a greater or less extent with serum. An abundance of organized lymph lined the pelvic cavity and elsewhere. Raising the right ovary, *in situ*, upon the

finger, a quantity of pus escaped from a rupture of the organ, sufficient to flow over in every direction. When the uterus was removed with its appendages there was found to be a dilatation of the right Fallopian tube, at one point as large as a man's thumb, filled with pus. The left ovary contained two corpora lutea in a recent state. Both Fallopian tubes were pervious. The uterus was healthy. The rectum contained a large quantity of mucus."

Pathology.—This is not clearly made out, though it appears safe to accept the stages described by Mme. Boivin: first stage, congestion, with increase of weight and rotundity; second stage, size of organ double, triple, or quadruple the normal size, tissue soft and infiltrated with yellow and violet-colored serum, with slight effusion of blood; third stage, suppuration, pus infiltrated or collected in spots; fourth stage, gray softening, disorganization, the gland becoming diffluent.

Causes.—The causes of the disease may be thus enumerated:

Pelvic peritonitis;
Peri-uterine cellulitis;
Gonorrhœa;
Disturbance of menstruation.

Any of the causes which have been spoken of as sufficient to cause the first two diseases mentioned may through them produce ovaritis. A form of ovaritis called blennorrhagic is admitted by most authors as corresponding with blennorrhagic orchitis in the male. It is difficult to see how even the progress of gonorrhœal inflammation along the tubes would cause disease of an organ not connected with the extremities of these tubes, but let it be remembered that gonorrhœa is in this way one of the most fruitful sources of pelvic peritonitis, and an explanation of ovaritis as a secondary result will suggest itself. Suppression of menstruation, or any sudden and violent shock given to the ovaries while ovulation is progressing and the walls of the organ are about being broken through, may likewise induce it.

Symptoms.—The symptoms of this affection are so intimately associated with those of peritonitis and cellulitis that it is impossible to separate them. There is severe pain in one or other iliac fossa, with increase of heat, fever, and perhaps chill. Pressure shows the most exquisite sensitiveness, and when the part is examined by conjoined manipulation this is excessive. By that means the ovary is felt enlarged and generally depressed in the pelvis. These symptoms may subside upon the occurrence of

resolution in four or five days; or pus forming within the gland may be discharged into the peritoneum, the rectum, the vagina, or the bladder.

Differentiation.—This is generally impossible. The association of the disease with those which have been mentioned as being at times its causes, at others its consequences, is usually too intimate for its distinction from them. Should conjoined manipulation discover the ovary as a round ball, very sensitive, and unassociated with fixation of the uterus, a diagnosis would be admissible. I have never met with such a case of acute character, nor is it likely that it often occurs, though as a sign of subacute or chronic ovaritis it is common.

Prognosis.—The prognosis is favorable, though never free from an element of doubt.

Treatment.—Leeches may be applied around the anus, over the diseased organ, or at the groin. Should its weight not give pain, a poultice should then be placed over the hypogastrium, and opium freely administered by mouth and rectum. The patient should be kept perfectly quiet, and not allowed to rise from her bed even for relief to the calls of nature. This should be especially attended to if it be supposed that suppuration has occurred, for then a very slight effort might cause a rupture of the abscess into the peritoneum.

Chronic Ovaritis.

That chronic inflammation may affect the ovaries there is no good reason for doubting, though very little has been ascertained as to the frequency of the disease. So great is the sympathy existing between the uterus and these organs, that uterine disorders excite ovarian pain very commonly, and give rise to many symptoms which are regarded by authors as characteristic of this disease. Again, it is a well-ascertained fact that slight attacks of chronic pelvic peritonitis are extremely common, and unfortunately we possess no certain means for distinguishing such a disorder, in the vicinity of an ovary, from chronic ovaritis.

In the great majority of cases of uterine disease the patient will complain of pain, of dull aching character, over one or both ovaries, and this will very likely be augmented by menstruation. But it is by no means to be concluded that this sympathetic pain, even if dependent, as it very often is, upon congestion, is due to chronic ovaritis. As well might it be believed that mammary pains excited in the same manner are due to mammitis. But it cannot be

denied that we sometimes meet with cases of chronic ovaritis, which may be recognized by the following symptoms:

Symptoms.—Fixed pain over one ovary;
Increase of this at menstruation;
Tenderness upon pressure;
Detection of an enlarged ovary by conjoined manipulation and rectal touch.

These are the symptoms which warrant a belief in the existence of the disease. In addition we may find great prostration after an alvine evacuation, especially when the left ovary is affected; excessive weariness after exertion; a disturbance of the nervous system amounting to hysteria; and depression of spirits.

Prognosis.—The prognosis is always favorable, though cure is often difficult of accomplishment.

Treatment.—Rest should be prescribed during menstrual epochs, when the diseased gland is congested and in a state of nervous excitement. Severe exercise or fatiguing occupations should be avoided, and all influences calculated to depress the vital forces carefully guarded against. Counter-irritation by means of small blisters, tincture of iodine, or issues of nitric acid, should be kept up over the diseased organ for months at a time, and once or twice a week the cervix uteri and whole upper part of the vagina should be painted over with tincture of iodine. Every night and morning the patient should be directed to use copious injections of warm water into the vagina in the manner already explained. For the various symptoms which accompany the affection the bromide of potassium in ten to fifteen grain doses will be found very beneficial. Utero-gestation, which secures the ovaries from monthly congestions for nine months, is always much to be desired under these circumstances.

Ovarian Abscess.

One of the ordinary results of acute ovaritis is formation of pus. This may discharge itself rapidly, become encysted, or discharge for a length of time, a pyogenic sac being formed, which fills and empties itself at intervals. Kiwisch asserts that as a result of inflammation abscesses may originate either in the parenchyma or in one of the follicles of the gland, and that the non-puerperal form generally has the former and the puerperal the latter origin. In either case depots may be established which

will contain an incredible amount of pus. Kiwisch has seen them contain as much as sixteen pounds, and Dr. Taylor,[1] of Philadelphia, reports an instance in which an ovary contained twenty pints of pus. In a piliferous ovarian abscess which I saw in the practice of Prof. A. C. Post, at least half that quantity must have been evacuated by incision. As a rule, however, no such amounts are reached, from twelve to sixteen ounces being generally a large accumulation.

Causes.—Ovarian abscess may result from—

Pelvic peritonitis;
Acute ovaritis;
Peri-uterine cellulitis;
Tubercular deposit;
Retention of débris of a fœtus;
The scrofulous diathesis;
Piliferous or dermoid cysts;
Inflammation of walls of ovarian cyst.

Tubercular deposit is very rarely found in the ovaries, as may be judged from the fact that Rokitansky[2] declares that he has never met with it, and is forced to deny its occurrence. Mme. Boivin's plates,[3] however, so fully illustrate one instance that its authenticity cannot be doubted. In a specimen presented me by Dr. Janeway, and which was exhibited to my class some years ago, tubercles existed in the lungs, liver, spleen, peritoneum, uterus, tubes, and, I think, ovaries, since the cheesy mass contained in these organs resembled precisely that in the other parts. Dr. Nott reports a case with which he met accidentally in the dissecting rooms in Baltimore, in which the ovaries were as large as limes, and full of tuberculous abscesses.

The product of ovarian pregnancy is sometimes extruded by the process of suppuration not only from the gland but from the body. Mme. Boivin was the first to suggest the occurrence of suppuration in the walls of ovarian cysts, as a cause of abscess. Her theory is now accepted by pathologists as correct,[4] and explains instances of multilocular abscesses which have been sometimes seen.

Symptoms.—Should ovarian abscess be the result of ovaritis, it will be marked by severe pain, chill, fever, throbbing, and the other

[1] N. Am. Med. and Surg. Journ., 1826.
[2] Path. Anat., vol. ii, p. 252. Am. ed.
[3] Plate xvi.
[4] See Farre, Hewitt, &c., opera citata.

symptoms already mentioned. If it result from causes which produce no sudden excitement of circulation and nervous supply, no symptoms other than dull pain, discomfort upon motion, and occasional fever may point to the lesion. It is only when a circumscribed tumor giving evidence of fluctuation is discovered that a diagnosis is warranted.

Differentiation.—Even then it is often difficult, except in cases due to ovaritis, to distinguish the disease from the following:

Ovarian cyst;
Pelvic abscess;
Ovarian pregnancy;
Distension of Fallopian tube by fluid.

Abscess may be differentiated from cystic degeneration of the ovary in some instances by signs, perhaps very obscure, of inflammatory action; tendency to chill and fever; pain upon pressure; and discomfort in certain attitudes. Pressure by conjoined manipulation will almost invariably cause pain, while in cystic disease it must be very firm for it to do so.

From pelvic abscess a differentiation is always difficult and very often utterly impossible. Kiwisch tells us to rely upon the immobility, excessive pain, and less defined boundaries of pelvic abscess; but where a certain amount of adhesive inflammation has been excited in ovarian abscess which has bound it to the surrounding parts, the difficulty becomes insuperable. I have very recently had two cases, one seen with me by Drs. Emmet and Elliot, and the other by Dr. Metcalfe, in which a decision by physical means alone was entirely impossible. In both cases, the fact that the accumulation was purulent was placed beyond doubt by free and constant discharge of pus through a small opening in the vaginal wall.

Ovarian pregnancy being marked by all the ordinary symptoms of conception, vomiting, mammary signs, cessation of menstruation, &c., will generally be suspected.

From distension of the Fallopian tubes by watery mucus, blood, or pus, it will generally be impossible to distinguish it with any degree of certainty. In some cases it may be accomplished by attention to the shape, configuration, and mobility of the tumor, as will be mentioned when speaking of dropsy of the Fallopian tubes.

Treatment.—The suppurative process should in the beginning be encouraged by poultices over the hypogastrium and irrigation

of the vagina by warm water. So soon as the purulent mass has made its way to the surface of the abdomen, or of the vagina or rectum, it should be evacuated by a bistoury, or trocar and canula. Then the strength of the patient should be sustained by quinine, brandy, beef-tea, milk, &c. Should the process of pus formation and discharge go on for too great a length of time, or should symptoms of septicæmia set in, the cavity of the abscess should be promptly injected with solution of tincture of iodine, persulphate of iron, permanganate of potash, or carbolic acid.

CHAPTER XLIII.

OVARIAN TUMORS.

Within the last twenty years important advances have been made in our knowledge of those pathological developments called tumors. The progress, which about the beginning of that period Rokitansky inaugurated, has since culminated in the eminent labors of Virchow. Had we now reached a standpoint which gave complete satisfaction to pathologists, it would be an easy matter to offer a simple digest of the whole matter for the contemplation of the student. But this is far from being the present aspect of the subject. Changes are constantly being made in nomenclature; views as to pathology are daily being altered; and classification is in consequence undergoing frequent alterations. This presents evident difficulties for one who, not being entitled by personal researches to original views, is forced to rely upon the workers in pathological anatomy for his authority. Every one who has really studied the subject of tumors, will admit the force of this statement, and, from such a one, I have no fears of a severe judgment upon the table by which I here endeavor to display at a glance the varieties of ovarian tumors. I am fully aware of its imperfections, but I know of no better method for simplifying a difficult subject so as to make it easily comprehensible to the general reader.

The ovaries may be affected by three forms of tumor:

1st. Fluid tumors;
2d. Solid tumors;
3d. Composite tumors.

The first class comprises those which are formed of one or more sacs filled with fluid contents only; the second, those which are purely solid; and the third, those which are composed of both solid and fluid elements.

The following table presents these three genera with their species:

- Ovarian tumors,
  - Fluid tumors,
    - Parasitic cysts—Cysts around hydatids;
    - True ovarian cysts,
      - From follicular dropsy;
      - From fluid exudation into stroma;
    - Cysts from liquefaction—Breaking down of solid substance.
  - Solid tumors,
    - Fibroma—Tumor composed chiefly of connective tissue;
    - Adenoma " " of gland structure;
    - Myxo-adenoma " " " " and colloid;
    - Carcinoma " " of cancerous material;
    - Histoid,[1]
      - Dermoid—Containing skin and kindred elements;
      - Pileous " hair " " "
      - Adipose " fat " " "
  - Composite tumors,
    - Cysto-adenoma—Cysts in adenoma;
    - Cysto-fibroma " " fibroma;
    - Cysto-carcinoma " " cancer;
    - Cysto-sarcoma.

Fluid Ovarian Tumors.

These have just been enumerated as—

Parasitic cysts;

True ovarian cysts,
- From follicular dropsy;
- From fluid exudation into stroma;

Cysts from liquefaction.

Cysts created by the presence of the parasite, called the echinococcus humanus, hydatid cysts, as they are commonly called, may develop in the ovary, though the occurrence is so rare as to make an extensive consideration of them unnecessary. The literature of the subject is very meagre, and in few of the works devoted to ovarian disorders is any mention of them made. In Dr. Bright's work upon Abdominal Tumors, fifteen instances of hydatid tumors

[1] I am forced to create this term, from the fact that no name exists for this family of tumors.

in the abdomen are recorded, in one of which a hydatid tumor the size of a very large hen's egg was connected with one ovary. Cruveilhier reports an instance discovered on the cadaver. Roux and Deneux believed that they had operated upon such cases, the first by the rectum, the second upon a tumor imprisoned in the inguinal canal. Dr. Arthur Farre refers to a very large ovarian cyst contained in the Museum of King's College, which consists of an immense aggregation of cysts, many of which are stuffed full of hydatids. Graily Hewitt believes that when hydatid disease of the ovaries exists, the echinococci are derived from the liver, and Kiwisch, who has never met with an instance, evidently suspects the authenticity of the reported cases, thinking that "torn off secondary cysts have been taken for acephalocysts." Too little is known of such cysts to warrant further remarks upon them.

True Ovarian Cysts.

This variety of disease consists of the formation of one or more large sacs, developed within the substance of the ovary.

Pathology.—Pathologists are still somewhat at variance with reference to the origin of ovarian cysts. "In many cases," says Rokitansky,[1] "they are undoubtedly formed from the Graafian follicles, and it appears that an inflammatory process is particularly liable to give the first impulse to this metamorphosis. They are probably, however, as often new formations from the beginning."

"It was formerly very generally supposed," says Wedl,[2] "that the cysts in the parenchyma of the ovary originated in the Graafian follicles, but no direct proof of this was ever given." Courty sums up the matter thus: "In a word, these cysts are dropsies, simple or complicated, of the Graafian follicles."[3] It appears that we must receive with some doubt this last doctrine, so seductive from its perfect simplicity, for Lücke,[4] one of the latest and most reliable authorities, takes even stronger ground against it than Wedl did. After quoting Rokitansky's views he goes on to say: "But we have already stated that cysts can only form in the connective tissue, and only after a long-continued irritation; and that it does not look at all probable that such cysts should form by spontaneous exudation. As far as the cystoids of the ovary are concerned this

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[1] Op. cit., p. 249. [2] Wedl's Path. Histol., p. 462. [3] Op. cit., p. 925.

[4] Chapter on Tumors in Billroth and Pitha's Manual of General and Special Surgery.

theory certainly is not admissible. These tumors are essentially cysts from broken-down tissue."

Graily Hewitt evidently accepts the doctrine of follicular dropsy in full faith. "In many cases," says he, "ovarian cysts are nothing more than enlarged and hypertrophied and dropsical Graafian follicles. . . . . Rokitansky and some others have even succeeded in finding ova in some of the cysts in question, thus affording a demonstrative proof of their nature." I have shown that Wedl and Lücke evidently are not satisfied with the completeness of this proof.

While experimental pathologists are testing this question, we may for the time assume that there are two entirely different pathological processes by which true ovarian cysts are generated. 1st. The follicles of De Graaf may undergo a species of dropsy. The liquor folliculi, which they normally contain, becomes excessive, and distending the tunic and the discus proligerus which lines it, gradually creates a cyst. Cazeaux[1] once styled the Graafian follicles ovarian cysts in miniature, an aphorism which aptly illustrates this view. 2d. The development of cysts may occur in the stroma of the ovary without connection with the follicles. In the second case, according to Wedl, "the cyst consists in an excessive augmentation of volume of the areolæ of the areolar tissue and of the papillary new formations composed of connective tissue."

Lücke makes Rokitansky's view as to formation of these cysts in the stroma so clear that I use his words instead of turning to the original: "Cysts may also be generated by exudation into new formed connective tissue—the fluid distending the different bundles, and as they intersect in all directions, the globular form is the result; thus numerous small spaces communicate with each other, from their walls new cysts start, and thus very complex tumors can be formed."

Cysts from Liquefaction.

When we undertake the subject of composite tumors, that of cyst formation by liquefaction will be carefully investigated. I will only say of it here, that sometimes the structure of a solid growth will so entirely undergo retrogressive change that its characteristics of solidity will be exchanged for those of a fluid tumor. In my nineteenth case of ovariotomy I removed a tumor which was supposed to be a simple cyst. Upon removal, however, it

[1] Thèse pour l'agregation.

was found to consist of an adenoma weighing about three pounds, which was entirely concealed by extensive cystic degeneration. In another case of solid tumor, which I saw with Dr. Bloodgood, of Flushing, there was no appearance of cystic formation anywhere; but at the end of two months the solid mass was greatly obscured by large accumulation of fluid. It is not certain that liquefaction of the mass produced this result, but, as it will be seen when we treat of composite tumors, pathologists consider it more common than any other method of cyst production in solid growths.

The walls of fluid tumors consist of connective tissue.

Generally upon the excessive development of cysts the ovary undergoes atrophy, but sometimes, instead of so doing, it becomes hypertrophied and superadds itself to some part of the sac, leading to puzzling questions in diagnosis.

The fluid contained within these cysts differs greatly in chemical and physical characters. Sometimes it is a clear, albuminous serum of light straw color; sometimes it is thick, viscid, and adhesive; while at times it is a dirty brown and semifluid material. An analysis made by Dr. O. Rees, of four specimens: 1st, clear, light straw color, alkaline; 2d, dark-colored, muddy, and neutral; 3d, like white of egg, alkaline; 4th, clear, straw colored, yielded in varying proportions the following elements:

Water;
Albumen with traces of fat;
Albuminate of soda;
Alkaline chloride and sulphate of soda from decomposed albuminate;
Extractive, soluble in water and alcohol;

Chloride of sodium with carbonate, from decomposed lactate of alcoholic extract. In all the four specimens albumen was detected.

Varieties.—True ovarian cysts may assume a variety of forms. Those which serve as types for classification are the following:

Unilocular;
Multilocular;
Multiple.

The unilocular tumor consists of the formation of a single sac within the ovary. This may go on until the size of the uterus in the ninth month of pregnancy is reached. Kiwisch[1] has met with

[1] Op. cit., p. 102.

one whose contents weighed over forty pounds; but such a development is exceedingly rare, as they seldom remain simple after passing the dimensions of an adult head.

Such cysts are much less likely than others to contract adhesions to the viscera of the abdomen, and they therefore constitute the most curable of all the varieties of ovarian tumor.

Multilocular Cysts.—It has long been observed that from the walls of ovarian cysts, smaller cysts are likely to grow and project into the sac, or, more rarely, to develop externally and jut into the abdominal cavity. To these processes of cyst growth Mr. Paget has given the names of endogenesis and exogenesis, and thus we speak of a cyst resulting from the former variety of growth, as an endogenous cyst, and of one showing the latter, as exogenous. Every cyst thus produced constitutes a tumor, and gives to the previously simple sac the features of a multilocular growth.

Various theories have been advanced to explain this secondary cystogenesis. That which appears most plausible is that in the coat of the unilocular cyst, which is composed of stroma, undeveloped Graafian follicles exist. These, by the same process as that which resulted in the primary cyst, develop, and project inwards or outwards. Should they prove exogenous, they may subsequently rupture and create peritonitis, while if endogenous, their walls may give way and a communication be established with other vesicles originating as they did. These secondary cysts are likewise created by cell growth, which results in sac-like projections from the walls of the parent cyst. At first resembling warty growths, they jut farther forwards, increase in size, and become large cysts. These cysts are then miniatures of the parent cyst. In the cystic degeneration occurring from exudation into the areolæ of connective tissue, secondary cysts form in the walls of the primary growth precisely as this originally arose.

Multiple cysts, as they have been aptly styled by Dr. Farre, are simply the development, side by side, of a number of Graafian follicles, or of cysts developing independently, as Wedl asserts. These are bound together in the same envelope, and really constitute one tumor, although at the same time they are composed of a number of cysts which are perfectly independent of each other. It is true that intercommunication may take place, but this is an accidental occurrence due to rupture of the cyst-walls.

The fluid contained in multilocular and multiple ovarian tumors is not generally so clear as that of the simple or unilocular variety. It is often as tenacious as honey or white of egg, so

thick, indeed, that it will not flow through a large canula, and may assume very dark hues. At times it is colored by cholesterine, blood, or pus, and is brown, red, or like coffee-grounds.

The size to which these cysts will grow is truly wonderful. It has been already stated that unilocular or monocystic tumors rarely attain a great size as such; they become, as they increase, multilocular or polycystic, and then their growth may become excessive. Instances are on record of tumors containing over one hundred pounds of fluid, and Dr. Copland, in the Dict. of Pract. Med., tells of an instance in which five hundred pints of fluid were drawn off by repeated tappings, in twelve months.

One or both of the ovaries may be affected, the right being that most frequently selected by the disease. The comparative frequency with which the right and left ovary are affected is shown by the following table:

Authority.	No. of cases.	Right side affected.	Left side affected.	Both sides.
Safford Lee, . . .	93	50	35	8
Chéreau, . . .	215	109	78	28
Scanzoni, . . .	41	14	13	14

Causes.—Very little is positively known upon this subject. The predisposing causes which are generally admitted are the following. It should be borne in mind that even as to some of these there is doubt and variance of opinion among Gynæcologists.

Age;
Childbearing;
Chlorosis;
Scrofulous diathesis;
Menstrual disorders.

The great predisposing cause is age, the affection showing itself almost invariably during the period of ovarian activity, and very generally during that of the most vigorous activity. It is rare under twenty and over fifty, the most common period of its occurrence being between twenty and forty. It may, however, occur as early as thirteen or fourteen, and as late as sixty, and a slight degree of cystic degeneration has been seen in infancy.

Scanzoni records 97 cases, 70 of which were from 18 to 40.
Chéreau " 230 cases, 133 " " 17 to 37.
Lee " 135 cases, 82 " " 20 to 40.

Of Scanzoni's cases five were between fifty-five and sixty; of Lee's one hundred and thirty-five cases, eighty-eight were married, thirty-seven unmarried, and eleven widows. With reference to the propriety of admitting the other causes there is much doubt.

The uncertainty existing as to the exciting causes is even greater than this. All those influences which theoretically would be likely to excite cystic growth, as ovaritis, blows, checking of menstruation, excess of coition, libidinous desires without gratification, have been advanced by authors as scientific certainties. But proof is wanting, however plausible the theoretical reasoning appears, and they cannot in the present state of science be admitted. "Our knowledge," says Graily Hewitt, "of the pathology of cystic disease, as ordinarily witnessed in the ovaries, seems reduced to this: that it is the business of the ovary to secrete cysts—the Graafian follicles; that this process of secretion is occasionally disturbed and deranged, and that one result of this is the production of large cysts of pathological character." This is reducing our knowledge to almost nothing, and yet such appears to be its true equation at present. Certainly nothing can with safety be predicated beyond this, that it is probable that those influences which keep up and intensify ovarian congestion, and interfere with rupture of the follicles of De Graaf, tend to produce cystic and follicular degeneration.

Symptoms.—The symptoms which develop themselves in the course of the disease are due to three separate and distinct agencies: disorder in the diseased ovary, mechanical inconvenience from the abdominal mass, and complications caused by its presence. The first demonstrates itself by dull pain over the iliac fossa, and a sense of fulness or throbbing. The second gives rise to dragging pains, dysuria, rectal disorder, and local fatigue after exertion. The third shows the ordinary signs of localized peritonitis, which may become quite active and then subside. None of these, except the last, which is an intercurrent accident, are generally very marked. They are usually only sufficient to suggest physical examination, by which reliable signs will probably be discovered, and the diagnosis be made complete.

Physical Signs.—These are of the greatest importance, and the full capacity of physical exploration should in every case be developed, for to it we must look for answers to the following questions:

1st. Does a tumor exist?
2d. If so, is it ovarian?
3d. If it be ovarian, what is its type?
4th. If a fluid ovarian tumor, is it multilocular?
5th. Is it adherent to surrounding parts?

Does a tumor exist?—To decide this question, the patient should be placed upon her back upon a flat, resisting surface, the abdomen uncovered, all stricture removed from the waist, and the knees drawn up so as to relax the abdominal muscles. It is of primary importance that she should be calm, and give herself up to the examination in the full desire of aiding the physician in arriving at a diagnosis. In some cases the patient, from nervousness, in some from pain created by pressure, and in others from a desire to mislead and deceive, will not be able or willing to do this, but, by suddenly contracting the abdominal walls, will place a serious, perhaps insurmountable, obstacle in his way. Under such circumstances ether should be employed as an anæsthetic, and full investigation made. The abdominal muscles being entirely relaxed, careful palpation and deep pressure should be made by both hands over the whole abdomen, and especially over the pelvic region. By this means a hard, resisting mass may be discovered, which produces an abdominal enlargement visible upon inspection.

Thus far very little has been learned; merely that an abnormal enlargement exists in the abdomen. It may not deserve the significant name of tumor, but be due to one of these states:

Adipose deposit in abdominal walls;
Œdema of abdominal walls;
Tympanites.

Very little experience will enable one to eliminate the first from consideration. An equable, smooth mass will be felt spread over the whole abdomen, yielding upon percussion slight resonance, which comes from air in the subjacent intestines. The most certain method of recognizing the condition will consist in lifting in the fingers or hands a large fold of the mass.

Œdema will be known by pitting upon pressure, by the existence of the same condition in the areolar tissue of the feet or face, and by its generally attending uræmia, chlorosis, or cardiac disease.

Tympanites will be readily recognized by extreme resonance upon percussion over the whole abdomen.

It having now been decided that the patient has an abdominal

tumor, or, in other words, an abdominal swelling due to a morbific cause of serious nature, it next becomes important to decide, not as to the character of this tumor, but whether it be ovarian or not.

Is the tumor ovarian?—It has been already stated that any abdominal tumor may, unless careful means of differentiation are adopted, be confounded with ovarian growths. The truth of this will be appreciated by reference to the valuable tables of Dr. John Clay, the translator of Kiwisch on the ovaries. He has collected twenty-three cases of attempted ovariotomy in which the operation was abandoned because the tumor proved not to be ovarian. The tumors were of the following characters:

12 were uterine;
2 " omental;
2 " results of chronic peritonitis;
2 " not discoverable;
1 was tubal pregnancy;
1 " obesity;
1 " mesenteric;
1 " splenic;
1 " not stated.

This part of our subject would be uselessly prolonged by an examination of the means of differentiating all forms of abdominal tumor, as, for example, enlargements of the liver, spleen, &c. All that I conceive it necessary to do is to enumerate those affections likely to be confounded with ovarian tumor by a practitioner of reasonable capacity, and point out the reliable means of distinguishing these. The following is a list of them:

Fecal accumulation;
Extra-uterine pregnancy;
Normal pregnancy;
Fibro-cystic tumors of the uterus;
Ascites;
Hydatids;
Distension of uterus by fluids;
Cystic degeneration of a kidney;
Sub-peritoneal cyst;
Cyst of broad ligament;
Colloid accumulation in the peritoneum.

Fecal matters sometimes accumulate to a great extent in the caput coli, and even along the course of the large intestine. A

little care will generally serve to distinguish such a tumor from one connected with the ovary. One or two fingers made to impinge with force upon it per vaginam, while it is steadied by the other hand placed on the abdomen, will reveal its yielding, "boggy" nature. Should any doubt exist, a course of catharsis would remove it.

Pregnancy, whether uterine or extra-uterine, affords abundant evidences of its existence in the rational and physical signs of that state. Should doubt exist here, a little delay will decide the diagnosis fully. Error is likely to arise in reference to differentiating this state, either from the possibility of its occurrence being lost sight of, or from the examiner placing reliance upon the asseverations of a woman who has every inducement to deceive him.

To state that there are many difficulties attending the differentiation of uterine cysto-fibroma and fibroids from ovarian tumors, would be to leave on the mind of the inexperienced practitioner a very imperfect and erroneous impression. In some instances it is not only difficult but utterly impossible, even for the most capable and accomplished diagnostician, to arrive at a certain conclusion. Quite a number of cases are now on record where experienced operators have not only opened the abdominal walls under an erroneous impression as to the nature of the tumor, but absolutely removed the morbid growth and the uterus from which it grew before a diagnosis was made. Fortunately this obscurity is exceptional. In most cases the origin of the tumor may be determined by the following means:

In Uterine Fibroids and Cysto-Fibroma.	In Ovarian Tumors.
1st. There is usually menorrhagia;	1st. Menorrhagia does not exist as a rule;
2d. The uterus, measured by the sound is enlarged;	2d. Uterus is not enlarged;
3d. Mass felt per vaginam is irregular and continuous with uterus;	3d. Mass felt per vaginam is smooth and not continuous with the uterus;
4th. There is generally leucorrhœa;	4th. There is no leucorrhœa;
5th. Sound placed in utero and made to move the uterus, the tumor felt by hand on abdomen moves also;	5th. The uterus may be moved without the tumor moving;
6th. The uterus is generally displaced;	6th. The uterus is not so markedly displaced, although it may be somewhat so;
7th. There are often several tumors;	7th. There is generally only one tumor;
8th. The tumor is always hard, if purely fibroid; hard and soft in spots if fibro-cystic.	8th. The tumor, if of fluid type, fluctuates.

From abdominal dropsy or ascites a differentiation is often extremely difficult, and always so important that a careful consideration is necessary.

In Ovarian Dropsy.	In Ascites.
1st. A small, round tumor will have shown itself in the beginning in one iliac fossa;	1st. The enlargement will have shown no small tumor at any point;
2d. In supine posture a rotundity is observed in the abdomen;	2d. In supine posture the fluid gravitates to sides of abdomen, and the abdominal surface is flattened;
3d. Percussion made in supine posture gives dulness over surface of abdomen;	3d. Percussion gives resonance over abdominal surface because the intestines float on the fluid;
4th. Change of posture alters line of dulness but little;	4th. Change of posture greatly alters line of dulness;
5th. No pouching and fluctuation are noticed by vaginal touch of Douglas's cul-de-sac;	5th. Douglas's cul-de-sac is distended by fluid, which fluctuates;
6th. No evidences of cardiac, renal, or hepatic disease exist;	6th. Evidences of cardiac, renal, or hepatic disease almost always exist;
7th. Skin is normal as to color, moisture, &c.;	7th. Skin, in majority of cases, gives evidences of cirrhosis by its parchment feel and jaundiced hue;
8th. Patient rolling in bed, no wave will be detected by inspection;	8th. Patient rolling in bed, a wave will be detected in the abdomen;
9th. Œdema of the feet is absent until a late period, when the patient has become exhausted.	9th. Œdema of the feet exists as an early sign.

From hydatids in the abdomen, the diagnosis of ovarian tumor will generally be practicable only by explorative incision, unless those growths be developed only upon the organs in the upper part of the abdomen. If the mass exists above the ovaries; if the patient be not a menstruating woman; or if such a development have been detected elsewhere in the system, all these considerations will, of course, prove of great weight in deciding the point. Dr. Bright, in his work upon *Abdominal Tumors*, gives illustrations of this affection, the differentiation of which from ovarian tumors would have been entirely impracticable unless the cases had been seen early and kept under observation.

Spiegelberg,[1] of Breslau, reports a case in which he mistook an echinococcus cyst of the right kidney for an ovarian cyst, and extirpated it. The patient died of collapse in twenty-six hours. He remarks in connection with it that explorative puncture would have saved him from the error.

[1] Transac. Insbruck Convention.

A case of hydronephrosis of the left kidney, creating error in diagnosis, is recorded by Baum;[1] and one of the right kidney by Simon[1] of Rostock. Both cases were mistaken for ovarian cysts. In the former the cyst was punctured, and on account of adhesions with the intestines the operation was given up, the cyst walls being sewed to the abdominal opening. Patient died on third day from peritonitis. In the latter the cyst was punctured, hemorrhage checked, and abdominal opening closed. Patient died of peritonitis on fifth day.

The point of origin of the tumor, its small size compared with a developed ovarian cyst, and its lateral location, may possibly serve to excite suspicion, which may be corroborated or set at rest by paracentesis or explorative incision. Subperitoneal cyst and cyst of the broad ligaments can be differentiated by one means alone,—explorative incision. A skilful diagnostician will often strongly suspect the existence of colloid disease affecting the omentum or peritoneum, but puncture or the use of the exploring trocar will usually be necessary for a positive conclusion as to the nature of the disease.

The tumor being ovarian, what is its type?—It must, of necessity, be either a fluid tumor, a solid tumor, or one of composite character. Should it be of the first form, its character will be ascertained by fluctuation being yielded perfectly over all its surface, and also by vaginal palpation, which is performed by placing one finger on the tumor where it rests against the roof of the pelvis and tapping with the other hand upon the abdominal wall. Should it be solid, the sense of resistance everywhere felt and the absence of fluctuation would proclaim the fact. A composite tumor, or one solid in some parts and fluid in others, would be recognized by a union of the features mentioned as characteristic of each of the other varieties.

These are the means by which a classification of the tumors must be made, but let it not be supposed that the task is always an easy or even a practicable one. There are certain forms of cancer, the medullary, for example, which yield to all appearances the character of fluidity, and yet contain solid elements. This is the case even with cystic sarcoma. Some years ago I saw, in consultation with Dr. Peaslee, whose name as an ovariotomist has become so justly celebrated, a lady from Texas, in whose abdomen there existed a large and apparently fluctuating tumor, which we

[1] Grenser, loc. cit.

supposed to be ovarian. It was exposed by incision by Dr. Peaslee, and found to be a cystic sarcoma connected with the uterus. The case ended fatally, removal of the tumor proving impossible.

I once saw, with Dr. John O'Reilly, an immense tumor, evidently of the ovary, in which fluctuation was clear, yet, upon removal, a cystic sarcoma was discovered to have yielded the delusive sign.

On another occasion I had a patient presenting all the usual signs of fluid ovarian tumor so perfectly that Drs. Peaslee, Loomis, Budd, and myself, had no doubt as to the diagnosis. Upon incision and tapping no fluid flowed, and I removed a cystic sarcoma of fourteen pounds weight. As it lay upon the table after the operation it was examined by a number of physicians, and nothing could convince them even then that its contents were not fluid, except section of the mass.

When doubt exists upon this point, it can be removed only by removal of a minute portion of the contents of the tumor by one of the four methods which I hereafter describe as the crucial diagnostic tests of abdominal tumors.

Is the tumor, which is now regarded as fluid ovarian, multilocular? —We need not stop to inquire very closely into the means for ascertaining whether it be hydatid ovarian cyst, true ovarian cyst, or Wolffian cyst, for at the bedside these questions do not often suggest themselves. The reason for this is, that hydatid cysts of the ovaries are merely curiosities thus far in professional experience, which have been seen by very few even of the most experienced ovariotomists. Wolffian cysts and dropsies of the Fallopian tubes do not, as a rule, grow as large as ovarian cysts, but otherwise there are no means except explorative incision which can differentiate them. The same remark is especially applicable to areolar cysts of the broad ligaments, between which and true ovarian cysts no diagnostic signs exist except those obtainable after incision.

The question as to the tumor being unilocular or multilocular is of importance, for the prognosis of the former is more favorable with reference to operative procedure than that of the latter. The following signs will be our surest guides to a determination of this question:

Should secondary cysts be exogenous, the cysts outside of the original parent cyst may be felt by palpation. Should they be endogenous, however, this means would fail us.

Although in a few instances large unilocular tumors have been

seen, for example, one by Kiwisch weighing forty pounds, ovarian cysts after passing the size of the adult head generally become multilocular.

If explorative tapping give a tenacious or honey-like fluid, the tumor is probably multilocular; if a clear, straw-colored liquid, it is probably unilocular.

Is the tumor adherent to surrounding parts?—In many cases this can be determined only by explorative incision, but in a certain number it may be decided without this with an approximation to certainty that firm adhesions do or do not exist. The following are the grounds upon which an opinion may be based:

If the case have developed very rapidly and be believed to be unilocular, there are probably no adhesions.

If there have been symptoms of peritonitis, there are probably adhesions. If the case have been painless, there are probably none.

Should the abdominal walls roll freely over the tumor, the patient lying upon her back, and should the tumor fall low in the abdomen as she suddenly sits up, there are probably no anterior adhesions. But posterior ones may exist and not be suspected from this examination.

If, upon vaginal examination, the uterus and base of the tumor exhibit immobility such as is found in pelvic peritonitis, and if, upon change of posture from erect to supine, these parts do not retreat from the finger in the vagina, there are in all probability strong pelvic adhesions.

All these signs are unreliable, however, and disappointment will surely follow any great degree of confidence which is reposed in them, but a compensation is to be found in the fact that even firm adhesions do not contraindicate removal.

It is always desirable to know the length of the pedicle. This point can be approximatively settled in a certain number of cases, by the means recommended by Tixier[1] of Strasbourg. He says:

"Practice and observation have enabled us to diagnose, in certain cases, the probable length and variety of the pedicle. Certain objective and subjective signs may guide the practitioner and facilitate his diagnosis; a very important matter, since on the length of the pedicle often depends the success of the operation.

"We have hitherto been able to diagnose with almost perfect certainty three varieties: the long, short, and twisted pedicle.

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[1] Le Pédicule et son traitement après l'Opération de l'Ovariotomie, Strasbourg, 1869; Archives Générales de Médecine, Juillet, 1870.

"*The long pedicle.*—The form of the abdomen has a peculiar aspect; this is the form *en besace*. The hypogastric portion of the abdominal wall is applied to the internal surfaces of the thighs, and the ovarian tumor, forcibly projected forwards, seems to be removed from the superior entrance of the pelvis. A vaginal examination reveals an elevation of the cervix uteri, and the index finger passed into the pelvic excavation does not meet with the tumor at any point. The womb is very movable and can be readily displaced. The collection of these symptoms induces one to presume that there is an elongated condition of the broad ligament and of the Fallopian tube, a condition favorable for forcing the pedicle without the abdominal wound.

"*The short pedicle.*—The existence of the short pedicle may be assumed in the presence of the following symptoms: in the first place, the form of the abdomen differs from that described above; one may observe a lateral extension without pronounced prominence of the medium portion. In attempting to introduce the tip of the finger between the tumor and the pubes, one feels through the skin that the growth passes into the pelvic excavation; its base seems to be seated over the pelvic opening. The vaginal touch denotes a sinking of the cervix uteri, and a more or less pronounced immobility of the womb. If the pelvic excavation be then explored with the finger, one feels that it is not free, and that certain parts of the tumor are contained within it. In the presence of these facts the surgeon may assume that there is a greater or less degree of shortening of the pedicle.

"*The twisted pedicle.*—At first sight this torsion seems difficult to determine. It may, however, under certain conditions be diagnosed with greater certainty than the two preceding varieties. Its existence may be concluded whenever the following symptoms have been observed:

"The patients experience at intervals very acute pains radiating downwards along the vein corresponding to the affected ovary, and upwards to the lumbar region on the same side. These pains are excited by work and fatigue. They break out also when the patient is in bed, and when she wishes to change her position. One hears also from these patients of very strong uterine cramps analogous to those occasioned by deligation of the pedicle. The cystic fluid is more or less deep in color, presenting a hæmorrhagic appearance. The touch in these cases gives no precise indication. One can only acquire the idea of the existence of an habitually long and thin pedicle in cases of this kind."

Although I have not been able to draw as positive and certain conclusions in reference to determination of the length and character of the pedicle, by aid of these means, as Mr. Tixier has, I nevertheless regard his suggestions as valuable, and well worthy of application to every case in which ovariotomy is contemplated. One rule which I have found very reliable is this; if the tumor

be found far up, out of the pelvis, upon vaginal examination the pedicle cannot be very short. If in the case of a tumor which is not very large, it be fixed in the upper part of the pelvis so that it cannot be pushed out, the pedicle is probably a short one. The efficacy of the sign may be increased by examining in the knee-elbow position.

When doubts exist upon any of the points here stated, which cannot be removed by those means of investigation which are limited by the abdominal walls and pelvic roof; which, in other words, extend to but not beyond the peritoneum in their immediate application, there exist four methods of exploration which bring the explorer into direct contact with the interior of the abdomen and of the tumor. Those positive, and reliable means, which may justly be styled the crucial tests of abdominal tumors, are the following:

The exploring needle;
Tapping;
Puncture;
Explorative incision.

To three of these a certain amount of danger undoubtedly attaches; but when compared with the great danger arising from operation upon an uncertain diagnosis, it sinks into insignificance. Many an inappropriate case has been submitted to the operation of ovariotomy which would have been spared it, with the promise of a prolongation of life, had one of these methods previously thrown light upon the diagnosis. They are of course not to be confined to determination of the character of a tumor alone, but may be employed to ascertain the origin, attachments, and complications of any abdominal growth.

The exploring needle, when passed through the walls of the abdomen and made, by suction or by capillary attraction, to remove some of the contents of the sac, does, on a small scale, what tapping does on a larger. It has these great advantages over paracentesis: it is almost painless, and is unattended by danger, for even if the needle penetrate intestine or a solid tumor which has been mistaken for a cyst, no evil result is likely to ensue. This method of investigation may be practiced in two methods: by the syringe and needle of Dieulafois, or by the ordinary hypodermic syringe, as advised by Walker. Dieulafois's instrument consists of a metal or hard rubber syringe capable of holding about two ounces, which is attached as a pump to a long, steel needle after

this has been plunged into the sac. The objections to its general use are these: its cost is quite large and it very easily gets out of order from disuse. It may be supplemented by the hypodermic syringe, which every practitioner will have at hand. The use of this instrument, which was suggested by Dr. H. F. Walker and practiced by myself before our knowledge of that just described, consists simply in plunging the needle with syringe attached through the abdominal walls at different points, drawing out as much fluid as possible, and expelling this into a test-tube for examination. This method serves to determine the following points: 1st, whether a tumor is fluid or solid; 2d, whether it contains clear, non-albuminous fluid or ichorous and irritating material; 3d, whether it be multilocular or not. I have resorted to it many times, and have never yet seen inflammation result from it.

Tapping offers some advantages which the exploring needle does not possess; but these are furnished at the expense of certain dangers which it is never safe to ignore. Let it be remembered that the danger of tapping ovarian tumors, even of purely fluid character, is not a matter of opinion, but one put beyond doubt by statistical evidence. Of[1] 130 instances of first tappings analyzed by Kiwisch, 17 per cent of the cases died within a few hours or days after the operation. This is certainly a mortality to be greatly dreaded, especially when the operative procedure which induces it is not curative, but one resorted to merely for palliation or the accomplishment of diagnosis.

The dangers resulting from tapping are peritonitis from escape of the irritating contents of the cyst into the peritoneum; inflammation of the walls of the cyst from admission of air; and septicæmia from absorption of the contents of the cavity, rendered more or less putrid by atmospheric contact. All these may be to a certain extent avoided by careful and complete emptying of the cyst while the patient lies upon the side with the abdomen over the edge of the bed; by thorough washing out of the sac by copious injections of warm antiseptic fluids; and by keeping the patient perfectly quiet in the dorsal decubitus, and under the gentle influence of opium for a week after operation. But even these efficient means do not entirely remove the danger. The advantages of tapping are, that it not only gives us the certain knowledge of the contents of the tumor, but by emptying the ab-

[1] Hewitt, op. cit, p. 637.

dominal cavity allows of full appreciation of the size, shape, and general characters of remaining growths in or near the pelvis.

Puncture of the abdominal walls by an ordinary lancet is now greatly in vogue in Great Britain as a method of diagnosis. According to Dr. P. Grenser[1] it is thus practiced: a lancet is thrust through the abdominal walls into the cyst, and through the opening thus made a silver tube to which a rubber one is attached is passed in and employed as a drain and then as a probe for the abdominal cavity.

Of all the means for definite and certain settlement of the question of diagnosis in abdominal tumors, I esteem explorative incision most highly. If practiced with caution and dexterity, it is attended with not much greater risk than tapping or puncture, while it gives much greater facility for exploration. While the other methods may be practiced several days or even weeks before the operation of ovariotomy, this should constitute or rather be merged into its first step. If it yield information which makes us decide against operation, the opening made should be closed; if the light which it throws upon diagnosis lead us to favor the radical procedure, it should be at once enlarged and prolonged into the primary abdominal incision.

Explorative incision should be thus performed. The patient having been prepared for the procedure exactly as if we had determined upon ovariotomy, she is placed upon the table and surrounded by assistants, &c., as in the case of the radical operation. An incision is then made by the bistoury upon the median line, one inch in length. This is carried down to the tumor and the finger is at once gently swept over this in every direction, so as to ascertain its character. The tumor may be tapped with a *very small trocar:* so small that the opening made will soon close if it be deemed best to desist from radical operation. If the sac be emptied by this means, the finger is then passed into the abdominal cavity and complete exploration made. If it be not emptied, a sound should be passed into the uterus and one finger carried down through the abdominal opening to the fundus uteri to ascertain as accurately as possible the origin and attachments of the solid mass. In case abdominal effusion have existed, this of course at once flows away, and any growth existing in the abdomen comes at once within reach of the finger. Should this appear to the touch to feel like a growth of malignant character, a

[1] Brander's résumé, R. and L. Med. Jour., April, 1871.

portion of it may very cautiously be removed by the finger-nail for microscopic examination. Cystic or simple adenoma of the ovaries gives to the touch very much the sensation of malignant growths. The microscope alone will decide as to their true nature. The fluids removed by tapping should be chemically and microscopically examined.

Natural History.—Ovarian dropsy develops either by one or by a number of cysts. In the first case the cyst may become fully distended by fluid, reach a point where its growth ceases and remain quiescent, only annoying the patient by the mechanical results of its presence and the apprehension that it may increase and create trouble. There are no grounds for doubting the evidence that such tumors may remain without increase for even forty or fifty years, but such cases are rare exceptions to a general rule. "Much mischief has resulted, however," says Dr. Graily Hewitt,[1] "from looking on such cases as the typical ones, while the large majority of the cases, the end of which is naturally death in a much shorter time, have been considered as the exceptional ones."

We now and then meet with pulmonary tuberculosis which goes on to formation of a large cavity, and then for some unaccountable reason ceases to advance. The cavity, which is distinctly discernible, remains quiescent, and the patient may live for years. As this is an exception in the natural history of phthisis, so is the tardy course of ovarian dropsy just alluded to an exception to the usual course of that affection. Generally the monocyst, as it grows, develops the power of cysto-genesis and becomes polycystic. If its type be originally multiple, the tumor advances even more rapidly, certainly, and uncontrollably, than in the case just mentioned. The prognosis of ovarian dropsy not interfered with by art, and by this we mean surgical art, as medicine has no controlling or curative power in the disease, is always unfavorable. In the great majority of instances unilocular disease changes its character to multilocular, and the average duration of the cases of both is supposed by the best modern authorities to be about three years of life after the inception of the affection.

Mr. Safford Lee has collected statistics as to the duration of the disease in 123 cases, not subjected to any curative surgical treatment.

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[1] Op. cit., p. 585.

In	38	the	duration	was	.	.	.	.	.	1	year.
"	25	"	"	"	.	.	.	.	.	2	years.
"	17	"	"	"	.	.	.	.	.	3	"
"	10	"	"	"	.	.	.	.	.	4	"
"	4	"	"	"	.	.	.	.	.	5	"
"	5	"	"	"	.	.	.	.	.	6	"
"	4	"	"	"	.	.	.	.	.	7	"
"	3	"	"	"	.	.	.	.	.	8	"
"	17	"	"	"	.	.	.	.	9 to	50	"

From this it will be seen that out of 123 cases 80 terminated within three years, and 94 within five. At the same time it must not be lost sight of that 17 out of 123 cases lasted over nine years, and that some, the number of which is not stated, terminated at the end of fifty. Sometimes nature effects a cure in the following ways. The cyst may discharge into the peritoneum and absorption occur. Of this accident Dr. Tilt has collected 71 cases, of which 30 recovered, 19 were improved, and 21 died. I have met with two instances of rupture, both of which proved fatal by peritonitis. The cyst walls may undergo calcareous degeneration, which checks advance. The cyst may discharge externally by the abdominal or dorsal surfaces, or into the rectum, bladder, vagina, or uterus by means of the Fallopian tubes. Instances of the last occurrence are mentioned by Morgagni, Frank, Follin, and Boivin, and Richard records five cases. Again, surgical means, ordinarily palliative, may prove curative. There are a limited number of cases on record in which paracentesis has produced a favorable result.

With reference to nature's power alone, or aided by absorbents, to remove the accumulated fluid, Kiwisch[1] declares, "We must express our dissent from the opinion of those practitioners who assume that an ovarian cyst can be completely removed by simple absorption. So far as we know, this process has not been satisfactorily demonstrated by a single case." M. Courty relates two instances in which he thinks that cure was effected by medical means. A prolific source of error in this connection is the fact that subperitoneal cysts, and cysts of the broad ligaments, are very apt to be confounded with true ovarian cysts. The greater curability of the two former varieties by tapping, accidental rupture, &c., is well established.

There are several modes in which ovarian dropsy produces its usual fatal results when unchecked by surgical means.

1st. A cyst may rupture and produce peritonitis.

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[1] Op. cit., p. 119.

2d. The patient may die from exhaustion, the result of functional derangements.

3d. Organic diseases produced by mechanical agency of the tumor may destroy life.

4th. The opening made by tapping may give exit to a discharge which exhausts the patient by its long-continued drain.

Before leaving this part of the subject it may be well to sum up the grounds upon which a prognosis may be safely made.

If the patient be young, the prognosis as to rapidity and certainty of growth is bad;

Unilocular tumors are most favorable;

Slow antecedent growth is favorable;

Solid matter in tumor is favorable as to growth, unfavorable as to cure;

The occurrence of the menopause is favorable;

Interference with surrounding organs, as the rectum, bladder, kidney, or stomach, is highly unfavorable;

A tumor firmly bound in the pelvis causes an unfavorable prognosis.

Treatment.—The medical treatment of ovarian dropsy by diuretics, hydragogue cathartics, diaphoretics, mercurials, absorbents, mineral waters, &c., has now been faithfully tested and found to be inefficacious. After a careful search through the records of the subject, one is forced to the conclusion that an extremely small number of cases exists substantiating the possibility of the accomplishment of absorption by these means. All that can be anticipated in these cases from medication is sustaining the nervous and sanguineous systems by tonics and stimulants; overcoming disordered functions by diaphoretics, cathartics, diuretics, and anti-emetics; and relieving local inflammations by the ordinary means usually resorted to under such circumstances. I am the more urgent in insisting upon the fact of the inefficacy of constitutional treatment, because I rarely meet with a fully developed case of ovarian dropsy at my clinique which does not bear evidence of a variety of attempts by cupping, leeching, blistering, inunction, painting with iodine, and correspondingly active internal treatment, to dissipate the accumulation. There is but meagre proof extant that such means have effected cures, and there is nothing more certain than that they lower the tone of the system and depreciate the vital forces. A recognition of this fact led Dr. W. Hunter,[1] before the introduction into

[1] Baker Brown, op. cit.

practice of the present methods of surgical treatment, to say that, "the patient will have the best chance of living long under it, ovarian dropsy, who does the least to get rid of it."

It is to surgery that we must look for aid, and the following list represents the means at our command. It does not by any means represent all the measures which have been proposed and practiced, for such a list would incumber the mind of the reader with much that would be of no practical importance. Only those methods are recorded which are to-day regarded as well-recognized and reliable procedures:

Tapping;
Drainage;
Incision;
Injection of the sac;
Partial excision;
Ovariotomy.

Tapping.—The operation of paracentesis, or tapping, consists of the introduction of a trocar and canula through the walls of a sac containing fluid, and allowing this to flow away. Of all the operations for relief of ovarian dropsy this is the oldest, and the one most frequently performed. The advantages which it offers are, facility of performance, quickness of relief, and immunity, to a certain extent, from the dangers which attend other surgical procedures adopted in these cases. It likewise enables us to decide with greater certainty concerning the diagnosis of the disease.

It is, however, attended by serious disadvantages, and although in a limited number of cases it has proved curative, it should never be practiced with any reliance upon its doing so, for in the great majority of instances it is purely palliative. Furthermore it is attended by the immediate dangers of hemorrhage and peritonitis, and by the more remote one of exhausting discharge from the sac which may continue so long as to wear out the patient's strength. M. Courty collates one hundred and thirty cases treated in this way by Kiwisch, Lee, and Southam, of which these are the results:

46	died	after	the 1st tapping.
10	"	"	2d "
26	"	"	3d to 6th tapping.
15	"	"	7th to 12th "
13	"	"	12th tapping.

Of 20 of these cases by Mr. Southam, 4 died within a few hours after the operation, 3 within the first month, and 14 within nine

months. Kiwisch lost 9 out of 64 within twenty-four hours after the first tapping. Dr. Fock,[1] of Berlin, gives the following table, displaying the dates at which death occurred after first operation in 132 patients:

25	died within	a few	days.
24	"	"	6 months.
22	"	"	12 "
21	"	"	24 "
11	"	"	36 "
29	only were alive at end of last date.		
132			

It will thus be seen that reliable statistical evidence places this procedure in the position of a palliative means which is generally followed by advance of the disease, and not rarely by immediate evil results. Still it must not be lost sight of that death may be warded off by the operation, many existing evils alleviated through the course of a period, varying from ten to twenty-five years, and that, in a few cases, complete cure has been effected. Dr. Ramsbotham records an instance in which one hundred and twenty-nine tappings were performed in eight years, and four hundred and sixty-one gallons of fluid removed; and Dr. Martineau another, in which eighty operations evacuated in twenty-five years seven hundred and twenty-nine gallons.

In stating, on a previous page, that a limited number of cases attested the curative results of tapping, I would not be understood that such cases are in themselves very rare. They are really not so; it is only in proportion to the cases tapped that they are few in number. Prof. Simpson reports two cases, and Prof. Scanzoni three, in which a single tapping was followed by complete recovery. A similar case has been reported to me by Dr. Finnell, of this city, as having occurred in the practice of Prof. Bedford. Mr. Baker Brown thinks that most of such cases were instances of Wolffian or Fallopian sacs, and not actually ovarian dropsy. But such sacs are usually not large, and probably some of the instances on record were not of those forms. Take, for example, the following by Kiwisch: "We saw this favorable result set in after the second puncture of a colossal ovarian cystoid, which Prof. Pitha performed in such a manner that the tumor which had previously contained more than sixty pounds of fluid, became shrivelled to the size of a child's head, and for six years caused the patient no

[1] Simpson, op. cit., p. 347.

inconvenience at all, who had formerly been reduced to the last extremity, but now is very well."

The circumstances which indicate the propriety of paracentesis are, rapid accumulation which interferes with some important function; coexistence of ovarian disease with pregnancy; solitary character of the cyst; firm adhesions which bind the tumor down so as to prohibit a more radical procedure; great doubt as to diagnosis; or constitutional debility, which prevents the tolerance of a more serious operation. The operation may be performed through the abdominal, vaginal, or rectal wall.

Tapping through the abdominal wall.—The patient being placed upon the side, a many-tailed bandage, such as is employed in paracentesis abdominis, is passed around the body. Its ends being held by assistants, traction upon them makes firm pressure, evacuates the tumor, and prevents syncope. By means of a bistoury, a small incision, a quarter of an inch in extent, is made upon the linea alba, midway between the symphysis pubis and umbilicus.

Fig. 223.

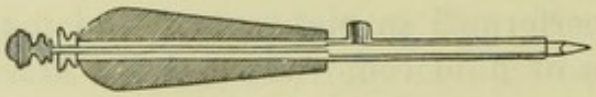
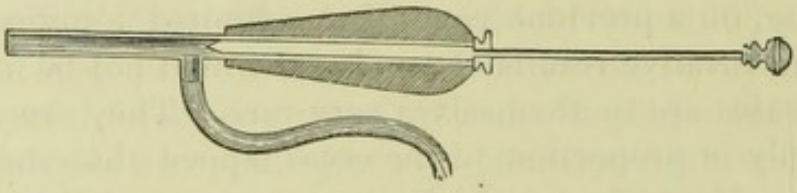


Fig. 224.



A large and long trocar is then plunged through the two layers of peritoneum and the wall of the cyst. Through the canula thus introduced a flow of fluid will take place, which, if such an instrument as that represented in Fig. 223 be employed, will be conducted by an India-rubber tube attached to the canula into a tub placed by the side of the bed upon which the patient lies. Should this tube not be employed, a convenient vessel may be held under the stream and emptied into a larger one when it is filled.

Should other cysts be felt through the abdominal walls after emptying the main one, the trocar may be again introduced and the canula made to empty them.

In performing the operation the practitioner should remember that one of the greatest dangers resulting from it is the occurrence of peritonitis. It is highly probable that this is excited not by the

puncture, but by subsequent escape into the peritoneum of fluid from the sac. To prevent this all the fluid should be removed which can possibly be got out before removal of the canula. Dr. Peaslee suggests washing out the sac with tepid water, and practices it in all his cases where the fluid is viscid. When the tumor is emptied of its contents, the abdominal wound should be closed by one or two silver sutures, the bandage tightened, a full dose of opium administered, and the patient kept quiet upon her back for at least a week. During this time the bowels should be kept constipated, the bladder evacuated by the catheter, and every influence which could excite peritonitis carefully guarded against. The dangers which follow the operation have been mentioned; those which attend its performance are perforation of the bladder, injury to the uterus or one Fallopian tube, and wounding the epigastric artery, or some large vessel of the cyst. The last cannot be avoided, while the means for avoiding the first three accidents are self-evident. Kiwisch asserts that there is seldom union between the wound in the cyst and the abdominal wall as a result of the operation, and such has been my own experience.

Tapping through the wall of the vagina.—This operation has been more or less in vogue for a long time. According to Kiwisch, it was first performed by Callisen in 1775, but has received little notice until modern times. Velpeau[1] declares that he advised it in 1831, and that it was adopted a few years afterwards by Nonat, Neumann, and Récamier. In Germany it has of late years been frequently resorted to, and Scanzoni gives the following reasons for preferring it to abdominal paracentesis. It "more often produces a radical cure than the other method just considered, and that especially because the cyst, opened in its lowest part, can empty itself more completely. If the puncture by the vagina were always possible, the abdominal puncture would soon entirely disappear from chirurgical practice; but unfortunately, this is not the case, for the conditions necessary for this operation are met with in but few patients; in fact, it is rare that the lower portion of the tumor descends sufficiently low into the pelvis to be accessible to the vaginal touch, and, furthermore, in many cases where the tumor can be reached, it does not present in its lower portion any cavity filled with liquid, but only solid masses of a sarcomatous, colloid, or cancerous nature." Kiwisch declares that he "unconditionally" prefers it to abdominal tapping, whenever it is practicable.

[1] Dict. de Méd., tom. xxii, p. 589.

The advantages of this operation will be appreciated from the following considerations. In abdominal puncture the wound made by the trocar in the walls of the abdomen is readily united by suture, but that in the cyst-wall remains open, and allows fluid to pour into the peritoneum. If this be of a bland character, it is readily taken up and eliminated by the emunctories; but if it be of an irritating nature, it creates peritoneal inflammation, which may go on, as has been shown, to a fatal issue. It is very evident that if the puncture be made in the most dependent portion of the peritoneal sac, the danger resulting from this condition will be diminished.

The operation is thus performed: the bladder and rectum having been carefully emptied, and the patient anæsthetized, she should be placed upon a table in the position for lithotomy. The operator then introducing the index, or, as is better, the index and middle finger of the left hand, places them against the most dependent and accessible part of the tumor. Upon the finger or fingers, a canula ten inches long is passed up and pressed against the tumor, the point of the trocar being drawn in a little. The operator then plunges the trocar through the vaginal walls into the tumor, and withdrawing it allows the fluid to flow away through the canula. The patient is then put to bed, quieted by opium, and guarded against all influences which might induce inflammation as long as such an accident is probable.

Tapping through the rectum.—Should the surface of the tumor be more accessible through the rectum than the vagina, or if for any other reason, as, for example, constriction, atresia, or inflammation of the vagina, it be deemed best to pierce the rectal wall, there is no objection to doing so. If a choice be admissible, however, no special reason pointing to the rectum as the proper point of approach, it would be best to operate through the vagina. From this canal, fluids escape without effort on the part of the patient, and with less annoyance to her, while from the rectum they can pass only by a voluntary act which exhausts her strength, and annoys her by the necessity of frequent repetition.

Thus far we have considered the operation of paracentesis ovarii merely as a palliative procedure, proving curative only exceptionally. The evil which is most uniformly active in preventing its curative effects, is rapid reaccumulation of fluid in the cyst. Indeed, the operation often seems to give vigor to this process, and as each accumulation robs the blood of some of its nutritious elements, a repetition of the act of emptying the sac rapidly exhausts the patient's strength. The observation of this

fact has led to the adoption of the method of which we come next to speak.

Drainage.—It has long been noticed that in a small number of cases ovarian cysts empty their contents through the rectum or vagina, and continuing to discharge, either never refill, or become obliterated. The following instance is worthy of record as an example of how much benefit may result from this effort on the part of nature to effect a cure:

Johanna Smith, æt. 46, married seventeen years, sterile; came to my clinique at the College of Physicians and Surgeons. The patient was in good health up to 1859, when she noticed a tumor over the right ovary. This grew to an immense size; so that for three months she could not turn in bed without assistance, and suffered from dyspepsia, œdema pedum, and other signs of constitutional depreciation.

In June, 1861, a large amount of sero-purulent fluid passed per rectum, and this flow continued for two months. She states that after this time she left her bed, a mere skeleton, but with no abdominal enlargement.

The tumor refilled in 1866, and discharged in the same way in 1868. Since that time only a small tumor has existed, and the discharge by the rectum has gone on steadily.

She is now not very much emaciated, and suffers from nothing but dyspepsia and constipation. She very frequently feels a desire to evacuate the contents of the bowels, but only sero-purulent matter escapes.

Vaginal touch shows the uterus pushed towards the left acetabulum and slightly anteflexed. Upon conjoined manipulation a tumor, the size of a cocoanut, is discovered in the right iliac fossa. Rectal touch reveals, as high up as the index finger can reach, a stricture which prevents fecal matter from passing, but allows the escape of fluids. Between this stricture and the sphincter ani a large amount of fluid is found.

The operation to which we apply the name of drainage is an imitation of this process, with the addition of the injection of disinfectant and alterative fluids into the sac.

The operation consists merely of vaginal or abdominal paracentesis, enlargement of the opening made by the trocar, and the introduction and retention of a tube in the canal thus created, by which fluid can flow out and injections be thrown in.

The proposition of vaginal paracentesis, already mentioned as claimed by Velpeau, in 1831, was not confined to evacuation of

the sac, but comprehended its drainage by means of a tube left *in sitû*, if such a procedure should be deemed necessary. In more recent times the Gynæcologists of Germany have systematized the operation, and rendered it subservient to the best practical results. It presents, of course, all the advantages of evacuation of the contents of the sac by vaginal opening, while at the same time it obviates the chances of failure resulting from reaccumulation and redistension. Statistics with reference to it are not yet sufficiently complete or full to enable us to speak with entire confidence of it, but thus far its results have been of the most favorable character in a certain kind of case. No one claims for it an extended field of usefulness. Even Kiwisch, its introducer and strongest advocate, speaks thus guardedly on this point: "In our opinion it is only of use in moderately large, simple cysts; because, in very large cysts, the extensive decomposition must be very exhausting to the system, and compound cysts do not allow of a proper shrivelling of the open sac, as we experienced in a fatal case, in which two cysts were in juxtaposition and only one could be punctured."

Scanzoni has operated in this way fourteen times; eight cases were cured; two relapsed in a few weeks; three were lost sight of, and one died of typhoid fever two months after the operation.

In America, the operation has been frequently resorted to by Dr. Emil Noeggerath. His success has not been encouraging thus far, but he is favorably impressed in regard to the plan, and attributes his unfavorable results to the fact that the cases upon which he has operated have most of them been complicated by malignant or other serious disease. Dr. Schnetter has had two cases which have proved entirely successful. Dr. Noeggerath has of late greatly modified, and I think improved, the method of performing this operation.

Noeggerath's operation for drainage of ovarian cysts.—1st step. The patient lying upon the back, Sims's speculum is introduced, and the anterior vaginal wall and the base of the bladder are held up. Seizing the fornix with a tenaculum, the wall of the vagina, the subperitoneal areolar tissue, and the peritoneum are cut through. 2d step. The cyst is then felt through the opening thus made; a tenaculum fixed in it, and paracentesis practiced upon the main cyst, and all others upon which it is practicable. The tumor being thus emptied, and the vagina cleansed of blood, the operator proceeds to the 3d step. This consists in turning the patient upon the left side, introducing Sims's speculum, and with silver wires

stitching the lips of the cyst to those of the vagina. By this plan thorough drainage is secured, the way is opened and kept open for antiseptic injections into the sac, and the peritoneum is shut off and protected from contact with fluids. Dr. Noeggerath informs me that small endogenous cysts exposed in this way, even without being opened, shrivel and disappear almost invariably.

Kiwisch's method.—The operation of paracentesis vaginalis is performed as already described. The fluid of the cyst having flowed off, a director without a handle is passed into the sac through the canula, and held in position while the canula is removed. A long probe-pointed bistoury is then passed by means of the director, and an incision is made, sufficiently large to introduce the index finger. The bistoury and director are then withdrawn, and a long flexible tube inserted, which is allowed to hang out of the vagina, being fastened by a T bandage at the vulva.

After the operation the patient should be kept in bed. On the second or third day symptoms of inflammation generally manifest themselves by severe reaction, and for ten or twenty days there is often an ichorous discharge and great pain in the surrounding parts. In favorable cases the ichorous discharge generally gives place to one which is purulent, and which disappears in from five to seven weeks, when shrivelling and perfect obliteration are to be expected. As long as there is any discharge from the cyst it should be washed out twice a day by an injection of lukewarm water, or, what is better, of warm water holding in solution persulphate of iron or carbolic acid. At the same time copious vaginal injections should be used to prevent irritation of the vagina.

The tube should be kept in place until discharge ceases and diminution of the sac has occurred.

Schnetter's method.—Dr. Schnetter, of this city, has modified this procedure in the following manner: the canula being introduced and the trocar withdrawn, a little knife, one inch and a half long in the blade, fixed upon a handle constructed according to the curve and dimensions of the canula, but longer than it, is passed through it. As the handle of the knife is longer than the canula, this admits of a protrusion of the cutting surface beyond its mouth. In withdrawing both canula and knife an incision is made by the latter, which opens the way for the finger and the drainage-tube. Scanzoni, who has twice employed Schnetter's method, prefers it to that of Kiwisch, on account of its greater simplicity.

West's method.—Still another method has been recommended by Dr. West, of London, which is very simple. The trocar and

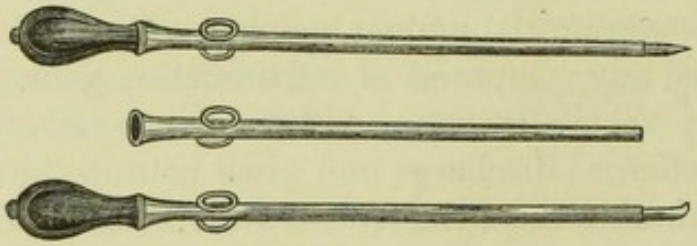
canula being plunged into the cyst, the former is removed and the fluid allowed to flow away. Then a No. 12 gum-elastic catheter is passed through the canula, the canula withdrawn, and the catheter fixed in its place by a T bandage. I adopted this plan in a case which I attended with Dr. O. H. Smith, of Williamsburgh. The notes in my case book read as follows: "The operation of West was performed six weeks ago. The patient has not done, and is not doing well. The flow from the cyst is steady and of rather offensive character; constant gastric irritability has harassed her; the pulse is quick; the skin dry, and the mucous membrane of the mouth and lips parched and cracked. It is very evident that the case will end fatally".[1]

The cyst may be opened by Scanzoni's long trocar and canula, or by a long bistoury.

Fig. 225.

Fig. 226.

Fig. 227.



Scanzoni's trocar and canula for paracentesis vaginalis.

The most ingenious apparatus which has been invented for the accomplishment of drainage by the vagina is represented in Fig. 228.

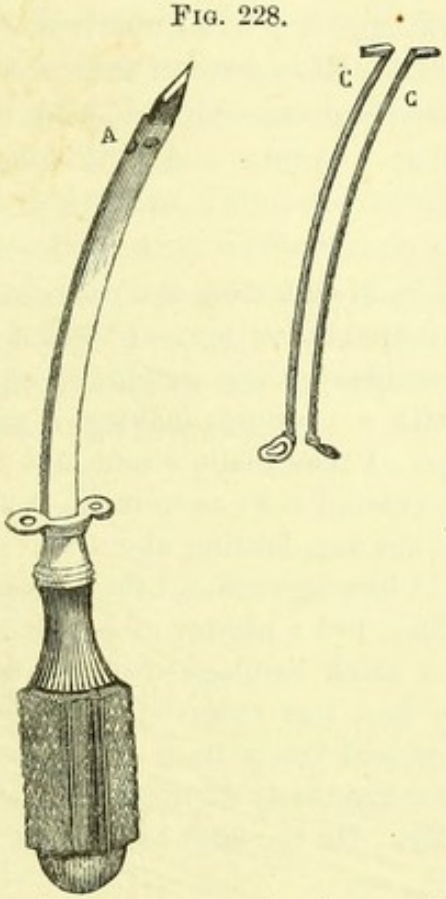
The best of these methods, however, appears to me to be Noeggerath's.

Drainage, as has been already intimated, may be practiced through the abdominal walls, either by a stiff or elastic tube. Figs. 229 and 230 represent a trocar and canula which I have employed for the purpose in one case. Although the case ended fatally, I had every reason to feel satisfied with the instrument with which the operation was performed. The instrument, being passed through the abdominal walls, closed as in Fig. 229, the outer tube or canula is slid down upon the inner or trocar. This movement throws out arms by an action similar to the opening of an umbrella, which engage the cyst-wall. The circular disk seen above is then slid down, fastened by a small screw, and the anterior wall of the cyst is clamped firmly to the peritoneum and ab-

[1] This patient subsequently died of peritonitis resulting from ulceration of the cyst-wall which penetrated the peritoneum.

dominal wall. The peritoneal cavity being thus closed, the cyst may be washed out by injections, and alterative fluids be thrown in.

FIG. 228.



Maisonneuve's trocar and permanent canula. A, curved trocar with lancet-point, with canula pierced at its extremity by three openings; through one, after removal of the trocar, fluid pours, while through those on the sides the bent extremities of the elastic wires C C are projected so as to prevent the escape of the canula. (Wieland and Dubrisay.)

Drainage through the abdominal walls has been frequently practiced in Germany and Great Britain, as the imperfect statis-

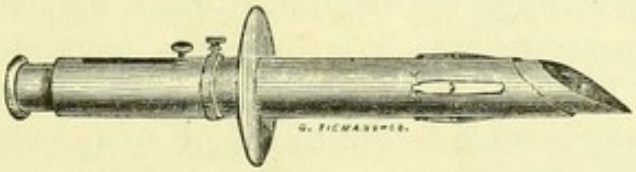


FIG. 229.

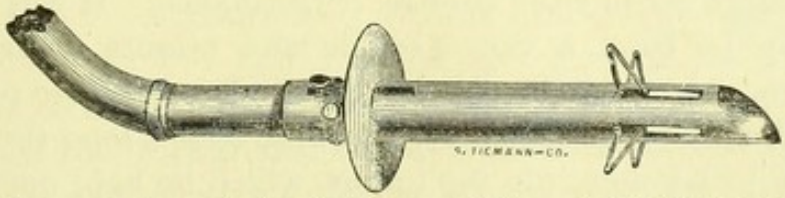


FIG. 230.

Trocar and canula for draining cysts through the abdomen.

tical table which I furnish will prove. In some cases canulæ have been left in the opening made, in others the lips of the cyst have

been sewed to those of the abdominal wound, while in some, yarn or tents of cloth or lint have been inserted into the cavity of the cyst.

Cases cured by drainage are of so much interest in reference to the treatment of cases too desperate in their nature for ovariotomy, such, for example, as those accompanied by extensive adhesions to the intestines, that I quote the following reported by Dr. Pawling:[1]

"Believing that she must sink from the progress of the disease, I determined to try an experiment on her. I tapped her again, just below the umbilicus, and drew nearly three gallons of water from her. I then enlarged the orifice with a bistoury, making it sufficiently large to introduce my little finger. I then made a tent, out of a soft cotton rag, about six inches long, twisted it so as to make it firm, pushed one end down to the bottom of the sac, leaving about two inches of the tent externally, applied a tight bandage around the abdomen below the orifice, also one above the orifice, put a plaster of basilicon ointment over the orifice, and then put a slack bandage over the dressing. Every day, until August 20th, the tent was removed and the bandage tightened. Healthy-looking pus passed freely from the orifice, intermixed with a little serum. The tumor gradually diminished in size, while her general health improved rapidly. On the 30th of August the sore was healed up, and she was well."

Incision.—In some cases of desperately bad character, the multilocular nature of the sac renders tapping, drainage, and injection ineffectual for the accomplishment of cure, while extensive adhesions bind it to the abdominal walls so firmly that extirpation is inadvisable. Under such circumstances the operation of incision, which consists simply in laying open the tumor by cutting through the abdominal walls, may be resorted to.

This operation, which is only one method of accomplishing drainage, is attended by many dangers and annoyances to the patient, who is often forced to submit to an exhausting and offensive discharge for months after its performance. It was first performed by Le Dran, a very graphic and minute description of whose procedure is given by Mr. Baker Brown. He performed it in 1836, making an incision about four inches long through the walls of the abdomen into the tumor, which he kept open for five months with pledgets of lint and a canula of sheet lead. Should it be found advisable after abdominal incision to adopt this method,

[1] Richmond and Louisville Med. Jour., Dec., 1870.

if complete union do not exist between the cyst and abdominal walls, the lips of the former may be sewed to the latter; a method advised by Mr. Baker Brown. Before making the abdominal opening, it has been advised by Récamier, and more recently by Tilt, to cause, by means of caustic issues, inflammatory adhesion between the sac and abdominal wall, but the plan has not met with success.

I had endeavored to present a statistical table of the results of drainage through the abdominal walls, but so difficult have I found it to distinguish between the reports of it and of simple tapping in which the opening has been left unclosed for a short time, that I am forced to offer it only as an imperfect report of a certain number of cases treated by incision:

Operator.	No. of Cases.	Cured.	Died.
Le Dran,	2	2	0
I. B. Brown,	3	0	3
Delaporte,	1	0	1
Velpeau,	1	1	0
Portal,	1	1	0
Bonnemain,	1	1	0
Ray,	1	1	0
Bainbridge,	2	1	1
Mussey,	1	1	0
Prince,	1	1	0
Djondi,	1	1	0
Galennowsky,	1	1	0
Buhring,	3	1	2
Pagenstecher,	1	1	0
Ollenroth,	1	1	0
Douglass,	1	1	0
Clay,	2	2	0
Farrell,	1	1	0
Hutchinson,	1	0	1
Paget,	1	0	1
Trowbridge,	1	1	0
Weber,	1	0	1
Thomas,	2	0	2
Pawling,	1	1	0
	32	20	12

In some of these cases the entire sac was filled with pledgets of lint saturated with caustic solutions; in some, threads of worsted or other substances were rolled into balls, dropped into the sac, and the ends allowed to hang out of the incision; in some, tents were introduced, while in others, drainage-tubes were employed. The time during which the escape of fluid continued, varied very

much. Sometimes it ceased in a few weeks, while in other cases it continued for a period varying from eight to twelve months.

Although from the presentation of facts just made it is evident that the operation of incision is one attended by great dangers, it must not be forgotten that in a certain class of cases it may render valuable service. When, for example, the tumor is multilocular and firmly adherent, it may be resorted to with two good results: first, it enables the operator more perfectly than any other method to reach successive cysts; and second, it offers a chance of permanent cure, without removal of the sac, almost equal in proportion to two out of three. The emptying of one large cyst will be better accomplished by simple drainage, but in case a number of cysts exist, that plan will generally fail.

Injection into the sac.—The insufficiency of simple tapping of ovarian sacs led Denman,[1] Bell, Hamilton, and others, to inject into them solutions of sulphate of zinc and other substances, but without effect. In 1846,[2] Dr. Alison, of Indiana, U. S., essayed the injection of tincture of iodine with a successful issue, after repeated trials on the same patient. Although others in France and Germany employed the method after this time, it was not systematized and placed upon the footing of a recognized procedure until it received the attention of M. Boinet, of Lyons. This practitioner, bringing a great deal of enthusiasm to the work, soon accumulated a large experience.

He employs for the purpose iodine and iodide of potassium, in the following proportions:

℞. Tr. of iodine, 100 parts.
Iodide of potassium, 4 parts.
Water, 100 parts.—M.

From four to ten ounces of this solution are injected, allowed to remain for some minutes, and then removed.

The injection is simply and perfectly accomplished in this way. A trocar and canula being passed, the fluid is removed from the cyst. A flexible catheter is then passed through the canula, deep into the cyst, and by means of a hard rubber syringe the fluid is injected through this. After having been retained for ten or fifteen minutes it is allowed to escape, or may be drawn off by the syringe. The catheter is kept in position for some days or weeks, and through it a solution twice as strong in iodine is soon used. Then as the cyst lessens considerably, pure tincture is em-

[1] Simpson, op. cit., p. 362. [2] Peaslee, Ovar. Tumors, p. 11.

ployed. Mr. I. B. Brown employs the pure tincture of the Edinburgh Dispensatory.

Sometimes, as, for example, in a case published in the Sydenham Society's Year-book for 1861, by Lowenhardt, the pain resulting from this procedure is excessive, and the shock to the nervous system so great as to destroy life. Boinet declares that so long as the injected fluid is confined to the sac, pain and tendency to collapse do not occur, they being due to its entrance into the peritoneum. This view is sustained by Lowenhardt's case, in which a post-mortem examination was made, and revealed a "small amount" of iodine in the peritoneum. The reporter lays no stress upon this, and yet the symptoms of which the patient died were just those witnessed after passage of fluids through the Fallopian tubes.

As to the statistics of the operation, it is difficult to speak positively. The following are probably the most reliable which have been published:

Author.	No. of cases.	Cures.	Failures.	Deaths.	Doubtful.
Boinet,	45	31	5	9	
Cazeaux,	62	48	11	3	
Gunther,[1]	158	32	61	59	
Simpson,	40 or 50 (?)	—	—	1	
Scanzoni,	4	—	—	4	
West,[2]	10	3	6	1	
Tyler Smith,	12	2	9	1	
Peaslee,	6	1	3	1	1

A certain degree of doubt seems to attach to some of these statistics. Those of Prof. Simpson are evidently too loosely reported to be depended upon, and Courty reviews those of Boinet in the following words: "According to this honorable practitioner, they, the injections, produced a cure in three out of five cases, and always a remarkable improvement. It is to be regretted that these fortunate results have not been reproduced in such satisfactory proportions in the experience of the majority of physicians who have had recourse to the same method." "At present," he continues, "the profession shows a strong tendency to abandon this treatment, the dangers of which are often manifested by fatal results." It is difficult, however, to regard this criticism as just, when we see so reliable an authority as Velpeau reporting, as he did in a discussion in the Academy of Medicine,

[1] In six the results were not stated.

[2] In two of these cases one cyst was cured and another was in progress.

one hundred and thirty cases, not operated upon by himself, as yielding sixty-four cures and thirty deaths. Even the statistics of Dr. West, whose extreme accuracy as an observer is well known, prove the fact that the operation of injection of iodine is not as dangerous as M. Courty appears to imagine. Dr. Peaslee draws from existing evidence the following conclusions: if restricted to patients previously tapped, which he regards as an important point, and to unilocular sacs, unaffected by inflammation, and not containing a thick, tenacious fluid, the mortality would probably be one in ten, and the cures one in three.

Dr. Peaslee's rules for selecting cases applicable for this plan are the following:

"1. Reject all *polycystic tumors*, excepting cases in which we only expect to diminish for a longer or shorter time, a single one of the sacs.

"2. Reject all monocystic tumors also, whose contents are *dense*, *viscid*, and *albuminous*, as a general rule; the exceptions presenting themselves in some cases where ovariotomy is out of the question.

"3. Reject also all single sacs whose contents are made up in part of *inflammatory products*.

"4. There remains, then, for the iodine injection, only the simple sac, with clear, serous contents, and this should have been tapped once at least previously, as a general rule. Adherence to this last precept also enables us to decide, before we determine to use the iodine, whether we have a single sac, or more—a very difficult thing to determine before tapping, in many cases."

Even should a sac collapse under the injection of iodine, the practitioner must not be too sanguine as to the result, for, even after remaining in this state for years, sacs often refill, and require a repetition of this operation or the performance of some other.

Partial excision.—It has already been remarked that when an ovarian cyst is broken in consequence of any accident, and empties itself into the peritoneum, complete recovery may take place by absorption of the effused fluid, and collapse of the emptied cyst. Of seventy cases of this accident reported by Dr. Tilt, forty, over half, recovered. The operation which we are now describing has for its object an imitation of this pathological result, and consists in opening the sac so that its contents may pour into the peritoneal cavity without escaping from it

through the abdominal walls. It was first performed by Guérin[1] and Bainbridge, from a suggestion by Dr. Blundell, according to Prof. Simpson; while Mr. Baker Brown ascribes it to Jefferson, West, and Hargraves.

The method is liable to these objections: 1st, the large vessels ramifying upon the sac may be cut, and hemorrhage excited; 2d, a species of fluid may be evacuated, which will excite peritonitis; 3d, the tumor may be multilocular, and only one cyst be evacuated. Its sphere is therefore limited to cases in which the character of the contained fluid is ascertained by tapping to be of a bland, unirritating nature, and free, or almost free from albumen, and in which a monocystic tumor is supposed to exist. If the case be one of a character favorable for this procedure, the risks of peritonitis, inflammation of the sac, and septicæmia from absorption of its putrefying contents, which often result from simple tapping, are avoided on the one hand, and those of ovariotomy on the other. It was once resorted to in this city, by Dr. W. L. Atlee, of Philadelphia, in the case of a very large cyst, the contents of which were found by chemical examination to be free from albumen; but the cyst subsequently refilled, and the patient died.

There are three methods in which it may be performed. If the monocystic character of the tumor and the innocuousness of its contents have been fully ascertained by previous tapping and physical examination, the cyst may be again emptied by a large quadrangular trocar, four-fifths of the contents drawn off, and the abdominal opening closed. Then each day a little of the fluid still remaining should be expressed from the tumor by compression with the hands, in order to keep the wound in the sac from uniting. This is the method of Prof. Simpson. Under the same circumstances an incision of an inch in extent may be made down to the tumor, a portion of this seized with clawed forceps or tenacula and excised, and the outer wound united.

Should any doubt exist as to the character of the tumor and its contents, everything should be prepared for the operation of ovariotomy in case these be found adverse to partial excision. Then by an incision two or three inches long the surface of the cyst should be exposed, a large piece of this cut out, and the abdominal wound closed. In this way all large bloodvessels may be avoided, as sight and touch are brought to the operator's

[1] Simpson, op. cit., p. 353.

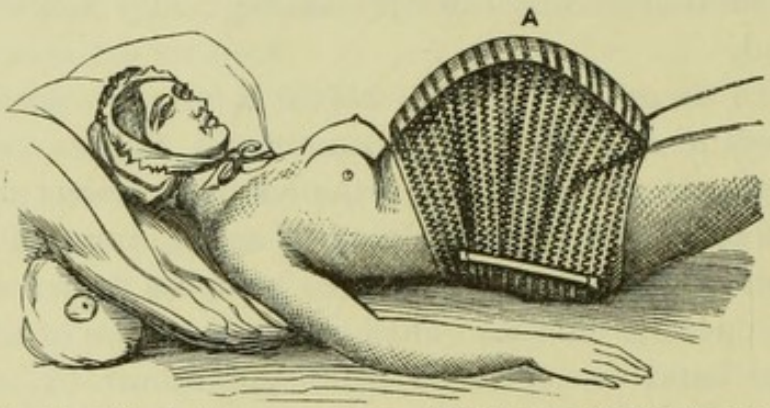
aid, and a sufficient portion of the sac is removed to prevent reunion.

Prof. Byford refers to a fact which in some cases must have an important bearing upon the success of this operation. It is that the contents of an ovarian cyst which are first evacuated may be clear and apparently bland, while that portion of fluid which comes forth last is thick, grumous, and acrid.

Other methods which have been advised, in addition to those alluded to, are the creation of an abdominal issue by use of caustic potash, by Dr. Tilt; ligation of the pedicle, by Dr. Tanner; pressure after tapping, by Mr. Baker Brown; "aspiration" or suction, by M. Buys; the seton; electricity; acupuncture; and a number of others, a description of which is not deemed necessary in the present essay.

In some cases, continuous pressure, after the plan of Mr. Brown, has effected not only amelioration, but cure. The best method for accomplishing it is by the elastic apparatus of Bourjéaud, represented by Fig. 231.

Fig. 231.



Bourjeaud's elastic compressor. (Wieland and Dubrisay.)

Résumé.—We have now considered the following surgical means for the cure of fluid ovarian tumors:

Tapping;
Drainage;
Incision;
Injection;
Partial excision.

It is evident, upon consideration, that each of these possesses certain advantages and disadvantages. These have already been spoken of; nevertheless it may not be useless to recapitulate those which are common to all the methods thus far treated of.

1st. All of them are applicable chiefly to unilocular tumors,

success attending their employment in multilocular cysts very rarely.

2d. Their employment is confined entirely to fluid tumors, so that if an error of diagnosis should have been committed, these operations cannot, as ovariotomy may, be turned to good account.

3d. One of the greatest dangers attending all of them is peritonitis, which should be carefully guarded against by complete evacuation of the contents of the sac, washing it out with warm water, and strictly insisting upon the recumbent posture.

4th. Two other great dangers are, inflammation of the cyst-walls and absorption of the decomposed contents remaining within the sac, which are most surely prevented by the use of antiseptic injections repeated at short intervals, preceded by complete emptying of the cavity.

5th. In monocystic and even in polycystic tumors which are bound down by false membranes of such strength as to render removal of the cyst impracticable, these procedures hold out the only hope for the cure of the patient.

6th. Finally, with the excellent statistics now furnished by the operation of ovariotomy in the hands of men skilled in its performance, these procedures all sink to the position of resources to be adopted only when complete removal of the sac proves to be impossible. They should, with the exception of vaginal drainage applied to small cysts, be looked upon not as operations to be resorted to from choice, but only where ovariotomy is impracticable.

CHAPTER XLIV.

PERI-UTERINE FLUID TUMORS.

The tumors which I shall consider under this head are, although entirely disconnected with the ovaries, so similar in their physical aspects to fluid ovarian tumors, that they are commonly mistaken for them. Indeed the difficulties which attach to this diagnosis are so great that they may safely be styled insurmountable without the aid of abdominal incision.

For the pathologist, all tumors, filled with fluid and existing near the site of the ovaries, are susceptible of absolute classification, for in his studies he cuts through the abdominal walls, and by sight and immediate touch learns the characters and relations of the morbid growths. But with the practitioner the case is different. For him, deprived as he is of the pathologist's means of observation, as a general rule, fluid tumors existing over the site of the ovaries are ovarian tumors until explorative incision teaches him otherwise.

There are four varieties of cyst which are found beneath the folds of the peritoneum, covering and making a part of the uterine ligaments and passing over the uterus:

Tubal dropsy;
Wolffian cysts;
Subperitoneal cysts;[1]
Simple cysts of the broad ligaments.

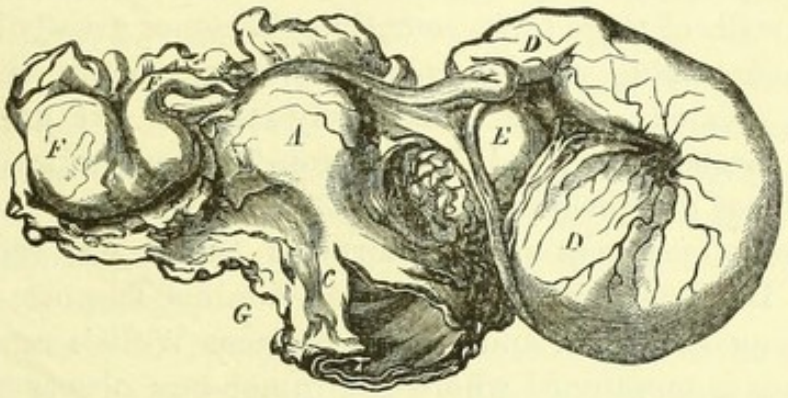
Tubal Dropsy.—This condition, which is described under the names of hydrops tubæ, salpingian dropsy, and hydrosalpinx, consists in the distension of the Fallopian tubes by muco-serous fluid. It arises in this manner: some influence, for example, acute or chronic salpingitis, pelvic peritonitis, or cellulitis, occludes both extremities of the tube. The inflammation of the mucous membrane of the tube creating a muco-serous fluid, the canal is distended by this, generally irregularly, to the size of the finger or small intestine. Thus far the affection does not concern our present investigation, for there is no probability that such a growth would resemble ovarian tumor so closely as to lead to an error in diagnosis. As this distension goes on, the mucous lining of the tube takes on the physical and physiological characters of a serous membrane, and secretes plentifully a serous, straw-colored, and slightly flocculent fluid. At times the distension of the walls of the tube proceeds so far that the fluctuating tumor which results gives all the physical signs of ovarian dropsy.

The testimony of authorities is almost unanimous that between this condition and ovarian dropsy there are no means of diagnosis. M. Aran sounds the key-note to the general belief when he declares that,[2] "the tube distended by liquid, I am perfectly assured, does not give a sufficiently clear sensation to allow us to diagnosticate its existence." Prof. Simpson, however, assumes a different position.[3] He declares that, although "in practice this

[1] I adopt the name suggested by G. Hewitt. [2] Op. cit., p. 633. [3] Op. cit., p. 432.

form of tumor is usually altogether overlooked or is mistaken for some other kind of tumor," it is really diagnosticable by the following means: "1st, its free and independent mobility; 2d, its elongated form; and 3d, its wavy outline." Let any one examine the shape of a large tubal dropsy, like that represented at Fig. 232, for instance, and he will see that both the shape and wavy

Fig. 232.



Tubal dropsy. (Hooper.)

outline will fail him. When it is remembered that the affection frequently results from pelvic peritonitis, the freedom of motion will evidently be often delusive. "The diseased tube,"[1] says Courty, "is rarely free and without alteration at its periphery: generally it bears signs of old inflammation, which is adhesive, and this fixes it to the neighboring parts." I have met with the affection four or five times in autopsies, and this statement has always been sustained.

The means of diagnosis just mentioned would be applicable to slight tubal distension, which is rarely productive of symptoms calling for examination. Few instances of diagnosis are on record, and even in cases where tapping has been supposed to substantiate it, it is by no means sure that such a disease existed. Prof. Simpson reports but one case in his extensive experience in which he was able to come to a conclusion. He denies the possibility of great enlargement of these tumors, declaring that they rarely grow larger than a fœtal head, and that we may justly be allowed to be skeptical as to cases reported as being much larger. Dr. Arthur Farre,[2] however, willingly admits the well-known cases of Bonnet and De Haen; the first of which contained thirteen pounds of fluid and the second thirty-two pounds. Scanzoni circumstantially re-

[1] Op. cit., p. 987. [2] Supplement Cyc. Anat. and Phys., p. 619.

ports an instance in which the sac attained the size of the head of a child of ten years of age.

Wolffian Cysts.—Within the external margin of the broad ligament, where the two walls of the peritoneum pass from the fimbriæ of the tubes to the ovaries, exists the body of Rosenmüller, parovarium, or Wolffian body, to which allusion has already been made as consisting of a number of little tortuous cords, some of which are perforated by canals. The slight secretion occurring from the walls of these tubes sometimes becomes greatly increased, and the containing walls becoming proportionately distended, a tumor is created. These cysts rarely attain a size greater than that of a large orange, and their distension generally stops short even of those dimensions.

Numerous instances of this form of tumor are reported by authors. Dr. Bright, in his work on Abdominal Tumors, delineates two striking examples, and in Mr. Spencer Wells's recent work, an instance is mentioned where the tumor was observed close to the uterus and was incised and emptied.[1] It is curious to observe how uniformly in describing them they are likened to an orange.

One of the most interesting cases of this character which I have seen in practice was in the case of a lady from Mobile, upon whom ovariotomy was successfully performed by Dr. Nott, of this city. He had tapped her, and drawn off a large amount of limpid fluid four years before the operation, and the cyst had for about three years appeared to have closed. After that time, however, it had refilled, and was, when I first saw her in consultation with Dr. Nott, quite tense, and the abdomen appeared of about the size of that of a woman in the seventh month of pregnancy. Operation was determined upon, but delayed for three months in consequence of the heat of the weather. When it was performed, both ovaries were found to be perfect in size and shape, and the cyst[2] was found to occupy the left broad ligament, the peritoneal walls of which were immensely distended over its surface.

Subperitoneal Cysts.—Cystic degeneration is much more likely to occur in those organs which have as component parts of their structure, minute cavities lined by epithelium. Thus, the kidneys and ovaries are peculiarly liable to be affected in this way. Cysts thus formed have been styled by Virchow cysts by retention. But cystic degeneration is by no means limited to such structures. It

[1] Case XXX.

[2] This cyst is now in my possession. Dried and stuffed with cotton it measures 26 inches in circumference.

may occur in areolar tissue anywhere, and those organs, which, like the thyroid and mammary glands, are prone to production of new growths having areolar tissue as their basis, are likewise especially liable to it.

It is believed by pathologists,[1] that under these circumstances the cyst is merely an expansion of the areolæ of the areolar tissue. In various parts of the abdominal cavity such cysts are found under the peritoneum and classed, by Dr. Graily Hewitt, under the head of subperitoneal cysts. Mr. Safford Lee reports one case of a tumor which filled the abdomen, and destroyed life, after having lasted for twenty-five years. On post-mortem inspection a large cyst was found behind the peritoneum, which had originated under the pancreas. He reports another which began on the right side of the abdomen, was tapped forty-eight times, and was found by autopsy to be omental.

Simple Cysts of the Broad Ligaments.—Throughout the literature of the subject of ovarian tumors, allusions, generally very obscure, will be frequently found to a kind of cyst, not ovarian and yet not Wolffian, which is occasionally met with in the broad ligaments. Two instances of such cysts are mentioned by Mr. Spencer Wells, one in Case XCIII, and the other in Case CXI. The latter is thus minutely described by Dr. Ritchie, who examined it: "Between the folds of peritoneum, which connected this with the tumor, appeared a little, clear vesicle, one-fourth of an inch in diameter. It moved freely between the folds, and having no apparent connection, could, by careful manipulation, be pressed from one part by the broad ligament to another. . . . The Wolffian body surrounded it; but the most careful dissection failed to show that it was connected with it, or that the cyst was, as might have been supposed, a dilatation of one of the tubules of that body." Dr. Ritchie was at a loss to account for the cyst, and suggests the possibility of its being a partially developed ovum.

The other case was examined by Dr. Wilson Fox. It was a large cyst, about twice the size of the adult head. The ovary was healthy and not connected with the cyst.

Scanzoni commences his article upon "Cysts formed between the folds of the broad ligament," thus: "Cysts are sometimes formed by a collection of liquid in the canals of the organ of Rosenmüller; sometimes they are completely independent."

I know of no pathological proof, other than that afforded by the

[1] Wells, op. cit., p. 84.

references made here, that these cysts ever assume very large dimensions. The largest recorded by Spencer Wells is that described by Dr. Fox, which was twice the size of a man's head. Nevertheless, it appears to me that, from the clinical evidence before us, we may assume that they sometimes become very voluminous. Dr. Peaslee tells me that he has met with several large cysts filled with clear, non-albuminous fluid, which were cured by tapping. This would probably not have been the case had they been developed in the proper tissue of the ovaries. He states, likewise, that in conversation he understood Mr. Spencer Wells that he had had the same experience.

Mr. Baker Brown accounts for many if not most of the cures of ovarian cysts effected by one tapping upon this supposition, and the confidence of Dr. Washington L. Atlee in the belief may be judged of by the following instance. I once saw Dr. Atlee cut down upon a sac which held a number of gallons of fluid, tap it by an exploring trocar, and await the chemical test of the liquid drawn off. While this was being made, he stated to the large concourse of physicians present, that should the fluid prove non-albuminous, he would view the cyst as one developed in the broad ligament, and not in the ovary; and instead of performing ovariotomy, he would then cut out only a small portion of the cyst-wall in order to secure the discharge of its contents into the peritoneum, and close the abdominal wound. The fluid was found clear and non-albuminous, when the operator did as he had proposed, and the wound was closed.[1] In a communication upon this subject which I have received from his brother, Dr. John L. Atlee, the following views are expressed concerning these growths:

"It is very difficult, previous to tapping, to distinguish cysts arising from the broad ligament from true ovarian cysts. The former are invariably, in my experience, unilocular, and do not displace the uterus to the same extent as the ovarian, although in these latter there is sometimes but little displacement. The cyst-wall is thinner, and the impulse on palpation is more sensibly felt. The absence of albumen in the fluid removed, its resemblance to ascitic fluid, its translucency, and slightly *purplish* tint when exposed to the sun's rays, are very strong indications that the cyst is peritoneal. These cases, of which I have had six or seven, perhaps more, get well by tapping, alterative treatment, and counter-irritation, with pressure. They sometimes burst from external violence, and the fluid is absorbed, and are erroneously called

[1] This cyst subsequently refilled and the patient died.

spontaneous cures of ovarian cysts. It is in these cases, as in hydrocele, that iodine injections have done good; in true ovarian cysts, in my opinion, seldom or never."

Prognosis.—The prognosis of Wolffian,[1] subperitoneal and simple cysts of the broad ligament is, if their character be recognized after explorative incision, very favorable. It is not a rare occurrence for them to undergo spontaneous cure, the cyst undergoing rupture from violence, and discharging into the peritoneum.

Treatment.—No medical treatment has any efficacy. The surgical treatment consists in tapping by the vagina or abdomen, drainage, injection of iodine, and partial excision, so as to allow escape of the contents of the cyst into the peritoneum. The method proposed by Prof. Simpson, of tapping, closing the abdominal puncture and daily pressing fluid from the tumor into the peritoneum, would likewise be very appropriate. In no case would ovariotomy be necessary until these means were tested.

This completes the subject of fluid ovarian and peri-uterine fluid tumors.

CHAPTER XLV.

SOLID TUMORS OF THE OVARY.

This class comprises those ovarian tumors, the structure of which is entirely solid, no extensive collections of fluid matter entering into their composition as a characteristic feature. They may be thus enumerated:

Solid tumors of the ovary, . . {
- Fibroma.
- Adenoma.
- Myxo-adenoma.
- Carcinoma.
- Histoid {
  - Pileous.
  - Dermoid.
  - Adipose.

[1] Tubal dropsy is elsewhere considered.

Fibroma, or Fibrous Tumor.—This form of tumor is rarely met with in the ovary, and never attains a very great size. Kiwisch reports two cases, one the size of a child's, and the other the size of a small adult head. Dr. Farre discredits the reports of large ovarian fibroids which are upon record, and believes them to have been in reality either cancerous tumors or growths connected with the uterus, which so encroached upon the ovaries as to seem to have sprung from them. Peri-uterine fibroids which spring, not from the uterus itself, but from the extension of uterine fibres into the broad and utero-sacral ligaments, have probably often given rise to errors in reports of such tumors. Many of the reported cases of ovarian fibroids have likewise been due to confusion of this form of tumor with adenoma. When the disease does affect the ovary it differs in no essential degree from the same affection of the uterus, except that pediculation does not occur as in the latter organ, and that the growth of the tumor is much more limited.

The reader must be reminded that these remarks apply to the pure fibroid and not the fibro-cystic ovarian tumor, which may attain an immense size, and is always to be regarded as a serious disease. They likewise apply to the development of fibroid tissue into true fibromata, for in the walls of cystic and cystoid growths fibroid tissue is commonly developed. Very often even a portion of the wall of a simple cyst contains a dense mass which is of this character.

No medical treatment accomplishes anything in this disease, and surgical means are not usually called for.

Kiwisch describes enchondromatous and osseous tumors of the ovary, but since no other pathologist has met with them, except as the latter has been confounded with calcareous degeneration, and since Scanzoni has examined the only two cases with which Kiwisch ever met, and differs entirely with him as to their character, they may well be left without further mention. As the statement made above as to the rarity of fibroids was limited to the formation of tumors, so this remark must not be understood as applied to cartilaginous and calcareous, commonly called osseous, formations in this organ, but only to tumors properly so called. Such formations are by no means rare in the walls of cysts and intermixed with cancerous growths.

Adenoma.—As fibroma consists in hypergenesis or hypertrophy of connective tissue, and myoma of the same vice of nutrition in muscular substance, so does adenoma (*ἀδήν*, a gland) consist in the

new formation of the glandular structure of an organ. It is strictly homologous to the natural gland-structure, and is entirely benign in its character and course. But adenomatous disease furnishes a prolific base for cystic, myxomatous, sarcomatous, and even cancerous degeneration. According to Lücke, the ovaries constitute a favorite seat of adenoma, which, since the investigations of Pfluger, Speigelberg, and Langham, is known to exist there very commonly, both as a solid and composite tumor. Pure adenoma is said by Billroth to be rare. The disease generally exists as cysto-adenoma, myxo-adenoma, adeno-sarcoma, or adeno-carcinoma. Its minute structure, as described by Klebs,[1] is this: a firm, fibrous layer forms the outer coat, and sends septa to the different cystic spaces, which constitute a gelatinous-looking surface. In this the microscope shows numbers of straight tubes lined with basement-epithelium. On vertical section these tubes run toward the stroma, ending in cul-de-sacs. Klebs thinks that the septa of the cellular spaces are formed from hypertrophied stroma, the tubular glands date from fœtal life, and the tough, whitish substance which they contain he regards as the secretion of these tubes.

Myxo-adenoma.—This form of tumor consists of an adenoma, according to Klebs, in the cystic spaces of which gelatinous material has been generated. The term myxoma is derived from μυξα, mucus, and is applied to tumors which consist of a gelatinous material similar to the gelatine of Wharton, or the vitreous humor.

A papilloma is a tumor due to hypertrophic elongation of the papillæ of a part. It usually occurs on free surfaces, but Lücke quotes Virchow as saying that papilloma is met with where no papillæ originally existed. Lücke, at the same time that he makes no reference to papilloma as a distinct ovarian tumor, mentions it as a complication of adenoma. It constitutes a variety of ovarian tumor which is often accompanied by ascites, and which presents, when exposed to view, an irregular, soft, warty surface. In size and appearance it resembles very closely a cauliflower. This appearance is due to the projection into the cavity of a cyst of large numbers of papillary growths, which, under the microscope, show multitudes of large epithelial cells, covering a projecting framework of connective tissue. I have seen quite a number of these tumors, and have been able to verify the statement made by Klob, that they form in this way. The

[1] Lücke, loc. cit.

cyst, becoming filled with fluid and with these projecting papillæ, bursts and turns itself inside out, its contents passing into the peritoneal cavity and exciting serous effusion from the peritoneum. In my twentieth case of ovariotomy I removed two tumors. One was a multilocular cyst of the left ovary, about as large as a uterus in the seventh month of utero-gestation. One of its compartments was covered over with a dendritic papillomatous growth. The other was a solid tumor of the right ovary, about as large as a cocoanut, and looking like a cauliflower, its whole outer surface being covered and formed by papillomatous projections. The peritoneum was filled with fluid. In another case I found a small cyst ruptured and partially, but not completely, everted. This form of tumor is originally a fluid tumor, which, from over-distension, has burst and become, from a clinical standpoint, a solid one. Billroth[1] alludes to the possibility of such a development when he says, "Even the surface of a tumor or a newly-formed cavity containing fluid or pulp may produce papillary proliferations." And again, "Fibromatous and sarcomatous papillæ may develop on the surface of cysts." That many of these papillary tumors of the ovary are benign, I think there can be no doubt, for patients have recovered entirely after their removal, and the microscope fails to prove their malignancy.

The mere presence of villous projections from a cyst-wall must not then be regarded as necessarily stamping the growth with malignancy, and it is not rare to see benign papillomatous projections arising from such localities. Dr. Peaslee informs me that seventeen or eighteen years ago he removed an ovarian cyst which was thus studded with arborescent villi, which, at the time, he strongly suspected of malignancy. The patient, however, not only entirely recovered from the operation, but is living at the present time, never having had any development of kindred degeneration elsewhere.

In other cases they are probably malignant, just as in papilloma of the cervix uteri we meet with both the malignant and benign forms. In one case, operated on by myself, the tumor was carefully examined for me by my colleague, Prof. H. B. Sands, who returned the following report: "Sections of the tumor, when examined under the microscope, exhibited the following elements: 1. Connective tissue, slightly vascular, arranged in the form of villi, either club-shaped or conical. 2. Flat epithelium, in several layers,

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[1] Op. cit., p. 549.

covering the villi, but not present in their interior. The appearances observed were those commonly seen in epithelial or cauliflower growth."

Carcinoma.—The ovary may be affected by several varieties of cancerous deposit, which are here placed before the reader:

1. The ovary may be affected by true scirrhous degeneration. This form of cancer is less common than others, occurs usually after middle life, and may create a tumor of large dimensions. It develops slowly, and presents the physical appearance of scirrhous disease in other organs. It may be a primary malignant development, or it may occur in the ovary secondarily, its primary development having been previously recognized in some other part of the system.

2. The ovary may be the seat of medullary cancerous deposit, which may originate in the vesicles of Degraaf, in a corpus luteum, as Rokitansky once saw it do, or in the stroma of the organ. Distension sometimes causes rupture of the tunica albuginea of the ovary, and then exuberant medullary growth develops in contact with the peritoneum and abdominal viscera.

3. Scirrhous or medullary cancer may alone or united attack the wall of a cyst, and develop either as an endogenous or exogenous production. The cancerous matter so completely invades the cyst-walls in some cases as to make it appear that cystic degeneration had occurred secondarily to its deposit.

4. From the wall of a cyst, vascular, arborescent villi may project, lining the cavity, and, in time, filling and distending it so as to cause the rupture of its walls. Then the exuberant cancerous element develops and secretes in immediate contact with the peritoneum, and produces either a dangerous peritonitis or abundant abdominal dropsy.

With this form of cancer colloid degeneration is often associated, when it constitutes that variety which has been described by Cruveilhier as alveolar cancer.

The recognition of the fact that the ovarian disease which affects a patient partakes of the character of any one of the forms of cancer just enumerated, must ever be a matter of great moment, for upon it must depend not only our prognosis, but in some cases the determination to adopt or reject the operation of ovariotomy. Even if the case be one of malignant disease, operative procedure may accomplish good by prolongation of life. One case upon which I operated over a year ago, is now doing well.

The symptoms which generally point to the malignant character of an ovarian tumor are these:

1. The rapid development of a solid tumor in an ovary, with—

2. Marked depreciation of the strength, vital forces, spirits, and general condition of the patient.

3. The occurrence of œdema pedum and spanæmia with a small tumor, which are consequently dependent upon a general blood state, and not the results of pressure by the tumor.

4. Lancinating and burning pains through the tumor.

5. Cachectic appearance.

6. The occurrence of ascites without evidences of cirrhosis or other hepatic disease, organic disease of the kidneys, or heart, or chronic peritonitis, the fluid accumulating in such large amounts as to force aside the supernatant intestines, and produce dulness in place of resonance on percussion in dorsal decubitus.

Cystic degeneration of the ovary sometimes advances with great rapidity, and is accompanied in its course by rapid emaciation, marked physical prostration, ascites, and a cachectic appearance. It may be asked whether a case thus complicated would not present the very conditions which have been pointed out as furnishing grounds for the diagnosis of malignant disease. Unquestionably it would. Let it be remembered that while these symptoms are mentioned as valuable aids to diagnosis, I do not pretend to maintain that they will always enable the diagnostician to avoid error. Again, in citing ascites with a solid tumor as a most important symptom of malignant ovarian disease, I do not allude to slight or even moderate effusion with a large growth, but a markedly disproportionate amount of fluid, a great deal of abdominal effusion with a very small tumor.

Besides the condition just mentioned there are two others which may create difficulty in differentiation from ovarian cancer; one is pregnancy in the middle or latter months, complicated by peritoneal effusion; the other, a uterine fibroid existing with cirrhosis of the liver, with its attendant dropsy. The first may generally be known by its characteristic symptoms; while the second, although it might be recognized by the physical and rational signs of uterine fibroids and of cirrhosis, would very likely give considerable trouble in diagnosis.

When difficult and obscure cases present themselves in which a positive diagnosis becomes impossible by ordinary means, paracentesis, explorative incision, or both, should be resorted to rather than that the patient should be deprived of the prospect for cure

held out to her by ovariotomy. Very often the most doubtful case may be satisfactorily settled by evacuating the abdominal effusion, and passing the index finger through a small opening in the peritoneum so as to touch the morbid growth. In certain rare cases even this would not suffice to remove all doubt.

By these means I have succeeded in making a correct diagnosis in several cases of true ovarian cancer, but in relying upon them I have twice failed entirely, pronouncing as cancer what afterwards turned out to be adenoma. Adenomatous ovarian tumors will unquestionably often produce excessive ascites and all of the other rational signs which I have here recorded as evidences of cancer. To illustrate this important fact I transfer the record of an erroneous diagnosis made by me from the journal in which it was published before the death of the patient, and then give the revelation made by removal of the tumor and examination of it by the microscope.

"On November 24th, 1870, I was called by Dr. W. K. Brown, of Brooklyn, to see with him Mrs. G., aged 48 years, the mother of a large family. About five or six months before the date which I have given the patient noticed a general depreciation of strength, and was alarmed by the discovery of a hard and painful lump in the right iliac fossa. A prominent obstetrician of this city was called upon to examine this growth, and pronounced it a fibrous tumor of the uterus. In spite of a tonic and sustaining course, the patient grew more and more feeble, and the abdomen became greatly distended by accumulation of fluid. In this case I was struck by the fact that in the dorsal decubitus no point of resonance could be discovered upon percussion over the abdomen, which I attributed to the excessive amount of effusion and shortness of the mesentery. To make more certain a diagnosis at which I had even now partially arrived, I drew off several large pailfuls of straw-colored serum. I found in the right iliac fossa a round, hard, somewhat sensitive tumor, the size of the head of an infant at birth. This could be pushed about in the pelvis, and was, Dr. Brown assured me, larger than it was when discovered some months before. I ventured a positive diagnosis of malignant disease of the ovary.

"The patient has been tapped three times since I first performed paracentesis, and Dr. Brown, writing on the 11th of March, says that in two or three weeks paracentesis must be repeated for the fourth time in as many months. The strength, appetite, and digestion are now good, and the tumor, though larger, is not the source of much pain.

"As to his impressions of the diagnosis, Dr. Brown courteously defers to my opinion; but evidently feels in doubt about it, as his experience, he says, has furnished him with no similar cases.

"In this case the diagnosis, which of course is as yet doubtful, was based upon these facts: here is a lady who becomes rapidly enfeebled and puts on a cachectic appearance at the same time that she discovers a solid tumor over the site of one ovary; this is sensitive, movable, and, to my appreciation, not attached to the uterus. I know of no disease which is so likely to exist, and by its existence to explain the phenomena of this case, as malignant disease of the ovary."

This was the report of the case while still living. Upon my unfavorable view, and advice not to submit to operation, Dr. Atlee was consulted, and decided in favor of operation, which he performed. Dr. Brown kindly sent me the tumor for examination, and it presented to the microscope, Dr. Edward Curtis examining it, all the appearances of adenoma. The patient died soon after the operation; but this result does not in any way modify the fact that my position in reference to the case was incorrect and that of Dr. Atlee correct.

In concluding this subject it may not be without interest to allude more particularly to the great amount of abdominal effusion which in cases of ovarian cancer constitutes such an important symptom. It is probably to a certain degree the result of peritoneal secretion stimulated to excess by the irritation established by contact with the exuberant morbid growth, which having burst its ovarian bounds projects into the peritoneal cavity. To a certain extent the accumulation is probably also due to a secretion from the free surface of the cancer itself.

Histoid Tumors.—Tumors containing fat, hair, teeth, bones, skin, in fact all the harder textures of the body, are not unfrequently found in the ovaries. For these, from the close resemblance of their contents to the normal texture of the animal economy, the name of histoid tumors (ιστος, "organic texture," and ειδος, "like") is appropriate. The varieties of this form of tumor are here given:

Histoid tumors: { Dermoid; Pileous; Adipose.

It was formerly supposed that these developments were always dependent upon conception, the product of which, instead of

passing into the Fallopian tubes, had been retained and undergone increase in the ovaries. But this view is fully contradicted by the fact that such tumors have been frequently discovered in other organs than the ovaries, in undeveloped females, and even in males. Cruveilhier accounts for them upon two hypotheses: 1st, by ovarian pregnancy, followed by death of the fœtus and proliferation from the skin, which thus becomes analogous to the blastodermic membrane of the impregnated ovum; 2d, by what the French style, "inclusion parasitaire," or, as we would term it, fœtal intussusception. This consists in the following occurrence: as a fœtus develops, a fructified ovum becomes enveloped in some part of its structure. The more advanced ovum goes on growing, and in time makes the future being. The smaller one also undergoes development, but, being placed under unfavorable circumstances, soon ceases to advance according to fixed laws, and its tegumentary envelope produces some of the textures of the body. It is manifest that the first of these hypotheses is tenable only upon the supposition that conception has once occurred; the second is so without it.

M. Pigné has analyzed eighteen cases with reference to the period of life at which they were found, with the following results:

5 existed in virgins under twelve years;
6 " children from six months to two years;
4 " the female fœtus at term;
3 " fœtuses cast off at eighth month.

Both the theories here advanced in explanation of this singular phenomenon are highly unsatisfactory. Opposed to the first are the following considerations: there is never in the tumor any trace of secundines; they occur in undeveloped females and males; and they exist in other parts of the body than the ovaries.

Against the second view appear these facts: such tumors are more common in the ovaries than in any other part, and only a portion and not all of the tissues of the body are represented.

To meet the want felt for an explanation, Lebert has advanced the theory that from the elements present, spontaneous generation of a portion of skin occurs, and this being given, we have, as Dr. Farre expresses it, "the basis out of which many of these products spring."

Histoid tumors vary in size from that of a hen's egg to that of the adult head, but very rarely grow larger. They are hard and generally globular. One ovary is usually affected, and by only

one tumor; but instances are on record where a single ovary contained a large number. They usually consist of fat, long hairs, teeth, skin, and traces of bone intermixed. The teeth are usually imbedded in the cyst-wall or attached to pieces of bone, and are sometimes very numerous. Schnabel[1] records a case in which they exceeded one hundred in number, and Ploucquet[2] one in which they amounted to three hundred.

When the predominating element of the mass is hair, these tumors are called pileous or piliferous; when fatty matter, adipose; and when skin, dermoid cysts.

Histories of such cases are so rare that I transfer the following from Prof. Kiwisch's work: "A girl, seventeen years of age, was attacked with a swelling of the left ovary which, after twenty-one years, measured four ells in circumference, and reached below the knee. After her death, which took place in her thirty-eighth year, it was found that the sac alone of the ovary weighed fourteen pounds, and contained forty pounds of a thick, adipose, honey-like mass, which was mixed with many hairs of different lengths, among which curls were found two inches long, and as thick as a thumb, very like elf locks; the internal surface of the sac was set with short hairs. There were also found eight bony concretions of irregular shape, one of which was seven and another ten inches long, and about two inches broad; the form of one of these bones was polygonal, and set with six molar teeth and one incisor, and nine separate bones were present besides. The teeth had the size, perfectness, and firmness which they generally have in a girl twenty years of age."

Histoid tumors are harmless, except in so far as they mechanically interfere with the surrounding parts in different movements of the body. Very often they are discovered by accident only. Physical exploration reveals a hard, round mass, painless upon touch, and unless its size prevents it, perfectly movable.

Although in themselves innocuous, and not likely to increase rapidly or to attain any great development, they sometimes set up very serious and even fatal disturbance by one of three methods: by creating suppuration and abscess on account of the irritation kept up by a foreign mass; by perforation and discharge into the peritoneum; or by the cyst which contains the histoid elements secreting fluid and changing its character to that of a fluid tumor.

No treatment is required, a fortunate circumstance, since none

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[1] Kiwisch, op. cit.

[2] Becquerel, op. cit.

would be at all effectual except extirpation. This would be eminently inadmissible, since there are not sufficient dangers attendant upon the tumor to warrant a resort to so hazardous a procedure. Dr. Graily Hewitt[1] refers to an instance in which Dr. Alexander Simpson injected one with iodine, but says that the result was not such as to encourage a repetition of the plan in future.

CHAPTER XLVI.

COMPOSITE TUMORS OF THE OVARY.

This class includes all those tumors which are composed of both solid and fluid elements. In some cases where there is a great deal of fluid and very little solid, or considerable development of solid material and very little fluid, it is difficult to draw the line of distinction, but for clinical purposes the recognition of this as a distinct class will prove of signal service. The following are the varieties of the affection:

Composite ovarian tumors:
- Cysto-adenoma;
- Cysto-fibroma;
- Cysto-sarcoma;
- Cysto-carcinoma.

The concurrence of the production of solid elements with cysts is very common in the ovaries, as it is elsewhere. The[2] most frequent method in which this union is effected is by the development of a solid tumor and the subsequent formation of cysts within it, although cyst formation may be primary and solid growth may project like a vegetation into the cavity. When a solid tumor is formed, it may undergo cystic degeneration in several ways: 1st, by liquefaction or softening of portions of its tissue by cell infiltration and colloid degeneration of its structure; this occurs with especial frequency in sarcomata, in which a very large cyst

[1] Op. cit., p. 577.

[2] Lücke, loc. cit.

sometimes forms which distends its capsule and in time almost entirely obliterates the traces of the original texture; 2d, they may form by exudation of blood or its elements into the structure of the tumor, as a result of an apoplexy, "apoplectic cysts," or of a species[1] of dropsy; 3d, cysts may arise from distension of the Graafian[2] follicles.

Cysto-adenoma.—The formation of cysts in the structure of an adenoma is a matter of exceedingly common occurrence. "Adenoma of the ovary," says Billroth,[3] "so often becomes cystoid in form, that it may be more suitably treated of in the next section," (composite tumors). The septa of the cysts consist of hypertrophied stroma, while the cellular or cystic spaces which are created are filled with a thick, tenacious material. As yet too little is known of the clinical features of these tumors to allow us to predicate any diagnostic signs.

In the case of adenoma, elsewhere mentioned, which I mistook for malignant disease, the specimen was submitted to Dr. Edward Curtis for examination, and the following report returned by him:

"Sections of the growth show it to be composed of a dense, fibrous stroma, arranged so as to inclose a mesh of sacs or crypts of various sizes and shapes. The walls of these crypts are lined with cylindrical epithelium, and the contents are in some an amorphous, colloid substance, in others, a mass containing large, pale cells, similar to gland cells, with fatty and granular detritus. The tumor thus corresponds to what is described as 'cystic adenoma,' or 'proliferous cyst,' a character of growth which though sufficiently formidable to life cannot be called malignant in the sense of being cancerous or infectious."

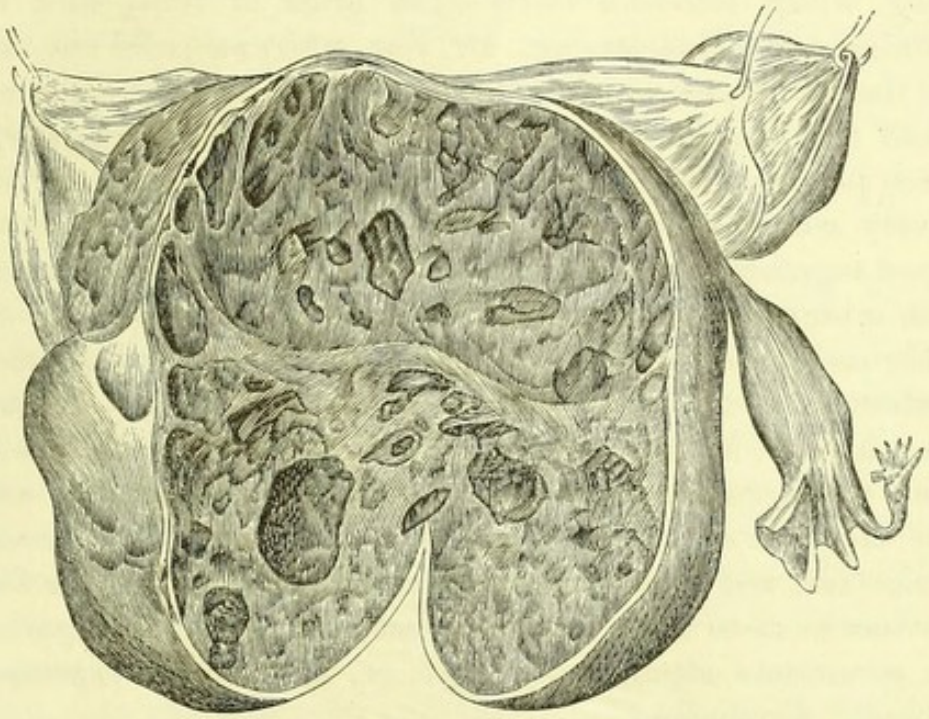
Cysto-fibroma.—As fibro-cystic tumor results from cystic degeneration of a fibroid, and these are very rare in the ovary, it follows that the form which we are now considering must be only exceptionally met with.

Cysto-sarcoma.—The clearest definition given of sarcoma with which I have met is that of Billroth. "A sarcoma is a tumor consisting of tissue belonging to the developmental series of connective tissue substances (connective tissue, cartilage, bone, muscles, and nerves), which, as a rule, does not go on to the formation of a perfect tissue, but to peculiar degenerations of the developmental forms." "By cysto-sarcomata," says Lücke,[4] "those large tumors are especially meant which consist of solid masses, papillary

[1] Klob, op. cit. [2] Rokitansky. [3] Op. cit., p. 616. [4] Loc. cit.

proliferations, and numerous closed and open cavities, such as are found in the mammæ, ovary, and testicle." In some cases the first step in disease is adenoma; then this being affected by sarcoma, which undergoes cystic degeneration, the result is a combination to which Lücke gives the name adeno-cysto-sarcoma.

Fig. 233.



The alveolar tumor of Cruveilhier; probably the adeno-cysto-sarcoma of Lücke.

What then are the differences between cystic adenoma, cystic sarcoma, and cystic fibroma? For the pathological anatomist they are great, for the practical gynæcologist they are very small. In the first case we have a new formation of gland structure; in the second a tissue rich in cells, but without alveoli, and consequently not carcinoma; in the third we have a tumor (rarely found in the ovary), composed chiefly of hypertrophy of connective tissue, each with cysts scattered throughout their substance. The symptoms of all these varieties of cystoids are the same, and as yet our pathological knowledge does not help us in diagnosis. It is, however, highly probable that in the future it may be productive of great good.

Dr. Hewitt quotes the report of a microscopical examination made of a specimen, probaby of cysto-sarcoma, shown at the London Pathological Society, as follows: "It consists of a delicate, fibrous stroma, forming round or oval alveoli, the latter lined by

densely grouped epithelial cells forming a zone, inclosing an area loosely packed with cellular elements of a similar form."

Kiwisch believes that even in this form of tumor the cystic portion may be due to Graafian dropsy, but this view is not shared by other pathologists.

The cysts often grow to a very large size. In Mr. Wells's ninety-first case of ovariotomy the operation was preceded by tapping, which removed thirty-eight pints of thin, dark fluid, containing much cholesterine. Dr. Fox, who examined the tumor, states that the cysts which were emptied by tapping represented one-half the bulk of the mass, which, even after this, weighed thirteen pounds. The structure of the solid portion of the tumor was very complex, the cysts being of every variety of size and grouped together in great confusion. In some the fluid was clear, and in others like pea soup. The proportion between the cystic and fibrous elements governs the character of these masses to such an extent that it is often difficult to classify them. When the former is much in the ascendency, the growth resembles a fluid tumor; when the latter predominates, it appears perfectly solid.

The contents of the cyst may be colloid, purulent, serous, or sanguinolent, and blood is sometimes effused between the fibrous interstices so as to cause a rapid increase in size. The cystic sarcoma sometimes attains very large, or, as Kiwisch expresses it, "colossal," dimensions.

In Mr. Wells's case, just alluded to, the tumor filled the whole abdomen, and extended two inches above the ensiform cartilage by its upper margin, but its growth was not nearly so rapid as that of pure cystic disease. This case had lasted for seven or eight years, slowly increasing until 1863, when it developed at the following rate; June to July, one inch, July to August, one inch, August to September, one inch, September to October, half an inch, October to November, one inch.

The tendency of these growths is to death, by exhaustion of the vital forces, by menorrhagia, or by interference with the functions of the abdominal viscera. In rare cases, however, a well-developed tumor may undergo absorption, a fact which I have had impressed upon me by the following case.

On the 8th of September, 1866, Dr. Wohlfarth requested me to see, in consultation with him, Mrs. W., who had been under his care since April of the same year, for a solid tumor of the right ovary, which had been rapidly increasing in size. The patient was a florid, handsome German woman, of 28 years, and

married. Upon examination I found a hard, globular tumor, larger than the adult head, in the abdomen a little to the left side. It was slightly movable, evidently not connected with the uterus, as proved when this organ was moved by the sound, and obscurely fluctuating in spots. I diagnosticated a cystic sarcoma of right ovary. Having an appointment to examine a case in a few days with several physicians, I requested Dr. W. to have his patient meet me then. Accordingly she was a short time afterwards carefully examined by Professor Chas. A. Budd, and Drs. Foster Swift, Finnell, Roth, Wohlfarth, and myself, with the unanimous verdict of cystic sarcoma.[1] I am thus particular, because I desire to remove all doubt as to the diagnosis. All agreed that operative procedure was not indicated or advisable, although the patient urgently demanded it.

In the succeeding month of December, the patient fell while walking and was so much stunned as to be taken up and carried home insensible. A severe and almost fatal attack of peritonitis, with a slight attack of pleuro-pneumonia followed, from which she recovered in three weeks. Some weeks after this Dr. Wohlfarth examined, and was amazed to find that the tumor had disappeared. I saw her on June 28th, and upon careful examination discovered only a tumor at the site of the left ovary, the size of a goose's egg.

This case was fully and minutely examined, was in itself a very plain and unmistakable one of composite tumor, and there exists in my mind no doubt whatever that the injury done to the tissue of the sarcoma by a violent blow caused its removal by absorption.

Should one or more large cysts be detected, relief to many of the symptoms arising from mechanical interference may be obtained by tapping. The results of the operation are, however, more dangerous than in fluid tumors, hemorrhage and subsequent inflammation often taking place in consequence of it. Another disadvantage attending it is that the operator is more limited as to choice of the point to puncture. Besides this means our efforts at palliation must consist in relieving symptoms as they occur, in giving support to the mass by an abdominal bandage, and in enjoining quietude during menstrual epochs.

The only curative treatment with which we are acquainted that avails anything for this form of tumor is removal by ova-

[1] At the time of this diagnosis we were not as familiar with other composite tumors of the ovary as we are now. To-day I should feel less positive as to the particular kind of composite tumor which existed.

riotomy. The operation is not so promising as in case of cystic degeneration, and should not be undertaken until the evil results of the disease and its tendency to destruction of life are fully manifested. It requires, generally, the long abdominal incision, and is very likely to be rendered difficult by adhesions; still the prospect of success is such as to render the operation in many cases of grave prognosis not only admissible, but incumbent upon us.

Cysto-carcinoma.—The formation of fluid collections may occur with cancer of the ovary in three ways: 1st, cysts may develop in the structure of scirrhus and medullary cancers, as they do in that of sarcomata; 2d, a fluid or cystic tumor, primitively benign, may develop malignant material in its cyst-wall; 3d, a large medullary cancer may, by cell infiltration and disintegration at its centre, form within itself a mass of fluid. The condition may consist then in cancer complicating cystic degeneration or in cystic degeneration complicating cancer. According to Scanzoni, the cancerous mass may develop in the tissue of the cyst-walls and project either internally or externally, or it may grow from the walls by pediculated or sessile tumors filled with medullary material, which are soft, tumefied, and very vascular. In the same tumor both colloid degeneration and medullary cancer may be met with.

The ovarian limits do not always confine these fatal growths. At times they pass them, and affect the peritoneum or other neighboring parts. This tendency to eccentric development accounts for the protuberances, the size of the fist, so often serving as means of diagnosis of ovarian cancer.

The distinguishing characteristic of cystic cancer is its rapidity of development. In a few months it often reaches a size which sarcoma or even cystic degeneration would not attain for several years.

The frequency of these and other ovarian tumors may be judged of from reference to some statistics accumulated by Scanzoni, which have been already referred to:

Number of cases examined,[1]	1823
" ovarian tumors among them,	97
" cases submitted to autopsy,	41
" fluid tumors,	25
" colloid tumors,	9
" cysto-sarcomata,	5
" cystic cancers,	2

[1] To avoid confusion in the mind of any one examining the original table, I would remark that Prof. Scanzoni applies the term "composite" not as I do, but as I employ "multiple."

From this it will be seen that the affection which we are now considering is rarer than sarcoma and very much rarer than colloid or alveolar degeneration.

Surgical treatment holds out little hope in these cases. According to my experience, ovariotomy performed upon patients thus affected almost invariably produces death. Nevertheless, even as a forlorn hope, its propriety should be considered.

The prognosis in this disease is graver and the limit of life shorter than in any other affection of the ovaries.

Alveolar or Colloid Degeneration.—For a long time the generally accepted opinion with reference to colloid (κολλὰ, "glue," and εἶδος, "like"), or jelly-like tumors, was that they were of cancerous nature, but both in their minute structure and in their clinical features they are so far removed from true malignant disease that the belief is becoming very prevalent that they are not of that character. This view is now adopted by Drs. Farre, G. Hewitt, Kiwisch, Collis,[1] Becquerel, and most of the more recent writers upon the subject. In speaking of ovarian colloid tumors Dr. Hewitt remarks: "The latter designation (colloid cancer) is not a good one, for an attentive consideration of the facts leads to the conclusion that the affection is not cancer at all." M. Becquerel[2] seems to have placed the question in its proper light when he says, "Several diseases have been confounded under the indefinite name of colloid cysts; it is therefore essential, before advancing, to distinguish these different varieties. We shall now endeavor to do this after them (Virchow and Scanzoni), previously remarking that under the name of colloid matter some have not at all intended to signify a cancerous product, while others have assigned it such an origin." Virchow[3] evidently alludes to this fact when, in speaking of the difference between the form and nature of growths, he says, "You may therefore say, colloid cancer, colloid sarcoma, colloid fibroma. Here colloid means nothing more than jelly-like." He then goes on to remark that no confusion should exist between such growths as colloid cancer and colloid degeneration of the thyroid gland as to pathological significance.

Virchow's description of alveolar cancer is thus quoted by Becquerel: "Small pouches, which are filled with gelatinous matter and whose walls are lined by a layer of epithelium, are found in the parenchyma of the ovary. These vesicles develop in every direction, but more especially at the periphery of the ovaries, where

[1] Op. cit., p. 205. [2] Op. cit., p. 226. [3] Cellular Pathol., p. 512.

they form masses of irregular shape. Some of them are isolated, while others are grouped together in the following manner. The walls of these vesicles disappear by atrophy of cellular tissue, when they are only formed by their epithelial lining. This becomes infiltrated with fat, and the walls forming the connection are easily ruptured. Those of the large cyst remain intact and become hypertrophied. . . . . In other cases the vesicles rupture by overdistension; from this results hemorrhage, and blood is found in the vesicles." Kiwisch describes it as a breaking up of the stroma of the ovaries into cellular cavities, alveoli, closely aggregated together and inclosing a jelly-like, semifluid mass. By others it has been likened to a sponge or a honeycomb.

It is safe to conclude, from the present aspect of the subject, that, while colloid deposit may coexist in the ovary with encephaloid cancer, the peculiar breaking up of the stroma into alveoli which we have just described, is not in itself a malignant affection, but one which seems to constitute a connecting link between cancer and the benign degenerations.

Alveolar degeneration frequently complicates cancer, sarcoma, and fluid tumors. "We have observed," says Kiwisch, "alveolar degeneration of considerable extent remain in the system for a long series of years, without any remarkably bad effects." Nevertheless the prognosis of the affection is always grave.

Should a large cyst be discovered anywhere, and the size of the tumor require diminution on account of interference with surrounding parts, paracentesis may be practiced; but in a pure alveolar tumor, no such accumulation will be discovered. Under these circumstances, if the disease steadily advance and the constitution suffer in consequence, we should be encouraged by recognition of its non-malignant nature to perform ovariotomy.

CHAPTER XLVII.

OVARIOTOMY.

Definition.—This term, derived from ωαριον, "the ovary," and τομη, "incision," signifies simply the removal of the ovary by surgical procedure.

History.—The history of the operation goes back only to a very recent date. It has become customary for those who have written upon it to cite ancient authors to prove that even as long ago as the time of the early Greeks the ovaries were often removed in the inferior animals as is done in our own time. The writings of Aristotle put this beyond question. It is even asserted that among the Lydians castration of the human female was practiced in order to enable them to serve as eunuchs. In more recent periods, we are told by Wierus, that a Hungarian swineherd, incensed by the lasciviousness of his daughter, removed her ovaries, in hope of reformation, after the manner in which he was in the habit of spaying his swine. Towards the close of the eighteenth century both ovaries, which had descended into the inguinal canals, were removed by Dr. Percival Pott, of England. But all this, though interesting as a matter of physiology, has little to do with the operation of ovariotomy, according to the true signification of the term. In the one case a minute and healthy gland, which is sparsely supplied with blood, was removed from a healthy peritoneal cavity. In the other a huge sac, which is supplied by large bloodvessels, and has in many instances contracted adhesions to a diseased peritoneum, requires extirpation.

The idea of removing large ovarian cysts, even, is not new, since it was discussed in 1685, by Schorkopff,[1] in 1722, by Schlenker,[1] in 1731, by Willius,[1] in 1751, by Peyer, and in 1752, by Targioni. In 1758, Delaporte even went so far as formally to propose the operation to the Royal Academy of Surgery, and in 1776, Laumonier, of Rouen, through an error of diagnosis, is supposed by some to have removed the diseased ovary. A careful examination of the subject appears to have stripped Laumonier of his mere-

[1] Ovariotomy in Germany, &c., by Paul W. T. Grenser, 1871.

tricious fame as a discoverer. "In the recent valuable statistical work of Mr. Clay, of Birmingham," says Tyler Smith, "the case of Laumonier is given as the earliest on record, but it is evidently one not of cystic disease, but of pelvic abscess after delivery, implicating the ovarium and Fallopian tube." As the eighteenth century approached its close, the suggestions of the writers already mentioned were not forgotten, but were from time to time repeated; among others by John Hunter in 1787, and later still by William Hunter. In 1798, Chambon ventured to prophesy that it would in time become a recognized resource in surgery, and in 1808[1] Samuel d'Escher, a student of Montpellier, proposed a specific plan for its performance based upon the teachings of one of his masters, M. Thumin.

In 1786, one observer stood upon the very verge of the great discovery, very much nearer than Laumonier ever did, and yet failed to systematize it as a surgical resource. Like many a man before and since his time, he recognized and appreciated a *fact*, but failed to connect this with a *law*. The following is a quotation from a work written by Thomas Kirkland, an Englishman, and published in London in 1786. It is entitled, "An Inquiry into the Present State of Medical Surgery."[2]

"A woman, betwixt twenty and thirty years of age, had been tapped twice for an ascites, and a large quantity of water taken away at each time; but after the last operation the puncture did not heal, and in a little time, a substance they did not understand protruding, I was desired to see her. It was evidently a part of a cyst, and, as it had already dilated the sore, I persuaded her to let it alone till the opening became larger, in hope of a better opportunity of affording relief. Accordingly, in ten days or a fortnight the protrusion was much larger, and by the help of a dry cloth a cyst that would contain five or six gallons of water was gradually extracted. More than a quart of matter immediately followed, and more was daily discharged for some time, yet the woman recovered without further trouble than keeping the parts clean, and afterwards bore several children."

Later on in his work he says:

"We have given an instance, p. 195, where a cyst being taken away cured an ascites; and seeing medicines do not avail in encysted dropsies of the abdomen, is it not worth our while to consider whether, when they are unconnected with the adjacent parts, after taking away the water,

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[1] Wieland and Dubrisay, op. cit.

[2] Med. Record, June 15th, 1867, from Exchange.

the patient might not sometimes be cured by enlarging the puncture, pressing the cysts forward, and draining it out?"

He then proceeds to examine the difficulties in the way and the objections which may be brought against the operation, and thus concludes:

"At present, I offer these hints to those who think the subject deserving attention, and time will probably determine the question."

Thus, as we advance from more remote periods to the beginning of the nineteenth century, we find the minds of physicians being gradually prepared for the reception of ovariotomy, as its consummation was step by step approached. But all that we find accomplished up to this time is the promulgation of ideas, prophecies, and propositions, and the performance of accidental operations, or of those upon healthy ovaries.

In 1809[1] the first real case of ovariotomy ever undertaken was successfully performed by Dr. Ephraim McDowell, of Kentucky. His first case was successful, the patient living twenty-five years afterwards. Subsequently he operated thirteen times, with eight favorable results. In 1821, Dr. Nathan Smith, of this country, operated successfully. In 1823, Dr. Lizars endeavored to introduce the operation into Scotland, and operated four times, but his results were bad. In one case the tumor was uterine and was not removed, in one no tumor could be discovered after abdominal section, and one of the two cases upon which ovariotomy was performed died.

Since this period, Atlee, Peaslee, Kimball, and Dunlap have been most influential in establishing the operation in America. In England, Dr. Charles Clay, in 1840, pressed it upon the notice of the profession, and he was soon ably sustained by Lane, Wells, Keith, Bryant, Baker Brown, and many others, whose names have become famous in connection with it.

In Germany the operation was performed in 1819, by Chrysmar,

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[1] Mr. Baker Brown's historical sketch of this operation commences, "I do not pretend to give a history of the operation of ovariotomy." The necessity for this declaration will be fully appreciated when it is stated that nowhere in his notice is the name of McDowell, Atlee, or any other American surgeon to be found. He declares that "The first who attempted extirpation appears to have been Aumonier, of Rouen, in 1782, and he was successful." In this statement, as Dr. Parvin has pointed out, Mr. Brown was wrong in three points, first, as to the fact; second, as to the name of the operator; and third, as to the date. The supposed ovariotomy was performed in 1776, by Laumonier, and was really the opening of a pelvic abscess.

and subsequently by Dieffenbach, Heyfelder, Kiwisch, Nüssbaum, Siebold, and Langenbeck. But the results in that country have been singularly unfortunate, so markedly bad, indeed, that Scanzoni, writing in 1856, says, "We consider ovariotomy a surgical temerity. . . . . It results from what precedes that we ought completely to reject ovariotomy, and that we will renounce the glory of having successfully performed such an operation, until facts come to demonstrate that it does not terminate as frequently by death as we now think." It is hardly just to quote such a passage, thirteen years after it was written, in regard to an operation which has so rapidly grown in favor as this. Whether the facts furnished by English and American ovariotomists have caused the eminent German gynæcologist to reverse his conclusion, as they have Drs. Charles West, Tyler Smith, Savage, Hall Davis, and many other candid searchers after truth, I am unable to say. Prof. Scanzoni's work was translated in this country by Dr. A. K. Gardiner, in 1861, who annotated it, "with the approval of the author," and no renunciation is there made.

These statements were made in the first edition of this work, which appeared in 1868, and left unaltered in the second, which was issued in 1869. I have preserved them here for the purpose of comparing them with those which, thanks to the exhaustive report on this subject recently issued by Dr. Paul Grenser, I am enabled to make at present.

"It is only within the last five years," says Grenser, "that much progress has been made in Germany in this operation." Unfortunately for many years insuccess appeared to attend it, and thus the voices of the most eminent and authoritative were raised against it. Of the first three patients ever operated upon there (by Chrysmar, in Wurtemberg), two died. Chrysmar commenced operating in 1819; his results were not such as to popularize a new and dangerous procedure. In 1828, the adverse criticism of the great Dieffenbach was pronounced in these strong terms: "Whoever[1] considers the opening of the abdominal cavity as a light matter, and as Lizars seems to believe that the difficulties are small, whoever thinks that this operation is accompanied by no more dangers than other operations, must be very thoughtless; for me, my one case is sufficient." The "one case" to which he refers, and from which he drew so illogical and hasty a conclusion, was an incomplete operation. In spite of the adverse weight of

[1] Grenser's Report on Ovariotomy in Germany, 1871.

this opinion, (in 1835) Quittenbaum, (in 1841) Stilling, and (in 1851) Martin, operated in a few cases, and with varying success. Writing of the operation at this time, when overclouded by repeated insuccesses it had failed to command the confidence of the profession, Grenser says: "Most of the ovariotomies performed within the last forty years had a fatal termination, and as a consequence reliance could not be felt in it, and confidence in it was altogether shattered when the celebrated Dieffenbach took ground against the operation." His opinion, in 1828, has been given; let us see how the experience of twenty years had affected it. In 1848 he wrote: "The operation does not benefit either patient or physician; the idea of opening into the abdomen of a sick, cachectic woman, affected with a hard tumor of the ovary, or even employing Lizars's method with cross-incisions, in order to remove the tumor by force, seems neither reasonable nor useful." He modified his opinion somewhat where the tumor was fluid, of small size, and movable. Thus wrote the great surgical light of Germany, and while he wrote American and English surgeons were gaining great results for humanity and for science in this same field. It must not be supposed that even in his own country advances were not being made, for Stilling, Büring, and others were carrying on the work. In 1850, the latter announced an important advance, namely, that adhesions should not be considered as a contraindication to removal.

In 1852, Edward Martin declared that the question was no longer as to the propriety and efficiency of ovariotomy, but of circumstances favorable to success. Martin's rules for operating, read even by our present lights, are most of them excellent.

About this time the voice of Kiwisch was raised against the operation. He[1] collected the statistics of 54 cases, of which 51 ended fatally, and concludes that certainly over half of all submitted to operation died. It was soon after this that Scanzoni and Gustave Simon gave their evidence against the operation, and increased its disfavor to such a degree that, as Grenser says, "its very existence was threatened." This opposition seems to have lasted up to 1864, when the tide appeared to turn in its favor, and now it numbers among its advocates Breslau, Gusserow, Hildebrandt, Speigelberg, Martin, Stilling, Veit, Wagner, and the now reformed Scanzoni. Grenser collects in 1871 the statistics of 129 operations performed in Germany, of which 60, a little less than

[1] Grenser, loc cit.

half, recovered. When these results are compared with English and American statistics, they show that Germany has much to make up; but experience has taught us how surely and swiftly she will stand abreast of other civilized nations in this as she does in every other advance and improvement. The report of Grenser upon ovariotomy in Germany, and another upon the operation in England, will undoubtedly do a great deal towards the accomplishment of this result.

According to Grenser we owe to Germany two of the most important of the improvements which have taken place in the operation since the days of McDowell: first, the adoption of the short incision and tapping the sac *in sitû*, which originated with Quittenbaum; second, the external treatment of the pedicle, which he declares was first resorted to and its advantages insisted upon by Stilling in 1841, and not by Duffin in 1850. In 1849, Martin first secured the pedicle in the lips of the wound. There are other advances which have been made in Germany; but I mention only those which have had a decided influence on the operation.

Into France the operation was introduced, or as some French[1] writers express it, "reintroduced," by Dr. Woyerkowski, in 1844. It was subsequently performed by Vaullegeard, in 1847, and later still by Nélaton, Maisonneuve, Jobert, Demarquay, and other surgeons of Paris. The results of these attempts, however, had the effect of casting discredit on the operation, from which it is only now emerging, thanks to the writings of Jules Worms, Ollier, Labalbary, Vegas, and more especially to those of Koeberlé, of Strasbourg. When it is stated that all these writers have published since 1862, it will be appreciated how recent is the favorable reception of the operation in France.

M. Boinet, in 1867, read an essay[2] before the Academy of Medicine, strongly advocating it, and "reprobating the timidity of French surgeons who have so long recoiled before it."

In concluding the history of ovariotomy, it may be said that the conception of the operation in all its steps is over a hundred years old, and is of European origin; that for its accomplishment we are indebted to what M. Piorry once styled, "une audace Américaine," which was supplied by Dr. McDowell; and that many of the important improvements which have since been introduced, we owe to Great Britain. Pre-eminently an Anglo-American pro-

[1] Wieland and Dubrisay, the French translators of Churchill.

[2] N. Y. Med. Record, July, 1867.

cedure, it has, even at the present day, not assumed its legitimate place in France and Germany.

Varieties.—There are two forms of the operation; one, abdominal ovariotomy, in which the cyst is removed through the incised abdominal walls; the other, vaginal ovariotomy, in which a small cyst is removed by incision through the fornix vaginæ. Incomplete cases, or those in which only a portion of the sac is removed, have also been grouped under this head, but very improperly so, for less than complete removal constitutes an entirely different operation, which is known as partial excision.

Advantages.—The advantages of the operation are these: it enables us to remove solid and polycystic tumors, which are curable by no other method, and to extirpate those of unilocular form, which have resisted all other procedures. Great as are the dangers of the operation, it often offers a better prospect for recovery than any of the other plans mentioned, and in case of their failure it always remains as a reasonable hope for the patient, whose life will probably terminate in three or four years, if art do not interfere.

Dangers.—The dangers which attend it are numerous and grave. The following table, constructed by Dr. Peaslee upon the post-mortem evidence of 50 cases, will exhibit them at a glance.

Peritonitis,	12	Strangulation of intestine in wound,	1
Septicæmia,	9	Diarrhœa,	1
Shock or collapse,	7	Erysipelas,	1
Exhaustion,	7	Tetanus,	1
Shock and septicæmia,	1	Ulceration through bladder,	1
Hemorrhage,	9	Unknown,	9

It will be seen from this that peritonitis destroys one-quarter of all who die from the operation, and septicæmia, or absorption of putrid material, one-sixth. After these causes follow those directly resulting from the depressing influence of the operation upon the nervous system.

Dr. John Clay makes the following analysis of the causes of death in 150 fatal cases, reported in his tables.

Shock or collapse,	25
Hemorrhage,	24
Peritonitis,	64
Phlebitis,	1
Tetanus,	2
Intestinal affections,	6
Abscess,	3
Chest diseases,	4
Congestion of brain,	1
Diabetes,	1
Not stated,	19
	150

Here also peritonitis appears as the most frequently fatal sequel of the operation, then come shock or collapse, and hemorrhage. After these no causes which are especially operative are recorded.

It may be stated as a fact, that peritonitis and septicæmia occurring after the operation, are not due to exposure of the peritoneum to air or to any special tendency of the vessels of the stump to absorption of putrid matters. It is, to say the least, extremely probable that both result from—

1st. Putrefaction of blood and the contents of the sac left in the peritoneum, or oozing into it from the small vessels of broken adhesions.

2d. Putrefaction of the stump beyond the ligature securing its vessels.

3d. Phlebitis set up by ligation of the veins of the stump.

4th. Pouring of pus into the peritoneum from incomplete closure of the peritoneal lips of the abdominal incision.

5th. Irritation of the peritoneum by foreign substances (ligatures) left within it.

If these propositions be true, the indications suggesting themselves for the avoidance of danger will be—

1st. To leave no fluid susceptible of putrefaction in the peritoneum.

2d. To prevent secondary hemorrhage by carefully checking all flow, before the abdominal wound is closed, by ligatures, torsion, the actual cautery, and persulphate of iron.

3d. To avoid the flow of pus in the peritoneum by uniting the abdominal wound on both its cutaneous and peritoneal aspects.

4th. To avoid as much as possible leaving foreign substances within the peritoneum, and to employ the most innocuous substances as ligatures when these are necessary.

5th. To provide the means for cleansing the peritoneum before closing the abdominal wound whenever putrescent materials are likely to collect in the abdomen.

Statistics of Ovariotomy.—The time has passed when in an essay upon this subject the question need be discussed as to the propriety of recognizing ovariotomy as a legitimate resource in surgery. The operation has to-day not only the verbal indorsement of the first obstetric surgeons of the world; it has the more positive testimony of their resorting to it in dealing with cases requiring its aid. So lengthy is the list of eminent names giving it their sanction, and so thoroughly has the ground been investigated by recent writers, that I deem it unnecessary to examine it more minutely. But besides this the results and rapid spread of the operation in Great Britain and America may be pointed to in reply to such a question, results which are fully as favorable as those of other important capital operations.[1] "Take, for example, hernia. Sir A. Cooper records 36 deaths in 77 operations; and Dr. Inman 260 deaths in 545 cases; or ligature of the large arteries, of which Mr. Phillips has collected 171 cases, of which 57 died; Dr. Inman 199 cases, of which 66 died. Of 40 cases of the subclavian artery 18 proved fatal."[2]

An approximative idea of the rapidity with which ovariotomy has been accepted, may be obtained from the statistics collected by different writers during the past ten years:

In 1856 Dr. Lyman,[3]	collected	212 cases
In 1860 Dr. J. Clay,[4]	"	425 "
In 1864 Dr. Peaslee[5] raised the number to		787 "

In presenting the statistics of the subject it is difficult to do so with perfect justice. The operation is a recently employed procedure, and although simple in its details depends for success so much upon little, and at first sight apparently insignificant, points, that the statistics of inexperienced operators cannot with justice be admitted. A proof of this is offered by a comparison of the earlier and more recent results of the most eminent ovariotomists as given by Prof. Simpson:

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[1] Remarks by Mr. Erichsen in Lancet for 1862, p. 688.

[2] Dr. Churchill's review of Dr. Lee on Ovarian and Uterine Diseases.

[3] Prize Essay, Mass. Med. Soc.

[4] Translation of Kiwisch on Ovaries.

[5] On Ovariotomy, Trans. Acad. Med. N.Y.

Dr. C. Clay	in his	first	20	operations	lost	1	in	$2\frac{1}{2}$
"	"	second	20	"	"	1	"	$3\frac{1}{3}$
"	"	third	20	"	"	1	"	4
Mr. S. Wells	"	first	50	"	"	1	"	2
"	"	second	50	"	"	1	"	3
"	"	third	50	"	"	1	"	4
Dr. Keith	"	first	20	"	"	1	"	$3\frac{1}{3}$
"	"	second	20	"	"	1	"	$6\frac{2}{3}$
Dr. Atlee	"	first	101	"	"	1	"	$2\frac{5}{38}$
"	"	following	78	"	"	1	"	$3\frac{5}{7}$

Between the statistics collected in Germany and those in Great Britain and America, there is so marked a discrepancy that one cannot but agree with Dr. Atlee,[1] of Philadelphia, in this opinion: "The German mortality is excessive, and there must be a fault somewhere. Their great dread of making a free opening in the abdominal cavity, and their method of managing the pedicle, may have much to do with their want of success." Simon declares that out of sixty-one operations only twelve completely recovered; and Scanzoni,[2] in giving his reasons for not accepting it, speaks of it as "a procedure by which Langenbeck has lost five patients out of six, and Kiwisch four out of five."

Dr. Paul Grenser, of Germany, has recently, after a six months' tour in England for the purpose of investigating this subject, made a careful report of the results of his observations. I quote in reference to it an abstract by Dr. S. Brandeis,[3] of Kentucky:

"The reason why English surgeons surpass all other nations in the results obtained in ovariotomy, Grenser believes to be found in the easy and quiet temperament, with the hardier and better nourished systems of English women; the proper selection of the locality; rooms well ventilated, on the second or third story, remote from patients with serious ailments; the great variety of precautionary measures; the superior operatic skill and manipulation; and nurses well trained for the work."

As it is not my intention to present full statistics upon ovariotomy, which would be out of place in a work of the character of this, but merely to give the practitioner certain facts which will enable him to decide in favor of, or against, the operation at the bedside, I shall content myself with stating the results obtained by operators who have become eminent in connection with it during the past ten or fifteen years. Of the following list, those

[1] Gardner's Notes to Scanzoni, p. 255. [2] Op. cit., p. 471.

[3] Richmond and Louisville Med. Jour., April, 1871.

who have operated in Europe are quoted chiefly on the authority of Grenser, whose report was made in 1871; those in America mainly from personal testimony. The statement in almost all cases is brought up to 1871. When this is not done it is so stated.

For the purpose of avoiding tediousness of detail, the statistics of no surgeon who has performed less than five operations is introduced into this table.

Operator.	Country.	No. of cases.	Recoveries.	Deaths.	Authority.
Spencer Wells,	Great Britain.	400	293	107	Personal communication to Dr. Peaslee.
Clay,	" "	210	138	72	Dr. Grenser.[1]
Baker Brown,	" "	120	84	36	" "
Keith,	" "	100	81	19	Lancet, August, 1870.
Bryant,[2]	" "	28	17	11	Dr. Grenser.
Willett,	" "	12	4	8	Dr. Brandeis.[3]
Tyler Smith (to 1866),	" "	17	14	3	
Nüssbaum,	Germany.	34	18	16	Dr. Grenser.[4]
Spiegelberg,	"	16	10	6	" "
Koeberlé,	"	69	42	21	Dr. Peaslee.
Sköldberg,	Sweden.	21	17	4	N. Y. Med. Jour. May, 1870.
W. L. Atlee,	United States.	242	"⅔ of the operations were successful."		Personal communication.
Kimball,	" "	130	86	44	" "
Dunlap,	" "	60	48	12	" "
Bradford,	" "	31	28	3	Rd. & L. Med. Jour. Ap. 1871.
Peaslee,	" "	26	17	9	Personal communication.
White,	" "	25	17	8	" "
Marion Sims,	" "	11	10	1	" "
Emmet,	" "	17	8	9	" "
Kammerer,	" "	5	1	4	" "
McRuer,	" "	22	16	6	Dr. Peaslee.
Axford,	" "	7	5	2	Personal communication.
Allan Smith,	" "	5	2	3	Dr. Blanton.
Noeggerath,	" "	6	1	5	Personal communication.
Gaillard Thomas,	" "	24	17	7	

Circumstances rendering a resort to the operation unadvisable.—Should an ovarian tumor grow very slowly, give no serious inconvenience to the patient, and not depreciate her general health, nor require tapping to secure her comfort, a resort to ovariotomy is not advisable. Though its results have been most gratifying, they are not sufficiently good to admit of interference in such a case as we are supposing. The following circumstances would strengthen this conclusion—

Presence of *much* solid matter in the tumor;

The patient being in robust health and free from suffering;

[1] Report on Ovariotomy in England, abstract by Brandeis. Richmond and Louisville Jour., April, 1871.

[2] Report carried up only to 1866

[3] Extract from Swedish table. Brandeis. R. and L. Med. Jour., April, 1871.

[4] Report on Ovariotomy in Germany. Pamphlet translated by Grunhut.

Relief having been afforded by paracentesis;
Non-albuminous fluid having been withdrawn by tapping.

The opposite of all these circumstances will call for it, unless one of the other operative procedures which have been mentioned be preferred.

Conditions favorable to the operation.—

Clearness and certainty of diagnosis;
Good constitutional condition;
Patient being hopeful and desirous of operation;
Unilocular character of cyst;
Absence of solid matter in its structure;
Abdominal walls not very thick;
Absence of adhesions and ascites;
Small amount of albumen in fluid of cyst.

The possibility of error in diagnosis has been already sufficiently dwelt upon. The importance of clearly understanding the nature of the tumor cannot be over-estimated. The operator should, by repeated, prolonged, and most careful examinations alone, and afterwards aided by others, endeavor to determine all the features of the case, not merely the fact that a tumor exists, but that it is ovarian and not uterine, that pregnancy does not exist with it, that it is not cancerous, that its contents are fluid, and that the fluid felt is all ovarian and none of it abdominal. In two cases I have, in company with a number of others who consulted with me, been greatly deceived. In one case, when upon the point of operating upon a large, multilocular tumor, the patient lying on the table, I discovered the coexistence of pregnancy in the fifth month. In another, which I supposed to be a large ovarian tumor, upon cutting through the abdominal walls, an immense amount of fluid escaped, leaving for removal an adenoma of the ovary not larger than the adult head. Cases are on record in which surgeons of great experience and skill have cut down upon uterine fibroids, cysts of the kidneys, the pregnant uterus, and other growths, under the impression that ovarian cysts existed, and instances have occurred in which abdominal section discovered no tumor of any kind, the operator having been deceived by tympanites.

As to the period at which the operation should be undertaken, there is, and probably always will be, a great deal of diversity of opinion. As the decision of this point will always involve a great

deal of responsibility on the part of the operator, it will not be without interest to refer to the views of the chief authorities of our day. Baker Brown operates quite early, as soon as the diagnosis is fully established, in order to avoid changes in the cyst and peritoneum. Keith, Peaslee, Atlee, and Tyler Smith wait for some degree of impairment of health and emaciation. Wells operates when the patient cannot walk a mile without difficulty. Bryant does so when the tumor, by its size, inconveniences the patient and interferes with her domestic duties, while Greenhalgh postpones the operation as long as it is justifiable, in order to secure changes in the peritoneum which will render it less liable to traumatic peritonitis.

It appears to me that the general rule should be this: if a small cyst be discovered which is removable by the vagina, it should be removed as soon as possible, while one too large for this should be interfered with when it is evident that the patient is failing in strength, and becoming emaciated, depressed, and nervous.

The following table, constructed by Dr. J. Clay, of 229 cases in which the general health was ascertained, displays the remarkable fact that even great emaciation does not produce a very unfavorable result:

Class of cases.	Health good	Health impaired.	Much emaciated.	Complicated with other diseases.	Complicated with pregnancy.
Successful, ...	21	17	47	21	2
Unsuccessful, . . .	21	25	46	27	2
Total, ...	42	42	93	48	4

The mental state of the patient has so marked an influence on the result that operators agree that a depressed and apprehensive mind commonly produces an unfavorable issue.

The greater the amount of solid matter in an ovarian tumor, the more favorable will be the prognosis as to rate of growth and the more unfavorable as to cure.

The following is Dr. Clay's table in reference to the character of the tumor:

Class of cases.	Monocystic.	Polycystic.	Solid.	Small.	Medium.	Large.
Successful, ...	19	66	8	4	14	30
Unsuccessful, . . .	25	106	13	3	17	48
Total, ...	44	172	21	7	31	78

The greater the thickness of the abdominal walls the more extensive will be the surface which must unite to effect closure of the abdominal opening, and the greater the probability of suppuration occurring between the lips of the wound and pus pouring into the peritoneum.

The presence of adhesions greatly complicates the case, but as this can be determined only after abdominal section, its consideration will be postponed until that point in the description of the operation is reached.

Mr. I. B. Brown first pointed out the importance of an abundance of albumen as a prognostic sign in ovarian cysts. "Believing as I do," says he, "that the highly albuminous condition of the fluid exhausts the system in a similar way to that of albuminuria from disease of the kidneys, I consider that it contraindicates an operation as clearly as the latter disease. The nature of the contents may be readily discovered by withdrawing a little by an exploring needle." I give this quotation, not for the purpose of indorsing the view, for I feel that it is a fallacious doctrine, but to show how strongly Mr. Brown feels in reference to the matter. The two states between which he draws a parallel are evidently different in these respects: in one case the drain of albumen ceases with the operation, while in the other it continues unabated; in the one the drain of albumen is the only evil resulting to the system, while in the other it is far less important than urinæmia, which accompanies it.

In several of my own cases, the fluid removed by tapping after abdominal section was gelatinous under heat and nitric acid, and yet the sac being removed, the patients rapidly recovered without an unfavorable symptom. That an abundance of albumen gives an unfavorable, as its absence gives a favorable prognosis, however, is possible.

Conditions unfavorable to the operation.—The following circumstances, although unfavorable to the operation, do not contraindicate it unless they exist in the most exaggerated degree:

Obscurity as to diagnosis;
Great constitutional impairment;
Gastric or intestinal disorder;
Depression of spirits;
Multilocular character of cyst;
Presence of solid matter in tumor:
Highly albuminous character of contents;
Presence of extensive and firm adhesions;

Ascites;
Complication with other diseases;
Complication with pregnancy.

Grounds upon which a choice of operative procedures should be based.—Before proceeding to describe the operation of ovariotomy, it will not be out of place to examine this question.

Tapping is not a curative but a palliative operation, and need not detain us.

Drainage.—When it is ascertained that a small cyst is unilocular, and more particularly, when by explorative incision it is known to be adherent, this operation may be resorted to either by the vagina or abdomen.

Injection is applicable to unilocular cysts filled with clear and slightly albuminous fluid, or even to those containing pus or blood. It has not been found to produce good results in those containing thick, unctuous, and fatty matters. This plan may be combined with drainage.

Incision.—This method of draining the cyst has its limited sphere in those unfortunate cases of multiple and polycystic sacs which, on account of firm adhesions, cannot be removed, and from their multilocular character are not susceptible of treatment by drainage or injection.

Partial Excision.—It is known that when a cyst containing a clear, straw-colored, non-albuminous fluid discharges itself into the peritoneum, recovery may take place, the effused fluid being eliminated and the sac contracting. Partial excision should be reserved for such cases and never employed in others, for where the contents of the sac are tenacious and albuminous it is more fatal in its consequences than ovariotomy itself. Dr. Clay has collected 24 instances in which the operation was performed. 10 patients recovered and 14 died, and of the 10 spoken of as recoveries only 7 were radically cured.

Ovariotomy.—This operation is applicable to cases between those desperate ones of cystic disease susceptible of treatment only by incision, and those not susceptible of cure by injection or drainage. It also offers the only hope in cases of composite and solid tumors.

In certain cases, rare ones I admit, in which a tumor not larger than the head of a child a year old falls down into Douglas's cul-de-sac it will be possible to cut through the vagina, seize the sac, draw it down, ligate the pedicle and return the stump to the abdomen. If this can be done a great deal of risk will be avoided,

and the patient spared a lengthy period of suspense, with the prospect of a serious capital operation at the end. I have met with but one case in which I felt justified in resorting to this procedure, and that case I shall now lay before the reader as it was at the time reported for a medical journal.

Vaginal Ovariotomy.—Mrs. S., a multipara, of spare habit, and remarkably excitable nervous system, had suffered for a length of time from retroflexion of the uterus. For this she had been successfully treated by Dr. James L. Brown, and for the past three years had been entirely free from any rational or physical signs of the condition until four months ago. At this time finding a return of symptoms, due to pressure upon the rectum, she sent again for her physician. Dr. Brown examined and discovered a movable cyst behind the uterus, which, in the erect and supine position, pushed the fundus uteri forwards and occupied Douglas's cul-de-sac completely. This cyst was equal in size, when first discovered, to a large orange; was painless upon pressure, and could readily be pushed out of the pelvic cavity. Dr. Brown made the diagnosis of cystic degeneration of the ovary, and advised the patient to seek further counsel.

In accordance with this suggestion, Drs. Peaslee, Noeggerath, and myself met in consultation and carefully investigated the case. At this time we found everything in accordance with what has been already stated, and concurred in the opinion of Dr. Brown, deciding still further that the right ovary was the seat of the disease, and that the cyst was in all probability multilocular.

In discussing the subject of treatment three plans were proposed: first, that the cyst should be allowed to develop so that ovariotomy might be resorted to after some years of life had been passed in comparative comfort; second, that the cyst should be tapped per vaginam; and third, that the operation of ovariotomy should be performed through the fornix vaginæ, in the same manner that it is ordinarily accomplished through the abdominal walls. The last proposal was made by myself, and urged upon these grounds:

1st. I felt satisfied that the cyst being movable (as proved by the fact that the knee-elbow position would at once cause it to roll out of the pelvis), sufficient space could be obtained through the fornix vaginæ to withdraw the emptied sac.

2d. I preferred this procedure to simple tapping, because drainage is very apt to follow paracentesis when practiced through the vagina, which might exhaust the patient and prevent a resort to vaginal ovariotomy at a later period. Furthermore, I did not re-

gard the increase of danger attendant upon vaginal section as very great, even if removal of the cyst proved impossible; for in case of such an occurrence I proposed simply to tap the exposed cyst and close the vaginal opening by silver sutures.

3d. I urged the adoption of the vaginal operation rather than waiting for the full development of the cyst, because of the peculiarly anxious nature of the patient. After being informed of the nature of the disease, she thought and spoke of almost nothing else, lost appetite, slept badly, and evidently depreciated in strength. From all that I could learn from her husband, who is a practitioner of medicine, from Dr. Brown, and from my own observation, I thought that she would prove a most unfavorable case for ovariotomy at time of full development of the tumor; and, to repeat a consideration just given in connection with paracentesis, I regarded the tentative process as not attended by great risk, since it involved incision only into the most dependent portion of the peritoneum.

All these views were fully laid before the patient and her husband, and at the end of a fortnight it was decided that the operation should be attempted.

Dr. Brown prepared the patient for the operation by the use of a cathartic, and kept her upon a milk diet for forty-eight hours previous to its performance. On Sunday, February 6th, 1870, at 3 P.M., I proceeded to operate, in presence of Drs. Peaslee, Brown, Walker, Purdy, J. C. Smith, and Sproat.

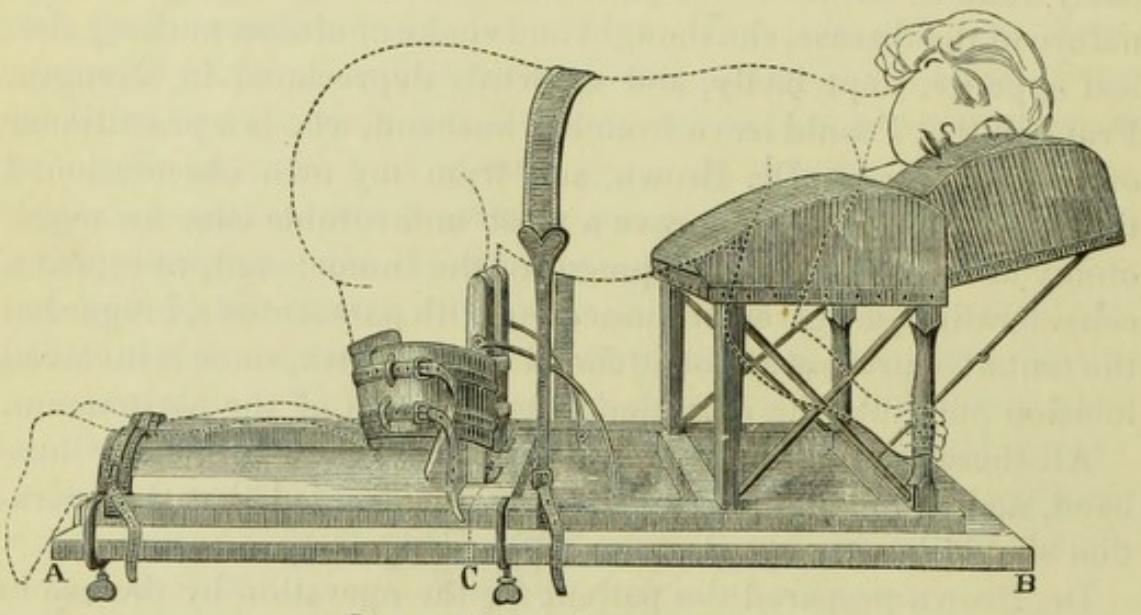
Dr. Purdy having anæsthetized her with ether, she was placed in the knee-elbow position, and secured upon the apparatus of Dr. Bozeman. This apparatus not only completely secures the patient in this position, by straps and braces, but makes the position perfectly comfortable for any length of time, and also favors the administration of an anæsthetic. It is shown in Fig. 234.

To prevent all possibility of the rectum falling into the line of incision, a rectal bougie was inserted for about five inches. Sims's speculum being now introduced, and the perineum and posterior vaginal wall lifted, I caught the fornix vaginæ midway between the cervix and rectum with a tenaculum, drew it well down, and with a pair of long-handled scissors, one limb of which was placed against the rectum and the other against the cervix, cut into the peritoneum at one stroke.

The first step of the operation being now accomplished, I proceeded to the second. The patient's position was changed to the dorsal decubitus, and passing my finger through the vaginal incision I distinctly touched the tumor, which had now fallen again

into the pelvis, and fastened a tenaculum in its wall. With a small trocar I then punctured, one after the other, three cysts, which gave vent to about six or eight ounces of fluid which looked precisely like vomited bile. Drawing upon the cyst, it now passed without difficulty into the vagina.

Fig. 234.



Bozeman's securing apparatus.

For the third step of the operation the position of the patient was again changed. She was now placed in Sims's position on the left side and his speculum introduced. Passing through the pedicle at its point of exit from the vaginal roof a needle, armed with a strong double silk ligature, I tied each half of the penetrated tissue and cut off the cyst and ligature. The cul-de-sac of Douglas was then sponged, the pedicle returned to the abdominal cavity, the incision in the vagina closed by one silver suture, and the patient put to bed.

The entire operation occupied thirty-five minutes, and presented no difficulties other than those slight ones incidental to ligature of a pedicle at some distance up the vagina.

Subsequent to the operation the patient was kept quiet and free from pain by opium, sustained by fluid food, and strictly confined to the supine posture. Her only discomfort arose from sleeplessness, and nausea which followed the use of the anæsthetic, and for ten days she progressed without any unfavorable symptoms. At this time, being allowed to leave the bed and lie upon the lounge, she exerted herself unduly, and an attack of peri-uterine cellulitis invaded the right broad ligament. The pulse became rapid, the skin hot and dry, and a phlegmonous mass as large as

the fist, hard, and painful to the touch, could be distinctly felt. This soon began to diminish, and at the end of the thirtieth day had ceased to prove a source of any annoyance, while the general condition of the patient showed her to be entirely out of danger.

I feel confident that the attack of cellulitis which complicated convalescence in this case was not at all dependent upon the nature of the operation, but was due to indiscretion on the part of the patient in overrating her returning strength.

It is not my belief that the scope of this plan of performing ovariotomy will ever be very great, but I think that in cysts of small size, which are unattached, it will offer a valuable resource for the avoidance of years of mental suffering while the disease is progressing, and of the capital operation of abdominal ovariotomy in the end, with all its attendant dangers and uncertainties. Even in a doubtful case, vaginal ovariotomy may be resorted to as a tentative measure, which, in the event of failure from attachment of the cyst, would in all probability be recovered from.

I should urge upon any one who determines to essay it, not to trust to his general knowledge of the anatomy of the fornix vaginæ and peritoneum, but to rehearse the first step of the operation upon the cadaver before attempting it upon his patient. There is often considerable space between the roof of the vagina and the floor of the peritoneum, and it usually requires two strokes of the scissors to penetrate the abdominal cavity. The first severs the vagina; then through this opening a tenaculum should be passed, and the peritoneum drawn down and opened. In thin women, if the fornix be well drawn down by a tenaculum, one stroke will often open the peritoneum.

Before operating upon the patient whose case is here recorded, I made one attempt upon the cadaver, feeling confident in my ability to open the peritoneum with certainty. The difficulty which I met with in this attempt induced me to practice the procedure on seven other dead bodies before I felt willing to attempt it on the living. After the difficulty attending this step of the operation is once appreciated, it can be readily and certainly avoided.

Abdominal Ovariotomy.—I have already expressed my belief that only a few cases will be susceptible of the procedure just described. The great resource in ovarian tumors, is the ordinary operation of ovariotomy by the abdomen.

In arriving at a just estimate of the results of the operation of ovariotomy two facts should always be borne in mind; first, that many cases of gastrotomy have been reported under the name

of ovariotomy; and second, that a large number of true ovarian operations have been undertaken in entirely inappropriate cases in consequence of erroneous diagnosis. By every one who examines the records of this subject, even superficially, these two facts must be recognized as depreciating very markedly the statistics of ovariotomy.

The true and only meaning which should attach to the term ovariotomy is the removal of one or both ovaries. Gastrotomy is a kindred, but not identical procedure, and should never be confounded with it, either as to its indications or results.

At present no progressive gynæcologist will question the propriety of performing gastrotomy for the removal of other than ovarian tumors when they threaten life, and when operative interference promises a prolongation of existence and diminution of suffering. I am not considering this question now, however, but merely stating what all will admit, that gastrotomy thus performed should no more be classified with ovariotomy than should the Cæsarean section.

Solid tumors of the ovary are comparatively rare, and although ovariotomy may be occasionally indicated for their removal, it may, I think, with propriety be stated that the truly legitimate field for this operation—the crowning surgical achievement of our country—is the removal of one or both ovaries when affected by cystic degeneration.

The diseases which have been most commonly confounded with ovarian cyst, and induced a resort to gastrotomy by reason of erroneous diagnosis, are the following: fibro-cystic tumors of the uterus; abdominal dropsy; colloid degeneration, having for its base the peritoneum, the mesentery, the abdominal viscera, or, as I have seen in two cases, the uterus; and malignant disease of the ovaries. Instances are not wanting in which pregnancy, phantom tumors, uterine fibroids, cystic degeneration of the kidneys, and other conditions have given rise to errors of diagnosis; but these have rarely done so, while those which I have just enumerated have frequently misled operators of skill and experience. Instances of these affections will often present themselves in which the most experienced diagnostician will be able to arrive at a positive conclusion only by the aid of paracentesis or an explorative incision, and a certain number will be met with in which even with these means at his disposal the most cautious operator will be led into error.

Nothing will so powerfully tend to give the operation of ovarian extirpation its proper and legitimate position among the resources

of surgery, and thus enlarge its sphere of usefulness, as the acquirement of a skill in diagnosis on the part of those who are called upon to perform it, which will serve to point out with system and certainty the cases to which it is peculiarly applicable, as well as those for the relief of which it holds out scarcely a forlorn hope.

Although this operation has now so fully overcome the opposition once arrayed against it as to have assumed its position as one of the legitimate resources of surgery, it is yet too recent a procedure, not to require the light which can be thrown upon it by honestly reported statistics, and by them alone. Amputation of the thigh has been so often performed, for so many years, and in so wide an extent of territory, that the surgeon who now performs it is excusable if he does not report every case for the critical examination of his peers. All questions as to the value and results of the operation are at rest; and, although statistics with regard to it will always be of value, the profession no longer demands them as essential for its ultimate position as a surgical resource. With ovariotomy it is otherwise. Every case should be carefully and frankly reported, in order that it may serve to swell the numbers from which conclusions, whether favorable or unfavorable to the procedure, are to be drawn.

There are many influences at work at present which tend to keep up the mortality attendant upon this operation. Some of these are inherent to the operation itself, and will always exist; others, as knowledge increases with experience, and the basis upon which it rests becomes more stable and assured, will greatly diminish or entirely disappear. First among these must be mentioned the necessity for cutting into the peritoneum, exposing this delicate and important structure for a long time, and often leaving vessels open upon its surface, or within its cavity, which pour out blood that serves as material for putrefaction. Second, the difficulty of diagnosis must not be lost sight of. It is safe to say that in no pathological condition for which surgical procedure is adopted, is this difficulty equalled. But it is not my intention to enumerate all the influences to which I have made allusion, and I shall content myself with the mention of a third. The observation of others may not agree with mine, and many may dissent from what I am about to advance, but to me it stands forth clearly as an influence which has done, and is doing, much to injure the position of ovariotomy as a surgical resource. It is this: the operation of ovariotomy is at present in this country often performed by men inexperienced in the diagnosis and

treatment of ovarian tumors. The statistics of some of the best operators prove that they have been progressively successful, as they have advanced in experience, and learned to avoid the dangers attendant upon the procedure, and we must conclude that they who operate for the first or second time, must damage the array of reported cases and increase the rate of mortality. I know full well that it may be objected to this statement, that if inexperienced men never operated, where would our supply of new surgeons come from? In reply to this I would remark, that if the professional relations of any man make it likely that he will be frequently called upon to perform this or any other operation, he should prepare himself to meet the demand upon him; but I cannot think it incumbent on any practitioner, upon whom no such demand is likely to be made, to undertake so formidable an operation if the services of skilful and experienced men be attainable for its performance. I sincerely believe, as the result of observation, that the third influence which I have stated as marring the statistics of the subject, is by no means an insignificant one, at least in the United States. My impression is that if the histories of all the single operations performed by different practitioners in this country were published, they would present a lengthy, and by no means pleasing, exhibit.

Preparation for the Operation.—We know that the septic endometritis, which is the starting-point of those symptoms which grouped together constitute puerperal fever, is often excited by the miasm attaching to the medical attendant from an autopsy, a case of erysipelas, typhus fever, or hospital gangrene. Although the fact that these miasms will exert a similar baneful influence on the parts exposed in this operation is not proved, it is at least so probable that no operator should expose a patient to the test. It is true that in the one case a mucous membrane altered by pregnancy and parturition is involved, and in the other a serous sac; nevertheless there is sufficient probability that evil might accrue, to make us careful to avoid these sources of disease. Previous to the operation the patient should be put upon a tonic course. Generous diet, iron, quinine, fresh air, cheerful surroundings, and gentle exercise should, unless impracticable from some peculiarity of the case, be prescribed. Drs. Simpson and Atlee speak highly of the use of the persulphate of iron as a tonic. A visit to the country or some quiet watering-place will prove of great advantage. Above all things, the mind of the patient should be made calm and cheerful, and every hope as to

the result of the operation encouraged. After a candid statement of the chances of success has been rendered her as material upon which to base her determination to accept or reject the operation, no doubt ought thenceforth to be expressed as to the result by physician or friends.

The operation should be performed in a locality where the air is pure and salubrious[1]—never in the wards of a crowded hospital, and if a choice be offered, in the country rather than the city. The day selected should be clear, and neither very hot nor very cold. If the weather be cool, the temperature of the apartment should be kept at from seventy-eight to eighty, and the atmosphere moistened by evaporation of water. A thoroughly experienced nurse should be in readiness to take charge of the patient.

After the operation it is essential that the bowels should be kept constipated for a week or ten days. That this may be done without inconvenience they should be empty at the time of operation. To effect this, during the week preceding it they should be acted upon by a gentle laxative every second day, and the patient kept for the last four days upon animal broths, beef tea, milk, and gruels like those of farina or corn.

It is certainly demonstrated that the influence of opium upon the nervous system is antagonistic to the spread and progress of peritonitis when once aroused; why should it not be so likewise to its establishment? During the four days preceding the operation one grain of opium, or the equivalent in some of its preparations, should be given as often as every six hours. This not only quiets the nervous system, but tests the patient's capability of tolerating the medicine. One hour before the operation, Dr. Atlee gives a dose of opium. The skin should be put into good condition by warm baths employed daily for a week or more, and its temperature kept equable during the operation by flannel wrapper and drawers. As the time for its commencement arrives, the bladder should be carefully evacuated, the patient anæsthetized by sulphuric ether, and laid upon her back upon a table of suitable height and strength, which is covered by folded counterpanes or blankets and placed before a window affording a good light.

The operator will require at least four assistants, one to administer the anæsthetic, one to stand opposite to him and aid in ma-

[1] Within the past eight months I have performed ovariotomy six times in the Strangers' Hospital of this city, with five recoveries and one death. From three of the patients who recovered both ovaries were removed. In Bellevue Hospital I performed the operation twice, with one recovery and one death. Both ovaries were removed from the patient who died.

nipulating the tumor and abdominal wall, one to take charge of the instruments, and one to apply ligatures, the actual cautery, &c. A fifth, to be at command in case of need, will always be of advantage.

The Operation.—Although this operation has of late years been so fully discussed, and so free an interchange of sentiment concerning it has been afforded, there is not one point connected with it upon which operators are agreed. The extent of incision, management of pedicle, closure of wound, and the other steps which will be alluded to, are still subjects upon which great variety of opinions exists. I shall avoid discussions, and hoping to be pardoned for any appearance of dogmatism which may result from so doing, give such a description as will, according to my view, best meet the requirements of practice.

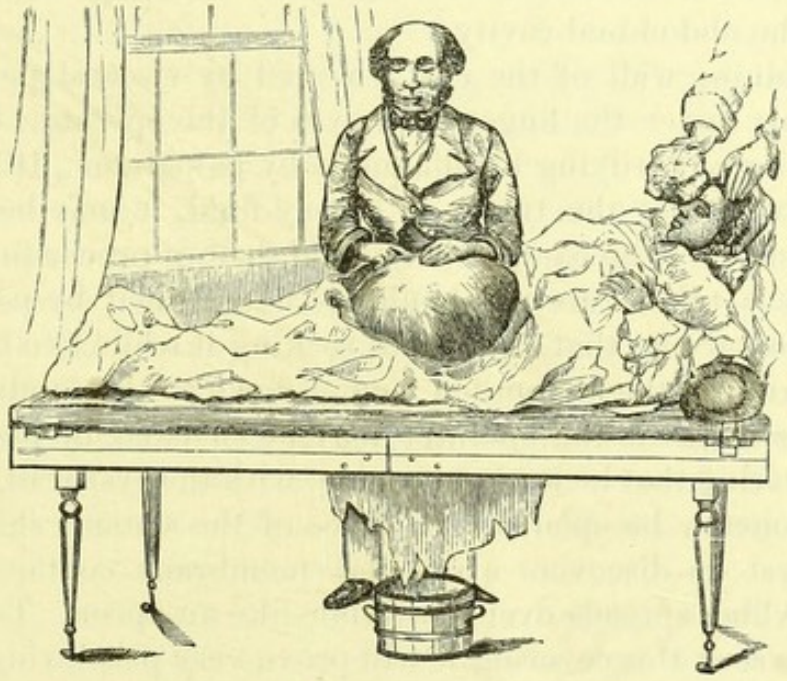
The steps of the operation are these:

1st. Incision;
2d. Examination for and rupture of adhesions;
3d. Tapping;
4th. Removal of the sac;
5th. Securing the pedicle;
6th. Cleansing the peritoneum;
7th. Closing abdominal wound.

The incision is made by a bistoury held by the operator, who stands at the right side of the patient. It should pass directly through the linea alba, and should extend from a point about two inches below the navel to one a little above the symphysis pubis. Passing through the skin and adipose tissue, layer by layer, it is continued until the operator sees the fibrous sheath of the recti muscles. Sometimes it is difficult to distinguish this from the peritoneum. If any doubt exist, it should not be incised until exposure to the air and pressure by forceps, fingers, or sponges, have checked the venous flow occurring from the vessels exposed by the abdominal incision. Then the fibrous structure should be caught by a tenaculum, snipped with scissors, and a grooved director passed under it, upon which it may be slit. If this expose the belly of one of the recti, it will be evident that the linea alba has not been struck by the incision. To reach it, a director should be pushed under the sheath across the muscle, and it will be arrested at the linea, where the incision may be made. All hemorrhage having now ceased, the parietal peritoneum should be lifted, snipped, and slit upon the director for the length of the incision.

It may be supposed that no difficulty could arise in cutting through the abdominal walls, but this is not so. Operators will sometimes commit most serious errors even here. In two cases, one of which occurred to myself, and the other to a very skilful operator of this city, the incision was carried only down to the parietal peritoneum, when this was stripped away from the muscles under the impression that it was an attached cyst-wall. In other cases operators have become confused in searching for the linea alba, and in others still, the incision which should open only the abdomen lays open the cyst itself, and allows its contents to flow away prematurely. By cutting at first only through skin and areolar tissue, and then applying the tenaculum to all doubtful tissues, these difficulties may be to a great extent avoided.

FIG. 235.



Position of operator. (Simpson)

As the peritoneum is slit a slight flow of straw-colored serum will usually take place, after which either the shining wall of the sac will be exposed to view, or, as will sometimes be the case, a thin layer of omentum will be found spread out over its surface. This should not be cut, but lifted like an apron and put aside. Sometimes, in addition to omentum, a loop of intestine may be found over the anterior face of the tumor, as happened in one of Mr. Baker Brown's cases, where it would have been incised had the operator not slit the peritoneum upon a director with scissors.

Mr. Brown has laid down, in reference to the abdominal section,

this important rule: it should always be regarded originally as an explorative incision. If any condition contraindicating the removal of the sac be found to exist, it may then be closed without exposure of the patient to great danger, while if it be found advisable to enlarge it to proceed, this may be done to any necessary extent. Mr. Wells has removed one sac by an incision of one inch and a half, and rarely resorts to one of over five inches. On the other hand, Dr. Clay, whose favorable statistics have been alluded to, prefers the long incision. The great dread which has always been entertained of cutting into and exposing the peritoneum, lends a degree of fascination to the short incision. When, however, it is borne in mind that it is to putrefaction of retained fluids that peritonitis and septicæmia are chiefly due, this feeling will diminish in force, for it is evident that the smaller the opening the more difficult will it be to discover and close bleeding vessels, and to cleanse the abdominal cavity.

The shining wall of the cyst, covered by visceral peritoneum, being now under the fingers and eyes of the operator, he has an opportunity of verifying his diagnosis by palpation. If it be positively settled that the tumor is purely fluid, it may be regarded as ovarian. If it be composite or solid, before proceeding further its relations to the uterus should be determined by passing the uterine sound into that organ, and rocking it while two fingers are passed through the abdominal wound down to the fundus uteri.

At this moment the operator may be checked in his progress by discovering that he is not in contact with the cyst-wall, although the peritoneum be opened. In place of the smooth shining wall of the cyst he discovers a vascular membrane containing large vessels, which spreads over the tumor like an apron. To one who has never seen this covering it will prove very perplexing. It consists of the peritoneal walls or roof of the broad ligaments which have been spread out by the growing tumor and have undergone great hypertrophy. Tumors thus surrounded have, according to my experience, broad and short pedicles, and their extirpation will be very difficult unless the valuable method advised by Dr. Miner, of Buffalo, N. Y., be adopted. It consists in cutting through the envelope of the cyst, avoiding, as far as possible, the opening of large vessels, introducing the fingers and enucleating the tumor.[1]

[1] I have resorted to this method three times, with good results, in cases which would have proved unmanageable by other means. It appears to me to be one of the most valuable of all the contributions to ovariotomy which have emanated from this country.

The sac which is left should then be opened, thoroughly cleansed, and touched all over its oozing surface with solution of persulphate of iron.

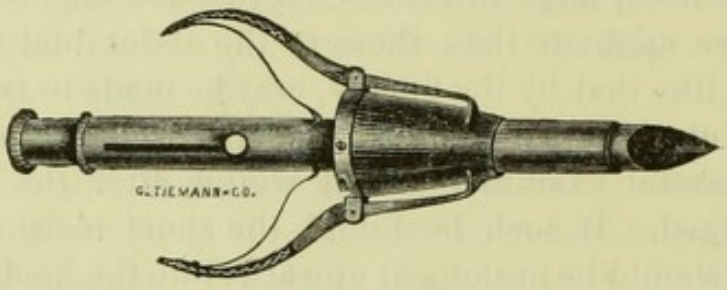
Examination for and Rupture of Adhesions.—The hands being rapidly cleansed of blood which has collected on them during the incision, should be dipped in a basin of warm water, to which has been added one drachm of the chloride of sodium to the pint, or sixteen grains of the crystals of carbolic acid, and two or three fingers passed around the tumor between the parietal and visceral peritoneum. Should they meet with slight adhesions, these should be gently broken; if none be reached, a large steel sound, previously dipped in warm water, should be swept around the tumor as far as the pedicle. Special attention should be given to attachments to the liver, large intestines, uterus, and bladder, which are of far greater moment than those to the abdominal walls. This exploration, like that by the fingers, may be made to rupture slight adhesions, but those which are strong and well organized should be left for careful examination and section after the incision has been prolonged. If such be found, the short incision of two to three inches should be prolonged upwards into the medium incision of five to seven, or the long incision of ten to twelve, the judgment of the operator deciding as to which is needful. If by a short incision, and the means of exploration already mentioned, the absence of adhesions can be decided on, nothing more is necessary, for this step of the operation is complete; but if it be found necessary, the incision should be prolonged, and the whole hand passed into the peritoneal cavity, in order that all the relations of the tumor may be clearly ascertained.

The long incision having been made, as soon as all flow from the severed vessels has ceased, the operator should break all adhesions within reach by carefully peeling off their attachment to the tumor. Great care must be observed not to tear the cyst-wall, lest escape of its contents or hemorrhage should occur into the peritoneum. In this way only moderate adhesions should be broken. Those of very firm and vascular character, should be dealt with after tapping. The patient may then, after the suggestion of Dr. Hutchinson, be turned on one side, in order to cause the tumor to protrude through the incision, and fluid removed by tapping, to pour out of and not into the abdomen. I have, however, given up this plan for the reasons that it complicates the operation, and renders escape of intestines with the fluid and tumor exceedingly probable. A little care in drawing off the fluid, and proper com-

pression of the abdominal walls by assistants will usually serve to prevent entrance of fluid into the peritoneal sac.

Tapping.—If doubt exist as to the character of the contents of the tumor, a portion should now be drawn off with an exploring trocar, for if a clear, watery fluid containing no albumen be removed, the operation may be given up, and partial excision made to replace it; while, on the other hand, a tumor supposed to be fluid may thus be proved to be solid or composite, without involving flow of blood into the peritoneum. If this explorative puncture prove the tumor to contain fluid, a large trocar like that of Spencer Wells, represented in Fig. 236, may be plunged in, fixed

Fig. 236.



Spencer Wells's trocar and canula.

to the wall of the cyst by its wings, and the fluid allowed to pour out into an appropriate vessel through a caoutchouc tube attached to the mouth of the canula. A large trocar should never be employed until it is absolutely certain that the tumor is an ovarian cyst, and that the prospects are decidedly in favor of its susceptibility of removal. After the insertion of a small trocar, retreat from extirpation is much easier and safer than after that of a large one.

While the fluid is pouring out, compression of the abdominal walls against the tumor should be made by an assistant, who places one hand on each side of the abdominal incision, and the sac kept from slipping into the abdomen by strong tooth forceps made to grasp its lips, if an ordinary canula be employed.

When the cyst is nearly or quite empty, and before search is made for remaining sacs, the fingers or a pair of Pinkham's wire retractors should be fixed in the upper commissure of the abdominal incision, and the abdominal walls be held up and open so as to allow a large space to exist between them and the wall of the half-empty sac. Looking into this the operator will now readily see any existing adhesions, and break them with his fingers or the

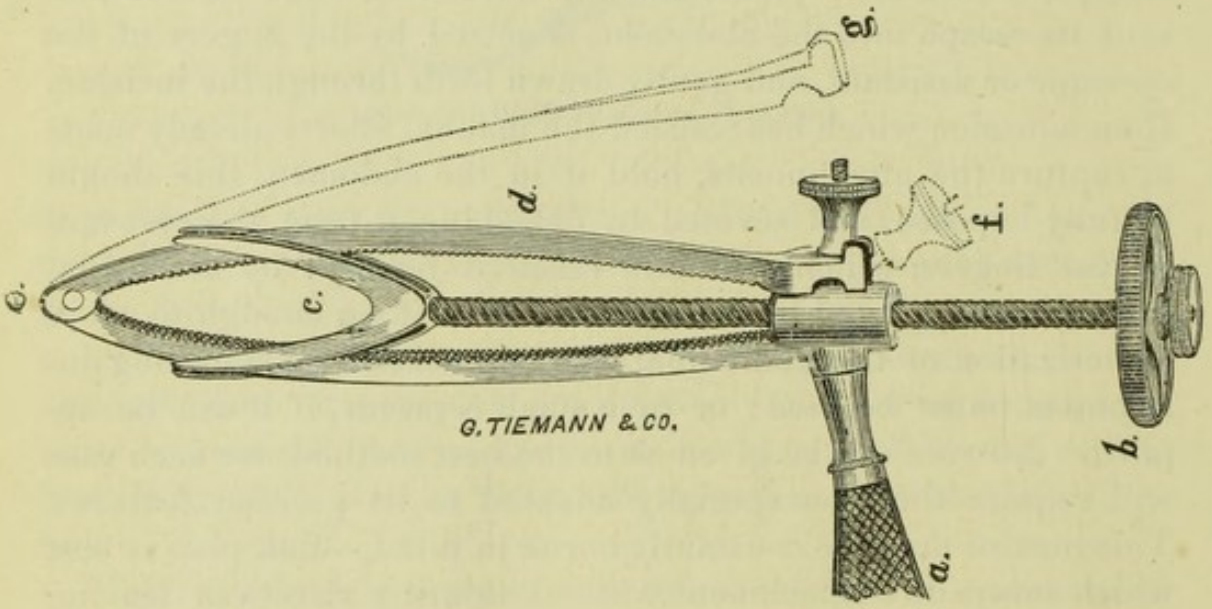
handle of a scalpel. By this means he may avoid the necessity of enlarging his incision, and succeed in breaking adhesions for a considerable distance up the sac-wall. This being done, the main sac, the flow from which has been meantime controlled by the fingers of an assistant or by forceps, should be completely emptied, the canula removed, and the index finger introduced in order to ascertain the existence of other cysts. A good deal of time is now often lost in an attempt to plunge the trocar into these, and sometimes the hand is introduced into the peritoneum to seize and steady them. The following method I have always found very useful, expeditious, and safe. The sac being seized by strong tenacula or forceps, one on each side of the opening made by the trocar, it is cut into so as to admit the hand, which finds the remaining sacs and readily guides the trocar to them. All the large cysts being emptied, the operator should at once proceed to the removal of the sac.

Removal of the Sac.—The sac being now drawn out by the tooth forceps, tenacula, or pincers, which have been fixed in it to prevent its escape into the abdomen, is seized by the fingers of the operator or assistant, and gently drawn forth through the incision. If an adhesion which has resisted the manual efforts already made to rupture the attachments, hold it in the abdomen, this should be fully exposed, and severed by detaching it from the cyst-wall by the fingers, which will now reach it readily; by the actual cautery, as suggested by Mr. Brown, if it be long enough to avoid cauterization of the abdominal wall; by scissors, if a cutting instrument must be used; or by a small écraseur, if it can be applied. No rule can be given as to the best method, for each case will require the plan specially adapted to its peculiar features. This maxim must be constantly borne in mind,—that plan is best which severs the attachment without injuring viscera or leaving bloodvessels open, for these are the two evils to be feared. If a flow of blood follow the severance of the adhesion, the vessel should be exposed, freely touched with persulphate of iron, or with the actual cautery so lightly as not to create a slough.

By the means recommended, adhesions will generally be severed without the application of ligatures, but now and then this is necessary. If it be so, silver wire should be employed when practicable, instead of silk, as less likely to induce inflammation. In some cases, however, the cyst adheres so strongly to some viscus that it cannot be separated. Under these circumstances a portion of the cyst-wall should be cut out and allowed to remain

upon the surface to which it so pertinaciously clings. M. Boinet[1] points out the propriety of removing the secreting surface of such a piece before leaving it. The tumor being freed from attachments is now drawn forth, and the pedicle seized in the fingers. At this point there is usually a delay caused by the lapse of time required by the operator for determination as to the plan which will be best adapted to securing the pedicle. There is often, too, some time spent in discussion upon this point, for no operator should be wedded to any single plan which he adopts in all cases. If the sac be left attached to the pedicle during this time, it is greatly in the way, drags heavily, soils the clothing, and usually forces entrance of its contents into the abdomen. I have been in the habit of rapidly encircling the mass some inches from the pedicle with a bit of fishing-cord, cutting off the sac, and then at leisure examining the pedicle. Dr. B. F. Dawson has devised for this purpose the temporary clamp shown in Fig. 237. By this the

Fig. 237.



vessels of the pedicle are secured, and this part compressed circularly instead of laterally, while it is secured by the means which are to be permanent.

Securing the Pedicle.—This, which constitutes one of the most important steps of the operation, is at times easily and satisfactorily accomplished, while at others it is invested with great difficulties. Unless the pedicle be excessively short, the sac may be drawn outside of the abdomen and its pedicle grasped by the

[1] New York Med. Record, July 1, 1867.

fingers. When very short it has to be manipulated in the abdomen. It may then be managed after one of the following methods:

1st. It may be secured against hemorrhage and left between the lips of the wound and outside of the peritoneum—

a. By being transfixed by a double ligature, one strand of which ties one half the stump and the other the other half, and fixed in wound by pins or sutures. (Stilling, Duffin.)

b. By compression by a clamp. (Hutchinson.)

c. By being secured in the wound and covered over by the skin and superficial tissues. (Storer.)

2d. It may be secured against hemorrhage and returned to the abdomen—

d. By being secured by double ligature, as mentioned in *a*, returned, and ligatures allowed to hang out of lower angle of wound. (Clay.)

e. By same process, and ligatures allowed to hang into vagina through opening in fornix. (W. W. Greene.)

f. By being tied, cut short, and returned to abdomen. (Tyler Smith.)

g. By being temporarily constricted by a wire constrictor. (Koeberlé.)

h. By severance by the actual cautery. (Baker Brown.)

i. By severance by the écraseur. (Atlee.)

j. By compression against the abdominal wall by acupressure needle passed from without. (Simpson.)

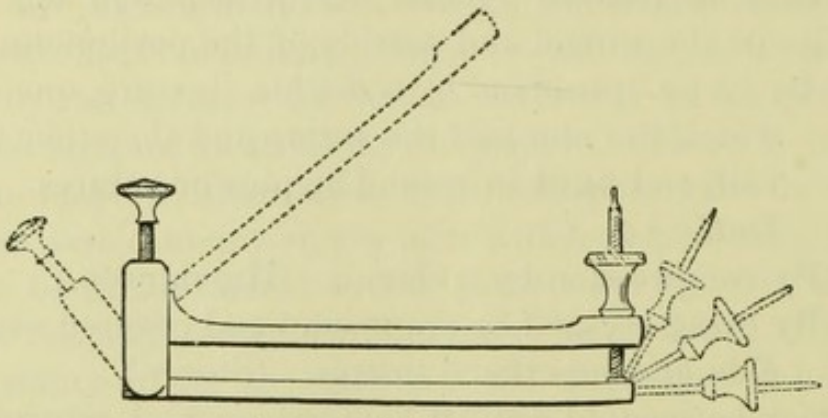
k. By use of silver wire passed repeatedly through pedicle by the cobbler's stitch. (Emmet.)

The prevention of hemorrhage by the ligature and clamp, *a* and *b*, are evidently identical in principle. The clamp, however, has the advantage of being simpler and more easily applied. The clamp most commonly used is that of Mr. Wells, though many others are equally applicable. It is thus applied: the pedicle or neck of the tumor being held in the fingers, the clamp, Fig. 238, is adjusted so that one limb passes over one, and the other over the other side of it; the two branches are then closely approximated so as to obliterate the vessels, and the sac is amputated above this by a bistoury. The clamp is then laid flat upon the abdomen and the incision closed.

Another very effective clamp is that of Koeberlé, represented in Fig. 244. The pedicle is included by it in the space repre-

sented in black and constricted by action of the screw which is seen below it.

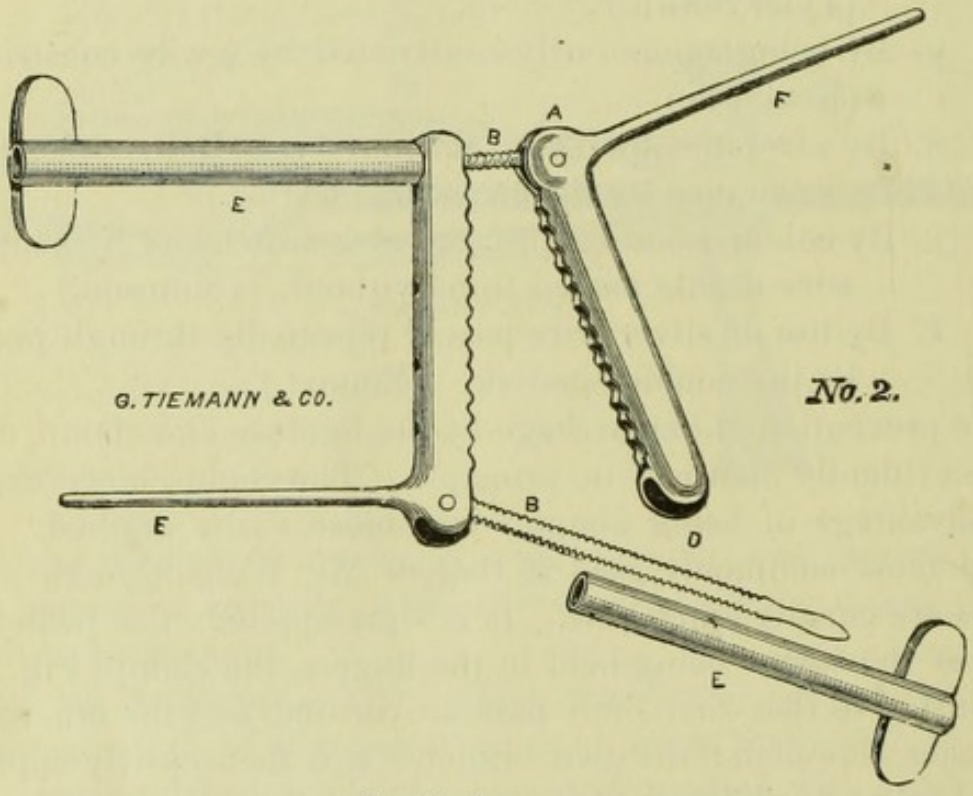
Fig. 238.



Spencer Wells's clamp.

When the ligature is employed, the sac is amputated and the stump placed between the lips of the wound and transfixed by harelip pins, or the sutures which close this part of the incision. Dr. H. R. Storer, has proposed as a further step that the stump

Fig. 239.

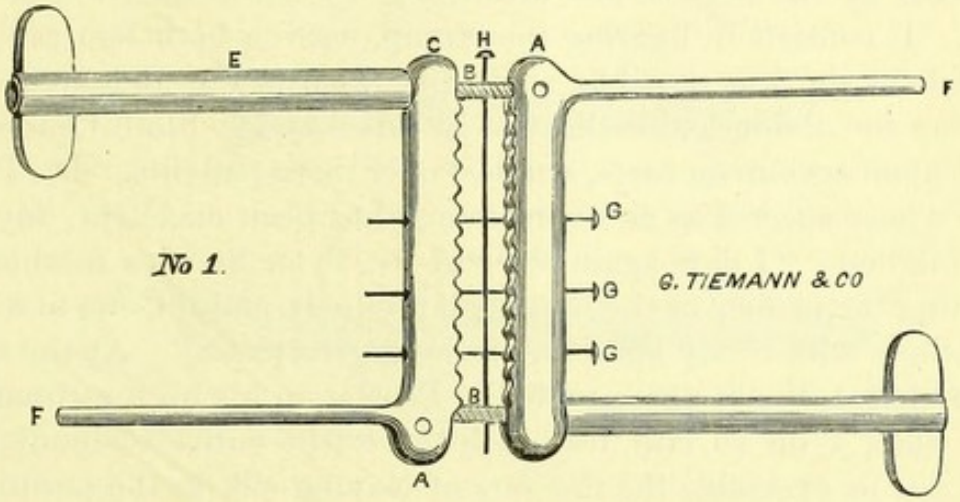


Atlee's clamp open.

thus fixed should be covered over by sliding forward the skin, and superficial tissues of the abdominal walls, in order that the stump may be protected from external influences, at the same time that

its emanations do not affect the peritoneum. This plan differs essentially from that previously considered, and unquestionably originated with Dr. Storer. His claim to it has been questioned merely by the confounding of the two methods.

Fig. 240.



Atlee's clamp closed.

Writing to Dr. A. K. Gardner, in 1860, Dr. Atlee says of these methods: "The great objection to the ligature is that it not only strangulates the peritoneum, but it leaves a sloughing stump, both of which are constant foci of irritation. By means of the écraseur and the styptic, persulphate of iron, all ligatures are avoided." When amputation is thus performed the stump may be fixed in the wound by pins or sutures or returned to the abdomen. This method is peculiarly applicable to small and non-vascular pedicles, but all appear afraid to trust to the hæmostatic powers of the écraseur in other cases.

The plan by which Dr. Clay returns the stump to the abdomen is practiced in the following manner: A double ligature is passed through the centre of the pedicle and then cut so as to leave two ligatures in position. One half of the pedicle is then tied with one and one with the other. The sac is then amputated, the pedicle returned to the abdomen, and the ligatures allowed to pass out through the lower angle of the wound. This method possesses these advantages: it absolutely prevents hemorrhage, as the ligature always does, at the same time that it furnishes a vent for fluids which may afterwards accumulate in the peritoneum. Dr. Clay still employs it, and has obtained by it the favorable results of one hundred and thirty-eight cures in two hundred and ten operations. Few of the leading operators now

follow the method; those who desire to return the stump to the abdomen following with some modifications the plan to which we now turn.

Dr. Tyler Smith was instrumental in rendering popular a method which was practiced, according to Dr. Peaslee, as long ago as 1829, by Dr. Rogers, and afterwards by Dr. Billington, of this city. It consists in ligating the stump, cutting both ligature and pedicle as short as possible, returning them to the abdomen, and closing the abdominal incision. In this way Dr. Smith[1] has operated upon seventeen cases, and lost only three patients. Dr. Peaslee,[2] whose success as an ovariotomist has been excellent, says of the method: "I now again refer to Dr. Tyler Smith's method of treating the pedicle as the best of all methods, and the one to which all others will, in my opinion, ere long give place." At the same time that I do not agree with Dr. Peaslee in his high estimate of this plan, I do so still less with those who entirely repudiate it and rate as excessive the dangers of leaving silk in the peritoneal cavity. By theoretical reasoning it is true that the practice can be made to appear very objectionable, but it is not theory which should decide us in reference to so grave a matter. The results of practice should outweigh all theory, and no one should yield aught to prejudice. This unwarrantable prejudice against the leaving of silk in the peritoneum, for so I regard it, has been strengthened by the report of 34 cases of ovariotomy by Mr. Spencer Wells;[3] of these, 4 were treated by return of ligature to the abdomen, and all died; 30 were treated by clamp, and all recovered. Peaslee, whose statistics are 17 recoveries out of 26 operations; Tyler Smith, who reports 14 successes in 17 operations; and Bradford, who has saved 28 out of 31 cases, all employ this plan universally. I confess that I once shared in the prejudice to which I have made allusion, but experience has caused me to change my mind with regard to it. In three cases in which I performed double ovariotomy, four of the pedicles were tied with silk and returned to the abdomen, while in one case six bleeding vessels of the omentum were ligated by it, yet all recovered. I do not regard ligation and return as being as safe as external treatment of the pedicle, but do not facts prove conclusively that the prejudice against the method is in the minds of many operators unjustifiably great?

Koeberlé, of Strasbourg, employs the clamp when the pedicle

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[1] His statistics are brought only up to 1866.

[2] Op. cit., p. 83.

[3] Lond. Med. Times and Gaz., Nov. 28, 1868.

is long, but when short, he compresses the stump by a species of constrictor which tightens a metallic wire that surrounds the pedicle. Fig 241 will explain the mechanism of this instrument, which passes into the abdomen, the shank remaining in the wound.

Fig. 241.

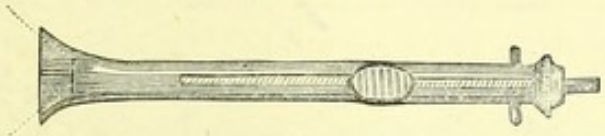
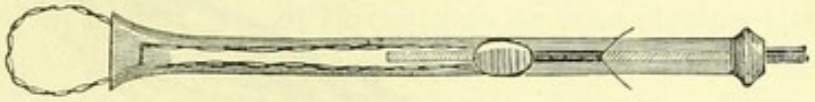


Fig. 242.



Koeberlé's constrictor.

Baker Brown[1] has of late practiced amputation of the tumor by means of the actual cautery, and claims the astonishing results of twenty-nine cures in thirty-two operations. It is highly probable that this method will accomplish a great improvement in the operation, and assume the position of a means of great value. Thus far it has not been extensively tried.

In employing this method, Storer's clamp shield would answer an excellent purpose in protecting the parts.

No rule can be given with reference to a choice between all these methods other than this: when the pedicle is long and slender it does not appear to matter very much which plan is selected, for all have yielded and are daily yielding excellent results; but when it is very short the external does not promise nearly so well as the internal method of managing the stump.

As to the special cases for applying the first and second plans the following suggestions (not rules), may be of service:

a. The clamp is applicable to long pedicles, requiring powerful ligation, and presenting a large amount of tissue for suppuration and decay.

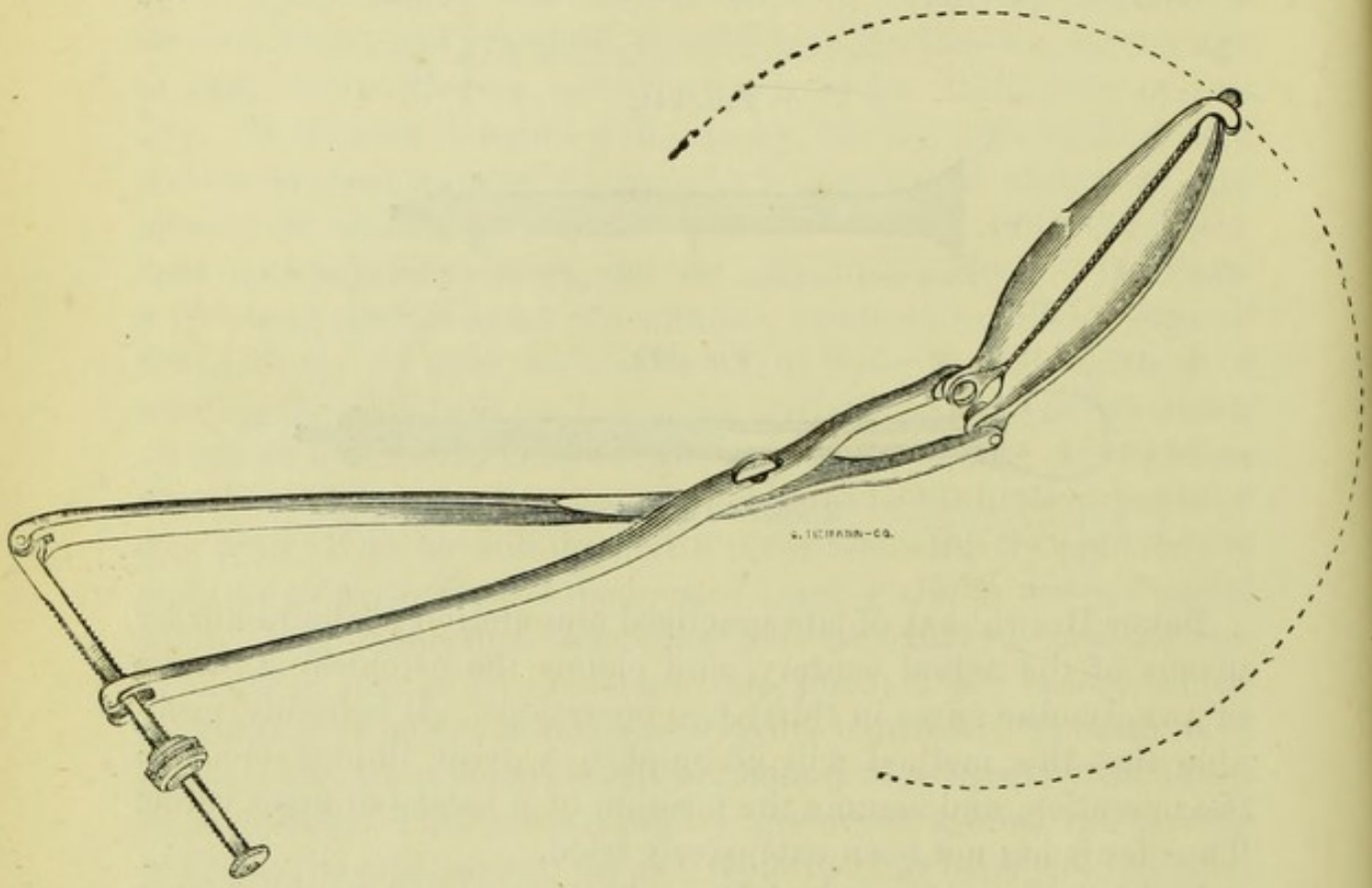
b. The écraseur may be relied upon where the pedicle and vessels are small.

c. Clay's method is eminently adapted to cases in which con-

[1] He has operated 120 times with 84 recoveries, but I cannot say how often he has employed this plan since 1866.

siderable suppuration is anticipated, and a vent for pus is required; as, for example, where many adhesions have been broken.

Fig. 243.



Storer's clamp shield.

d. Tyler Smith's method may be resorted to with confidence where the pedicle is small in volume, where no great disturbance of the peritoneum has occurred, and where we have no reason to anticipate suppuration.

e. Koeberlé's constrictor is applicable to just the same class of cases as the method of Dr. Clay, and for the same reasons.

f. The severance of the stump by the actual cautery presents many advantages, and may be used in any case except where the vessels are very large.

The statement just made as to its being immaterial whether the pedicle is returned or not, in ordinary cases, is based upon the comparative results of Wells, Brown, and others who do not return it, with those of Tyler Smith and other operators who do.

The following analysis of a large number of cases is given with reference to this point by Dr. J. Clay:

Class of cases.	Stated left within the abdomen.	Inferred left within the abdomen.	Kept without by various methods.	Tied in two or more portions.	Simply ligatured.	Stitched in wound.	Ecraseur used to divide it.
Successful, . .	113	76	20	122	22	3	2
Unsuccessful, .	58	97	25	57	26	3	1
Total, . .	171	173	45	179	48	6	3

The methods just enumerated are those by which hemorrhage from the vessels of the pedicle is prevented. The means by which the pedicle is sustained between the lips of the wound so as to keep its putrid extremity outside the body are these: it may be transfixed by one or two of the sutures or pins closing the abdominal wound; it may be held up by a transverse rod of steel, as is done by Koeberlé; or it may be sustained by the clamp and two pins or sutures, which do not transfix it, but pass on each side in close contact with it.

Obstacles to Removal of Sac which may be discovered as the Operation proceeds.—There may be no pedicle, especially in cases of solid or semi-solid tumors, an indissoluble union existing with the body of the uterus. At other times the sac is in part bound down so that it cannot be removed, while part of it can be drawn out of the abdominal incision. Under these circumstances I have found the following plan of great service. The operator cutting through the sac passes his hand and arm in and discovers the lowest portion of the sac. Then near the base of the sac he picks up the peritoneal covering, cuts through it, passes in his finger, and removes the tumor by enucleation, after the method of Miner already alluded to. The pouch thus left sometimes fills with blood, which being confined to it and not entering the peritoneum presents an odd and puzzling appearance. By such a tumor I was once much puzzled and delayed until one of my assistants suggested the true explanation of it. In another case in which I practiced this method a fatal issue occurred in this way: the patient did well until the eighteenth day, when becoming angry, she jumped from her bed, struck violently at an attendant, fell back and was dead in an hour and a half. An autopsy revealed the fact that the pouch left by enucleation was filled with a fetid, grumous mass of blood. The effort made by the patient caused a rupture of this sac and escape of its contents into the peritoneum, which produced death from collapse. This danger could be avoided by thorough checking of all oozing of blood by persulphate of iron before ligating the mouth

of the sac, or by leaving within it a silver catheter and ligating the neck around this, and securing it by pins in the wound. By this means antiseptic injection could be regularly practiced.

I am very confident that I have succeeded by this plan of enucleation in extirpating three cysts, which could by no other means have been completely and safely removed. I urge its merits upon the attention of operators, for there is a class of cases in which the pedicle is short, where it will prove of great value.

Sometimes the whole sac, in consequence of strong adhesions to the abdominal viscera, cannot be removed. When this is so, that portion which is drawn out should be removed, the lips of the part remaining stitched carefully to the abdominal walls, and the incision closed except at its lower angle, which should be kept free by the insertion of lint, or a caoutchouc tube by which disinfecting fluids may be thrown in to prevent septicæmia, as in ordinary drainage. This procedure is a modification of the operation of incision already alluded to. The omentum may be adherent to such an extent that its removal becomes necessary. When this involves considerable rupture of its bloodvessels, it may be cut off by the écraseur and its bleeding extremity touched with persulphate of iron or the actual cautery; or it may be amputated and brought outside the wound, as is done in the case of the pedicle.

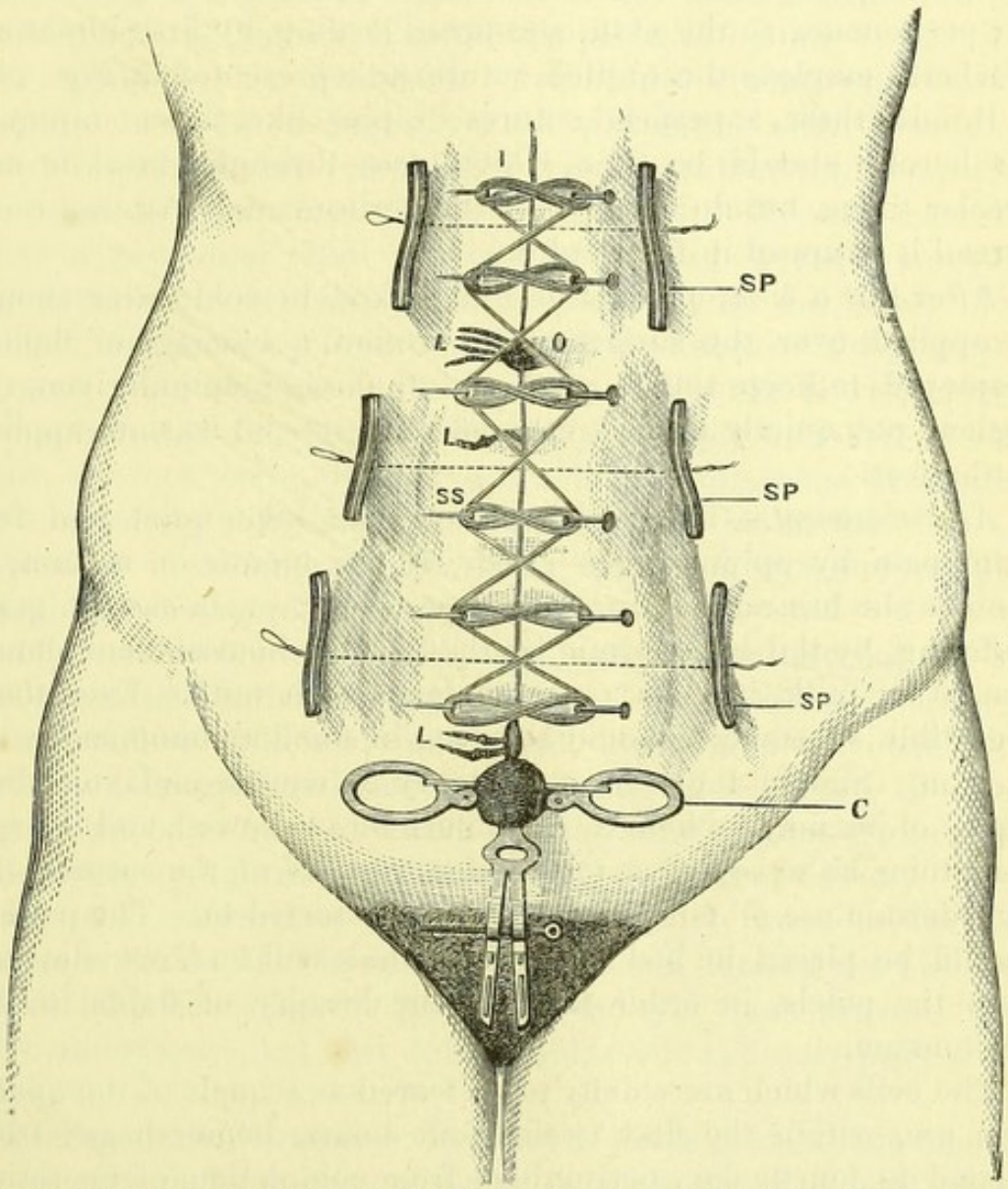
Before proceeding to the next step of the operation the remaining ovary should always be carefully examined as to the existence of disease, for if cystic degeneration exist, it ought at once to be removed. If very minute cysts exist, not larger than marbles, for example, they should be incised, but if large ones are found, secretion from the walls of which might cause sufficient flow into the peritoneum to excite peritonitis or septicæmia, they should be removed, for the great dangers of the operation have already been incurred, and it would be unwise to leave the seeds of another tumor to develop.

Cleansing the Peritoneum.—The sac having been removed and hemorrhage checked, all fluids contained in the peritoneal cavity should be carefully removed by soft sponges squeezed out of warm water. Not only the intestines and abdominal walls, but especially the pelvis should be completely and thoroughly cleansed. This is a point of great importance, and may decide the issue of the case. Every particle of fluid left will undergo decomposition, and expose to the great dangers of septicæmia and peritonitis.

So momentous does this appear to some operators that Koeberlé,[1] after cleansing the peritoneum, always makes an opening through the recto-vaginal space to allow drainage of fluids which may collect, employing tubes of glass as drainage-tubes.

Closing the Wound.—This is accomplished by two sets of sutures, the deep and superficial. The first, composed of silver,

FIG. 244.



Closure of the abdominal wound after Koeberlé's plan. C shows the clamp grasping the mummified pedicle. (Wieland and Dubrisay.)

are passed in the following manner: A thread of silver wire is passed at each of its extremities through a long and stout straight needle. One of the needles being grasped by strong needle-

[1] Courty, op. cit.

forceps is passed through the peritoneum of one abdominal flap near the edge of the incision and made to emerge through the skin about an inch from the edge. Then the other needle is seized and passed through the other side. The suture is then secured by twisting. If it be desired to use quilled sutures, it can be accomplished by passing a doubled silver thread after the same method. These deep sutures, placed at the distance of half an inch apart, will bring the whole incision into contact from the peritoneum to the skin, and favor healing by first intention. Koeberlé employs the quilled suture as represented at Fig. 244.

Besides these, superficial sutures or pins like those employed for harelip should be used, which pass through the skin and areolar tissue, but do not involve the peritoneum. Around them thread is wrapped in figure of 8.

After this a long pledget of lint soaked in cold water should be applied over the surface of the wound, a bandage of flannel employed to keep this in place, a full dose of opium given, the patient put quietly to bed, covered warmly, and warmth applied to the feet.

After-treatment.—The patient should be kept quiet and free from pain by opium, given either by the mouth or rectum, so soon as she has rallied from the anæsthetic; or, in case of great suffering, by the hypodermic method. Her nourishment should consist of milk, beef-tea, or some gruel with milk. Even these digestible substances should be given in small amounts and with caution. Should there be a tendency to nausea and vomiting, pieces of ice may be held in the mouth or swallowed, and if these symptoms be so severe as to threaten rupture of the sutures, the hypodermic use of morphia should be resorted to. The patient should be placed in bed so that the trunk will be more elevated than the pelvis, in order to limit the locality of fluids in the peritoneum.

The evils which are chiefly to be feared as sequels of the operation are, within the first twenty-four hours, hemorrhage; from second to fourth day, peritonitis; from completion of operation to third or fourth day, nervous prostration; and from fourth to fourteenth day, septicæmia.

Septicæmia, being the result, first, of the decomposition, and second, of the absorption, of fluids in the peritoneum, is not likely to occur for several days. In Dr. Peaslee's cases it appeared in from four to twelve days, but it may take place in two or three weeks after the operation.

The effect of the operation upon the nervous system should be guarded against by the means just enumerated as general rules of management, and by administration of stimulants, as wine, brandy, or champagne, if the strength appear to be failing. In addition, the most complete quietude of mind and body should be afforded. All conversation and noise should be interdicted, the patient's hopefulness excited and fostered, and all muscular effort avoided. For four or five days the sigmoid catheter should remain in the bladder and the bowels be kept constipated by opium for ten days or a fortnight. The avoidance of cathartics during this time is essential to safety, a neglect of this precaution often producing a fatal issue. Some years ago I was present at the removal of an immense cystic sarcoma by Dr. John O'Reilly, who made an incision extending from the xiphoid cartilage to the symphysis, and after detaching many adhesions extirpated the mass. The patient did perfectly well for a week, and was in a fair way to recover. She was, however, very urgent that her bowels should be moved, and the doctor refusing to comply with her solicitations, she took surreptitiously a full dose of bitartrate of potash. This acted as a hydragogue cathartic, but its action was not limited as it usually is. Diarrhœa, and soon dysentery, supervened and destroyed the patient's life.

After the seventh or eighth day, tympanites may call for an alvine evacuation, which may be effected by an ordinary injection of soapsuds or an infusion of linseed, chamomile, or fennel.

Should hemorrhage be ascertained to be taking place, all dressing should be at once removed, and the stump, if out of the abdomen, securely ligated or touched with the actual cautery. If it have been returned to the abdominal cavity, there is but one course available, that is, opening the wound, ligating the bleeding vessel, and cleansing the peritoneal cavity. Such a necessity is very unfortunate, yet this course holds out the only prospect of success.

Peritonitis, which proves the cause of death in about one-quarter of all who die from this operation, is best avoided by leaving few or no ligatures in the cavity, by removal of all putrefactive matters, and by keeping the abdominal viscera at rest by preventing vesical and rectal actions and applying a bandage. Should it occur in spite of these preventive means, it should be treated by full doses of opium, and if the patient's strength will bear it, the application of leeches and fomentations over the hypogastrium. Koeberlé is in the habit of applying a bladder of ice on each side

of the incision for a number of days after the operation, for the prevention of hemorrhage and peritonitis, but this plan is not followed by English or American operators.

Septicæmia, which is, next to peritonitis, the most frequent cause of death, is, when once fully established, an almost hopeless state. It is ushered in by dizziness, excessive muscular prostration, anorexia, great pallor, small, rapid, and very weak pulse, sometimes a low delirium, dry tongue, and a sweetish odor of the breath. It is probably this condition which is so often alluded to as a "typhoid state" after operations, and one cannot but suspect that many, if not most, of those cases quoted in Dr. Clay's tables as shock or collapse, occurring as late as the fifth, sixth, seventh, and tenth days, were really instances of this affection. In one of my fatal cases, already alluded to, the patient was doing quite well on the evening of the seventh day. On the morning of the eighth I was struck by her wild, maniacal expression and cadaverous countenance; upon examination I found all the symptoms of septicæmia present, and she very soon succumbed to them.

The gravity of this sequel has rendered all operators anxious to possess the means to avoid or remedy it. Most of the methods of avoidance have been already stated, the importance of the subject will, however, excuse my again referring to them as—

1st. Completely cleansing the peritoneum;

2d. Checking all hemorrhage before closing the abdominal wound;

3d. Establishing drainage through Douglas's cul-de-sac, should septicæmia appear imminent;

4th. Establishing drainage at lower angle of the wound;

5th. Mummifying the stump by persulphate of iron.

To secure ready escape of fluids from the peritoneal cavity, Koeberlé adopts two methods. The first consists in making an opening through the recto-vaginal space into the peritoneum, and leaving in it a glass drainage-tube. The second, which is adopted when he returns the stump to the cavity constricted by the garotte, consists in introducing, down to the pedicle, a "dilator composed of two branches of lead, each of which is formed of two parts, one horizontal, destined to be applied on the skin, the other perpendicular, in the form of a gutter with a concavity within. These two valves, introduced separately into the wound, are kept apart by two transverse rods arranged upon a very simple plan."[1]

[1] Wieland and Dubrisay, op cit.

He highly esteems the use of this instrument for drainage; it is kept in place after an operation until all discharge from the pelvis ceases.

Drainage from the cavity is likewise effected by Dr. Clay's method, and by introduction of tubes of caoutchouc through the lower angle of the wound. The last method I now always adopt, unless the cyst has been free from adhesions.

Koeberlé adopts the plan of mummification of the pedicle of the sac, and the omentum, if he has had to cut this off, by free application of strong solution of persulphate of iron, believing that this prevents putrefaction and absorption. These are preventive means. When the accident is at hand and its symptoms recognized, one of them has likewise been used as a curative measure by Keith, of Edinburgh. M. Courty thus reports it: After the clamp had been removed, peritonitis with effusion of fluid set in. On the sixteenth day after the operation a puncture was made through the recto-vaginal cul-de-sac, and a fetid fluid poured away with relief to the symptoms. In this case the operation was resorted to for prevention of peritonitis. It may upon stronger grounds be employed for septicæmia.

The most valuable suggestion with reference to this matter has emanated from Dr. Peaslee, who has unquestionably placed at the disposal of the ovariotomist a method which robs the operation of much of its danger. It consists in washing out the peritoneum with disinfectants. I cannot do better than describe it in his own words.

"I first injected a solution of chloride of sodium (℥j to Oj), into the peritoneal cavity of a patient much prostrated by septicæmia, in February, 1855. I began with one quart of the solution, and then drew out the same amount of fluid with the syringe; though I soon found I could inject that or a larger amount, even two quarts, through a flexible bougie, and then changing the position so as to bring the free extremity to a lower level than the one in the peritoneal cavity, convert it at once into a siphon through which all the fluid would freely flow out. The immediate relief from the first injection was very striking; the dizziness and stupor at once disappearing, though to return again in from eight to twelve hours. I repeated the operation twice daily, and then once daily for a week, when the returned fluid no longer presented any odor of decomposition. When the fluid was unusually fetid, I used a solution of the liquor sodæ chlorinatæ (℥ij to Oj). The patient recovered rapidly from the time when the fetor of the fluid was overcome.

"In September, 1862, I again resorted to the same practice in a second case of septicæmia after ovariotomy. . . . . .

"A third case of septicæmia, produced by blood oozing from the omental vessels after ovariotomy, occurred in my practice in September, 1863. The symptoms appeared in this case on the fourth day, and the injections were commenced on the seventh. The same kinds were used as in the preceding case, the solution of liquor sodæ chlorinatæ, even ʒj to ℥iv of water sometimes, and it was found necessary to use them three times daily for twenty days, to keep the patient from sinking; then twice daily for twenty-one days, and once daily for thirty-three days more; making one hundred and thirty-five injections in all, in seventy-eight days. I found it better to inject a large quantity rapidly, and let it flow away immediately, usually injecting as much as the cavity would receive (one to two quarts at first). For the encouragement of others who may resort to this treatment, I should also add that it was persevered in, in the second case for four weeks, and in the third for three weeks, before any amendment in the character of the decomposed fluid could be perceived."

It is a matter of moment, in reference to this method, to know how an experience of fifteen years in its use should have affected its originator towards it. In an article written in 1870, he arrives at the following conclusions.

"1. Intra-peritoneal injections of water, with the addition of liq. sodæ chlorinat. or carbolic acid, as before explained, are entirely safe after ovariotomy in the conditions requiring them.

"2. They should be used with a *curative* intention in all cases of septicæmia already developed, and in all cases for *prevention* where it is feared, from the presence already of a fluid in the peritoneal cavity, whose decomposition will produce it.

"3. Thus used, they will diminish the percentage of deaths from septicæmia after ovariotomy from one-sixth (seventeen and eleven-seventeenths per cent.) of all who die after it, to one-thirty-sixth (two and sixteen-seventeenths per cent.); and increase the average success of ovariotomy from seventy to seventy-four or seventy-five per cent.

"4. Intra-peritoneal injections are never to be thought of except for the purpose of removing a fluid already in the peritoneal cavity, which either already has, or assuredly will have, produced septicæmia.

"5. A tent may be inserted for two to four days at the lower end of the incision, with entire safety, in any case of ovariotomy where the accumulation of such fluid is apprehended.

"6. Finally, septicæmia would more rarely occur after ovariotomy if all fluid were removed from the peritoneal cavity by the most careful sponging before closing the incision."

In cases in which the necessary escape of fluids into the peritoneum makes the occurrence of septicæmia probable, Dr. Peaslee is now in the habit of introducing a tent of rolled linen as large as the little finger, into the lower extremity of the abdominal incision, in order to facilitate peritoneal injection, should this become necessary.

Let no one suppose that septicæmia once established becomes irremediable, or even excessively dangerous. Experience disproves this; it is the prolongation of exposure to absorption of septic elements that constitutes the great danger of the condition. "The two greatest discoveries," says Dr. Carl Both,[1] "which science owes to Virchow are, in my opinion, the established independent life of the animal cell, and the important fact that the living blood cannot hold or retain septic or putrid liquids, unless it is constantly nourished with such substances from a nidus of degeneration and decay."

As to the time at which the sutures should be removed no fixed rule can be given, for it will depend upon the rapidity and completeness of union. Should union by first intention occur, some of them may be removed on the fifth, sixth, or seventh day. But great care should always be observed, and only those at points where the union is strong should be withdrawn. After withdrawal the lips should be firmly approximated by adhesive plaster. The clamp, if employed, or the ligature, if passed out through the wound, should be removed when they lose their hold by reason of sloughing, and drop away. No traction should be applied to them. A case was recently reported before a society in London in which too early removal of the clamp had resulted in obstinate protrusion of a knuckle of intestine, which produced fatal peritonitis. Dr. Wells used it as a text by which to urge that the clamp should always be left in place until it was ready to drop off. This will usually be about the eighth or tenth day.

The patient should be cautioned against rising too early after convalescence. Even after she is able to go about she should be very careful not to make any violent efforts, and for a year or two she should wear a well-fitting abdominal supporter to guard against ventral hernia. I have had this occur in two cases. The abdominal walls were separated over a space measuring about four inches, and the intestines were supported only by skin, areolar

[1] Boston Gynæcological Journal for 1869, p. 356.

tissue, and peritoneum. In one case these yielded to pressure, and one year after ovariotomy a cancerous mass, about the size of a kidney, with a mass of attached omentum, escaped.

CHAPTER XLVIII.

DISEASES OF THE FALLOPIAN TUBES.

Normal Anatomy.—The identity of structure of the Fallopian tubes and uterus will be appreciated by the slightest study of the formation of these organs in the embryo, as described by recent observers, more especially by Leukart, Thiersch, and Kölliker.

In the walls of the Wolffian body, situated near the kidneys, on each side, in the female embryo, a narrow canal develops which ends below in the two horns of the uterus, while the distal extremity performs "a movement of rotation from before backward, and from above downward; the whole, together with the ligaments of the ovaries and the round ligaments, being enveloped in double folds of the peritoneum, which enlarge with the growth of the parts themselves, and constitute finally the *broad ligaments of the uterus.*"[1] Coming together at the median line these canals coalesce, or undergo fusion, forming the lower portion of the uterus, and the entire vagina down to the hymen.[2] The fundal arch is now formed in all probability from fusion progressing from below upwards, although this is somewhat doubtful. Thiersch[2] thinks from observations on the embryos of sheep that it occurs from below upwards; while Kölliker,[2] who experimented on those of cattle, believes that it occurs from the centre. Prof. Dohm, who experimented upon embryonic foxes, sheep, pigs, and cattle, concludes that it begins between the middle and lower third, and extends upwards and downwards. All this occurs very early in

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[1] Treatise on Human Physiology by J. C. Dalton, p. 645.

[2] Prof. Dohm of Marburg. Transac. Insbruck Convention, Obstet. Jour., vol. iii, p. 167.

embryonic life; according to Dohm it is completed by the end of the second month.

From the fact of this identity of structure we would naturally suppose that there would exist between these organs a close sympathy in health and in disease.

In the adult woman, according to Carl Hennig,[1] the right tube is nine and a half centimeters (three centimeters make an inch), while the left measures only eight and a half. The abdominal extremity has attached to it five large and ten small fimbriæ. The walls of these tubes consist: 1st. Of peritoneum, which covers them to the fimbriated extremities. 2d. Of connective tissue, in which are interspersed two sets of muscular fibres, external or longitudinal, and internal or transverse, which are continuations of the muscular tissue of the uterus and broad ligaments. At the point where these tubes enter the uterus, Hennig declares that the longitudinal and transverse layers of fibres both become greatly developed, and that the latter forms here a distinct *sphincter tubæ*. 3d. We find within and lining the tube a mucous membrane, which is thrown into large and small folds, which are very evident near the fimbriated extremity, and gradually become insignificant as we advance towards the uterus. Within this membrane Mr. Bowman discovered tubal glands, which consist of grape-like structures, extending downwards towards the subjacent muscular fibre. They differ from the muciparous follicles of the vagina, the Nabothian glands of the cervix, and from the utricular follicles of the uterine cavity. Kölliker denies the existence of these, but Hennig[2] describes them very fully. These compound glands of the Fallopian tubes are lined with an epithelium of basement form. The mucous membrane covering over the tubes, and not dipping down into these glands, is covered by a ciliated epithelium, the broom-like action of which is exerted towards the uterus. The object of this seems to be to sweep the products of the ovaries into the uterus, and to force in the same direction menstrual blood oozing into the tubes from their mucous lining, as a result of ovulation. The zoosperms, which are known to pass through the uterus and proceed as far as the ovaries, are themselves endowed with powerful ciliary action in the single cilia which each possesses, and by this they overcome the opposing force of the tubal ciliæ.

It is highly probable, to say the least, that the erectile condition

[1] Uterine Catarrh. Translation in Obstet. Jour., vol. iii, p. 468.

[2] Loc. cit., p. 473.

induced in the mucous membrane of the uterus and tubes by contraction of the middle coat of their muscular fibres produces in the latter, as in the former, rupture of bloodvessels and consequent hemorrhage. Hennig declares that "during[1] menstruation throughout its entire surface, it (the mucous membrane of the tube) assumes a dark red color." Ruysch, the old anatomist of Amsterdam, who wrote in 1737, describes a post-mortem examination in which he discovered the Fallopian tubes containing blood. This has by some of the writers upon the history of hæmatocele been construed into a record of that affection, but the passage appears to refer merely to a condition which depended upon ovulation. Messrs. Bernutz and Goupil[2] mention instances of the collection of blood in the Fallopian tubes in consequence of obstruction of these canals. Dr. Duncan[3] admits that some blood may come from the tubes in natural menstruation. In one of my cases of ovariotomy in which I employed the clamp, the patient menstruated regularly through the tube for three periods, when at the same time menstruating per vaginam. The abdominal opening then closed, and the discharge was thereafter confined to the vagina. Other cases of the same kind are on record. Now as in this case there was free exit of blood per vaginam, there can be no reason for believing that a regurgitant action occurred. The blood flowing by the tube was more probably the result of hemorrhage into that canal, the uterine end of which was constricted by traction, effected by the confinement of the abdominal end in the wound.

The diseases by which the Fallopian tubes may be affected are the following:

Inflammation;
Stricture;
Distension;
Displacements.

Inflammation of the tubes, or salpingitis, consists in inflammation of their mucous membrane, and may be either acute or chronic.

The acute variety generally results from puerperal endometritis, or from gonorrhœa, which has extended through the uterine mucous membrane. I have twice seen this disease almost destroy life by attacking the uterine mucous membrane, and subsequently producing pelvic peritonitis, doubtless reaching the peritoneum by traversing the tubes.

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[1] Loc. cit., p. 470. [2] Op. cit., vol. i.
[3] Fecundity, Fertility, and Sterility, p. 388.

Chronic salpingitis is one of the sources of uterine leucorrhœa, and commonly produces permanent interference with the calibre of the tubes. In some cases it results in constrictions, while in others it produces dilatation. The latter condition it probably is which produces the discrepancy observed between the reports of various observers as to the dangers resulting from intra-uterine injections. When the sphincteric action of the sphincter tubæ of one or both sides is destroyed, fluid thrown into the uterus will sometimes enter the tubes, and produce in them contraction, spasm, and violent acute salpingitis, which may go on to the production of peritonitis and death. When dilatation has occurred it is not at all rare for the uterine sound to be passed for several inches up the tube. I have met with several unquestionable cases of this kind. I say unquestionable, because the sound must have followed one of two courses, through the fundus into the peritoneum, or up the canal of one of the tubes.

As this subject has created some discussion, I will rapidly allude to two of these cases.

A physician near this city wrote to me concerning the case of his wife, who had chronic corporeal endometritis of several years' duration. Upon using the sound, he was alarmed at finding it pass into the uterus nearly six inches. The lady came down to me, and upon repeated measurement I found the sound pass a little over three inches. The patient went home, when her husband, surprised at my results, used the sound again, when, as before in his hands, it passed in over five inches. To solve the paradox he at once came down with her, and when examining with him I distinctly showed him the normal measurement, a little over three inches, and then twice passed the sound up one tube a distance of five inches.

One of my clinical assistants pointed out to me at my clinique, as a fit subject for a lecture, a patient whose uterus measured five inches, and who presented no symptoms except those of ordinary uterine catarrh. I had occasion to examine this patient, after stating this measurement, before the class, when I found that the sound passed only three inches. Confident, from the well-known accuracy of my assistant, that he could not have erred, I at once stated to the class what I believed to be the cause of the discrepancy, and in its presence passed the probe up the right tube, making a measurement of five inches. To avoid all chance of error, I now requested my assistant to verify my two measurements, when he also passed it first three inches to the fundus uteri, then

two inches up the right tube. Hildebrandt[1] relates two cases in which he passed a probe up the tube, and similar instances are recorded by Veit,[2] Matthews Duncan,[3] Noeggerath,[4] and others.

The great danger in both acute and chronic salpingitis is pelvic peritonitis, which may spread and destroy life. This arises from escape of the contents of the inflamed tubes into the peritoneum.

Of the symptoms very little can be said. The chronic variety may continue for years, and result in dilatation of the tube with no symptoms which arrest attention; while the acute form so quickly produces local peritonitis, that its symptoms are lost in those of that affection.

No special treatment is applicable to it except the adoption of means to prevent peritonitis, as rest, opiates, leeches, and strict avoidance of sexual intercourse.

The great obscurity of the diagnosis of tubal diseases renders the subject one upon which it is not profitable to speak further, although as a pathological study it is one of great interest.

Stricture.—The Fallopian tubes, which are often imperfect or wanting when the uterus is absent or undeveloped, may, even after full development, be affected by stricture. The condition may be produced by these causes:

Calcific deposit;
Senile atrophy;
Salpingitis;
Pelvic peritonitis;
Tubercle or fibrous tumors.

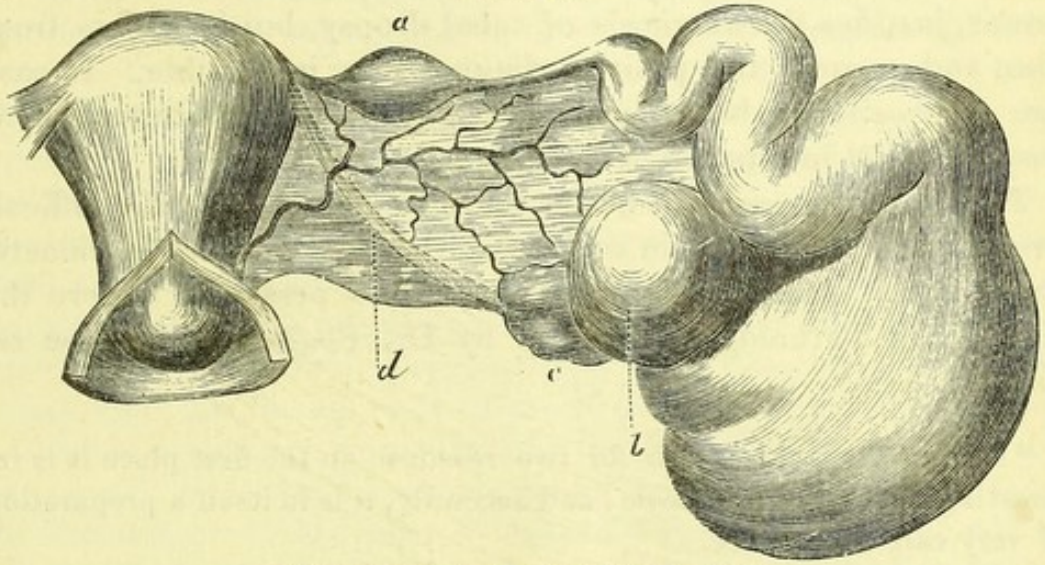
Partial obliteration of the canal results in sterility if it affect both sides simultaneously, and sometimes, by causing the accumulation of fluids, it produces tubal dropsy. It is not rare for rupture of the tubes and consequent hæmatocele and peritonitis to result from imprisonment of menstrual fluid in them. M. Puech analyzed two hundred and fifty-eight cases of congenital atresia of the genital organs, and found that in fifteen cases the Fallopian tubes were dilated, and in five were ruptured. The condition is rather a study for the pathological anatomist than for the Gynæcologist, for it can neither be diagnosticated nor relieved by treatment.

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[1] Barnes's Report on Midwifery, Brit. and For. Med.-Chir. Review, Oct., 1868.
[2] New York Obstet. Journ., vol. i, p. 267. [3] Edinburgh Med. Journ., 1856.
[4] Remarks before Obstetrical Society, New York.

Distension.—The tubes may be distended by accumulation of mucus, pus, menstrual blood, or a muco-serous material secreted by the altered mucous membrane accompanying great and prolonged distension. This condition owns invariably as its moving cause, stricture, which prevents the tube from emptying itself into the uterus. When very great distension takes place, the accumulated fluid either forces its way out of the uterine extremity, constituting the profluent dropsy of Rokitansky, or

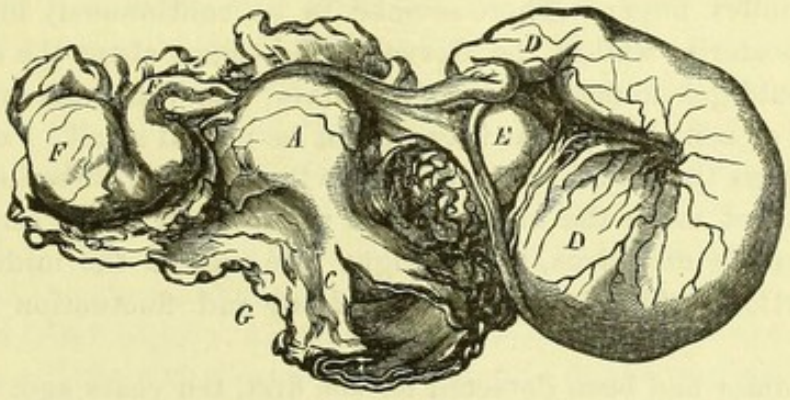
Fig. 245.



Tubal dropsy. (Boivin and Dugès.)

passes out of the fimbriated extremity into the peritoneum, or a rupture of the tube occurs. Such an accumulation may produce a tumor equal in size to the head of a child of ten years, and

Fig. 246.



Tubal dropsy. (Simpson.)

some say even much larger, though there is doubt as to the authenticity of the latter cases. Virchow has established a class

of cysts which he styles cysts from retention, to which distension of the tube by sero-mucus properly belongs.

The diagnosis in advanced cases, where, for example, the tumor has developed to the extent just mentioned, is difficult and often impossible. Sometimes, however, it may be made by the following means: an elongated, fluctuating, movable tumor is felt in the retro-uterine space a little to one side; in its outlines the tumor is wavy, and it can be separated from the uterus. Scanzoni quotes Kiwisch as declaring that, in such cases, the presence at the side of the fundus of a mammillated, elastic, and elongated tumor, justifies the diagnosis of tubal dropsy, but he differs from him, and regards the positive diagnosis as impossible. In case the diagnosis can be arrived at, the most appropriate treatment would consist in tapping per vaginam.

The following case will better serve to demonstrate the difficulties attending diagnosis in such cases than any number of didactic statements. A specimen of tubal cyst was presented before the New York Pathological Society by Dr. Peaslee with these remarks:

"I bring this preparation for two reasons: in the first place it is interesting in point of diagnosis; and secondly, it is in itself a preparation of very rare occurrence.

"The patient, a lady, forty-one years, first came to me from the country, last May. I saw her on board of one of the North River steamers. She had an abdominal tumor, which was supposed by the physician who sent her to me to be ovarian in character. The question was in regard to the propriety of removing the growth. I found the uterus completely retroverted, so that the os was on a level with the symphysis pubis, was very high up, and I could with difficulty reach it with the index finger. There seemed to be continuously in structure with the posterior wall of the uterus a solid tumor about the size of the fist. I could get no fluctuation in the mass; the whole was impacted in the pelvis so completely that it could not be moved at all. I could with difficulty pass the sound in the uterus to the depth of three inches, just, but could not move the organ to the right or left. The tumor rose a little above the umbilicus, to the right side and to the middle. This upper portion evidently contained a fluid, and fluctuation was very distinct.

"The tumor had been detected for the first, ten years ago. She menstruated regularly and had never suffered from menorrhagia. She had been gradually failing in health, became quite thin, and was also anasarcous in her lower extremities. I regarded the growth as a fibro-cystic tumor of the uterus, and advised non-interference with the case

until the sac should become so large as to require tapping, which operation in itself would enable us to determine the better its real character. She was first tapped about the first of October, and fifteen pounds were drawn off, and refilling, was tapped again in December, when ten pounds were evacuated, leaving as large a mass as before the operation. Still the physician persisted in the diagnosis.

"I saw her again about two weeks ago, she having come to me then with the intention of having it decided whether she actually had ovarian tumor or not. She had filled again, perhaps to a greater extent than before; so that it became very necessary to tap her again, and I did so with a view of determining the precise condition of things, in order afterwards to decide what should be done. I removed eighteen pounds of fluid. It resembled precisely the usual ovarian fluid, especially that taken a second time, except that it was slightly opalescent, giving the appearance as if mixed with a small quantity of milk. I tested it with heat and nitric acid, and found that it contained about half its bulk of albumen. After the sac was evacuated it was very easy to find that the tumor was very adherent to the lower part and on each side above. On passing the finger into the vagina, however, the solid mass which I expected to find had entirely disappeared; it was a mass, as I said before, so very solid that, to my sense of touch, it was clearly a fibrous mass and part of the uterus, more especially the fundus. That had entirely disappeared; I could not reach any sign of the existence of such a mass. The abdominal wall had been so distended that I could easily fold it over the fundus (as is my custom in such cases), and fairly grasp the organ. I could not feel any tumor there; in fact I could find nothing but the sac which I had evacuated, and of course this gave the idea that after all it was an ovarian tumor, and a single sac probably. I then introduced the sound in the uterus, and bringing it forward upon the instrument, produced an anteflexion. I could then very easily bring the organ forward, and could feel very distinctly the fundus and both the horns. Then I could feel that something extended down from the right side, leading to a solid mass, which I had felt before. There was a sac that had not yet been touched, or solid mass, but I could also feel passing off from the left side of the uterus a pedicle which was evidently continuous with the large sac which I had evacuated, which, of course, made it at first very certain that we had an ovarian tumor, rising from the left side. One thing made me doubt my diagnosis, and that was the extreme thickness, roundness, and evenness of the pedicle. I could not find its lower edge; it was of an even thickness, equal to that of the two fingers, all the way down. I was forced to doubt very much that it was an ovarian tumor at all, but I nevertheless considered it proper to advise the patient to have an incision made when her health should be sufficiently improved.

"She went on well for three days after the tapping, when she began

to lose her appetite, and all that I could do had no effect upon this condition. She had no fever at any time, neither signs of inflammation. She lived until the ninth day, and died of exhaustion.

"At the time of the autopsy the cavity of the uterus was but three inches long, as previously made out. On the right side a true ovarian cyst existed, but on the left was a *bonâ fide* tumor of the Fallopian tube of very large size, the upper rim of which was the large, even, and round mass of tissue which aroused the suspicion of a pedicle. It seems that the tube had become occluded at the very commencement of the uterus; accumulation took place beyond, until the tube itself was distended into a sac with the capacity of eighteen pounds. The whole was adherent to everything in its neighborhood; rectum, sigmoid flexure, and to both iliac fossæ. As the sac contained half a pint of blood, which in her condition was an enormous amount to lose, it was considered that death was the direct result of hemorrhage."

Displacements.—The tubes may pass with hernial protrusions into the inguinal or crural openings, and, in case of inversion of the uterus, may descend into the cavity of the displaced organ. It is generally in company with the ovary that the tube leaves its place, but at times it descends alone. Dr. Scholler[1] reports an instance in which, in a child who died twenty days after birth, a tumor was discovered which extended from the inguinal region to the right labium, and contained the Fallopian tube, which was non-adherent. A crural hernia of the tube alone which ended fatally is likewise recorded by M. Berard.

Prof. Rokitansky,[2] and Dr. Turner of Scotland, have both recently drawn attention to severance of the tube from the ovary by traction from increased weight of the latter or from false membranes. The former cites twelve instances in support of the fact.

Other Diseases of the Tubes.—In addition to these diseases the tubes are sometimes affected by cancer, tubercle, fibrous tumors, abscess, and accumulation of blood in their canals from hemorrhage from the mucous membrane. There is so strong an analogy between these disorders and the same in other organs, that it is not deemed necessary to enter upon their consideration.

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[1] Courty, op. cit. [2] Sydenham Soc. Year-Book, 1861.

CHAPTER XLIX.

CHLOROSIS.

Definition and Synonyms.—This disease is probably a neurosis of the ganglionic system of nerves. Disordering the control which this system exerts over the functions of organic life, it produces, as symptoms of its existence, impoverishment of the blood, constipation, dyspepsia, palpitation, and menstrual derangements and irregularities.

Although it is probable that it may occur in the male as well as the female; that it is sometimes met with in women who have passed the age of puberty, and as an exceptional occurrence has been known to affect young children, the ordinary period of its invasion is the time of puberty, when the dormant functions of the ovaries are being aroused, and the girl is rapidly passing into the state of womanhood. This fact has led many observers to suppose that it is dependent upon some derangement in ovulation and menstruation, but it is more probable that torpidity of the uterus and ovaries is, like the peculiar blood state which is so characteristic of the disorder, merely a symptom of functional disease in the sympathetic system of nerves.

Chlorosis has been described under a variety of names, as, for example, Anæmia or Spanæmia, a kindred disorder with which it has been commonly confounded by writers; Chloro-anæmia, Green Sickness, Cachexia Virginum, Morbus Virgineus, and many others.

Frequency.—It is an affection of great frequency in all civilized and refined communities. The greater the tendency developed by society to luxurious and enervating habits the more frequently is it encountered. Thus in large cities and the higher walks of life it is of much more common occurrence than in country places, and among the lower classes, where a more natural and healthy existence is passed.

History.—The characteristic feature of the disorder being readily recognizable, and of such a nature as to excite not only attention but anxiety, it has, from the remotest times, received some attention at the hands of physicians. Although, however,

allusions to it will be found even in the writings of Hippocrates, Valleix declares that F. Hoffman,[1] who wrote in the middle of the eighteenth century, was the first who ever gave a full and satisfactory description of it. Sydenham,[2] who flourished in the middle of the seventeenth century, describes "The Green Sickness," but disposes of the whole subject, symptomatology and treatment, in exactly ten lines. During the last century the subject has attracted great attention, and, thanks to the investigations of Andral, Becquerel, Rodier, and others, our knowledge of the pathology of the condition has been greatly advanced.

Pathology and Symptoms.—Before approaching this part of our subject special allusion must be made to a fact which has been already mentioned, that chlorosis and anæmia are frequently treated of as identical affections under the latter appellation. The pathological condition found to exist upon chemical analysis of the blood in the two diseases is often the same, a diminished amount of red corpuscles and in time diminution of all the solid elements of the blood. Many of their symptoms are also the same, as, for example, pallor, palpitation of the heart, dyspnœa, the existence of a loud systolic cardiac murmur, &c. In spite of these facts it will be noticed that even those writers who treat of the two conditions under the name of anæmia are forced to note the circumstance that there is a peculiar form of the disease which occurs about the period of puberty, to females only, and which has characteristics not displayed under other circumstances. Prof. Flint,[3] in treating of the etiology of anæmia, says:

"The obvious causes may be arranged into the three classes just stated, viz.: *First*, causes which involve an actual loss of red globules, as in hemorrhages; *Second*, causes involving a defective supply of material for assimilation; *Third*, causes which occasion expenditure of those constituents of the liquor sanguinis on which the production of red globules is dependent.

"The causes are not always apparent. Anæmia is apt to occur in females at or near the age of puberty, when there has been no loss of blood, no deficiency in alimentary supplies, and no unusual expenditure of blood plasma. Under these circumstances it constitutes the affection to which the name Chlorosis was applied before the anæmic condition was fully understood. If the name be retained, it should be considered as denoting anæmia occurring under the circumstances just stated."

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[1] De Morb. Virgin. [2] Syd. Soc. Ed. of Works, vol. ii, p. 288.
[3] Flint's Practice of Med., 2d ed., p. 62.

I have introduced this quotation not merely for the purpose of citing the views of the eminent author from whom it is drawn, but as illustrative of the position of those who look upon these disorders as identical as to pathology, and differing only in the period of life at which they are developed. As I proceed with the description of the symptoms, course, and treatment of chlorosis, I hope to be able to justify myself in following the example of Becquerel, Valleix, and many other French writers, in looking upon them as essentially and entirely different in nature.

Several French pathologists, under the lead of Becquerel, of Paris, have of late years advanced the view that chlorosis differs from anæmia mainly in this: that the latter is merely a blood state, while the former is a disease of the nervous system which may or may not produce the latter.

The most striking differences between the two diseases may be thus contrasted:

ANÆMIA	CHLOROSIS
Is merely impoverishment of the blood due to want of nourishment, from some drain upon the system, or from some poison in the blood.	Is a disease of the nervous system, and may occur with or without the production of its most common symptom, anæmia.
Can usually be accounted for by discovery of some special cause.	Cannot usually be accounted for by discovery of special cause.
Occurs at all periods of life, to men, women, and children.	Occurs in true type usually to girls about time of puberty.
Is readily curable by removal of cause, supply of good diet, and administration of iron.	Is affected favorably only by remedies which act upon the nervous system, as alteratives and tonics.
Is always characterized by impoverishment of blood.	Sometimes exists without impoverishment of the blood.
Produces a puffy and pale appearance.	Produces a light green color.
Does not produce sadness or great nervous disquietude.	Produces sadness and nervous disquietude.
Is unaccompanied by visceral neuralgia.	Is constantly accompanied by visceral neuralgia.
No special affection of solar plexus of nerves.	Pain, uneasiness or distress commonly referred to solar plexus.
Iron always does good.	Iron often increases discomfort.
Symptoms of ovulation will be noticed without menstruation.	Neither symptoms of ovulation nor menstruation will be observed.
The cause of the disease being removed, patient will rapidly improve.	If supposed cause be removed, patient will often improve but slowly.

The period of development by which the girl becomes a woman and the boy changes to the man is at once one of the

most striking, important, and interesting physiological processes which take place in the animal economy. The special alterations occurring at this time do not need enumeration here. All that it will be necessary to say is that all this change is coincident with the development of the ovaries in the one case and the testicles in the other, so that the former organs become capable of casting off matured ovules, and the latter of secreting fructifying zoosperms. If any accident occur so that growth and development do not take place in ovaries or testicles, the result is that the girl never becomes a fully developed woman, and the boy grows up a shrill-voiced, beardless, effeminate man.

In the lower order of animals, and more especially in the males of many species, interference, by castration, with development at puberty, gives us still more remarkable results. If two colts be bred in the same stable and from the same stock, and one be castrated and the other left entire, the former will develop into the gentle, slender gelding, while the latter will grow into the strong-necked, majestic, and vicious stallion. A still more striking contrast will be found to exist between the ox and the bull.

This process of development, which we term puberty, is under the control of the ganglionic, or sympathetic system of nerves, which, at that time, must necessarily be in a condition of excessive susceptibility. It is probable that in that state of exaltation, it is, in the female, often affected by a functional derangement which creates the collection of symptoms to which we give the name of Chlorosis. I say it is probable, for it must be confessed that the theory which I have here stated is merely an hypothesis suggested by clinical observation of such cases, and not supported by post-mortem or other physical evidence.

To state this view in other words; at the critical age of puberty, when a series of important and peculiar changes are being effected through the instrumentality of the sympathetic system of nerves, this system seems, in the female, to be liable to a morbid influence, which, in great degree, paralyzes it, and impairs its functions. Sadness, nervousness, and irascibility mark its onset; then neuralgia develops itself in the limbs, the head, and the viscera; the appetite is impaired; digestion becomes weak, and dyspepsia, flatulence, and depraved tastes are encountered. The young girl craves the most unpalatable and innutritious substances, as, for example, chalk, clay, slate, and other articles of alkaline character; while, at other times, the taste prompts her to consume acids, as vinegar, lemon-juice, pickled vegetables, &c. Usually the process of blood-

making is soon disordered, and anæmia sets in, coincidently with amenorrhœa, constipation, palpitation of the heart, sensitiveness along the spine, distress in the solar plexus of nerves, coldness of the hands and feet, and irregular and excessive flushing of the face.

Raciborski,[1] from his allusions to the affection in his work upon "Puberty and the Change of Life," evidently regards its pathology as due to disorder affecting the ganglionic nervous system:

"Chlorosis is an affection very common with young women about the period of puberty. This is not the place for me to discuss the primary nature or the remote cause of this disease, to inquire if it commences in the alteration of the blood which characterizes it, or if, on the other hand, as appears more probable, the alteration just alluded to is itself a consequence of an affection of an important part, such, for example, as the great sympathetic nerve, which, by its numerous relations would explain at the same time both this alteration of the blood and various troubles in the digestive, respiratory, and genital organs, and all the disorders of general sensibility."

Upon pressing along the spine, a point of great sensitiveness will usually be found near the seventh cervical vertebra, and others are often discovered above and below this. Auscultation reveals a loud basic systolic cardiac murmur, and along the arteries the bruit de souffle can be detected. It is not rare to find the sternum and clavicles very sensitive to pressure, as, likewise, the intercostal spaces.

Most of these are symptoms which mark the effect of the disease upon the nervous system. The peculiar blood state usually engendered, has, however, received special attention, and been, by many excellent authorities, regarded as the main element of the disease. Becquerel,[2] in his excellent article upon this subject, thus sums up the changes which are ordinarily effected in this fluid.

"1st. The water of the blood is notably augmented, which diminishes the density of this fluid. The amount is represented by the same figures as in anæmia.

"2d. The proportion of the globules is diminished.

"3d. The fibrin is usually found to be normal in amount.

"4th. The fatty and saline constituents retain their normal proportions, as does usually the albumen. In very severe and obstinate cases, however, the albumen is diminished, when we see dropsical swellings as a result."

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[1] De la puberté, and de l'age critique chez la femme, p. 240.

[2] Mal de l'Utérus, t. ii, p. 490.

Mode of Development.—Chlorosis generally develops itself very insidiously. In a girl who has previously been in good health, languor, sadness, and aversion to company usually first attract attention. These are followed by palpitation of the heart after exertion, scantiness of the menstrual flow, and a characteristic pale or greenish complexion. Alarm is ordinarily excited by these evidences of approaching disease, and careful scrutiny soon discovers others which have been already alluded to. According to my observation, the first suspicion which usually takes possession of the minds of the friends of the patient, is, that pulmonary consumption, or heart disease, is about to develop itself. In some cases, an effusion of serum takes place into the areolar tissue of the body, into the pleural cavities, or into the peritoneum, when even the medical adviser is deceived, and fears that dropsy from Bright's disease, cardiac disease, or chronic peritonitis is about to show itself.

If an error in diagnosis lead to neglect of appropriate treatment, or if, still worse, the symptoms of the disease be mistaken for those of plethora, as I have more than once known them to be, the gravest features of the affection will show themselves, and a most critical condition be established.

Causes.—The predisposing causes are well known to be sex and age; but those which absolutely excite the disorder are not so easily ascertained. The causes which are here recorded, are probably those which most frequently prove active; but it must be specially stated that, in the majority of cases, no cause whatever can be assigned for the disease.

Great grief, or prolonged mental anxiety;
Depressing home influences;
Great fear suddenly excited;
Deprivation of pure air, exercise, and light;
Disappointment in love;
Erotic excitement without gratification;
Prolonged watching and loss of sleep;
Nostalgia;
Excessive mental labor.

The most marked instances of the disease which have fallen under my observation, have occurred under the influence of great grief for the loss of a relative, disappointment in love, or home-sickness. Dr. W. H. Hammond, in an interesting article upon

this subject published in the Psychological Journal for July, 1868, records a striking instance arising from sudden and extreme fear.

Before leaving this part of the subject, it is proper that I should state that Becquerel, who has done more for the advancement of our knowledge of this interesting affection than any other modern authority, admits these causes with considerable reserve. They "can, if they do not produce, at least favor the development of chlorosis," says he in reference to most of those causes which I have recorded.

Varieties.—I know of no good reason for dividing chlorosis into varieties. In one set of cases, certain symptoms are predominant; in others, a different set of signs assume the ascendency. It may, however, prove useful to the reader to lay before him the six forms which have been adopted by Becquerel. They are as follows:

1st form, simple chlorosis;
2d form, chlorosis with predominance of cephalalgia;
3d " " " " dyspnœa and palpitation;
4th " " " " gastralgia;
5th " " " " menstrual disorder;
6th " " " " general feebleness.

Differentiation.—An aggravated case of this disease may be confounded with anæmia, cardiac disease, tubercular pleuritis or peritonitis, or even with the first stage of tubercular phthisis. From all these a careful and intelligent search for the evidences of organic lesions will usually distinguish it in time; but without watching the progress of the case for a considerable period, it is often impossible to decide as to the diagnosis.

The physician is often deterred from arriving at a positive conclusion as to the existence of chlorosis, by imagining that the disorder is identical with anæmia. Drawing from the veins of the patient a drop of blood, he puts it under the microscope, and to his surprise finds it to contain red globules in normal amount, and concludes that his suspicions were incorrect. It is a well-known fact that the disease may exist in aggravated form with little or no blood change.

Complications.—Chlorosis may be complicated by hysteria, hypochondriasis, hypertrophy of the heart, and tuberculosis. In one case which I have seen, chlorosis developed itself with most unmistakable symptoms, and then violent chorea showed itself, which proved fatal after lasting about two years.

Prognosis.—Unless some serious disorder complicate it, the prognosis is always good; but the course and duration of the disease cannot be predicted. If all the surroundings of the patient, both social and physical, be altered, and all causative influences removed, recovery may be rapid and complete; but if these circumstances cannot be brought about, the affection may last for an indefinite time.

Treatment.—Treatment should consist, not in fruitless attempts to overcome one, or even two of the results of the disease, amenorrhœa and anæmia, for example, but in a systematic effort to accomplish these three ends:

1st. To remove the cause of the disorder;
2d. To cure the neurosis itself;
3d. To repair the damage which it has effected in the system.

If any of the causes which have been enumerated be found to exist, it should as far as possible be promptly and entirely removed. In many cases the cause cannot be discovered, and in many, if discovered, cannot be removed; but if search be always made for it, a sufficient number of successes will occur to reward the effort.

Even where the special cause cannot be detected, recovery may be accomplished by removing the patient from home, and sending her to a distance from objects and people connected with the sadness and depression attendant upon the inception of the attack. A visit to some agreeable watering-place or lively country resort, if the patient live in a city, or to some large and busy city, if she inhabit the country, will often do more in the way of cure than can be effected by any amount or kind of medication. A sea-voyage and visit to a foreign country will often produce a most excellent result, and sometimes cause complete cure.

Well-regulated exercise in the open air is of great importance. Horseback exercise, rowing, bowling, walking, playing at ten-pins, &c., constitute some of our best nervous tonics. Sea-bathing, and more particularly surf-bathing, is very useful, and should, when attainable, be faithfully tried. All of these are, however, inferior in value to cheerful, congenial, and new society. This accomplishes a change in the nervous system which nothing else so surely effects.

In the meantime, nervous tonics should be freely given. The best of these are the preparations of arsenic, strychnine, and quinine. Should the patient bear it well, the continuous electric

current should be employed, and general electrization, as practiced by Drs. Beard and Rockwell, of this city, often proves very beneficial.

As anæmia is usually a complication of the disease, iron is generally indicated. Some of the best preparations are, the saccharated carbonate, iron by hydrogen, and the bitter wine of iron. A very excellent combination is offered by the following prescription:

℞ —Ferri vini amari, ℥vijss.;
Tr. nucis vomicæ, ʒiv;
Solut. potassæ arsen., ʒij.—M.
S.—A dessertspoonful, in a claret-glassful of water just after each meal.

The diet should be extremely nutritious, consisting of meat, milk, animal broths, eggs, and vegetables, with wine, whiskey, or malt liquors, if these appear necessary on account of great exhaustion.

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