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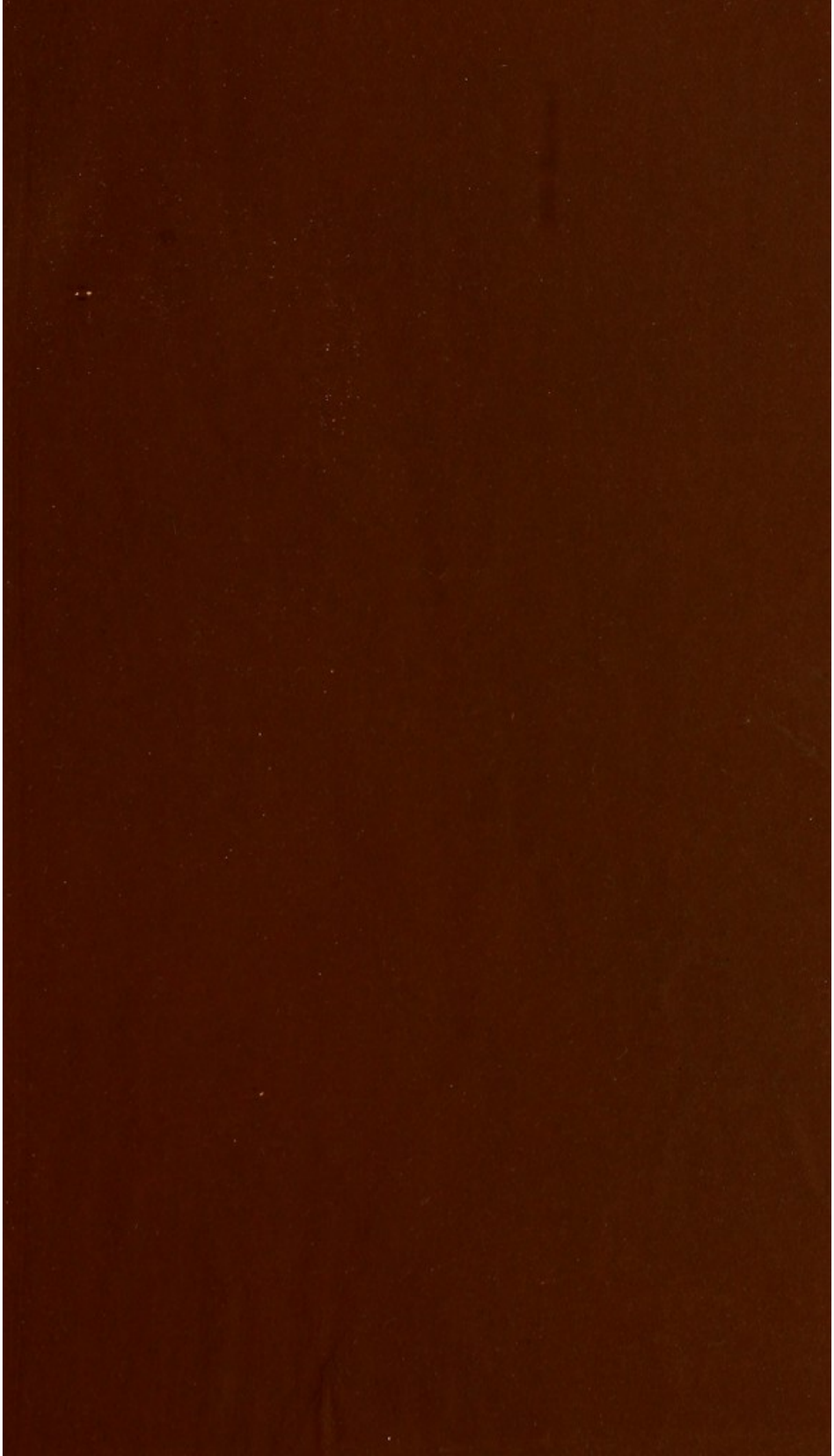

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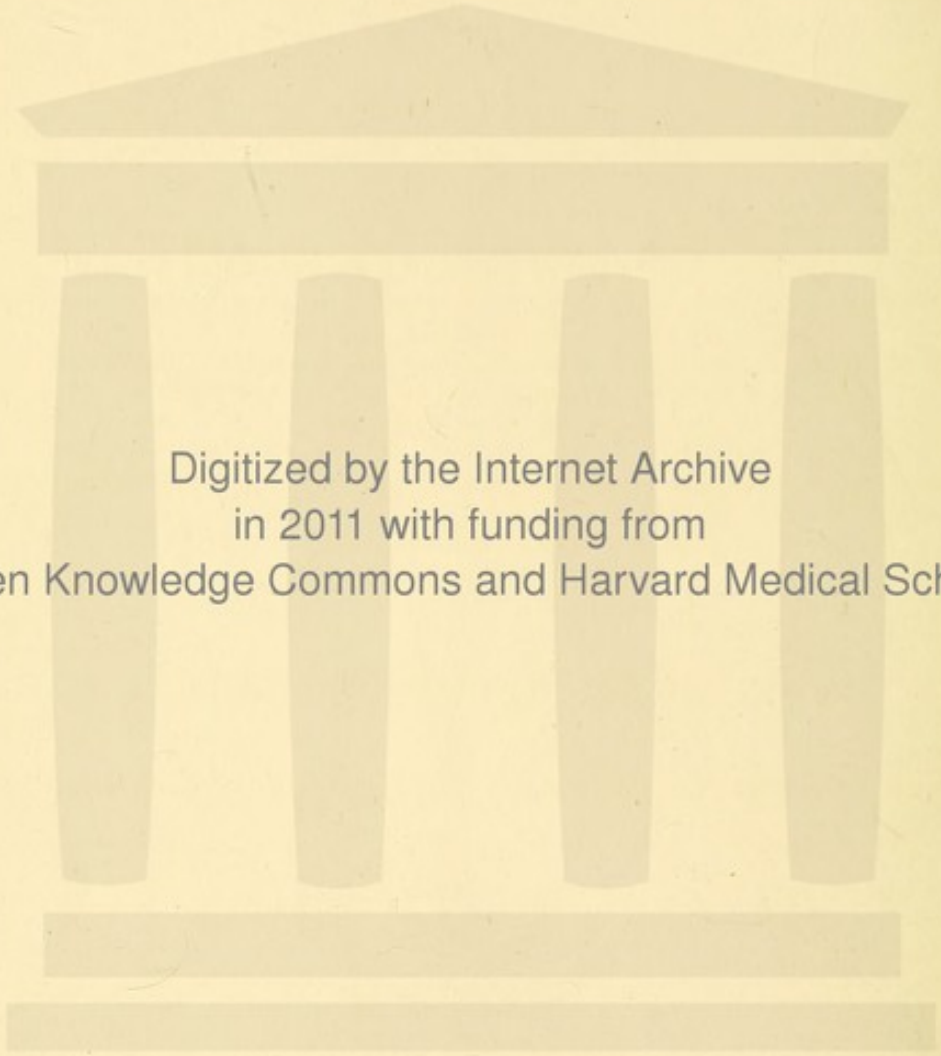

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A

PRACTICAL TREATISE

ON THE

DISEASES OF WOMEN.

Received Am Jour Med Sci Jan 75 - 189

BY

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FOURTH EDITION, THOROUGHLY REVISED.

WITH ONE HUNDRED AND NINETY-ONE ILLUSTRATIONS ON WOOD.



PHILADELPHIA.
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1875.

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TO

JOHN T. METCALFE, M.D.,

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

IN TOKEN OF ADMIRATION OF HIS PROFESSIONAL SKILL;

OF GRATITUDE FOR NUMBERLESS FAVORS RECEIVED DURING LONG YEARS OF AN INTERCOURSE,

UNINTERRUPTED IN ITS HARMONY AND PLEASANT RELATIONS;

AND

OF THE WARMEST PERSONAL AFFECTION,

This Work

IS INSCRIBED BY HIS FRIEND,

THE AUTHOR.

PREFACE TO THE FOURTH EDITION.

In presenting this, the fourth edition of his treatise on the Diseases of Women, the author desires to express the great gratification which he has felt at the cordial reception accorded to the work by his professional brethren, as shown by the exhaustion of three large editions within five years, the translation of the work into German, and preparations now on foot to render the present edition into French and Italian. Stimulated by this, he has spared no pains in the revision to make the work a faithful exponent of the most advanced condition of gynecology. Many portions have been virtually rewritten, and the whole has received the most careful attention. The series of illustrations has been reduced by the omission of many which seemed to be superfluous, while a number of new ones have been introduced which it is hoped will more thoroughly elucidate the text.

To one point in the work the author would call the attention of the reader. Some of the manipulations recommended by him will be found difficult of accomplishment by the practitioner who employs the cylindrical speculum or others which are applied in the dorsal position. As examples, may be mentioned the use of the intra-uterine stem with supporting anteversion pessary, and the uterine probe. Introduced through Sims's speculum, they are easily managed; employed in any other way, their use is attended by difficulties.

It may very naturally be asked why the author, knowing as he does that the dorsal method of speculum examination almost universally prevails, teaches from the standpoint of the lateral or Sims's method? He answers the question in all candor in this way.

He looks upon the introduction of the lateral method of speculum examination as a great advance in gynecology; he regards it as a method which puts him who practises it upon a decided vantage-ground over him who employs the dorsal method; and he confidently looks forward to the day when the great superiority of the levator perinei speculum will cause it to supersede all others. He freely acknowledges that in this estimate he may be entirely in error; but so strong are his convictions that he would be recreant to them did he speak less decidedly. In the Woman's Hospital, of this city, with a surgical staff of twelve, this plan is universally adopted; and an opportunity of demonstrating its advantages always affords pleasure to the surgeons of the institution. Time, the test of the value of all things, will settle this matter, and the author, with the small minority which believes as he does, is perfectly willing to abide its verdict.

In the preparation of this edition for the press the author has been greatly aided by three of his friends, to whom he offers his sincere thanks—Drs. S. Beach Jones, Jr., James B. Hunter, and Matthew D. Mann.

New York, June, 1874.

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THE

DISEASES OF WOMEN.

CHAPTER I.

HISTORICAL SKETCH OF GYNECOLOGY.

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 useful hint, many a suggestive statement may be met with which will germinate for the common good. Some of the most valuable contributions to modern gynecology will be found to be foreshadowed, or even plainly noticed, by the writers of a past age, and afterwards entirely overlooked. As examples may be cited, 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 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 Biblical 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 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," etc.

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 gynecology. Three volumes were written upon the subject by authors contemporaneous with Hippocrates. They have ordinarily been attributed to him, but Dr. Francis Adams, the translator of the

---

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

[2] Book ii, c. 84.

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, etc., are discussed. Aretæus, Galen, Archigenes, and Celsus, who probably lived in the first and second centuries, all treated of gynecology; the first describing 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 a description of peri-uterine cellulitis which shows him to have been at least familiar with the fact that the tissues immediately connected with the uterus were liable to suppurative inflammation, the purulent products of which discharge themselves through the vagina or rectum.

Soranus, the younger, made important contributions to gynecology. 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 gland, and describes the hymen and clitoris.

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,[1] 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 immediate

[1] 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.

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, etc.

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, etc., were employed; and as emollients, linseed, poppies, barley, etc., 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, etc. 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, describes herpes uterinus; and uterine hemorrhoids are alluded to by Paulus Ægineta[2] in this explicit manner: "Hemorrhoids 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 library for the purpose of heating the baths. But scarcely were they settled in their new dominion, when they exhibited an extraordinary change.

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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.

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 gynecology, 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.

We have then sufficient data to warrant the belief 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 gynecology, and were familiar with means of investigation which were subsequently lost, or ceased to be appreciated. They fully sustain the statement of the English translator of the works of Hippocrates that, "They furnish the most indubitable proof that the obstetrical art had been cultivated with most extraordinary ability at an early period."

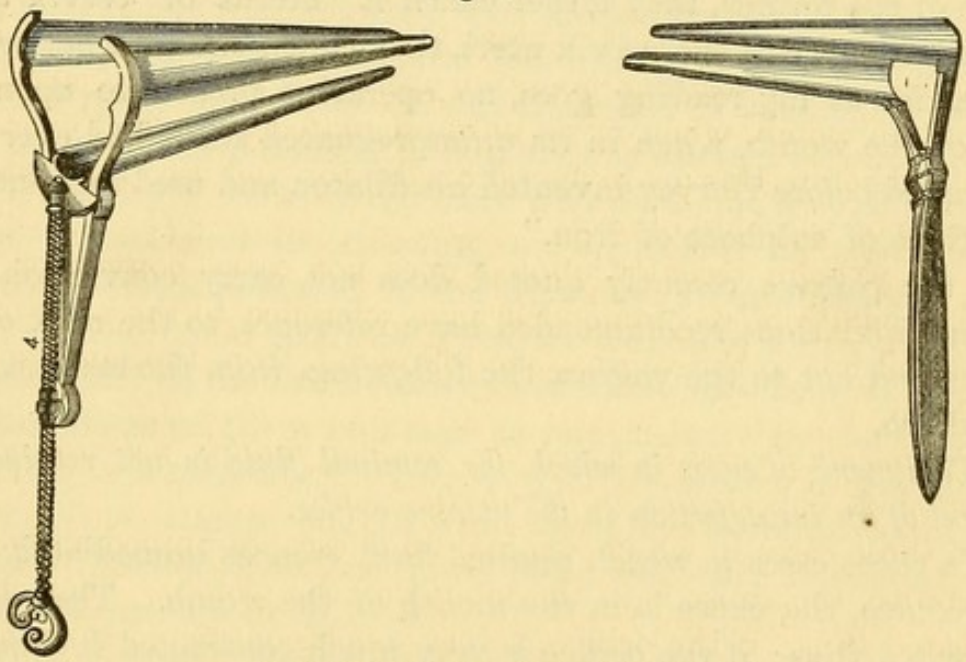
It must not, however, be supposed that the knowledge of the ancients was of the same exact and scientific nature as that which has prevailed since the modern introduction of the speculum. He who seeks in this literature for distinct and lucid pathological data will surely meet with disappointment. They 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, etc.; and Aëtius and Paulus seem to have been as partial to the "grease of geese" as our Milesian population is at present. To make amends for this many a valuable and suggestive thought may be gleaned with reference to diagnosis and treatment. This has certainly been proved by our experience of

the past, and we have no evidence to warrant the belief that these rich mines have yet been exhausted.

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," etc.; 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 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. One of six passages from writings imputed to him, I translate from the recent work of Monsieur T. Gallard.[1]

"*Treatment for rendering fertile a sterile woman; attention is directed to that part which consists in replacing a displaced neck of the uterus.*

"Just after the patient has taken a bath and a fumigation, open the uterine mouth and replace it at the same time, if necessary, with a sound of tin or lead, at first small in size, then larger, if it passes, until the difficulty seems remedied; dip the sound in any emollient preparation which may be thought best, and which should be rendered liquid by melting."[2]

A recent biographer of Harvey[3] remarks, "That the older writers looked upon the vagina and uterus as one organ, and when they spoke of the former, they either called it 'uterus' or 'cervix uteri.' What we now call the cervix uteri, they called the internal cervix; and as far as my reading goes, no operative procedure upon this part of the womb, when in its unimpregnated state, had ever been attempted before Harvey invented his dilator, and used intra-uterine injections of sulphate of iron."

If the passage recently quoted does not carry conviction that the manipulations recommended have reference to the neck of the uterus and not to the vagina, the following, from the same source, will do so.

"*Treatment*[4] *of cases in which the seminal fluid is not retained on account of an imperfection in the uterine orifice.*

"In those cases in which seminal fluid escapes immediately after intercourse, the cause is in the mouth of the womb. They should be treated thus: if the orifice is very much contracted it should be dilated with very small bits of pine wood and lead." We cannot suppose that in cases in which intercourse was practicable any contraction below the os externum uteri could exist, rendering such dilatation necessary.

Professor Simpson[5] asserts that among the ancients the sound was resorted to only for dilatation of the cervix, and not for exploration and measurement. The *specillum* mentioned by Aëtius was em-

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[1] Leçons Cliniques sur les Maladies des Femmes, p. 115.

[2] Hippocrate Œuvres Complètes. Tome vii, p. 379.

[3] Obstet. Journ. Great Britain and Ireland, vol. i, p. 26.

[4] Gallard, op. cit., p. 116.

[5] Obstet. Works.

ployed for reposition, while Hippocrates advises the use of a sound hollowed out on one side, and covered by medicated ointments: this, "the operator introduces into the uterine orifice, and pushes onwards so as to make it enter the interior of the uterus. When the medicinal substance is melted, the sound is withdrawn."[1] In 1657, a probe, used as we now employ the uterine sound, and intended especially for uterine exploration, was actually described by Wierus,[2] 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 were 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, "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

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[1] Gallard, op. cit., p. 116.

[2] Dr. H. G. Wright, Diseases of Women, Eng. ed., vol. i, p. 135.

have invented the speculum. Most assuredly it was not for the invention, but for the regeneration of an instrument which had been curiously lost sight of, that the world was indebted to this great man, who was really the founder of the modern school of gynecology. 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 does 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 by his predecessors and contemporaries.

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 gynecologists 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 instrument, new aids to diagnosis and treatment were rapidly brought forward. 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, etc. 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, etc. "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," etc.

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 discussions, 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 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 hematocele.

The improvements inaugurated by Récamier mark an era in

gynecology; one scarcely 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 dilation of the canal of the cervix by sponge-tents, so that the body of the uterus 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, hematocele, uterine flexions, etc. 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 gynecology, 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 chief factor 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 edition 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 importance which he attached to the matter may be appreciated from the following quotation. In reviewing the state of uterine pathology in Great Britain, as illustrated by the standard work of Sir Charles Clarke, he says: "Various forms of cancerous ulceration are carefully described, but the very existence of inflammatory ulceration is not mentioned. Now when we reflect that, as I shall hereafter show, in nearly five cases out of six of *confirmed* uterine disease, in which chronic discharges, mucous, puriform, or sanguinolent, or other well-marked uterine symptoms are present, there exists inflammation or inflammatory ulceration of the cervix, it is easy to conceive how erroneous

must be the views respecting uterine pathology, of a medical school ignorant of so vitally important a circumstance."

The last edition of Dr. Bennet's work was published in 1861, and a quotation of the views held by him in 1870, shows that they are essentially unaltered. Yet I believe that I am correct in saying that the great majority of the progressive gynecologists of our time sustain the views which are opposed to his. I find myself to-day endorsing the action of Sir Charles Clarke in publishing a work on diseases of women "in which the very existence of inflammatory ulceration is not mentioned," or is mentioned only for the purpose of disputing its validity.

One great advance which was effected by the work of Dr. Bennet was the placing upon a surer basis than it had yet occupied, the differentiation of engorgement and induration from commencing cancer of the neck.

It would be well, before proceeding farther, to consider very briefly 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 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 a marked impression. 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 candid investigation and experimentation at the bedside. I have come to regard the belief of Dr. Bennet in inflammation as the great moving cause, the common factor, in the production of uterine diseases, as an error. 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 formerly 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 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 hematosis

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, etc., destroy life without ever showing, unless as an exception to a rule, uterine disease as a consequence.

The constitutional depreciation of a woman will, however, sometimes prove a predisposing cause of local disease. As granular degeneration under the eyelids 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 the cervix is a well-known result of phthisis pulmonalis, tertiary syphilis, and anæmia.

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

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[1] On Leucorrhœa.

[2] Clin. Chirurg., vol. ii, p. 303.

attention, for Paulus Ægineta[1] 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, however, 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 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 most eminent practitioners of Paris, and by many the view then expressed is still adhered to. No one of experience will question the fact that a disorder of position of the uterus will often result in subsequent disorder in nutrition and sensibility. Every one must have repeatedly met with cases in which the reposition and support of a displaced uterus have at once dissipated a collection of symptoms which by many would have been attributed to inflammation of the mucous lining or parenchyma. Every one must have

[1] Op. cit., p. 624.

found in many cases the relief of a displacement, which was regarded as only an unimportant concomitant of the morbid state, result in complete cure. But admitting this is merely admitting the propriety of regarding displacement as one of many untoward influences which may disorder the innervation, circulation, and nutrition of the uterus; not making it the chief factor in the production of uterine diseases.

The primary importance of displacement was long ably maintained in this country by the late Prof. Hugh L. Hodge of Philadelphia, and the adherents of this theory are numerous.

The most signal instance of its adoption which has recently occurred is that of Dr. Graily Hewitt, of London. While he does not make displacement absolutely essential as a primary factor of uterine disease, and limits his belief in its agency almost entirely to flexions or deformities of shape, the importance which he attaches to such displacements may be gathered from the following quotations from the third edition of his valuable work upon the diseases of women.

"*a.* Patients suffering from symptoms of uterine inflammation (or, more properly, from symptoms referable to the uterus) are almost universally found to be affected with flexion or alterations in the shape of the uterus of easily recognized character, but varying in degree.

"*b.* The change in the form and shape of the uterus is frequently brought about in consequence of the tissues of the uterus being previously in a state of unusual softness, or what may be often correctly designated as chronic inflammation.

"*c.* The flexion once produced is not only liable to perpetuate itself, so to speak, but continues to act incessantly as the cause of the chronic inflammation present."

In a certain number of cases very grave and annoying symptoms of uterine disease will be found due to chronic ovaritis, an affection in which treatment is so inefficient that every practitioner must dread to meet it. The symptoms of uterine disease being present, an exploration of the pelvic organs is made. No uterine disease of any kind is found to exist, but prolapsed into Douglas's cul de sac are found the ovaries, large, tender, and tumefied. In other cases uterine disease will be found coexistent with enlargement, tenderness, and displacement of the ovaries, and the practitioner indulges the hope that so soon as the uterine disorder shall be cured the ovarian trouble will disappear. Such a sequence, however, does not occur, and he recognizes, to his disappointment, that what he

regarded as a secondary matter is really one of primary importance. For this reason no examination of the uterus should be considered complete which does not involve a careful investigation of the state of the ovaries.

For many years a thorough sceptic as to the frequency of ovarian disorder as a cause of the ordinary symptoms of uterine disease, I am now convinced of its truth, and in few cases do I give more guarded prognoses than in those in which I find one or both ovaries enlarged, tender, and prolapsed.

Since the year 1850, when he published his well known work upon the subject of Ovarian Inflammation, no one has been a more constant or consistent advocate of the claims of ovarian pathology upon the notice of the gynecologist than Dr. Tilt, of London. At a meeting of the London Obstetrical Society, in April of the present year, he recapitulated his views, and it cannot fail to be a matter of interest to see how time and experience have affected them. The positions which he originally took were these: 1st. That the recognized frequency of inflammatory lesions in the ovaries and in the tissues that surround them is of much greater practical importance than is generally admitted. 2d. That of all inflammatory lesions of the ovary those involving destruction to the whole organ are very rare, whilst the most numerous, and, therefore, the most important, may be ascribed to a disease that may be called either chronic or subacute ovaritis. 3d. That, as a rule, pelvic diseases of women radiate from morbid ovulation. 4th. That morbid ovulation is a most frequent cause of ovaritis. 5th. That ovaritis frequently causes pelvic peritonitis. 6th. That blood is frequently poured out from the ovary and the oviducts into the peritoneum. 7th. That subacute ovaritis not unfrequently causes and prolongs metritis. 8th. That ovaritis generally leads to considerable and varied disturbance of menstruation. 9th. That some chronic ovarian tumors may be considered as aberrations from the normal structure of the Graaffian cells.

Dr. Tilt pointed out that although these views, when promulgated, had been adversely criticized by Drs. Rigby, West, Bennet, and Churchill, they were now to a great extent accepted, and that they have been amply demonstrated both clinically and necroscopically by Aran, Bernutz, Gallard, Négrier, and Lireday. I would emphatically dissent from his 3d postulate, which I regard as entirely too sweeping an assertion, but with the remaining eight I fully agree.

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, Hegar, and Spiegelberg, in Germany; and of Sims, Atlee, Emmet, Bozeman, Peaslee, Dunlap, Agnew, 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, etc., have been perfected and are now constantly practised. 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 tendency of many of the leading gynecologists of our day is a matter to be deplored by all who wish well to gynecology. 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 resource 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 of timidity in employing them. I regard them as great advances in gynecology, 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 frequently 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.

Both the science and art of gynecology have been greatly advanced by the pathological researches of the German school. 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 contributions of great practical value are coming forth from them to enrich our literature. Among these may be especially mentioned those by Kiwisch, Lumpe, Oppolzer, Hennig, Waldeyer, Braun, Simon, Spiegelberg, and Martin. 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.[1]

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 gynecology were, during the early part of the present century, advanced in other lands 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, singular to relate, 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, and we see in our day his determined opposition to the phlogistic theory of uterine disorders rapidly gaining advocates amongst the ablest and most philosophical in our ranks.

From this country have emanated, as contributions to this important department of medicine, anæsthesia, ovariotomy, the revival of the method by which vaginal fistulæ have been made amenable to systematic treatment, and which since the time of Gossett had been entirely forgotten; and last, but by no means least, the introduction into ordinary practice of Sims's methods of exploring the pelvic viscera.

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 spe-

[1] This promise, which was announced in the 3d edition of this work, is now repeated with a good prospect of its approaching fulfilment.

culum, 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.

It may very pertinently be asked how I reconcile this opinion with the facts that with the exception of myself no other writer of a systematic treatise on gynecology recommends this method of exploration in preference to that by the cylindrical speculum in daily practice; that few if any of the gynecologists of Great Britain or the continent of Europe employ it to the exclusion of the old plan in ordinary cases, and that even in this city, where the personal advocacy of Sims himself and the wide spread influence of the Woman's Hospital which he has founded are felt, only a dozen practitioners do so, most of whom are connected with this hospital. My explanation of the fact is this: to employ Sims's speculum efficiently considerable experience with it is necessary. One who has not practised with it so as to become skilful will find it far less useful than the cylindrical and valvular specula in ordinary use. I feel sure that most of those who have tried it and cast it aside, except for operations in the vagina or uterus, have attributed their own shortcomings to an instrument the use of which they had not mastered. Again, it is necessary to have an assistant, and highly desirable to have a practised assistant, to hold the speculum. None of the substitutes for such an assistant have ever proved or, I think, will ever prove effectual. For this reason also the use of this instrument has not become more general.

It is becoming customary with those who practise gynecology as

specialists in this city and employ this speculum, to see their patients almost universally at their offices, and to have in attendance a trained nurse who manages both patient and instrument during examinations. One practising in this manner places himself, I am confident, on a vantage ground, which can scarcely be imagined by him who clings to the old methods of exploration. The experience required, however, to use this speculum with advantage, and the disadvantage of its requiring the aid of a nurse, will prevent its universal or even very general adoption. I do not believe that the practitioner who sees very little of uterine disease will ever employ it. But there are at present many who are studying and practising gynecology extensively and scientifically. It is to such that these remarks are especially addressed.

In stating all this thus plainly and positively, I am by no means ignorant of the criticism to which I expose myself from an overwhelming and most influential majority. I confess that even to me the slow advance made by Sims's speculum, *as an instrument for every-day use*, has been a matter of great surprise. Familiarized, however, by years of practice with both methods of examination, and prejudiced in favor of neither, I cannot doubt the result. The assertion of its rights by the new method will give an impetus to the advance of gynecology which in some degree it has even now effected.

I cannot close this part of my subject without appealing to those working in this department who are willing to test the matter, in the following manner. Learn the use of Sims's speculum, not by personal labor and experiment, but from one who is fully master of it; have at your disposal a trained nurse, and persevere with the method for three months, and you will endorse the statement as to the vantage ground which you will occupy, which just now appears so exaggerated to you. Nothing is easier than to attack *upon paper* such a position as that which I have here assumed. Nothing more tempting than a half humorous, half sarcastic review of it. But the question is one of too great moment to be thus dealt with. All earnest workers in our ranks are in search after truth, not striving to prove themselves right; all wise men are eager to avail themselves of improvements in their calling, not to find warrant for hugging what is old.

Within the last quarter of a century a vigorous attempt has been made to open the field of gynecology to female labor, and to 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, Phila-

delphia, 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. Actius 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 for 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 practised 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 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

[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.

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, admits them to its ranks as members. 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. All appear willing to intrust the solution of the problem of woman's fitness for the duties of medicine to time, the great crucible of human theories.

I am so often consulted by recent graduates as to the works which they should make the basis of a library upon gynecology, 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.
Kiwisch—On Diseases of the Ovaries, 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.
Athill—Diseases of Women, 1 vol.
Gallard—Léçons Clinique sur les Maladies des Femmes, 1 vol.
Peaslee—Ovarian Tumors, 1 vol.
Atlee—Ovarian Tumors, 1 vol.
Barnes—Treatise on Diseases of Women.

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 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 prescribed. 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, granular degeneration, 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 :—

Neglect of out-of-door 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, etc., which are there so common, are here not much practised. 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;" ovulation becomes irregular and

abnormal, favoring the development of subacute ovaritis; 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 comes in contact with limbs encased in thin cotton cloth, which is entirely inadequate for their protection. It is not surprising that evil often results to a menstruating woman thus 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 relation 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 efficiency.

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 mucous membrane of the uterus. 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 exertion. 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. I am convinced that uterine displacement is one of the most fruitful causes of subinvolution. As, during the six weeks or two months succeeding delivery, the process of retrograde metamorphosis, called involution, progresses, the uterus, under untoward influences, many of which are developed by the routine management of the lying-in chamber, becomes displaced. This results in impeded venous return from its tissues; the process of involution is checked, and months or years afterwards the patient, being forced to apply to a physician, is informed that she has suffered and is suffering from metritis of a chronic character of which displacement is a complication or result.

Every practitioner frequently hears that some lady has been injured for life "because she was not properly bandaged at her last confinement," and either doctor or nurse, possibly both, are severely censured for the culpable neglect. Too often such censure is listened to in silence, and the party supposing herself injured is allowed to hold the same opinion still. It is the duty of every physician to inform those coming under his influence as to the futility of trusting to the obstetric bandage, or if he cannot conscientiously do so, it is fully as much his duty to review his opinion upon the subject, and carefully to consider whether his own confidence is not misplaced.

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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 them. The practice is becoming exceedingly common, as every physician is aware, so common, indeed, that in the older portions of this country, (unfortunately it must be said in the more civilized and educated,)[1] it is by no means usual to meet with large families of children.

This question is certainly not an agreeable one to deal with, and the facts which I am citing may prove unacceptable to many of my countrymen, but it is one which is rapidly assuming proportions which must influence the future population of our country. It is useless to ignore it. If an evil is to be eradicated, the first step towards such a consummation is its recognition, and what class of men can more immediately and effectually grapple with this one than physicians? That it has attracted the attention of those outside of our profession, is attested by the fact that it has recently been made a subject of consideration in a pastoral letter from one of the Episcopal bishops of the State of New York to the people of his diocese.

With these statements we leave this unattractive subject to deal with another, 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 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

[1] Able papers upon this subject appear in the *Boston Gynecological Journal*, from the pen of Prof. D. Humphrey Storer, and in the *Philadelphia Med. Times*, from that of Prof. Wm. Goodell.

matrons throughout the land. In its columns are a number of 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 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, peri-uterine 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 such conditions after childbearing, even in a patient whom I considered cured at the time of marriage.

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

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

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 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

[1] In this statement I do not desire to reiterate a report which has long been silenced—that uncivilized women enjoy an immunity from uterine disorders. I merely assert what my own observation puts beyond doubt in my mind, that they suffer little from them in comparison with the civilized and refined.

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 *embonpoint*, 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 gynecologist, 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 practitioners. With the utmost caution, assisted by the most practised 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 gynecology 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 pro-

perly applied them to the solution of the case in hand. In many instances, uterine disease being suspected, the physician employs 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 rectal touch, the 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, etc.; 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. Having mastered these, let him in an obscure case develop them one after the other, slowly, carefully, and thoughtfully, until he has arrived at a diagnosis, or at the fact that he is unable to make one even after having availed himself of all the resources at his command.

Let me illustrate this by a supposititious case. An inexperienced examiner discovers upon vaginal touch that the vagina is occupied by a large tumor. If he rest satisfied with this method of exploration, and without reflection adopt the idea that the case is one of fibrous polypus, he may commit a grave error. The most skilful of gynecologists could not decide by touch alone, and would be, almost as much as he, exposed to error if he relied upon it. All the means which the experienced diagnostician can bring to his aid are likewise at the service of the inexperienced; and if the former stand in need of their assistance, surely the latter much more decidedly requires it. Let him then ask himself this question, although he may feel absolutely positive, altogether certain, that he is dealing with a fibrous polypus: what else may this be? At once the answer will come, it may be a case of prolapsed uterus, or of inversion of the uterus. It is important that he should know which it is, and usually it is quite easy to decide.

Drawing down the tumor, he examines by inspection and touch, and seeks the os externum, up which to pass the sound. It is not anywhere to be found, and moreover the tumor is larger below than it is above. The case is not one of prolapsus, and he feels that his diagnosis of polypus is surely correct. If it be a polypus which occupies

the vagina, the uterus should be above it. He now practises conjoined manipulation, but to his surprise this organ is nowhere to be felt. This may be due to his want of experience, and he examines further with the sound, endeavoring to pass it alongside of the neck of the tumor, and into the uterine cavity. He is surprised again, to find that it is arrested at the neck of the tumor, around which he now passes his finger, and finds it closed everywhere by a gutter of circular character existing about an inch above the lips of the dilated os. The case now looks like one of inversion, but he is not sure, for sometimes adhesive inflammation attaches the walls of the cervix to the neck of a polypus. Are there any means by which he may settle this question positively? By conjoined manipulation he thinks that he feels a ring or circle over the abdominal face of the tumor, and gradually he pushes his fingers into it, and becomes positive of its existence. Shaving off a small piece of the mucous membrane which covers the vaginal face of the tumor, he now places it under the microscope, and finds it sparsely covered over with cylindrical or columnar epithelium, not the squamous epithelium which should characterize the surface of a polypus.

Now placing the patient upon the back he passes one finger into the rectum and a sound into the bladder and approximates them above the tumor. He finds no uterus intervening, and his diagnosis is made; the case is one of inversion of the uterus. This is his diagnosis, that is, his deduction carefully and philosophically drawn from the premises presented to him, by the best means at his disposal. Let him resort to all these means, and success will usually be his. But, it may be suggested, he is not as familiar with these means as a more experienced man is. Practically, I agree that he is not; but why is he not theoretically? Are they not recorded and fully explained in all his works on gynecology? What is demanded of him is not experience, not wisdom; but a faithful and earnest effort to arrive at the truth by simply employing means which science places at his disposal.

These remarks of course apply with equal force to every condition in which a diagnosis is required. Let it be a constant habit to demand of one's self, after admitting a suspicion as to the nature of the disease, what else could present the physical appearances which exist? Having carefully considered this, let the various means of differentiation at command be fully tested. Then if an error of diagnosis creep in to damage interests entrusted to his charge, the mortified diagnostician may console himself with the reflection that at least he has exerted himself to the utmost of his

ability to avoid it, not fallen into a trap set for him by carelessness, indolence, or incompetency.

It must not be forgotten, however, that certain rare and exceptional cases will occasionally occur, the diagnosis of which will baffle the skill and experience of the most cautious and conscientious. Take, for example, the following:[1] a patient aged 62 years had a movable abdominal tumor which was examined by a number of physicians. She died suddenly, and autopsy revealed extra-uterine pregnancy, a child weighing 4½ pounds lying loose in the peritoneal cavity. Or this:[2] a tumor is discovered in the pelvis; the patient dies from some cause disconnected with it, and it is found to be a displaced kidney. But such cases are rare. The careful and intelligent diagnostician will very generally be successful.

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, etc., 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

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[1] N. Y. Med. Record, Feb. 1st, 1872, p. 539.

[2] Braithwaite's Retrospect, part 37.

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.

It will further be seen that the headings of my table are not numerous, nor the table itself lengthy or exhaustive. My belief is that the chief reason why such tables are not more generally employed is that they are so long and so filled with non-essential items as to become tedious and impracticable. This table is that which I employ in daily practice. I find that when filled out it gives all the salient points in my cases and these are all that I desire ordinarily to preserve.

MANAGEMENT OF PATIENT DURING PHYSICAL EXAMINATION.—Before commencing the consideration of physical signs, I shall make 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 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, 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. Abdominal palpation conjoined with use of the sound.
6. Inspection.
7. Rectal touch.
8. Vesico-rectal exploration.
9. The speculum.
10. The uterine probe and sound.
11. Tents.
12. The exploring needle.
13. The aspirator.
14. The microscope.
15. 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 practised 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, scybalæ in the rectum, inflammatory products, the result of peri-uterine cellulitis or peritonitis, a prolapsed ovary or ovarian tumor, or an hematocele. 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.

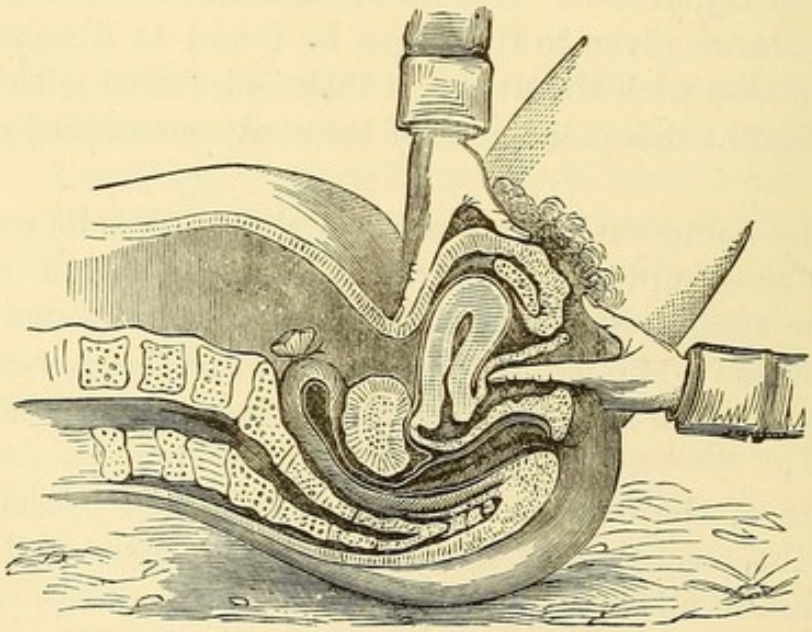
In certain rare and obscure cases, such, for example, as those in which a diagnosis of large tumors in the vagina is very difficult, it becomes necesssary to introduce the whole hand into the vagina. This procedure, which is usually resorted to while the patient is anæsthetized, should be practised with the greatest caution. Other-

wise injury may be done to the parts about the vulva, and a large and carelessly managed hand may produce rupture of the vagina.

One manœuvre by which touch of the parts lying closely in contact with Douglas's cul-de-sac is much facilitated still remains to be mentioned. Where small tumors exist behind and disconnected with the uterus, or where enlarged and prolapsed ovaries are to be sought for and examined, an excellent result is often obtained by placing the patient in Sims's left lateral position, and passing the index and middle fingers of the right hand as high up as possible, their palmar surfaces looking towards the posterior wall of the vagina. By this method I have repeatedly detected enlarged and slightly displaced ovaries which in the dorsal decubitus had entirely escaped observation.

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 prevent their retreat, abdominal palpation should invariably be combined with vaginal touch.

Fig. 2.



Practice of conjoined manipulation. (Sims.)

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 as 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 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. By this means the diagnostician decides as to the solidity or fluidity of tumors, their sensitiveness to pressure, the presence of fœtal movements, and other points of equal importance.

Abdominal Palpation conjoined with the use of the Sound.—I shall very soon speak of the uterine sound in relation to its ordinary and more legitimate functions. Here I allude to it only as a means of rotating the uterus in the pelvis in order that the hand pressed upon the abdomen may separate it from enlargements in the abdomen. This method of investigation is of so great value, and appears to me so little appreciated and so rarely practised, that I wish to draw especial attention to it. Let us suppose that a tumor

occupies the pelvis or lower portion of the abdomen, and it be desired to determine how close a relation exists between it and the uterus. The sound being passed to the fundus, the patient lying upon the back, it is made to rotate the uterus. The left hand, which is unoccupied, is now placed on the abdomen, so as to become cognizant of movements in the uterus and tumor. If both move equally, their connection is intimate; if the uterus move freely and the tumor but little, it is less marked; while if the tumor remains stationary during rotation of the uterus there is probably no connection, or one only by lengthy bonds of union.

Again, in cases where palpation and conjoined manipulation fail to map out the position of the uterus on account of obscure pelvic tumors or great obesity of the woman, lifting the organ by the sound and rotating it under the palm laid upon the abdomen, is a valuable resource.

Lastly, in cases of supposed fibrous polypus where one fears to operate lest an inverted uterus may have misled him, although the passage of the sound alone makes him almost sure as to diagnosis, it gives confidence to feel the uterine body rolling under the hand laid over the abdomen, for it is not an unheard-of occurrence for the sound to pass through the uterine walls and enter the peritoneum.

I would urge this procedure, as a rule, in the examination of abdominal and pelvic tumors. Indeed, in a large number of such cases, a neglect of it will allow of errors in diagnosis, which, by its adoption, might have been avoided.

Inspection.—A great deal may be learned from the inspection of diseased growths about the vulva, or ostium vaginæ, and of tumors in the vagina, which may be drawn down between the labia, and valuable information may be gained concerning abdominal enlargements by this means. For example, the shape of an ovarian cyst is globular and protuberant, while that of an abdomen affected by ascites is flat and bulging at the sides; the form of a mono-cyst is usually globular, while that of a poly-cyst is commonly irregular; the development of a pregnant uterus is regular and symmetrical; that of a solid tumor of the uterus generally irregular and unsymmetrical.

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 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. Those who have not employed this method systematically must have a faint idea of the great facility which it gives for exploration of the lower portion of the posterior wall and recto-uterine space.

Valuable as is this method of exploring by the rectum, it has been of late greatly improved upon by Prof. Simon, of Heidelberg, who has systematized the plan of passing the entire hand into the intestine and introducing the forearm as far as its middle. By this means a positive diagnosis may be made of many diseased states of the uterus, ovaries, rectum, and sometimes even of the kidneys. By it the examiner is enabled to hold the ovaries between the thumb and finger and appreciate their size, consistence, and smoothness; to discover tumors of the uterus no larger than a cherry; to ascertain the length of the pedicle of an ovarian cyst, and the freedom from attachments of the cyst itself; and in a case of renal cyst, to learn that the tumor has no connection with the pelvic organs.

This method may be combined with abdominal palpation, and where its complete development is not called for, may be modified by limiting it to the introduction of the hand, with the exception of the thumb.

There can be no question as to the great value of Simon's method. It will in the future serve to throw a flood of light upon many cases which now prove exceedingly obscure in spite of all our efforts. My experience with it, thus far, makes me very sanguine as to its future, not only as a means of diagnosis, but of treatment in certain forms of posterior displacement of the uterus.

Simon's method is thus put into practice:—

1st. The patient is anæsthetized and placed in an exaggerated lithotomy position; the knees being thrown upwards so as to flex the thighs sharply.

2d. The sphincter ani is thoroughly stretched and first the fingers, and then the hand cautiously introduced. In certain very rare cases an incision, involving the sphincter, is made through the

posterior raphe of the anus. For diagnostic purposes this is very seldom required.

3d. The fingers are then separated and a careful examination of the pelvic organs is made.

4th. Should it be found necessary to invade the parts above the level of the sacrum, three or four fingers are introduced into the sigmoid flexure, so that we may "reach above the umbilicus without in the least injuring the intestines or peritoneum, and the upper portion of the rectum and sigmoid flexure being extremely movable, can palpate the whole abdomen as far as the lower edge of the kidney."

The procedure requires caution. Violence and force must be avoided, and no attempt must be made to introduce more than three or four fingers into the sigmoid flexure.

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. Who the originator of this ingenious method is I cannot say. By Mr. C. F. Weiss it is attributed to Malgaigne.

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 for arriving at a correct conclusion in obscure cases. Unquestionably the greatest benefits derived from the speculum demonstrate themselves in the therapeutic department of this subject. 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 quicksilver, and covered by India-rubber, which is thoroughly varnished. This instrument is represented in Fig. 3.

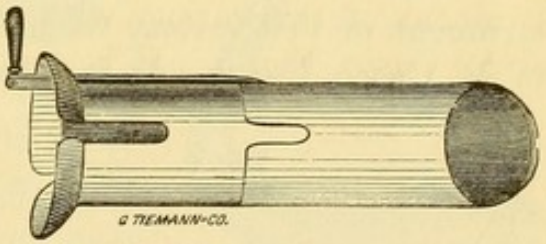
Fig. 3.



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 in 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.



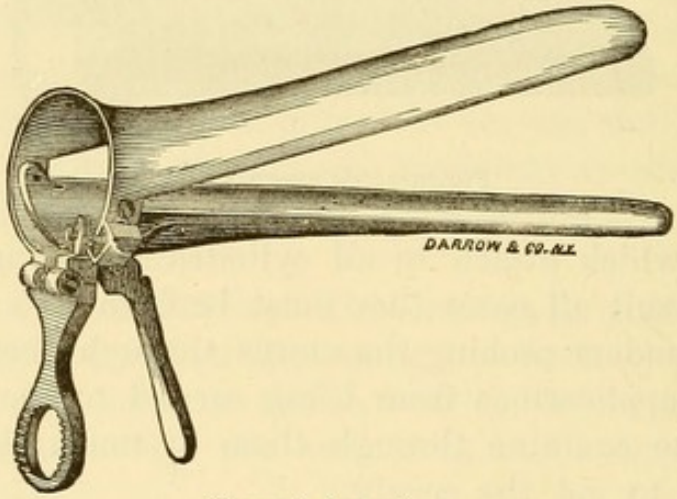
Thomas's telescopic speculum.

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.

Of valvular specula the bivalve of Ricord, the trivalve of Ségalas, and the quadrivalve of Charrière have long been popular. No in-

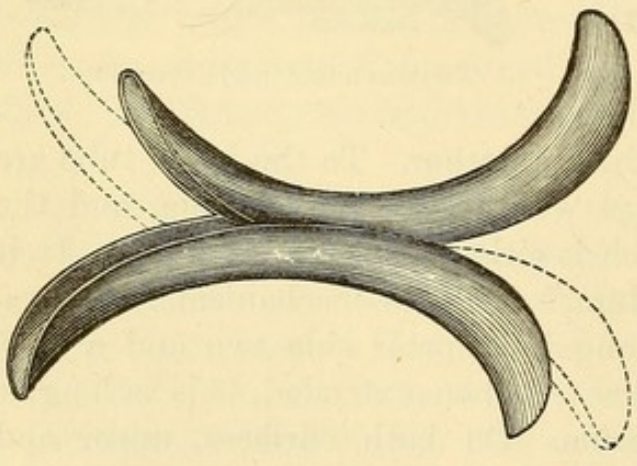
Fig. 5.



Cusco's Speculum.

strument of this variety with which I am acquainted equals that of M. Cusco, Fig. 5. It is compact, easily introduced, and shows the cervix very clearly.

Fig. 6.



Neugebauer's Speculum.

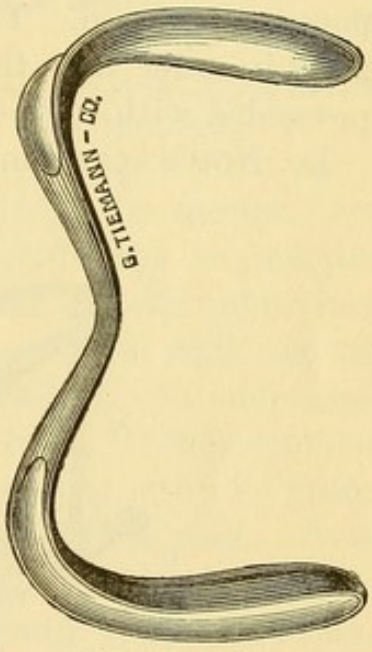
Of all the specula thus far mentioned I have spoken from personal knowledge. The next I show upon faith alone. It is the speculum of Prof. Neugebauer, of Warsaw, which is so highly commended by some of the most eminent gynecologists of Great Britain that I bring it before the reader upon their au-

thority. The diagram here exhibited shows this instrument somewhat modified by Dr. Barnes, of London, and as presented by him before the London Obstetrical Society.

All valvular specula, however, present these great disadvantages. It is difficult to avoid prolapse of the vaginal walls between their branches, and in removing the instrument these 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, a cylinder may be introduced without pain, but in a nullipara, or virgin, this is often caused.

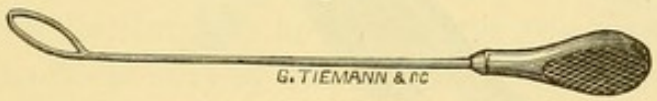
Like the cylindrical, the valvular specula in general use do not as a rule admit of probing the uterus and making applications to the fundus. I do not deny that in some cases it is possible, nor that by perseverance a skilful operator may succeed in effecting these objects in many instances, but it is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

Fig. 7.



Sims's speculum.

Fig. 8.



Sims's depressor.

Sims's speculum, Fig. 7, 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. 8, which acts upon the anterior wall.

The facility which Sims's instrument gives for exploration and

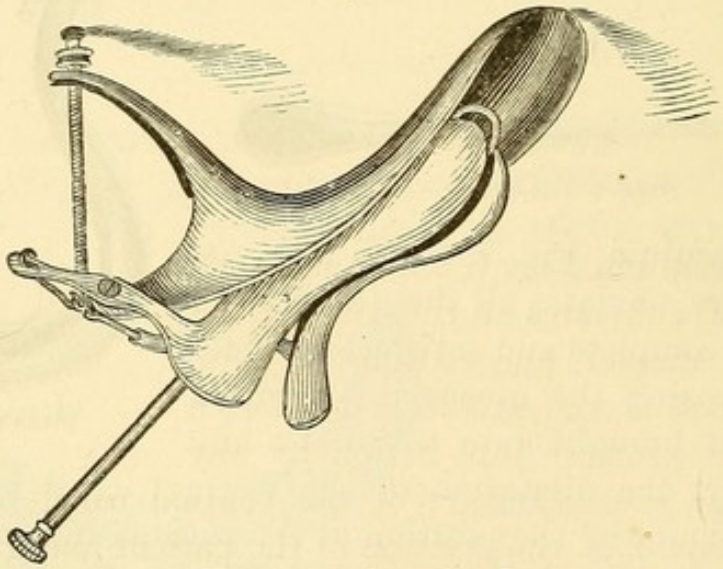
treatment is very great, so great, I think, that the practitioner devoting himself to gynecology who does not avail himself of it, loses as great an advantage as the auscultator would forego in not bringing to his aid the double stethoscope of Camman. But unfortunately this instrument presents such disadvantages that it can never come into general use. In the hands of those attending a sufficient number of cases of uterine disease to give them skill in manipulation and opportunity for thoroughly familiarizing themselves with it, 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.

A few of these, for their number seems destined to surpass that of modifications of the forceps, I lay before the reader.

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 (Fig. 9) does this by depressing the anterior

Fig. 9.

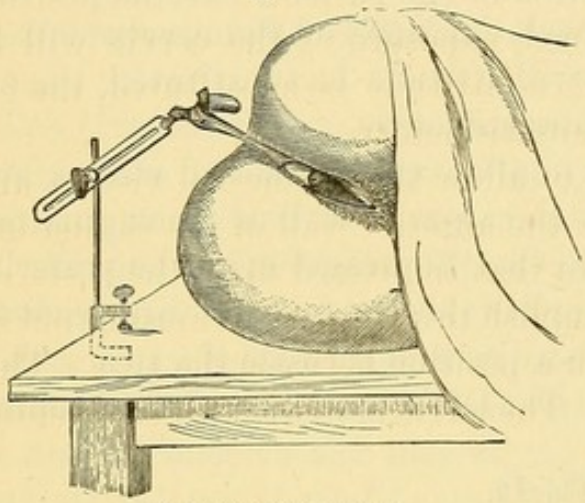


Nott's speculum closed.

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.

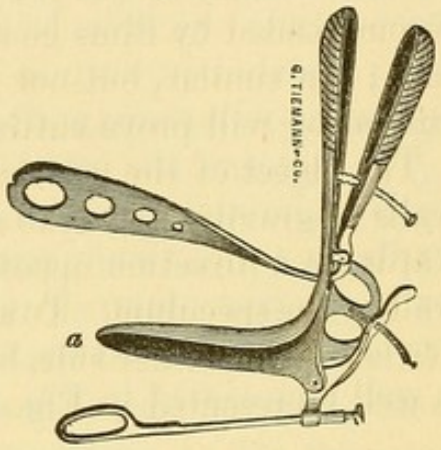
The speculum of Dr. J. B. Hunter (Fig. 10) is simply Sims's speculum, with its blades bent inwards so as to enable the examiner to fix it in a support which is attached to the table and acts as a mechanical assistant. The speculum being thus fixed keeps its position perfectly, and the examiner, with both hands free, proceeds in his investigation, employing the depressor as when an assistant aids him. To make this arrangement effectual some practice is necessary, but with that it will prove an excellent one.

Fig. 10.



Hunter's speculum.

Fig. 11.



Thomas's modification of Sims'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, 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, and thus one hand is left 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. 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.

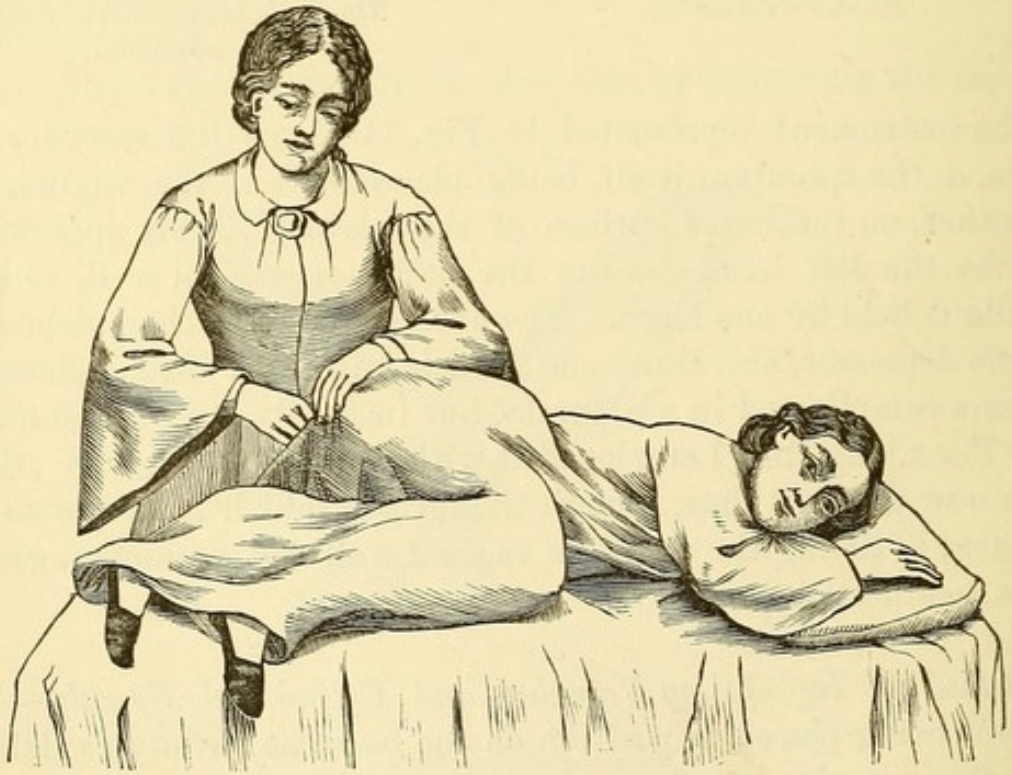
Method of Introducing Valvular and Cylindrical Specula.—The patient being placed in position on the back, as already explained, and the speculum, probe, and whatever other instruments are to be employed, laid in a basin of warm water at the bedside, the physician seats himself in a chair, or if a low bed be used instead 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 be not on her back, nor on her side, but in a position between the two. This is well represented in Fig. 12. The left arm must be drawn behind

Fig. 12.



Nurse holding Sims's speculum. (Sims.)

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, 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 is introduced, the posterior vaginal wall elevated by it and the anterior depressed by the depressor, Fig. 8, held in the other hand, or by the mechanical depressor represented in Fig. 11.

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. 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

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

[2] Maladies de l'utérus.

practitioner, and we dread seeing it popularized among young physicians of little skill and experience." Nonat[1] 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[2] candidly acknowledges 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, contra-indications to such a procedure, but where none exist it should be considered as essential to a thorough examination. This remark does not apply to the sound as ordinarily employed, but to the *probe passed through Sims's speculum.*

Dr. Sims has furnished us with a new instrument and method for probing the uterus, 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.

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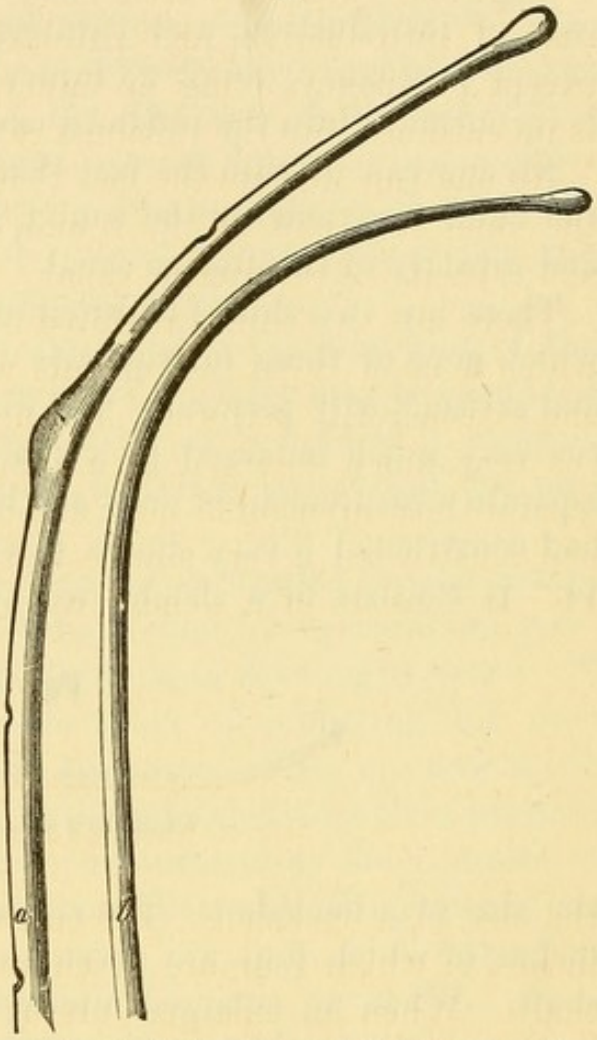
[1] Maladies de l'utérus.

[2] Diseases of Females, Am. ed.

Fig. 13 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.

Fig. 13.



Sounds of Simpson and Sims compared.

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.

Mode of Probing the Uterus.— While the woman lies on her back, the examiner, by vaginal touch, carefully ascertains the position of the uterus, by passing his finger, first into the fornix vaginæ, over its posterior face, and then along the base of the bladder, 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 as 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. 14. It consists of a slender rod of whalebone, ending in a knob

Fig. 14.



Thomas's Elastic Probe.

the size of a buckshot. The entire instrument measures eighteen inches, of which four are given to the handle and twelve 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 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.

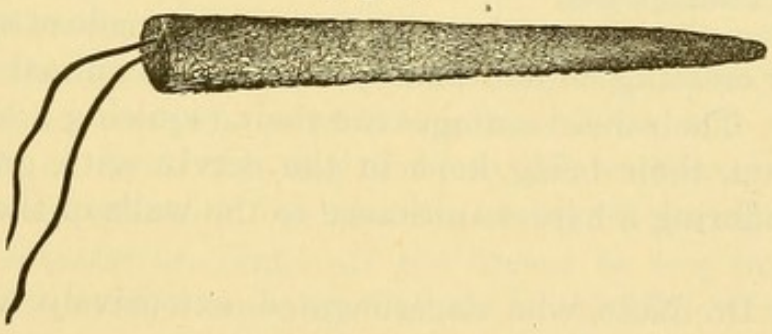
TENTS.—Before the time of Récamier, the cavity of the uterus was a space entirely closed to investigation and local therapeutics, unless the os were greatly dilated by disease. He not only aspired to an accurate knowledge of its affections, but boldly applied his remedies directly to the diseased surface: 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 1844, 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, etc.

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.

The practitioner should no more think of preparing his own sponge-tents than his extracts or tinctures. They are now made by those who possess much more skill and experience than himself, and by procuring them from these manufacturers the interests of both himself and his patient will be subserved.[1] They should be

Fig. 15.



A sponge-tent.

steeped in a solution of carbolic acid as an antiseptic, and may be medicated with iodine, zinc, copper, or other substances. The cord attached to a tent should always pass through it, and be attached at its upper extremity. A neglect of this simple precaution has

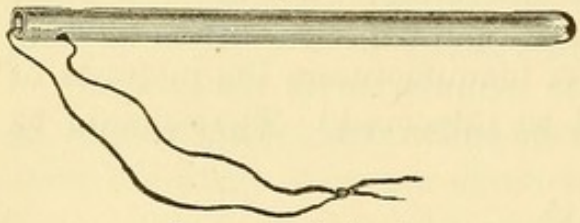
[1] Tents carefully and honestly prepared may be obtained by mail, from W. J. Porter, 113 Washington Street, Newark, N. J., as well as from the instrument makers of this city, Boston, and Philadelphia.

repeatedly allowed the tent to break upon its removal, and one-half to remain in the cavity of the body of the uterus.

Preparation of Sea-Tangle Tents.—In 1862,[1] Dr. Sloan, of Ayr, Scotland, first 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. 16.

Fig. 16.



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.

The late Dr. Nott, who experimented extensively with them, arrived 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

[1] Glasgow Med. Journ., Oct. 1862.

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."

The last point here mentioned is one of great importance in their use, and for its recognition we are indebted to Dr. Kidd, of Dublin. He thus speaks of it: "When the uterine tissues are relaxed by hemorrhage, a fine tent can be passed at once through the whole length of the cervix and on to the fundus, and by a little care a number of fine tents can be packed alongside of one another in the canal, when a single large one, though not nearly of the size of the bundle so formed, could not be passed at all. The first tent introduced serves as a guide to the others, and when they absorb fluid and swell out, they not only dilate the os internum as much as the os externum, but also the cavity of the uterus itself."[1]

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. 17,

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[1] Dublin Quarterly Jour., Feb. 1869.

mond abst med Sci oct 1877 pp 477

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

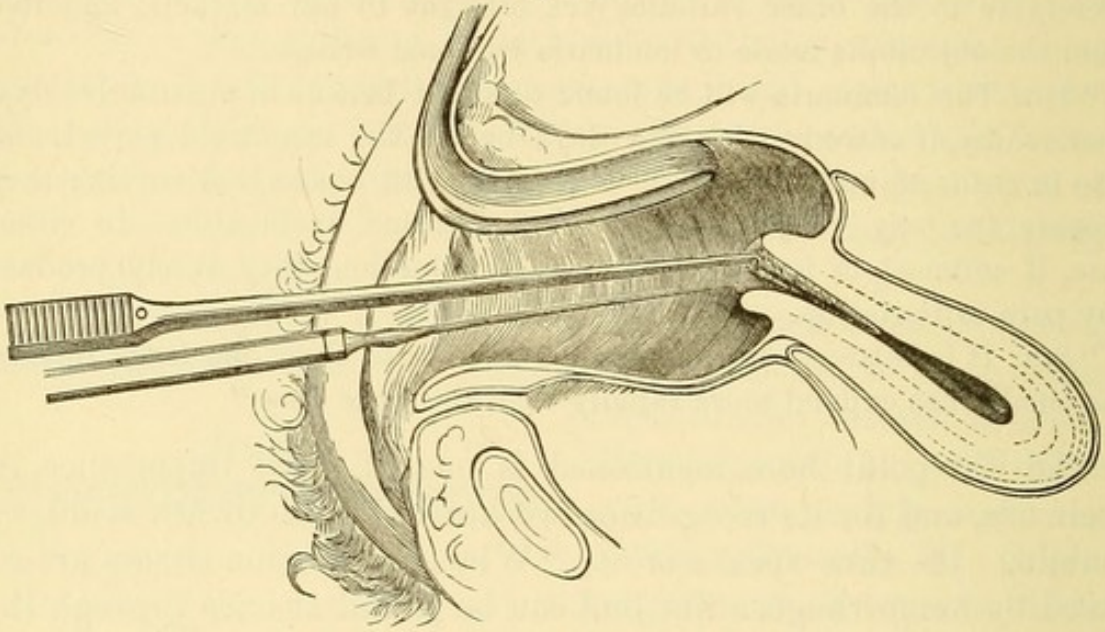
Fig. 17.



Tenaculum for fixing the uterus.

probe, and gently pushed through the cervix, as represented in Fig. 18.

Fig. 18.



Introduction of a tent. (Sims.)

Should its retention be doubtful, a mass of cotton should be packed against it so as to keep it in place, and the woman be directed to remain in 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, or by traction upon the thread attached to it.

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, for the cases which demand them are often urgent ones, and they serve a purpose not attainable by any other means. It is much to be regretted that practitioners have not shown more alacrity in publishing unfortunate results from the use of this method of exploration and treatment. Had all the fatal cases which have resulted from accidents due to tents been faithfully recorded, the list would now be a long one, and it would be greatly lengthened by a record of all the instances in

which tedious, exhausting, and dangerous disease has thus been excited. It may then be asked whether it is right to recommend a method accompanied by so much danger. The same line of argument applies to this question, which does to so many similar ones in medicine. Great dangers attend the use of anæsthetics, of narcotics, and other means which are in daily use, but the *proportion* of accidents occurring from their use is small although the aggregate is large; and the good which they effect is so great that their evils must be condoned.

In my own practice I have met with three fatal cases resulting from the use of tents. In one they were employed to remove a fœtal shell which had been retained for two months and was destroying the patient's life by septicæmia; in the second and third the cervix was being dilated for the removal of fibrous polypi, the hemorrhage from which had greatly exhausted the patients. One of these women died of tetanus, one from peritonitis, and one from an overwhelming and sudden attack of septicæmia.

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." Beside these I have seen, as every other gynecologist has, who has employed this means to any extent, a number of cases in which the following affections have been excited by them: pelvic-peritonitis, peri-uterine cellulitis, septicæmia, endometritis, and hematocele.

This is the record of my own practice, and my observation of that of many of my friends whose results I have an opportunity of seeing exactly agrees with it. Let it be remembered that many of the operations of gynecology are performed after dilatation of the cervix by tents. A fatal result ensuing is commonly attributed to the operation. With my experience I cannot doubt that the preparatory dilatation is accountable for it in many cases.

In view of the great suddenness with which the dangerous symptoms which follow the use of tents develop themselves, I confess myself greatly at a loss to account for the method by which they establish the morbid train. My impression is that the tent establishes a lymphangitis or angeioleucitis in the abundant network of uterine lymphatics, and that from this source, as in cases of dissecting wounds, a rapid advance of inflammation takes place to

neighboring parts. In this way the peritoneum and pelvic areolar tissue are reached; in this way septicæmia develops itself. How else could these parts become affected in the course of twelve or twenty-four hours? Even if a septic endometritis were established which reached the peritoneum through the Fallopian tubes, peritonitis would be the invariable result, which is not the case, and the development of this would probably be less rapid.

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 kept perfectly quiet.

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, 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 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.

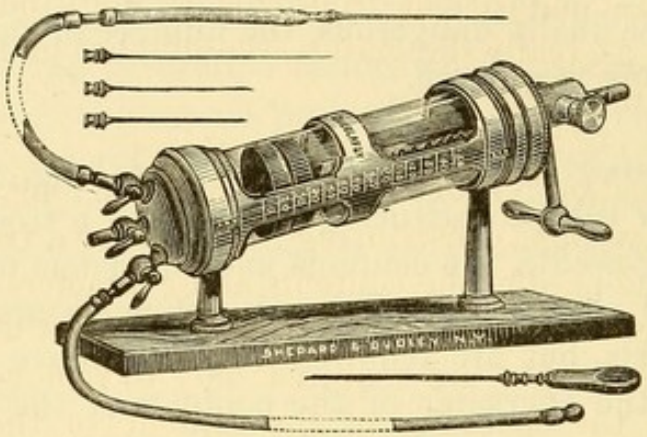
THE ASPIRATOR.—To whom belongs the credit of originating this method of evacuating the fluid contents of tumors or cavities I am unable to say. M. Courty alludes to it as a method of emptying ovarian cysts in use ten years ago, and mentions the instruments employed for that purpose by Buys, Monro, Guerin, and Boinet. To M. Dieulafoy, of Paris, certainly belongs the credit of systematizing and popularizing it to such an extent that it must be looked upon as a great resource, not only for diagnosis, but treatment of many of the morbid states with which the gynecologist is called to deal.

This method consists in the introduction of very slender, long needles perforated by a capillary tube, into tumors in regard to the consistency of the contents of which it is desired to decide; connecting these by gutta-percha tubes with a glass cylinder in which a powerful piston plays very accurately, and creating a vacuum in this by drawing the piston upwards. Powerful suction is thus exerted upon the fluid in the cavity penetrated by the needle, and if not too tenacious to flow through so small a needle, it passes through the tube and enters the cylinder. Fig. 19 exhibits the most recent modification of Dieulafoy's aspirator. Such instruments, very perfectly constructed, can now be obtained of the instrument makers of this city.

One great advantage possessed by this instrument consists in the fact that the needles are so delicate that the intestines, the bladder, solid tumors, or even important secernent organs may be penetrated without great danger. The sac imprisoned in intestinal hernia,

the large intestine distended by gases, the bladder threatened with rupture by impassable stricture, have all been tapped by it with impunity.

Fig. 19.



Dieulafoy's aspirator.

Should the operator not have this instrument at his disposal, the same principle may be applied to diagnosis by the use of the ordinary hypodermic syringe, as suggested by Dr. H. F. Walker, and sufficient fluid obtained for chemical and microscopical examination.

This method of exploration may be applied to all pelvic and abdominal tumors, with the best results.

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 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 several 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 sarcoma or 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 examination 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. A similar case has been reported to me, in which a piece of cotton was long retained, giving rise to very anomalous symptoms. A portion being removed, the microscope revealed its true nature.

In the diagnosis of ovarian tumors it becomes a most valuable resource. By it the fluid removed from a cyst may often be decided to be ascitic, ovarian, from cysts of the broad ligament, fibro-cystic, or from cysts of hydatid origin. In solid ovarian tumors it may also aid and settle diagnosis. 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, etc., 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;
Conjoined manipulation.

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;
Simon's method.

3*d.* *Cavity of Cervix and Body*—
Tents, followed by introduction of finger;
The uterine probe and sound;
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;
Simon's method;
Conjoined manipulation;
Abdominal palpation;
Auscultation and percussion;
The exploring needle;
The aspirator.

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. These glands are remarkably large, reaching, according to E. Klein,[1] a diameter of 0.5 millimetre. They open immediately upon the free surface.

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. To these Broca has given the name of dartoid sacs.

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 inter-

[1] Stricker's Manual of Histology.

vening; 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 ruptured its remains contract and form little tubercles on the walls of the vagina.

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, which is, I think, very generally, regarded as the sphincter vaginæ. Savage[1] denies that it (the bulbo cavernous muscle) has any such influence, the true sphincter vaginæ being the pubo-coccygeus muscle, which is seen by dissection within the pelvis, arising from the inner surface of the pubic bones. Descending on the sides of the vagina some of its fibres pass between it and the rectum to meet others from the opposite side in the perineum. Another set go behind the rectum, and uniting with similar ones from the opposite side, intermix with its circular fibres to make the internal sphincter. The remaining fibres, still more outward, are inserted into the sides of the coccyx.

Vulvitis.

Definition.—Vulvitis is the name applied to inflammation of the mucous membrame 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

[1] Female Pelvic Organs, 2d ed.

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 its nature 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 applied 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 a solution of actetate 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 eight 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 com-

prise them all would be a long one. As examples may be mentioned papillary, pruriginous, erythematous, sebaceous, granular vulvitis, etc.

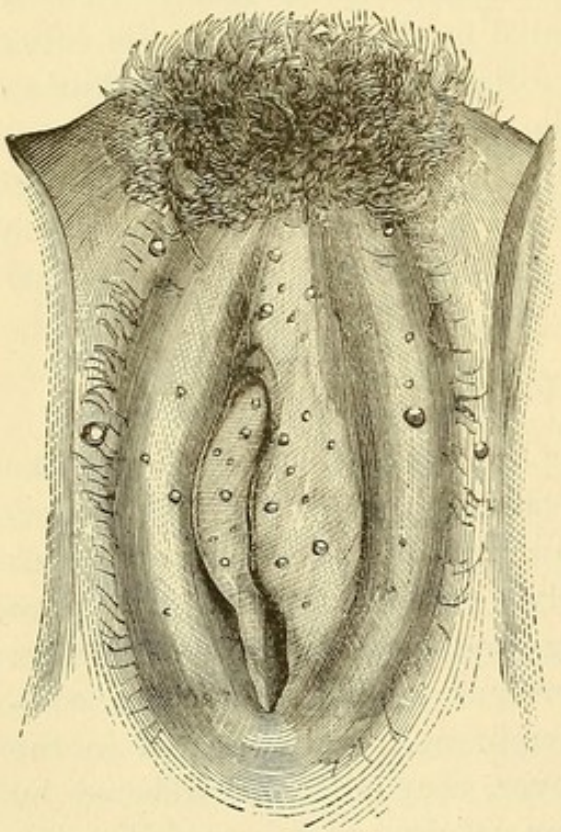
We may avoid tediousness of detail, and at the same time run no risk of being led into error, by classing all forms of inflammation affecting the solitary glands of the vulva under the head of follicular vulvitis; provided that we bear in mind that all the varieties of glands may be simultaneously affected,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

Fig. 20.



Follicular vulvitis. (Huguier.)

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 commonly 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 semi-fluid 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 con-

dition 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, etc. 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, etc.

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 pathes 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 one exposed to any of the predisposing causes mentioned, would at once excite the suspicion of a practitioner at all familiar, even in theory only, with the existence of this malady. The only disease with which it would probably

[1] Dict. de Méd., vol. xxx, p. 991.

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.

Cyst and Abscess of the Vulvo-Vaginal Glands.

Anatomy.—Just anterior to the hymen, or 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 ischiopubic fascia, and have the unyielding ischium on one side, accounts for the complete confinement of pus forming in them, 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 forgotten. 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 enlarge-

ment and distention. At other times suppurative inflammation is set up 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 small hen's egg. Very often the first intimation of the existence of the disease, is given by pain during the sexual act.

Differentiation.—An abscess of this gland is readily distinguished from a cyst by the presence of the ordinary signs of inflammation. From phlegmonous inflammation of the labium majus it will be known by its distinct, globular, and limited outline, the former affection being diffuse. Furuncles are entirely too superficial to create confusion in diagnosis.

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, or in the furrow between the labia minora and majora. In some cases, however, the gland becomes filled with a honey-like matter, and exists as a cyst for a number of months, and I am inclined to think even for years.

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 practised. 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. Or the same result has been obtained by evacuation of the contents of the sac and the introduction of a stick of nitrate of silver so as to cauterize its walls and the edges of the opening.

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 base. Pruritus vulvæ is the most prominent symptom of these maladies. So intense is the irritation of the vulva established by them that vulvitis is the consequence, the disease then being styled prurigenous vulvitis.

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. In many cases of

diabetes and vesico-vaginal fistula, this affection constitutes an exceedingly annoying and even painful complication.

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 first, with colombo, or the second, with the tinctures of cinchona, or gentian. 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 leads to 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 an abscess. The pus which is thus created is usually very offensive from propinquity to the rectum and vulva.

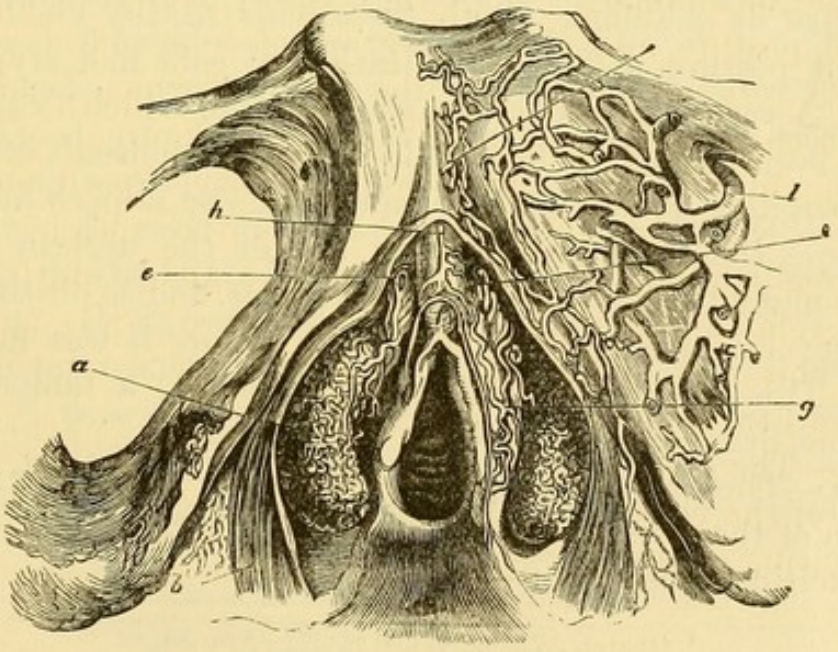
The diagnosis is usually very easy. Attention is directed to the part by heat, pain, throbbing, difficulty of locomotion, and exquisite sensitiveness upon pressure. Upon physical exploration one labium is found very much swollen and quite hard and tender. Although it is usually easy to distinguish this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

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.

Anatomy.—If an incision be made by a scalpel through the skin and its subjacent adipose tissue, around the vulva, and all the

Fig. 21.



Plexus of veins of the vestibule. (Kobelt.)

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. 21.

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 known as pudendal hemorrhage; if not, the blood pouring out into the areolar tissue, surrounding the wounded plexus, will soon form a coagulum, constituting a bloody tumor, which has received the name of thrombus or pudendal hematocele.

Pudendal Hemorrhage.

Especial attention was 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 took place. He declared that criminal cases had 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 piece 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 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:—

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

Great muscular efforts;[1]
Blows rupturing the labium;
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 Hematocele.

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

A pudendal hematocele 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, of Zurich, and in 1647, Veslingius is said by Dr. Merrimen to have noticed it. It attracted the attention of Kronauer, of Basle, in 1734, and subsequently that of Levret, Boer, Audibert, and others.[2] In time it passed somewhat out of notice, until the researches of Deneux,[3] in 1830, drew attention to it in more recent times. It is generally alluded to by authors only as one of the results of preg-

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

[2] Velpeau, Dict. de Méd., vol. xxx.

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

nancy 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 twenty-two years I have met with but three cases. These occurred as direct results of injuries 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 specially consider 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 artery may, during labor, likewise produce a bloody tumor,[1] but this should not be treated of under the technical head of pudendal hematocele, for it would really constitute a case of sub-peritoneal hematocele.

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

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

than a walnut. 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 the amount of blood effused is generally less extensive than in pregnancy, and is usually confined to the vulva.

Causes.—The causes are similar to those of pudendal hemorrhage, namely:—

Muscular efforts;
Blows injuring the labia;
Punctures by small instruments.

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, practised without a suspicion as to the nature of the real difficulty.

Differentiation.[1]—Care must be observed not to confound this affection 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 pudendal hematocele, 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 delivered, there are always two dangers to be apprehended. The lesser of these is hemorrhage; the greater, purulent infection through the walls of the cyst, or the formation of an extensive abscess, which may produce the same result. These may follow in the non-puerperal form of the affection, but the danger of

[1] 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.

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 abscess 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. As 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 hemorrhages ensue, the sac should be thoroughly washed out 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 sac, 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 plegmonous inflammation.

Pudendal Hernia.

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 distention 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 abdominal 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 ex-

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

amined 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, lancet 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]

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 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.[2] In adults this is ordinarily obliter-

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

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

ated, 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 excessive 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,[1] 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 professional 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

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

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."

A pamphlet has recently appeared upon the subject by Dr. Hart of this city. In it he details an operation for hernia performed in a case of hydrocele from a mistake in diagnosis. The fluid of the hydrocele being evacuated, the wound was closed by silver suture, and the patient recovered. He declares that the disease is mentioned by Ætius, Paré, Scarpa, Meckel, and Poland.

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 that of the ordinary hypodermic syringe, should be passed in, in order that the contents of the sac may be carefully examined.

Should the character of this fluid not assure us that hernia exists, the smallest needle of the aspirator should be introduced, and all the fluid drawn off. Even where hernia exists, such a procedure has been found to favor return of the sac, and to do no harm by rendering it subsequently pervious.

Treatment.—The diagnosis being made, the treatment should consist in evacuation by means of the aspirator, and, if cure do not follow this, in the injection of tincture of iodine in addition, which may be done by reversing the action of the same instrument.

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 erup-

tive 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.

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 practised 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 in 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. The itching is generally intermittent, in some cases occurring at 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.

This disorder is to some degree paroxysmal, any influence which produces congestion of the genital organs aggravating it very much. Lying in a warm bed, sexual intercourse, eating and drinking, more especially highly seasoned food and stimulating beverages, and the act of ovulation, all produce this result. Its duration has no limit, months, and even years, sometimes passing before relief is obtained.

Although the term "pruritus vulvæ" is that ordinarily applied to it, it must not be supposed that the irritation is always confined to the vulva. It often extends up the vagina, to the anus, and down the thighs. In pregnant women I have repeatedly known it to spread over the abdomen. It may be asked why such a state should be styled "pruritus vulvæ?" These extensions are merely complications of the original malady which really deserves that

name, and are due to contamination, by scratching, with an ichorous element which constitutes, as I believe, the prominent exciting cause of the trouble.

Causes.—Every practitioner dreads to meet with 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 scratching induced by it will frequently establish a cutaneous disorder, the connection of which with the pruritus, whether as cause or effect, will be doubtful.

The predisposing causes of pruritus are the following:

Uterine, vaginal, or urethral disease;
Pregnancy;
Depreciated general health;
Habits of indolence, luxury, or vice;
Uterine or abdominal tumors;
Want of cleanliness;
Constitutional syphilis;
Severe exercise in one of sedentary habits.

It will be observed that most of these influences are those which predispose to the development of abnormal secretion by the mucous membrane lining the genital tract. Such excessive and deranged secretion I believe to be in the great majority of cases the immediate, exciting cause of the nervous irritation. That there are other causes, it will be seen that I admit, but to treat this condition successfully, I am convinced that special reference must be had to this element. He who simply keeps in view the local trouble, in the majority of cases will be striving merely against the branches of an evil, the root of which consists in the ichorous material, which bathes and excoriates the terminal extremities of the nerves of the vulva and vagina.

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;
Aphthous ulcers.

3*d*. *Local irritation*—

Eruptions on the vulva;
Animal parasites;
Onanism;
Vegetations on the vulva;
Vascular urethral caruncles;
Growth of short bristly hair on mucous face of labia.

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 insignificant 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.

It is not, however, usually vaginal leucorrhœa which produces the result, it is much more commonly due to the discharge arising from cervical or corporeal endometritis, and the obstinacy of these affections accounts to some extent for that of the secondary one.

I have so often found diabetes accompanied by this symptom that I always examine the urine in obscure cases. It is by many attributed to the constitutional agency of the disease. The marked relief afforded by the systematic use of the catheter, has led me to think otherwise. My impression is that the pruritus 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 through irritation 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, and the vagina should, at the time of taking each bath, be syringed out with pure or medicated water. The irritated surface should be protected by unctuous substances, or inert powders, such 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, or, as is better, after a thorough use of the vaginal douche the vagina should be thoroughly tamponed daily with cotton saturated with glycerine to which has been added borax or acetate of lead, two drachms to the ounce. Of this plan, which I should mention does not confine the patient to bed, I can speak in high terms. While it protects the vulva from ichorous discharges, it does not prevent ablution and applications to the point of maximum irritation. A very useful vaginal injection, and wash for the vulva, under these circumstances, is the following:

℞.—Plumbi acetatis, ʒiv.
Acidi carbolici, ℈ij.
Tr. opii, ℥iv.
Aquæ, Oiv.—M.

This may relieve itching for a 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 very lightly with the solid stick, and then using the tampon of cotton and glycerine.

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 ʒj), 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. C. Osborn,[1] of Alabama, in an interesting article upon the medicinal use of this drug, declares that he always resorts to a

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

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. My own experience agrees with his.

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.,[1] 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 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 the 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 is 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, etc., should be employed, as if local inflammation were the cause of the affection.

While these palliative and curative means are being adopted,

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

sleep should be secured by preparations of opium, or one of its substitutes, codeine, chloral, 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 may 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 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.

In the same way infusion of tobacco and solutions containing borax, lead, alum, zinc, or carbolic acid will be found to be very valuable remedies. They should be used very freely, and after previous cleansing of the vagina by pure water. One great difficulty in the treatment of the disease consists of the inefficient manner in which vaginal injections are practised by patients. This should be guarded against by explicit directions, and the use of the means suggested hereafter in connection with that subject.

The following prescriptions have obtained a reputation for the treatment of pruritus; and I know by experience that they deserve it:

℞.—Chloroformi, ʒj.
Ol. amygdalarum, ℥j.—M.
S. Apply to vulva and outlet of vagina.

℞.—Acidi hydrocyan. dil. ʒij.
Plumbi diacetati, ℈j.
Olei cacao, ℥ij.—M.
S. Apply after washing with cold water.

℞.—Lotionis nigri, Oj.
Sodæ biborat. ℥j.
Morphiæ sulphat. gr. x.—M.
S. Apply after bathing the part.

℞.—Acidi tannici, gr. c.
Belladonnæ ext., gr. x.
Butyr. cacao, q. s.
M. et ft. supposit. vag. xx.

S. Let the patient place one in contact with the cervix uteri, every night, after thoroughly syringing the vagina.

Where diabetes exists as a cause the patient should bathe the parts after urination, and be instructed to keep the vulva thoroughly covered and protected by one of the ointments already mentioned.

Where the pediculus pubis is found to exist, mild mercurial ointment should be applied; and for the acarus scabiei, sulphur ointment will be found quite sufficient as a parasiticide.

The following prescription I have never employed, but it is highly recommended by good authority:

℞.—Zinci sulphur-carbolat. ʒj.
Aquæ destillat. ℥ij.
S. After careful bathing, use as a wash once or twice a day.

Where short, bristly hairs are found growing from the inner or mucous surface of the labia majora, great relief follows depilation. Each hair should be seized by forceps, the operator using a magnifying glass, and jerked from its place.

A review of the plans of treatment here given will convince the reader that they are all based upon the recognition of the causative lesion. No disorder is more inappropriate for empirical treatment.

Hyperæsthesia of the Vulva.

Definition.—The disease which I proceed to describe under this name, although to all appearances one of trivial character, really constitutes, on account of its excessive obstinacy and the great influence which it obtains over the mind of the patient, a malady of a great deal of importance. It consists in an excessive sensibility of the nerves supplying the mucous membrane of some portion of the vulva; sometimes the area of tenderness is confined to the vestibule, at other times to one labium minus, at others to the meatus urinarius; and again a number of these parts may be simultaneously affected. It is a condition of the vulva closely resembling that hyperæsthetic state of the remains of the hymen which constitutes one form of vaginismus. In two cases I have seen the whole surface of the vulva, except the labia majora, affected by an excessive sensibility which extended along the urethra.

Frequency.—This disorder, although fortunately not very frequent, is by no means very rare. So commonly is it met with at least, that it becomes a matter of surprise that it has not been more generally and fully described.

Pathology.—It is not a true neuralgia, but an abnormal sensitiveness; "a plus state of excitability" in the diseased nerves. No inflammatory action affects the tender surface, no pruritus attends the condition, and physical examination reveals nothing except occasional spots of erythematous redness scattered here and there. The nerve state appears identical with that which sometimes develops in the scalp, and on parts of the cutaneous surface. The slightest friction excites intolerable pain and nervousness; even a cold and unexpected current of air produces discomfort; and any degree of pressure is absolutely intolerable. For this reason sexual intercourse becomes a source of great discomfort, even when the ostium vaginæ is large and free from disease. It is this difficulty which generally first causes the patient to apply to a physician for relief.

Causes.—The predisposing causes appear to be the period of life near or at the menopause, the hysterical diathesis, or a morbid mental state characterized by tendency to depression of spirits. As exciting causes I have found chronic vulvitis and irritable urethral tumors to exist in some cases, but in others no cause whatever has been apparent.

Symptoms.—I have said so much on this subject, under the head of definition, that I have little more to add. The patient applies for relief because the act of sexual intercourse is painful, and because in the sensitive spot there is always a degree of discomfort, which is increased by bathing the part, or even by the friction incident to walking. Upon questioning her, it will be observed that her mind is disproportionately disturbed and depressed by this. In some cases it seems to absorb all the thoughts, and to produce a state bordering upon monomania.

Differentiation.—It should be distinguished from irritable urethral tumor and vaginismus, which will be readily accomplished by inspection and touch.

Treatment.—The treatment of this condition is most unsatisfactory. I have met with six cases of marked character, and in not one was relief given by treatment. Whether they subsequently recovered I cannot say, but they certainly were not cured while under my observation. In one case, which I saw with Dr. Metcalfe, the sensitive area was the vestibule, and to this we applied

nitric acid so as to destroy the mucous membrane completely and followed this up by local sedatives, but to no purpose. In another, which I attended with Dr. Sims, he removed portions of the labia minora and of the vulvar mucous membrane without success. In another case I dissected off all the sensitive tissue, which was quite extensive. This patient, the wife of a clergyman, left me well, and was greatly rejoiced; but, in six months, I received a letter from her declaring that she was worse than before the operation. The treatment which I would recommend from my experience is this: to send the patient away from home where, in addition to enjoying change of air, scene, and surroundings, she would live *absque marito;* to put her upon the use of general tonics, as arsenic, strychnine, quinine, and iron; and after having cured any local exciting disease, like vulvitis or urethral vegetations or tumors, to make frequent ablutions with warm water and apply sedative and calmative substances in the form of lotions or ointments. As examples of these, I would mention opium or its salts, carbolic acid, chloroform, and iodoform. Sometimes benefit seems to result from strong solutions of alum, tannin and similar agents.

My observation of the results of caustics and the knife is not such as to inspire me with confidence in them.

Irritable Urethral Caruncle.

This affection has, likewise, received the names of vascular tumor, and irritable vascular excrescence of the urethra.

Just from the edges of the meatus urinarius, and, sometimes, along its walls for some distance, little vascular tumors develop themselves, which render this canal very irritable, and in this way produce a great deal of discomfort.

Pathology.—According to Wedl[1] they consist of hypertrophied papillæ, which, as they enlarge, are accompanied by excessive growth of areolar tissue. They are extremely vascular, capillary vessels of considerable size being found within them, ramifying in transverse sections, very much like the *vasa vorticosa* of the choroid. Dr. Reid,[2] of Edinburgh, declares that they are richly supplied with nervous filaments. These two anatomical facts account for two corresponding clinical observations, that they bleed very freely and readily, and that they are almost as sensitive to the touch as a neuroma. Savage styles these curious growths "pseudo-angiomata,"

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[1] Pathological Anatomy. [2] Simpson, Diseases of Women, p. 276.

and asserts that within them, cystic cavities, probably the remains of urethral glands, are occasionally found, filled with mucus.

Causes.—Of the etiology of this affection nothing is known. It develops in the young and old ; the married and single.

Symptoms.—The patient complains of pain upon sexual intercourse, in passing urine, in walking, and upon the slightest contact of the clothing. Sleep is disturbed by these means, and by the increase of sensitiveness engendered by the warmth of the bed. As a consequence, she becomes nervous, hysterical, and greatly depressed in spirits. Her whole thoughts often become fixed upon this one painfully absorbing topic, and a most wretched mental state is at times produced. Of course, these grave results occur only in very aggravated cases; but, even in minor ones, they are present in slight degree.

Dr. T. F. Cock informed me of a case in which a patient became so much depressed from this cause that she committed suicide, and I have a similar statement of another case from a non-professional source. In the latter, the time had been appointed for removal of the growth when the patient destroyed her life. I should be sorry to leave the impression, that mental alienation of grave character is likely to develop from these little growths; it is not. A certain degree of it is very apt to be met with; and, in rare cases, where the suffering is very great, it sometimes becomes excessive. To convey some idea of the amount of pain induced by urination in some cases, I quote the following: "I was told by a shepherd's wife, who had one of these sensitive caruncles at the orifice of the urethra, that whenever she was obliged to pass water, she was in the habit of going to some distance away from her cottage, in order that she might moan and scream unheard, and not distress her family with the sound of her cries, so intense and intolerable was the suffering which at such times she experienced."[1]

Physical Signs.—The patient being placed upon the back with the thighs flexed and the knees separated, inspection shows at the meatus urinarius, a florid, vascular growth, varying in size, from that of a cherry-stone to that of a pullet's egg. Scanzoni declares that they may grow to the size of a goose's egg. Sometimes, instead of one, quite a number may be found, of small size, extending around the meatus or up the canal. Where the canal itself is invaded, the cases are always very difficult of cure, on account of the difficulty in reaching the morbid developments.

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[1] Simpson, op. cit.

Differentiation.—There are but two conditions with which I have ever known the disease confounded. One is prolapsus urethræ or eversion of the mucous membrane of the canal; the other syphilitic growths of warty character. From the first a careful examination will readily distinguish it, and when the second exists similar developments will be found upon other parts of the vulva. Besides neither of these conditions is nearly so annoying and painful as that which we are considering.

Course and Duration.—It is impossible to say how long these growths will continue to exist when uninterfered with. I have known them last for years without continuing to develop, but retaining a small size, and being always excessively sensitive and annoying.

Prognosis.—In case a single large caruncle exist, an almost positive promise of relief may be held out from its removal; but where a number of small, fungous, warty growths surround the meatus and extend up the urethra, cure is extremely difficult, for no sooner are they removed, than the morbid process of development rapidly produces more. Another discouraging feature of these cases is this, a nervous hyperæsthesia is engendered by the growth, which lasts long after its removal. It behooves the operator in such cases always to be guarded in his promises, at the same time that he urges interference as the only hope for relief in the present, and safety from increased trouble in the future.

Treatment.—Before operating the patient should be thoroughly anæsthetized and placed upon the back, with the thighs flexed and the knees widely separated. The labia being then separated by an assistant on each side, the tumor should be seized near its base by forceps, pulled towards the operator, and its attachment cut by scissors. Very free hemorrhage may occur. To control this, the raw surface should be wiped dry and thoroughly touched with fuming nitric acid, or a stick of nitrate of silver. Should this not control it, the edges may be brought together by suture.

This operation may be very nicely performed by galvano-cautery, if an instrument be attainable. By this means not only is hemorrhage prevented, the base is also thoroughly cauterized, which is a great safeguard against return of the growth.

Where the urethra has been invaded it should be thoroughly stretched by little retractors introduced within it, and held by assistants, and the growths thus exposed be cut off by scissors, or scraped from their attachments by a steel curette. After removal, their bases should be very cautiously touched with nitric acid,

nitrate of silver, or, what is still better as preventive of relapses, the actual cautery.

Urethral Venous Angioma.

This is a disease affecting the urethro-vaginal tubercle or anterior half of the urethro-vaginal septum. It sometimes attains large size, and projects between the labia. From irritable caruncle or vascular excrescence it can be differentiated by its want of sensitiveness.

It appears, says Savage,[1] to be due to venous congestion, analogous to that giving rise to priapism.

Its treatment is identical with that of urethral caruncle.

Prolapsus Urethræ.

This accident, which has likewise been described as procidentia and eversio urethræ, consists of prolapse of the urethral mucous membrane, with proliferation of the underlying connective tissue. It is not commonly met with, but at times produces considerable irritation of the urethra and bladder, and leads to an erroneous diagnosis of irritable caruncle. I have met with it only in adults of enfeebled constitution and advanced age; but Guersant, in the *Révue de Thérapeutique*, declares that he has seen fifteen cases in little girls between two and twelve years of age. Diagnosis is easy. A roseate projection encircles the meatus, which is sensitive and liable to bleed. The only diseases with which it could be confounded are, irritable caruncle, urethral polypus, and venous angioma. From all these it can readily be differentiated by careful examination, which shows that it entirely surrounds the meatus, while they do so only in part. The extreme sensitiveness of irritable caruncle is not a differential sign which can be relied upon, for I have seen prolapse of the urethra develop this symptom very decidedly.

It may for some time exist without symptoms, but usually soon creates difficult and painful micturition, pruritus vulvæ, and leucorrhœal discharge.

Treatment.—The simplest method of treatment is to seize the prolapsed circle with tooth-forceps, the patient being anæsthetized, draw it down with very little force, and cut it off with curved scissors. The resulting hemorrhage will readily be controlled by applying a pledget of lint or cotton, saturated with a solution of persulphate of iron, one-third of the full strength, against the raw

[1] Savage, op. cit.

surface, and making pressure by the finger for some minutes. Should it be deemed necessary to continue it longer, this may be done by a T bandage.

If great vascularity leads to fear of hemorrhage, the ingenious method of Sequin may be adopted with advantage. This consists in introducing a female catheter into the bladder, and ligating the prolapsed part to it so as to strangulate it entirely. The catheter is left in sitû until released by sloughing off of the ligated part.

In one case I drew down the prolapsed tissue, passed a double silk ligature through its base, and tied the two halves. The cure was perfect.

A better operation than either of these would be encircling the prolapsed tissue, which should be well drawn down, by the galvano-caustic wire, removing the mass in this way, and keeping a catheter in the bladder for some days if necessary.

Coccyodynia.

Definition and Frequency.—This affection consists in a morbid state 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 the late Dr. Nott, 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]

Although, as will be here seen, Dr. Nott gave every detail with which we are now familiar, as to the symptomatology and treatment of this affection, the subject was nearly forgotten until the year 1861, when it was again described, almost simultaneously, by Simpson, of Scotland, who gave it its name,[2] and Scanzoni, of Ger-

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

[2] In Prof. Alexander Simpson's edition of Sir James Simpson's post-humous volume on Diseases of Women, the name coccygodynia is used. In his Clinical Lectures, published in Philadelphia, 1863, the name which I here employ appears.

many. We have in this another instance, of which so many exist, of the complete oblivion into which a few years may cast a valuable contribution to science. Surely in such a case he who revives what is forgotten deserves as much credit as he who originally made the discovery.

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, etc., and in such acts the existence of the disorder which we are considering is revealed.

Pathology.—The peculiar pain which characterizes this disease has, according to my experience, a variety of causes; I have removed one coccyx in which a fracture with dislocation, received in early life, which caused it to jut in at a right angle to the sacrum, was its source; another in which, as in Dr. Nott's case, just recorded, caries existed; while in still a third no abnormal condition could be discovered. In such cases as the last, the pain which characterizes it is probably due to a hyper-sensitive state of the fibrous tissues surrounding the coccyx, or of that making up the tendinous expansions of the muscles. This may at times be, as Prof. Simpson has suggested, of rheumatic character; but it appears to me that it is very generally a neuralgic state, due to uterine or ovarian disease, of which coccyodynia is a frequent consequence.

As a rule, 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.

Its chief causes are the following:—

Blows or falls upon the coccyx.
Injuries inflicted by parturition.
The influence of cold and exposure.
Uterine and ovarian disease.
Horseback exercise.[1] (?)

In a case mentioned by Courty the patient had the peculiar habit of sleeping with the buttocks uncovered, and the sacrum

[1] Scanzoni.

pressed against the wall. In nine of Scanzoni's cases the condition followed parturition; in five, the use of the obstetric forceps; and in two, horseback exercise was the only cause ascertainable.

Symptoms.—The patient, upon sitting down, rising, making any effort, or passing feces 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 hemorrhoids, fissure of the anus, and a spasmodic condition about the muscles of this part, due to ascarides in the rectum. From these a careful and thorough 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.—Should this disorder arise, as it so often does, from uterine disease, that should be removed by treatment before any hope is indulged in that it will disappear. In slight cases, blistering and the endermic use of morphia may effect a cure. Should they not do so recourse should 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 late Prof. Simpson, consists in severing the attachments of all the coccygeal muscles; the second in extirpating the coccyx itself, after the plan of Dr. Nott.

The first operation may be 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 subcutaneous operations, no hemorrhage occurs unless some large vessel be injured. I have

resorted to this procedure but once, when I found it exceedingly difficult of accomplishment, and it proved an entire failure in giving relief.

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; that is, supposing that it is resorted to in a case really demanding it.

Should detachment of the muscles fail, as it will do if the bone be diseased, 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 practised 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.

Many slight cases of coccyodynia occur, however, which pass away with time and palliative treatment. The gynecologist should take care that operation is not resorted to too early.

We have now considered the most frequent and important of the diseases of the vulva. There are others which have not been mentioned and which do not require special attention, as they possess the same characteristics as similar morbid states developing in other parts of the body.

Tumors of considerable size may spring from the external organs of generation. Thus we may have tumors resulting from hypertrophy of the clitoris, or of the nymphæ, lipoma of the labia majora, and cystic tumors of large size growing by a pedicle from the same site. Malignant disease also frequently attacks these organs, where it runs its usual course; differing in nothing from its career in other locations.

CHAPTER V.

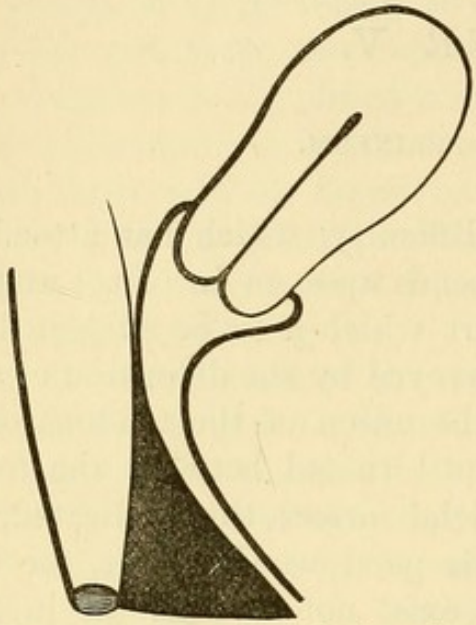
RUPTURE OF THE PERINEUM.

Anatomy.—A great deal of the difficulty, which has attended the repair of ruptured perineum, depends upon an incorrect understanding of the anatomy of the part which is to be subjected to operation. An imperfect idea is conveyed by the definition of the perineum, as a part consisting of the union of the tendons of a number of muscles effected at a point situated between the fourchette and anus. Should the superficial surface, thus indicated, be united by reparative operation, little good would result, for the sustaining powers of the perineum exist not in this, but in the thick and firm triangle, called the perineal body, of which this muscular plane is the base, and the apex of which extends up to the point of divergence of the posterior vaginal and anterior rectal walls.

Proceeding in close proximity with each other towards the pelvic outlet, the vagina and rectum diverge at a point above the perineum; the one arching forwards in coincidence with the pelvic curve, the other slightly backwards towards the coccyx. In this way an irregular triangle is created, of which the base is the perineum, one side the posterior vaginal wall, and the other the anterior wall of the rectum. This body, having the union of muscular tendons as its base, is itself composed of fibro-elastic tissue and bloodvessels. One of its sides resting upon the rectum, the other gives strength, elasticity, and firmness directly to the posterior wall of the vagina; while this wall, being by it pressed against the anterior or upper vaginal wall, sustains it and the bladder which lies upon it. Figs 22 and 23 will show by schematic diagram the relations of the perineal body and the effect of its removal upon the vaginal walls. The anterior or upper wall, after its removal by rupture, lacks support and falls downwards, prolapse of this wall occurring, with cystocele. The normal direction of the posterior wall is destroyed. Instead of its arching forwards towards the vulva, it runs in a straight line to the anus. The result of this change of direction, with the coincident loss of support from the strong, elastic perineal body, is to create a sagging forwards,

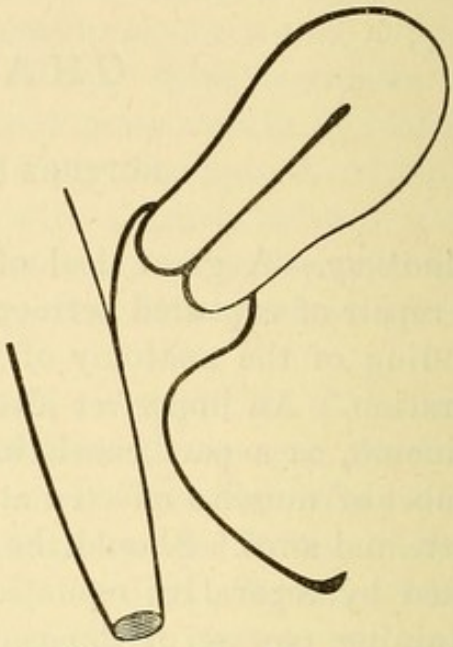
and soon prolapse of this wall follows that of the anterior, and uterine displacement is a consequence.

Fig. 22.



Perineal body perfect; both vaginal walls sustained.

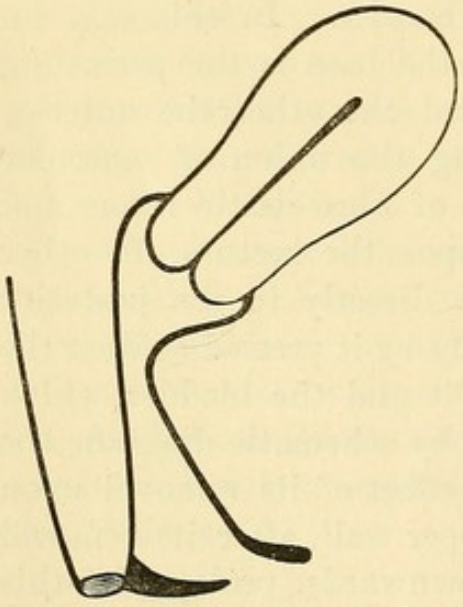
Fig. 23.



Perineal body removed by rupture; both vaginal walls robbed of support.

When a woman with an uninjured perineum is placed upon the back, and the finger of the examiner is passed into the vagina, as it passes over the perineal body it will be firmly pressed against the upper vaginal wall. Upon the withdrawal of the finger, the separated walls will be observed to come in contact at once by the rising of the posterior wall. If the perineal body have lost its power, no such upward pressure is found to exist, and the vaginal walls are discovered to be in less close contact.

Fig. 24.



Perineum improperly repaired. Perineal body not restored to place. Vaginal walls not sustained.

After operation for closure of the ruptured perineum, an examination of this kind should be made. If the upward pressure of the perineal body is found to be sufficient to bring the posterior in contact with the anterior vaginal wall, the object of the operation has been attained. If it do not so, both walls will lack support, in spite of the fact that the superficial perineum, the base of

the perineal triangle, has been united and appears perfect. The latter result will deceive the patient, and may deceive the surgeon, with false hopes. The former will alone give future immunity from the dangers of vaginal prolapse and its consequences.

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

Complete and Partial Rupture.

These include the following degrees of destruction:

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.

Complete rupture presents such serious discomforts as a consequence, that partial rupture is by many viewed as a trivial circumstance. So it is by comparison, but so likely is it to be followed by prolapse of one or both vaginal walls that it should never be undervalued. So soon as such prolapse occurs, uterine, vesical, and rectal troubles become almost inevitable.

The evils resulting from partial rupture are by no means insignificant, but they are more remote and more tolerable than those which follow complete. When the sphincter ani is torn through, and still more markedly when the rectal wall is ruptured, incontinence of feces and rectal gases occurs to such an extent as to embitter the life of the unfortunate patient. The consequences of rupture of the perineum may thus be presented:

Subinvolution of the vagina;
Prolapsus vaginæ with cystocele or rectocele;
Prolapsus uteri;
Incontinence of feces and intestinal gases;
Prolapsus recti.

The first three of these may result from both varieties of rupture, complete and incomplete. The last two attend only the former. 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.

Subinvolution of the vagina I have never seen alluded to as a consequence of rupture of the perineum; but I see the two conditions too often coexistent to regard it as a mere coincidence. "The muscular walls of the vagina," says Savage, "are not separable into coats or layers. Two-thirds of the thickness of the vagina, varying from 2–3 lines above to 5–6 below, is made up of this muscular portion; the inner third consists of a dense, cellular lining membrane, inseparably united to it." The elastic, contractile elements of this canal are identical in structure with uterine fibre; and development occurs in them as in those of the uterus under the stimulus of gestation. A retrograde metamorphosis likewise affects them subsequent to labor. As this process is often interfered with in the uterus by rupture of the cervix, so is it in the vagina by rupture of the perineum. Let any one appeal to his own experience for the frequency of subinvolution of the vagina as a concomitant of rupture of the perineum. It may be objected that the latter often results from difficult and particularly from instrumental delivery, which may produce both conditions. An examination into the histories of cases will refute this; the result is often produced when the labor has been very rapid and unaided. It may again be suggested that prolapse of the vagina, a consequence of the rupture, excites excessive growth in its walls; but the two things coexist where perineal rupture has not resulted in vaginal prolapse, almost as often as where it has done so.

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 usually does immediately after labor, is extremely unlikely to heal by first intention, it may do so by the process of granulation without interference other than binding the thighs together, and producing constipation by opium.

The first and second degrees 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 feces 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 rupture be an incomplete one, in which it is not deemed advisable to resort at once 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;

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

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 necessary, 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. For this reason no case of obstetrical instruments should be considered complete which has not in it needles and sutures for performance of this operation. 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 practised 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.

My advice and practice with regard to this point are decidedly to give the patient the benefit of the doubt and to close the rupture

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

at once. If failure follow, however, never, unless there be some special reason for so doing, attempt another operation before the results of parturition have entirely passed away. This will not be before the lapse of two or three months from the time of delivery; just after delivery there is a reason for operating which has passed away in a fortnight.

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 brilliant 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 great advances have been made in the operation by Mr. Brown in England; Verneuil, Laugier, Demarquay, and others in France; Langenbeck and Simon 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 tissues alongside the perineum or the sphincter ani itself, and employ the quilled suture, while others make no "liberating incisions," as the French surgeons style them, and employ the interrupted suture. The varieties of quilled suture operation are modifications of the procedure of Roux; those of interrupted silver suture of Marion Sims's plan. In description I

[1] Baker Brown, Surgical Diseases of Women.

shall adhere to no one particular and exact method, but describe those which I have selected as best in my own practice, and afterwards allude to certain special modifications advised by different operators.

Preparation of the Patient.—The general health should be carefully investigated. If it be bad, the operation should be delayed, and the patient put upon tonics and placed under the best hygienic circumstances. For a week before operation, the bowels should be kept lax by some mild cathartic, in order that after that time cure will not be jeopardized by the coming down of scybalæ, which have not been removed by a cathartic given twenty-four hours before operation. This point is one of a great deal of moment, and should not be overlooked. The following prescriptions I would recommend for this purpose, not only here, but before other operations which should be followed by constipation:

℞.—Sennæ fol. ℥j.
Anisi sem cont. ℥j.
Aquæ bullientis, Oj.
M. ft. infus. cole, et adde
Potassæ bitart. ℥j.
S. A claretglassful to be taken every morning upon rising.

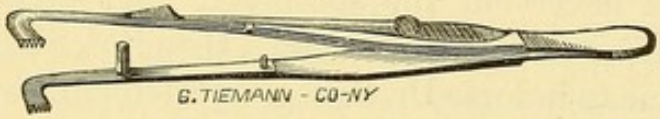
℞.—Sulphuris lactis, ℥j.
Potassæ bitart. ℥j.
Sennæ confect. ℥j
Mellis aut syrupi, q. s.
M. et ft. confect.
S. A portion equal in size to a pigeon's egg every morning upon rising, and every evening upon retiring.

During the week the vagina should every night and morning be 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 handing the required instruments to the operator, and washing the sponges as they become bloody. The assistants, lifting the feet from the table and flexing the thighs so that the edges of the tibiæ will be horizontal, should hold the knees clasped under the arms and steady the feet with the hands of the same side, while the unoccupied hands of the other side retract the labia and expose the ruptured part.

The assistant holding the left thigh should do even more than this. The directions just given should be observed by the assistant holding the right knee; he who holds the left should do so with the right arm, clasping it with this and retracting the labium with the right hand, while with the left he sponges the wound with sponges held in long wire handles, which do not cause his hand to obstruct the operator's view. It will at first appear that it will be difficult for one assistant to do all this. Let him who thinks so try it, and he will find that it is not so, and that such arrangement of his aids will be greatly to his advantage.

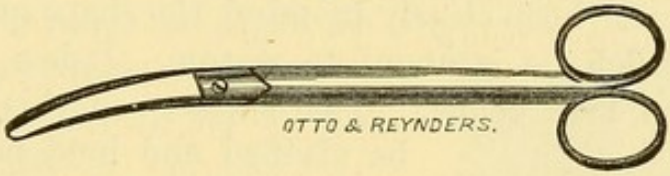
Instruments and Appliances Needed.—These will consist of long handled curved scissors; a bistoury with narrow blade; tooth forceps and tenaculum; one dozen small sponges, (size of a walnut,) fixed in handles ten inches long; artery forceps; silk ligatures; round, curved needles one inch and a half long, threaded with

Fig. 25.



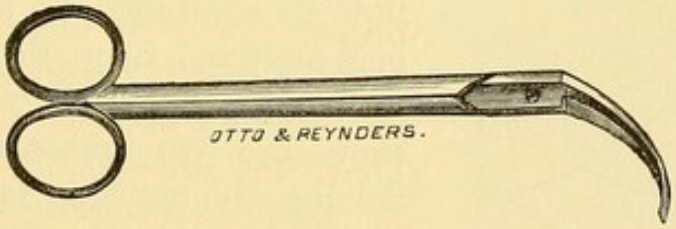
Thomas's tooth forceps.

Fig. 26.



Slightly curved scissors.

Fig. 27.



Emmet's scissors sharply curved.

silk, which is double and tied at the eye of the needle by as small a knot as possible; and, if the quilled suture is to be used, pieces of gum-elastic catheter to be employed as such. A basin of water should be in readiness to receive the bloody sponges, and a pitcher, bucket, or other reservoir at hand to supply more when this should be changed.

Operation for Partial Rupture.—It is a matter of great surprise to me that no distinct separation should be made by writers between the descriptions of operations for partial and complete

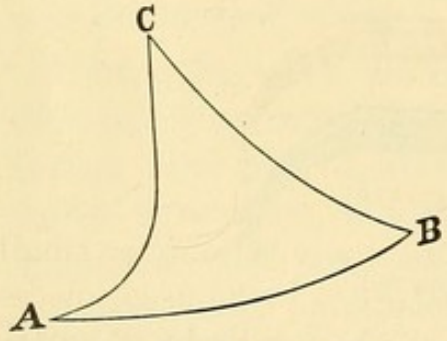
rupture. The first is a procedure in which the merest tyro should succeed; it scarcely deserves the name of perineorraphy, so easy and simple is it. The second is one of the most delicate and uncertain operations in gynecology, and even the most skilful may fail in it. I feel sure that evil has arisen from their confounding a simple and difficult procedure, and shall make a wide difference between them.

The operation for partial rupture has for its sole object the restitution of the perineal body. That for complete rupture has for its main object the restoration of the power and functions of the sphincter ani. After the main object of the second operation has been attained, that of the first should claim attention; but it is, although of great importance, insignificant in comparison with the object of the operation for complete rupture.

Before describing these operations, I would say a few words upon division of the sphincter ani. I have operated a great many times for rupture of the perineum, and cannot recall a case of final failure; thus far I have never cut the sphincter. My experience, as does that of my colleagues in the Woman's Hospital, Sims, Emmet, and Peaslee, leads me to indorse Dr. Savage's statement, that "the success of operations for the closure of perineal lacerations is obviously not promoted by the division of the superficial anal sphincter."

Let the operator keep clearly in mind the shape and dimensions of the body which he is about to restore. It is a triangle with apex above and base below. Two surfaces of this shape are to be vivified and held face to face by sutures. That is the whole operation.

Fig. 28.[1]



Profile view of perineum. *A C*, rectal wall. *A B*, cutaneous surface. *B C*, vaginal wall.

1*st part of the Operation.*—All being now in readiness, the assistant's fingers are fixed upon the labia by the operator, and the degree of traction they are to practise regulated. Seizing the mucous membrane just above the upper border of the anus, at the point where it joins the skin, with the tooth-forceps or tenaculum, he now cuts a furrow directly up the vagina, extending for about an inch and a half. While this is being done the anterior vaginal wall may be lifted, and the posterior wall exposed, by the introduction of

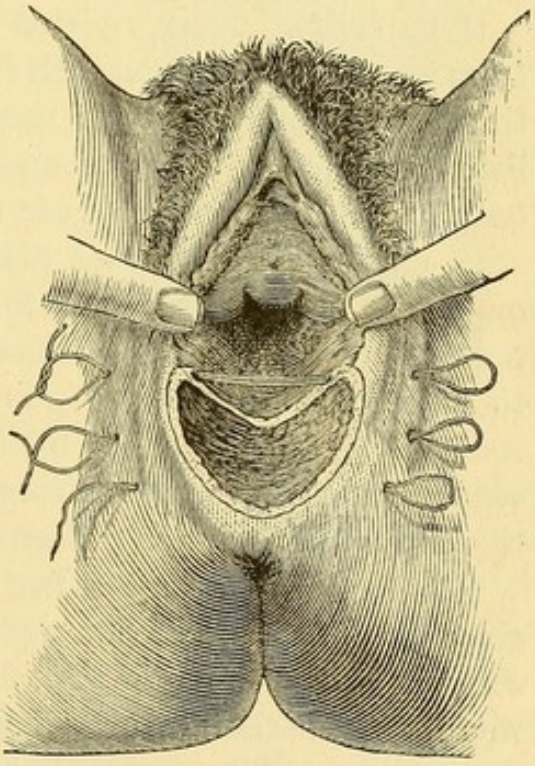
[1] I am indebted for this diagram to an excellent article upon perineorraphy by Dr. Theophilus Parvin, appearing in the American Practitioner.

Sims's speculum under the symphysis pubis. The furrow thus cut marks the extent of the base of the perineal body and the point of junction of the bases of the two triangular vivifications now to be made, one on the right and the other on the left. Now seizing the mucous membrane on one labium, a little below the level of the meatus urinarius, two other furrows are cut from this point, one extending to the upper, the other to the lower extremity of the first or basic furrow. A little undenuded triangle which will be left in the midst of this one should now be vivified. The same thing is done on the opposite side, and then this part of the operation is complete.

The operator now stops and carefully examines to see if any arteries are spouting, and if any undenuded surfaces still remain. If he find the former he twists them, and, if necessary, ties them with very delicate silk ligatures, which he cuts short; if the latter he catches them with the tenaculum, and with the bistoury cuts them away.

The first step of the operation is now finished. The operator should not hasten to the second, for the tissues should be exposed for a while that he may be assured against hemorrhage. Sutures should never be applied until all hemorrhage has been checked. The wound made is shown in Fig. 29.

Fig. 29.



Shows surface denuded, and sutures in position.

2d part of the Operation.—Now taking in the needle-holder a round, curved needle, about two and five-eighths inches long, which will cause less hemorrhage than the needle with cutting edges, armed with a doubled silk thread, giving a loop about eight or ten inches long; he inserts it opposite the lowest external angle of the vivified triangle, (which would be a little above the level of the anus,) and makes it pass across the middle of the united bases of the triangles, over the rectum, and emerge at a corresponding point on the opposite side. This suture is nowhere visible within the vagina, for it lies embedded in the

tissues lying over the rectum. It may be passed by one sweep, or, if this prove difficult, may be drawn out at the middle of its course, and reinserted through the same hole. The suture with the needle attached is left in position, and another being taken, it is inserted above the first, and made to pass through the tissues at the extreme upper angle of the vivified surface. Guided by the finger in the rectum, it is kept embedded in the recto-vaginal septum, and emerges at a point on the other side corresponding to that of entrance.

This, like its predecessor, I am in the habit of concealing in the tissues, so that after its passage it is nowhere visible within the vagina. This is not customary; most operators leave the middle portion of each suture free upon the surface. I believe that an embedded suture excites much less irritation on the denuded surface, and acts less like a seton upon it, than an exposed one.

A third needle is now inserted, but, instead of being embedded, it runs across, and is seen traversing the vaginal orifice. It is inserted above the second suture, passes into the vagina at the inner border of one triangle, and emerges at a corresponding point on the opposite one. Others are passed in the same way until the operator feels that a sufficient number are in place.

If he intend using twisted wire sutures, they should be passed from a quarter to half an inch from the edges of the wound, and one-third of an inch apart; if the quilled suture, the wires should be inserted three-quarters of an inch from the vivified border, and only three or four sutures are necessary.

In any case the sutures originally passed should be temporary ones, only intended as means for drawing into place stronger, permanent ones of silver, silk, or hemp. If the ordinary quill suture is to be employed, pieces of gum-elastic catheter, cane or bougie, or rods of hard rubber are inclosed in the looped extremity of the sutures, the opposing surfaces are approximated by pressure, the opposite quill is put into position, and the sutures are tied over it.

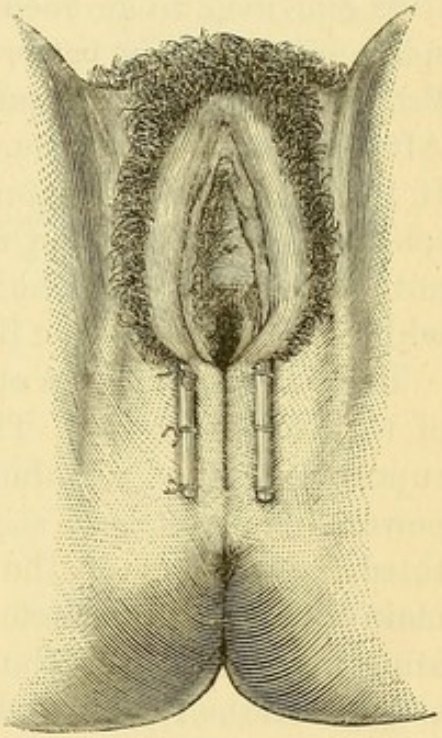
What appears to me a better method than this, for employing this form of suture, is one which has been extensively used by Mr. James Lane, of London, Dr. J. H. Thompson, of Washington, and myself. Whether priority belongs to Mr. Lane or Dr. Thompson I cannot say. The former has employed it since 1860.[1] It consists in replacing the quills by little rods of ivory, (Lane,) or hard rubber, (Thompson,) perforated by three or four holes through which

[1] Lancet, Sept. 1865.

sutures are passed and secured. Both operators employ silver sutures instead of silk. Dr. Thompson secures the sutures by perforated shot: Mr. Lane secures them by some method which he does not mention in the account which I have seen describing his operation. Mr. Lane reports thirty cases thus treated, in not one of which he failed to obtain complete cure. Dr. Thompson reports fifty-three, of which all were successful. The number of cases operated on by myself I do not know, but it is quite large, and I cannot recall a failure.

After the quills are arranged, the patient is put to bed, quieted by opium, the knees tied together, the bowels kept constipated, (or in a lax condition—Thompson,) and the urine drawn by catheter every six hours. On the third day, the deep sutures should be removed, but superficial ones, which are inserted to the number of three or four to approximate the cutaneous surfaces, should be left until the eighth.

Fig. 30.



Quill sutures in place.

If the operator intend using the interrupted wire suture, after having passed his silk sutures, he gives their extremities to his assistants, and taking a piece of silver wire eight inches long affixes it to the loop of the lowest and draws it into position. It is then slightly twisted, so as to keep its ends together, and bent down, so as to be out of the way, and another is drawn into place, and so he proceeds until all are placed. Then collecting them, he places them under the finger of one of his assistants, selects the lowest, or that first passed, adjusts the lips of the wound, removes blood clots from between them, and putting the shield in place, he twists it until the requisite approximation of the tissues is accomplished. For the details, as to the method of drawing the wires into place and twisting them, the reader is referred to the article on Vesico-vaginal Fistula. After the plan there described, he twists them one after the other from below upwards. If it appear necessary, superficial sutures are then passed between the deep ones to approximate the cutaneous surface more completely.

All the twisted sutures should then either be cut very short and

turned down to the right and left alternately, or be left long, collected in a bundle, and tied. The object of this is to keep them from sticking into the neighboring tissues. The patient is then put to bed; the knees are tied together as after the operation by quill suture; the dorsal or lateral decubitus preserved; the urine drawn by catheter every six hours; the vagina kept clean by syringing with tepid water; and the diet made nutritious, though mild and unstimulating. On the eighth or ninth day, the sutures should all be removed, and on the next, the bowels should be acted on by a saline cathartic, great care being observed to prevent tenesmus.

Operation for Complete Rupture.—Complete perineal laceration always involves rupture to a greater or less extent of the anterior wall of the rectum. If rupture of the bowel extend for more than from one inch to an inch and a half above the upper edge of the sphincter ani, it is better to close it by a primary operation consisting of vivifying its edges and uniting them down to the anus. After union of these parts, closure of the perineum may be practised. If the bowel be not injured above an inch and a half from the sphincter, one operation will suffice to close the whole. I would not be understood as making this a dogmatic rule, but merely one which approximates the line of conduct which I deem safest.

The sole object of the operation for partial rupture is restoration of the perineal body. The objects of the operation for complete rupture are: first, restoration of the sphincter ani muscle to all its power and functions; second, closure of the rectal opening; and third, restoration of the perineal body. What constitutes the main object in the first operation, is the least of those striven after in the second. The operator must then appreciate that mere closure of the rent in the genital fissure is not what is desired. He may gain this, and not benefit his patient in the least, for incontinence of feces and gases may continue. Success involves always complete union of the ends of the severed muscle and complete closure of the rent in the bowel. To secure these the ends of the muscle, spread out and expanded, must be curled up and approximated, and the recto-vaginal septum must be drawn down and united to them. With these facts in view, clearly defined and appreciated, the difficulties of the operation greatly diminish. To no one are we so much indebted for their demonstration and illustration by practical results, as to Dr. T. Addis Emmet, of this city.

Let Fig. 31 represent the perfect sphincter, Fig. 32 will show it ruptured and spread out, with the point of insertion and exit of the needles. The dotted line shows the course of the metallic sutures

embedded in the tissue. It will be seen that the remaining recto-vaginal wall is a fixed point, and that as the wire is twisted, the ends of the muscle are elevated, and the three points approach each other as shown at C. As the twisting goes on, these points come nearer and nearer together as seen in Fig. 33, until at last they unite as shown in Fig. 34.

Fig. 31.

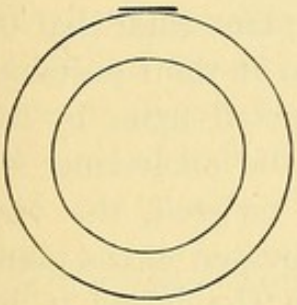
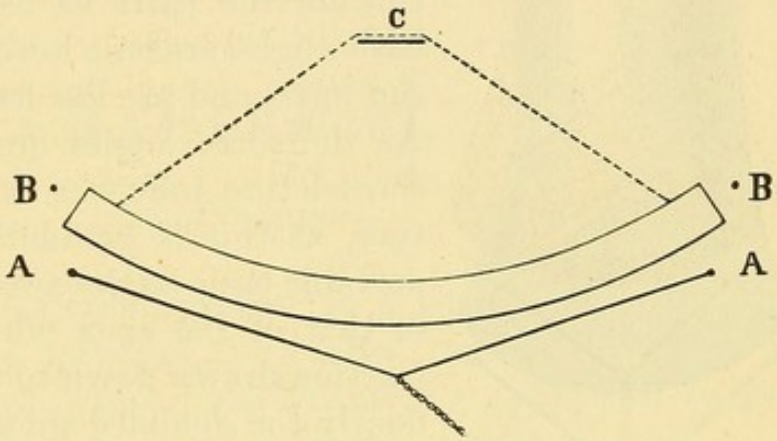


Fig. 32.



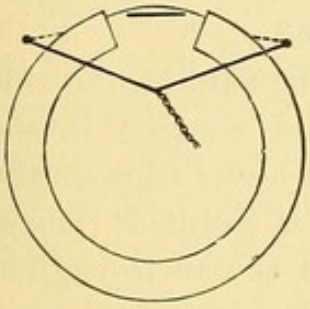


Fig. 33.

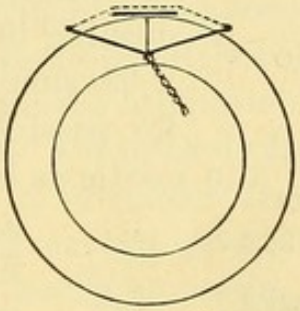


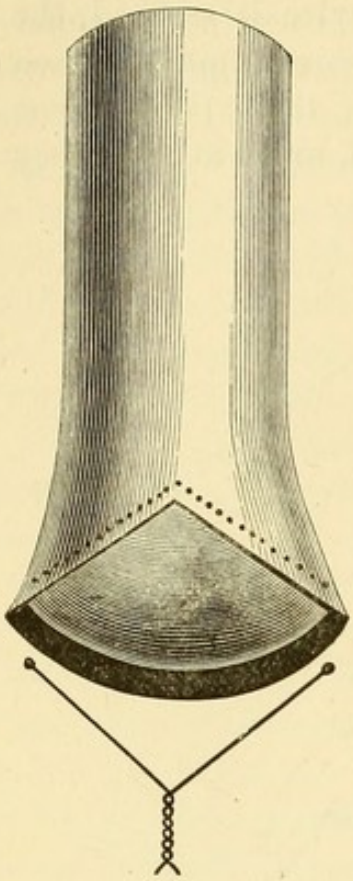
Fig. 34.

Should the first needle be inserted and drawn out above the end of the broken muscle as shown in B B, Fig. 32, the tissues at this point will be approximated, and the ends of the muscle brought close together, but absolute and complete union will not have been attained, and loss of function will still exist. The first suture is the important one, and must catch the ends of the broken and expanded muscle so as to lift them upwards into contact with each other and with the recto-vaginal septum.

In vivifying the parts before insertion of the needles the two lateral triangles representing the perineal body split in two are denuded, and the line of denudation is prolonged backwards along the edge of the recto-vaginal septum. The border of the rectal mucous membrane at the extremities of the broken muscle as far as the upper end of the rent in the bowel is the guide for doing this.

Fig. 35 is a schematic diagram showing the ruptured bowel, the expanded muscle at its anal extremity, the insertion and exit of

Fig. 35.

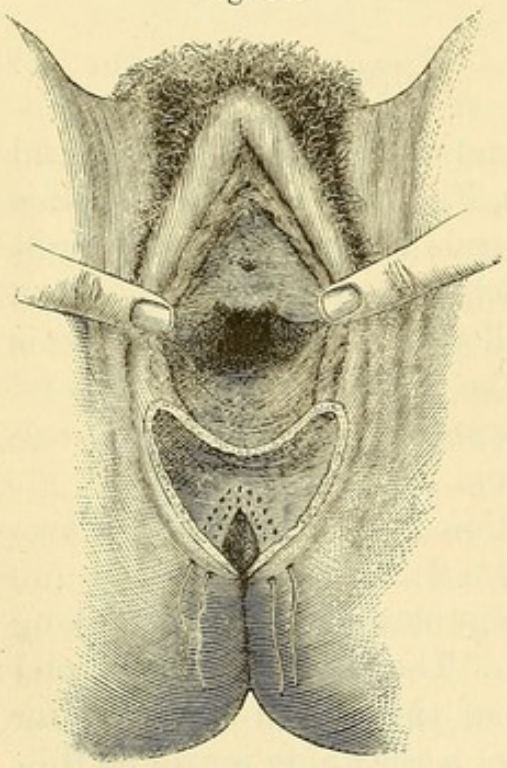


the needles, and the course (dotted lines) of the embedded sutures. The line of denudation is marked out by the course of these sutures.

The rectal rent presents itself to the operator as an imperfect isosceles triangle, apex above and base below. The two lateral borders of this are the parts to be vivified. The two basic angles are on a lower plane than that of the apex, and are less fixed in their position. As the three angles are acted upon by the constricting influence of the encircling suture, as this is gradually twisted, the two movable basic angles are elevated to the plane of that of the apex while the latter is by traction drawn down to meet them. Coincidently the denuded sides of the triangle are, of course, approximated, and thus the rectal opening is completely closed.

To sum up this part of the subject, the rule for passing the first suture consists in the introduction of the needle as low down as the lower edge of the anus. From this point it passes upwards through the recto-vaginal septum, completely encircles the rectal rent, and comes out alongside of the lower edge of the anus on the opposite side.

Fig. 36.



Surface denuded in complete perineal rupture, and first two sutures in position.

Let the reader refer to Fig. 36, and he will appreciate that a suture which takes this course, like the string at the mouth of a bag, puckers the open parts, draws them into apposition, and controls the action of the sphincter. The two conditions which we have to fear as sources of failure after this operation are, first, recto-vaginal fistula, and second, non-union of the sphincter. This method, to a great extent, secures us against both.

The subsequent steps of this operation are the same as those of that for partial rupture.

Should the patient tolerate it, a rectal tube may be introduced occasionally for the escape of air from the bowel, or in place of this a large catheter may be kept in recto.

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 are supposed to produce 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 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 even now by many 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 time last referred to, the affection has been allotted a space in the various systematic text-books which have appeared upon gynecology.

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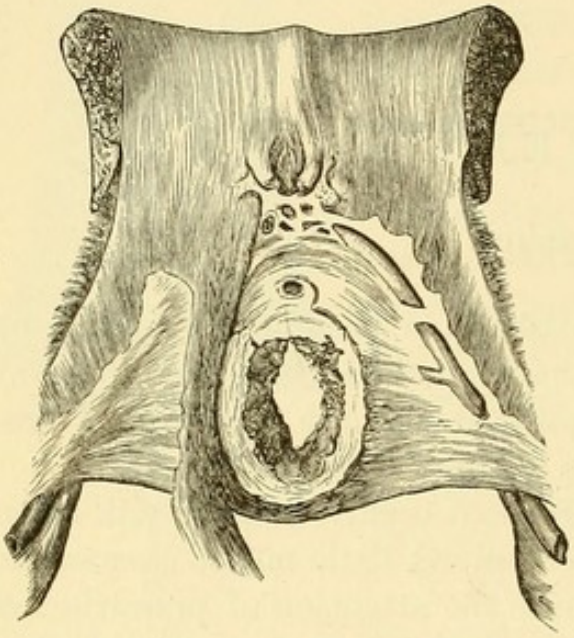
[1] Simpson, Clin. Lec. Dis. of Women.

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

Anatomy and Pathology.—It is, I think, very generally accepted as a fact that the bulbo-cavernosus muscle which passes over the clitoris and forms a figure-of-8 with the sphincter ani is the constrictor vaginæ. Dr. Savage denies this positively, declaring that "the constriction of the vaginal ring is produced by the pubo-coccygeus muscle." This is a broad and powerful muscle situated within the pelvis just above the point at which the vaginal walls branch off to seek their osseous attachment. Arising from the inner surface of the pubic bones its fibres take various courses; its median fibres descend by the side of the urethra and vagina, some of them turning in between the vagina and rectum to meet similar fibres from the opposite side in the perineal body; another more outward series, turning in beneath the rectum, intermix with fibres of the other side; while the remaining fibres still more outward are inserted into the sides of the coccyx. Fig. 37 shows a portion of this muscle.

Fig. 37.



Pubo-coccygeus muscle. (Savage.)

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 and in neighboring muscles, 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 eyelids, 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 caruncle 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 caruncle of the meatus;
Chronic endometritis or vaginitis;
Pustular or vesicular eruptions on the vulva;
Neuromata;[2]
Fissure of the anus;[3]
Hyperæsthesia of the remains of the hymen;
An abnormally rigid perineum;
Disproportionately large size of male organ.

Professor Scanzoni in August, 1868, published his views upon this subject. During the preceding three years he had seen thirty-four marked cases, due chiefly, he thought, to violent efforts at sexual intercourse, practised 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.[4]

Some of the causes which I have enumerated produce vaginismus

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[1] Bul. N. Y. Acad. Med., vol. i, p. 439.

[2] Simpson, Med. Times and Gaz., 1857, vol. i, p. 336.

[3] H. Dewees. Baker Brown.

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

by direct irritation of the nerves of the vaginal mucous membrane; others, by creating a discharge which indirectly establishes the same condition.

Dr. William Neftel, of this city, has recently published some very interesting observations upon the influence of lead poisoning in creating this neurosis. He records four very striking cases, having this as a cause, and in one, the vaginismus was the symptom which incited an examination for poisoning by lead. These cases were successfully treated by electricity.

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 muscular contraction 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.

Differentiation.—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.

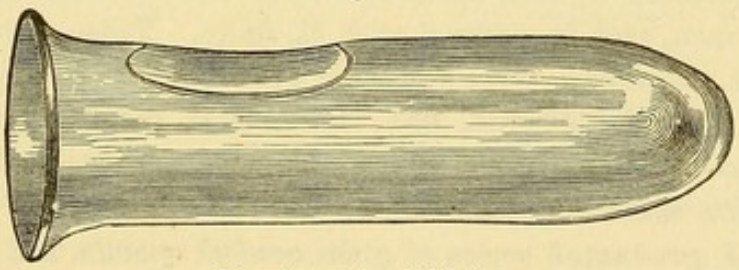
Prognosis.—"From personal experience," remarks Dr. Sims, "I can confidently assert that I know of no disease capable of producing so much unhappiness to both parties to the marriage contract, and I am happy to state that I know of no serious trouble that can be so easily, so safely, and so certainly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

The experience of Scanzoni, Tilt, and others, who have adopted an entirely different treatment from that pursued by the last-men-

tioned author, and who deprecate the use of the knife, leads them to the same favorable 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. 38, should be gently inserted into the vagina, and kept there

Fig. 38.



Sims's vaginal dilator.

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 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 a number of very aggravated cases, and in all with perfect success. But there has been for some time in the minds of many gynecologists 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 distention 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 pen-

cilling 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 takes the same position in deprecating resort to the knife and giving preference to forcible distention. 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 sitû* 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 distention.

Should these means fail, the operation of removal of the hymen and section of the perineal body may be practised. It will be observed that I do not say of the sphincter vaginæ muscle. This is certainly not severed to any extent; and it is highly probable, if we accept Dr. Savage's anatomy of it, that its fibres are nowhere involved in the section. My impression is, that Sims's operation accomplishes two things: first, ablation of the hymen often removes nerves which are in a condition of hyperæsthesia; second, section through the perineum enlarges the ostium vaginæ, and thus removes an obstacle to intercourse.

If I be correct in this, we have here an instance of the injury done by theorizing with reference to a subject which should be put beyond doubt by anatomical demonstration on the cadaver. No one would have done mischief, if told to enlarge the ostium vaginæ by section; many have caused serious hemorrhage by endeavoring to sever the bulbo-cavernosus muscle; which good authorities declare to be no sphincter at all.

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

[1] N. Y. Med. Journal, loc. cit.

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, (meaning evidently the bulbo-cavernosus,) to the perineal raphé, thus passing across the muscle, and measuring nearly two inches.

After this, the vaginal dilator is placed in the canal, 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. 38 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.

Burns's operation, more recently endorsed and practised by Sir James Simpson, rests, it appears to me, upon too weak a basis to warrant its use. It consists in section of the pudic nerve, which Sir James says "may be exposed by cutting through the skin and fascia, at the side of the labium and perineum; beginning on 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." Now let the reader examine Savage's plate, showing the pudic nerve, and he will see, that to sever it "by cutting from the vagina," the incision would have to be carried as far as the ramus of the ischium on each side, where it lies in direct contact with the pudic artery.

No one can examine a diagram showing the course of this nerve, without strongly suspecting, that its section is an operation which has existed in the mind of the operator, and never really been performed upon the living being.

Upon what then did this procedure rest for its good effects? Upon the same basis as that for the supposed section of the sphinc-

ter; severance of the tissues at the ostium vaginæ and consequent enlargement of the entrance to the vagina.

The practice which I should recommend in vaginismus, with the light which we at present have for our guidance, is the following:

1st. Remove existing uterine, ovarian, vaginal, urethral, or rectal disease, if any can be discovered; insist upon the patient's living *absque marito;* let her use copious vaginal injections of warm water twice daily; use the local anodynes mentioned, by rectal or vaginal suppository, or throw into the vagina, every night, by means of a small syringe, four drachms of fluid, in which are dissolved twenty or thirty grains of chloral; have a plug inserted into the vagina by the patient and retained for several hours every day; give such tonics as quinine, strychnine, and iron freely; and, if it can be accomplished, let the patient have a change of air and scene, and indulge in sea bathing.

2d. Should this plan fail, anæsthetize the patient, and by means of the blades of a trivalve or quadrivalve speculum, distend the ostium vaginæ thoroughly; follow this by the use of the vaginal plug, and resort to the means above given for locally soothing and generally sustaining.

3d. Should this method likewise fail, anæsthetize the patient; remove the hymen by scissors, a simple procedure; incise the perineal body exactly as it is torn in parturition, introduce the plug, and keep it *in sitû* for a week, removing it and cleansing it daily. After this, let the patient use it herself, and follow out the directions given under my first caption.

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 a single life. 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.

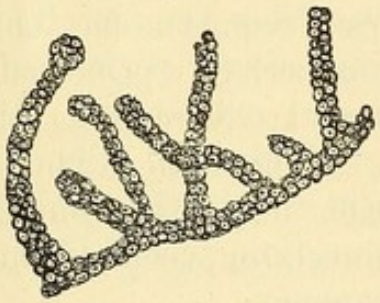
CHAPTER VII.

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.

Anatomy of the Vagina.—The vagina is a canal formed of strong, muscular elements and lined by mucous membrane. At its upper extremity it is attached 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-cell, which are subject like the same structures in the uterus to great hypertrophy 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. The 3d extends to the fourchette; the 1st and 2d spread out at the upper portion of the perineum, making the perineal septum, and attach themselves to the ischio-pubic rami. 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 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

Fig. 39.



Filiform papillæ of the vagina. (Kilian.)

[1] Op. cit.

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 having for their function the transmission of sensation. He represents them as being thread-like and filiform, as shown in Fig. 39.

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 of Vaginitis.—Vaginitis assumes three forms, which differ from each other sufficiently to require separate investigation. They are denominated as follows:

Simple vaginitis;
Specific vaginitis;
Granular vaginitis.

Prof. Hildebrandt, of Germany, has recently described another variety which he styles "adhesive," for the reason that its chief characteristic is to produce adhesions between the vagina and uterus. It occupies the upper third of the vagina; the mucous membrane bleeds readily; and the discharge is thick, creamy, and sanguinolent.

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 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 subdivisions of simple vaginitis, the recognition of which at the bedside constitutes an important point, are, primary and secondary. Sometimes the disease exists

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

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 existing there 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:

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.

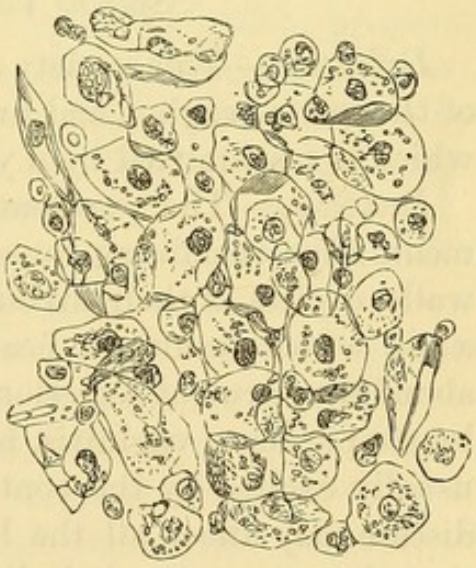
Symptoms.—Acute vaginitis manifests itself by the following symptoms:

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 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. 40.



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;
Granular degeneration of cervix.

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 distinguishable 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 granular degeneration.

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.

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

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, it appears to me, 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 to be identical. The poison of 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 intense heat 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

[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.

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;

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 often 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.

Dr. Noeggerath has lately published a remarkable paper on "Latent Gonorrhœa in the Female Sex,"[1] in which he declares, that certain morbid phenomena in the female organs, which have hitherto been considered as separate, and treated independently, possess a common basis from which they collectively and separately take their origin—this being nothing more nor less than gonorrhœa. "I have," says he, "undertaken to show that the wife of every husband who, at any time of his life before marriage, has contracted a gonorrhœa, with very few exceptions, is affected with latent gonorrhœa, which sooner or later brings its existence into view through some one of the forms of disease about to be described. . . . I believe I do not go too far when I assert that of every 100 wives who marry husbands who have previously had gonorrhœa, scarcely 10 remain healthy; the rest suffer from it or some other of the diseases which it is the task of this paper to describe. And, of the ten that are spared, we can positively affirm

[1] Die Latente Gonorrhœ im Weiblichen Geschlecht. Bonn.

that in some of them, through some accidental cause, the hidden mischief will sooner or later develop itself."

The diseases to which this author refers as remote consequences of latent gonorrhœa are perimetric inflammations, both acute and chronic, ovaritis, and catarrh of the genital tract. These when once excited are, he declares, incurable, and render the life of the female one of misery and danger. These women rarely become pregnant, or, if they do so, either miscarry or bear only one child. To sustain this assertion he gives the statistics of 81 cases, of which 31 only became pregnant. Of the 31, only 23 went to full term; 3 were prematurely delivered, and 5 aborted. Of the 23 who went to full term, 12 had one child each during married life; 7 had two children each; 3 had three; 1 had four; and among the 23 women there were five abortions. He asserts that although apparently cured, gonorrhœa may exist both in the male and female an entire lifetime in a latent form, which may at any moment burst forth into acute gonorrhœal inflammation, or excite serious uterine or periuterine inflammation.

Extraordinary as these views may at first sight appear, I have given them at length, on account of their possible importance and the respect which I entertain for any opinion emanating from their author.

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.

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[1] Bumstead on Venereal Dis., p. 172.

Granular Vaginitis.

Definition and Synonyms.—This variety of vaginitis was first described by Ricord, under the name of Psorolytrie. In 1844, M. Deville,[1] a pupil of Ricord, described it fully, and it was subsequently 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 embedded 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,[2] 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[3] and West[4] 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,

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[1] Archiv. de Méd., 4th series, t. v.

[2] Op. cit.

[3] Diseases of Females, Am. ed., p. 529.

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

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

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 sub-acute 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 combated 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 until complete quiescence of the nervous system is accomplished.

When the acute form shows a tendency to become sub-acute 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 tampon of cotton saturated with the following mixture, introduced, so as to fill the vagina without too much distention:

℞.—Glycerinæ, ℥iv.
Acidi tannici, ʒss.
Morphiæ sulphat. gr. ij.—M.

Such a tampon, or one saturated with glycerine containing sulphate of zinc or acetate of lead, may be allowed to remain for two days at a time.

In place of this, after free vaginal injection, suppositories, composed of butter of cocoa or gelatine and gum tragacanth, with per-

Fig 41.



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

sulphate of iron, alum, copper, zinc, or opium, may, by means of the suppository tube represented by Fig. 41, be daily placed in the upper part of the vagina.

The following is a good formula:

℞.—Acidi tannici, ʒj.
Morphiæ sulphat. gr. iij.
Butyr cacao, q. s.
M. et ft. supposit. No. x.

S. One per vaginam every night and morning after use of the syringe.

In some cases, where, for example, the vagina is very narrow or very sensitive, patients will object to the size of the vaginal suppository tube. For them the small rectal suppository tube can be made to answer. The apex of the cone of the suppository is fixed in the mouth of the tube, and remains there with sufficient tenacity to admit of its introduction to the cervix.

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. During the treatment of this affection all stimulants, spices, and highly seasoned food should be avoided.

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 extreme 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, but it was left for the daring investigations of Amussat and Debron to place its cure among the achievements of modern surgery.

Pathology.—As a result of injury from mechanical, chemical, or pathological 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

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

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

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 the head. Among the causes of sloughing from impaired vital force should be especially mentioned the continued and eruptive fevers, typhus fever, scarlatina, variola, etc.; 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

[1] Mal. de l'Utérus, p. 369.

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 vagina will be found to be impossible. 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 hematocele 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 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 will greatly depend upon the patient. If she be a woman of good sense and perseverance, and keep up distention by the vaginal plug, not for months, but for years, the result is often a very good and permanent one. If, on the other hand, she ignores the risk attendant upon the cessation of its use, ultimate contraction will almost surely occur. 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 septicæmia, purulent absorption, or a septic endometritis which ends in lymphangitis, or in salpingitis and peritonitis.

Differentiation.—Before any surgical interference is established for the relief of atresia, it should be differentiated from imperforate hymen and absence of the vagina. The latter very rarely, if ever (Scanzoni[1] says never), exists without simultaneous absence of the

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

uterus and rudimentary development of some of the external organs of generation. If an obliterated vagina be present, it may generally be 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 be 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 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 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. I have seen two cases end fatally, one in my own practice, and one in that of Dr. Charles S. Ward. In both, septicæmia appeared to develop itself, probably from lymphangitis; and in one, secondary peritonitis occurred. This is, however, only a supposition, based upon cases proved by necropsy to be of this character. In neither of these cases was an autopsy obtained.

For these reasons, such accumulations should not be evacuated without great caution; and it is always well for the operator to announce to the patient's friends, the fact that dangerous consequences may result.

Methods for Evacuating Retained Menstrual Blood.—Accumulations of menstrual blood may be evacuated by two methods: aspiration, and puncture by a small trocar from which air is excluded.

The great advantage of the former plan in these cases is, that it enables the operator to reach the fluid through the vagina, the rectum, or the abdominal walls, as happens to be most convenient; and this without the admission of air, which would act as a direct poison upon the abnormal mucous surfaces. It is safer to remove the fluid very gradually, and not at one time. Once in every three or four days a portion may be drawn off by aspiration, until the cavity is emptied. Let it be remembered that there is no steady increase in the amount of fluid, but that it is suddenly and greatly added to at menstrual epochs.

In some cases, rupture of the tubes has occurred after the uterine accumulation has been evacuated. In these cases a tubal accumulation, due to menstrual flow from the salpingian mucous membrane, has become encysted by stricture of the tube. The sudden emptying of the uterus causes contraction of the walls of the tube, and emptying of the tubal contents into the peritoneum is the consequence. This danger is diminished by gradual evacuation of the mass of blood in the uterus.

In this way having very gradually drawn off all the blood which will flow, the action of the aspirator should be reversed, and the emptied cavity thoroughly and repeatedly washed out with warm carbolized water. Then the patient should be kept perfectly quiet, in the horizontal posture, and under the gentle influence of opium and quinine for four or five days.

By careful observation in these cases the menstrual epoch can usually be ascertained. If it be known, this treatment should be instituted four or five days after its passage, and kept up for about ten days. Then an effort may be made to remove the obstruction which has produced the evil.

It may be asked what should be done in case an aspirator is not attainable. Should the distention of the uterus be so great as to render delay dangerous, or travelling on the part of the patient unadvisable, it may be replaced by a very small trocar, attached to which is a gutta-percha tube, which is connected with a Davidson's syringe, or other exhauster. The trocar and canula may be plunged through the obturator tissue or the wall of the rectum, and the fluid evacuated.

Bernutz,[1] who believed that the admission of air into a uterus

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

previously closed to its entrance, causes contraction, which forces imprisoned blood into the peritoneum, advised for the avoidance of this accident the following plan. He proposed 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. He practised puncture by a very small trocar guarded by gold-beater's skin. In this way gradual discharge is accomplished, and air excluded. He did not leave the trocar in place, but prefered subsequent puncture, if necessary. The fatal termination of four cases led him to the adoption of these precautions.

After evacuation of all the retained blood, and diminution of the size of the distended uterus, he recommended 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."

Of these plans for evacuating retained menstrual blood, aspiration is the safest, simplest, and least painful.

With the array of fatal cases now on record from sudden evacuation by means which admit air to the cavity, and with the means at our disposal for greatly diminishing these dangers; where there is no necessity for haste (and ordinarily there is none), it becomes a question which each must answer for himself, whether in these days of telegraphs, railroads, and profusion of medical charities, it is not absolutely culpable in any operator to ignore the existing facts, and to expose his patient to a risk which science enables him, at least, greatly to lessen.

Operation for Rendering the Obliterated Vagina Pervious.—Before operation, if there be any doubt as to the presence of the uterus or as to its size or position, the hand may be introduced into the rectum, after stretching the sphincter, and a full and satisfactory exploration made.

If on account of great obesity it be found impossible to appreciate the extent of tissue existing between the bladder and rectum, and consequently in the course in which the vagina is to be opened, or perhaps absolutely constructed, the urethra may be rapidly distended by sounds so as to admit the finger to the bladder. Then the index and middle fingers of the right hand being carried up the rectum, and the index of the left introduced into the bladder this important point may be ascertained.

Before operating, the patient should be anæsthetized, and the bladder and rectum emptied of their contents. She should be

placed in the lithotomy position, upon a strong table, before a window giving a good light.

The labia being retracted by the fingers of two assistants, holding the thighs, the finger of a third, who kneels by the side of the operator, is introduced into the rectum. A steel sound is then passed into the bladder, which the assistant, on the left of the woman, holds in the right hand. At this moment, this assistant holds the woman's knee under his left arm, retracts the labium by his left hand, and holds the sound in his right hand. The sound, he must press upon gently, so as to let the operator's finger recognize its presence as it works its way up the vagina. By means of a pair of curved scissors, conducted up to the point of obliteration upon one finger, the tissue between the urethra and rectum should then be very cautiously cut, in a transverse direction, and the finger introduced into the opening made. This is really almost all the cutting which should be done; the rest should be accomplished chiefly by the finger. This, by the sense of touch, tells the operator exactly how nearly he approaches the sound in the bladder on one side, and the finger in the rectum on the other. To one who has not tried this plan, the facility with which the adherent vaginal walls may be separated, or a new tract torn through the tissues, will be surprising. Now and then, the application of the scissors or of a curved, probe-pointed bistoury will become necessary, but every such necessity constitutes an element of danger.

As the operator approaches the regions around the cervix, he may become bewildered as to its position. Under these circumstances, let him make pressure by his unoccupied hand, over the hypogastrium, so as to force the hard cervix down upon his finger. Should he still feel a sense of bewilderment, he should pass the four fingers of the right hand, and the hand itself except the thumb, into the rectum, seize the uterus, steady it, and press its cervix down upon the finger in the vagina. Should he not succeed, even now, in determining the relation of parts, he should stop the operation, introduce a vaginal plug, and finish it in a week or ten days. Ordinarily, if he proceed in the cautious manner described, after having beforehand carefully explored the pelvis, and the uterus exist, he will succeed in reaching it.

This method of operating is that which is said to have been adopted by Amussat in 1832, and by Dupuytren. 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.

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. To prevent such a result, a plug of glass, such as represented by Fig. 38, 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 and, if necessary, for years. Where the entire canal has been obliterated, even these efforts may fail and contraction 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, for a fortnight after operation, be kept scrupulously clean by injections of tepid water practised 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 slightly under the 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 distention by menstrual blood occurred. In one instance of atresia I saw an hematocele 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.

In an interesting report of a case of atresia operated upon by Dr. Grange Simons, of Charleston, in the Transactions of the South Carolina Medical Association, 1872, an opening was made through the fornix vaginæ, and the uterus not being found, the operation was abandoned. The patient menstruated through this opening afterwards. Subsequently she died of tetanus, and the vaginal opening was found to communicate with a Fallopian tube which was there adherent to the vagina.

CHAPTER IX.

PROLAPSUS VAGINÆ AND VAGINAL HERNIÆ.

Prolapsus Vaginæ.

It might upon very valid grounds be maintained that prolapsus vaginæ, recti, and vesicæ are so intimately connected with prolapsus uteri, that this chapter should have been united with that upon the latter condition. I have especially avoided this course, for the reason that I wish to direct the reader's attention particularly to prolapse of the vagina as a primary condition, one often long existing without uterine descent, and very frequently preceding that state as a causative influence. For any repetition which may occur in the two chapters, I offer no apology, in view of the great importance of both subjects.

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 organs which are mainly instrumental in this result are the

vagina, the peritoneum, the uterine ligaments, 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. Dr. Savage[1] has said, "the vagina does not support the uterus under any circumstances." It is difficult to concur in this statement when in practice we see a prolapsed uterus, vagina, and bladder perfectly sustained by astringents applied to the vaginal walls, by operations narrowing that canal, and by simply giving support to its walls, posteriorly, by restoration of the perineum.

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, and 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[2] 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."

It is an important question whether there can be prolapse of the vagina without rectocele, cystocele, or uterine prolapse. 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

[1] Lancet, Feb. 1858. [2] Female Pelvic Organs.

utero-sacral ligaments it is indirectly attached to the sacrum. This wall aids 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 perineal septum, a point a short distance above the vulva, and just at the upper edge of the perineal body, the muscular walls of the vagina pass off to attach themselves to the ischio-pubic rami. At that point the canal is constricted by the pubo-coccygeus, the true sphincter vaginæ muscle. The mucous membrane of the canal passes down to the fourchette. 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 repeated 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, rendering it abnormally voluminous and lax, or which destroys its lower buttress or support, will tend to induce this affection. As pregnancy and parturition combine most, and often all, of these, they very generally furnish both predisposing and exciting causes. The development of the vagina, and increased weight of the uterus dependent upon the former, and the distention of the canal and enfeebling of the sphincter muscle incident to the latter, all unite in favoring 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 uterine ligaments. By the process of involution which diminishes the size and weight of the uterus, these parts likewise return to their original dimensions. 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.

[1] Meigs's Translation of Colombat.

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;
Senile atrophy of vaginal walls;
Rupture of perineum;
Previous distention by tumors;
Long continued vaginitis;
Subinvolution of the vagina.

Of all these causes subinvolution of the vagina is the most frequent, more especially when it accompanies, as it often does, rupture of the perineum. Next in frequency stands senile atrophy and absorption of surrounding adipose tissue.

It is evident that all act either by debilitating the power of the vaginal walls by mere mechanical distention, 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 of the uterus, or occurs soon after 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 chronic. The most important results of the condition are prolapse of the uterus, bladder, and rectum, one or more of which are almost sure to ensue.

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 tendency to become fatigued, 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 disturbance of the functions of the part which forms the hernia. In one case the prominent symptoms will point to 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 in part sustains,

ceases to afford the required resistance, the bladder, partly under this influence and partly under that of traction, 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 protrudes 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.

Rectocele.

Rectocele, or recto-vaginal hernia, occurs in a manner similar to that by which the bladder descends. The posterior wall of the vagina not only ceasing to give proper support to the anterior wall of the rectum, but dragging it obliquely downwards, this forms a pouch which soon fills with fecal matters. The feces, becoming hard, and, in consequence, irritating, create mucous inflammation and discharge, with tenesmus, obstinate constipation, and hemorrhoids. 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 feces, under the supposition that cellulitis existed, which by effused lymph had completely blocked up the pelvis. It may be

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

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.

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 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. Even when the investigator feels positive in his diagnosis, it is always advisable to test the question by capillary puncture. Should an intestine be punctured by the little needle employed, no evil will result.

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[1] Notes to Colombat, p. 211.

Treatment of Vaginal Prolapse and Hernia.—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-chest 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 practised, 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 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.

In some cases the globe pessary, a round ball made of glass or silver, or the air pessary of Gariel will be found to be very useful, more especially where the bladder or rectum participates in the prolapse. But they must necessarily be only palliative in their results, since while they relieve the immediate consequences of want of power in the canal, they increase the existing weakness by con-

tinued distention. 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 has been practised. 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 practised 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, the procedure was practised by Scanzoni, Roux, Velpeau, Simon, Stoltz, and Malgaigne, but the results were not good.

The operation consists in paring the edges of the labia majora, removing the labia minora, and uniting the vivified surfaces by silver sutures.

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 which promises a radical cure. 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;
Uretero-uterine fistula;
Uretero-vaginal fistula.

Fecal Fistulæ.

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

Simple Vaginal Fistulæ.

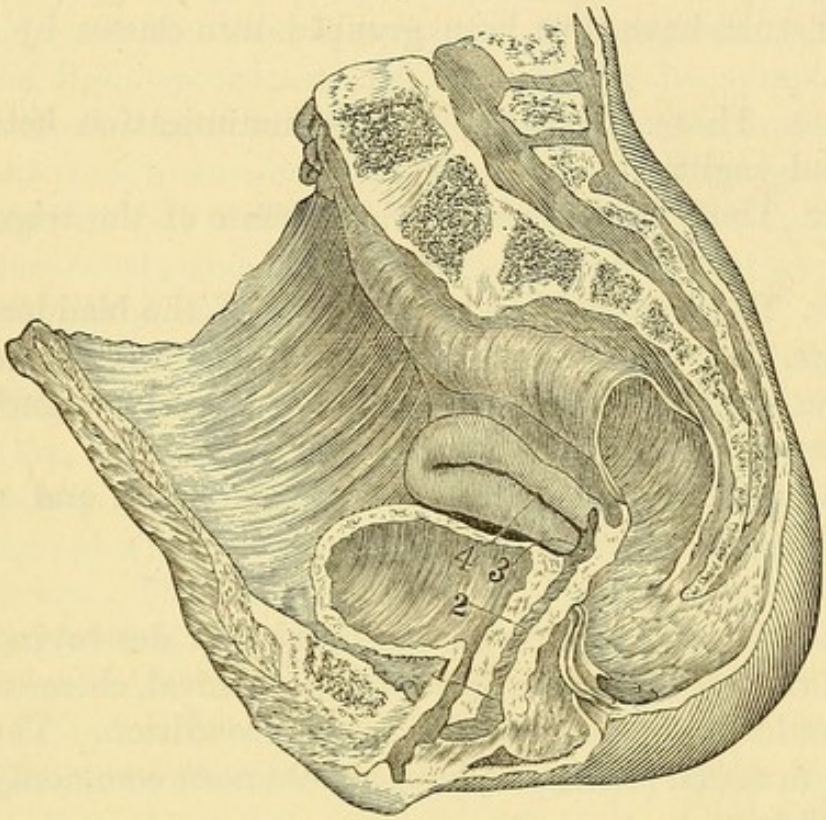
Peritoneo-vaginal fistula;
Perineo-vaginal fistula;
Blind vaginal fistula.

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. 42 displays the points at which they are usually observed.

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.

Fig. 42.



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

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 separated on the twenty-first day.

Other agencies which may create fistulæ, but which have been rarely noticed to do so, are pessaries, stones in the bladder, fecal accumulation, etc.

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 has been already inaugurated, subsequent 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 malpractice.

In a report upon this subject by Mr. I. Baker Brown[1] to the Obstetrical Society of London, in 1863, the following statements

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

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,[1] Emmet, and Bozeman[2] 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 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 it becomes necessary 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, often becomes impossible.

About thirty years ago Dieffenbach[3] recorded a case of vesico-vaginal fistula, the cause of which had been the presence of a stone

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

[2] Agnew, Vesico-Vaginal Fistula.

[3] Med. Record, vol. i. 321.

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 feces 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, 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 a highly offensive odor emanates from the patient's body.

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

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[1] Op. cit.

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. Infusion 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 practised.

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 fourteen years ago, and it may now be accepted as a true statement as to the prognosis of all fistulæ of

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

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 alluded to 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 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, however, 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 Wurtemberg, 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 specu-

lum, 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 opinion." 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,[4] 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.

Entering the field almost as early as Sims, Simon, of Germany, greatly aided in systematizing the operation, and has been second to no one else in improving it.

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

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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.

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

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 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 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

[1] Operative Surgery.

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[1] says: "I do not believe that there exists in the science of surgery a well authenticated complete cure of vesico-vaginal fistula." Malgaigne,[2] 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:[3] "20 cases of vesico-vaginal fistula were subjected to 48 operations—among which were elytroplastie, episioraphie, 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. 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.

I would not be understood as claiming for America in this matter more than she really deserves—the establishment of the method of cure upon a firm and certain basis. To claim more than this, would be to ignore the plain teaching of history. To France belongs the inception; to England the glory of having absolutely made the discovery, although she did not appreciate the fact; to Germany, next to America, the credit of having specially advanced and perfected reliable operative procedures. In that country today, by the method of Simon, success even in the gravest cases has become the rule and failure the rare exception.

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

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[1] Pathologie Externe.

[2] Manuel de Méd. Opérat.

[3] Med. Record, vol. i, p. 322.

very much. The principle which he demonstrated is, however, the same, and the modifications of the operation all act in developing it.

In this country, the operation is commonly performed, not by specialists alone, but by practitioners in every walk of the profession, and, thanks to the extreme simplicity of Sims's procedure, it is no longer looked upon as a difficult undertaking, requiring special skill and experience. It is at the present day certainly very difficult to appreciate the statement of a physician[1] of Ireland, that "he unfortunately had the opportunity of seeing a great number of fistulas, and a great number of operations, and his experience had been that the vast majority of them proved unsuccessful."

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 in the abdominal decubitus, 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

[1] Remarks by Dr. Cronyn before the Surgical Society of Ireland, March 15, 1872.

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 cauterization 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 in Fig. 38, should be kept in the vagina, and, to prevent distention 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 evacuated 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:

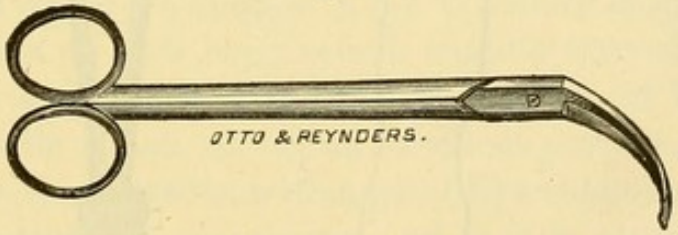
1st. Paring the edges of the fistula;
2d. Passing sutures through them;
3d. Approximating them and securing the sutures.

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 then introduced, does so with the right hand, while with the left he 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 then fully distended, will be seen throughout its extent, except where it is obscured by the speculum.

The operator, having near him all the instruments, etc., 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. 47, 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 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, or with what I much prefer, the tooth forceps, shown in Fig. 25, and held up. Then with a pair of long-

Fig. 43.



Curved scissors.

Fig. 44.



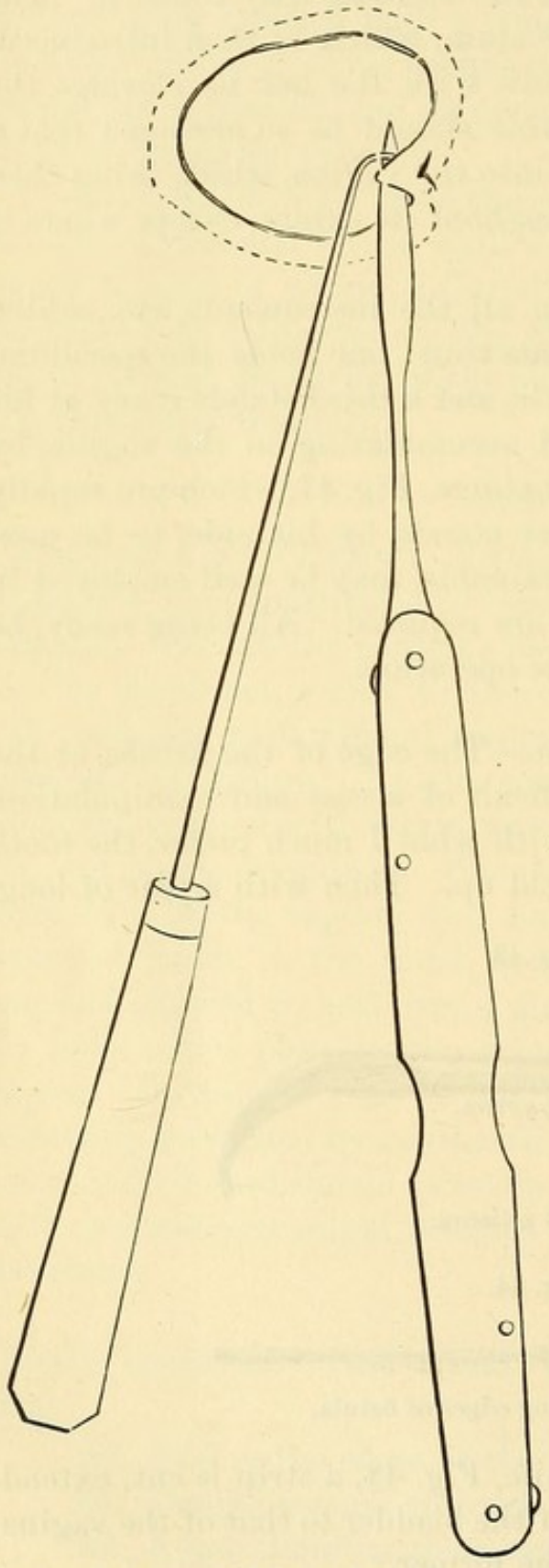
Bistoury for paring edges of fistula.

handled scissors, Fig. 43, or a knife, Fig. 44, 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.

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.

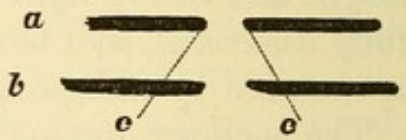
It is of great moment that sufficient tissue should be removed,

Fig. 45.



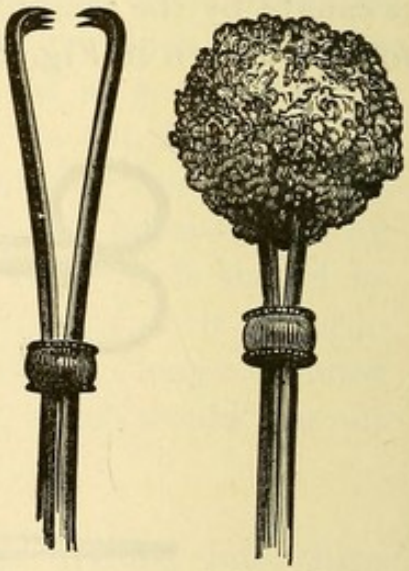
Paring the edges. (Wieland and Dubrisay.)

Fig. 46.



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

Fig. 47.



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

and that the amount taken on the vaginal surface should be greater than that near the vesical. Prof. Simpson[1] makes this point very clear by the following language: "Enter the point of your knife 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 abraded surface, 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 invading its mucous membrane. This is made evident by Fig. 46. 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.

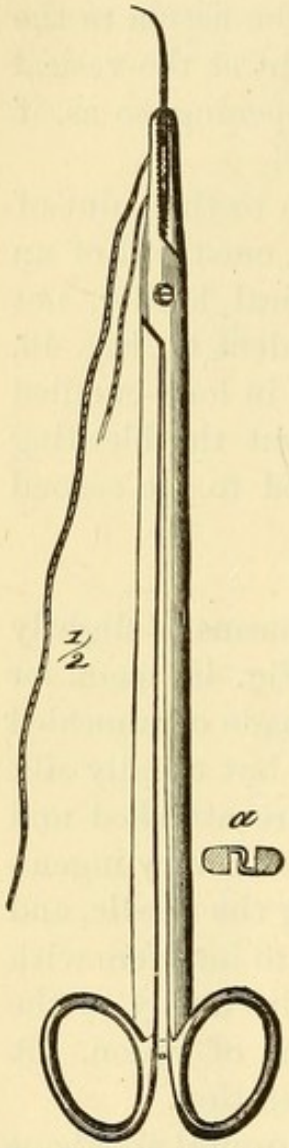
Passing the Sutures.—The sutures are passed by means of slightly curved needles held in a pair of strong forceps, Fig. 48, made for the purpose. In some cases the metallic thread, made of annealed silver, which is employed, may be passed at once, but usually silk threads are first passed, and the silver sutures are attached and drawn through. Dr. E. Cutter 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 welds the wire firmly to the needle so that no obstruction exists at the point of union. A number thus prepared are in readiness for each operation.

The needles which we employ in the Woman's Hospital are about three-quarters of an inch long, round, slightly curved, and without cutting edges anywhere. Dr. John T. Hodgen, of St. Louis, has invented a needle which serves an excellent purpose. It is a very small, straight, short needle, with a point like that of a trocar. This passes readily through the tissues, and to it is attached a delicate silk thread which carries the silver wire, the bent end of which is rubbed down to small dimensions by sand-paper. 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

[1] Diseases of Women.

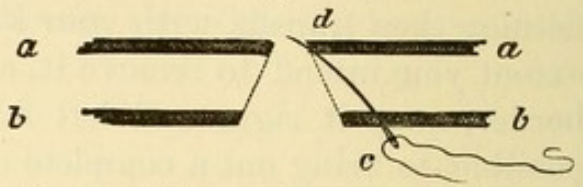
surface, but not involving its mucous lining. Fig. 49 represents the point of entrance and exit of the needle.

Fig. 48.



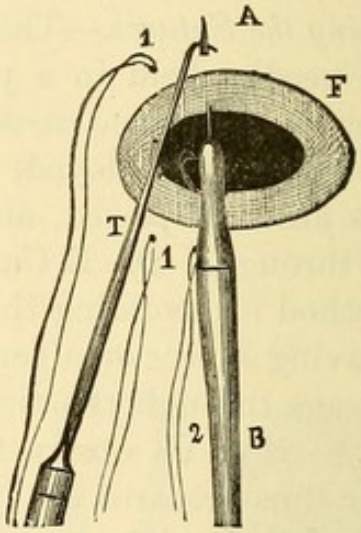
Needle held in forceps.

Fig. 49.



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

Fig. 50.



Passing the needle. (Wieland and Dubrisay.)

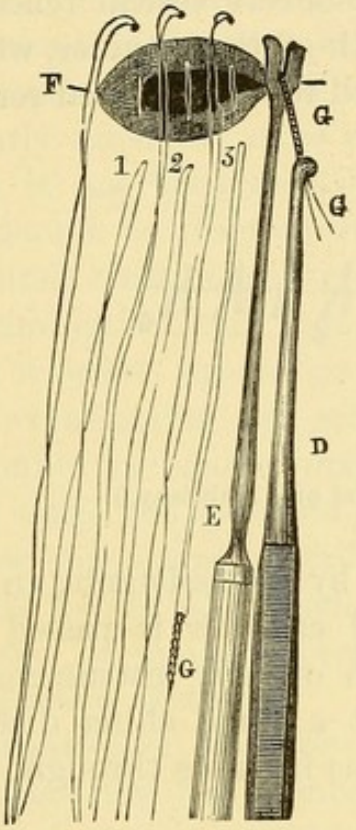
The point of the needle having passed out, it is engaged by the small, blunt hook, Fig. 54, until it can be seized and drawn through by the needle forceps. Then it is plunged into the other lip and drawn out half an inch from the edge of the incision. The ends of the silk suture are then given into the 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. 51.

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

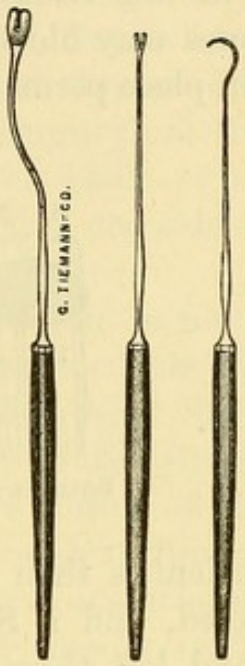
make the thread follow it, some opposing force is needed, or the thread might cut through the tissues. This force is offered in the species of fork represented in Fig. 53, which is put as a fulcrum under the thread at its point of exit, and made to sustain and draw it through.

Fig. 51.



Twisting the sutures.

Figs. 52, 53, 54.



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

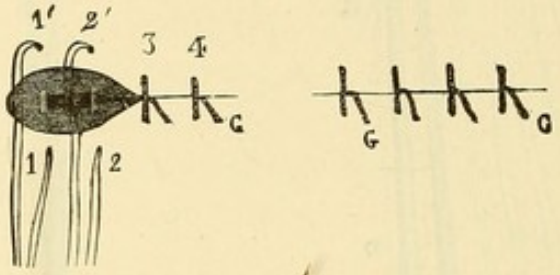
A bit of silver wire about twelve inches long is attached, by bending its extremity, to the first silk suture, and by the use of the fork just mentioned, the silk thread is drawn through so as to make the wire replace it. The silk is then cut off, the silver suture put aside, and the operator proceeds to replace each silk thread in the same way. This being accomplished, the instruments are then 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. 51, slipped into the fulcrum, Fig. 52, 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 then 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.

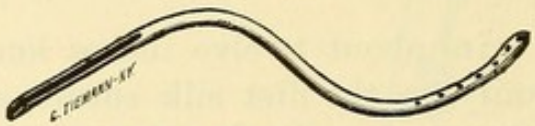
Fig. 55.



Sutures twisted. (Wieland and Dubrisay.)

The patient is then 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. 56.



Sims's sigmoid catheter.

The nurse should examine the catheter 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 in which it has been embedded. 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 great, so great, 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.

Other methods have been successfully employed by Bozeman, Agnew, Baker Brown, Simpson, Simon, and others. For fear of being uselessly prolix, I shall describe but one of these, that of Simon.

Among other attempted improvements, 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. Extended experience with tubular needles leads me to the conviction that they are at once the most ingenious and worthless appliances which can be employed.

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 improvements made by Sims, had acquired a great degree of skill in treating vesico-vaginal fistulæ. To regard him as an imitator would be unjust. He was without question a coincident discoverer.

The chief features of Simon's operation are these:

1st. He repudiates silver wire as a suture superior to 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.

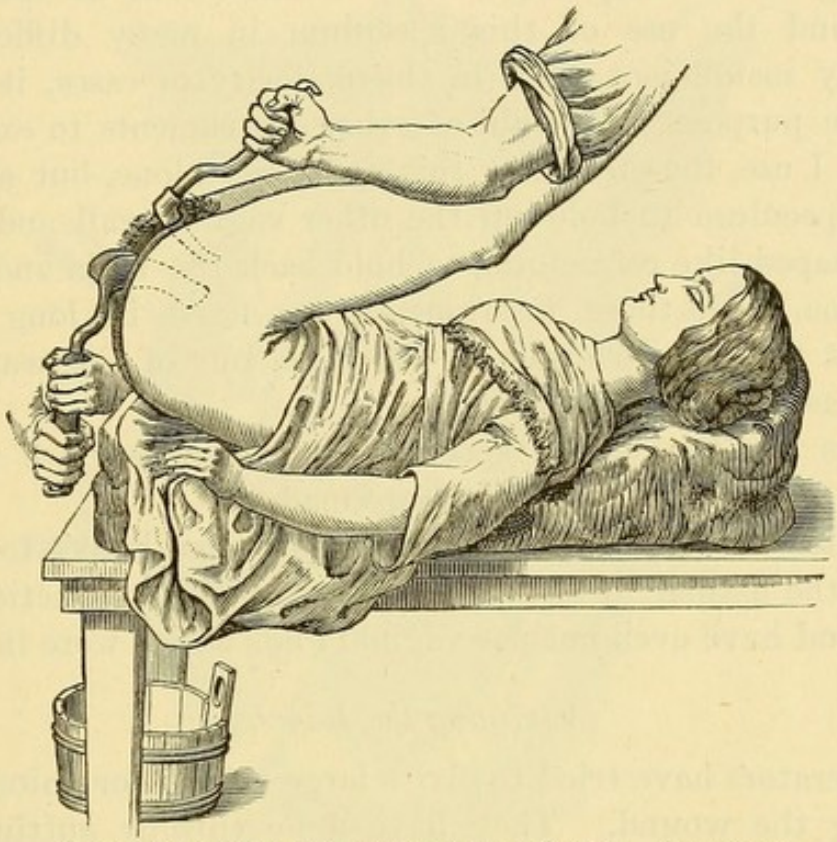
5th. He allows the bowels to be evacuated whenever nature prompts it, and does not diet the patient nor confine her to bed. At times he even permits outdoor exercise in twenty-four hours after the operation in favorable cases.

I prefer to describe his procedure as far as possible in his own words. The following *resumé* of his method is made up from his work upon "The Operation for Vesico-vaginal Fistula," published in 1862.

Position of Patient.—There are three positions, in general use, for the patient in operation for vesico-vaginal fistula. (1) The back, as in operation for stone. (2) The knee-elbow; and (3), Sims's position, which is a modification of the latter. "I use neither of these, but prefer the breech-back position (Steiss-Rückenlage), which has all the advantages of those mentioned, without their disadvantages. It consists in this, that the patient, lying on her back, is put in a position which is almost exactly similar to the knee-elbow position. The breech is so elevated that it is somewhat above the level of the abdomen and breast. The thighs are bent back towards the belly and the sides of the chest, so that the breech is the most projecting part. The legs are either flexed at the knee, or extended over the sides of the chest. The vulva is above and to the front. The head is supported by a pillow. If the fistula is seated very high in the vagina, the thigh must be drawn as far as possible upwards; if the fistula is, however, very

near the vaginal outlet, we are not obliged to elevate the breech so much, and have no need, therefore, of flexing the thigh so forcibly. I have called this, in distinction to the ordinary back position, the "Steiss-rückenlage;" because in it the breech (Steiss) is the most projecting part, and presents itself in a manner very similar to the breech presentation of the fœtus.

Fig. 57.



Simon's position for vesico-vaginal fistula. (Simon.)

The advantages are:

1st. The field of operation is clear, we are not obliged to operate between the thighs.

2d. The assistance can all be given from the side, without hindering the operator.

3d. It allows the use of several specula and the side retractors, to expand the vagina on every side.

4th. It is quite as well borne as the ordinary back position.

5th. It admits of chloroform narcosis. . . . .

If the fistula can be brought down entirely with perfect ease, I bring it directly to light. If, however, there is the least difficulty in moving it, (as in the majority of cases,) I operate with the specula and retractors, with the fistula *in sitû*. I always prove this by seizing the uterus with a hooked-forceps (Museux) and pulling it

gently down, before I operate with the specula and levers. I have improved Jobert's method of seizing the cervix with the forceps by passing two threads through the cervix, thus getting rid of an instrument which is very much in the way. Sims constructed a gutter shaped speculum for expanding the fistula, which has left all other specula in the back-ground. He used four sizes. It is shaped liked Neugebauer's (1856), except that instead of ending in a sharp edge, it is rounded out at the end. I have found the use of this speculum in many difficult cases absolutely insufficient, and, in the majority of cases, it only answers the purpose by the aid of other instruments to expand the vagina. I use, therefore, not this speculum alone, but also a flat-shaped speculum to hold up the other vaginal wall and also side levers (shaped like retractors), to hold back the labia and sides of the vagina. All these instruments are fixed in long handles, curved at the end, in order to get them out of the way, and to give the assistant a firm grasp.

Always use the widest specula possible, Sims's are not wide enough. I have had two sizes more made.

In addition to these I often use long-handled hooks to seize the edges of the fistula. I always cut the cord-like contractions of the vagina, and have even cut the vaginal folds which were in the way.

Vivifying the Edges.

All operators have tried to give a large surface for union without enlarging the wound. They have done this by cutting at the expense of the vagina, leaving the edges of the bladder intact. According to my observations and experience, I give the preference to a deep funnel-shaped incision of the edges of the fistula similar to the incision in plastic operations in any other part of the body. The incision must be carried to the healthy tissue and all the cicatricial tissue extirpated.

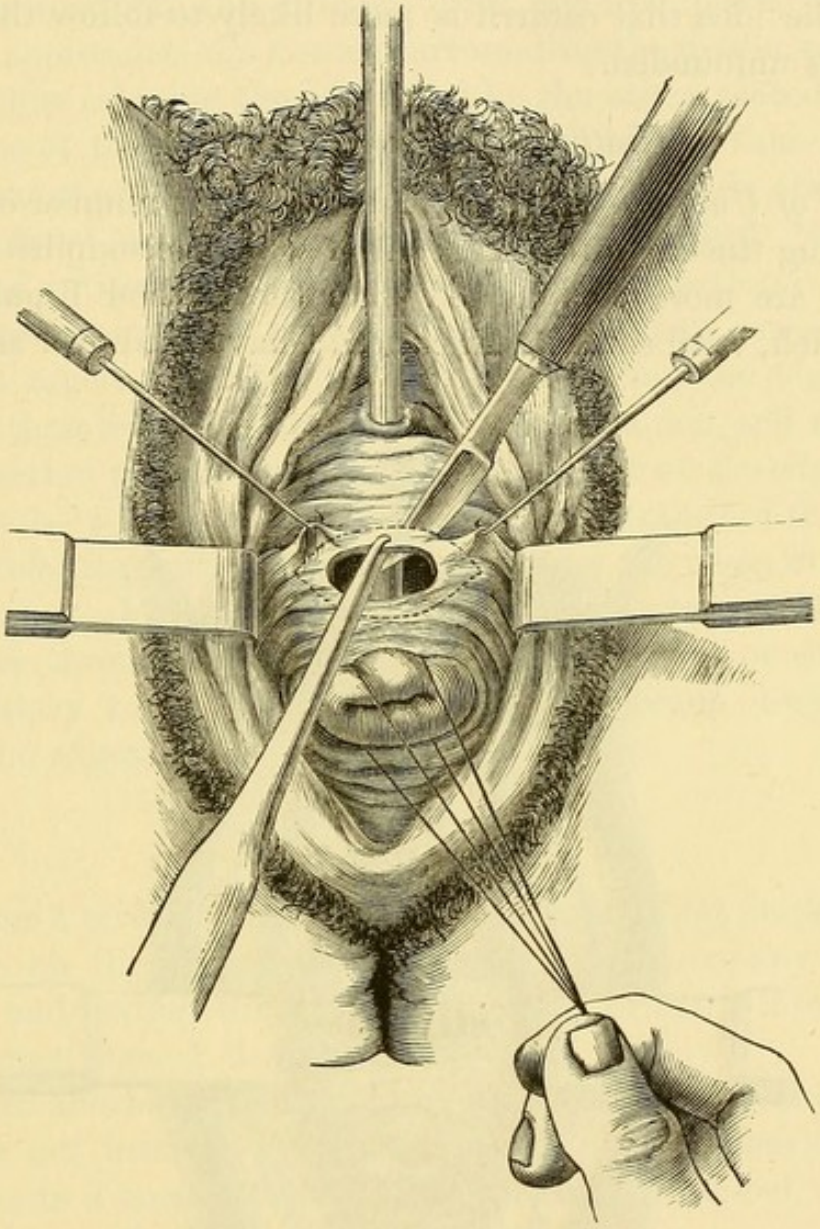
It extends quite through the walls of the septum to the vesical mucous membrane, and sometimes through it.

In this way is formed a steep funnel-shaped wound, with its point in the bladder, and its base in the vagina, and its edges from 6 to 8 Mm. thick.

Although other authors wish to avoid as much as possible the enlarging of this defect, it is exactly here only where union can take place, by first intention, that I strive to have the edges as free from cicatricial substance, and as prone to union as possible; and, even in the largest fistula, I do not refrain from this repeated

paring off the edges, even to making the defect very much larger, until the union is accomplished. And, even if with the best preparation of the edges, the union does not take place, and we meet with entire want of success, the woman loses no more urine than before.

Fig. 58.



Vivifying the edges of the fistula. (Simon.)

Sometimes I cut the vesical mucous membrane, and sometimes avoid it, but place little weight on that.

The advantages claimed are:

1st. By the deep funnel-shaped incision all cicatricial substance will be certainly cleared away.

2d. The edges are more prone to union, as they unite in a natural manner, edge to edge, and not with a flat surface on the same; the nerves, vessels, etc., thus continue on in the normal direction.

3d. The very wide edge is unnecessary, as only the upper edges unite in any case.

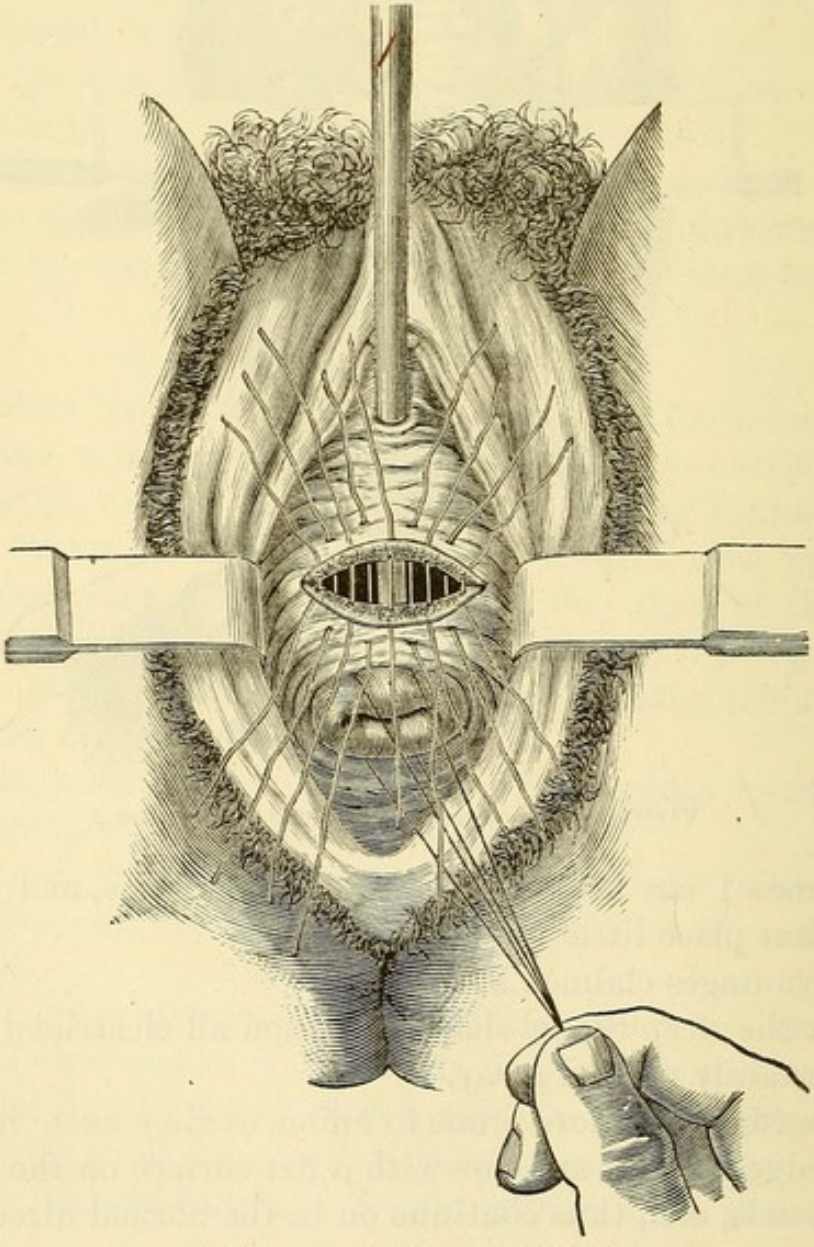
4th. If union does not take place the first time, a second attempt is more likely to succeed, with the thick edges, than where with already thin edges, these must be bevelled off still more and made thinner.

5th. The idea that catarrh is more likely to follow this form of incision is unfounded.

Uniting the Edges of the Wound.

Method of Uniting.—There have been a great number of methods of bringing the edges together; all of which accomplish their purpose, but are more complicated than the method I published in 1854, which, with some modification, I have used ever since.

Fig. 59.



Sutures in position. (Simon.)

In order to meet the indication for uniting, I use either one or two rows of fine silk sutures tied in the ordinary manner.

In large fistulæ, where a great degree of relaxation is necessary, in order to bring the edges into exact union, I use my so-called double suture, consisting of two rows, one the "relaxing," the other the "uniting." In small, or in slit-shaped fistula, I use only one, the uniting row. In the double suture, one row, placed very deep and wide, approaches the tissues surrounding the fistula, to the line of union, thus relaxing the edges; while the other, placed between the stitches of the first, holds firmly the edges, and thus promotes the most exact union. When only one is used, it is the uniting row, and placed in the same manner as here described. Of course, each row of sutures supplements the other in its action.

Both rows are placed very deep, even, in many cases, through the vesical mucous membrane. They thus bring the edges of the wound, in their whole thickness, in the closest union, and withstand greater traction than if they only seized a part of the edges. The sutures are 1–1½ lines apart. The point of entrance of the threads is, in the relaxing suture, some distance from the edge, in the uniting, quite near. I consider it of very little importance, whether the suture goes through the vesical mucous membrane or not. It is only necessary to be careful that this membrane does not get between the edges of the wound.

After-Treatment.

1st. From a series of observations, I conclude that neither on the wound nor on the new cicatrix does the urine have any injurious influence, and neither hinders the union by primary intention nor loosens a once formed cicatrix.

2d. From another series of observations, I have learned that the healing is not interfered with by a degree of distention, which could come in a normal filling of the bladder, provided, only, that the wound is perfectly freshened and united.

In most cases the permanent retention of the catheter only does harm.

Each of these deductions is drawn from a number of appropriate cases.

Upon these conclusions then is based my after-treatment, which up to the removal of the stitches is entirely unimportant. Those minute directions, the carrying out of which is so tedious both for the patient and physician, are all laid aside. The patient is per-

mitted to take any position she chooses. She passes her water, as soon as she feels the need, either in a bed-pan, or, if she object to that, in the sitting or knee-elbow position. Only in a few cases, where the patient is not in a condition to pass water spontaneously, is the catheter used every three or four hours. On the fourth or fifth day an attempt is made to remove the stitches, and this is repeated on the following days. On the eighth day, the patient is allowed to leave her bed, even if all the stitches are not out.

To avoid passages from the bowels, with straining, on the first eight days, a fluid discharge is recommended. If irritation of the bladder ensue, morphine, one-eighth grain per dose, should be given, and daily warm injections into the vagina, but not into the bladder, should be employed."[1]

Prof. Simon[2] 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."

In the description of Simon's method here given, the words of the author have been employed as much as possible.

Elytroplasty.—This operation was published to the profession by Jobert de Lamballe,[3] 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 diffi-

[1] This resumé has been prepared from Prof. Simon's work by Dr. M. D. Mann.

[2] Am. Journ. Obstet., vol. ii, p. 241.

[3] Bull. de l'Acad. de Méd. de Paris, t. ii, p. 145.

culties 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.

To one unaccustomed to the treatment of fistulæ, it would appear that the larger the fistula the more difficult would be its cure. This is not so; some of the most difficult cases will be found to be those in which the opening is so small as to be discerned with difficulty. In these cases I would strongly recommend the following plan: Introduce into the bladder a large steel sound, and by its extremity make the fistula to project towards the vagina. Then cut away the tissue surrounding the fistula so as to let the sound pass freely into the vagina. Sutures may then be passed, and the enlarged fistula cured.

Closure of the Vagina.

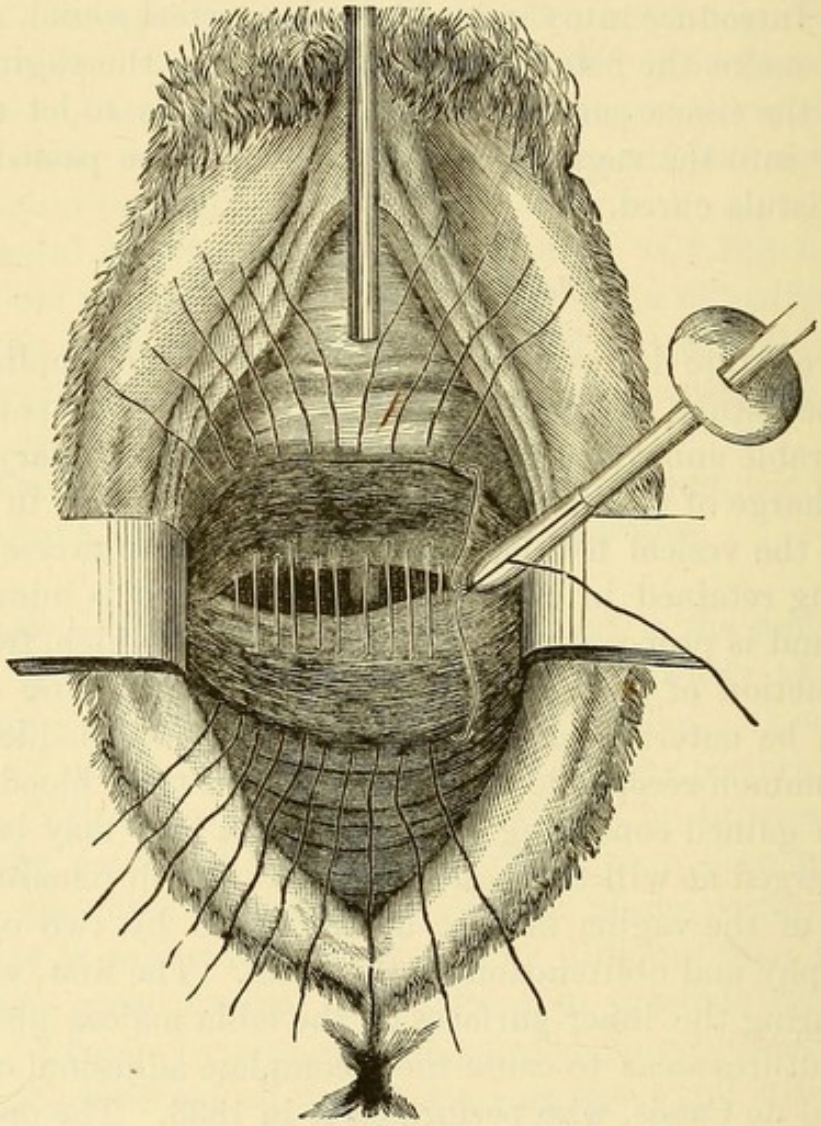
This procedure is resorted to in despair of accomplishing the cure of the fistula, and in the hope of relieving the patient from the intolerable annoyance attendant upon an involuntary and constant discharge of urine. It does not, of course, equal in efficiency closure of the vesical fistula, since it involves the necessity of the urine being retained in the vaginal canal, which is injured by its presence, and 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 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 canal. The first, which consists in paring the inner surfaces of the labia majora and uniting them by sutures 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 Simon, 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

Fig. 60.



Obliteration of the vagina. (Simon.)

due to great loss at the base of the bladder have been entirely relieved by it. He places a very high estimate upon the operation, as the following extract from a published letter from him to Dr. Bozeman of this city will show:

"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 origin-

ated 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 this procedure to the lower section of the vagina, but he now obliterates the canal just below the loss of substance.

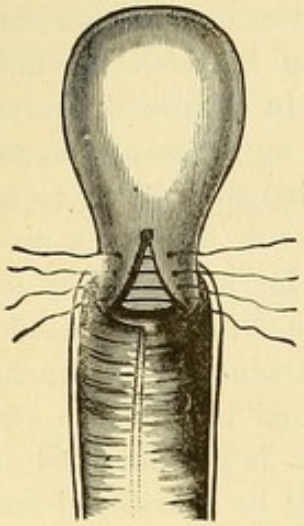
Urinary Fistulæ requiring Special Treatment.

In the great majority of instances no other plan of treatment than the suture is necessary. 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.

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. 61, so as to approximate the walls of the cervix and the lips of the fistula.

Fig. 61.



The cervix is slit to expose the fistula above, and sutures are passed.

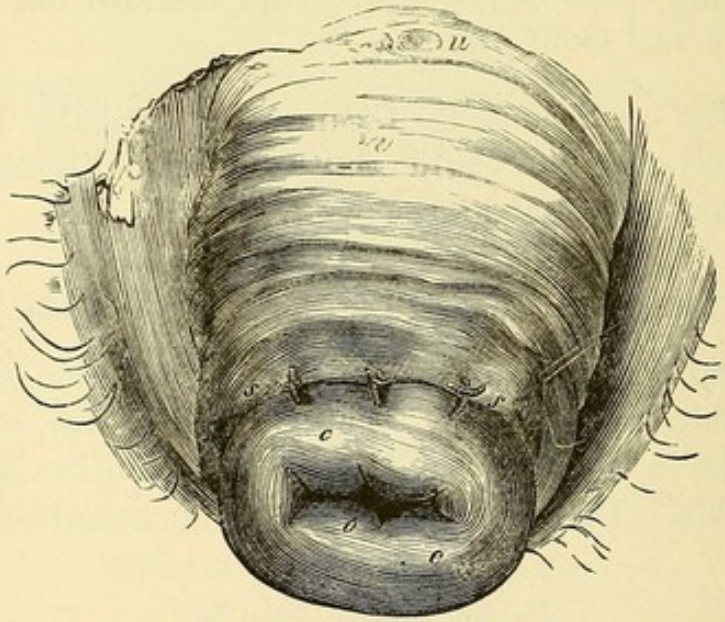
In case the fistulous orifice be so high as to be considered beyond reach, the only remaining resource is to close the os uteri externum by suture, and allow menstruation to occur through the bladder.

Vesico-utero-vaginal Fistulæ.

For these the plan of vivifying the anterior lip of the os, and thus making the uterine tissue subservient to closure of the fistula, is peculiarly applicable. The operation, represented at Fig. 62 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

Fig. 62.



Anterior lip of fistula united to anterior lip of cervix. (Simon.)

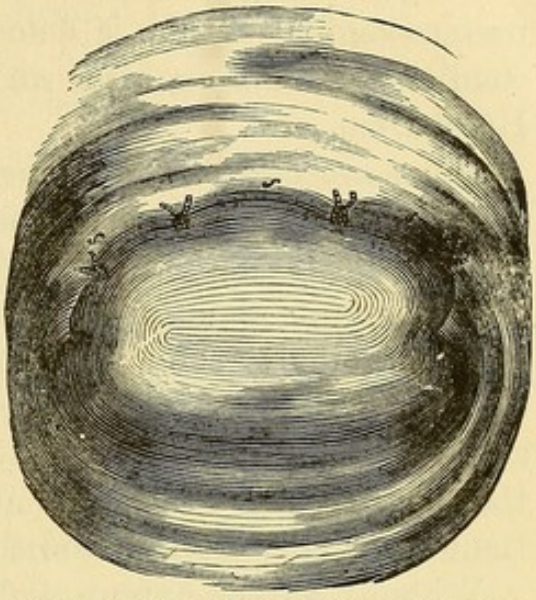
the cervix into the bladder. Menstruation will afterwards occur into that viscus, and the blood thus accumulating be discharged with the urine.

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, the first step of 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.

Fig. 63.



Anterior lip of fistula united to posterior lip of cervix. (Simon.)

To facilitate this procedure, the cervix may with great advantage be slit to the vaginal junction on each side, one-half denuded, drawn forward and made to fill the space left vacant by the sloughing of the vagina.

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 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.

There are eccentric and rare forms of fistula which I have not mentioned in my enumeration. For example, I have met with 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 was vesical and not ureteral was proved by the escape of colored fluid through the abdominal wound when injected into the bladder. This patient entirely recovered, and the fistula healed of itself.

Where a larger extent of denuded surface is required than can be obtained by paring the edges of fistulæ, Langenbeck and Collis have resorted to the following plan. Splitting the edges of the fistula, they have separated the two flaps thus produced, and bringing the opposing raw surfaces together, have secured them by suture.

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.:

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[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 occurence, and describes his "usual plan for overcoming this obstacle," when he has reason to fear its occurrence from cutting of the ureter."

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 feces, may evidently produce them.

Ulceration or abscess much more frequently produces 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.

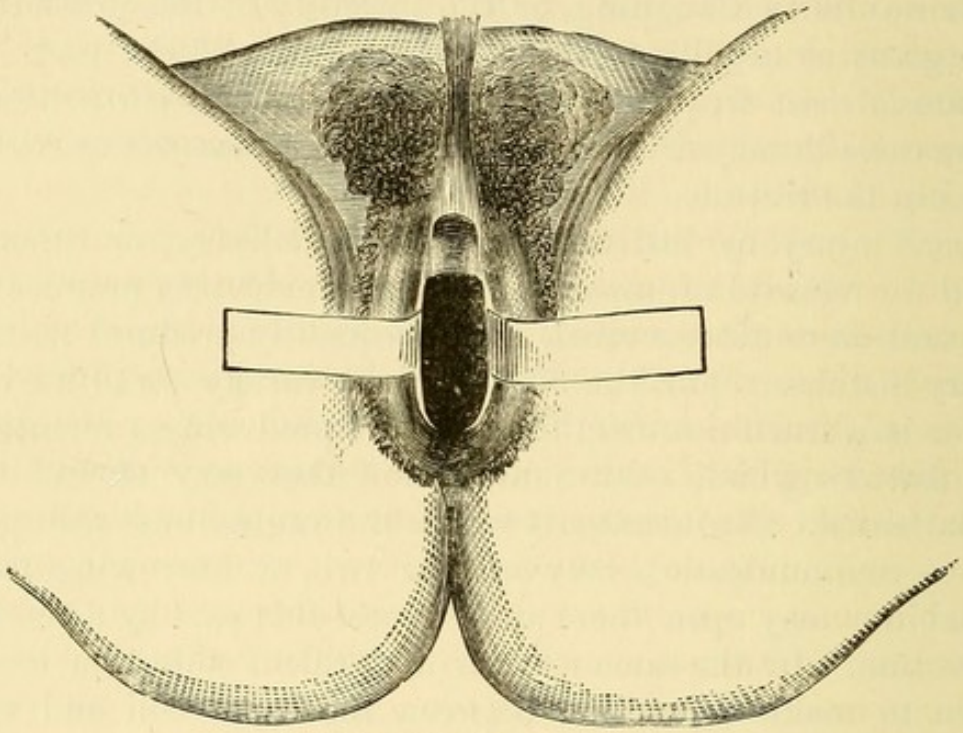
Symptoms.—The most prominent, often the only symptom which will attract the patient's attention, will be a discharge of offensive gas or fecal matter by the vagina. The amount which escapes will of course be governed by the size of the fistula, but the annoyance dependent upon the accident will not be 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 semi-fluid 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. 64.



Examination for fecal fistula.

Treatment.—Recto-vaginal and recto-labial fistulæ should always be treated by 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. Before operation, the sphincter ani muscle should always be paralyzed by thorough stretching by the fingers, and after it a rectal tube should be retained, unless very annoying to the patient. After the operation, too, 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.

In one case of recto-vaginal fistula I have introduced the speculum into the rectum, and closed the fistula on the rectal surface. The facility with which the operation was performed was surprising.

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 are 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, etc. etc.

CHAPTER XII.

GENERAL CONSIDERATIONS UPON UTERINE PATHOLOGY AND TREATMENT.

Nothing more decidedly retards the progress of gynecology, lowers it as a special study in the eyes of the sister departments, and fans the dying flame of a prejudice with which it has been able successfully to contend only during the past half century, than the unsettled state of uterine pathology. In general medicine, in surgery, and in all other special departments, the study of pathology is made the keystone of the arch which supports them; and observers seem willing to agree as to fixed principles concerning it. In gynecology, this whole subject presents the melancholy aspect of uncertainty and dissension. Many of its votaries, instead of taking broad and strong views, become the partisans of some special dogma or theory, which is warmly attacked by others who hold some view equally narrow, incomprehensive, and exclusive.

As a result of this state of pathological confusion among the leading minds devoted to the department, every newly-fledged specialist feels warranted in elaborating and maintaining a theory of his own; or, in attaching himself to one of the many which present themselves for his choice.

All must admit that to this department to-day as many able, zealous, and industrious laborers are devoted, as to any other in medicine. Why should such a body weaken its influence by adherence to dissentient and partisan views? Why is one impelled to entertain 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 truth lies not in any *one* of these theories, but is to be found to a certain extent in each. No pathologist claims that hepatic, or cardiac, or renal disease has always the same pathological origin; why should any one expect to find for uterine disorders a universal pathogenic factor?

At no period in modern times has this department been so favorably and respectfully regarded by the science of which it is a part, as at present. Now, then, has the time arrived when every one of its well-wishers should strive to obliterate all factions and parties, to free it from dogmas and narrow views, and place it where it should always have stood, upon the broad platform of an enlightened pathology.

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 reacts upon the other two conditions which I have stated are essential to health—normal innervation and circulation, and an unaltered state of the structure of the organ.

Again, a uterus may be in a perfectly normal state in every respect, when suddenly it becomes retroverted. As a consequence, innervation and circulation are at once disturbed, congestion occurs, a hypergenesis of tissue gradually takes place, and thus what was originally merely a displacement becomes a condition of congestion, enlargement, and chronic catarrh.

The position 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; 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.

Let us now proceed one step further. Those primary pathological conditions which most commonly produce disorder in the three elements which I have mentioned, may be said to constitute the especial factors of uterine disease. What are they?

1st. Catarrhal inflammation of the lining membrane.
2d. Prolonged congestion of uterine tissues.
3d. Excessive growth of connective or muscular tissues.

In the beginning one only may exist, uterine catarrh, for example; in time this may induce another, congestion in the parenchyma; and still later, this excessive blood supply may result in a third,

hypergenesis of connective tissue. Whatever then tends to induce and keep up any one of these three morbid states, tends directly to the establishment of confirmed uterine disease, and the consideration of this point brings us to the investigation of the individual pathological agencies which ordinarily produce such a result.

1st. In the very large majority of cases of uterine disease, the first link in the morbid chain is subinvolution—which produces as direct consequences, passive congestion, hypersecretion by lining membrane, menstrual disorders, displacements, sterility, and interference by pressure with neighboring organs.

2d. A certain number of cases is produced by disordered uterine circulation and innervation, the results of displacement of the uterus, either as a whole or by bending of itself upon its axis. Such displacement or distortion induces passive congestion, hypergenesis of tissue, dysmenorrhœa, sterility, and endometritis.

3d. A certain number of cases arises from primary catarrhal inflammation of the lining membrane of the uterus itself. This, commencing as an entity, results in hypergenesis of tissue, displacements, menstrual disorders, and sterility.

4th. In a number of cases by no means small, the circulation, innervation, and size of the uterus are interfered with by obstruction to the escape of menstrual blood. Such obstruction distends the uterine cavity by the imprisoned menstrual discharge, inflames its lining membrane, and results in leucorrhœa, dysmenorrhœa, hematocele, and flexions.

5th. In some cases the uterus is, by sympathy with diseased ovaries, kept in a condition of exalted innervation and deranged circulation, which, in time, eventuates in congestion of the whole organ and hypersecretion by the mucous lining. As consequences of these states, there appear as symptoms leucorrhœa, menstrual disorders, displacements, sterility, etc.

6th. The development of benign or malignant growths, consisting of hyperplasia of one or more of the uterine elements, often deranges the innervation, circulation, and proportionate weight of the uterus, and results in displacements, sterility, menstrual disorders, leucorrhœa, pelvic pains, mechanical interference with surrounding organs, etc.

7th. The uterus, although not primarily affected, may become displaced and congested from interference by contracting lymph, exuded in contact with it and over its surface, as a consequence of pelvic peritonitis. Such displacement and congestion may result in excessive growth of tissue and endometritis.

8th. Disease not only of the neck but of the body, and not only of the mucous membrane but of the proper tissue of the organ, is often induced by laceration of the cervix which results in eversion and the exposure of a large and vulnerable surface to friction and injury during coition and exercise.

Let the pathological state which establishes the disorder be what it may, after it has continued for some time and its instrumentality has resulted in fixed disease, the following symptoms develop as characteristic of such disease: leucorrhœa; menstrual disorders; pain in back, loins, and pelvis; sterility; hysteria or nervous symptoms; gastric, intestinal, and vesical derangements, etc. They are confined to none, but in time mark all.

With these facts before him, the student may well ask, how any logical mind could consent to adhere to an exclusive pathological doctrine, ignoring or denying others of unquestionable importance and significance? It has, I think, been done by confounding cause and effect. He whose mind is hampered by the theory of inflammation, will find it in every case of long standing, in the mucous membrane, for congestion of this produces hypersecretion; and in the parenchyma, because hypernutrition in this part has resulted in hypergenesis of tissue. The uterus is large, tumefied, secreting excessively, and tender to the touch; all these prove for him "inflammation" to exist. In the great majority of cases in which a diseased uterus is examined after it has been in an abnormal condition for a long time, the following physical signs will be discovered:

1st. The uterus will be larger than normal.
2d. Catarrh of the lining membrane will exist.
3d. The vaginal face of the cervix will be in a granular condition.
4th. The uterus will be displaced.
5th. The ovaries will be found slightly enlarged and sensitive.

Here are five theories offering themselves for adoption, and in a conclave of five consultants, each might hold an unassailable ground, and each might possibly be right. But, as no one has the key to the progressive development of the complex condition, no one can prove himself so. According to my observation, the analysis of this collection of morbid states, which most frequently furnishes the key to their solution, is this:

Involution of the uterus was interfered with some years before, and subinvolution existed for a while, and gradually resulted in

areolar hyperplasia;[1] this soon resulted in displacement, which impeded venous action; from this, a uterine catarrh arose, which excoriated by its discharge the vaginal face of the cervix; from this cause, combined with friction, granular degeneration took place; and the irritation transmitted by this complication of irritating influences created enlargement and sensitiveness of the ovaries.

I say, that, according to my experience, the most common factor of this series is subinvolution; but I do not say that it is the universal factor. It may be that all these lesions arose from congestion due to retroversion which has been neglected, and has long prevented free venous return. Or, perchance, the large granular surface, which has been called an "inflammatory ulcer," is an eversion of the cervical mucous membrane due to rupture of the cervix, which occurred five years ago in parturition, and has kept up nervous irritation and hyperæmia, which have resulted in all these "signs of inflammation."

Impressed by the fact that, with many of the physical and rational signs of inflammation, the enlarged, sensitive, and engorged uterus is not inflamed; one party has endeavored to cut the gordian knot by styling the anomalous state one of "irritability." But the term was badly chosen, and its introduction has accomplished more of confusion than of simplification—nor have the profession generally been willing to accept a name signalizing the nervous condition alone for a state characterized by congestion, hypergenesis of tissue, and coincident, probably resulting, nervous exaltation.

But, it may be asked, is not this condition of enlargement of the uterus after all a state of inflammation, of chronic metritis, however it may have arisen? I answer, no more a condition of chronic inflammation than is the enlargement of the tonsils which lasts for years in children; or than the tender, enlarged spleen, the ague cake of malarial poisoning; or than the enlarged testicle of syphilis. I do not deny the name and character of inflammation to suppurative tonsillitis or quinsy, to the orchitis of gonorrhœa or even to that very rare disease splenitis, which sometimes ends in suppuration. Let the unprejudiced reader reply to this question from his own observation: does the state of the uterus which we are

[1] Hypertrophy signifies excessive growth or enlargement of a tissue already existing: hyperplasia signifies the development of new tissue.

considering most resemble the former or the latter of these pathological states? I cannot doubt his reply.

These remarks apply not only to the partisan of the dogma of inflammation, but to those of all the others which have been adopted. He who wishes to sustain his views and his party by finding displacement will almost always do so, for a heavy uterus, which was in normal position in the beginning, generally falls from its place in time; he who looks for uterine catarrh will likewise be gratified, for a congested mucous membrane always gives forth an excessive secretion; and even he who will be satisfied with nothing but ovarian disease will often be able to sustain his theory, for chronic uterine disorder is very apt to affect in time these organs, which are so intimately in sympathy with the uterus.

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 physician, 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.

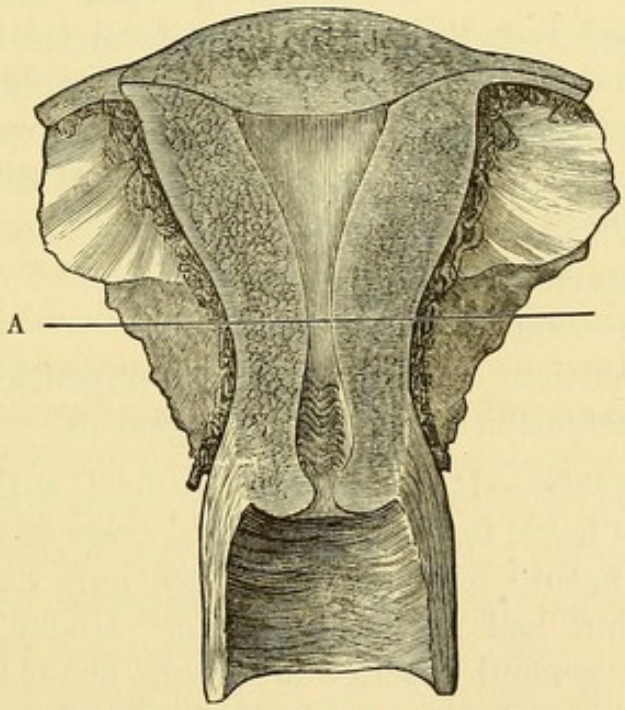
Another point which influences prognosis is this: in the management of uterine diseases it is of primary importance that the practitioner should enlist the interest and co-operation of his patient. Should she be apathetic with regard to the result, or even having begun treatment with enthusiasm, become 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 affected, 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

Fig. 65.



A represents the dividing line between body and cervix.

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.

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 running 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 always 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; and in this field of practice, fully as much as in others, honesty and sincerity should guide the practitioner. He who practises deception here, is surely no less culpable, although far more likely to escape detection, than the charlatan who makes it a rule of life.

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 endometritis 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 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, etc. 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 men-

strual 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. And here, unfortunately, the patient is liable to come in contact with the personal prejudice of her attendant; he does not approve of pessaries. Why? Because he has seen them do great damage! Yet he does approve of splints, of the catheter, of anæsthesia, and of opium! Very likely he has not given an hour to the investigation of this important subject in his whole professional career. How often do patients come to those specially treating these diseases, after years of treatment from such prejudiced practitioners, with anteversion, retroversion, or slight prolapse, and, obtaining immediate relief, ask in surprise the significant question, why was this not done long ago?

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, etc."

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, the results of an old subinvolution. 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 granular degeneration of the cervix still existing, though much improved.

It should not be forgotten by the gynecologist that chronic local disease is often caused by a general depreciation of the system. In some cases the lungs undergo chronic pneumonic consolidation, 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 lining membrane of the uterus may be clearly expressed in the following manner:

- Endometritis
  - Acute
    - General.
    - Cervical.
    - Corporeal.
  - Chronic
    - General.
    - Cervical.
    - Corporeal.

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 more likely to be confined to the body.

Causes.—The causes of acute endometritis are as follows:

Direct injury;
Cold from exposure during menstruation;
Constitutional disease 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 applications of chemical irritants, surgical operations, and intemperate coitus.

It is, probably, in some instances, 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 hemic 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, not infrequently 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 hematocele 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 septicæmia and peritonitis.

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, 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. All explorations of the uterus should, as a rule, be avoided. The probe, if used at all, should be employed with the greatest caution, and never unless passed through the speculum. The sound as ordinarily used should not be thought of. 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 even the introduction of the speculum 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. 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 periuterine cellulitis, pelvic peritonitis, and acute vaginitis. In the first two of these, constitutional disturbance is generally more marked and excessive than in this; they are often preceded by chill, and usually by more intense febrile action, and greater elevation of temperature. This, however, is not universally true. The last is very generally attended by a lesser degree of general disturbance. No positive conclusion can usually be arrived at without physical exploration, which, in pelvic inflammation, will discover fixation of the uterus, hardening of periuterine tissue, and excessive tenderness when parts other than the uterus are compressed by conjoined manipulation. It will generally be noticed that in cellulitis and peritonitis there is no great increase of uterine or vaginal discharge.

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

[1] Diseases of Females, American ed., p. 193.

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 result from it an infiltration and a softening, which are much greater in the layers of the parenchyma of the 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.

The first of these complicating conditions is of so much moment as to require special consideration.

The time has, I think, arrived when, with our present light upon the subject, acute parenchymatous metritis should be given a subordinate place in pathology instead of the prominent one which it formerly occupied. 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 peritonitis and cellulitis having been mistaken for metritis; and in great part from the difficulty of gaining post-mortem evidence, the disease generally being recovered from. As a complication of inflammation of the internal mucous or external serous covering of the uterus, parenchymatous inflammation is universally admitted. As a pathological entity, however, I question whether any well authenticated case of this affection is on record. The descriptions of the disease which are given in recent works, such, for example, as those of Courty, Gallard, and Scanzoni, each of whom devotes considerable space to it, appear to me to have come down to us as a matter of literary tradition rather than of clinical research.

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[1] Path. Anat. Female Sex. Organs, American ed., p. 231.

While searching for a case of pure uncomplicated metritis, I have 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.

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 slight 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

[1] Pathology Anat.

[2] Path. Anat. Female Sex. Organs, American ed., p. 231.

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 satisfy 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 nervous system, and a quieter of pain; it absolutely modifies the inflammatory process by its influence upon the nerves. The bowels, unless constipation exists, should not be acted upon by cathartics, and ordinarily no other medicine than opium should be administered. 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, etc. A condition of intestinal quietude should be encouraged, and therefore such food as involves the elimination of a small amount of excrementitious matter should be allowed. By these means motion in the abdominal cavity may be lessened and rest be assured to the diseased part. As soon as free 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 located in the uterus, not in 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 cervical canal, inject the vagina with solutions of persulphate of iron, keep the bowels constantly active by saline cathartics, etc., 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.

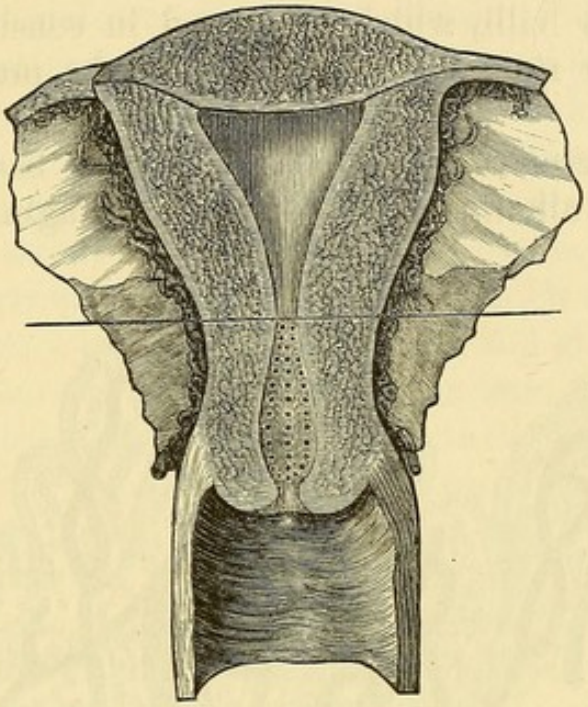
CHRONIC CERVICAL ENDOMETRITIS.

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, however, neither universal nor absolute, sometimes subjacent parts being more or less implicated, and at others the mucous membrane of 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 to the os externum, as represented by the dots in Fig. 66.

Fig. 66.



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.

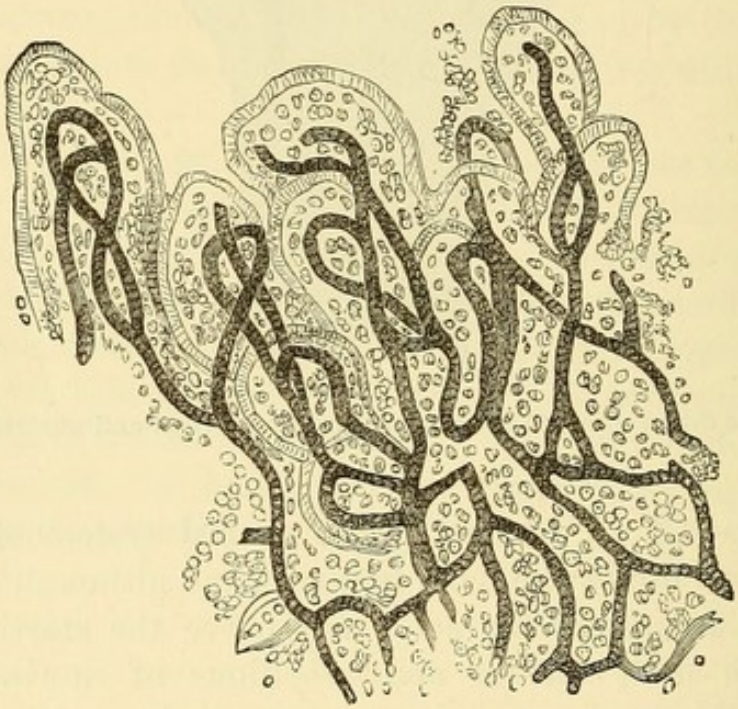
Anatomy of the Cervical Mucous Membrane.—The cavity of the cervix uteri is a fusiform canal, measuring about one inch and a quarter, beginning at the os internum above and ending at the os externum below. On the anterior and posterior walls of the cervix are ridges, from which folds are given off which are arranged with regularity, and run obliquely upwards and outwards, to end in other indistinct lines on the sides of the canal. This arrangement of mucous membrane has received the name of arbor vitæ.

Between these folds numerous mucous glands are seen, which are

called by some the glands of Naboth.[1] 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 upon the larger rugæ and other parts of the mucous membrane. (Fig. 67.)

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. 67.



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 mucous glands 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,[3] their

[1] A great deal of obscurity attaches to the nature and functions of these glands. Some regard the Nabothian glands as identical with the muciparous follicles, others look upon them as occluded glands distended by their retained secretion.

[2] On Leucorrhœa, Am. ed., p. 38.

[3] Mal. de l'Utérus, p. 423.

mouths may be seen very much dilated. In some cases it becomes complicated by granular degeneration. 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.

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;
Impoverishment of the blood from chlorosis or other cause;
Prolonged mental depression;
Insufficient nutriment;
Excessive lactation;
Frequent parturition;
Subinvolution;
Styles of dress which depress the uterus;
Want of exercise and fresh air.

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 these influences should especially produce this disease. My answer is, that they do not do so. Sometimes they cause chronic pneumonia; at other times granular eyelids; 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;
Laceration of the cervix.

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 the predisposing causes, it will often prove 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 practice of 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 in 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 may now show themselves. The discharge may be either too scanty or too profuse, too frequent or too infrequent, and to a certain extent painful; sometimes, though not often, 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 vaginitis 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 a deterioration in the nutrition of the patient.

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. 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 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 to be somewhat enlarged. Its tissue may present a swollen, puffed appearance, or be intensely red as if in a state of granular degeneration, which will upon close inspection be found to be due to removal of its investing epithelium and the occurrence of hypertrophy of the villi. Should this condition exist, it will afford relief to the mind of the inexperienced gynecologist, 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 degeneration exists, in fact nothing is found explaining the backache, nervousness, impaired nutrition, and profuse leucorrhœa which led him to advise and urge the examination. The case is simply one of cervical endometritis which affects the glands of the canal without having produced granular degeneration.

It is often a matter of great difficulty to decide whether endometritis is confined to the neck or extends through this part into the body. In many cases a certain conclusion is impossible. The

evidences by which it may be usually arrived at are these: in the former case the neck alone is found enlarged and tender to touch, conjoined manipulation, and the probe; in the latter, the body also shows these signs of the implication of its tissues in the morbid action. The discharge resulting in the former is more thick, tenacious, and difficult of removal than in the latter variety. Lastly, the constitutional symptoms attending the latter are ordinarily graver than those created by the former.

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 frequently passes, in multiparous women, 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 this affection will depend upon the degree of glandular disease accompanying it. If the mucus which marks inflammation of the glands be slight in amount, and not very tenacious in character, whatever be the extent of coincident granular degeneration, the prognosis is favorable. When, on the other hand, there is little granular disease, and a large amount of thick, resisting mucus hangs from the cervical canal, the prognosis, according to my experience, is very doubtful, and sometimes hopeless, unless very radical measures be adopted. If each will look back into his experience, he will see that in all severe cases he has either been forced to resort to measures which absolutely destroy the diseased glands for their cure, or that the patients in time, wearied of his insuccess, have gone for treatment elsewhere. Let it be remembered that I allude now only to very severe cases where the glands are profoundly involved. In regard to such, I feel sure that the experience of others must agree with mine.

Even in minor cases 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.

Treatment.—The disease consisting in cervical endometritis, the efforts of the practitioner should be directed to producing an alterative influence upon a mucous membrane which is in a condition of chronic inflammation, and the avoidance of all influences which may cause it to spread to adjacent tissues. These ends will be best accomplished by the following means:

General regimen;
Emollient applications;
Alterative applications;
Ablation or destruction of the diseased glands.

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 contra-indication 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 ten or fifteen minutes without fatiguing the patient or proving a source of annoyance to her. The methods for doing this are so fully described elsewhere that they need not be repeated here.

In many cases of this 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 profoundly involved the cervical glands, resort must be had to applications to the diseased surface through the speculum.

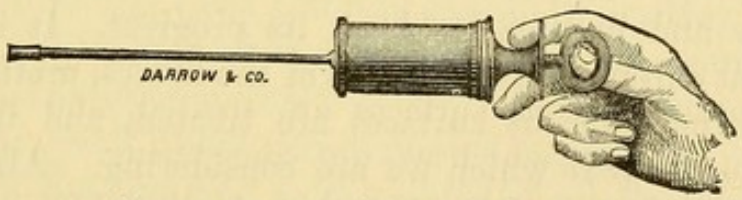
In cases in which the lining membrane of the cervix is in a condition of granular degeneration, and the mucous glands are very little affected, cure can be almost as readily accomplished as where the same granular disease exists on the vaginal face of this part. But such cases will be treated of under the caption of "Granular Degeneration of the Cervix;" they do not properly come under consideration at the same time with the more obstinate disease of the glands. To make this statement more clear; cervical endometritis consists of glandular inflammation, which is sometimes complicated by granular degeneration. In some cases the glands are very slightly diseased, while the villi of the canal are decidedly so; these come under consideration rather as "Granular Degeneration," which will be treated of elsewhere, than of true endometritis.

Alterative Applications.—It will be found that cervical endometritis, existing in a canal the os externum of which is contracted, will always prove much more difficult of cure than in one where this part is dilated. The degree of dilatation will generally be found to exert a marked influence over the tractability of the case. When then it is discovered that the disorder does not disappear under the influence of time, and the simple measures already mentioned, as one of ordinary catarrh, it is always advisable to dilate this part before proceeding with more decided measures. If this be neglected, and the practitioner satisfy himself with passing through the constricted orifice, nitrate of silver, iodine, pencils of zinc, alum, iron, etc., once or twice a week, no good whatever will result. After months, or even years, of treatment, he will discover that the mild means which he has adopted have left the disease uncon-

trolled; or that the severe ones have increased contraction of the os, which renders menstruation difficult and painful.

The best and simplest method for overcoming the difficulty, is to snip the external fibres of the os by scissors for a quarter of an inch, touch the raw surfaces thus made with nitrate of silver or solution of persulphate of iron to prevent union, and keep plugs of greased lint or cotton in the canal for a week. Should there be any objection to this procedure, which is painless, free from danger, and effectual, the same thing may be imperfectly accomplished by repeated dilatation by metallic sounds, or by the use of a tent of sea-tangle or sponge. The use of a tent which dilates the os externum, not passing within the os internum, is to a certain extent free from the dangers attaching to those which invade the body. The os externum having been dilated by one of these methods, the first if there be no special objection to it, so that free escape of the secretion of the muciparous glands may occur, the canal must be thoroughly cleansed. Unless this be systematically done it will be imperfectly accomplished, and the thick, tenacious material will completely shield the diseased glands and neutralize any chemical agent before it can reach them. The most efficient means for removing this plug is the syringe represented in Fig. 68. It is a syringe of hard rubber, two inches in circumference, holding an ounce, and so arranged as to be worked with one hand, the index and middle fingers surrounding the neck, and the thumb retracting the piston. Upon the extremity of its long pipe is slipped a bit of gutta-percha tubing, the free portion of which projects half an inch. This free portion readily enters the cervix, and goes up to the os internum. When introduced, the piston is powerfully retracted, the mucous plug is sucked in, and the cervix is left entirely clean.

Fig. 68.



Syringe for removing cervical mucus.

Where the material which covers the os is purulent or starchy, and not tenacious, a stream of water may be projected from this syringe against the cervix, and the whole be removed by suction;

or this 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.

Fig. 69.



Rod eight or nine inches long, wrapped with cotton.

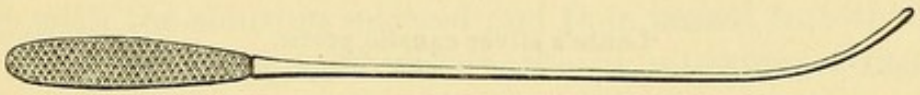
When the characteristic plug of tenacious mucus is present, there are but two methods which entirely remove it: one is the exhausting syringe; the other the use of a dry sponge as large as a raspberry fixed in a long-handled sponge holder, or held in long dressing forceps, and passed into the cervical canal and rotated so as to entangle the thick mucus. 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. After having been cleansed by one of these methods, the cervical mucous membrane is exposed, and applications can be made to it with some prospect of their coming in contact with the diseased glands embedded in the jungle of convolutions which constitute the arbor vitæ. A neglect of the systematic removal of this material, I believe often prevents cure, and hence I am so minute in reference to what may appear an insignificant point.

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 inflammations of the fauces, urethra, bladder, and many other mucous surfaces are treated, and it is equally applicable to the part which we are considering. Alterative and escharotic substances may be applied to the lining membrane of the cervix uteri in the following ways: by painting solutions over the canal by a brush or dossil of lint, by touching the whole diseased area with drugs in solid form, or by leaving them for varying lengths of time in contact with the walls of the canal in a solid

form, or upon cotton which has been saturated with solutions of them.

Should the case be one of short standing and of no great degree of severity, the cervical canal should be thoroughly painted over with the compound tincture of iodine, a strong solution of nitrate of silver, glycerine saturated with tannin, or a saturated solution of sulphate of zinc, or copper. This may be done by using a brush of pig's bristles, which is far superior to one of camel's hair; or, by wrapping cotton around a delicate probe of silver or whalebone and saturating this with the solution. Emmet's silver or Budd's vulcanite probe answers an excellent purpose.

Fig. 70.

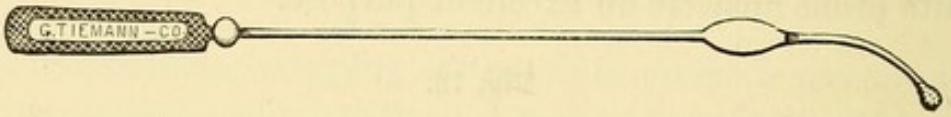


Budd's elastic probe.

Should the practitioner prefer to use 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, etc.; 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. 71 and 72 represent the probe and cup.

Fig. 71.



Lente's silver caustic probe.

Fig. 72.



Lente's cup for fusing nitrate of silver.

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.

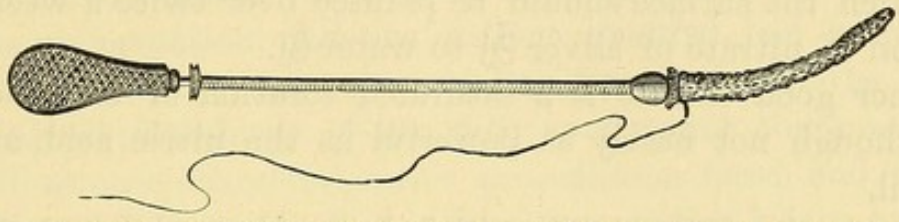
After such an application, a stream of water should be projected against the cervix, and a pledget of cotton, which has been freely saturated with glycerine, with a bit of thread attached, should be placed against it. By means of the thread this may be removed by the patient in twelve hours.

The walls of the cervical canal may also be thoroughly cauterized by the introduction and retention of Braxton Hicks' crayons of sulphate of copper, iron, zinc, or alum cast in a mould of the length and size of the canal. Those which I have seen are imported from London. They are introduced into the cervical canal and kept *in sitû* by a roll of cotton. The zinc points may be allowed to dissolve, as they give no pain in doing so. Those of iron, alum, and copper should have a thread attached by which the patient may remove them when they cause discomfort.

Alteratives in combination with cocoa-butter may be 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.

Fig. 73 represents an instrument, originated by Dr. Sims, which consists of a silver probe surmounted by a slide, by means of which a roll of cotton soaked in any medicated solution may be left within the cervical canal.

Fig. 73.



Silver probe with cotton wrapped around it and thread attached.

Two inches of the probe are wrapped with cotton which is soaked with the solution selected and then passed into the cervical canal so as to be engaged within the os internum. The roll of medicated cotton is then slid off by the slide and retained within the canal, while the probe is withdrawn. In twelve hours the patient makes traction upon the thread attached to the cotton and it is removed.

Destruction and Ablation of the Diseased Glands.—As every gynecologist must have found out by annoying experience, there are cases of this affection which prove incurable by any and all of these means. They are instances not of granular disease, but of aggravated inflammation of the mucous follicles. It is in these cases that 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 but one resource remains, that is to fulfil the indication which is so often elsewhere adopted in surgery, to destroy or remove the habitat of a disease which is not susceptible of cure. This has been done by some, by the use of potassa fusa and the actual cautery, but against both I would strongly advise, for they produce a great deal of subsequent cicatricial contraction. Dr. John Byrne informs me that he introduces with good effect an electrode of the galvanic cautery, which fits the canal, to the os internum, and then by establishing a current makes it white hot. I know nothing of the plan personally.

One of the best chemical agents for destroying the glands is fuming nitric acid. This should be carefully applied to the canal

by means of a film of cotton wrapped around the silver probe, after the canal has been thoroughly cleansed. After its use, a stream of cold water should be thrown by the syringe against the cervix and a wad of cotton saturated with glycerine applied. In ten days or a fortnight a slough of the cervical mucous membrane will take place, after which the surface should be painted over twice a week with a solution of nitrate of silver ℈j to water ℥j.

Another good caustic is a saturated solution of chromic acid, which, though not nearly as powerful as the nitric acid, answers very well.

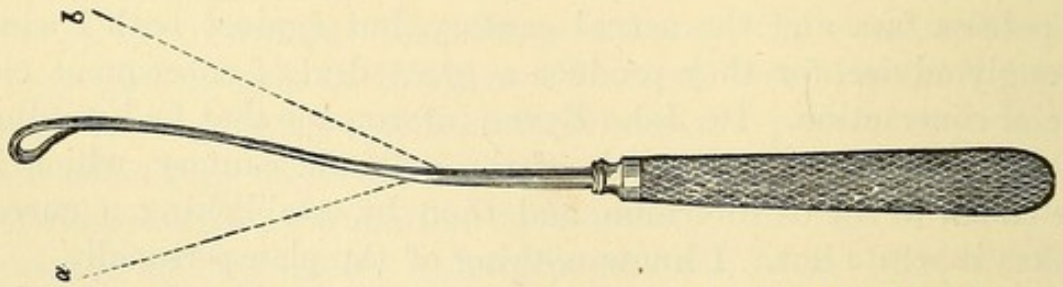
These are the only agents which I would recommend for this purpose. Nitrate of silver is not sufficiently powerful, and potassa fusa and the actual cautery are too destructive in their results.

In alluding to these cases Dr. West[1] says, "I am disposed to think, however, that in the most obstinate cases it may be expedient to adopt a suggestion of M. Huguier, of which I have but small experience, though I have followed it with benefit on two or three occasions. He is accustomed to scarify the interior of the cervical canal with a small, curved, narrow-bladed, blunt-pointed bistoury before introducing the caustic. The previous scarification exposes the more deep seated follicles, which would otherwise altogether escape the action of the remedy; and while M. Huguier states that he has never known any mischief follow this proceeding, he has by its repetition two or three times effected the cure of cases that resisted every other mode of treatment."

In these very obstinate cases I have repeatedly resorted to a surgical procedure which accomplishes the removal of these glands, and which I have never seen followed by subsequent contraction or inflammation.

This consists in the application of the cutting steel curette, represented in Fig. 74, so forcibly as to remove the arbor vitæ and

Fig. 74.



Sims's curette, representing the angles at which it may be bent.

[1] West, op. cit.

mucous glands from the os internum to the os externum. Sometimes a second operation 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.

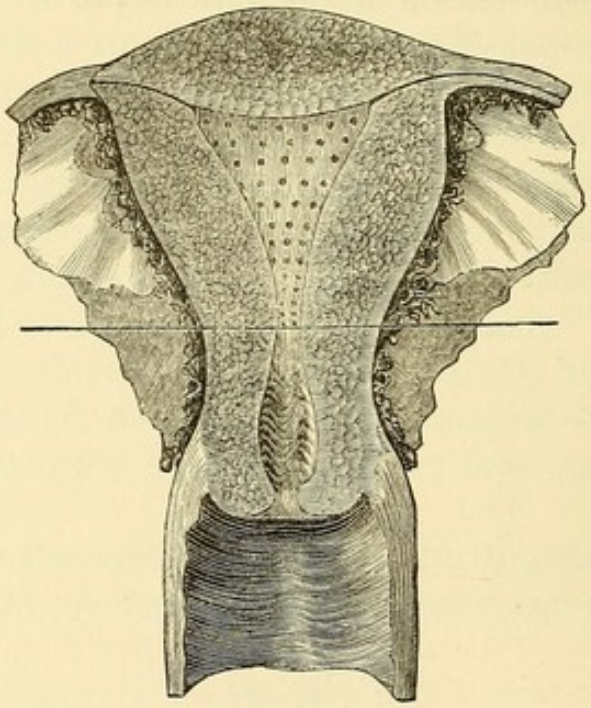
CHAPTER XV.

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. 75.

Fig. 75.



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

[1] Mal. de l'Utérus, p. 408.

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,[1] of Chicago, in his excellent work on Medical and Surgical Treatment of Women: "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 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 gynecology 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. The 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 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.

Anatomy.—If the mucous membrane of the uterus be examined with a lens, it will be seen to be studded with minute openings

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[1] Op. cit., p. 182.

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 favorable and unfavorable 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 of 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;
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:

[1] Scanzoni, Diseases of Females, Am. ed., p. 202.

Scrofula;
Tuberculosis;
Spanæmia;
Exhaustion from parturition;
Exhaustion from 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;
Subinvolution;
Displacements causing great congestion;
Chronic pelvic peritonitis;
Abuse of sexual intercourse;
Injury from sounds, or intra-uterine pessaries, and injuries resulting from attempts to produce abortion;
Certain hemic conditions, as those accompanying phthisis and the 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 passes 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. This repeated dilatation and contraction cannot last long without exciting inflamma-

tion in the mucous membrane of the uterus. 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, or uterine flexion.

The parturient process is a very frequent source of the disease, especially where the undeveloped placenta is prematurely separated from its uterine connection. Where, 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 might result.

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 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 may be correct.

Acute endometritis may, instead of subsiding entirely, very naturally run into this disease.

Subinvolution of the uterus keeps up a constant tendency to hyperæmia of the parenchyma which affects the mucous membrane. As a complication of this condition corporeal endometritis is more commonly observed than as a consequence of all the other causes combined.

Pelvic peritonitis disturbs the position, the innervation, and the circulation of the uterus, and proves a fruitful source of endometritis.

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[2] 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

[1] Op. cit., p. 75.

[2] Op. cit., p. 234.

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 injurious influence on the digestive system, but the taking of food by a dyspeptic who has abused and injured the organ, may do so.

Injuries from sounds, etc., 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.

Vaginitis of non-specific character may, and of specific form often does, pass by continuity of structure into the neck and body of the uterus. The latter has in these cases in my experience not only affected the body, but the Fallopian tubes, resulting in peritonitis.

Symptoms.—The symptomatology of corporeal endometritis constitutes one of the most unsatisfactory and obscure subjects in the entire field of gynecology. 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 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 accompanies or excites areolar hyperplasia, which induces displacement and causes pain on locomotion, sexual intercourse, and the passage of feces through the rectum; or results in an ichorous discharge, which creates the annoying symptoms of vaginitis, cystitis, or pruritus vulvæ. The chief symptoms which usually present themselves in a case of 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 cervical 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 a reliable and valuable, though by no means a universal, 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 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.

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 often simultaneously 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 an evidence of chronic corporeal endometritis.

Pain in the back, groins, and hypogastrium is generally present,

[1] Op. cit., p. 76.

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 this affection 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 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. 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, and create more discomfort than in a healthy uterus. Upon conjoined manipulation, two fingers being placed in the fornix vaginæ, and the fingers of the other hand made to depress the anterior wall of the abdomen, sensitiveness will usually 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 corporeal endometritis. Lastly, dilatation of the os internum may be taken as a corroborative sign.

Course, Duration, and Termination.—This disorder often lasts for years; in the case of a multiparous woman confining itself to the mucous membrane; in that of a woman who has borne children gradually exciting congestion and exuberant growth in the subjacent parenchyma. This is the most frequent result exerted upon the parenchyma, but it may be affected in two ways: 1st, a hyperplasia, or excess of nutrition, may occur; 2d, an aplasia, or want of nutrition, may take place, and dilatation and distention eventuate.

Complications.—The most ordinary complications met with are displacement, vaginitis, granular degeneration of the cervix, and pruritus vulvæ.

Treatment.—Special attention should be given to sustaining and improving the general health of the patient, which will often 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 be 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.

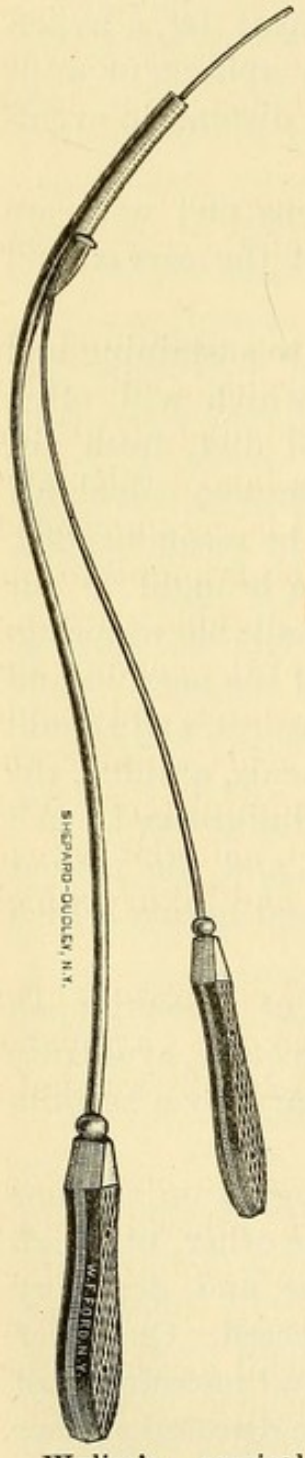
The uterus should be placed at rest by removal of pressure upon the fundus by clothing, limitation of marital intercourse, avoidance of violent and intemperate exercise, and if necessary, by a sustaining pessary.

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.

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 still resorted to for combating this rebellious affection. There are four methods by which it may be practised: 1st, by the use of solutions painted over the surface; 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 dilators 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 a short, 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 through the cervical canal a small and delicate cervical speculum. That shown in Fig. 76 is one of the best of its kind.

Fig. 76.



Wylies's cervical speculum, with probe passing through it.

Having previously wrapped the silver or hard rubber probe with a film of cotton, he now passes this up 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 gently moves it over the surface. 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, until the next day at least, and if any discomfort exist, for several days.

In place of the cotton-wrapped probe, the painting of the uterine surface may be very thoroughly accomplished by the use of a small brush of pig's bristles dipped in the solution, and passed through the cervical speculum.

The alteratives which may be thus employed are:

Solution of chromic acid ʒj to ℥j water;
Solution of nitrate of silver ℈j or ʒss to ℥j of water;
Compound tincture of iodine ℥ss to ℥ss of glycerine;
Saturated solution of sulphate of zinc;
Saturated solution of sulphate of copper;
U. S. D. solution persulphate or perchloride of iron with equal parts of glycerine;
Solution of chloride of zinc ʒj to ℥j water;
U. S. D. muriate tincture of iron ʒij to ℥j water;
Saturated solution of carbolic acid.

By the admixture of water, glycerine, or alcohol, these solutions may be weakened to any extent desired. I would advise against the use of strong caustics in endometritis occurring above the os internum, upon the ground that I have not seen them accomplish as much good as the same substances in alterative strength. There are certain conditions of disease in this part resulting from chronic inflammation for which I shall recommend them, but these are consequences of the disease and not the disease itself. I would not in the condition which we are considering employ the nitrate of silver in solid form, pure chromic acid, or fuming nitric acid.

Use of Ointments.—The application of ointments to the lining membrane of the uterus is so inconvenient and disagreeable a process that I cannot recommend it. It possesses no special advantages. It is proceeded with in much the same manner as that of fluids, except that a different instrument is, of course, necessary for their introduction. One which answers the purpose very well is the invention of Dr. F. D. Lente. It consists of a syringe with a silver tube attached. The ointment to be employed is put into

the syringe by a spatula, 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, etc.—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 Alteratives of Solid Character to the Endometrium.—Substances of solid character which will melt under the influence of the heat of the body may be introduced into the uterine cavity in the form of suppositories or pencils. The pencils of zinc, copper, alum, or iron mentioned in the last chapter may be thus employed, or suppositories made with cocoa-butter, or according to Becquerel's formula, may be used instead. Becquerel's formula is the following:

℞.—Tannin, 4 parts;
Gum tragacanth, 1 part;
Bread crumb, q. s.

One to be gently pushed into the uterine cavity and allowed to melt, every four days.

Upon first trying an intra-uterine suppository or pencil of a certain strength, I should advise that a thread should always be attached to it in order that it may be removed by the patient in case of pain. After testing in this way, the thread may be dispensed with, but, as a preliminary precaution, its necessity is great. Cases are met with in which a few drops of water in the cavity of the uterus will cause pain, and I have seen the cautious introduction of the uterine sound cause violent epileptiform convulsions. Should such a result follow the introduction of a medicated pencil which has slipped out of reach, the position of the introducer would be an unfortunate one.

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 some 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

[1] Beitrage zur Therapie der Chronischen Metritis. Berlin, 1868.

[2] Amer. Journ. Obstet., vol. i, p. 377.

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 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,[1] Jobert,[2] and others. A case of sudden death from entrance of air into the veins has been met with by Bessems,[3] who, in post-mortem examination, "found air-bubbles in the vena cava and heart." Another case ending thus suddenly is reported by Dr. Warner,[4] of Boston, as occurring at the Charity Hospital of St. Louis, where "a small quantity of water injected into the uterus occasioned immediately 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:[5] "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[6] 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 anti-

[1] Amer. Journ. Med. Sci., April, 1870, p. 566.
[2] Bennet on the Uterus, p. 287.
[3] N. Y. Journ. Obstet., vol. i, p. 394.
[4] Boston Gynæcological Journal, vol. ii, p. 286.
[5] Dis. of Women. Am. ed., p. 110.
[6] Mal. de l'Utérus.

phlogistic 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 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 is a valuable resource in endometritis, 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 them, and that they are 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 dis-

orders 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 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 "such a 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 gynecologist 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-salpingian orifices? Post-mortem examination proves this to be the case.

[1] Gantillon on Uterine Catarrh, pamphlet, 1871.

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 occasional relation as 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 this subject I will embody in a series of propositions the most important facts connected with it.

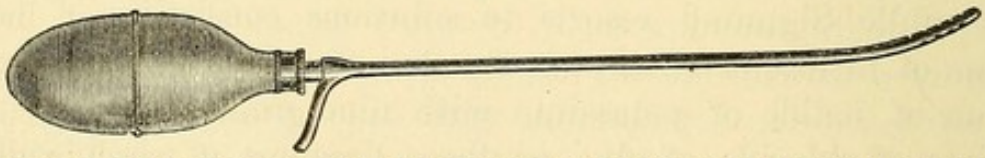
1. Intra-uterine injections may produce death even when simple and unirritating fluids are employed, by peritonitis due to absorption of the fluid and subsequent phlebitis; passage of fluid into the peritoneum; endometritis (?); or by sudden entrance of air into a vein.

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. One of the most effectual and safe of these is the instrument shown in Fig. 77.

Fig. 77.



Molesworth's double canula and bulb syringe for injecting the uterine cavity.

When the India-rubber bulb is squeezed, the fluid which it contains escapes from holes in the end of the canula, and at once returns through another tube which lies alongside of it. Then, as the compression of the bulb ceases, a vacuum is created, which sucks back every superfluous drop.

b. The best substances for injection 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 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 periuterine cellulitis has 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 fungoid 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 gynecologist 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 gynecologists.

CHAPTER XVI.

AREOLAR HYPERPLASIA OF THE UTERUS—THE SO-CALLED CHRONIC PARENCHYMATOUS METRITIS.

Definition and Nomenclature.—One of the most common pathological combinations which confronts the gynecologist is that which I here endeavor in as concise a manner as possible to picture. A patient calls upon him for relief of backache; pelvic pains; dragging sensation about the loins; "bearing down pains;" leucorrhœa; menstrual disorder, tending chiefly to excessive flow; throbbing sensation about the uterus; general feeling of despondency; malaise and weakness; and irritability about the bladder and rectum. All these rational signs pointing to the uterus as the probably delinquent organ, a physical exploration is made, and furnishes the following results: the uterus is usually discovered to be in the condition of descent, retroversion, or anteversion; it is voluminous, tender to the touch, and evidently engorged with

[1] An interesting essay upon this subject may be found in "The Journal of the Gynecological Society of Boston," vol. i.

blood; from the cervical canal a leucorrhœal matter pours; the probe carried to the fundus finds it tender, and creates the flow of a little blood; the cervix is often in a condition of granular or cystic degeneration; and a low grade of vaginitis exists.

To this pathological combination the more superficial diagnostician will often apply a name which announces one only of the existing conditions; as, for example, uterine catarrh, ulceration of the cervix, or retroversion or prolapse. The more reflective and intelligent examiner will ordinarily group the coincident morbid states together under the name of "chronic metritis."

The latter would be fully sustained in his position by authority as abundant as it is orthodox, for by systematic writers, since the days of Récamier, this uterine state has been described as one of "chronic parenchymatous metritis." Only within a very recent period have the pathologists of the German school begun to question the validity of this conclusion, which, taking its origin in France, was spread through England and America chiefly by the writings of Dr. Henry Bennet. According to this view the following pathological changes were believed to be those resulting in the condition just described. In the first stage the 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 enlarge-

ment, congestion, and tenderness upon pressure, the microscope now proves to have been instances of excessive growth of the connective tissue of the uterus, with congestion, and resulting hyperæsthesia of its nerves.

It may result from three entirely different pathological states; first from interference with retrograde metamorphosis of the puerperal uterus from any cause; second, from congestion long kept up by mechanical causes, such as displacement; third, from a formative irritation or state of hypernutrition excited by endometritis, or the existence of fibrous tumors. Whatever be the originating pathological condition, that which results and which we are now considering consists in hyperplasia of connective tissue as its most marked feature, and of congestion and nervous hyperæsthesia as important accompaniments.

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, but this is by no means the signification which is ordinarily given to the term. 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 this city:

"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?"

It is not an entirely correct statement that this pathological doctrine originated in France. Upon the revival of gynecology in that country by the labors of Récamier, it likewise revived and assumed important proportions. But 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 scepticism, but absolutely creates controversial discussion, and forms sects and factions, where all should be united for the

common good. "All must mourn," remarked the late Professor Hodge, "over a discrepancy of opinion which bears so directly on the treatment of such painful and distressing maladies." "We cannot but believe," says Meredith Clymer, "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 gynecology, 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 vessels," 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

[1] Uterine Disorders, p. 218.
[2] Dis. of Women, p. 363.
[3] Op. cit., p. 129.
[4] Med. Record, No. 92, p. 475.

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 gynecology are rapidly gaining ground, are not sustained by analogical reasoning, but by anatomical 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[1] 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." Certainly the "anatomical point of view" is an important one, and it is supported by what we observe from a clinical stand-point.

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 desirable, but has become absolutely essential. It is incontestable that there is a peculiar condition that affects the uterus which is characterized by distention of bloodvessels from vital or mechanical cause; effusion of the serum of the blood; and hypergenesis of connective tissue. To denote this state, gynecologists 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 others also have acknowledged the necessity, Klob, for example, in "habitual hyperæmia" and "diffuse proliferation of connective tissue," and Kiwisch in "infarctus."

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 pro-

[1] Dis. of Females, Am. ed., p. 181.

liferation 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 distention of cells already existing. 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 gynecologist, 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.

In a very fair, critical review[1] of the 3d edition of this work, the reviewer remarks that this name "involves the notion that the connective-tissue elements alone hypertrophy, and disowns the muscular element as the one most readily provoked to increase. We do not deny that, in the disease in question, there is hyperplasia of connective tissue, or, at any rate, of non-muscular elements; but we must aver our belief that concomitantly there is increase in the muscular elements also." At first glance, this appears to be a very strong point of objection; but I think that even the writer himself will, upon more careful examination of the views of pathologists, agree that they look upon the proliferation of areolar tissue as *always* the characteristic or highly predominant feature of the condition, and regard muscular growth as an insignificant accompaniment only. For obvious reasons it is impossible for me to quote

[1] Brit. and Foreign Medico-Chirurgical Rev., Jan. 1873.

largely to sustain this position, and I confine myself to the statement of Professor Klob,[1] who, in speaking of this condition, expresses himself in the following terms: "The whole uterine connective tissue sometimes proliferates either without accompanying increase of the muscular substance, or, if this does occur, the connective tissue predominates to such an extent that the muscular substance is comparatively of not much account."

It is true, that, while most who have investigated this subject have found, like Klob and Scanzoni, a great preponderance of connective tissue, and an insignificant increase of muscular elements, some have declared that the muscular structure is greatly hypertrophied. One reason for this variance of opinion is this: the most prolific source of areolar hyperplasia, the so-called chronic metritis, is interference with involution of the parturient uterus. What begins as subinvolution ends, in time, in a condition ordinarily styled chronic metritis. He who examines early will probably find a greater amount of muscular elements than he who does so later; and let it be remembered that by continental writers, with one exception,[2] no recognition is made of subinvolution as a disease distinct from what Chomel styled it, post-puerperal metritis. In this way I reconcile the researches of Klob, whose statement I have quoted, with those of Finn,[3] who reports the following observations, made at the Institute of Pathological Anatomy in St. Petersburg:

"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."

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

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[1] In the American translation of Klob the rendering is not this; but Dr. Kammerer tells me that that passage is not correct, and that this is.

[2] M. Courty.

[3] Am. Journ. Obstet., vol. i, p. 264.

some name which would signify that fact. "Areolar hyperplasia"[1] expresses this fact concisely, and hence I have employed it. But the only proof of the appropriateness of a newly applied term, is its general adoption. If this be accepted, I shall feel that good has resulted from my effort; if its approval be not implied by adoption, I shall admit with regret that I have only helped to render confusion worse confounded.

Pathology of Areolar Hyperplasia.—The vast majority of cases are due to interference with that retrograde metamorphosis occurring in the puerperal uterus, styled involution. To comprehend the pathology of cases thus arising, it will be necessary to consider the physiology of that process as well as the pathological conditions which may affect it.

It is only within the last quarter of a century that we have understood the process 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, Heschl, Kölliker, and Retzius that we are most indebted.

The important pathological fact that arrest in a disturbance of this process constitutes a condition of disease emanated from 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 time, the condition which now engages us has become generally recognized as a uterine state of great frequency and moment.

To fully comprehend this part of our subject it is necessary to bear in mind the component parts of the healthy uterine parenchyma. It consists of five elements: 1st. Fusiform fibre cells, or, as they are termed, the smooth muscular fibres; 2d. Round and oval nuclei, which are supposed to be elementary fusiform fibre cells; 3d. Amorphous or homogeneous connective tissue, which permeates the parenchyma and binds together the fibre cells and nuclei; 4th. Fibrillated connective tissue or white fibrous tissue; and 5th. Elastic fibrous tissue. These elements, together with nerves, blood-vessels, and lymphatics, make up the tissue of the uterus, which is

[1] Hypertrophy signifies excessive growth of the elements of a tissue already existing; hyperplasia signifies the development of new tissue.

covered by a serous membrane externally and a mucous membrane within.

No sooner does this structure feel the stimulus of conception than it develops rapidly, partly by growth of already existing structures and partly by new formations. The round or oval nuclei rapidly develop into fusiform cells, and these as rapidly grow into colossal cells which grow longer and more powerful as pregnancy advances. "A new formation of muscular fibre also takes place,"[1] the connective tissue elements grow proportionately, and the bloodvessels enlarge.

Parturition occurs, and almost immediately a retrograde evolution begins to restore the uterus to its original constituency. The fully developed fibres 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, or arrested retrograde evolution.

Thus far we have been dealing with facts thoroughly ascertained by histological investigations and fully established by evidence yielded by the microscope. But from this point the pathology of subinvolution is not so satisfactorily settled. Prof. Simpson declared that the disease was due to the fact that "this retrograde metamorphosis of the uterus has not taken place during the puerperal month, or has taken place only to such an imperfect degree that the uterus is of the size we usually see it have at the end of the first week or so after delivery," but he entered, if I may judge from the posthumous volume of his work upon Diseases of Women, upon no detailed account of the existing pathological defect in the organ. Since his writing, it appears to have been agreed upon that this consists of persistence of the muscular fibres, characterizing pregnancy, in a state of fatty degeneration. Thus Dr. Wright[2] says, "Pathologically it closely corresponds with that state of the heart structure so admirably described by Dr. Richard Quain, and com-

[1] Arthur Farre, Cyc. Anat. and Phys., Article Uterus.

[2] Uterine Disorders, p. 221.

monly known as fatty degeneration." Dr. West[1] expresses himself thus: "though fatty degeneration of the tissues takes place, yet the removal of the useless material is but imperfectly accomplished, while the elements of the new uterus are themselves, as soon as produced, subjected to the same alteration." I search in vain the literature of the pathology of this subject for a basis for these hypotheses. That literature is scanty in the extreme as yet, and the subject awaits extended researches before we can speak intelligently of it. The day has passed, however, when we can let probabilities in pathology pass current for facts.

The best, indeed I may say the only detailed account of this condition studied by the microscope, which I have been able to obtain, is one by Dr. Snow Beck,[2] of London. "The enlargement of the uterus did not depend so much upon an increase in the size of the contractile fibre-cells, as upon an increased amount of round and oval globules, with amorphous tissue in the uterine walls. . . . The essential condition of the organ consisted in the elements of the different tissues retaining a portion of the natural enlargement consequent upon impregnation. But this enlargement was more due to the increased size and amount of the soft tissue present in the walls of the uterus, as well as at the internal surface, than to the increased size of the contractile fibre-cells." Marked congestion existed, the bloodvessels being large and forming a complete and continuous system with the capillary network on the inner surface of the uterus. No allusion to preponderance of muscular fibres is anywhere made, and no mention of fatty degeneration occurs.

The condition of the uterine cavity is important. It is always enlarged, the glands of the cervix are usually enlarged, and upon the lining membrane of the cavity fungoid growths are commonly developed.

This is all that can with positiveness be said of the pathology of the early periods of subinvolution in the present undeveloped state of the subject.

The uterus, the study of the tissues of which gave Dr. Beck's results, measured $3\frac{1}{2}$ inches in length, $2\frac{1}{4}$ inches across the fundus, the walls were $1\frac{3}{8}$ inches thick, and the uterine canal was 3 inches deep.

As time passes the uterine walls diminish in size, their tissue

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[1] Dis. of Women, 3d Eng. ed., p. 89.

[2] London Obstetrical Trans., vol. xiii, p. 239.

grows less vascular, the bloodvessels become smaller, and the uterine cavity assumes smaller dimensions. But the organ does not assume its original size; it remains large, dense, firm, and sensitive; for years presenting the characteristic appearances of the so-called chronic parenchymatous metritis. Although taking an entirely different view of the pathology of chronic metritis, Dr. West[1] signalizes almost the same fact in the following words: "It must, however, be at once apparent, that after inflammation has passed away, its effects may remain in the larger size and altered structure of the womb, and that the very nature of these changes will be such as to render the repair of the damaged organ both unlikely to occur, and slow to be accomplished, and must leave it in a condition peculiarly liable to be aggravated during the fluctuation of circulation, and alterations of activity and repose, to which the female sexual system is liable." This is just the state to which I allude at the commencement of this chapter, as one existing years after labor, and which, attended by congestion, displacement, catarrh, and granular degeneration, is styled chronic metritis. It is, I think, this state which most frequently furnishes instances of areolar hyperplasia to the microscope.

Let any one faithfully and patiently watch a case of subinvolution for a year or two with reference to this point as I have repeatedly done, and I cannot doubt that he will have the same evidence which makes me so strong in my present belief. Lastly, let it be remembered, that by the French school no condition of arrest of development is recognized as accounting for it; these are cases of "post-puerperal metritis," metritis, according to M. Gallard,[2] without symptoms, "chronique d'emblée."

Does any one claim that between this condition and chronic metritis a difference should be made? Let him tell me by what means he can at the bedside distinguish one from the other, and I may agree with him. There are no means for such differentiation. If the uterus be very large and the patient recently delivered, the case is termed subinvolution by English writers; if its dimensions have diminished, years have elapsed since parturition, and the almost universal accompaniments of the condition, leucorrhœa, granular degeneration, and displacement, be present, it is styled chronic metritis.

Arrest of involution of the puerperal uterus is an occurrence of very great frequency. It constitutes the chief cause of all chronic

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[1] Op. cit., p. 89 [2] Op. cit., p. 372.

uterine disorders, and for this reason its importance cannot be overestimated. Until this subject receives the attention which it deserves, the present confusion as to the causes, pathology, and general features of chronic metritis, which helps to weaken uterine pathology, must continue.

As a very general rule, areolar hyperplasia, the so-called chronic metritis, is a consequence of subinvolution. This constitutes the explanation of the fact that so large a number of women with uterine affections refer their illnesses to child-bearing, and that so many who are well until that process remain invalids afterwards. Go back to the commencement of all cases of uterine disease, and a very large proportion will date from parturition. These hyperplastic or subinvoluted uteri were those which chiefly furnished Lisfranc's cases of "engorgement," which Jobert "melted down" with the actual cautery, and which hundreds to-day are treating by powerful caustics as parenchymatous metritis. The question may be asked, do I myself not blister, apply leeches, and even amputate the cervix in these cases? The element which sustains the disease is an excessive supply of blood; to diminish this is to strike at the root of the evil. In areolar hyperplasia I blister lightly, to exert an alterative influence upon the nerves; for the relief of coincident congestion, I leech occasionally, as I would for hyperæmia elsewhere; and I amputate, as I would do the enlarged tonsils: but nowhere would I treat the condition as inflammation.

The only apology which I offer for enlarging still further upon this part of my subject, is contained in the fact that I regard it as one of the most important points in the whole of uterine pathology. Even by Parisian writers, who above all others have been wedded to the theory of chronic inflammation, the dependence of a peculiar form of so-called chronic metritis upon disordered involution has been recognized. "The commencement of chronic metritis," says Gallard,[1] "is so insidious, that it is often difficult to determine its date in each particular case. So rare are cases of true acute metritis which, in perpetuating themselves, become chronic, that it is generally admitted that the disease is, to a certain extent, chronic from its commencement. Nevertheless, I consider this passing of acute into chronic metritis as much more frequent than most authors think. . . . Aran, after having contested this, was forced to recognize, as the origin of the greatest number of cases of chronic metritis, acute metritis following parturition. This acute stage

[1] Leçons Cliniques sur les Mal. des Femmes, p. 372.

often passes unnoticed among the sequelæ of labor, scarcely disturbed by slight febrile movements which excite no suspicion of uterine inflammation so long as they do not present themselves with the alarming symptoms so characteristic of puerperal metritis. Here we see arise a condition which Chomel with his eminently judicious and practical mind was obliged to distinguish from this serious disease by giving it a particular name, that of post-puerperal metritis." . . . . . "This inflammation, which surprises the uterus before it has finished the work of involution which would reduce it to its normal size, finds in the histological features of this organ circumstances most favorable as well for its development as its perpetuation and its passage into the chronic stage."

If this passage be read with the key which I here offer, it becomes plain how a condition arises insidiously after labor without the symptoms of inflammation, and yet ends in what is generally called chronic metritis; how a state due to parturition differs so widely from ordinary puerperal metritis, that a new distinctive appellation is required for it; how metritis appears to commence in chronic form; how Aran found this latent, undemonstrative, acute disorder the "source of the majority of cases of chronic metritis;" and how, in spite of the obscurity of early symptoms, M. Gallard is forced to believe that the chronic disease does follow an acute puerperal metritis, the development of which is obscured by the sequelæ of labor. The supposed acute metritis, without symptoms to announce it, which is conjured up to sustain an untenable theory, was really an arrest of retrograde metamorphosis; the chronic metritis, which was afterwards found to exist in full development, with a commencement so obscure that it must have been "chronique d'emblée,"[1] was this same condition passing or having passed into areolar hyperplasia. At this time its slowly retrograding muscular fibres have, to a great extent, passed away, but its connective tissue continues exuberant, and the uterus remains large, swollen, tender, and heavy.

Compared with interference with involution, all other pathological influences become comparatively insignificant as causes of this condition; nevertheless they must receive due weight. The tissue of the virgin uterus presents a structure unfavorable to this disorder. That of a uterus once affected by gestation offers a more propitious field for its development.

Displacement of the uterus at first results in passive congestion,

[1] Gallard, op. cit.

this being kept up, hypergenesis of connective tissue takes place. Fibroids, whether they be submucous, subserous, or mural, keep up a constant nervous irritation that induces hyperæmia, which proves the first step towards this affection. In a very important essay, Rouget[1] proves the uterus to be an erectile organ, as richly supplied with a network of vessels as such organs always are, and very subject to active physiological congestion. It is certain that such a kind of hyperæmia attends ovulation, and it is highly probable that sexual congress has a similar result. From this it will appear how prolongation of the *molimen menstruationis*, and excessive indulgence in sexual intercourse, especially near menstrual epochs, may produce evil consequences.[2]

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. Klob declares that this purely passive congestion is capable of inducing hypernutrition and hypertrophy of the connective tissue.[3]

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 the disease in the cavity of the body. As I have already stated, 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 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

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[1] Rouget—Récherches sur les Organes érectiles de la Femme.

[2] Scanzoni calls attention to the fact that it is met with in prostitutes.

[3] Klob, op. cit., p. 130.

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.

A very striking illustration of this affection due to non-puerperal causes is related by Dr. West, whose observation seems to have led him to very similar conclusions with mine. "Some years ago," says he, "I saw a lady, aged forty-three, who, during thirteen years of married life, had never been pregnant. She had always menstruated painfully, and rather profusely; and both these ailments had by degrees grown worse, and this especially during the last few months. She complained of a sense of weight and dragging immediately on making any attempt to walk, and induced even by remaining long in the sitting posture. . . . Menstruation was very profuse, accompanied by discharge of coagula, while at uncertain intervals during its continuance most violent paroxysms of uterine pain came on. On examination the enlarged uterus was distinctly felt above the symphysis pubis, as large as the doubled fist, and per vaginam the whole organ was found much enlarged, and much heavier than natural; the cervix large and thick, but not indurated; the os uteri small and circular; and the hymen was entire." He goes on to say: "Whenever the uterus is exposed to unusual irritation, it increases in size; not necessarily, nor I believe generally, as the result of inflammation, but because the organ is composed of formative material, which excitement of any kind will call into active development."

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 blood-vessels, 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 sclerosis[1] of the uterus.

Every practitioner must have met with cases in which a large,

[1] The term sclerosis was, I believe, first applied to this condition by Skene of Brooklyn. Subsequently Gallard likewise employed it.

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 like fibrous tissue, and appears when cut almost as dense and bloodless.

In leaving this important and interesting part of my subject, let me sum up what has been said, in a few words:

1st. The condition ordinarily styled chronic metritis consists in an enlargement of the uterus due to hypergenesis of its tissues, especially of its connective tissue, which induces nervous irritability, and is accompanied by congestion.

2d. Decidedly the most frequent source of this state is interference with involution of the puerperal uterus. A very large proportion of the cases of so called chronic parenchymatous metritis are really later stages of subinvolution.

3d. Areolar hyperplasia is often induced in a uterus which has once undergone the development of pregnancy, by displacement, endometritis, and other conditions inducing persistent hyperæmia.

4th. The same influences may possibly produce it in the nulliparous uterus, (most frequently they do so in the neck,) but such a result is exceedingly infrequent.

5th. However produced, the condition is one of vice of nutrition engendering hyperplasia of connective tissue as its most striking feature, and, although attended by many of the signs and symptoms of inflammation, it in no way partakes of the character of that process.

It has been maintained by some that acute puerperal metritis extends itself into the chronic metritis of the non-puerperal state, and this form of the affection has been differentiated from subinvolution. I have seen no evidence of the correctness of this view, nor do I believe that any such distinction can be made at the bedside.

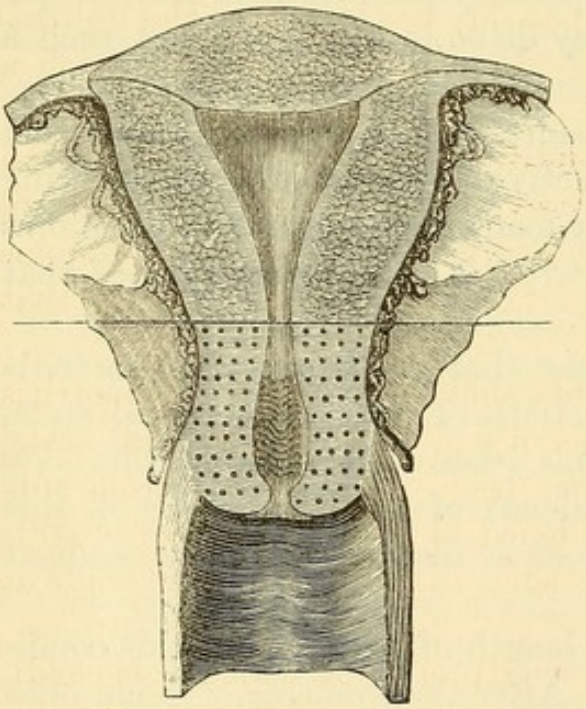
Course and Termination.—The length of time which this condition may last is very uncertain. After the connective tissue once becomes thoroughly affected by the disease, it rarely returns to its original condition, but so complete is the relief which may be afforded the patient by removal of those concomitant conditions that attend upon it and increase the discomforts which are due to it, that she will often for years imagine herself well. Very suddenly, however, imprudence during menstruation, the act of parturition, over-exertion, or some other influence creating 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 to such an extent as to interfere with its functions. Uninterfered with by art the disease has no fixed limits. The increase of uterine weight which it induces usually results in displacement. This increases already existing congestion, and the patient suffers, until the menopause at least, from endometritis, granular cervix, and the ordinary symptoms of displacement.

In some cases contraction of the exuberant tissue occurs, and uterine atrophy with its accompanying symptoms takes place.

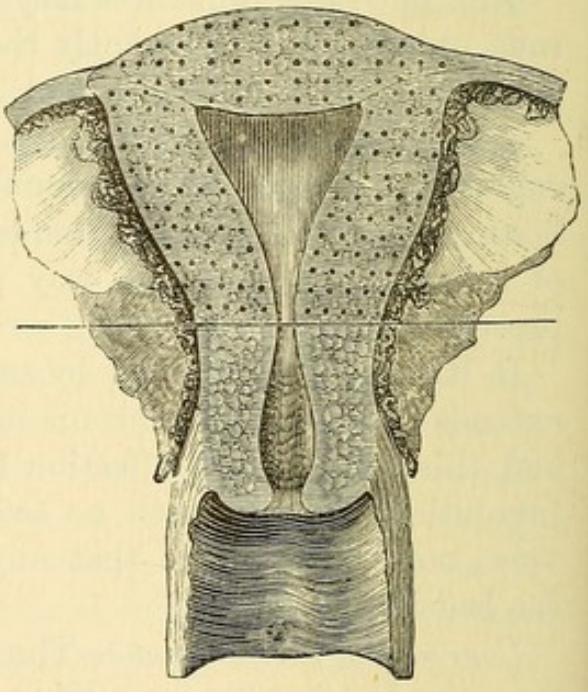
Varieties.—Whatever be its cause, areolar hyperplasia may affect the entire uterus; it may limit itself to the neck, extending from the os externum to the os internum; or it may affect the body from the os internum to the fundus. The habitat of hyperplasia limited to the cervix is represented by Fig. 78, while Fig. 79 represents that of the corporeal variety.

Fig. 78.



The dots represent the site of cervical hyperplasia.

Fig. 79.



The dots show the site of corporeal hyperplasia.

Whether arising from imperfect involution or from non-puerperal causes, this limitation to cervix or body will be frequently observed. Dr. West[1] alludes to the cervical variety as "one in which the enlargement is limited to the neck of the womb, and

[1] Op. cit., p. 93.

sometimes even involves only one lip, generally the anterior. In the latter case it is usually consequent on childbearing, and perhaps is, strictly speaking, rather the result of a partial deficiency of involution of the uterus than the effect of a generic hypertrophy of the part." This fact was first announced in Great Britain by Dr. Evory Kennedy.

Frequency.—This affection is one of great frequency, and as it was formerly universally regarded as chronic parenchymatous metritis, this is one great reason why inflammation of the structure of the uterus was thought to be so common. This fact makes its careful study a matter of great moment to the gynecologist. I do not hesitate to declare that he who fully masters it and thoroughly appreciates its frequency and influence will possess a key to the management of numerous cases which would in vain be sought for elsewhere.

As I have before remarked, interference with that retrograde metamorphosis of the puerperal uterus which is now styled involution is in the great majority of cases its cause. Surprise may for this reason be excited by the assertion that of all forms of the affection, the cervical variety is the most frequent. The reason for this is to be found in the facts that cervical endometritis, which in multiparous women proves a not infrequent 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 laceration, occurring during parturient distention; that after childbearing the connective tissue at this point is looser and more permeable than that of the body; and that when involution is retarded for some months and then is accomplished, it sometimes takes place in the body, but fails to do so in the neck from that exposure to injurious influences which has just been alluded to.

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 this affection or of some of its resulting complications. An important fact connected with this state is that where hypertrophy of the connective tissue exists, transient attacks of

active congestion frequently occur and excite acute symptoms. These pass away, leaving the basis of the affection in its original state, again to return with all the signs 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.—These may be enumerated as—

A depreciation of the vital forces from any cause;

Constitutional tendency to tubercle, scrofula, or spanæmia;

Parturition, especially when repeated often and with short intervals;

Prolonged nervous depression;

A torpid condition of the intestines and liver.

Nulliparity secures, to a very great extent, an immunity from the disease, and multiparity constitutes a most important predisposing cause. This fact arises not merely from its being, as it often is, an immediate consequence of the parturient act, but from the peculiar tissue changes of utero-gestation rendering the uterus prone to its development. "Frequently," says Klob, "this proliferation of connective tissue is developed after repeated deliveries in rapid succession without any previous or existing inflammation, ... and sometimes is developed in consequence of the puerperal condition." Its "causes must be sought for in habitual hyperæmia;" consequently whatever state gives a tendency to this must be regarded as a predisposing cause, while one which induces and perpetuates it must be looked upon as exciting. The woman who has never been pregnant is much less liable to areolar hyperplasia than she whose uterus has undergone the tissue changes of utero-gestation. Nevertheless, in very rare and exceptional cases, I think that she may suffer from it. In the whole of my experience I have seen but two or three cases, and the diagnosis in these is based upon clinical evidence alone.

Here let me guard the reader against a fallacious argument which is often used in reference to this matter. As areolar hyperplasia is rarely seen except in women who have borne children, it is said that it is always the result of interference with involution. This is incorrect. A woman bears a child, has no post-partum trouble, and goes through uterine involution perfectly. A year or two afterwards she has endometritis. This in time produces areolar hyperplasia with its usual symptoms and physical signs. The same kind and degree of endometritis in a nulliparous woman would have lasted for years without parenchymatous complication. In

the former case the endometric disease existed on ground favorable to hyperplasia, because an important predisposing cause existed. In the latter such predisposition was wanting.

The exciting causes are the following:

Over-exertion after delivery;
Puerperal pelvic inflammation;
Laceration of the cervix uteri;
Displacements;
Endometritis;
Neoplasms;
Cardiac disease;
Abdominal tumors pressing on the vena cava;
Excessive sexual intercourse.

After delivery many of both these sets of causes are developed by the pernicious system of management which nurses frequently adopt. The nerve and blood states of the woman are depreciated by starvation, impure air, and disturbance of sleep by attention to the wants of the child, while the enlarged uterus is forced into retroversion and the congestion which it induces, by a very tight bandage, rendered still more hurtful by a thick compress over the uterus. The practitioner who regards delivery of the placenta as the end of the third stage of labor furnishes a marked predisposing cause. The third stage of labor consists in complete and permanent contraction of the uterus, and may not be accomplished for hours after the expulsion of the placenta. No obstetrician has done his duty who leaves his patient before its accomplishment.

Symptoms.—It is impossible to present the symptoms of this condition entirely separated from those of complications which very commonly attend it, such, for example, as displacement, laceration of the cervix, ovarian congestion, granular cervix, etc. These states of course produce symptoms of their own which mingle with those of the main disorder. The symptoms then, which are due to areolar hyperplasia and its almost inevitable complications, 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.

If the affection be general or corporeal, graver symptoms manifest themselves.[1] Chief among these are:

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 hemorrhoids;
Pressure on the bladder with vesical tenesmus;
Sterility.

Physical Signs of Cervical Hyperplasia.—Vaginal touch will generally discover that the uterus has descended in the pelvis so that the cervix will rest upon its floor. 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 usually be 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 a great degree of sensitiveness. Under these circumstances the direction of the uterine axis 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

[1] It must not be supposed that all these symptoms occur in all or even in the majority of cases. In many cases few, and in some almost none of them will be recognized.

of the organ, but its degree of sensitiveness. This may likewise be accomplished to a certain extent by rectal touch. The uterine probe may then be introduced, the cavity measured, and the sensitiveness of the walls carefully ascertained.

A point which should 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 be 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. This sign is not, however, to be entirely relied upon.

Differentiation.—When the whole uterus is affected, or the body of the organ alone is enlarged, the diseases with which areolar hyperplasia may be confounded in its first stage, are:

Pregnancy;
Neoplasms;
Periuterine inflammations.

From these a careful differentiation should be made; for if in error, the practitioner would not only fail in giving relief, but, in some cases, 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 practised with great caution, and only when good reason exists for supposing pregnancy and periuterine inflammation absent.

Between pregnancy and endometritis with corporeal hyperplasia, 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, menstruation 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."

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, etc. 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 and hypertrophy of uterine tissue with anteflexion and endometritis. In the same manner polypoid growths or submucous fibroids might give trouble in diagnosis. Under such circumstances reliance would have to be placed upon the use of the sound, conjoined manipulation, and tents, together with the rational signs.

Periuterine inflammations fix the uterus, create hardness and swellings in the iliac fossæ and pouch of Douglas, and sometimes produce purulent discharges.

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 sclerosis. 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 Sclerosis.	*In Scirrhous Cancer.*
The patient shows no cachexia.	She often does.
There is tendency to amenorrhœa.	There is tendency to hemorrhage.
The history usually points to parturition.	It does not.
It has been preceded by symptoms of uterine enlargement.	It has not.
The cervix feels like dense fibrous tissue.	It feels almost like cartilage.
The body is perhaps implicated.	It is very rarely so.
A sponge-tent softens the tissue.[1]	It leaves it hard and dense.

Prognosis.—The prognosis in hyperplasia of the entire uterus or of the body alone is unfavorable with regard to complete cure, though highly favorable with reference to great relief of symptoms and to danger to life. Should the patient be approaching the menopause, it is possible 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 result-

[1] This test originated with Spiegelberg.

ing from the complications of this disease can be so fully controlled that comfort will be obtained. 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 corporeal endometritis, menorrhagia, etc. 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, ovarian disorders, etc.

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 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[1] 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.—Let me urge upon the practitioner, as a rule to be observed in every case, before treatment is adopted for this dis-

[1] It must be noted that Klob alludes to carcinoma, while Noeggerath limits his statement to epithelioma.

order, to examine for and remove, if discovered, the five following complications which very often accompany areolar hyperplasia, and establish symptoms which greatly increase the evils attending it. So important do I consider them, that I give them decided prominence.

1st. Laceration of the cervix uteri which creates intense nervous irritation, both immediate and reflex, and consequent uterine congestion and neuralgia.

2d. Displacement of the uterus, which results in vascular engorgement, dragging upon uterine ligaments, mechanical interference with surrounding parts, and difficulty in locomotion.

3d. Fungoid degeneration of the endometrium which results in profuse leucorrhœal and bloody discharges.

4th. Granular and cystic degeneration of the cervix which produce nervous and vascular derangement of the uterus, leucorrhœa, and menorrhagia.

5th. Vaginitis which is excited by the discharge dependent upon engorgement of the endometrium.

He will be most successful in the treatment of areolar hyperplasia who most assiduously searches for and cures these complicating conditions before addressing remedies to the main affection.

Laceration of the cervix, and exposure of the delicate walls of the cervical canal to friction against the vagina, is so frequently not only a concomitant circumstance but, I think, a cause of this condition, by interfering with involution, that it should always be looked for. Let it not be supposed that a mere visual inspection will reveal its existence. It will often fail to do so while the red and excoriated cervical walls are being for long periods treated for so-called ulceration by caustics and alteratives. To test the question, a tenaculum should be fixed in each labium cervicis, and these should be approximated so as to present to the eyes of the examiner the perfect cervix as it existed before the accident. Once discovered, the inner surfaces of the torn lips should be thoroughly pared and brought together by suture. Such an operation will often have a most happy effect upon the uterine disorder; nervous irritability will disappear, and nutrition become greatly improved by removal of this focus of irritation.

If displacement exist, great benefit will 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 antever-

sion pessary if the uterus have fallen forwards. 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.

If evidences of fungoid growths on the endometrium exist, the whole cavity should be gently scraped by the wire-loop curette, and this source of leucorrhœa, metrorrhagia, and uterine congestion taken away.

At the same time that I have elsewhere urged that too great importance should not be given to granular and cystic degeneration of the cervix, I would not ignore the fact that, once established, they become a source of irritation, and thus of uterine engorgement. They should by all means be treated and removed.

Vaginitis is secondary to uterine catarrh, which is a very common accompaniment of hyperplasia. It should be treated by the ordinary means elsewhere indicated, and a recurrence prevented by relief of the endometrial disease.

The subject carefully analyzed presents itself in this way. If the abnormal condition, which has created areolar hyperplasia, has passed away, this condition is not *in itself* the source of many disagreeable symptoms. No woman thus affected feels perfectly well, but she is often sufficiently comfortable to be able to perform all her duties in life. But the uterus thus diseased is peculiarly liable to certain complicating conditions which have just been mentioned, and these create a great deal of discomfort by production of pains in the back and loins, nervousness, leucorrhœa, and menstrual disorders. These symptoms are then in a great degree, as I stated in giving the symptomatology of hyperplasia, due to the complications of the disorder, and not to the disorder itself. In other words, sustain a hyperplastic uterus, keep it free from displacement, granular and cystic disease of the cervix, and uterine catarrh, and the patient will be so comfortable as, in most instances, to feel satisfied with her condition. Sometimes this is all that we can accomplish. The mere fact of accomplishing these results will, however, do much for the cure of the disease itself. Relief of displacement favors free venous return and prevents congestion which feeds and perpetuates hyperplasia. Cure of uterine catarrh and of granular and cystic degeneration of the cervix removes two great causes for hyperæmia of mucous and submucous tissues. The means employed for the relief of these symptoms even do more, they tend by their own direct influence to alter the morbid state

of the nerves of the part, to diminish the calibre of bloodvessels under their control, and thus to check excessive nutrition and secretion.

All complications being removed, the practitioner has now to deal with a large, heavy uterus, the tissue of which is exuberant, the bloodvessels enlarged, and the nerves in a condition of hyperæsthesia.

Let me enumerate the indications to be met by a few leading propositions.

1st. Everything possible should be done to prevent congestion, and remove that already existing.

2d. Every attention should be given to the restoration of the general system, especially the blood and nerve states.

3d. All weight should be taken from the large and heavy uterus.

4th. Nervous hyperæsthesia should be relieved by every means in our power.

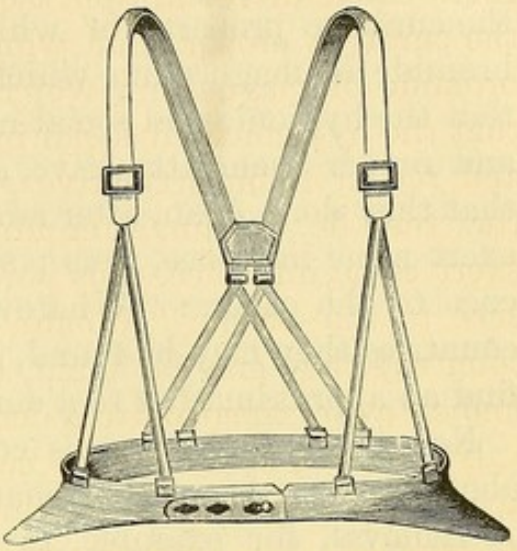
The means for furthering these ends may thus be presented:

Rest;
General treatment;
Depletion;
Emollient vaginal injections;
Alteratives.

Rest.—The patient should be instructed to take much less exercise than usual, to lie upon her bed or lounge for an hour every day about mid-day, and to be especially quiet during menstrual periods. It is highly improper to confine her to bed, 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 may become necessary, 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 a skirt supporter and a well fitting abdominal bandage. Fig. 80 represents a very excellent skirt supporter, which has been

Fig. 80.



Bacheller's skirt supporter, the circular piece a thin band of metal.

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 super-imposed viscera, which, pressed downwards by tight clothing, and badly supported on account of the relaxation of the abdominal walls, fall directly 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. That one should be selected which absolutely accomplishes the end in view, namely, sustaining the viscera and supplementing the weakened muscles of the abdomen.

Sexual intercourse often produces bad results in an organ which is so prone to congestion, and great infrequency and caution should be enjoined with reference to it.

By combining all these means we do all in our power to place the hyperplastic uterus at rest as we would a fractured bone or enlarged testicle.

General Treatment.—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 diminishing the size of the uterus. Of most of these I doubt the efficacy. During the stage of enlargement, that is, before contraction of the exuberant tissue has occurred, ergot, kept up for a considerable time, produces good results. By its power of exciting contraction of the uterine tissue it diminishes hyperæmia, and lessens the bulk of the uterus.

European writers speak in high terms of the alterative influences 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, etc., 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 an approximation to a demonstration in their favor."

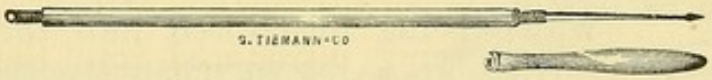
No other general means compares in result with a change of abode and corresponding change of air, habits, and associations. A removal, for example, to the seaside, where bathing can be enjoyed, a sea voyage, or a residence at an agreeable watering place, may accomplish much good. Mental depression predisposes 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.

Depletion.—If vaginal touch and conjoined manipulation discover the fact that the uterus is tender, the occasional abstraction of small amounts of blood by puncture or scarification will be beneficial. Not more than an ounce or two should be taken at once, unless amenorrhœa be a symptom. In case this be so, a more copious abstraction by leeches, during the menstrual epoch, will often give great relief. At times leeches then applied to the cervix will give great pain by their bites. This 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 practised are leeching, scarification, and cupping. 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 sponge or 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 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 forceps, or still better, by a little spear, the invention of Dr. Buttles, of this city.

Fig. 81.



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 vulcanite, 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 vulcanite, that a complete vacuum is produced. 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 be necessary afterwards will be to pass a moist sponge, attached to a sponge-holder, 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 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 should be practised systematically, the patient for some hours after its adoption being kept perfectly quiet in bed.

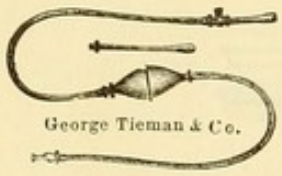
Fig. 82.



Hard rubber cylinder for dry cupping the cervix uteri.

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 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 stopcock 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

Fig. 83.



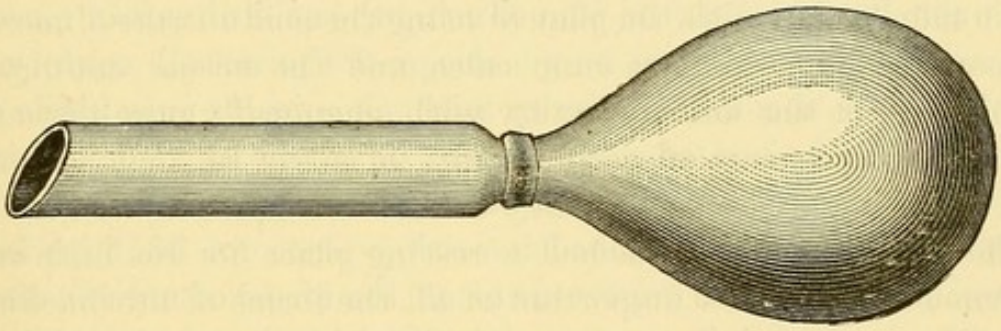
Davidson's Syringe.

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 the tub over which the patient is lying. This avoids all fatigue, and produces a much more prolonged application. This can likewise be conveniently done by means of the Fountain syringe, which consists of a large bag of gutta-percha which holds, according to the size, from one to three quarts of water. This bag, communicating at its bottom with a long tube made of the same material, is filled and hung up. Then the patient, passing into the vagina the nozzle connected with the lower end of the long flexible tube, touches a spring, and the fluid flows by gravitation.

This syringe can be packed in small compass, and is very convenient and manageable.

Fig. 84 represents Molesworth's vaginal syringe, an excellent instrument for cleansing and medicating the vagina and cervix

Fig. 84.



Molesworth's vaginal syringe.

uteri. It consists of a small glass speculum attached to a bag of India-rubber. The former being introduced to the upper part of the vagina, and the latter filled with fluid, it is repeatedly compressed so as to bathe the canal thoroughly.

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 the addition of lauda-

num, half an ounce to the gallon; infusions of linseed, poppies, hops, bran, slippery elm, starch, hyoscyamus, conium, or 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.

Local Alteratives.—The best local alterative is the compound tincture of iodine, which, by means of a brush of pig's bristles, should be carried up to the os internum, or even to the fundus, should endometritis exist, and over the whole cervix; then, waiting for complete drying, this process should be repeated. After these applications a wad of cotton, to which a string has been attached in such a way as to leave its surface flat, should be saturated with glycerine and laid against the cervix. This acts as a local hydragogue, and disgorges the tissues. These local applications should be repeated once a week, but others should be made oftener by the patient herself by means of vaginal injections, by which the drugs just mentioned may be brought in contact with the cervix.

Mild and lacking in vigor as this course may appear, let any one test it side by side with the plan of using the acid nitrate of mercury, potassa fusa, and potassa cum calce, and the actual cautery; of swabbing out the uterine cavity with chemically pure nitric acid, or of leaving a piece of solid nitrate of silver to melt within it; and, unless his experience greatly differ from mine, he will feel that in the former he has reached a resting place for his faith in the treatment of the most important of all the forms of uterine disease. He will see proof daily spring up before him that his capacity for benefiting his patients has greatly increased, while his liability to injuring them has as markedly diminished.

Should it appear to the practitioner that persistent hyperæmia requires more energetic means than those mentioned, resort may be had to counter-irritants which vesicate and destroy the mucous membrane of the vaginal cervix, and thus cause a free flow of serum. Such cases grow smaller and smaller in number in my practice as I grow older in experience, and although I admit the occasional necessity of these means, I caution the reader against a constant or too early resort to their use. They cannot diminish the absolute size of the enlarged organ, and should not be used with any such view. They can remove congestion and nervous exaltation, and in certain exceptional cases may be employed for these purposes.

One of the best methods for practising 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.

After blistering, pledgets of cotton saturated with glycerine should be applied for the hydragogue effects of that drug.

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, or with glycerine.

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 very unmanageable cases, in which the large size of the cervix renders it, by its bulk, a source of discomfort to the woman. The same grounds should decide the gynecologist to operate here, as do the surgeon in enlarged tonsils; not the mere existence of enlargement in the organ, but the fact that this enlargement disturbs other parts by its degree, or that all other means failing to cause reduction in its size, this offers itself as a means of accomplishing that result. 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.

The operation may be much better accomplished by means of galvano-cautery. The vaginal portion, or rather a part of the vaginal portion of the cervix, is encircled by the galvano-caustic wire, and thus removed.

CHAPTER XVII.

GRANULAR AND CYSTIC DEGENERATION OF THE CERVIX UTERI.

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 diseases elsewhere located. An example of this is frequently presented in the morbid state under consideration, which, in itself, proves so annoying by its profuse discharge, and interference with the functions of the uterus and with locomotion, as to call for prompt relief.

The vaginal surface of the cervix uteri is covered by a smooth mucous membrane which is continuous below with that of the vagina, and extending through the cervical canal joins that of the body, which differs widely from it, at the os internum. This membrane is covered over by numerous papillæ which become visible when a sufficiently strong glass is used. One or more slender blood-vessels pass into each and form at their extremities vascular loops, then return, and at their bases pass into adjoining ones. They are completely covered by pavement epithelium and basement membrane. Throughout the cervical canal mucous crypts or follicles exist, which are, likewise, found scattered over the vaginal portion of the cervix, and even within the cavity of the uterus itself. The diseases of two of these elements of cervical mucous membrane, the villi and mucous crypts, are now to engage our attention.

Granular Degeneration of the Cervix.

Definition.—This condition, which has been described under the names of erosion of the cervix, granular ulcer, and epithelial 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.—It is an affection of great frequency, attending all the diseases of the uterus which result in leucorrhœa, and being commonly a concomitant of most of the diseased conditions of the

parenchyma and lining membrane. 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 predisposing causes are:

Enfeebled general health;
Spanæmia;
The scrofulous diathesis;
The syphilitic diathesis.

Those which are exciting are the existence of:

Displacements;
Endometritis;
Laceration of cervix;
Areolar hyperplasia;
Abuse of sexual intercourse;
Vaginal leucorrhœa;
Pessaries which touch the vaginal face of the cervix.

From this array of causes it will appear that it is rarely a disease which stands alone, but that it is usually engrafted upon some other affection of greater moment. Although this is true, it will not do in practice to carry the view too far. At the same time that it must be admitted that granular degeneration, even of aggravated character and considerable proportions, affecting the vaginal face of the cervix, and the distal extremity of the cervical canal, is commonly a consequence of some pre-existing disease, the fact must not be lost sight of, that this affection of itself keeps up a hyperæmia in the subjacent and neighboring parts of the uterus, and even extends a reflex influence to the ovaries.

By almost all writers upon this subject since Récamier's time, too much stress has been laid upon the theory that it depends upon an, "indurated and hypertrophied condition of the parenchyma of the cervix." That it results from this no one would deny, but it is equally true that it often arises from other causes, and itself induces this one. In general terms we may say that it is usually produced by, 1st, any disorder which keeps the villi of the cervix constantly bathed with ichorous fluids for a length of time; 2d, by anything which keeps up friction against the cervix; 3d, by any influence producing and perpetuating congestion of the uterus. Let the reader turn to the list of predisposing causes and

he will see that they are just such as to favor these morbid influences, and that the exciting ones are those which absolutely produce them. For example, displacements keep up congestion of parenchyma and mucous membrane, and produce uterine leucorrhœa, and cause friction between the cervix, thus engorged and excoriated, and the vaginal surface. Hyperplasia produces displacement with all its results, furnishing in advance a tissue peculiarly prone to hyperæmia, and already abnormal in character. Laceration of the cervix is a fruitful source of cervical hyperplasia, and the eversion of mucous membrane which attends it establishes friction which results in leucorrhœa and increase of hyperæmia. But it is unnecessary to apply remarks which are so obvious to each of the causes mentioned.

Symptoms.—Should granular degeneration exist with but trivial disorder of the uterus of any other kind, 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 more serious symptoms generally show themselves, is a corroboration of the statement, that graver disease of the uterus constitutes an important element in such cases. Ordinarily, these are the symptoms which will be noticed in a case of the more serious kind:

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 might serve as a diagnostic means, for by it the cervix is felt to be covered by a velvety or granular surface, which, to the practised 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.—The disease is unlimited. If the general

health improve, it is possible that nature may effect a cure without the aid of local treatment, but such a result should not be anticipated. The degenerated surface may go on for an unlimited time pouring out pus, and thus greatly impoverish the blood and cause grave constitutional results.

Pathology.—Granular degeneration 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; eversion of the cervical mucous membrane. In the first instance, the epithelial covering is first removed, producing what is called an abrasion, and the villi themselves are destroyed. In the second, after the 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 condition, giving rise to another name. Its surface becomes coated with false membrane, when it is termed a diphtheritic ulcer.

Eversion of the cervix is by no means a rare source of granular degeneration. As a result of prolonged congestion and hyperplasia of the submucous tissues, or in consequence of laceration of the walls of this canal by the act of parturition, its lining membrane prolapses as the mucous membrane of the eyelids does in ectropion, and if not diseased at the time of displacement, very soon becomes so. At times the hypertrophy, which, under these circumstances, takes place in the crested folds of the everted cervical membrane, produces so great a degree of projection as to have caused the appellations of fungus ulcer or cock's-comb granulation to be applied to it, according to Dr. Arthur Farre,[1] though Scanzoni[2] regards this as merely an exaggeration of the villous hypertrophy recently mentioned.

Prognosis.—The prognosis in this affection is always good, though it may require a great deal of time to effect a cure, for this will

[1] Supplement Cyc. Anat. and Phys., p. 695.

[2] Dis. of Females, Am. ed., p. 222.

not be permanent unless that of the coexisting disease be accomplished.

Treatment.—Before treatment for this condition is commenced, let me urge the practitioner to examine carefully as to whether he is really dealing with a case of granular degeneration or with one of cervical laceration. The two conditions closely resemble each other; the former often complicates the latter; and a treatment which is appropriate to the one is utterly insufficient for the other.

Granular degeneration being generally a secondary disorder engrafted upon a pre-existing one, before treatment is adopted, the primary disease should be sought for, and both should be treated simultaneously.

Should displacement, endometritis, vaginitis, or areolar hyperplasia exist, attention should be directed to their relief at the same time that this one of their results is treated. It may be asked, if this be true, how is it that the mere application of caustics to the diseased surface will so often effect a recovery without regard to other disease? An influence which commonly induces granular degeneration 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 good. It is precisely in accordance with this principle that the practitioner, if called to treat a very obstinate case of cervical hyperplasia, which is unattended by such solution of continuity, creates it by abrading the surface by a blister, 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 enlargement accompanied by granular degeneration, than those which are free from it. The key to the explanation is, I think, the one here given.

Having presented these remarks and sufficiently insisted upon their importance, I now proceed to the consideration of the special treatment of the condition itself. Before commencing treatment, the general health should receive especial attention; those tonics and hygienic directions which appear best suited to the particular case being given. These indications should from the commencement be as far as possible fulfilled: 1st, the granular surface should be put beyond the influence of friction; 2d, it should be protected from contact with ichorous discharges; 3d, a steady alterative influence should be exerted upon it by local applications; and 4th,

congestion of the uterus and of the especial part diseased should be prevented.

To accomplish the first indication the uterus, if displaced, should be put and kept in position by a well-fitting pessary. Even if its axis be normal, it is often excellent practice to lift it out of the pelvis by an elastic ring. At the same time such support prevents a tendency to congestion of the organ, and may be rendered more effectual by careful removal of all weight from the abdomen, by tightly fitting or heavy clothing. Let no one who has not tried this as an adjuvant, undervalue it, for there can be no question of its great utility.

Free use of copious vaginal injections should be practised twice daily, to remove all leucorrhœal discharge, and should this arise from endometritis, that condition should be treated. This indication may further be accomplished by the application of the styptic colloid of Richardson, which consists of a strong solution of tannin in gun-cotton collodion. I know of no means better calculated than this to accomplish all four of the indications enumerated. It appears to act not only as a direct alterative, but, forming a protective crust over the surface, constitutes for it a shield against friction and uterine discharges, while at the same time, by its compression of the excoriated villi, permeated by their loops of vessels, and of the submucous tissue with its increased vascular supply, it diminishes local congestion.

The nerves governing nutrition and circulation in the part should be impressed with a new influence by direct alterative applications. The best solid ones are the stick of nitrate of silver or sulphate of copper; and the most effectual fluid applications, saturated solution of carbolic acid; chromic acid ℥ss to water ℥j; compound tincture of iodine; equal parts of tannin and glycerine, left in contact with the part on pledgets of lint or cotton; iodoform; and saturated solution of persulphate of iron, pure or diluted with equal parts of glycerine.

It is a good routine plan to begin with a thorough application of solid nitrate of silver, and follow this immediately by a protective coating of styptic colloid.

When an 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 steel curette, before applying the caustic.

After this the same substances may be used as for ordinary granular degeneration.

Should simple eversion of the cervix exist, the hemorrhoidal mucous membrane should be at once removed by the scissors or destroyed by fuming nitric acid. When this is excessive, and due to laceration of the canal 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.

The last indication in enumeration, but not in importance, is the prevention of congestion, local and general. To a certain extent this is accomplished, locally, by all the alterative and astringent applications alluded to, and the same thing may be furthered by vaginal suppositories and injections. Should any case prove very obstinate, this end may be more decidedly attained by taking a sharp-pointed, curved bistoury, and beginning as high up the cervix as the disease extends, cutting through the mucous membrane and submucous tissue, extending the incision outside the os as far as the surface is affected. Five or six such superficial and painless incisions sever the network of little vessels in the submucous tissue, and, for the time at least, interfere with the circulation.

Congestion of the whole uterus is greatly relieved by removal of weight from it by abdominal and skirt supporters; avoidance of muscular efforts; the use of a pessary; careful regulation of the bowels; rest, especially during menstruation; and the use of copious, warm vaginal injections.

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.

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 these, should an anodyne be needed, one grain of the extract of belladonna, or 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 whole covered with cocoa butter. They may be introduced by the finger, but by the use of the vaginal suppository tube elsewhere mentioned, there is much greater certainty of their coming in contact with the diseased surface. Suppositories may be employed once or twice a day.

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.

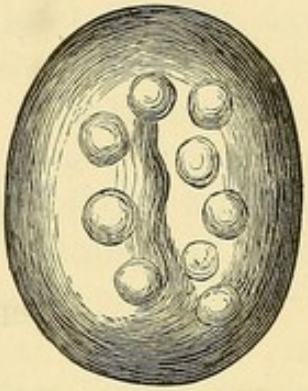
Cystic or Follicular Degeneration of the Cervix.

Definition.—This form of disease, 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," says Farre, "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." A recollection of these facts is essential to a full understanding of the stages of this form of degeneration.

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 covering the part. These are due to repletion from retention of the secretion of the follicles. 2d. These cysts are seen open, *i. e.*, they have burst, and a depression 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 depressions just mentioned. For the thorough knowledge of this subject we are indebted, as for so much else relating to the anatomy and pathology of the uterus, to Dr. Arthur Farre. Usually the cervix is seen studded over by little globular bodies about as large as a hemp seed with here and there a depression, and here and

there a prominence of red and irritable looking character.

Fig. 85.



Cystic degeneration of the cervix.

Synonyms.—It will now be readily appreciated why a variety of names should 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.—Anything which keeps up congestion in the cervical mucous membrane may give rise to this affection of the mucous glands of the vaginal cervix. Among the chief are:

Cervical endometritis;
Granular degeneration;
Cervical hyperplasia.

Prognosis.—If a few scattered cysts appear, the prognosis is decidedly favorable; but in certain rare cases, where the whole of the extremity of the cervix is filled by them, nothing but amputation of the part containing them accomplishes cure.

Treatment.—The contents of all the cysts should be evacuated by a bistoury, 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 treated upon very much the same plan as that advised for granular degeneration.

Should a great amount of cystic degeneration exist, and cure not follow evacuation and cauterization of the cysts, the vaginal face of the cervix should be removed by the galvano-caustic wire, or by bistoury or scissors. Here, as in cervical endometritis of cystic character, the rule of surgery which inculcates the ablation of a part which is the habitat of a disease which proves incurable by minor means, should be followed.

CHAPTER XVIII.

SYPHILITIC ULCER OF THE CERVIX UTERI.

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 which I felt satisfied 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 Prof. Bumstead.[3] The author investigates the character of syphilis when affecting all parts of the body, even the lachrymal sacs, the membrana tympani, etc., but nowhere is any mention made of the disease appearing on the cervix, except a

[1] Bennet on the Uterus, p. 350.

[2] Mal. de l'Utérus, vol. i, p. 169.

[3] Bumstead on Venereal Diseases.

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, and, as M. Gosselin has pointed out, instead of passing off rapidly, as it sometimes does, it may 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 malignant disease. 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 cases 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.

Secondary eruptions, as, for example, mucous patches, vegetations, etc., which appear here will be known by

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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.

Their rapid development;
Their connection with constitutional signs;
Simultaneous affection of the vagina;
Absence of chronic cervical inflammation;
The peculiar appearance of secondary eruptions.

Treatment.—This will consist in cases of chancre of the ordinary treatment adopted when such an ulcer affects any other part. In cases 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.

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 gynecologists 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, Wltczek, Baudelocque, and Böer. Gartshore describes a case of retroflexion complicated by retroversion, but the flexion appears to have made little impression upon him. In 1775 Saxtorph wrote an essay entitled "De Ischuria ex utero retroflexo," describing a case with autopsy, but the words "orificium alte supra pubem reperi," show that it was not a true case. About the same

time Wltczek published an unquestionable case "de utero retroflexo," but it occurred during utero-gestation, and hence does not concern our inquiry. Both in England and France this subject of displacements attracted great attention at this period. [1] "At this time Chopart upon his return from England, where he became well acquainted with W. Hunter, informed the Academy of Surgery what progress was being made in a subject which had attracted attention in France thirty years before."

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:

Bazin, Paris	1827.
Améline, Paris	1827.
Boivin and 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 gynecology. I have not of course attempted to enumerate all writers upon displacements, 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 gynecology, 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 upon gynecologists 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

[1] Cusco, "Thèse sur l'Anteflexion et la Retroflexion de l'Uterus," Paris, 1853.

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 pathology and treatment.

Pathological Significance of Versions and Flexions.—The ancients ascribed to these displacements many constitutional evils, as paralysis, hysteria, etc., 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 endorsement 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."

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, but very rarely do, exist without causing any symptoms, for in themselves they do not constitute disease. Thus it is that in rare cases we see the uterus forced completely out of its place by tight clothing, without the production of morbid signs.

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[1] Goupil, B. & G., op. cit., p. 459.

[2] Op. cit., Amer. ed., p. 112.

2d. By interfering with escape of menstrual blood, by disordering uterine circulation, and keeping up hyperæmia, 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. Often being the results, as they are sometimes 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 them to prevent resulting relaxation of uterine supports.

5th. One reason for the great prejudice existing against the use of pessaries 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 deviations for versions and flexions.

Anatomy.—The uterus is kept in its normal relations in the pelvis by the following means:

1st. By the vagina to a limited extent;
2d. By the areolar tissue and fasciæ of the pelvis;
3d. By juxtaposition with the bladder and rectum;
4th. By the following ligaments:

a. The round ligaments, continuations of uterine tissue;
b. The utero-vesical ligaments, bands of pelvic fascia, and uterine muscular tissue passing between the bladder and the cervico-corporeal junction, where they attach themselves, and prevent retreat of cervix;
c. The utero-sacral ligaments, formed of hypogastric fascia, and uterine and vaginal tissue, 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, enclosing areolar tissue, ovarian and round ligaments, and ovaries; preventing lateral, anterior, and posterior displacements.

5th. By the sustaining influence of the abdominal cavity.

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, the uterine tissue develops rapidly into muscular structure. This keeps the cavity of the organ closed by tonic contraction, and removes the possibility of inversion unless it be accomplished by absolute violence. But when from any cause this contractile power 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 a cavity, and it must be evident that these, and only these changes of position 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 enfeebles 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 a prolapsed vagina 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;
   - Excessive growth 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;
   - Abnormally large pelvis.
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;
   - Prolapse of vagina, bladder, or rectum.

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.

No circumstance combines so many of these causes of displacement as utero-gestation and parturition. Should involution follow these without interruption, no tendency to displacement results. But the process of involution is frequently interfered with. Then as consequences of the arrest of retrograde metamorphosis the uterus remains large and heavy; the vagina voluminous and feeble; and the uterine ligaments, which owe their strength chiefly to the uterine cortex which they contain, lax and weak. As a result of

parturition, too, the perineum is often enfeebled, which allows of prolapse of the vagina, which produces traction upon the uterus.

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.

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, when there exists a growth in the walls or cavity of the uterus which renders it too large for accommodation in the pelvis, or, when an abdominal tumor draws up the uterus. It never requires treatment, and is of importance only as exciting suspicion of pregnancy, or as an evidence of morbid growth in some way connected 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.

Unfortunately for the student of this subject, its nomenclature has been rendered somewhat obscure. By some, all cases of prolapsus in which the uterus does not escape from the vagina, are termed incomplete, while those in which it does, are styled complete. By others, complete protrusion is denominated procidentia; and, by others still, a very slight descent without alteration of direction of axis has been designated by the very odd name of squatting uterus. I have striven to simplify the matter by applying the name prolapsus to all, and marking the degrees of descent by the terms 1st, 2d, and 3d.

Anatomy.—The uterus is delicately poised in the pelvis, and prevented from descending to its floor by the following agencies: a surrounding investment of areolar tissue, which binds it to the bladder, the rectum, and the pelvic walls; certain ligaments, which attach it to neighboring points of support, a general sustaining influence exerted upon the viscera of the abdomen and pelvis by the abdominal cavity; and the elastic walls of the vagina. About the sustaining influence of the vagina there is much doubt, some, like Savage, denying it; while others, like Bennet, West, and Kiwisch, maintain it. My impression is, that the tonicity and apposition of the walls of this canal certainly effect something in the way of support, although observation has led me to modify very much the belief which I once had in its great influence. Loss of tone in it resulting in prolapsus vaginæ is commonly attended by a similar prolapse in the uterus, but it does not follow that the uterus falls from want of support; it is more probably dragged down by the heavy vagina.

On the other hand, a good deal of stress has been laid upon an experiment for which Aran credits Stoltz; that of cutting the vagina away without noting any descent of the uterus. A little reflection must show that this proves almost nothing. It merely

demonstrates the fact that, without the vagina, other supports are sufficient to sustain the uterus. No one has ever maintained that the vagina was the only support which keeps the uterus up, nor that others were insufficient without it.

A great deal of support is unquestionably derived from the connective areolar tissue, which so closely unites the uterus with the rectum, bladder, and pelvic walls, as to involve displacement of these viscera in its descent. Dr. Savage, dragging the uterus of a cadaver forcibly downwards by means of a vulsellum attached to the neck, found that after cutting its important ligaments, and overcoming by force the action of the vagina, it still would not advance. "The obstruction was found to be due to the subperitoneal pelvic cellular tissue, particularly where it surrounds and accompanies the uterine bloodvessels."

The most important factors in the prevention of prolapse are the utero-sacral ligaments, which Aran considered the only real ligaments of the uterus. Arising from the point of junction of neck and body, they usually embrace the rectum in their bifurcation posteriorly, and, diverging on each side of it, terminate in the subperitoneal cellular tissue, as high up as the second lumbar vertebra. They are exceptionally inserted into the rectum. It was the recognition of this anatomical arrangement of these important ligaments which led Huguier to suggest that they be called utero-lumbar, instead of utero-sacral. They consist of the following elements: peritoneum, pelvic connective tissue, uterine cortex, and vaginal muscular fibre. Their influence, as likewise to a much less degree that of two similar bands connecting the cervix in front with the bladder, cannot be doubted.

These are probably all the factors which unite in the 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.

Fig. 86.

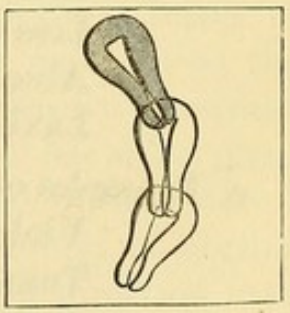

Diagram representing the uterine axis in the three degrees of prolapsus.

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.

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. 86.

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 to the ostium vaginæ. In the third the last barrier has been overcome, and either a part or the whole of the uterus hangs between the thighs.

Causes.—The causes which predispose to this accident are:

Child bearing;
Laborious occupations;
Advanced age;
Habitual constipation.

I know of no way in which I can give so concise a summary of the exciting causes of prolapsus as by a reference to the classification to which I have already referred under general considerations upon displacements; for the exciting causes will be found to belong in every case to one of four classes: those increasing uterine weight; those enfeebling uterine supports; those forcing the uterus down by power applied above; and those drawing it down by traction from below.

a. Examples of causes connected with increased uterine weight:

Tumors, submucous, subserous, or mural;
Pregnancy (rare, but sometimes met with);
Hypertrophy or hyperplasia;
Retained fluid.

b. Examples of causes connected with enfeeblement of uterine supports:

Abnormally capacious pelvis;
Rupture of perineum;
Loss of tone in vaginal walls;
Loss of tone in uterine ligaments;
Absorption of fat from pelvic areolar tissue;
Laxity of abdominal walls.

c. Examples of influences forcing the uterus downwards:

Violent coughing;
Tumors in abdomen;
Ascites;
Violent muscular efforts;
Tight and heavy clothing;
Straining at stool.

d. Examples of influences dragging uterus down:
Congenital or acquired shortness of vagina;
Prolapse of vagina, cystocele, rectocele;
Subinvolution of the vagina.

I have already stated that these evil influences are most completely combined in the condition existing after parturition; that the uterus is heavier than normal, the recently distended vagina relaxed and feeble, the uterine ligaments very much stretched, and the sphincteric muscles of the vagina often weakened. When, as so often happens, rupture of the perineum and of the cervix uteri occur, and are followed by subinvolution of vagina, uterus, and uterine ligaments, we have in perfection all the conditions which give rise to this displacement. Of all the causes of prolapsus this combination is the most frequent, and hence the difficulties attending cure. It is for this reason that prolapse is found to be 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 that in 114 cases of prolapsus 99 occurred in women who had borne children.

Next in order of frequency will be found to be a condition which occurs in old women, a 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. Here, though the uterus is atrophied, it descends in spite of its lightness, partly from loss of vaginal support, and partly by traction exerted upon it by the prolapsing vaginal walls.

That the abdominal cavity exerts upon the uterus a peculiar retentive power, no one will question who watches the influence of respiration upon this organ. It rises and falls as regularly as the diaphragm does, and behaves as if it were itself directly concerned in the respiratory process. Dr. Matthews Duncan[1] has done great good by his admirable elucidation of this fact, and in the future I believe that more valuable contributions to the etiology of uterine displacements will come from investigations in that direction than any other. Loss of tone in the abdominal walls probably favors displacement by effecting an alteration of the direction of force

[1] Researches in Obstetrics.

transmitted to the uterus, bladder, and superior vaginal wall, and by permitting the entrance of intestines into the anterior peritoneal prolongation or anterior uterine excavation.

Increased uterine weight and pressure from above are so plainly active in creating prolapsus that no one will doubt their causative influence.

Pathology.—There is no variety of displacement about the pathology and mechanism of which gynecologists are more at variance than this, and yet none to which a greater amount of honest, scientific labor has been applied for the elucidation of these very points. As examples, I may cite the experimental researches of Aran,[1] Legendre,[2] Huguier,[3] Savage,[4] and Taylor,[5] to which the seeker after more elaborate data is referred.

My limited space will not permit me to go fully into the views of these investigators, and I shall confine myself chiefly to a rather dogmatic statement of my own opinions, at the same time acknowledging that they are, in great extent, founded upon the investigations alluded to.

It matters not whether the original cause of the displacement be increase of uterine weight, depreciation of sustaining power, 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 sphincteric muscles impaired. The displaced organ is generally affected by congestion and inflammation of the mucous lining, its cavity is much enlarged, and solutions of continuity occur 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.

"The tension of the aponeurotic fibres of the broad ligaments," says Legendre, "during uterine prolapse, results in compression of the hypogastric veins, as compression of the veins of the neck occur, from tension of the cervical fascia, when the head is forcibly thrown backward. In this way, congestion of the uterus and other pelvic organs is kept up." Prolapsus, from its influence in thus producing

[1] Etudes Anatomiques et Anatomo-pathologique sur la Statique de l'Uterus, Paris, 1858, Archiv. Gén. de Méd.

[2] De la Chute de l'Uterus, Paris, 1860.

[3] Les Allongements Hypertrophiques du Col de l'Uterus, Paris, 1859.

[4] Female Pelvic Organs, London, 2d ed., 1870.

[5] On Amputation of the Cervix Uteri, etc., New York, 1869.

hyperæmia, is usually attended by hyperplasia of the areolar tissue of the uterus. This organ undergoes an absolute increase in size, and the tissue of the cervix is especially altered. Simultaneously with hyperplasia, there is varicose degeneration of the bloodvessels of the cervix and absorption of its proper tissue. This increases the natural ductility of the part, and upon any traction being applied it stretches so as to produce the phenomenon of variation in the length of the uterus, mentioned under the head of physical signs. The walls of the vagina are found much thickened by proliferation of epithelium and hypertrophy of the submucous layers of areolar tissue. Thus it becomes not only more capacious, but heavier and more voluminous than normal, and even if its increase in volume and weight are consequences of uterine displacement, it drags upon the uterus and increases its tendency to descend.

The uterus may descend from its normal place in the pelvis under any one of the four influences which have been mentioned. It must not, however, be supposed that one only is usually active. On the contrary, two, three, and even four are often combined in furthering the result. For thoroughness of study they are examined apart, that course being also chosen from the fact that even if several causes are combined, one is usually especially prominent as a factor.

If a careful clinical study be made of this interesting subject, the uterus will be found to descend in one of these ways:

1st. A woman who has previously been in good health begins to complain of dragging about the loins, backache, and sense of fatigue about the pelvis. An examination is made, and the uterus is found resting upon the floor of the pelvis, its axis unaltered. There is no rupture of perineum, no redundancy of vagina, and the habits of life of the patient preclude the possibility of muscular efforts or tight clothing being agents in the condition. A careful examination of the displaced uterus shows it to be large and heavy from subinvolution, or discovers a fibrous tumor in its structure. The natural supports have been perfect, but they have been overtaxed and have yielded. Increased uterine weight is the prime mover in the disorder.

But keep this case under observation. The descent already effected has drawn down the bladder, caused pressure upon the rectum, established a hyperæmia in the tissues of the vagina, and begun already to rob the uterine ligaments of their power by stretching them. Pressure on the rectum and dragging upon the bladder create irritation, the patient "bears down" in evacuating these

viscera, and a new influence is developed: force from above. Very soon congestion of the vagina results in excessive areolar growth, this canal falls into its own distended channel, and another evil influence is the result: traction upon the uterus from below. The uterus has now descended so that its os projects between the labia majora; if its ligaments were stretched before, how much more so must they be now!

2d. A uterus is found in the first degree of prolapsus. It is a healthy uterus, normal in size, weight, and consistency. Its supports appear perfect, and no influence exerts traction upon it from below. Everything is normal, but one—the uterus has descended. Examination proves that this woman has labored hard, lifting heavy weights, and placing herself in a constrained attitude to do so; or she has for weeks suffered from a spasmodic, violent cough; or from obstinate constipation which has caused tenesmus. The cause of the prolapse is evidently force applied to the uterus from above. But this remains the sole cause for a short time only. Very soon increased weight of the uterus from congestion, enfeeblement of uterine supports from prolonged tension, and traction by falling of the hypertrophied vagina and prolapsed bladder complete the vicious circle.

3d. An examination of the uterus in a case exactly similar as to symptoms, demonstrates no increase of uterine weight, no force applied from above. The woman is found to have a justo-major pelvis, which has always resulted in precipitate labors; or she is past sixty, and a senile atrophy is developing; or the perineum is ruptured, and the anterior and posterior vaginal walls are protruding in egg-like pouches at the vulva, not sufficiently to drag upon the uterus, but enough to shorten the vagina by allowing its distal end to protrude. The mischievous factor is loss of uterine support. The uterus is normal in weight and exposed to no evil influences from pressure or traction, but its feeble supports even then are unfit for their functions, and the uterus falls. It descends to the second degree, and dragging upon the broad ligaments, their aponeurotic expansions compress the hypogastric veins, great congestion results, and at once a new influence develops—increased uterine weight. Now rectal and vesical tenesmus and pressure by the displaced abdominal viscera add another untoward element—force applied from above. And as the descending uterus everts the congested, voluminous, and heavy vagina, it drags the offending organ still more rapidly down.

4th. The reader wearied by repetition may crave a respite here, but he asks it just where it cannot be granted, for we come to the consideration of the most frequent and consequently most important of all the influences resulting in prolapsus uteri. Prolapse of the uterus is sometimes a primary affection, but in the great majority of cases it is secondary, produced by prolapse of the vagina, which literally drags it from its position. There are two methods in which this occurs: 1st. The perineum is ruptured, and by this the vaginal walls lose the buttress against which they rest, and the power of the pubo-coccygeus muscle is diminished. 2d. A vagina developed by utero-gestation does not undergo involution, but remains a large, voluminous, and heavy bag, the redundant walls of which overcome the resistance of the perineal body and prolapse, dragging the uterus down, either before or simultaneously with their escape from the vulva.

Dr. Duncan, in an essay read before the Edinburgh Obstetrical Society,[1] in 1871, maintained that the perineum had nothing to do with the support of the uterus, and that, therefore, laceration of this part is not a cause of prolapsus. I do not believe that the perineum supports the uterus directly, nor that upon the cadaver its section would result in prolapsus, but I believe that destruction of the perineal body which acts as a sphincter to the vagina, results in loss of support to both its posterior and anterior walls. These prolapse, their tissue becomes hypertrophied, and they drag down the bladder and then the uterus. Look at Fig. 22, and see how much support vagina and bladder obtain from the perineal body, and the results of its rupture may be better appreciated. So long as the vagina is normal in volume and weight, and remains within the pelvis with its walls in apposition, it constitutes, I think, a uterine support. So soon as it falls from the pelvic cavity, becomes hypertrophied, and has its walls separated, it degenerates into a uterine tractor.

Dr. Duncan points to the fact that many cases of complete perineal laceration do not produce prolapsus uteri. This is true. Such laceration is usually the result of parturition, and is, I am satisfied, often a cause of subinvolution of the vagina. If this condition has resulted, the laceration is very generally followed by prolapsus vaginæ, and thus by descent of the uterus. If vaginal involution have not been interfered with, it is usually not so.

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[1] Transactions, vol. ii, p. 269.

Aran points out the fact, that removal of the vagina from the cadaver does not produce uterine prolapse, and Dr. Duncan declares, "I have no doubt that if, by way of experiment, the perineum was cut through in a healthy woman, no tendency to prolapsus would be thereby produced." I freely accept both experiment and proposition, but I cannot agree in the deductions based upon them. When the uterine ligaments are strong, the uterus does not readily leave its position. Sometimes traction steadily exerted upon the cervix fails to draw down the body, but stretches the neck so that the uterus measures by the sound between six and seven inches. Klob[1] declares, that "relaxation of the uterine tissue is noticeable in the region of the external orifice, and consequently in what was previously the vaginal portion and lower segment of the cervix, which part often assumes a spongy softness. This relaxation must be attributed to the varicose condition of the bloodvessels, and absorption of the cervical tissue." This, and not hypertrophy, is probably the condition of this distended part. In many cases, before prolapse occurs, the uterus is affected by areolar hyperplasia, or the local atrophic state engendered by flexion, which last Dr. Hewitt regards as a frequent source of it, and when thus weakened it readily yields to traction. When the tractile force is checked by reposition of the uterus, the neck instantly contracts, and the length of the whole organ greatly diminishes.

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 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 gynecologists and the great majority, whose experience is opposed to theirs.

In these cases the force of traction appears to expend itself upon the most powerful uterine ligaments, those inserted at the axis of rotation, the cervico-corporeal junction. They yield, and the cervix advances towards the vulva, but the uterus, supported though it is by factors of less power, resists steady traction, and remains in

[1] Op. cit., p. 88.

place. Legendre attached to the cervix uteri of a cadaver, a weight of fifteen kilogrammes, which was gradually increased to fifty during the period of an hour, then diminished to thirty, and kept at that for two hours. At the commencement of the experiment, the uterine canal measured by the sound five centimetres, and at its conclusion nine, the lengthening being chiefly in the cervix. In other experiments, a less weight kept in action for several days, caused complete prolapse with elongation of the cervix uteri.

Since the appearance of Huguier's essay upon supra and infra-vaginal elongation of the cervix as conditions commonly mistaken for prolapsus, writers have commonly considered hypertrophic elongation of the cervix below the vaginal junction under this head. I shall not do so, because the propriety of such a course seems to me to be sustained neither by clinical observation nor pathological investigation, and because true cervical hypertrophy will be elsewhere treated of.

That there is a form of hypertrophic elongation of the cervix uteri, which occurs below the cervico-vaginal junction, and appears upon very superficial examination to resemble prolapsus, or even produces that condition by traction, I, of course, admit. But it appears to me erroneous to regard supra-vaginal elongation, which is marked by an attenuation of the tissues of the neck and "a spongy softness," according to Klob attributable to a "varicose condition of the bloodvessels and absorption of the cervical tissues," as true hypertrophy.

It is highly probable that this condition, the result of traction, may occur during pregnancy, and exist as a source of great annoyance after it. The following deductions by M. Gueniot[1] substantiate this view:

"1. In certain women there exists during pregnancy, and occasionally at the time of parturition, a special affection of the neck of the womb, which generally passes unrecognized, and has not hitherto been the subject of any description.

"2. This affection may be designated under the name of *Œdematous Elongation with Prolapse of the Neck*, which indicates the principal constituent traits. Hyperæmia and turgescence of the organ, the arrangement of its cavity, which is transformed into a long and freely patent canal; the rapidity with which these symptoms may disappear, and the great facility with which they may be

[1] Archives Gén. de Méd., Juillet, 1872.

reproduced under certain circumstances, are all so many fundamental characters of the affection. Ulceration of the os tincæ, occlusion of the vagina, a thin and flaccid condition of the uterine walls, are also almost constant symptoms; as are also circumpelvic pains, a feeling of general debility, and variable disturbances in micturition.

"3. The causes of this change in the neck of the uterus are complex; they are derived from two sources: certain anatomical dispositions of the organ, and various circumstances exerting upon it a prolonged mechanical action.

"4. Although very rare, œdematous elongation with prolapse of the neck is, without doubt, a less exceptional affection than one would be inclined to imagine. Many observers have erroneously assimilated it to hypertrophic elongation, or to simple prolapsus, to which affections, in truth, it presents a great analogy, but from which it is essentially distinguished by proper and very important characters."

Course, Duration, and Termination.—Prolapsus uteri 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 Munro, is referred to on page 343 of this work. 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 gan-

[1] Trans. Obstet. Soc. of Berlin, 1847. [2] Clinical Lectures.

grene. 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 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 granular degeneration 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.

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 facts that the uterine catarrh which usually exists is rather the result of a passive congestion of the endometrium than of true inflammation, and that the axis of the organ, although altered in direction, is not bent upon itself so that an obstruction in it is created.

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 upward 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 sphincteric muscles, 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 prolapse rapid and easy, but even here I have known very grievous mistakes 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 five or six inches. The organ now being replaced, and again examined by the sound, it is found to measure only three or four, and this experiment may be repeated any number of times with the same result. The explanation of this fact is given in connection with the subject of pathology.

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, after it has been restored to the pelvis.

Prognosis.—The prognosis as to cure is very bad, and even as to complete relief not good. It will depend somewhat 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.

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;
Hyperplasia of uterus;
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 first and second degrees, its tissue becomes congested, and appears swollen, œdematous, soft, and relaxed. In time this passive hyperæmia induces hyperplasia, which especially affects the connective tissue. As a consequence the uterus is enlarged, and increased in weight and capacity. Not only do congestion and hyperplasia 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 down-

wards 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.

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 hyperplasia, subinvolution, pregnancy, or tumors. It may even occur to a uterus normal in size and constituency. In an instant the patient feels that something has given way within her, becomes prostrate and much alarmed, and suffers pain of an 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, the cervix was driven out of the vulva, the body being arrested by the sphincter vaginæ and perineal septum. The last patient I saw a year after the accident. She had suffered intensely from the displacement, but from false modesty had never told of it. I discovered distinct traces of the hymen, which I had every reason, both physical and moral, to believe had not been ruptured by sexual congress.

In such a case as this it appears to me highly probable that the utero-sacral ligaments are ruptured. This supposition, the difficulty of proving which by necropsy is apparent, may have attracted attention, but the only allusion to it which I have met with is the following from Courty, who, in speaking of the utero-sacral ligaments says, "if they are stretched or *torn* the entire organ falls."

In acute prolapsus, 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 chest, 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 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, 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 traction by a prolapsed vagina. Unfortunately, however, after the disease has existed for some time, it is often impossible 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.

As far as possible, however, the original cause should be ascertained, and if it be properly sought for it will, in a number of cases, be discovered. For example, suppose that there is no enlargement or prolapse of the vagina, no evidence of excessive downward pressure, and yet the uterus lies upon the pelvic floor. Strength should be given to its normal supports.

Suppose, on the other hand, that the vagina be found to be in

its normal state, and the prolapsed uterus very heavy, weighing, perhaps, three times what it should. This increase of weight should receive especial attention.

If, again, the insignificant, atrophied uterus of an old woman of seventy be prolapsed into a large, flabby, non-contractile vagina, traction by this vagina may safely be credited with the uterine displacement.

Lastly, if the common coincidence of rupture of the perineum, with subinvolution, and prolapse of the vagina and uterus be encountered, it may be assumed that increase of uterine weight, loss of support, and traction, have combined to bring about the issue.

It should be the care of the physician to keep every one of these indications in mind; and in every case attend first to that which concerns the primary and most important factor; second, to those which are secondary and created by the displacement itself.

The means adapted to prevention of pressure from above are:

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 feces.

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 301.

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. The physician may choose intelligently, if he only bears in mind what it is that he desires to accomplish by them.

During the continuance of treatment 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.

Means adapted to diminution of uterine weight are:

Removing polypi, tumors, etc., by operation;

Removing uterine inflammation, hypertrophy, and congestion, by appropriate treatment;

Amputation of the neck of the womb.

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 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 deavors to avail himself.

Means for strengthening or supplementing uterine supports:

The recumbent posture;
Local astringents and tonics;
General tonics;
Pessaries.

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 pelvic tissues may be made 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.

General tonics, mineral and vegetable, should be employed. Among these, ergot, strychnia, and iron may be specially mentioned. Sea-bathing is peculiarly beneficial for this purpose, for it not only acts locally, but improves the tone of the whole system.

Pessaries.—The plan of supporting the prolapsed uterus, vagina, bladder, and rectum by mechanical contrivances which supplement the enfeebled natural supports constitutes a method of great value, and one which will never be cast aside. In a great many cases, objections, or advanced age on the part of the patient, want of skill on that of the physician, and the uncertainty as to result which attaches to all surgical procedures for the cure of prolapse, render a resort to a method which relieves very greatly during even a long lifetime, one which is dictated by prudence and good sense. To support four organs, which are, and have been for a long time, prolapsed, by an artificial mechanical means, frequently taxes the skill of the ablest gynecologist, and sometimes utterly defeats his best attempts. Let the general practitioner bear this undeniable fact in mind, and not become discouraged by difficulties, nor disheartened by repeated fruitless efforts. Let such a one who reads this believe too the assertion which I here make, that I advise no instrument merely because it has been generally accepted, and that I limit myself to the mention of those only which I daily employ in practice with good results.

In employing pessaries for all the varieties of prolapsus of the pelvic organs, the desideratum is an instrument which will not distend the vagina, at the same time that it will support the uterus. Such instruments as sustain the vagina without distending it, and thus allow it to regain something of its former tone and elasticity, are those which should be, as far as possible, selected. The great functions which, in the majority of cases, are required of a pessary in prolapsus are these: first to supplement the action of the utero-sacral ligaments, the chief factors in sustaining the uterus; second, to keep the vagina, bladder, and rectum in place, so as to prevent them from perpetuating the uterine displacement by traction.

I have already said, that he who treats this condition, in any of its varieties, by replacement and support by a pessary, must fre-

quently meet with insuccess. Is it not illogical to suppose that by any mechanical contrivance, heavy, congested, and prolapsed organs, often four in number, very generally three, can be, without preparation or the use of allied means, kept at once in normal position? Yet such a result is often anticipated. Before resorting to a pessary at all, the patient should be kept in the recumbent posture for a few days, or, if possible, a week, with the foot of the bedstead elevated six inches, for the purpose of allowing congestion to pass off. During this time mild cathartics should be given to further this end by removal of fecal matter and stimulation of hepatic circulation, and the vagina should be systematically and copiously irrigated with astringent fluids to harden its tissues in preparation for a pessary, to effect support of the uterus, bladder, and rectum by a re-establishment of its sustaining power, and to cause contraction in its distended superficial bloodvessels. This time is not wasted, for the case is sure to be a lengthy one, and at the end of it, the patient is much better able to begin treatment of a mechanical kind without meeting with mishaps, which, in the commencement, dishearten and discourage her. Nowhere is the statement more true than here, that a good beginning advances us half way to success.

The patient having risen, all of these means, except recumbency, should be continued throughout treatment, and others which are adjuvants to the pessary should be adopted, as, for example, removal of weight of clothing; avoidance of muscular efforts, long standing, and constrained postures; diminution of weight of uterus; and others which have been already enumerated. Having attended to all these points the pessary presents itself as a valuable resource by which to complete and effect restoration of the parts: without attention to them it is often too feeble to accomplish, unaided, the desired result.

Let us suppose that we are dealing with a case of prolapse in the first or second degree, what pessary should we choose? This will depend upon the amount of weight to be sustained. If this be great, a fibrous tumor existing, and, by its weight, depressing the organ, very possibly no internal pessary will succeed; if it be moderate, almost any one of this list will do so—Meigs's elastic ring, Hodge's, Smith's, Hewitt's, or Thomas's pessaries, all of which are shown by diagrams in connection with retroversion. None should be used which distends the vagina, and that employed should be worn without any sense of discomfort; should be kept clean by irrigation with astringent fluid every night, or night and morning;

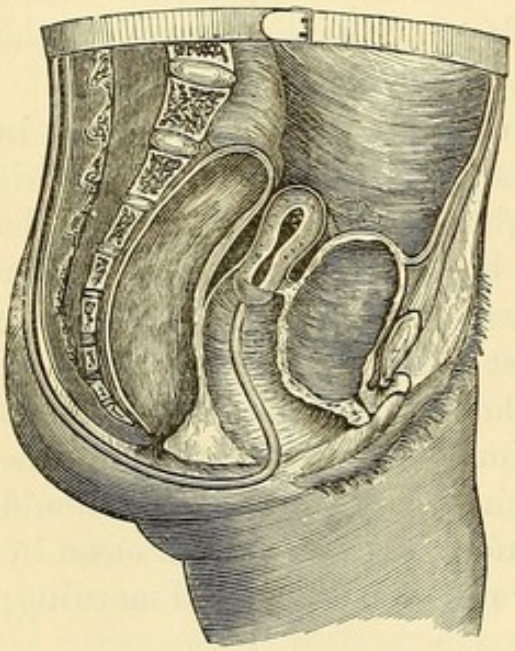
and should be examined, at intervals, by the physician, to make sure that it is not cutting into the tissues.

If the great weight of the uterus render these pessaries, which pass entirely into the body, ineffectual, or, should the case be one of prolapse in the third degree, others, which are in part external and in part internal, should be employed. I rarely attempt to sustain a completely prolapsed uterus by an internal pessary, because I usually despair of success, and because I have known such evil consequences result from them in such cases, that I am unwilling to let the patient pass out of my sight with one in place. It is safer, more effectual, and more comfortable for both physician and patient that she should wear an instrument which she can remove at will, allow the parts to rest during the hours of recumbency, and replace upon rising.

There are three methods by which such support may be furnished, by a stem curling over the perineum, by one passing out of the vagina over the symphysis pubis, and by one ending at the middle of the vulvar opening, and resting upon a bandage passing beneath it. Of these plans, the best is the first, and the next, in merit, the second. The third is objectionable, on account of the want of some point of support against which to fix the distal extremity of the stem, and prevent motion in it.

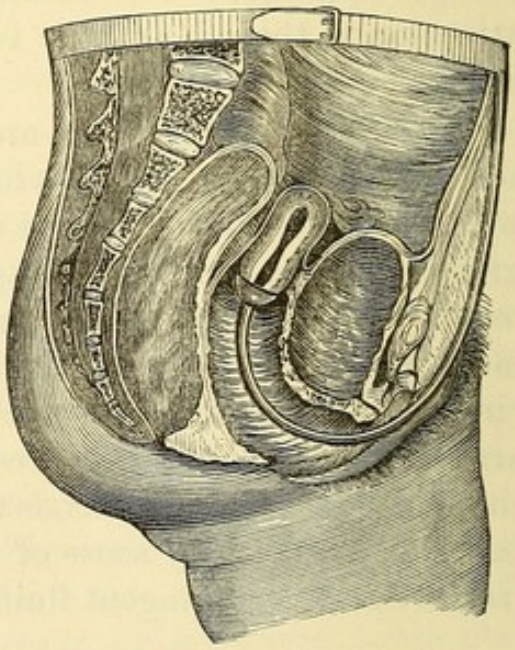
No pessary with which I am acquainted, so universally answers the indications of supplementing the action of the utero-sacral ligaments and sustaining the prolapsed vagina, rectum, and bladder as Cutter's admirable pessary shown in Fig. 87. The cup at its

Fig. 87.



Cutter's prolapsus pessary in position.

Fig. 88.



Prolapsus pessary with abdominal support.

upper extremity receives the cervix uteri, and the simplicity of the instrument enables the patient to remove and replace it with perfect facility. This should be done in the recumbent posture upon retiring at night and rising in the morning.

By reversing the direction of the stem, it may in a similar manner be carried over the symphysis pubis and attached to a belt passed around the waist. Fig. 88 shows such an instrument in position.

Means for preventing traction by the vagina.

Perineal support;
Perineorrhaphy;
Elytrorrhaphy.

Perineal Support.—I have already pointed out the important function of the perineal body in closing the mouth of the vagina and offering a buttress for the support of its walls. When rupture of the perineum occurs, its sphincteric powers are destroyed, 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, partial relief is sometimes obtained.

Perineorrhaphy.—Much more complete and permanent support may be given to the vagina, and prolapse of its walls be much more certainly obviated, by restoration of the perineal body by the operation of perineorrhaphy. If the uterus be not very heavy, this operation often proves a very excellent means of relief, for it removes the tractile power, which pulls down this organ, and thus the cause of the accident is taken away. But this operation, although efficient in these cases, is not likely to prove so where so heavy a weight, as a much enlarged uterus, requires support.

It must not be supposed that, in cases of prolapsed vagina, perineorrhaphy is limited to instances in which the perineum is ruptured. It is equally applicable to those in which the pressure of a voluminous and heavy vagina or uterus has produced complete loss of power in the perineal body, and caused its distention and attenuation. In all cases, to be effectual, it must restore the lost organ, the perineal body, and not simply shut the evil from sight by drawing before it a thin and useless curtain, which extends from the fourchette to the anus.

Elytrorrhaphy.[1]—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[2] upon the subject, that "his desire had been to put beyond controversy the origin of the operation, 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."[3] Judging from these quotations, it appears that the operation has been known and practised 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,[4] 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[5] revived it in 1858, with certain modifications. His operation, which I shall now

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[1] ἔλυτρον, "the vagina," and ραφη, "suture."

[2] Gazette Médicale, 1835, p. 558.

[3] Wieland and Dubrisay, op. cit., p. 533.

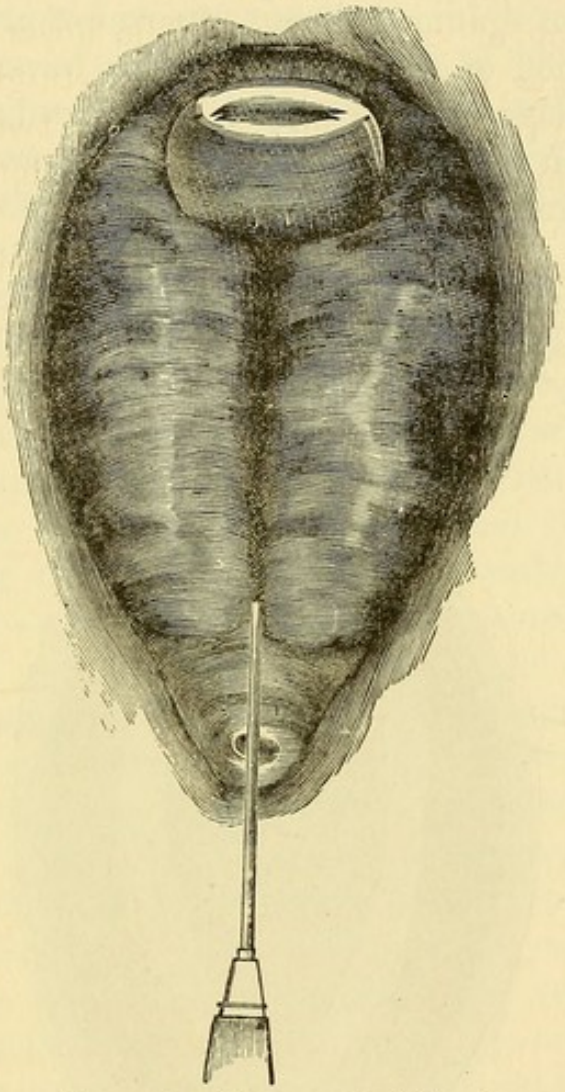
[4] Uterine Surgery, Am. ed., p. 312.

[5] Uterine Surgery, Eng. ed., p. 309.

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. A curved sound, with forked tenaculum points, is fixed in the cervix uteri and made to cause a fold in the anterior vaginal wall, as shown in Fig. 89.

Fig. 89.



Uterus fixed by sound. (Sims.)

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 point, the mucous membrane is hooked up by a tenaculum several lines above the meatus and cut by curved scissors. The tenaculum 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.

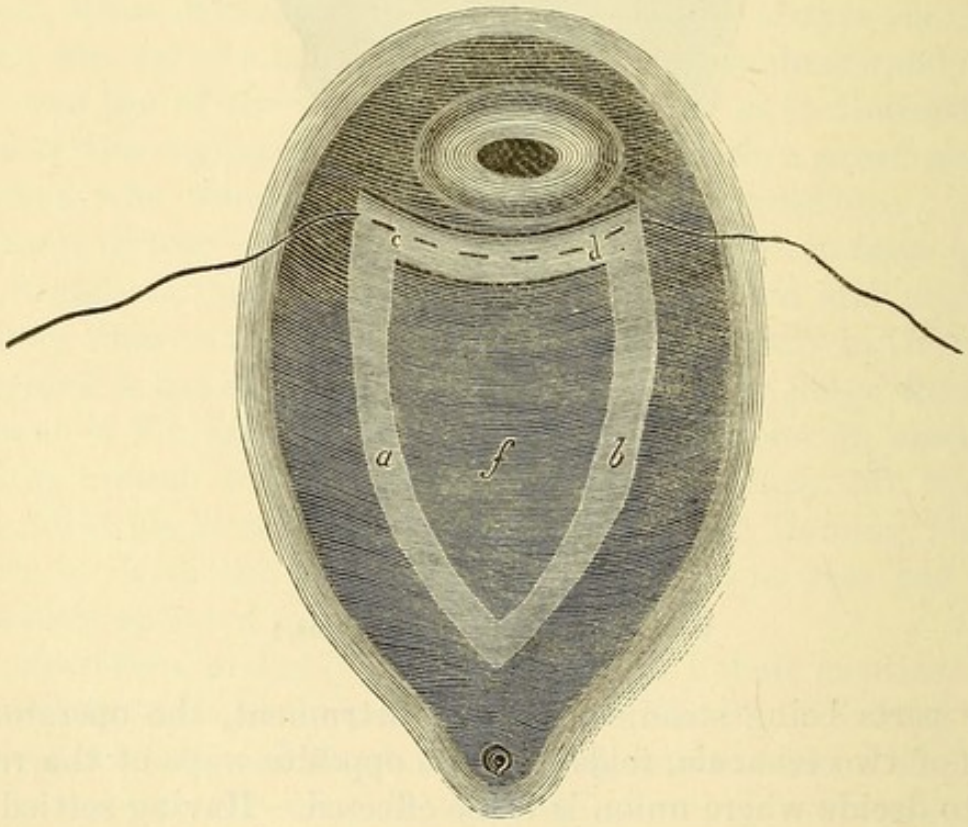
The sound being removed, and the cervix pulled down by a small tenaculum, two transverse lines of denudation, not shown in the diagram, nearly uniting the two arms of the V, are made.

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 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.

Dr. Emmet, finding that the pouch left posterior to the uterine neck by this procedure was sometimes entered by the cervix, im-

Fig. 90



Emmet's operation of elytrorrhaphy.

proved the operation by closing it, as represented in Fig. 90. 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. 89, 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 several times after this plan, and can bear testimony to its simplicity.

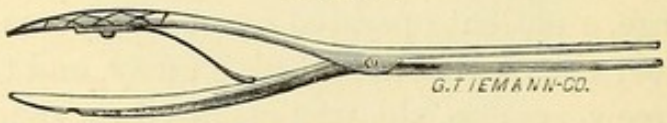
That the operation of elytrorrhaphy has effected excellent results, there can be no doubt, for the journals of the day contain numerous reports of cases successfully operated upon by slight modifications of it. Its disadvantages are, that it is a very tedious process, difficult of performance for one 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 employing it thirteen times 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 experi-

[1] Op. cit., p. 159. [2] Mal. de l'Utérus, p. 748. [3] Vol. viii, p. 523.

enced some of these in practice, I have performed a different operation for the same purpose, namely, removing a portion of the entire vaginal wall,[1] by a process which prevents the possibility of severe hemorrhage, at the same time that it secures complete apposition of the lips of the wound. I have now resorted to this procedure fourteen times. All of my cases, however, have occurred in hospital practice, and of most I have lost sight. From those which I have been able to follow, I feel that I can speak with increasing confidence of the plan. By this method 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 of the whole canal.

Thomas's Operation for Narrowing the Vagina.—This operation may be performed upon either one, or both of the vaginal walls in two successive operations. In doing it, the uterus may in the first operation be left in a state of complete prolapse, or it may be returned to the pelvis, and the procedure accomplished with Sims's speculum in the vagina. Let us suppose it 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 buckshot 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

Fig. 91.



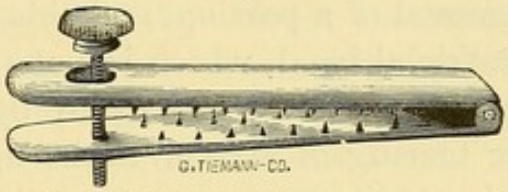
Dilating forceps for separating the bladder and vagina.

a point near the meatus, when it is withdrawn. This insertion I have found quite easy. An instrument of steel, Fig. 91, 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 then passed down

[1] Removal of portions of the vaginal wall was long ago practised by Dieffenbach and others. It is only the method of doing it which is mine.

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, a quarter of an inch in length, fixed upon their inner faces, is then applied.

Fig. 92.



Clamp with teeth for compressing wound in vagina.

This clamp, the limbs of which are united by a hinge, admitting a separation of a quarter of an inch at one extremity, is united by a screw at the other, which can be graduated as to the degree of compression which it accomplishes. The separated vagina is then 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 the vagina is folded so as to protrude as two flaps turned face to face. The clamp is then adjusted, with the hinge towards the cervix and the screw towards the urethra, and tightened by the screw. Then the portion of the vagina hanging out of the clamp is cut off near the edge of the clamp, interrupted silver sutures are passed so as to secure the lips of the wound, and, the clamp still in place, 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, or from the torn recto-vaginal septum.

The patient is then put to bed, all discomfort quieted by opiates, the bladder emptied by the catheter, and the bowels kept constipated. In twenty-four hours the tampon should be removed, in forty-eight the clamp should be taken off, and in eight or nine days the sutures withdrawn.

Usually both walls require operation, an interval of two or three weeks intervening between the procedures. Between the

operation on the vaginal wall after restoration of the uterus to its place and that where the uterus is prolapsed there is this difference: in the first case, 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 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, of course, not yet in a position to speak with positiveness of this procedure, but these are the advantages which I think that it presents. 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. 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. The clamp not being amenable to having its teeth tear out by traction, movements on the part of the patient, coughing, vomiting, etc., are not likely to result in failure as in the ordinary procedure. The entire procedure can always be accomplished by an ordinarily expeditious operator within thirty minutes, which greatly redounds to the advantage of the patient.

My experience thus far with this operation has acquainted me with but one disadvantage connected with it, that is, hemorrhage; but this has always proved controllable by means of the clamp. This 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 vulcanite. The steel stretcher may be dispensed with, and the tearing of the areolar tissue accomplished by a sound.

It is never safe to promise a good and permanent result from any of the operations of elytrorrhaphy. If in a case of enlargement of the cervix, relaxation of the vagina, and complete distention or rupture of the perineum, the patient is willing to submit to three operations, amputation of the cervix, elytrorrhaphy upon anterior wall, and closure of the perineum, cure will often be complete and permanent. This is a trying ordeal, both mentally and physically; nevertheless most women affected by prolapsus in the third degree would unhesitatingly accept one of even greater severity with the prospect of cure.

Besides the operations here mentioned as practised upon the

vaginal walls, Episiorrhaphy, which has been already described, has at various times been resorted to as a curative or palliative process for the affection of which we are treating. This, too, has been variously combined and modified, as, for example, under the names of Inferior Elytrorrhaphy, Elytro-episiorrhaphy, Episio-perineorrhaphy, etc. 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 for 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 here described.

CHAPTER XXI.

ANTEVERSION OF THE UTERUS.

In treating of versions and flexions under separate heads, I would especially guard the reader against supposing that a clear and distinct line is to be drawn, clinically, between them. I have deemed it conducive to completeness and thoroughness of detail to deal with them in this way, but versions are rarely uncomplicated with flexions, and flexions are frequently complicated by them.

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. 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 a valuable statistical report by Dr. Meadows:

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 displacement recorded by M. Nonat,[2] the following were the number of anterior and posterior inclinations:

Anteversion	135
Anteflexion	33
Retroversion	67
Retroflexion	14

"Anteversion," says Klob,[3] "in general is a rare form of displacement, and occurs much less frequently than retroversion."

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

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[1] Diseases of Women, Am. ed.

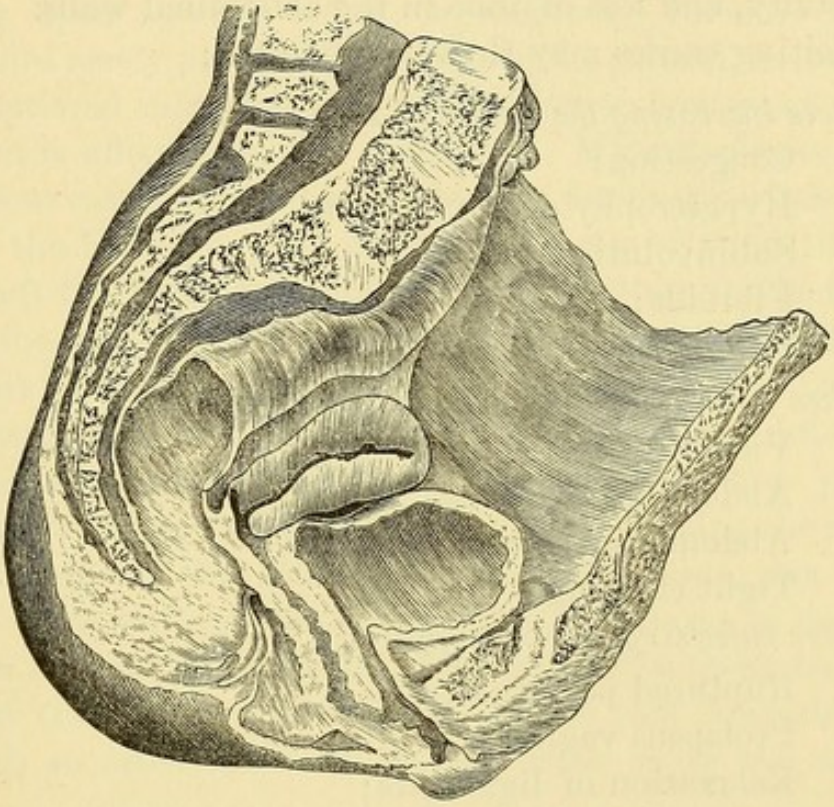
[2] Mal. de l'Uterus, p. 416.

[3] Klob, Patholog. Anat., p. 69.

be conclusive. 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.

Fig. 93.



Normal position of uterus.[1] (Breisky.)

The degree of this forward inclination may be so increased by slight causes as to constitute a morbid state. As to the line which 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.

The chief factors in the suspension of the uterus are the utero-

[1] Boston Gynæcol. Journ.

vesical and utero-sacral ligaments which attach themselves to it at the junction of the neck and body. This point, therefore, constitutes what has been termed, its "centre of revolution." Thus poised, it is kept from revolving anteriorly by the broad ligaments and a certain degree of support furnished by the bladder and abdominal walls. Any influence which overcomes or abolishes the sustaining power of the bladder, the utero-vesical ligaments, or walls of the abdomen, either excites such change of position, or renders the uterus peculiarly predisposed to it from causes of exciting kind.

Predisposing Causes.—The predisposing causes of this affection are parturition, enfeebled muscular condition, habits of indolence and inactivity, and loss of tone in the abdominal walls.

The exciting causes may thus be presented:

Influences increasing the weight of the uterus.

Congestion;
Hypertrophy or hyperplasia;
Subinvolution;
Fibroids;
Pregnancy.

Influences forcing the fundus directly forwards.

Violent efforts;
Abdominal effusions;
Abdominal tumors;
Tight clothing.

Influences enfeebling uterine supports.

Ruptured perineum;
Prolapsus vaginæ;
Relaxation of ligaments;
Destruction of power of utero-vesical ligaments by cystocele.

Influences dragging the fundus directly forwards.

False membranes;
Prolapsus vaginæ;
Cystocele;
Shortness of the round ligaments; (?)
Anteflexion.

A large 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, many to cystocele which takes away support at the same time that it produces traction,

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.

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.

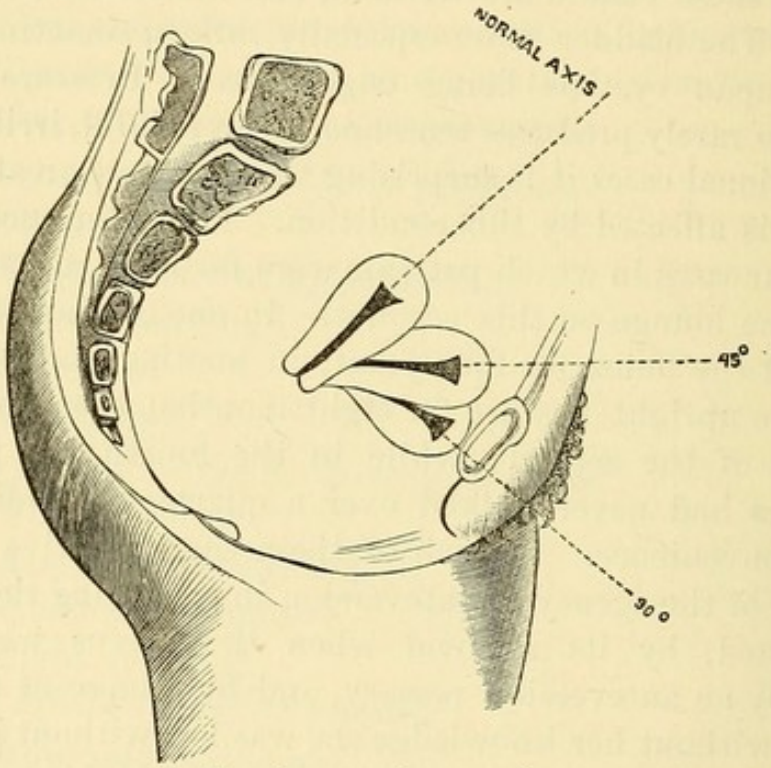
In exceptional cases it is surprising to see to how great an extent locomotion is affected by this condition. My experience furnishes me with four cases in which patients were for long periods confined to bed or the lounge on this account. In one of these the patient had not left the house for four years; 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 distention 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. 94 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.

Fig. 94.



The degrees of anteversion.

Diagnosis.—When in a case of this displacement vaginal touch is practised, 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 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 long been 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 is no doubt that the round ligaments are similarly altered.

Treatment of Anterior Displacements in which Version predominates over Flexion.—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 it as merely a coincident or resulting condition which is

[1] Mal. des Femmes, p. 202.

producing no annoyance, of course the primary disorder must take precedence of it in treatment. It is, however, futile to assume the position that not the displacement, but its cause, must be the main object of attention; that if endometritis, subinvolution, or a fibroid be its cause, they, and not it, must be treated. Nothing so surely prevents success in the management of such cases as the carrying into practice of the theoretical view that support must be confined to those of pure, uncomplicated displacement. It is very often required where this is a result or complication 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 required by the uterus as splints are by a fractured bone, not absolutely 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 easily accomplished. When it proves difficult, 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. 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.[1] 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

[1] The operator should be very sure that the anteverted uterus is not bound down by false membranes before applying force for its replacement.

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.

The dorsal decubitus in cases occurring suddenly, as for example, during pregnancy or after labor, is of great value, and even in chronic cases is an important adjuvant to treatment by pessaries. In the commencement of such treatment, at least, it should be always adopted, for two or three hours every day, at mid-day, for the purpose of affording a temporary rest to the parts.

Prolonged retention of urine was first recommended by Piorry. While the patient is erect it is a means of no value, but combined with the dorsal decubitus, it is certainly, to some extent, effectual, and should always be tried. In cases of pure anteflexion, it is of little or no value, but, when anteversion predominates, it elevates the uterus and sustains it very sensibly, unless cystocele exist. To make these means more effectual, let the foot of the bedstead be elevated about twelve inches. As the bladder becomes distended, this sac, filled with water, is pressed against the anteverted uterus, from which all weight is removed by the upward inclination given to the intestines. Let any sceptic examine an anteverted uterus by touch, after this is done, and he will be forced to yield to the conviction of his senses. As a method of treatment preparatory to pessaries, I would strongly recommend this plan, but only in that way.

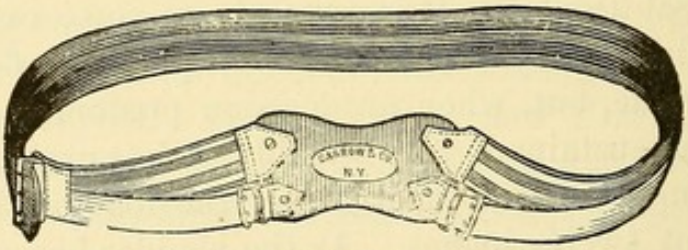
Removal of abdominal pressure, by prohibition of tight clothing, of heavy skirts supported by the hips, and of all constricting bands which cause a substitution of abdominal for thoracic respiration, is

too often neglected in these cases. It is a means of great value, and often gives as much relief as 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 offered a very plausible explanation of the fact that in some women benefit follows the use of abdominal supporters, while in others, absolute injury results from their employment. "If the patient be emaciated," said 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 an abdominal pad or truss, which is at the same time simple, inexpensive, and efficient. It

Fig. 95.



Abdominal pad of wood or cork.

consists of an ovoid block of cedar, 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 an elastic band or 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.

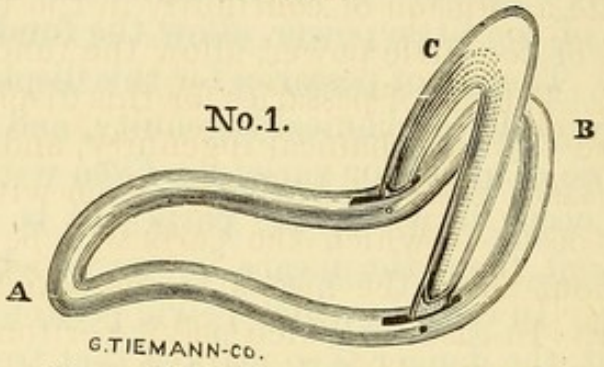
Pessaries.—What is desired of a pessary in sustaining the anteverted uterus is this: to make steady pressure on the base of the

bladder above the cervico-corporeal junction, to supplement the vesico-uterine ligaments, and at the same time not to injure the vagina by excessive pressure at this point. 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 a 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 which is attended by absolute danger. In cases in which pelvic peritonitis has preceded the displacement, the danger is so marked that treatment by pessaries, either should not be adopted at all, or, if attempted, should be limited to the most cautious trials.

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, the treatment should be commenced in this way. The intestines should be evacuated by a cathartic, all weight removed from the fundus by abdominal and skirt supporters, 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 day, for a week or ten days 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, if the displacement is readily reducible, and it requires no great force to sustain the uterus, the anteversion pessary represented in Fig. 96 may be introduced, and the patient allowed to 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. In three or four days 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 a week; then for two weeks; then for a month; and afterwards for a still longer time, two months, for example, without examination. The pessary here

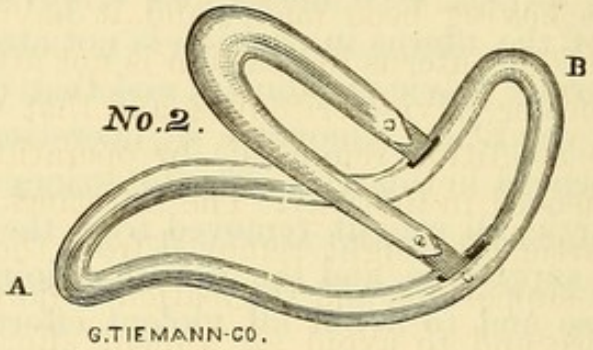
advised is represented closed for introduction in Fig. 96, and open as it should be in the vagina in Fig. 97; the bow which sustains the fundus is large and smooth, so as not to injure the vaginal wall. When the pessary is drawn upon by means of its lower branch,

Fig. 96.



Thomas's anteversion pessary closed.

Fig. 97.



Thomas's anteversion pessary open.

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 is an important element 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, 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 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 the cervix. It requires a certain amount of practice to use this and all other anteversion pessaries.

One great advantage of this instrument is, that it can be readily removed by the patient herself. Where she can be kept under observation of the gynecologist himself, being so near as to be able to send for him in case of discomfort, I prefer that represented closed in Fig. 98, and open in Fig. 99.

Fig. 98.

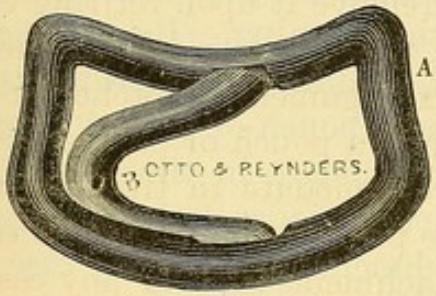
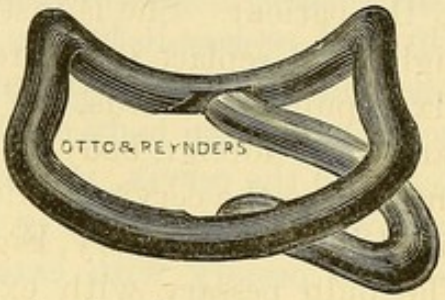


Fig. 99.



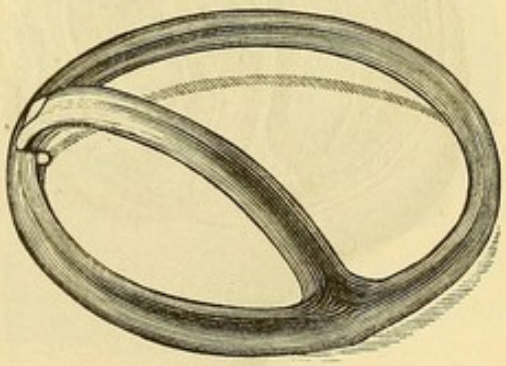
Thomas's anteversion pessary closed and open.

It is introduced closed, the patient lying upon the back. Then the anterior bar A is pushed up against the bladder by the index-finger, so as to lift the anteverted uterus, and kept in this position, while the finger is pushed down, made to engage the limb B, which is folded back upon the pessary, and it is drawn into the position shown in Fig. 99. The limb B when extended is under the symphysis pubis.

In removing it, the top of the index-finger pushes up the bar A, and while holding it thus elevated, its palmar surface towards the operator, the limb B is folded back by the dorsal surface, the bar A is pulled down, and the instrument slips out.

Another pessary which is very useful in these cases is that of Dr. Hitchcock, of Kalamazoo. It consists of an ordinary ring pessary, elastic or not, with an arch arranged as shown in the diagram.

Fig. 100.



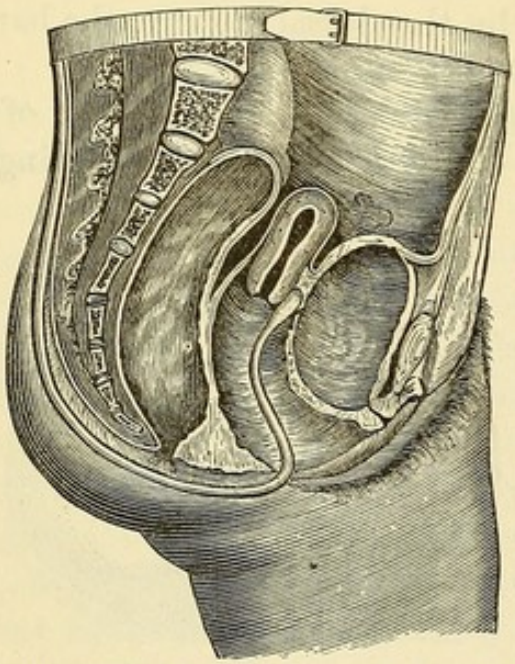
Hitchcock's anteversion pessary.

If the attending physician possess only little skill in the use of pessaries, or if the uterus be replaced with difficulty, and sustaining it appear to require force, he had better not employ an internal pessary, but limit himself to one connecting externally with a band. Support may be given by such a pessary in two ways: by a pessary with a stem arching over the perineum, or by one passing out at the upper vaginal commissure, and going over the symphysis and

anterior abdominal walls. A very simple one of the former kind is a modification of Cutter's retroversion pessary.

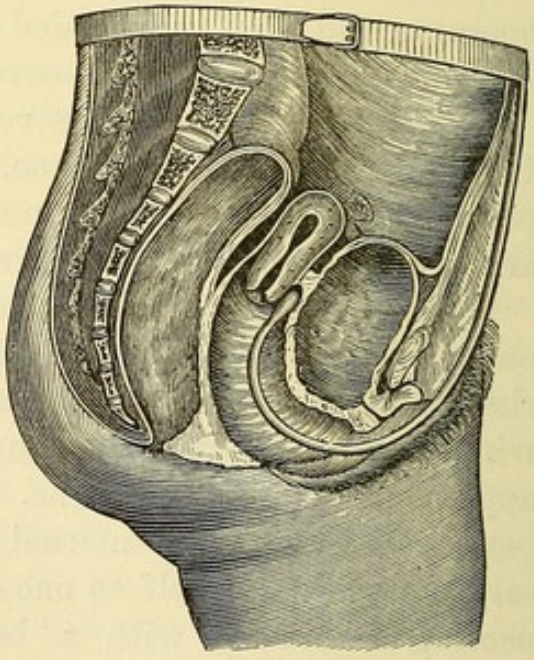
The upper extremity of this form of Cutter's pessary has a bulb attached to it, and is so bent forwards as to strike the base of the bladder, anterior to the cervix. This is introduced by the practitioner, and its method of introduction and removal fully explained to the patient. She is instructed to remove it upon retiring 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, Fig. 97, if the practitioner desires to try it. The bulb pessary with external attachment may in any case be used as preparatory to an internal instrument. 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. 101.



Anteversion pessary supporting uterus.

Fig. 102.



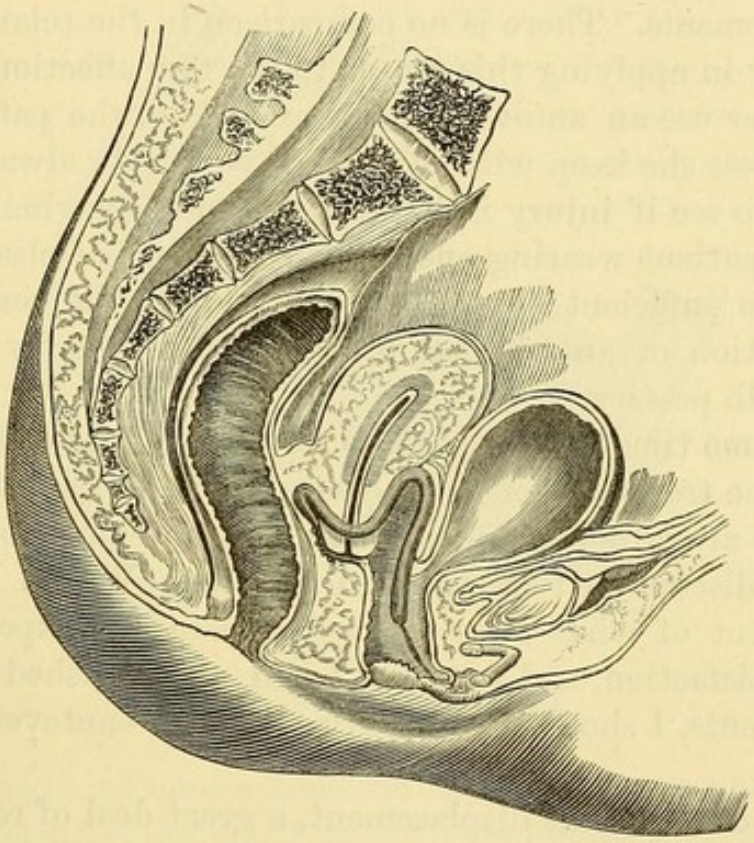
Anteversion pessary supporting uterus.

Fig. 102 represents similar support, being rendered by an almost identical instrument, which passes out of the vagina anteriorly.

Cases will occasionally be met with in which the parts are so sensitive that the hard bulb of these pessaries cannot be borne. Under these circumstances, they can be with great advantage replaced by soft balls of very fine sponge, until the reposition of the uterus and removal of congestion which is thus effected render solid bulbs tolerable.

Fig. 103 represents a very ingenious anteversion pessary recommended by Dr. Graily Hewitt. I have little experience with it, but the evidence in its favor is so strong that it should not be omitted.

Fig. 103.



Graily Hewitt's anteversion pessary.

I would especially impress 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 from 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. Do not rely upon 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 anteversion, 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, unless she keep within reach of your aid; 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. 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.

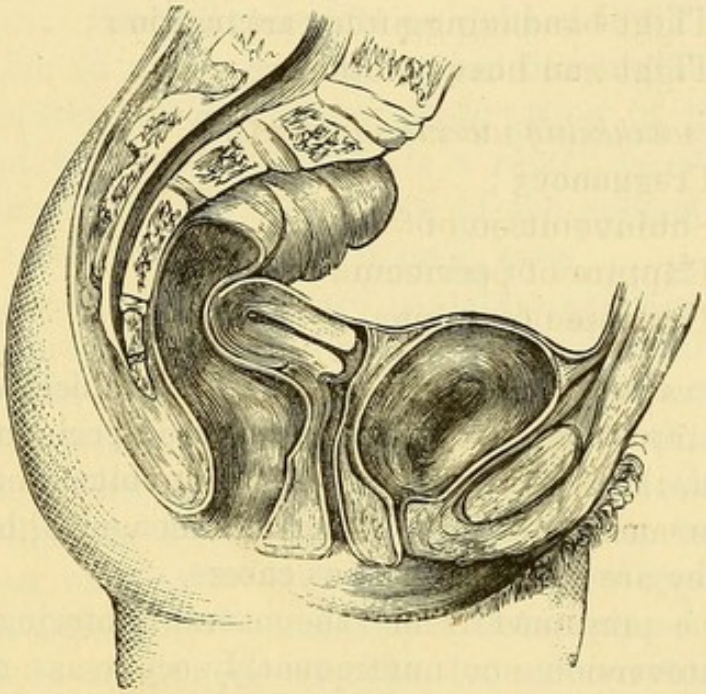
In many cases of this displacement, a great deal of relief may be obtained from merely lifting up the displaced organ in the pelvis without rectifying the anterior displacement, and for one who is not familiar with the use of anteversion pessaries, or has not at his command facilities for procuring good instruments, I really think that this, in the commencement of treatment, if not throughout its entire course, is the safer and better plan. Lifting the uterus may be accomplished by the ordinary ring pessary or Gariel's air pessary, and the simultaneous use of the abdominal pad of wood or cork. If the pad be used alone, and when the fundus uteri is 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 be often very great.

CHAPTER XXII.

RETROVERSION.

Definition and Frequency.—Retroversion consists in a posterior inclination of the uterus, so that the fundus approaches the sacrum

Fig. 104.



Retroversion of the uterus.

and the cervix advances towards the symphysis pubis. As an idiopathic primary lesion, it is not common, but it is frequently symptomatic of neoplasms, areolar hyperplasia, or other states which increase the weight of the uterus.

Predisposing Causes.—The predisposing causes are parturition, general muscular debility, and habits of indolence and inactivity.

Exciting Causes.—These may be classified under four heads:

Influences increasing uterine weight.

Fibroids;
Subinvolution;
Areolar hyperplasia;
Pregnancy;
Congestion.

Influences dragging the uterus out of place.

Adhesions from pelvic peritonitis or periuterine cellulitis;
Rectocele;
Subinvolution of the vagina;
Prolapsus of posterior vaginal wall;
Retroflexion.

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;
Subinvolution of vagina;
Rupture of perineum;
Prolapse of vagina.

Of all these causes the two most frequent are decidedly prolapse of the vagina, from subinvolution or ruptured perineum; and areolar hyperplasia, the advanced stage of subinvolution of the uterus. All the others mentioned are sometimes met with, but, compared with these, they are insignificant as causes.

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. Retroversion occurs in this way less frequently. 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. 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, increase of uterine

weight and relaxation of supports. 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.

If involution have gone on tardily and imperfectly, the woman is still more prone to having the uterus forced backwards. The round ligaments, which are composed of muscular structure similar to that of the uterus, are important agents in preventing this. It is highly probable that an arrest of retrograde metamorphosis affecting the uterus may likewise affect them, and leave them longer and less powerful than natural. "Hypertrophy of the two (round) ligaments," says Scanzoni,[1] "constantly accompanies a normal pregnancy; while, as we have ourselves had an opportunity to determine, in the case of a bicorned uterus, biparted, or bilocular, the ligament corresponding to the side on which was the pregnancy, was alone hypertrophied. . . . We remember many cases of women who have died after metritis or puerperal peritonitis, with whom one or both of the round ligaments were notably hypertrophied, and presented a lively red color, with a serous infiltration."

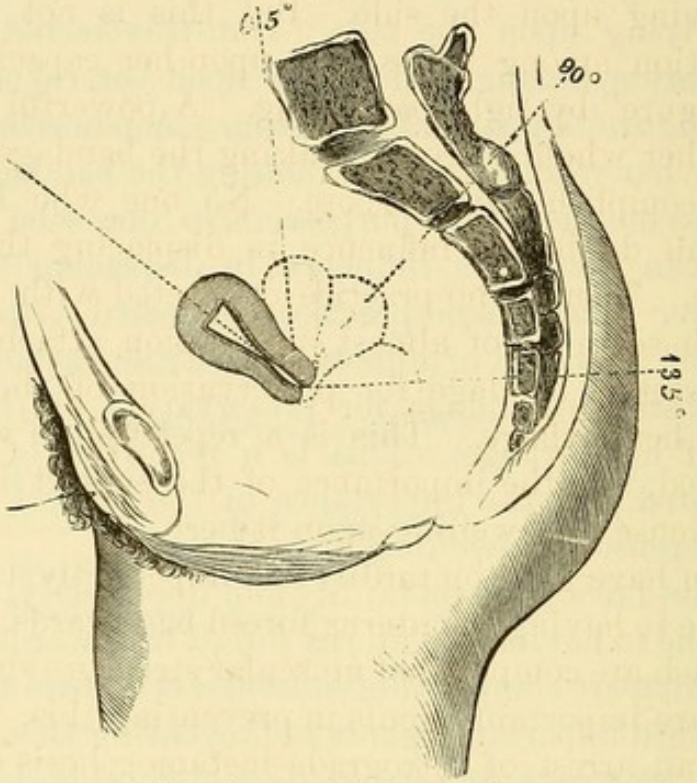
Not only as a result of pregnancy do these ligaments develop a condition which renders them prone to yield to traction from an enlarged uterus—Boivin and Dugès have observed hypertrophy in them, with dilatation of their vessels from chronic engorgement, fibroids, and even from ovarian tumors.

Varieties of Retroversion.—It may exist in slight degree, the uterine axis inclining so as to make with that of the superior

[1] Scanzoni, op. cit., p. 358.

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.

Fig. 105.



The 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 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 usually it creates tenesmus of bladder and rectum, together with congestion in the lining membrane of these viscera; fixed, gnawing pain in the back; discomfort in locomotion; and pain in defecation. These, however, 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 feces, 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. All doubt as to the nature of the mass thus felt may be removed by rectal touch, the uterine probe, and conjoined manipulation.

Differentiation.—This affection may be confounded with a 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. Unless the case be very clear it is unsafe to rely upon vaginal touch for a diagnosis. Conjoined manipulation and the uterine probe should be brought to our aid.

Prognosis.—There are three conditions which render the prognosis of this condition unfavorable: where the uterus is bound down by strong adhesions; where the organ contains in its parenchyma a fibrous tumor; and where the vagina is attached to the cervix so near the external os that no pessary can rest posterior to the cervix to sustain the uterus after it is replaced. This form of utero-vaginal junction is important as giving ground for a very grave prognosis as to the cure of all anterior and posterior displacements.

Results.—This displacement may produce the following disorders:

Congestion;
Areolar hyperplasia;
Dysmenorrhœa;
Sterility;
Cystitis;
Rectitis.

Treatment of Posterior Displacements in which Version predominates.—The first indication is to restore the uterus to its place, the second to prevent its again becoming displaced.

Methods of Reduction.—In an ordinary case in which the uterus is not firmly held in retroversion by the surrounding parts, the patient should be placed on the left side as for an ordinary examination with Sims's speculum. The operator then lubricating the index and middle finger of the right hand introduces them to the fundus, he standing at the patient's back, and facing her head, the palmar surfaces of the fingers being directed to the rectum. The uterus is lifted upon the inner surface of the fingers until it becomes erect, then their dorsal surfaces, which will really be the backs of the nails, are made to push the organ over into normal position. I would urge the trial of this method exactly as here described, and will answer for its efficiency.

But sometimes the uterus is irreducible by any but the most powerful methods. In such a case 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 lubricating two fingers of the right hand 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 with two fingers in the rectum instead of in the vagina.

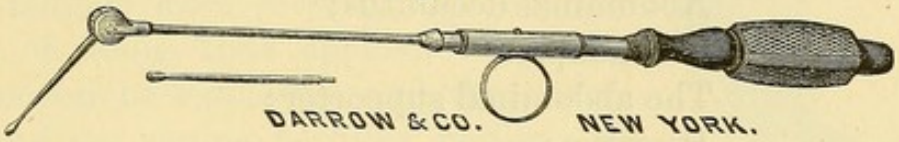
Should these powerful, and usually efficient methods, fail, I would strongly urge against efforts being made by introduction of instruments for restitution into the uterus. If they exert less force, they will not be effectual; if more, they may penetrate the uterus and create peritonitis. Besides, in 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. 106, consists of a short metal sound, terminating in a ball. The

[1] Am. Journ. Med. Sci., July, 1870, p. 275.

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 is governed by the finger passed through the ring. 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. 106.



Sims's uterine repositor.

An instrument which is more commonly employed is the uterine sound. This being introduced to the fundus should be made to elevate and rotate the uterus in this manner: the operator holding the handle in his left hand should press upon the staff near its middle by the tips of the fingers of the right hand, and thus, making of the left hand a fulcrum, and of the sound a lever, push the handle gently and steadily back to the perineum. This movement will lift the uterus, and partially restore it. Now very gently making the tip of the sound revolve, he by doing so carries the uterus into a condition of anteversion.

In the majority of instances reposition is perfectly practicable by conjoined manipulation or rectal taxis, or by means of a sponge fixed in a sponge-holder and pressed into the fornix vaginæ.

Good results will often attend carrying one 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.

Methods of 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, practicable, and void of danger; whether the patient is suffering from symptoms especially referable to the displacement, or this is merely

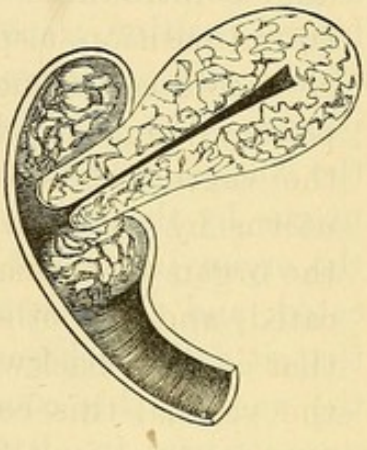
a sign of existing disease, which makes the mechanical treatment of displacement hazardous. Under such circumstances, where, for example, pelvic peritonitis is present, local treatment should be dispensed with. As a rule, however, even if uterine disease of subacute or chronic character exist, and the 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;
Elytrorrhaphy.

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 support of the displaced organ, a tampon of carbolized cotton, or a 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 or sound, 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, the sound being removed, 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 supra-cervical 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 accompanying 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. I do not look upon the abdominal decubitus as a valuable resource in the treatment of retroversion, but merely as an adjuvant to other means, which directly straighten the axis of the uterus. Lift the retroverted organ, and it has a certain degree of efficacy, as an adjuvant, which it does not possess while the displacement is in existence. 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. 107.



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 in 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.

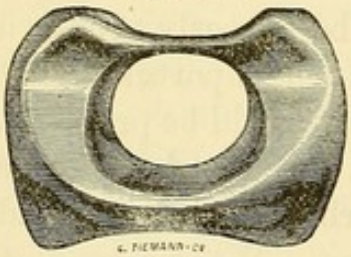
During the use of this means the patient may go about and attend to her usual avocations, although, if it be convenient, it is better to confine her to the abdominal decubitus.

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 which is very effectual, and 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, a sponge pessary, which consists in the attachment of a soft egg-sponge, instead of a bulb, to the stem of Cutter's pessary, Fig. 111, should be left in position. The sponge fits in the vaginal cul-de-sac, is steadily pushed upwards against the uterus by the elastic dorsal strap, and forcibly, but gently, keeps the organ in normal position. For such cases as those just indicated, and for others in which the retroversion is so obstinate that it falls backwards in spite of a pessary passed entirely into the vagina, this constitutes a means of such great value, that I urge its trial in all difficult cases. By it I have controlled many cases which had resisted all other plans of mechanical treatment, and feel assured that it will not fail to produce in the hands of others as good results as it has yielded me. Of course, it is only a temporary and preparatory means, for sponge is, at all times, an objectionable substance to leave in the vagina. It should, in this case, be removed, washed, and replaced once in every twelve hours.

For this same temporary and preparatory end, Hurd's or Hoffman's pessary may be introduced, for the purpose of gently elevating the fundus by an obtuse body introduced into the vaginal cul-de-sac. These instruments should be watched, for they sometimes incarcerate the neck. They should likewise be kept very clean by copious and frequent vaginal douching.

Fig. 108.



Hoffman's inflated, soft rubber pessary.

After the methods thus far described have been pursued for a fortnight or three weeks, even the worst cases will generally tolerate a well-adjusted permanent pessary; but where this tolerance is not developed, the medicated tampon or sponge pessary should be continued until it is so.

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 becoming tense, tend to act remedially on posterior devi-

ations. 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.

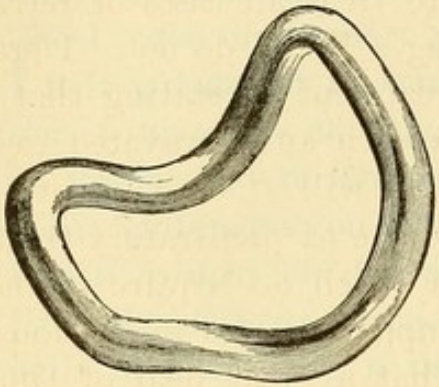
It may be asked whether I propose to treat all cases of retroversion in this manner in the beginning. No; I do not. I prefaced these remarks upon preparatory treatment by stating that I supposed the practitioner to be dealing with an aggravated case and one intolerant of support. Most cases will at once 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; even dangerous. Some may suppose that a great deal of time must be consumed by this preparatory treatment which is not absolutely 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 preparatory treatment which I have described, and at its end let pessaries be again tried. Many cases will then 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 gynecology will be found to arise from a cautious, patient, and philosophical treatment of these cases. But let no one suppose that a careless fulfilment of the directions given 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 now been 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 gynecology 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.

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 improved 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.

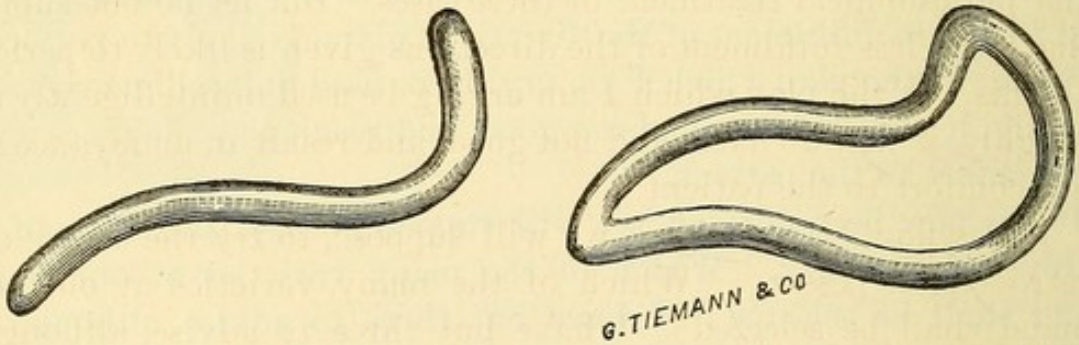
Fig. 109.



Hodge's closed lever pessary.

Until four 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 my friend, the late 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 acquaintances who have tried it have also done; I have employed it almost universally where formerly I used Hodge's instrument. The Albert Smith pessary is shown in Fig. 110. 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. 110.



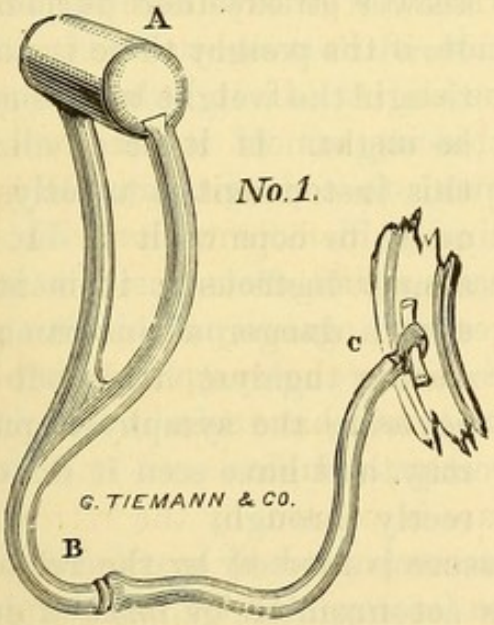
Albert Smith's pessary.

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 distention. 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.

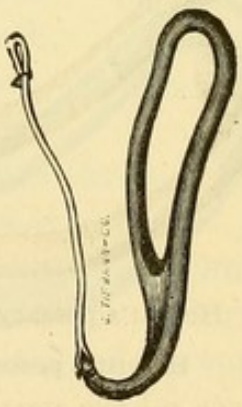
In some cases so very great is the pressure exerted by the displaced uterus, that no purely internal support will answer the purpose of sustaining it, for the point against which either the pubic or uterine extremity of the instrument rests will, in spite of every precaution, become ulcerated. Under these circumstances I have obtained the most gratifying results from the use of a modification of Cutter's retroversion pessary, intended to obviate a difficulty which I found attend that excellent instrument, that of cutting through the vagina. If no great amount of pressure is to be borne, Cutter's pessary answers very well for this 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 size—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

Fig. 111.



Modification of Cutter's pessary.

Fig. 112.



Cutter's pessary.

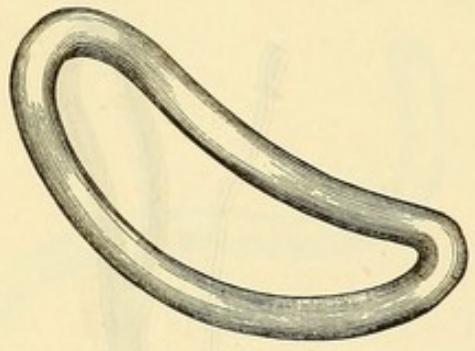
and simple a method for meeting the difficulties of aggravated retroversion. Had I space, I could cite a number of very bad cases of this difficulty, which had for years resisted treatment by ordinary pessaries, and which have readily yielded to the use

of the bulb pessary exhibited in Fig. 111. 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 prolapse of the posterior vaginal wall 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. 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 pubis it may, as I have seen it do, cut directly through.

Fig. 113.



Hewitt's pessary.

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 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. To one unaccustomed to the use of pessaries the simplicity and elasticity of this instrument will prove very seductive, and lead to a belief in its perfect harmlessness. Such a reliance will prove utterly delusive. Even the most elastic will often cut through the vaginal walls when the instrument is a little too large. It is more liable to produce this result than any other variety of pessary.

All of the instruments thus far mentioned act by pushing the fundus up, and thus carrying the cervix back into the upper part of the vagina. Spiegelberg has advocated the method of not only doing this, but at the same time by engaging the cervix in a ring at the extremity of a retroversion pessary, forcing it backwards and upwards. In some cases this will be found to be an excellent means. By merely arranging a cross bar near the upper part of one of the retroversion pessaries just mentioned, this may be accomplished.

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, by preventing prolapse of the posterior wall of the vagina, and dragging upon the uterus. Should it appear that this procedure will not be sufficient, posterior elytrorrhaphy may be resorted to with the best hopes of cure.

Fig. 114.



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 doubt-

ful 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, and 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 vulcanite 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 gynecologist 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 hastily to conclude that

the instrument was improperly applied. This is by no means always true. I have repeatedly removed pessaries under these circumstances, which had been introduced by the most competent gynecologists. 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 literally true, he who makes it knows that the same accident has happened to himself many times, that a week of rest will entirely efface it, and that no real damage has resulted to the patient from its occurrence. It cannot be denied that even in our day there are those in our profession whose minds have not yet become disenthralled from the prejudice against gynecology which existed up to a century ago. These too often forget that the observance of professional ethics should rise superior to the promptings of an illiberal sentiment, of which every day is proving the injustice and fallacy. It is a matter not of courtesy, but of professional honor, to protect the interests of a brother practitioner, as far as the patient is concerned; much more so, where the question concerns his reputation with the public upon whose esteem his usefulness depends.

Some 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 mine 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 gynecology, 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 gynecological practice. And why any one should practise an art and ignore a means which, properly mastered, constitutes one of the most powerful and reliable of its resources, is equally incomprehensible.

CHAPTER XXIII.

FLEXIONS OF THE UTERUS.

We come now to the consideration of the very important, interesting, and difficult subject of uterine flexions. Version, or turning of the uterus, signifies the fact that its long axis has changed its normal direction in the pelvis. Flexion signifies the bending of the uterus upon itself, so that a decided angle is created in this long axis. One condition is a displacement; the other a deformity in the organ. One may be likened to a dislocation of one of the long bones; the other to a fracture with angular union of the broken extremities. One involves merely restoration of a dislocated

organ; the other rectification of a deformity which may have lasted for years, or may even have been congenital.

I treat of flexions under a separate head from versions because I think that evil results from an opposite course, both to conciseness and fulness of description. Versions are commonly accompanied by flexions, flexions are often attended by a certain degree of version; flexions in time produce versions, and upon a pure version it is probable that a flexion is sometimes engrafted. Nevertheless, if we desire to advance in our knowledge of such subjects, we must begin by separating, not uniting, pathological conditions, merely because they commonly complicate and give rise to each other.

Frequency.—Flexions of the uterus, that is, displacements anteriorly, posteriorly, or laterally, in which the decidedly predominating feature is flexion and not version, are very common.

In 339 displacements	Nonat	found 67	flexions.
" 84 "	Meadows	" 54	"

As to the relative frequency of anterior and posterior flexions, the evidence is decidedly in favor of the former.

In	67	cases of flexion	Nonat[1]	found	33	anteflexions	and	14	retroflexions.
"	54	" "	Meadows[2]	"	20	"	and	34	"
"	54	" "	Scanzoni[3]	"	46	"	and	8	"
"	23	" "	Valleix[4]	"	11	"	and	12	"
"	296	" "	Hewitt[5]	"	184	"	and	112	"

Out of 1670 cases of flexion collected by Ludwig Joseph,[6] of Breslau, 1100 were anterior and 570 posterior.

Although the results are somewhat conflicting, the preponderance of evidence very decidedly favors anteflexion over retroflexion.

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] Mal. de l'Utérus, p. 416.

[2] Am. Journ. Obstet., 1st vol. p. 176.

[3] Klob, op. cit., p. 69.

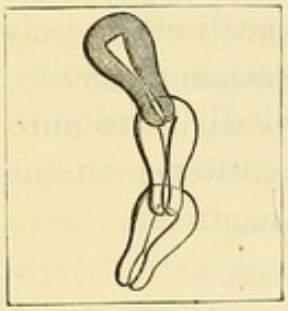
[4] Cusco, Thèse, p. 35.

[5] Dis. of Women, 2d Am. ed., p. 213. Dr. Hewitt includes versions with flexions. The other statistics refer to pure flexion.

[6] Berlin Beiträge zur Geburtshulfe und Gynäkologie, vol. ii. part 2, 1873.

If this be so, it may be asked why areolar hyperplasia so frequently results in retroflexion as well as in anteflexion. One reason is 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. 115 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 yielding at the os internum, and retroflexion results. Another reason is that flexion commonly follows parturition, at which time, attacking an organ with weakened tissues and relaxed ligaments, it meets with an efficient ally in the nurse, who favors retroflexion at the expense of anteflexion by zealously forcing the fundus backwards by a tight obstetric bandage.

Fig. 115



The uterus descending changes its axis.

Anatomy.—Thanks to the researches of Coste, Pouchet, Bischoff, and others, we are to-day well informed concerning the development of the uterus. Early in embryonic life a little duct shoots out from the external surface of each Wolffian body. These pass downwards to unite and make a common canal, which becomes in time separated into uterus and vagina. Very soon a constriction appears, the neck of the uterus is formed, and becomes well developed, while a very small spot marks the point where the body is to show itself. The original canals become Fallopian tubes, and at the time of birth these, as well as the neck and body of the uterus, vagina, and other organs, have arrived at maturity. But it must not be supposed that the proportions of the adult uterus exist in that of infancy. The neck forms three-quarters of the organ, and the body, represented by a soft movable membrane, has no fixed position, but follows the bladder, if upon opening the abdomen it is drawn forwards, or the rectum, if that viscus is pushed backwards. Later in the life of the girl, even after she has reached puberty and menstruation has occurred, the uterus is curved forwards; and this anterior inflexion lasts through life, if a normal state continue, though it is generally diminished and sometimes overcome by puberty and utero-gestation.

In 1849, Velpeau, whose insight into gynecology was certainly remarkable, in a discussion before the Academy of Medicine of Paris, declared that he had so often found an anterior inflexion of

the uterus in healthy women, that he was inclined to look upon it as normal. Upon this hint two of his pupils, Boullard, (1852,) and Piachaud, (1853,) with great assiduity, investigated the subject, and determined that it is so in the child and virgin; the latter basing his deductions upon 107 cases. Boullard found it to exist in 80 female fœtuses, and in 27 adult females. Verneuil and Follin subsequently confirmed these observations.

That this is the normal condition up to puberty is unquestionable; nor can it be denied that to a limited degree it is so even afterwards in the unmarried female. But, as Cusco has pointed out, it greatly diminishes at puberty, unless abnormal flexion is developed. Up to this time the neck of the uterus represents three-quarters of its entire bulk, and the whole organ is an insignificant element of the human body. At this time, however, it becomes an important organ. The body develops; its walls become thick, dense, and strong; "and," says Cusco, "this is an important point, if the development is regular its walls *establish an equilibrium;* the uterus straightens itself; its anterior concavity disappears; and there remains only a slight depression corresponding to the bladder." Up to this period of life it is unquestionably 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 then conclude from the evidence at present upon record:

1st. That anteflexion is the rule during early childhood;

2d. That it is quite frequent, in slight degree, in nulliparous women, without constituting disease.

For the prevention of versions certain pelvic ligaments are very effectual, but they have no power to prevent bending of the uterus upon itself. This is accomplished by the inherent strength and resistance of the proper tissue of the organ. Remove a normal uterus from the cadaver, balance it upon the cervix, and it will sustain itself perfectly; press it down by applying force to the fundus, and its own resiliency will cause it to erect itself immediately. 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

[1] Aran, op. cit., p. 981.

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.

A corroboration of this view is found in the frequency of flexions in the uteri of the aged which have lost tone and strength. "In aged women," says Klob,[1] "with exceedingly relaxed uteri, the pressure of the intestines upon the posterior surface of the organ is sufficient to cause anteflexion.

Pathology.—Flexions may be congenital or accidental. As the opposite walls develop an excess of nutrition may be appropriated by one, which grows rapidly, while the other developing more slowly arrests the erection of the uterus and, giving it an inflexion, creates concavity on one side and convexity on the other. If the posterior wall develop most decidedly, an anteflexion results; if, as was the case in nineteen out of M. Soudry's seventy-one autopsies of infants, posterior displacement exist and the anterior wall receive the chief amount of nutrition, a retroflexion is the consequence. But not only does the excessive growth of one wall create an inflexion on the opposite side; the side which is bent undergoes to a certain extent atrophy, and this increases the already growing disproportion. This, in all probability, is the source of congenital flexion, a condition always exceedingly difficult of cure, but fortunately one which does not create as much corporeal congestion and constitutional disturbance as the more remediable form which is accidental.

Congenital anteflexion is much more common than congenital retroflexion. Cases of the latter are, however, by no means unknown. Boivin and Dugès[2] report two cases, Dubois one, Deville one, and Bell one in a very young girl. I have several times met with it.

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[1] Op. cit., p. 61.

[2] Cusco, op. cit., p. 34.

Any influence which weakens the tissue constituting the uterine walls, creates flexion. If the posterior wall be chiefly affected, the body falls backwards; if the anterior, it inclines forwards; if both, the direction of inclination is decided by extraneous forces. Rokitansky has proved that such weakening is accomplished by endometritis, which creates an inward growth of the utricular glands into the submucous connective tissue, near the os internum, which in consequence undergoes atrophy and enfeeblement; or by cystic degeneration in the cervical glands, "which from their increased size and consequent pressure, cause the submucous stratum to become atrophied, and which ultimately bursting, thereby cause a collapse of tissue in the formerly dense framework of the uterus, leaving in its place a flaccid net-like areolar tissue incapable of sustaining the organ in its normal position." Both these occurrences, says Klob, take place quite frequently. Rokitansky says that in the anterior semi-circle of the uterine tissue around the os internum of women who have borne many children, a large transverse vein is found, which, by its removal of tissue, weakens the wall.

But there are other influences, which may accomplish this result: abscess of the uterine tissue; development of fibroids which disorder the bloodvessels; varicose degeneration of the veins and sponginess of tissue engendered by prolonged traction upon the neck; disturbance of nutrition by flexure created suddenly by a blow or fall, or gradually by traction from false membranes; subinvolution, or areolar hyperplasia, which accomplishes on a large scale, the substitution "for the dense framework of the uterus of a flaccid, net-like areolar tissue, incapable of sustaining the organ," which Rokitansky declares occurs at the os internum in cystic degeneration.

This loss of power in one or both walls of the uterus is frequently, though not universally, the cause of flexions of accidental character. They are sometimes due to force sufficiently strong to overcome the resisting power of the uterine tissue, either suddenly or by slow degrees. Once flexed, the wall soon undergoes degeneration, and thus two causes for a continuation of the condition are combined.

The point of greatest weakness is the point at which flexion occurs, and this is usually opposite the os internum. In anteflexion it may occur below this point, when the neck only is flexed, from prolonged and habitual constipation. In retroflexions I have known it occur at the middle of the body, and escape superficial examination, or induce a belief in the existence of fibrous tumor. Klob has noticed this but once, and has failed to find an analogous

instance. Cusco[1] records one case in his own experience where the body was equally divided by a flexion, and quotes Ashwell and Bell for others of similar character.

These are the influences under which flexion is induced. No sooner does it occur, than a marked change takes place in the uterine circulation. The uterine bloodvessels arise from the arteria uterina hypogastrica, the arteria uterina aortica, and from the arteria spermatica externa.[2] The veins make up by their union two plexuses, the uterine and pampiniform. All these vessels go to and come from the uterus at its sides. A flexion of this organ to a certain extent ligates these vessels, as Hewitt expresses it, and interferes with circulation directly and immediately. The incompressible arteries still carry blood to the body, but the compressible veins fail to return it to the general circulation, and the consequences are congestion, œdema, and in time hypergenesis of tissue. This important fact Dr. Hewitt, in his recent admirable edition of his work upon Diseases of Women, lays so much stress upon, as to make it the pivotal point of his pathological creed. There can be no question of the truth of this view, nor of its extremely important pathological bearing. In bringing it prominently forward, and insisting upon its frequent and striking effects as a factor in uterine disorders, Dr. Hewitt has, in my judgment, done a great deal of good. He is in error, however, in supposing that it had previously been unrecognized, as the following passage from his work announces: "It is somewhat surprising that the occurrence of mechanical congestion of the body of the uterus, arising from mere change of shape of the organ, as above pointed out, should not have attracted the attention of uterine pathologists." Since the appearance of Prof. Klob's work on Pathological Anatomy, published in 1868,[3] it had especially attracted my attention, and had constituted a prominent feature in my teachings. Klob[4] declares that "a further consequence of venous hyperæmia, arising from hindered reflux of blood at the point of flexion, is œdema with tumefaction and genuine hypertrophy of the body of the uterus. The reflux of blood from the uterine to the hypogastric veins is interrupted, and in consequence of the collateral hyperæmia, frequently a very considerable dilatation of the plexus pampiniformis takes place, because the blood can now only flow through

[1] Op. cit., p. 37. [2] Stricker's Manual of Histology.

[3] Dr. Hewitt's views were first published in an article read before the British Medical Association at Leeds in 1870.

[4] Op. cit., p. 60.

the spermatic vein." Under this mechanical influence both neck and body become tumid, tender, and painful; the mucous lining is so congested as to give forth excessive amounts of mucus and blood; and the tissues of the organ, excited to excessive growth by prolonged blood stasis, undergo in time marked hypergenesis.

At the point of flexion the cervical canal is always more or less closed by apposition of its walls. From this cause the ingress of fluids is prevented, and sterility commonly results, and the egress is interfered with to such an extent, that dysmenorrhœa, hematometra, hydrometra, and accumulations of mucus take place. Of course such accumulations cannot occur with impunity; they result in the production of endometritis and even in hematocele by regurgitation.

In congenital flexion the circulation of the uterus is so gradually interfered with that marked congestion is not so likely to occur as it is when the organ is suddenly bent upon itself, nor is occlusion of the cervix ordinarily so complete.

Results and Complications.—Already the reader can enumerate for himself many of the consequences arising from flexion of the uterus; and a list of them placed before him will need little further explanation as to the mode of their production. They are the following:

Congestion;
Hypergenesis of tissue;
Sterility;
Dysmenorrhœa;
Menorrhagia;
Endometritis;
Tendency to abortion;
Hematocele;
Ovaritis and Salpingitis;
Pelvic peritonitis;
Fluid accumulations in utero;[1]
Uterine neuralgia;
Cystitis and Rectitis;
Granular degeneration.

When it is remembered that each of these affections sets up symptoms and complications of its own, it will be appreciated that flexion of the uterus is a disorder which, apparently insignificant in itself, is the source of many grave results.

[1] Kiwisch reports a case of hydrometra.

Deranged uterine circulation produces menstrual disorder. Usually this consists in excessive flow, but sometimes the opposite condition exists.

Ovarian congestion, neuralgia, and enlargements, as, likewise, catarrh of the Fallopian tubes, are probably due to a reflex influence transmitted through the intimate and sensitive nervous connections between the uterus and these organs. Rigby attributed them to pressure, but this does not appear to account for those conditions.

Peritonitis results from pressure and friction by the displaced fundus, and, in some cases, from reflux through the tubes of imprisoned fluids. It is by no means rare; so common, indeed, that Virchow regards traction by false membranes as the chief cause of anteflexions. That this pathologist is in error upon this point is the belief of all others with whose views I am familiar.[1]

Predisposing Causes.—Any cause which predisposes to enfeeblement of uterine tone, to the development of a force which overcomes this even when unimpaired, or still more one which combines the two evil influences, prepares the way for flexure of the uterus under the impulse given by a sudden or persistent exciting cause. They may be thus enumerated:

Parturition;
Impoverishment of the blood;
Enfeebled nerve state;
Extreme youth or age;
Laborious occupation;
Relaxation of abdominal walls;
Influences altering pelvic axes.

Exciting 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;
Cystic degeneration near os internum;
Pregnancy;
Fatty degeneration;
Areolar hyperplasia;
Vascular degeneration in uterine walls.

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[1] Joseph of Breslau agrees with Virchow.

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 or backwards.

Abdominal or pelvic tumors·
Ascites;
Fecal accumulation;
Tight clothing;
Muscular efforts.

Influences exerting traction forwards or backwards.

False membranes from pelvic peritonitis.

Of the first class of causes, inflammation affecting the mucous membrane of the neck, and creating areolar hyperplasia in the parenchyma is, according to my experience, one of the most frequent. The hyperplasia thus arising results in atrophy of the muscular and submucous fibrous structures of the uterus and their replacement by hypertrophied areolar tissue, and produces a marked tendency to this deviation by thus substituting a lax and feeble for a dense and powerful substance. Klob declares that this replacement of strong tissue by that which is weaker occurs more especially near the os internum. Virchow denies the agency of this condition as a causative influence, as he likewise does that of fatty degeneration, observed by Scanzoni, at the point of flexure. The influence of parturition, abortion, and pregnancy has been admitted by all authorities.

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 flexions, 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 of displacement to that of corporeal flexion, or of anteversion.

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, whether such force is developed suddenly or gradually.

We have now pursued the study of flexions, as a whole, as far as it is profitable to do so; and, from this point, they shall be considered under separate heads.

The uterus may be flexed upon itself anteriorly, posteriorly, or laterally, giving rise to the disorders known as—

Anteflexion;
Retroflexion;
Latero-flexion.

The fundus in falling forwards or backwards does not always preserve the median line, but commonly falls obliquely to the right or left. This obliquity is frequently created even where the median

line was originally preserved by the use of a pessary, and constitutes so prominent a difficulty in these cases that I employ a special instrument for its treatment.

Thus we may find a uterus flexed forwards and laterally; backwards and forwards; backwards and laterally, etc.

These varieties are known as—

Retro-anteflexion;
Retro-lateroflexion;
Ante-retroflexion;
Latero-anteflexion, etc.

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.

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

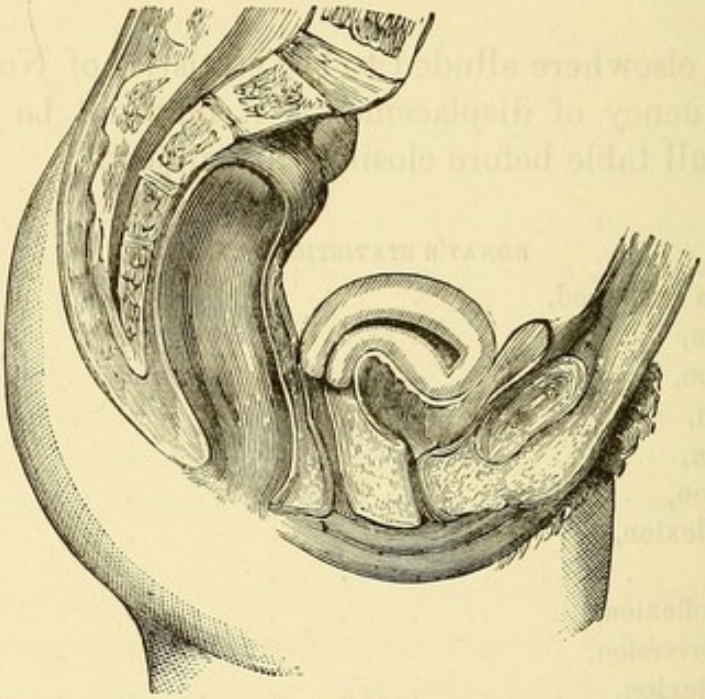
[1] Op. cit., p. 416.

CHAPTER XXIV.

ANTEFLEXION.

Definition.—This, which is one of the most frequent of all uterine displacements, consists in a bending of the organ so that the fundus, the cervix, or both, are bent more or less sharply forwards.

Fig. 116.



Anteflexion.

Varieties.—There are three forms of anteflexion: first, corporeal flexion; second, cervical flexion; third, cervico-corporeal flexion.

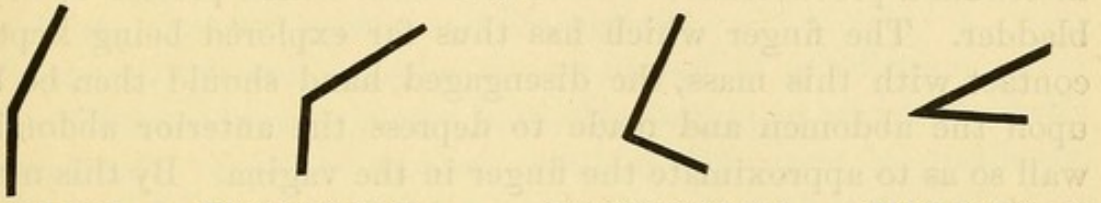
1st. The cervix being normal in position the body is flexed;
2d. The body being normal in position the cervix is flexed;
3d. Both are flexed forwards.

The lines represented in Fig. 117 will serve to show the deviations which may affect the axes of body and cervix.

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.

Fig. 117.



Normal axes. First variety of flexion. Second variety of flexion. Third variety of flexion.

In addition to these there is a rare form in which the cervix is flexed forwards and the body backwards, but it is difficult to represent the axes of this variety in a diagram.

Symptoms.—A certain degree of this displacement may exist for years without the development of symptoms. Very generally, however, obstruction to venous return at the point of flexure produces congestion which increases the displacement, disturbs the nervous system, and disorders uterine functions. Then the following symptoms develop themselves:

Pain over hypogastrium and in groins and back;
Irritable bladder;
Leucorrhœa;
Dysmenorrhœa;
Sterility;
Nervous disturbance and despondency;
Pain on locomotion;
Menorrhagia;
Tendency to abortion;
Pain on sexual intercourse;
Pelvic neuralgia;
Sense of depression at the epigastrium.

In some cases there is a morbid and invincible aversion to walking, partly arising from physical and partly from mental causes. I have, in several cases, seen women who had been bed-ridden for three and four years rapidly restored to their powers of locomotion by restoration of the uterus to position, and its retention by an efficient pessary.

Dr. Hewitt mentions the retention of secundines after abortion in cases of anteflexion, and their putrefaction in utero, and advises

as treatment restoring the organ to place, when expulsion at once occurs.

Physical Signs.—As the finger passes into the vagina and touches the cervix, nothing abnormal will usually 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 succeeded in introducing 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 through 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, and because it is acquired and not congenital.

(*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 flexion be of reducible kind, prognosis is favorable; if the contrary, it is by no means so.

(*e.*) The prognosis of congenital flexion is almost a hopeless one, unless the knife be resorted to.

(*f.*) Of all the cases except the last the prognosis is most un-

favorable 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 usually bad, but enlargement of the uterine body may result from anteflexion, and its consequences are commonly sterility, vesical irritability, dysmenorrhœa, and leucorrhœa.

Treatment.—I shall consider the treatment of anteflexion under three different circumstances: reducible flexion in which the body is displaced; reducible flexion in which the neck is displaced: irreducible flexion in which the neck alone, or both body and neck, are bent forwards.

Reducible Flexion, body bent forwards, axis of neck normal.—The indications for treatment are very simple: to restore and retain the flexed part. 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.

As to the second indication it may be said that the prognosis as to its successful accomplishment is very favorable, unless we have to deal with a shallow anterior vaginal pouch; more so in these than in any other form of this displacement.

The bowels having been evacuated, and pelvic and vaginal irritation removed by warm vaginal injections and rest in the dorsal decubitus, local treatment should be commenced thus: the uterine sound being introduced to the fundus, not much curved, but as straight as it can be made to pass, the handle being held in one hand, the tips of the fingers of the other should be pressed against the shaft of the sound near the middle, and they being made a fulcrum, the handle should be carried to the symphysis. By this manœuvre the flexed fundus is elevated, and at the same time carried towards the hollow of the sacrum. This point being reached, the sound should be very gently rotated, and complete retroversion with partial retroflexion of the uterus accomplished. This should be done with the utmost gentleness, and as I have described, not

by a sudden rotation of the flexed organ, which forcibly sweeps the fundus around the superior strait of the pelvis.

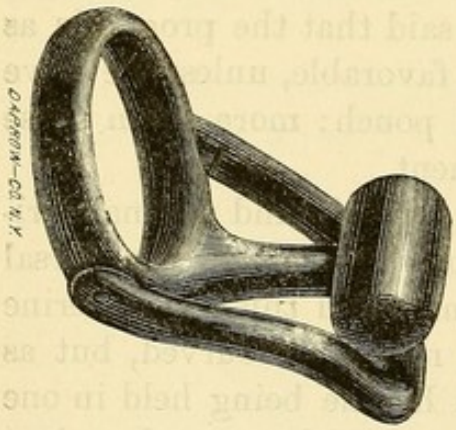
The instrument represented in Fig. 100 or that shown in Fig. 101 should now be applied, the patient kept for a few days upon the back in bed, the bladder kept distended by urine, and the abdominal walls forced inwards by an ordinary obstetric bandage with a folded towel under it as a compress.

At the end of a week examination will generally show marked amelioration of the displacement. Then the sound should be again introduced, the uterus held in retroflexion for two or three minutes, the pessary restored, the obstetric binder replaced by one of the abdominal bandages elsewhere shown, all weight removed from the abdomen by a skirt supporter, and the patient allowed gradually to resume her duties. If she do not suffer from the support used, it need not be altered; if she do so, the anteversion pessary, Fig. 95, Fig. 98, or some other may be made to replace it.

Should the bulb of the pessary in the beginning prove painful, it may with great advantage be replaced by a soft sponge. This will necessitate the removal of the instrument once in every twenty-four hours.

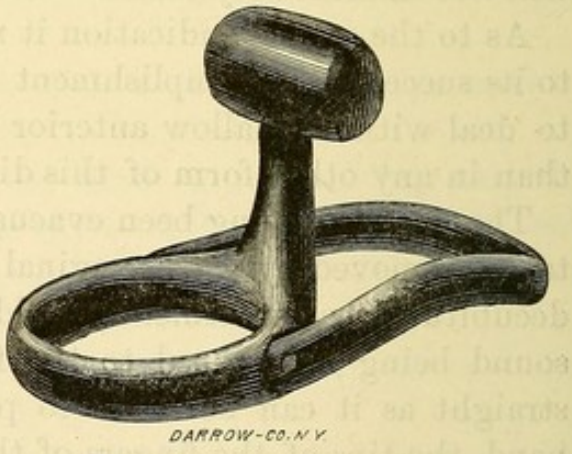
With considerable hesitancy I show the anteflexion, (not anteversion,) pessary, the mode of action of which is perfectly shown in Figs. 118 and 119.

Fig. 118.



Anteflexion pessary being introduced.

Fig. 119.



The same after introduction.

The bulb on the end of the stem rests just under the fundus, the ring receives the tip of the cervix, and the movable branches rest against the tissues under the pubes. This pessary sustains the anteflexed body perfectly. My hesitancy in recommending it is not based upon its inefficiency, but upon the facts that it is impossible for the patient to remove it, and difficult even for the physi-

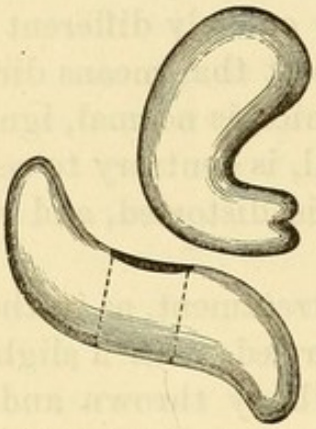
cian to do so. To flex the stem and bring the bulb down so as to pass the pubic arch, as shown in Fig. 118, the finger, or a curved instrument, must be passed over it. For these reasons, although I have employed it for years, I have never before published it, and I should recommend none but experts to resort to it.

Reducible Flexion, neck bent forward, axis of body normal.—The treatment of such a case as this should be entirely different from that of the last mentioned. Is it not evident that means directed to rectification of the axis of the body, which is normal, ignoring the position of the neck, which is abnormal, is contrary to reason? It is the neck, and not the body, which is distorted, and which consequently needs treatment.

The patient having been prepared for treatment, as in the previous case, the sound should be gently carried, with a slight forward bend only, to the fundus, and the body thrown and held backward for several minutes, in order to straighten the uterine canal. If it be found to do this, and the reducible character of the case be demonstrated, there are two methods by which the normal direction of the uterine axis can be preserved: one, the use of the intra-uterine stem, soon to be described; the other, the use of a pessary, which will bend the cervix backwards, and keep it so inclined. In the treatment of such a case, the practitioner must bear in mind, that two indications must be fulfilled for the accomplishment of cure: 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. After the utero-vesical ligaments and uterine parenchyma have been repeatedly stretched by the sound, and the canal temporarily straightened, the pessary of Dr. Hurd, of West Point, Miss., should be introduced. This instrument, which is shown in Fig. 120, consists of a smooth block of vulcanite, or of a shell of the same material, which exactly fits and fills the vagina, and has an opening or canal running 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 so well. It answers excellently in all cases, except those which belong to a most incurable class of anteflexions, namely, in those where the vagina joins the cervix very near 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 refer-

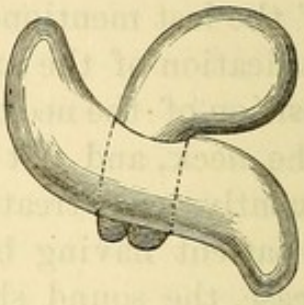
ence to Hurd's pessary; if the instrument employed be too small, the cervix may be incarcerated. There are three sizes of the instrument, and a proper one should be selected. In all cases, too, it should be carefully watched during its retention in the vagina,

Fig. 120.



Hurd's pessary; uterus not yet placed in it.

Fig. 121.



Hurd's pessary; uterus in position.

that this accident may be avoided. There are two entirely different forms of Hurd's pessary, with reference to the course of the central canal. In that intended for anteflexion, the canal runs as shown in the figure; in that for retroflexion and retroversion, it inclines directly forwards.

In these cases I employ, also, an instrument shaped exactly like that shown in Fig. 95, except that the anterior movable piece consists of a solid disk or plate. Against this the flexed neck and body rest as against a splint or board, and by it the bent wall is straightened.

He who expects from these methods remarkably satisfactory results, will surely be disappointed. In a certain number of cases failure will attend all means thus far devised, not excepting surgical procedures. My experience, however, warrants me in saying that a persevering resort to the treatment here advised, will reward the gynecologist by success in many cases. After overcoming this form of flexion, a Meigs's ring pessary should be worn for a long time to prevent the upward and forward pressure of the vagina. After overcoming this, and all other forms of flexion, it is well to dilate the cervical canal by means of graduated sounds, as there is generally more or less contraction of it.

Irreducible Flexion, neck, body, or both, immovably bent forwards.— It matters not which of these three varieties of irreducible[1] flexion

[1] In speaking of a uterine flexion as being "irreducible," the term must be understood as being used relatively only. The uterine tissue is elastic, and, of course, always yields to force.

we meet with, it is incurable except by two means: the use of the intra-uterine stem or the knife. These cases are, I think, very commonly congenital, and one wall is well developed by excessive growth, while the other is dense, rigid, atrophic, and unyielding. It may, however, result from prolonged accidental flexion, with development of slight attacks of peritonitis; even without the last, indeed, for cicatricial retraction of the atrophied section of connective tissue has been found by Klob in such cases.

Recognizing our poverty of resources in certain 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 all flexions of the uterus. But it was found to cause peritonitis and death in a number of instances, and in consequence it was, for a time, almost entirely abandoned. So decidedly did experience appear to weigh against it that it became difficult to explain the encomiums once showered upon it by its advocates, and the remarkable cures reported from its use. Nonat declared that, carried away by enthusiasm, "ils se sont laissés aller trop facilement sur le terrain glissant des illusions." Nevertheless, the method was never entirely cast aside, for none could 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."

During the last five years there has been evidenced, however, a growing inclination to return to this plan, and the last year has brought forth a number of reports favorable to it.

At a medical convention held in Innsbruch, 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,

[1] Discussion in Acad. de Méd., reported in Charleston Med. Journ., 1853.

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. More recently, Prof. Schultze, of Jena, advises the use of the intra-uterine stem in certain obstinate cases, but, in a review of his publication, by Dr. Munde, in the American Journal of Obstetrics, for August of this year, it evidently appears that he does so with caution and reserve.

Prof. Olshausen, of Halle, likewise publishes his recent experience with the method. Of its character the reader can judge for himself, for the professor gives accurate data. Out of 297 cases of versions and flexions, 81 were treated by the stem and 5 were so treated for other conditions than displacement. Periuterine inflammation resulted in 7 cases; treatment was stopped on account of hemorrhage or pain 10 times; the stem could not be kept in place 3 times. Of 66 cases in which they did well, in 15 the results appeared to be permanent; in 18 improvement was great and lasted a long time; and in 17 "doubtful permanent results were obtained." In 11 sterility was cured. The stems were worn for periods varying from a few weeks to 22½ months.

Drs. Thomas Savage and Thomas Chambers have both reported very favorably upon this plan in the Obstetrical Journal of Great Britain and Ireland, to which the reader is referred for their interesting articles.

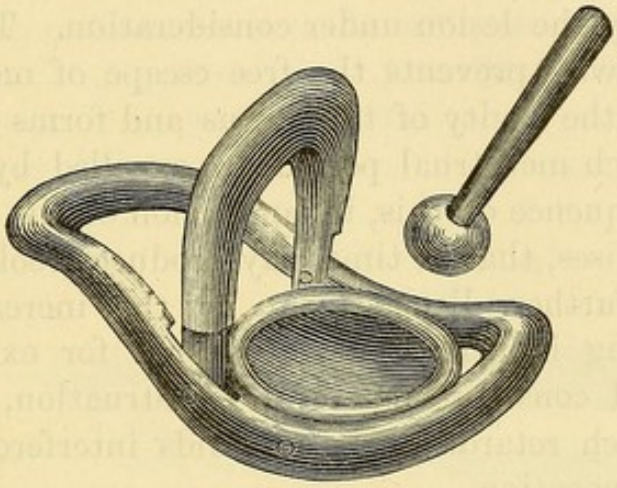
Before the use of this method careful examination should be made as to the previous existence of periuterine inflammation. If any be found existing the uterine stem should be entirely cast aside.

A great variety of instruments has been employed for keeping the stem in place. Some are complicated, others stiff and unyielding, while most are not susceptible of removal by the patient, and are therefore wanting in the main element of safety. I would recommend the instrument which I employ for this purpose as not subject to any of these objections. It consists of two parts, a stem of solid glass or vulcanite, two to two and a half inches long, and ending below in a round bulb as represented in Fig. 122. This being introduced into the uterus is supported by an ordinary anteflexion pessary, between the branches of which a shallow vulcanite cup has been fixed, with a small hole in it for drainage.

It will be seen that the support of the uterus is not intrusted to the intra-uterine stem alone. It is in part effected by the pessary, and the stem merely serves to render the action of this more perfect than it would otherwise be.

The stem ending in a round bulb rests in the cup where it changes position with every movement of the uterus. It must be remembered that it is not used for anteversion but for anteflexion, and that stability of the base of the stem is not desirable. Just

Fig. 122.



Intra-uterine stem and pessary for anteflexion.

above the shoulder a small hole is drilled through the stem through which a silk thread is passed which hangs from the vulva. Upon the first evidence of trouble the patient draws out the loosely fitting pessary, then making traction upon the thread removes the stem.

Before introduction of the stem, the cervix, if found to be too contracted for it to pass, should be dilated by one or more sea-tangle tents, which for the time straighten the uterus and dilate the cervical canal. After introduction the patient should be kept in bed for three or four days, and upon leaving it, should be careful in her movements for a week or two. During menstruation, the instrument should be removed, and during the non-menstrual period, she should be directed to remove it at once upon the occurrence of pain, chilliness, or feeling of general languor or discomfort. Even the most ardent advocates of stem pessaries will admit the propriety of 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. To use them freely in the face of such evidence as we possess would be reckless and unwarrantable.

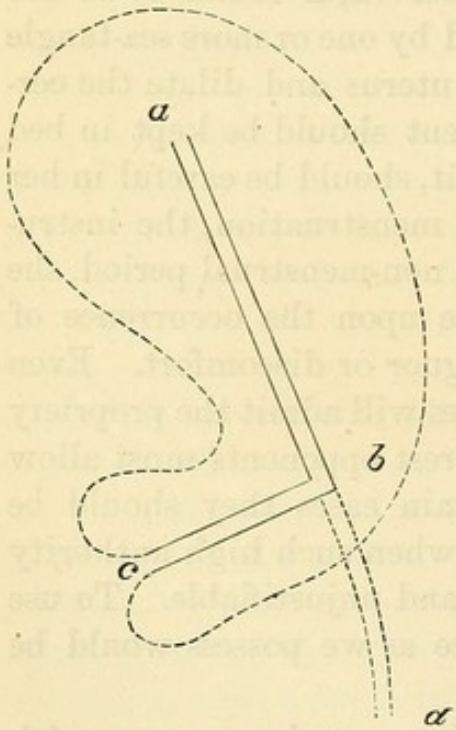
Should the patient not tolerate the intra-uterine pessary with comfort, should the flexion not yield to the treatment by it, or, should the practitioner prefer to adopt operative procedures, an operation is at his disposal not intended to cure the displacement,

but to remedy its resulting cervical obstruction, leaving the disorder of position unchanged.

Operation for Irreducible Cervical, Corporeal, or Cervico-Corporeal Flexion.—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.

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 or both walls of the cervix. Having thus overcome cervical obstruction and consequent accumulation of fluids in utero, do we at the same time remove the tendency to mechanical congestion of the body of the uterus? Not entirely, but if we secure the results of cervical section as we should ordinarily do by subsequent use of the intra-uterine stem, we accomplish to a certain extent both results.

Fig. 123.



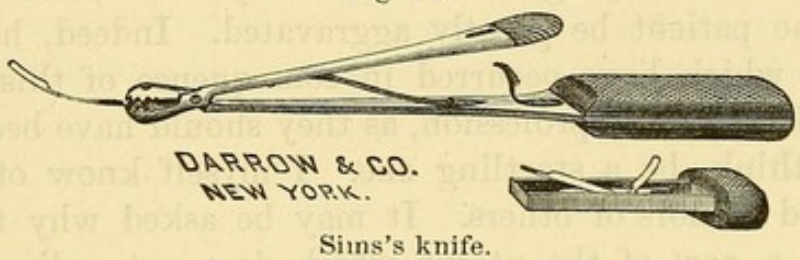
Creation of new uterine axis. *a b* represents the axis of the body; *b c* represents the axis of the neck; *b d* represents the axis created by incision.

If the posterior uterine wall, bent forward as shown by the line *c b*, Fig. 123, 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 would

have free entrance and exit, for instead of turning the angle at *b* and escaping at *c*, they would at once escape at *b*.

The operation which accomplishes this result is an exceedingly simple one, and 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 as far as can be conveniently done without involving the vaginal junction, which will probably be below the point *b* in Fig. 123. The blade of Sims's knife, represented in Fig. 124, is now introduced through the os inter-

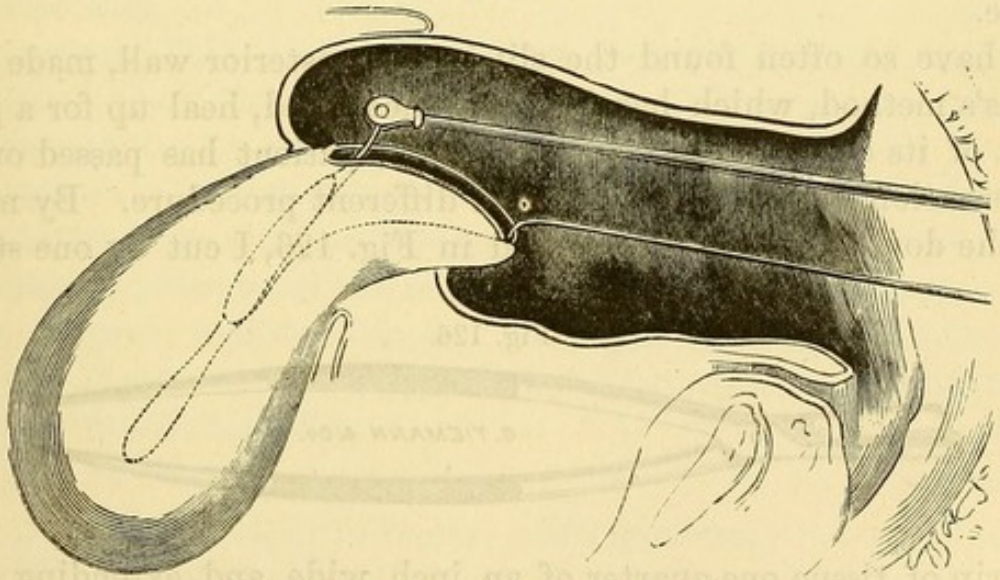
Fig. 124.



Sims's knife.

num, 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, just at the angle made by flexure of this wall. Towards this the blade of the knife should now be turned, and it should be cut through.

Fig. 125.



Posterior section of the cervix. (Sims.)

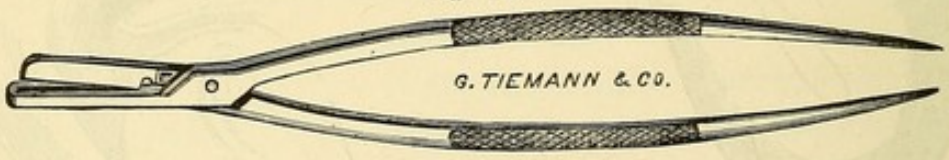
In this operation the scissors and knife alone should be used. None of the uterotomes are at all appropriate. Just after the operation a roll of cotton saturated with solution of persulphate of

iron, one-third to two of water, should be introduced so as to occupy the whole cervix from os internum to os externum. Under this a firm tampon of wet cotton should be placed. In twenty-four or thirty-six hours the tampon should be removed, but the roll within the cervix may be left for three or four days. After this it should be renewed two or three times to secure complete perviousness of the canal. In three or four weeks the intra-uterine stem may be introduced and worn if its use be deemed advisable.

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 periuterine 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, be a startling one. I myself know of five, and have heard rumors of 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, 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, which has just been described, 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 represented in Fig. 126, I cut by one stroke

Fig. 126.



a strip of tissue one-quarter of an inch wide, and extending from the os externum to the vaginal junction. 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. Then the

knife should be slid up and the projecting points of tissue cut as shown in Fig. 125, so as to make a straight and unobstructed canal. Should there be any difficulty in introducing one blade of this instrument 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 went further than this, and in these cases removed the entire posterior wall of the cervix, as near as possible to the utero-vaginal junction.

After these procedures for the cure of anteflexion which has for a long time been irreducible and was very probably congenital, conception is by no means common. Operations for this condition often effect relief of menstrual and amelioration of circulatory disorders; and they may even cure sterility, but he who practises them should beware how he makes promises to this effect.

CHAPTER XXV.

RETROFLEXION.

Definition.—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.

Varieties.—This displacement has been divided into varieties dependent upon the degree of intensity. These are so entirely arbitrary that they may as well be ignored.

Symptoms.—Retroflexion produces annoying symptoms by creating congestion of the uterine body, obstructing the cervical canal, and causing pressure on the rectum, congestion of the ovaries, and reflex nervous manifestations. Through so many avenues of approach it may well be supposed that its symptoms are numerous. They are usually as follows:

Severe backache;
Weight in rectum with tenesmus;
Leucorrhœa;
Dysmenorrhœa;
Nervous disturbances;
Difficult locomotion;
Menorrhagia;

Tendency to abortion;
Pain on sexual intercourse;
Pelvic neuralgia;
Epigastric depression;
Gastric derangement;
Uterine colic or tenesmus;
Sterility.

Many of these symptoms produce epiphenomena of their own, and thus increase a list which is already long.

Physical Signs.—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 disengaged 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 abdominal walls be lax, 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, a prolapsed and enlarged ovary, and prolapsed kidney. The careful practice of the four diagnostic methods mentioned, will remove all doubt.

In certain very rare cases the kidney has been known to prolapse into Douglas's cul-de-sac and produce the most anomalous symptoms. In a case of my own in which a very obscure tumor existed posterior to the uterus, this diagnosis was made by Dr. Noeggerath in consultation. In accordance with his advice I placed the patient in the knee-chest position, and applied a good deal of upward pressure, when the tumor suddenly escaped into the abdomen. Support was given by a bulb pessary, and for a time my patient

was relieved, but upon her return to her home in Virginia a complete relapse occurred. Dr. Noeggerath tells me that he has met with but one other such case. Of course the correctness of the diagnosis is doubtful. I am inclined to admit it from the peculiar symptoms exhibited, and by the fact that post-mortem examination proves that such a prolapse of a floating kidney sometimes occurs. The following account of such a case may be found in Braithwaite's Retrospect.[1]

"Examining the body of a man who had died of phthisis, aged thirty-five, Dr. Isaacs found the left kidney located in the pelvis, its upper end being in contact with the bifurcation of the aorta, and its lower touching the posterior surface of the bladder, and lying on the fifth lumbar vertebra, and first, second, and third pieces of the sacrum. Its right edge was in contact with the rectum, and the left with the iliac portion of the brim of the pelvis. There were three renal arteries, one coming from the aorta, and two others from the right common iliac. The kidney was of the ordinary size, but the supra-renal capsule was twice its natural size, and of the shape of a fig-leaf, and it occupied its normal position in the lumbar region."

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, hematometra and hydrometra from imprisonment of fluids by obliteration of the canal 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 so very

[1] Am. ed., Part xxxvii, p. 87.

common that it should be suspected and examined for in every case of habitual abortion.

Prognosis.—The prognosis is always good in retroflexion, unless one of the following conditions exists: 1st. A cervico-vaginal junction so low as to give no post-cervical space for accommodation of a pessary; 2d. The previous existence of peritonitis and fixation of the uterus; 3d. The existence on the posterior wall of a sensitive fibrous tumor.

Treatment of a Case of Reducible Retroflexion.—The patient should be prepared for treatment as in anteflexion. To avoid repetition, I refer the reader to that subject for details. The indications are clearly to restore the retroflexed organ and to keep it in normal position. In some cases attention to the first indication is all that will be required, for retroflexion is sometimes an accident occurring suddenly from violence. Usually, however, both indications must be fulfilled.

In replacing the flexed part no great degree of difficulty is generally experienced, if the following method, which I would strongly urge, be adopted. The patient being placed in the left lateral position, with the left arm drawn behind the body, the operator lubricates the ring and middle fingers of his right hand and passes them with palmar surfaces towards the posterior vaginal wall up to the fundus. He now stands behind the patient, his face looking towards her occiput, and the line of the anterior surface of his body being about on a level with one passing through the woman's body at the base of the sacrum. Now bending forwards, he by the tips of the fingers pushes the fundus upwards, while by their bases he retracts the perineum, elevates the posterior vaginal wall, and admits air freely to the vagina. As the uterine body rises in the pelvis to a perpendicular, the flat surface of the finger-nails will rest against it. By these he makes pressure forwards, that is, towards the pubes, and steadily forces the uterus into anteflexion.

I am thus particular in describing this manœuvre, because I regard it as an improvement upon the ordinary ones for overcoming this and other posterior displacements, and would ask for it a trial, and not a judgment upon theoretical grounds alone. My impression is that the position of the operator enabling him to push the perineal border towards the coccyx, considerable additional space is gained, and the fingers reach a higher point than they could otherwise be made to do.

In very difficult cases, the knee-chest position may be necessary, but it is not often called for.

After replacement has been effected in this way, the sound may be employed to make sure of its thoroughness and to increase it. Should it be used before manual replacement, it should be done very cautiously and by the following steps:

1st. It should be introduced, but slightly bent, to the fundus.

2d. Holding the handle in his left hand, the operator should place the tips of the fingers of the right hand upon the shaft and carry it towards the perineum as far as possible.

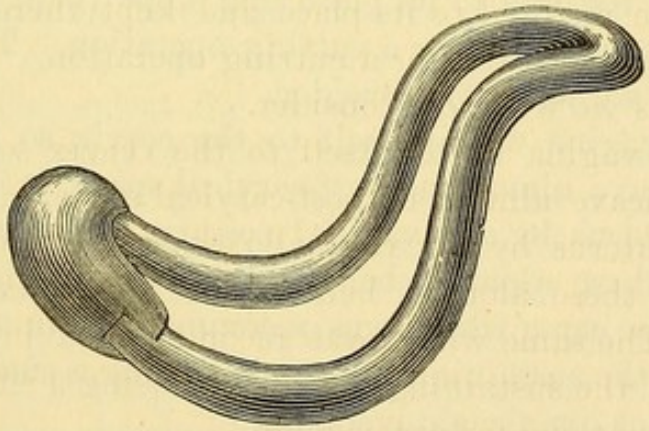
3d. The uterus being now to a certain degree straightened and elevated, the sound should be rotated so as to throw the fundus forwards, and the handle of the instrument held in one hand be carried towards the patient's back so as to advance the tip as far as possible towards the abdominal walls.

Reading a procedure thus described often leaves the impression that it is a complicated one, and, perhaps, that the directions given are unimportant. Let one who has habitually used the sound simply as a rotator fairly try this more delicate and rational employment of it, and I am sure that he will adhere to it, even although prejudiced against it originally.

Sims's repositor, likewise, answers very well in cases of retroflexion after partial replacement by the fingers.

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, but confinement to bed is at no time necessary. The

Fig. 127.



Thomas's retroflexion pessary.

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. Should no excessive tenderness exist the pessary shown in Fig. 127 will answer excellently. I employ it more commonly than any other in these cases. It is narrow, measuring be-

tween its branches at the widest part seven-eighths of an inch in the smallest sizes, and one and one-eighth of an inch in the largest; upon its upper extremity is a bulb which prevents cutting of the tissues; its lower extremity rests against the tissues under the pubes; and it is five inches long in the largest sizes, and four and a quarter in the smallest, measured along the outside curve of the branches. Spanning the pelvis, this narrow instrument stretches the vagina without distending it, and pushes the fundus to a higher point than any other with which I am familiar. Its retention depends not upon its size but its relation to the pelvis, for it is prevented from escaping not by separation of its branches, but by the length and degree of the post-uterine curve, and by the retention established by the tissues under the pubes against the downward curved lower extremity.

In place of this, any one of the pessaries mentioned under the head of treatment of retroversion may be employed, as, for example, Hodge's, Albert Smith's, or Hewitt's.

If the fundus be light and easily reducible, one of these will answer the purpose; but, if it be heavy or rebellious to reduction, Cutter's pessary with the bulb, Fig. 111, answers a much better purpose. Fitted accurately, and worn by a patient whose waist is kept free from constriction, and her abdomen from pressure, it not only sustains a reducible uterine body, but I have frequently seen it replace one which was irreducible by other means.

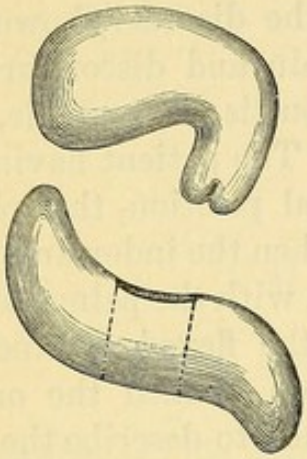
By these means a uterus affected by a reducible retroflexion may, in all conditions excepting two unfavorable ones already mentioned, be restored to its place and kept there without resort to the intra-uterine stem or a cutting operation. These unfavorable conditions we will now consider.

When the vagina unites itself to the cervix so near its lowest point as to leave almost no post-cervical space, it is impossible to sustain the uterus by any vaginal pessary. Under these circumstances, and these alone, I believe the intra-uterine stem to be necessary. The same which was recommended in anteflexion will answer here; the sustaining instrument being a small retroversion pessary, and not one for anteversion.

Sometimes the posterior uterine wall becomes the site of a fibrous tumor, which, by keeping up congestion by its presence as well as by the flexion which it induces or aggravates, renders the whole fundus so tender, that an ordinary pessary cannot be tolerated. In such cases the bulb should be removed from the modified Cutter's pessary and replaced by a soft sponge, and by this the uterus be sup-

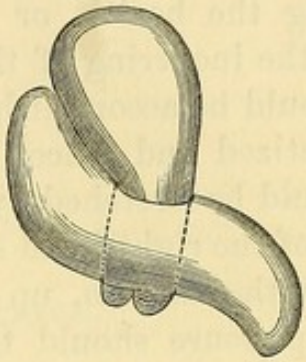
ported. Sometimes under these circumstances Hurd's pessary, Fig. 128, will be found to answer a good purpose.

Fig. 128.



Hurd's pessary.

Fig. 129.



Retroflexed uterus in Hurd's pessary.

The inflated, soft rubber pessary of Hoffman, Fig. 108, is also a serviceable temporary instrument under such circumstances. Where tenderness is excessive, it will often be found to be a 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.

Treatment of Irreducible Retroflexion.—Anteflexion is probably often a congenital condition, or continues for so long a period during the life of the girl before it is discovered, that the anterior inflexion becomes an irreducible uterine deformity. This is sometimes, though much less frequently so in retroflexion, which is usually reducible, unless the flexed body be bound down by false membranes, the result of slight peritonitis. It is sometimes difficult in a given case to decide the cause of the permanency of the displacement. In a general way it may be said that if it be due to false membranous attachment, the uterus will not move from its position in the pelvis; if it be due to contraction in the tissue of the uterus itself, the organ will change its pelvic relations, but not the abnormal ones existing between body and neck.

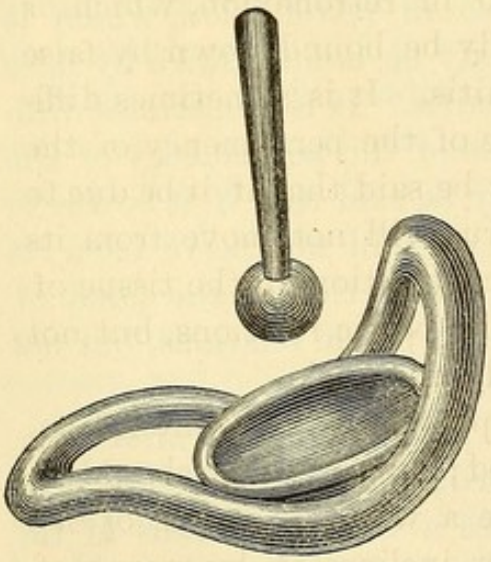
In case the flexion be found due to parenchymatous alteration, no surgical procedure should be adopted; but the body should be cautiously bent forwards once or twice a week by means of the sound or repositor, and kept in anterior inclination by means of the retroflexion pessary, shown in Fig. 127, or by the modified Cutter's pessary.

If the uterus be found fixed in the position of retroflexion by false membranous attachments, not of recent origin, and the patient be not suffering to such an extent from the displacement as to render reposition urgently necessary, it had better be left undisturbed in its unnatural place. Should the disorder, however, be affecting the health, or causing such pain and discomfort as to render the incurring of the risk of peritonitis warrantable, reduction should be accomplished in this way. The patient having been anæsthetized and placed in the left lateral position, the sphincter ani should be stretched by the thumbs. Then the index and middle fingers of the right hand should be passed, with the palmar surfaces towards the sacrum, up the rectum to the flexed uterine body. Steady pressure should then be made upon it until the organ is lifted upright, when, the fingers being made to describe the arc of a circle towards the pubes, the outer surfaces of the finger-nails will be in contact with the uterine body, and by them it will be pushed over into an anterior position. After this the fornix should be filled with a soft, moist sponge, and this forced up so as to sustain the body by a tampon of cotton in the vagina. The patient should be kept very quiet, and all pain should be soothed by free use of opium, as a preventive of peritonitis.

Lateroflexion.

Sometimes the uterus is flexed to the right or left side as a consequence of disease of its proper tissue 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 always settle the point.

Fig. 130.



The treatment of lateroflexion should be conducted upon precisely the same principles which guide us in reference to anteflexion and retroflexion. Of all varieties of flexion this is the most likely to require the use of the intra-uterine stem, for it is exceedingly difficult, I may even say rarely possible, to

overcome it by a vaginal instrument. When this necessity presents itself, either in retroflexion or lateroflexion, I employ the intra-uterine stem represented in Fig. 130. The fundus is in part sustained by the pessary, not entirely by the stem.

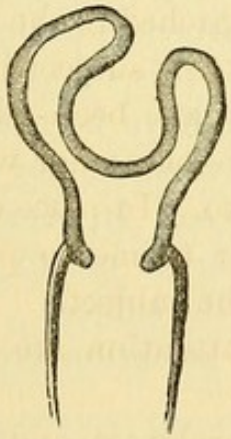
CHAPTER XXVI.

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.

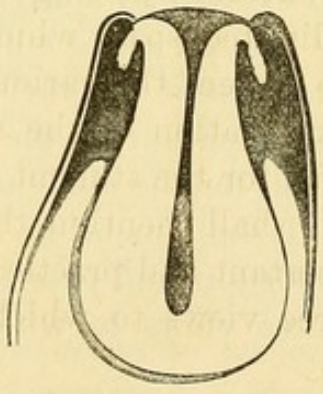
Varieties.—Writers differ in classifying the varieties of the affection, some describing three and some four forms. For practical purposes all these may be brought under two heads—partial and complete. In the first the body has become depressed, but has not passed through the os. In the second the uterus has been turned completely inside out, and the inverted fundus and body

Fig. 131.



Partial inversion.

Fig. 132.



Complete inversion.

hang in the vagina or between the thighs, "*velut scrotum*," as it has been expressed by Hippocrates. Fig. 131 represents the first, and Fig. 132 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.

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 forwards or backwards. 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, the placenta still adhering.

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.

In the limited space which I can allot to this subject it is impossible to present the various theories which have been advanced for the explanation of the mechanism of inversion; nor would it be beneficial for the student that I should do so. In place of such an effort I shall mention those which appear to me to possess a really important and practical bearing upon the subject.

The three views to which I shall direct attention are the following:

1st. That some part of the relaxed body prolapses, and passing out of the cervix drags the entire uterine body with it.

2d. That some part of the relaxed body prolapsing, acts as an excitant of uterine contraction which forces the remaining portion through the cervix, and thus inverts the whole organ.

3d. That lateral traction and direct pressure on a cervix the tissue

of which is abnormally soft, causes eversion of this part and gradually of the whole uterus.

The first of these is the oldest and even at present the most generally received view as to the mechanism of inversion. According to it, it was generally supposed that the part of the fundus which first undergoes inversion is the middle. This is denied by Oldham and Kiwisch, who maintain 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."

Since the days of Astruc the theory has been at various times maintained that active contraction of the uterus sometimes produces inversion. "Sometimes," says Astruc, "it is produced from contraction of the womb, which forces the bottom inside out, through the mouth of the womb, which is not yet closed." Regular uterine contraction, however violent it may be, would only tend to complete closure of the uterine cavity. If, however, such a partial inversion or internal projection as that alluded to by Rokitansky in the quotation recently made, occur, it acts as the placenta, the hand of the obstetrician, or any other body in the cavity, by exciting expulsive efforts which may succeed in driving it out of the os externum. Should they do so, complete inversion is the result; should they fail, the projection may persist as a partial inversion. This view which was advocated by the late Dr. Tyler Smith appears to me to explain the apparent paradox of inversion with tonic contractions of the uterus more satisfactorily than any other which has been advanced. I have met with one case occurring after delivery, which convinces me, that sometimes, at least, what I have just described really takes place.

Still another and very ingenious theory has been advanced by Prof. I. E. Taylor for explaining the occurrence of inversion. It is that inversion sometimes begins at the cervix, this part undergoing eversion as in prolapsus, and this going on to the complete inversion of the entire organ.

In previous literature, allusions to the possibility of inversion after this method may be found. Klob alludes to it in these words: "A very remarkable class of cases of inversion are those in which, without efficient cause, an inversion of the cervix into the vagina takes place, drawing the fornix of the latter with it, and thus forming a polypus-like tumor in the cavity of the vagina, which may reach down to the vulva, at the lower part of which the internal orifice is situated." A very striking case was published by Mr. William Lawrence in the London Medical Gazette, Dec. 5, 1838, under the head of "Spontaneous Partial Inversion of the Uterus." But the credit of having drawn proper attention to the subject and having proclaimed its probable pathological bearings, unquestionably belongs to Taylor. I say "probable," for the reason that it is not yet proved. I accept it, because my own observation leads me to believe that Dr. Taylor's deductions are probably correct.

Predisposing Causes.—Every influence which destroys the tone and resistance of the uterine parenchyma proves a predisposing cause of this condition. As examples, may be mentioned:

Parturition;
Distention of uterus by retained fluids;
Distention of uterus by tumors;
Spongy softening of tissue in prolapsus (?).

Exciting Causes.—A uterus in which the tone of the walls has been destroyed by physiological, pathological, or mechanical causes has lost all its normal safeguards against inversion. Thus, we may say, that anything which produces distention 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. The exciting causes are thus presented:

Traction on placenta;
Traction by polypi or tumors;
Sudden delivery of child by traction;
Muscular efforts when relaxation exists;
Prolapsus uteri (?).

Instances of its production by all these causes are on record, though by far 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 Ané and Baudelocque report its having taken place on the third, and Leblanc on the tenth day.

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. As to the possibility of any amount of force inverting the non-pregnant and undilated uterus, much doubt has been expressed. 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.

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, furnishes me with the history of the following case. A young woman who had borne one child, seven or eight years previously, and had never had any recognized uterine disease, while making a violent effort in rolling ten-pins, suddenly felt something give way within her, after which she suffered 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.

Menstruation, after amputation of the uterus, is by no means rare. It must be remembered that in such an operation the whole uterus is not removed. It is from the remaining stump that the flow occurs.

It is certainly difficult to admit the occurrence of inversion beginning in the body of an undilated uterus. It may be that in 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. It may be that inversion begins in such cases at the cervix and becomes complete in the method suggested by Taylor.

After all, there is nothing more astounding in the fact of spontaneous inversion of an undistended uterus than there is in the spontaneous reposition of one which has been long inverted, and this we have, with the positive testimony of scientific and reliable men now on record, no possible justification for doubting. Of late

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[1] Colombat on Females. Meigs, p. 182.

[2] Traité des Mal. Chirurgicales.

[3] Colombat, op. cit.

the validity of both these phenomena has been denied. There is nothing easier than the rejection of the testimony of others, and the discrediting of deductions which we ourselves have not drawn. When De La Barre presented his case of spontaneous reposition to the Academy of Surgery, Baudelocque was appointed a committee to examine into it, and reported that it was "totally false." Some years afterwards he met with a very similar case, and yielded to the evidence of his own senses a credence which he had presumptuously denied to the assertions of another.

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 between the thighs of the patient if inversion 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:

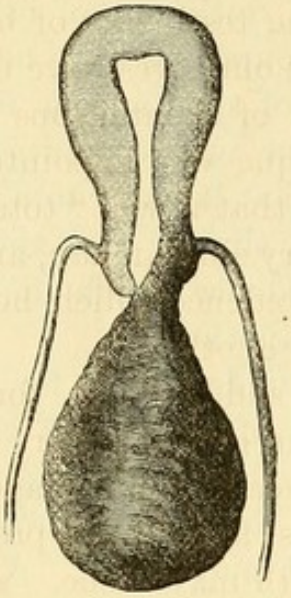
Occasional or constant hemorrhage;
Dragging pains in back and loins;
Difficulty in locomotion;
Difficulty in defecation and micturition;
Anæmia and its accompanying evils.

Physical Signs.—All these symptoms belong as much to polypus, fibrous tumor, and cancer, as to inversion, and to determine 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 usually 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 the uterus should be;
Rectal examination will reveal the uterus *in sitû*;	Rectal examination will not reveal the uterus *in sitû*;
Recto-vesical exploration will reveal the uterus;	Recto-vesical exploration will not reveal the uterus;
Acupuncture will give no pain.[1]	Acupuncture will give pain.

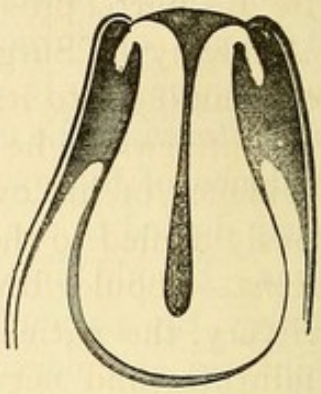
[1] Gueniot, Arch. Gén. de Méd., 1868, t. ii, p. 393.

Fig. 133.



Polypus.

Fig. 134.



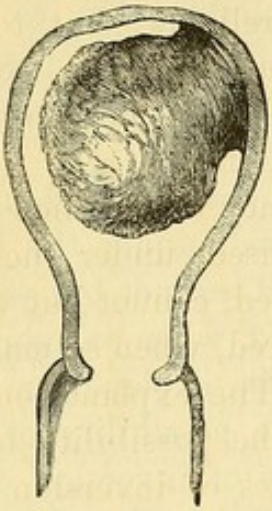
Inversion.

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. 133 will readily 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 particularly so. Differentiation from a fibrous tumor will depend upon the following signs:

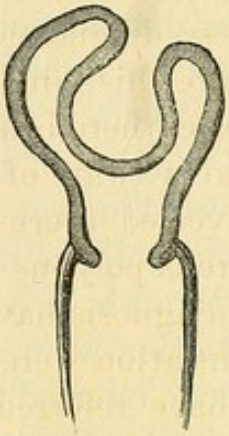
IF IT BE A FIBROID GROWTH.	IF IT BE PARTIAL INVERSION.
The probe will show increase of uterine cavity;	The probe will show diminution of uterine cavity;
Conjoined manipulation and Simon's method will reveal rotund body of uterus;	Conjoined manipulation and Simon's method will reveal small abdominal ring;
It will have come on very gradually;	It will have occurred more suddenly;
It will have no reference to parturition;	It usually follows parturition;
Acupuncture is painless.	Acupuncture gives pain.

Fig. 135.



Fibrous polypus.

Fig. 136.



Partial inversion.

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, years after its occurrence, when the accident has happened after delivery. Twelve such cases have now been placed upon record: three by Meigs,[1] and one by each of the following observers: Spiegelberg,[2] Leroux,[2] De la Barre,[2] Thatcher,[2] Rendu,[2] Shaw,[2] Beaudelocque,[3] Foujen,[4] and Huckins.[5] Even admitting the undoubted authenticity of these 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

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[1] Obstetrics.

[2] Article by Prof. Spiegelberg, "Archiv für Gynäkologie," Am. Journ. Obstet., Aug. 1873.

[3] Daillez, Thesis.

[4] Weiss, Des Réductions de l'Inversion, etc.

[5] Letter to author from Dr. Jason Huckins, of Maine, U. S.

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 the possibility of error to enter his mind, and consequently does not carefully weigh the evidence, there is a great likelihood of it.

One who is aware of the great frequency with which amputation of the inverted uterus has been practised, 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 in the "Beitræge zur Geburtskunde und Gynäkologie," and in which amputation was practised, 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 attempts at reduction of the inverted organ. A small hand, a cautious, unexcitable mind, and constant vigilance during all the efforts by taxis, must be combined with thorough knowledge of the subject, to avoid this imminent danger. Even with all this combination, it is a matter of surprise to me, from my experience with these cases, that the accident has not occurred much oftener. 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 may be adopted.

1st. The organ may be left in malposition; hemorrhage being controlled by hemostatic means.

2d. The inversion may be reduced by taxis, by elastic vaginal pressure, or by a combination of the two.

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[1] Becquerel, op. cit., p. 306.

3d. All these failing to give relief, the uterus may be amputated.

Methods of Checking Hemorrhage, the Uterus being left in sitû.—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, artificial means may, in a limited degree, accomplish the same results.

The most vascular growths, such, for example, as hemorrhoids 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 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 department 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 gynecology 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.

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[2] 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.[3] 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[3] in the same manner effected reduction in a case of five months' standing, and in the same year M. Barrier[4] accomplished it in one which had existed for fifteen months.

Up to the year 1858, the reposition of inverted uteri may be said to have been limited to replacement, within short periods after parturition. It is true that occasional cases had occurred in which

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[1] Colombat, Am. ed., p. 186.

[2] Daillez's Thesis appeared in 1803.

[3] Quoted from Ranking's Abstract, vol. 7, by G. Hewitt.

[4] Courty, Mal. de l'Utérus, p. 797.

chronic inversion had been overcome by taxis and pressure, but these held the position of accidental and anomalous feats in treatment, not that of systematic procedures, which it was incumbent upon the practitioner to essay in every case. At this period two cases of chronic inversion were reduced, one of twelve years' standing by Prof. Tyler Smith, of London, by elastic pressure and taxis; the other of almost six months' standing by Prof. James P. White, of Buffalo, U. S., by taxis alone. Each[1] of these gentlemen worked without the knowledge of what the other was doing; and to them belongs the great credit of having systematized, and made subservient to science and humanity, a method which before had been practised in a loose and desultory manner. Soon after their publications, cases of cure effected by taxis alone, or combined with pressure by bags of air or water placed in the vagina, were rapidly reported from different parts of the world. Most notable among these were the cases of Noeggerath, of 13 years' standing; Teale, of $2\frac{1}{2}$ years; West, of 1 year; White, of 15 years; and Bockendahl, of 6 years. When it is stated that all these occurred in 1859, it will be fully appreciated how great an impetus was given to this subject by the successes of Smith and White. 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; and, although I cannot go so far as to endorse the sanguine prediction of White, made in 1872, that "well directed pressure upon the fundus, if continued long enough, will, in all cases where there are no adhesions, result in restoration or reposition," I do believe that the day has passed when any practitioner would be held blameless by a jury of his peers, who has either left untouched, or amputated a uterus in the condition of chronic inversion, without some special reason apart from the mere displacement itself.

The best methods at our command for replacing an inverted uterus may thus be presented:

[1] I feel that full justice was inadvertently withheld from Dr. White in the former editions of this work. My space does not allow me to state the grounds upon which I place him on an equality with Dr. Smith, in reference to this matter; but any one desiring details will find them in an article by Dr. White in the "Richmond and Louisville Journal" for August, 1872.

Methods for effecting gradual reduction	Pressure by vaginal stem and cup or bulb; Elastic pressure combined with taxis; Elastic pressure alone; A stream of cold water.
Methods for effecting rapid reduction	Manipulation by Viardel's method; " " White's " " " Barrier's " " " Noeggerath's " " " Courty's " " " Thomas's "

None of these methods are free from danger; in several cases even elastic pressure has excited fatal peritonitis. But gradual reposition is certainly much safer than rapid reduction.

Before each of these certain preparatory measures calculated to relax the cervical parenchyma, or render its resistance less decided, may be essayed. One of these is the use of belladonna by the vagina in the form of vaginal injections of the infusion, or of ointment smeared around the uterine neck; or by the rectum in form of suppository. The other is the making of two or three longitudinal incisions through the superficial layers of the parenchyma of the neck. This method is a very old one, dating back to Millot[1] in 1773. Since his time it has been repeatedly advised; for example, by Colombat, Gross, Sims, Barnes, and others. Of the benefit of the first of these methods there is little doubt; of that of the second there is none.

Gradual Reduction by Repositor.—This method dates back to Von Siebold,[2] who employed a curved stem surmounted by a fine sponge, the stem being held *in sitû* by a T bandage. After him it was repeatedly and successfully employed, and to-day it is coming again into favor, having been very recently recommended by Drs. Hicks and Barnes of London. The former employs a solid stethoscope, the large extremity covered by India-rubber; the latter a hollow caoutchouc cup, fixed to a curved stem. Both of these are supported by a T bandage.

By Elastic Pressure.—The demonstration of the important fact, the most important, indeed, connected with this subject, that elastic pressure was capable of greatly aiding reposition of an inverted uterus, belongs to the late Dr. Tyler Smith. I say "greatly aiding," for he combined taxis with it. It was left for Bockendahl, of

[1] Taylor, op. cit.

[2] Ch. F. Weiss, Paris, op. cit.

Germany, to prove that it could effect reduction unaided. Smith's plan consists in passing the hand into the vagina, night and morning, and kneading the uterus for ten minutes, and during all the intervening period keeping an air pessary in the vagina. Bockendahl simply trusts to elastic pressure alone, thus making an important improvement upon Smith's plan.

A Stream of Cold Water.—This method has not been sufficiently tested to command confidence, but it is worthy of mention and consideration. Dr. Charles Martin,[1] of France, succeeded in effecting reduction in a case which proved rebellious to other means by this, which he tried in the following manner: he introduced the speculum around the inverted uterus twice a day and threw upon the fundus, with force, by means of a syringe, a stream of cold water. Then filling the speculum with cold water, he kept the uterus immersed for three or four minutes. My impression is that, simple as this method is, we shall hear of it again.

There is no limit to the time during which efforts at gradual reduction may be persevered in. Such a limit is established solely by the patient's tolerance of the method tried. A case is mentioned in this chapter in which elastic pressure was kept up for eighteen days with successful result. Sometimes, however, the patient cannot tolerate elastic pressure, or that by a repositor, for symptoms of peritonitis result from their use. Then it is that anæsthesia and rapid reduction offer themselves as valuable resources.

Rapid Reduction by the Old Methods of Taxis.—Taxis has been practised 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:[2] "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,[3] "two opinions which have arisen in relation to the reduction of the uterus inverted during

[1] Gaz. des Hôp., 1853.
[2] Mal. des Femmes, 2d ed., p. 510.
[3] Mal. de l'Utérus, p. 901.

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[1] describes 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 has been attempted. My impression is that the manipulations practised on the fundus in chronic cases 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. It is scarcely applicable to other than recent cases.

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 the late Prof. 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.

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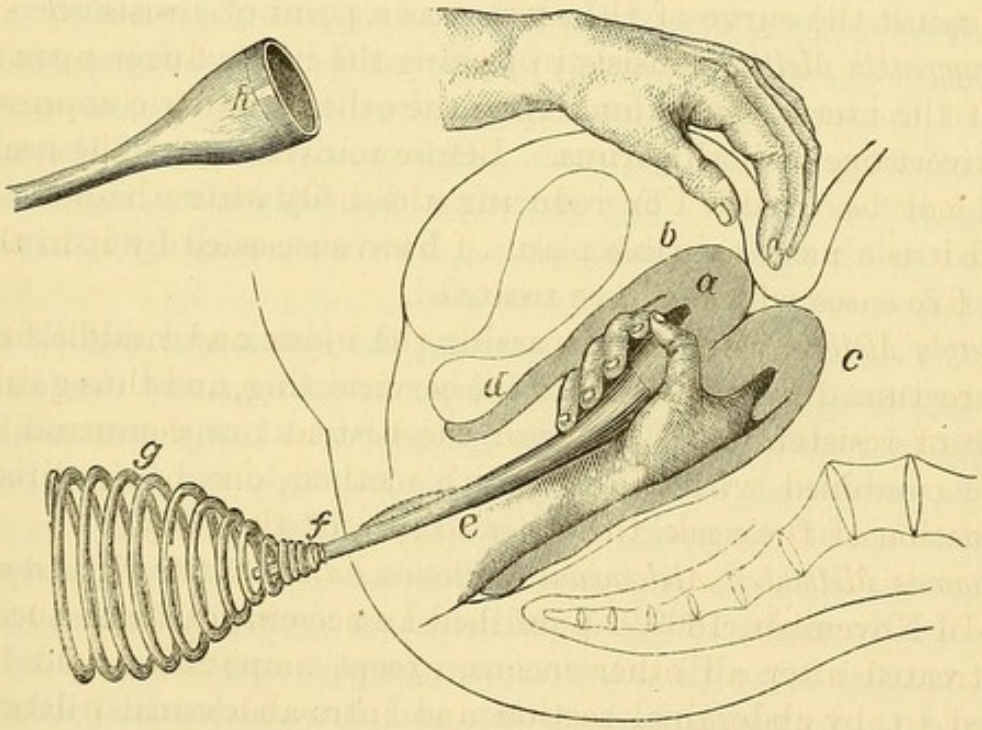
[1] Mal. de l'Utérus, tome 2, p. 314.

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.

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.

The use of a repositor by which to make direct pressure and aid in reduction has been resorted to by Depaul and others. Prof. J. P. White has recently employed one which by its simplicity and efficacy makes it worthy of especial mention. Fig. 137 shows this

Fig. 137.



Rapid reduction by White's method. Operator grasps uterus, *a*, and presses his chest against spiral spring, *g*, *f*, which forces cup of repositor against fundus.

instrument, and, likewise, makes evident the method of reduction which the experience of nine cases extending over a period of fifteen years has led him to adopt.

It is impossible to set an absolute limit to the time which should be allotted to one attempt at immediate reduction, but these efforts

cannot be persisted in much longer than one or two hours without great danger of 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 placing a caoutchouc bag in the vagina, or closing the os uteri by silver sutures as practised 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.

The operator should not adhere too long to one plan of manipulation, but try one after the other of the other methods of manipulation which will now be mentioned.

Barrier's Method consists in spreading the four fingers around the uterus, pressing the thumb against the fundus, and forcing the neck against the curve of the sacrum as a point of resistance.

Noeggerath's Method consists in placing the index finger upon one horn of the uterus, the thumb upon the other, and so compressing as to invert one or both cornua. Before reinversion of the neck it should not be tried. For reducing the body after the neck has yielded it is a most valuable plan. I have succeeded by it in three out of five cases which I have treated.

Courty's Method consists in passing the index and middle finger up the rectum, dipping them into the cervical ring, and thus gaining a point of resistance. It is one of the best at our command, and may be combined with Noeggerath's method, one being directed to reduction of the neck, the other to that of the body.

Thomas's Method. 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 1. 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

[1] Amer. Journ. Obstetrics and Dis. of Women and Children.

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. The physician who was consulted prescribed astringents and hemostatics, 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 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 practised 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 practised 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. Journ. 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

[1] Mal. de l'Utérus, p. 906.

to know that her unflinching courage was equal to any trial which promised release from the unfortunate state which for nearly two years had embittered her life and destroyed her usefulness.

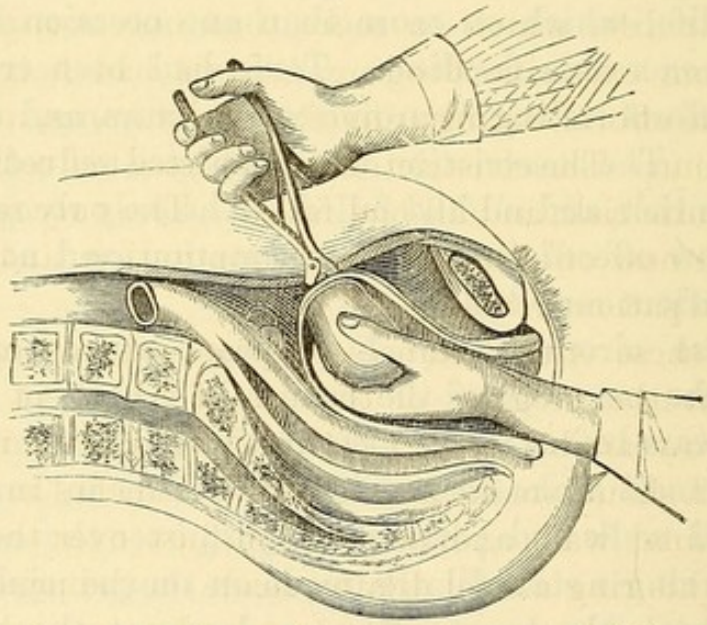
After ligation of the circular artery, the mucous membrane of the uterus sloughed extensively, and the patient appeared much exhausted. In a week from this time, however, she was in a fit condition for the operation proposed, and it was appointed to take place on the 16th of September.

An instrument very similar to that represented in Fig. 139 was promptly executed for me by Messrs. Darrow & Co., 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. 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

Fig. 138.



Replacement of uterus by dilatation through abdomen.

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. 138, 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, 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 additional force employed was a little more than the vagina could bear, and one finger passed through between the uterus and bladder. 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*, etc., 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, when its dangers are compared with those of amputation. 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, 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 declared 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 Vermilye. 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. Vermilye 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 distention 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 cases on record reduced by taxis, that of Dr. White, of Buffalo, likewise ended fatally.

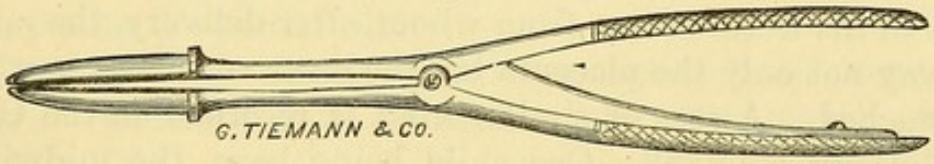
If, like the first here recorded, a case should prove rebellious to taxis repeatedly and intelligently applied, and to prolonged and powerful elastic pressure, what is to be done? Only two courses have until this time been open to us; one to leave the case unre-

lieved, the other to perform amputation. In an elaborate report of cases of inversion given in the American Journal of Obstetrics for August, 1868,[1] 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. 139.

Fig. 139.



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.

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

[1] Translated from the "Beitræge zur Geburtskunde und Gynäkologie."

with elastic pressure for eight days, and Dr. F. A. Ramsay,[1] of Knoxville, Tennessee, after seventeen or eighteen days of effort. Does any one doubt that in the hands of many less persevering 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 have taken place into the inverted sac;

2d. It frequently 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. This will not be wondered at when it is borne in mind that even tearing away of the organ has been several times recovered from. Radford, J. C. Clarke,[2] 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. A case of similar kind is recorded in the Gazette des Hôpitaux for 1842. One child being born, the midwife felt the breech of another as she supposed. Around it she passed a handkerchief, pulled with all her force, and dragged away uterus and annexæ. The patient recovered!

A very 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

Out of 58 cases of amputation collected in the report in the German journal recently alluded to, 18 were fatal—nearly one-third.

[1] Taylor, op. cit.

[2] Dublin Journal, 1837.

Should it be deemed advisable to resort to this procedure in spite of the dangers incident to it, there are three methods by which it may be performed: the knife, preceded by the ligature; the écraseur, preceded by the ligature; and galvano-cautery.

Experience proves that removal of an inverted uterus by the knife, or even the écraseur, is likely to be followed by profuse and dangerous hemorrhage. To avoid this, a method advised by Dr. McClintock, of Dublin, should invariably be adopted. It consists in the application of a strong ligature for from two to three days before the operation. This obliterates the vessels, and, just about the time that decomposition of the strangulated organ begins, it is amputated. Even when galvano-cautery is employed, although this method is not likely to be followed by hemorrhage, it is well to surround the neck, above the point at which the wire is to pass, by Hicks's wire rope écraseur, in order that compression may at once be made in case it should take place.

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. To do this effectually, however, it must be secured before removal of the uterus, by some means by which it can be drawn down. This may be accomplished either by the ligature or the wire écraseur. A tampon should be avoided, lest blood collecting above it might separate the lips of the wound and enter the peritoneal cavity.

Removal of the uterus by ligature alone should never be attempted. Not only have we better and safer means; statistics prove this to be an especially dangerous method. Out of 33 cases thus operated upon, 17, over half, ended fatally.

CHAPTER XXVII.

PERIUTERINE 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 brought into notice, 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: parametritis, periuterine 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.

Anatomy.—[1]"The sub-peritoneal pelvic tissue," says Dr. Savage, in his work on 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.

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 perirectal abscesses with this disease.

French writers,[2] on the contrary, regard as instances of periuterine 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 periuterine, in place of pelvic, cellulitis.

Periuterine 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 most common seat of periuterine 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 enlargements 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 periuterine 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 periuterine cellulitis are—

Pelvic peritonitis;
Ovaritis;
Fallopian salpingitis;[1]
Endometritis;
Uterine displacement.

[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 become chronic, 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 abscess 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;

Direct injury from coition, caustics, pessaries, operations, or blows.

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[1] Op. cit.

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, etc., will excite it; but under these circumstances they are merely immediate and exciting influences.

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 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 thermometric range;
Pain;
Fever;
Dysuria;
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. The thermometer shows marked increase of animal heat, rising to 103° or 104°, or, in severe cases, even higher. With these general 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 pains, 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 prompts 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 swollen and œdematous spot may be detected. Upon pressing in different directions great sensitiveness will be observed, and by conjoined manipulation a particularly sensitive point will be detected usually 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, or in the tissue around the cervix.

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 against 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 practised 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 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;
Hematocele;
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.

Hematocele occurs suddenly with uterine hemorrhage, and is marked 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 usually posterior to the uterus and not on one side of it. 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 displacement 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.

Treatment.—Should the practitioner be called in the acute stage, before effusion has occurred, or after its occurrence and before its

[1] Aran, op. cit., p. 638.

complete organization, leeches should, in the case of a strong patient, be at once applied over the hypogastrium. After leeching; warm poultices of powdered flaxseed 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, tincture of aconite, or tincture of gelseminum. 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 arm.

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 is the persevering use of the warm douche for fifteen or twenty minutes, night and morning, after one of the methods already advised. The fluid used should be as warm as the patient can bear it, and may be slightly medicated in the later stages 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 XXVIII.

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 on 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, "periuterine 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 periuterine 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 periuterine 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. Periuterine cellulitis is 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, and

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[1] Archiv. Gén., 1857.

[2] Clin. Méd. des Femmes, 1862.

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 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 ordinarily 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 presented itself:

Mrs. M., aged 35, married, but never pregnant, was under my

[1] I have rejected a number of the cases reported, because not sufficiently conclusive.

care, during the winter, at the Woman's Hospital, for anteflexion of the uterus, the result, as I supposed, of periuterine 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.

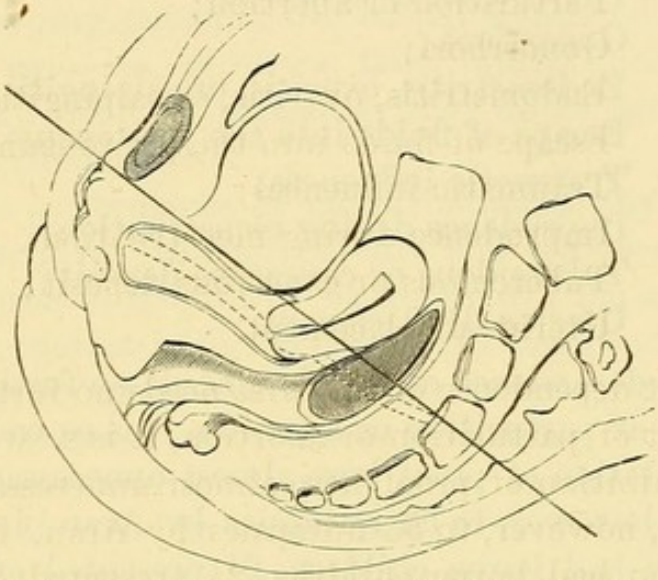
The fixation of the uterus, observed during life, was due to lymph effused upon the pelvic peritoneum, and no trace of inflammatory action in the pelvic areolar tissue could be discovered as accounting for it. It is true that the left ovary, enveloped by the layers of the broad ligament, was inflamed, and that a certain amount of inflammation existed in the cellular tissue immediately surrounding it, but this did not extend.

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 colic.

Pathology.—The disease runs its course here, as peritoneal inflammation does elsewhere, in three stages. In the first there are simple engorgement and turgescence of the vessels, producing red-

ness, 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 liga-

Fig. 140.



The straight line represents approximately the roof of the pelvis; the dotted line represents it more exactly.

ments, 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 the following:

Periuterine cellulitis;
Parturition or abortion;
Gonorrhœa;
Endometritis, ovaritis, or salpingitis;
Escape of fluids into the peritoneum;
Traumatic influences;
Imprudence during menstruation;
Tuberculous or cancerous deposit;
Uterine displacement.

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 seen a number of severe cases due to it, and the great importance attached to this cause by Noeggerath is elsewhere fully stated.

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 persulphate of iron into the uterine cavity. The passage of the

[1] Op. cit., 718.

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, 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, etc.

Traumatic agencies, as blows, falls, injury during labor, punctures, etc., may result in partial, as they do in general inflammation of the peritoneum.

During the performance of menstruation, a physiological function which involves ovarian rupture 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 investing peritoneum. 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.

In certain peculiar states of the system this affection is excited by the most trivial circumstances, and very commonly the physician is held to a severe account for the fatal issue of an affection which he as little expected to arise from his interference as the friends of the patient did. I have seen it excited by the passage of the uterine sound, the use of a small sponge tent, and, in one case, from the passage of water, used by vaginal injection, into the uterus. Dr. Barnes, in his late excellent work on the "Diseases of Women," says, "I have seen fatal peritonitis follow the simple application of nitrate of silver to the cervix uteri." It should be the duty of every physician to shield an unfortunate brother practitioner by the protection which these facts legitimately afford him; but it should equally be the duty of each to remember this paragraph, the whole of which is italicized in Dr. Savage's work upon the Female Sexual Organs—"No surgical proceeding whatever, touching any part of the uterine system, should be unattended by the precautions observed in operations of a grave character there or elsewhere; in certain states of the general system unforeshadowed by any recognizable peculiarity, the most trivial operation has been speedily followed by fatal peritonitis."

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 tuberculosis or uterine disease, it often assumes from the beginning the chronic type. Besides these varieties there are two others which cannot be passed without notice—menstrual pelvic peritonitis which becomes aggravated at periods of ovulation, and recurrent peritonitis which lasts for many years, giving, however, immunity for long periods, and then recurring with great violence from a trivial cause. I have now under my care two such cases, one of which has lasted ten and the other eight years. For eight, ten, or twelve months these patients enjoy an almost absolute immunity from the disorder: then, excited by some apparently insignificant cause, a severe and excessively painful attack comes on. One of these cases is always complicated by cellulitis, and a purulent accumulation frequently discharges itself through the pelvis as a consequence of these attacks.

Symptoms.—The acute form shows itself by—

Pelvic pain and tenderness;
Sometimes great vesical irritation;
Fever;
Usually increased thermometric range;
Nausea and vomiting;
Anxious facies;
Mental disturbance;
Tympanites.

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.

The thermometric range is likewise variable. In the beginning of an attack, which may become a severe one, the range may be normal, or even below the normal standard. "Sub-normal temperatures are especially common in peritonitis," says Wunderlich, "and always suspicious; death may follow them closely. High and rising temperatures do not add, *per se*, arguments for an unfavorable termination, although adding another dangerous element to the case. It is not so much the actual height, as its constancy, which must be feared; as are, also, great and irregular fluctuations between very high and very low temperatures." When, however, a case commences with a temperature of 106°, it is greatly to be feared that it will run a violent and dangerous course. On the other hand, even a normal temperature should not give complete security, although a decidedly favorable augury may usually be drawn from it. In general terms it may be said that for him who implicitly trusts to the revelations of the thermometer in this affection, it will prove an unreliable guide; but to him who looks upon them merely as aids to diagnosis and prognosis, it will give decided assistance.

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 fixed. 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 one side of the uterus. This tumor, which is formed by aggluti-

[1] "Perimetritis and Parametritis," p. 78.

nation 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. G. 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 acuteness 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—

Periuterine cellulitis;
Pelvic hematocele;
Fibrous tumors;
Fecal impaction.

Periuterine 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 Aran 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.

Pelvic Hematocele.—From this it may be distinguished by the great suddenness of appearance of hematocele, absence of signs of inflammation in the beginning, 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 free bloody flow will likewise point to hematocele, though such an occurrence, to a limited extent, often

takes place in peritonitis. Hematocele often excites peritonitis, and thus both frequently 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 usually movable, and cause no fixation of the uterus.

Fecal Impaction.—After pelvic peritonitis and cellulitis have existed for some time, and have lost their features of acuteness, and more especially after opium has been long used to allay the pain which attends them, they are very apt to be complicated by fecal impaction. Not only is this a complication, I have known it exist long after the inflammatory affection which preceded it has passed away, and give rise to the belief that this still continues, the pain which it creates being attributed to the primary condition. I am now preparing for publication the notes of four very striking cases in which after four or five months of intense suffering from supposed periuterine inflammation, which was treated by free use of opium, I discovered great fecal impaction, the removal of which afforded complete and permanent relief. So frequent do I consider the development of this condition as a result and complication of periuterine inflammation, or as an independent state which is mistaken for it, that I never take charge of a case which has been under the previous treatment of others without examining for its existence, and in the management of cases from the commencement under my charge, always carefully guard against its occurrence.

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 vaginal injection which by accident has entered the uterus, have been known to destroy life by causing peritonitis which has extended to the whole peritoneum. 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 prog-

nosis 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, etc., 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 periodical 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 injury 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 the patient be strong, 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 morphia will be repeated every two or three hours for a long time before perfect ease 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 the abrasion which it produces 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 in these stages 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 hematosis, 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 practised. 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 easy travel. 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 strict limitation 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, ʒiij.
Ferri iodidi syr. ℥ij.
Tr. calombæ, ℥vj.—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 frequently 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 the aspirator, 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 XXIX.

PELVIC ABSCESS.

SURPRISE may be felt at the appropriation of a special chapter to this subject. The opinions of several reviewers have already been expressed to this effect, and the propriety of making it an addendum to that on cellulitis or peritonitis has been suggested. How could this, however, with propriety be done, when pelvic abscess arises from other than those inflammatory processes; from ovaritis, perirectitis, psoas disease, disease of the pelvic bones, etc.? It appears to me a matter of importance to impress the fact that it should be viewed from a more general stand-point and not be limited to the results of two affections. I know of no surer way of effecting this object that that which I here pursue.

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 hematocele or ovarian cyst; 3d, inflammatory suppuration in the areolar tissue, the ovaries, the 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, a fibrous tumor of the uterus, or caries of the pelvic bones.

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 diathesis; 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. Sometimes, 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.

König has instituted some very interesting experiments on the cadaver, to show the most probable routes which these accumulations may take:

1st. Injecting air or water beneath the peritoneum near the ovary or tubes, the injection ran along psoas and iliac muscles into pelvis.

2d. Beneath lateral ligament near cervix, it filled the same side of pelvis, ran along round ligament towards Poupart's ligament, and to the iliac fossa.

3d. Beneath broad ligament behind cervix, it filled posterior and lateral part of pelvis, and passed along psoas and iliac muscles into pelvis.

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 hematocele;
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, suddenness of appearance, etc.; 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 affected 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.

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 until the presence of pus is an absolute certainty. If it be thus delayed, the tissues intervening between the pus and the point of introduction of the instrument become broken down, and 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 evacuation 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 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.

Dr. Savage believes that "puncture should be practised early and per vaginam." Spencer Wells declares from an experience in opening as many as from twenty to thirty pelvic abscesses that he has known of no fatal result. "I have known," says he, "several cases of death where no puncture has been made—some of them very painful cases—when I had urged puncture and was overruled." As a rule he punctures per vaginam.

This subject is one upon which no fixed rule can be given. The surgeon must weigh the dangers of operation with those of delay, and decide by the indications presenting in each individual case.

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.

Dr. Savage reports the points of opening, artificial or spontaneous, in 19 cases; they were as follows:

1 above pubes at median line.
1 midway between navel and pubes.
1 outside left saphenous opening.
2 by rectum; 1 fatal.
1 by rectum and side of anus.
1 by colon; 1 fatal.
4 by vagina.
2 by bladder.
1 by iliac region.
3 into peritoneum; 3 fatal.
1 by rectum and internal abdominal ring.
1 by vagina, bladder, rectum, and inguinal region.

It will be seen that out of 19 cases 5 proved fatal; 3 by emptying into the peritoneum, and 2 by causing colitis and rectitis.

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 there exist the slightest doubt as to the contents of the sac the needle of a hypodermic syringe should be plunged into it and the point decided. If this be not done an ordinary exploring needle should be passed into the tissues until pus is seen to flow along its groove. Then the operator, feeling sure of his ability to reach it, holds the needle in one hand, while with the other he slides the point of a bistoury along its gutter and passes it to the place of accumulation. This is a method at once safe, certain, and effectual, and I should recommend it in preference to any other except that which comes next to be considered. If an aspirator can be procured it affords an easy and effectual means of emptying these accumulations, and at the same time one that is to a great extent free from danger. After it has removed all the fluid which will flow its action should be reversed, the sac filled with equal parts of tincture of iodine and water, and this at once drawn off again. Should reaccumulation take place, the situation and certainty of

the purulent collection being established, it may be evacuated by a bistoury. 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 piece of gum-elastic catheter or rubber tubing may be left in it.

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.

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. A trocar, the needle of the aspirator, or a bistoury guided by an exploring needle, may be plunged through the centre of the issue without the danger just mentioned.

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 feces 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 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 carbolic acid.

In case of entrance of feces, 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.

Before practising any operation for evacuation of pelvic abscesses an anæsthetic should always be administered, as perfect quietude is essential to safety.

CHAPTER XXX.

PELVIC HEMATOCELE.

Definition and Synonyms.—Under this and the synonymous titles of retro-uterine hematocele, periuterine hematoma, 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 hematocele. Germany has of later years contributed a great deal towards it through the labors of Olshausen, Credé, Braun, Hegar, Virchow, Schrœder, Seiffert, and others; and England through those of Madge, McClintock, and Tuckwell. 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 hematocele under the impression that he was enucleating a fibrous tumor, and losing his patient from hemorrhage.

Frequency.—This subject is not fully settled, a good deal of discrepancy of opinion existing concerning it. Prof. Olshausen, of Halle, declares that in 1145 gynecological cases he saw 34 hematoceles, and Seiffert, of Prague, reports 66 seen in 1272 cases of pelvic female diseases. In ten years Dr. Barnes has met with 53 cases, and in twenty years Dr. Tilt has seen but 12.

I do not regard the disease as being, by any means, very rare, but my experience assures me that many cases of cellulitis and a certain number of uterine and periuterine tumors are reported as those of hematocele.

Pathology.—The definition of hematocele 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 or peritonitis.

It is evident that hematocele 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 hematocele, but at present the discovery of the source of the hemorrhage is usually 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;
   - Uterus.
3. *Reflux of blood from the uterus.*
   - Reflux of menstrual blood.
4. *Transudation from bloodvessels.*
   - Purpura;
   - Scorbutus;
   - Chlorosis;
   - Hemorrhagic peritonitis.

All of these causes have been proved by post-mortem research to have resulted in hematocele, 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 blood from the vessels of the peritoneum. The last condition has been described as hemorrhagic peritonitis, and especially pointed out by Virchow. Schrœder believes that peritonitis always precedes the occurrence of hematocele. That it usually accompanies it is unquestionable, but if it be a precursor of this affection, which suddenly bursts forth upon a patient apparently in good health, it tells badly for our means of diagnosis of pelvic peritonitis. It is undeniable, however, that in some cases hematocele does follow and not precede the 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 the following 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

[1] Op. cit., p. 344.

been found to have occurred most frequently during the period of ovarian activity and especially during a menstrual epoch.

The predisposing causes are—

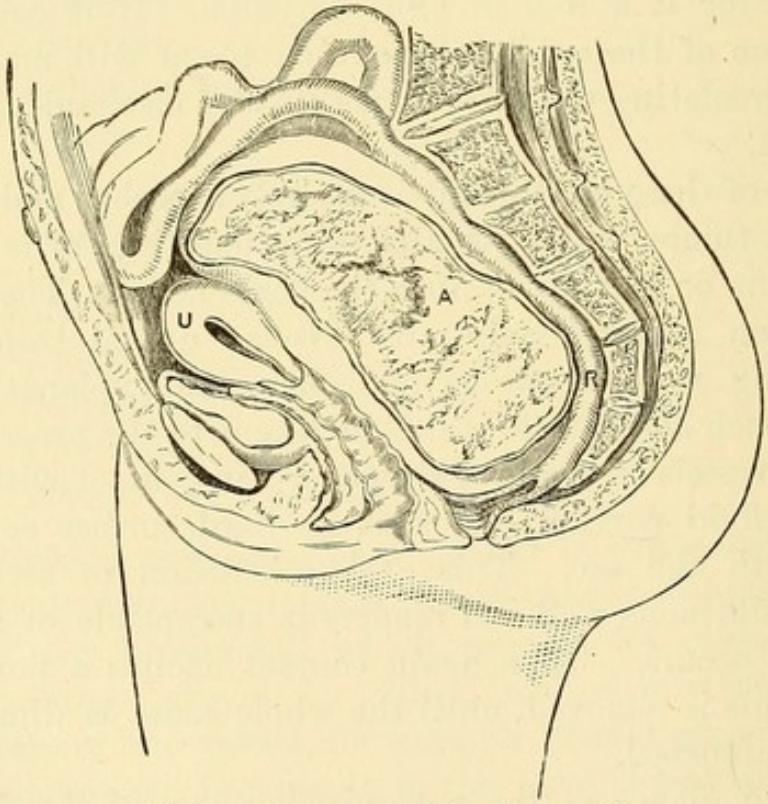
The period of ovarian activity, 15 to 45;
Disordered blood state, plethora or anæmia;
The menstrual epoch;
Chronic uterine or ovarian disease;
The hemorrhagic diathesis.

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.

Varieties.—There are two forms of the affection, subperitoneal and peritoneal. In the latter, the blood tumor forms within the

Fig. 141.



Peritoneal Hematocele. (Barnes.)

peritoneum, where it in time becomes encysted unless death occur at an early period. In the former, it occurs in the areolar tissue of the pelvis, under the peritoneum.

The propriety of the consideration of the former under the same head as the latter, has been contested by Aran, Bernutz, and Voisin, but from a clinical stand-point it appears to be quite valid. Not only have distinct instances of subperitoneal hematocele been recorded by such observers as Simpson, Olshausen, Tuckwell, and Barnes; cases have, likewise, presented themselves, which commencing as subperitoneal ones have ruptured the peritoneal covering of the pelvis, and thus broken down the theoretical barrier which pathologists have been inclined to establish between the two varieties.

Of the two varieties the peritoneal is much the more frequent, at the same time that it is the more grave. In 41 autopsies Tuckwell found the tumor to be peritoneal in thirty-eight. In a case which I saw with Dr. Emmet about a year ago, we were unable to make a diagnosis of a tumor which lay obliquely anterior to the uterus. In twenty-four hours the patient fell into a state of collapse, and as we saw her thus, the nature of the tumor, which we were doubtful about on the previous day, became evident. Upon a post-mortem examination an ante-uterine hematocele as large as a goose's egg was found under the peritoneum, through which it had broken, discharged a portion of its contents into the peritoneum, and caused collapse and death. This is the only ante-uterine, but not the only subperitoneal hematocele, with which I have met.

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.

It is evident, then, that the symptoms must differ widely in cases marked by very great and sudden loss of blood, and those accompanied by very little. In the first there are evidences of profuse abstraction of vital fluid, great peritoneal shock, and excessive prostration. In the second these may all be so slight as to escape the notice of non-observant patients. The best course which can be pursued in reference to the matter is, I think, to take,

as an example, a case of moderate severity, and guard the reader against supposing that all attacks give the same degree of intensity of symptoms.

Most prominent among the symptoms are—

Severe pain in the pelvis;
Pallor, faintness, and coldness of extremities;
Sense of exhaustion;
Nausea and vomiting;
Metrorrhagia;
Uterine tenesmus;
Tympanites;
Interference with bladder and rectum;
Small and rapid pulse;
Depressed thermometric range.

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.

After a variable time, generally within forty-eight hours, a reaction from this state of prostration occurs. Sometimes this is slight; at others decided. It is dependent chiefly upon the degree of inflammation set up by the sanguineous accumulation acting as a foreign body. This is usually marked by the following symptoms:

Tendency to chilliness;
Constipation;
Suppression of urine;
Great tympanites;
Heat of skin;
High thermometric range;
Rapid pulse;
Tenderness over abdomen.

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 hematocele, and call for a physical exploration.

Physical Signs.—Vaginal touch reveals a tumor usually posterior to uterus and vagina, and generally partially closing the latter. 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 ob-

securely 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; and similar cases are recorded by G. Braun, Olshausen, Barnes, myself, and others.

Rectal touch will 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 hematocele may be confounded are—

Pelvic cellulitis or abscess;
Retroversion;
Extra-uterine pregnancy;
Fibrous tumor;
Dislocated ovarian cyst.

The mass created by cellulitis and abscess is usually bound to the side of the uterus, and not posterior to that organ; it develops less suddenly than hematocele; is hard at first, and gradually softens; is exquisitely painful to touch; does not lift the uterus and press it forwards; and is not usually accompanied by metrorrhagia.

Retroversion may present the signs due to the mechanical results of hematocele, 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 many of the signs of pregnancy. In place of metrorrhagia there is usually, though not always, amenorrhœa.

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[1] Op. cit., p. 342. [2] Courty, Mal. de l'Utérus, p. 912.

Fibrous tumors grow slowly, are painless, and move with the uterus. They are irregular and hard, and do not usually push the uterus so far forwards and upwards.

Displaced ovarian cysts are painless, show no signs of hemorrhage, and cause no constitutional disturbance or metrorrhagia.

Course, Duration, and Termination.—Hemorrhage from the sources enunciated as those of hematocele, 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 long 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.

In some cases a slow and steady hemorrhage appears to go on for weeks, and render the bloody tumor gradually larger. In others hemorrhages subsequent to the first take place after this has become encapsulated. After subsidence of the symptoms of reaction, chill, fever, and sweating often come on late, marking suppuration in the mass, and slight septic absorption.

Prognosis.—The prognosis of hematocele must be governed in great degree by the amount of blood lost, the degree of constitutional shock resulting, and the intensity of reaction excited. As a rule it is favorable; especially so, I should say, when treated upon the expectant plan, and not by immediate surgical interference.

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.

When death occurs it is usually a consequence of loss of blood, shock from sudden invasion of the peritoneum, peritonitis, rupture of the encapsulated mass into the peritoneum, or septicæmia.

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[1] Noeggerath, Bul. N. Y. Acad. Med., vol. i, p. 577.

Treatment.—The physician will rarely 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 for treatment will be simple enough:

1st. To check tendency to further loss;
2d. To prevent death from prostration;
3d. To relieve pain.

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; cold fluids given to drink if nausea should not exist as a symptom; and astringents administered, such as aromatic sulphuric acid, and gallic acid in as free doses as the stomach will tolerate.

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 hematocele it is peculiarly appropriate 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. The patient should be put to bed and kept perfectly quiet. The diet should consist of fluid food, such as milk, animal broths, and gruels of farina or sago.

And now will arise the important question, whether the accumulated blood should be left for removal by nature, or should be evacuated by surgical means. 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 sur-

[1] Nonat, op. cit.

gical 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 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, hematocele 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.

With the light which experience has thrown upon this point it appears to me that, without being dogmatic, we may safely adopt this rule. The mere presence of a large amount of blood in the peritoneum does not warrant evacuation. If, as time passes, suppuration within the sac, which has then pretty certainly become encapsulated, and septic absorption are manifested by chills, febrile action, and profuse sweating, the softening mass should be discharged by incision. In other words, so long as the accumulated blood appears to be doing no decided harm and nature seems to be causing its absorption, it should be left alone. But so soon as evidences of septicæmia are observed, it should be evacuated. Under these circumstances, a neglect of surgical interference would be culpable. Without such indications it 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 posterior vaginal wall may be lifted by Sims's specu-

lum, 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 bowels kept constipated by opium. Warm poultices of ground linseed should be constantly kept over the hypogastrium, and pain should be quieted by opiates.

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.

As time passes and pain is relieved, quinine, alone or combined with sulphuric acid, in full doses will prove a valuable remedy, and should be kept up perseveringly.

CHAPTER XXXI.

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, stea-

tomata, sarcomata, etc. 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 εἰδος), 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 Clark, 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 we consider 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 gynecology 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

[1] Surg. Pathol., p. 583.
[2] Mal. de l'Uterus.
[3] McClintock, Diseases of Women.
[4] Op. cit., p. 173.

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 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.

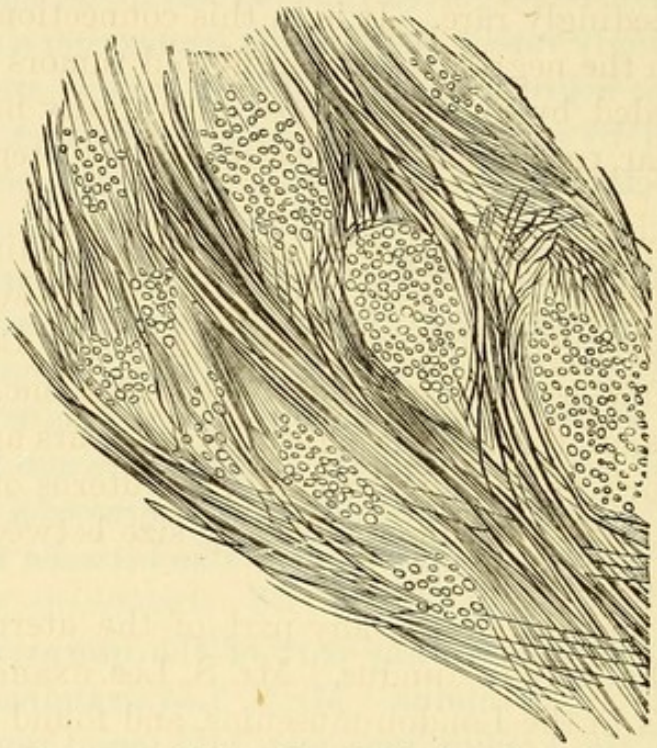
Uterine fibroids may develop singly, when ordinarily they do not attain to a very great size. Sometimes, however, they exist in great numbers, and grow to a very large size. Courty reports one weighing fifty pounds, and I have removed one, with uterus and both ovaries, of the same weight. Some years ago I exhibited 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 varies 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 the 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.

Fig. 142.



Uterine fibroma. Oblique longitudinal section of muscular cell-bundles. (Billroth.)

Uterine fibroids are liable to a variety of diseases, among which the most 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, 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 hematocele. 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.

If a tumor be situated in the wall of the uterus, it may remain there until it assumes large dimensions. Should it be near the 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

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 1874 may, unfortunately, quote the words of Sir Charles Clarke, recorded in 1814: "Nothing is known respecting the cause of this disease." Sixty 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;
Hemorrhoids;
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 distention and atrophy as to leave only a thin film to represent it. 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 external surfaces of the uterus, the patient should lie upon the back with the thighs flexed. All constriction should be removed from the waist, and the bladder and rectum emptied. The examiner then, depressing the uterus by the right hand placed over the hypogastrium, should sweep the index finger of the other as high up as possible over the posterior wall, first by vaginal and then by rectal touch. While the finger in the vagina or rectum lifts the uterus, the tips of the fingers placed on the abdomen should be forced behind the fundus, and downwards over the posterior uterine wall so as to approach the finger within the pelvis. By these means the posterior wall will be superficially examined in women with tense abdominal muscles, thoroughly in those in whom they are thin and relaxed.

The finger in the vagina now drawing the cervix forwards, 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 cervix lifting it up will offer itself as an opposing force to the hand on the abdomen. This manœuvre will fully expose to examination the anterior surface of the uterus, unless the patient be very fat. Should she be so, a tenaculum may be fastened in the cervix, and the uterus drawn down by it so that the posterior wall will be better within reach of rectal touch, and the anterior wall of vaginal exploration when the finger is pressed firmly against the base of the bladder.

When, in a case in which it is of importance that a certain diagnosis should be arrived at, it proves impossible to do so by use of

the means thus far mentioned, Simons's method may be resorted to with great confidence as to the results which it will yield.

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.

Differentiation.—The diseases which may be confounded with fibrous tumors are—

Pregnancy;
Periuterine cellulitis or abscess;
Pelvic hematocele;
Anteflexion or retroflexion;
Ovarian tumors;
Fecal impaction.

In pregnancy amenorrhœa and other signs of utero-gestation exist, while in uterine fibroids there is usually a tendency to menorrhagia. In pregnancy the uterus is symmetrical, in fibroids usually asymmetrical. The tumor found in pregnancy is generally softer than that in fibroids and more uniformly median in position. In a doubtful case time, with its development of fœtal movements, will always settle the point.

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.

Hematocele generally occurs suddenly and 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, and these are rare. 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 less 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 often 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.

From this rapid disposal of the subject of differentiation it must not be supposed that it is always an easy matter. In many cases only careful watching will enable the diagnostician to arrive at a certain conclusion.

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 over-confident 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 statements 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 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

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[1] Op. cit., p. 177.

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 menopause, their nutrition is impaired, and fatty and calcareous degeneration sometimes 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 of interstitial and subserous variety, the efforts of the practitioner should be limited to palliation of the evils resulting from these growths. These evils will generally be due to either one or all of the three following conditions which result from them: 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. 111), 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 hemostatic agents, as elixir of vitriol, ergot, tincture of cannabis indica, gallic acid, etc.; 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 often resort 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 and liver carefully supervised.

In some cases the engorged condition of the mucous membrane lining the uterus and covering the tumor causes it to become covered by little fungoid growths, which keep up and greatly increase the amount of hemorrhage. Under these circumstances, the application of the curette is of great service. Even if there should be an error in diagnosis, this treatment will accomplish good by severing the vessels of the mucous membrane, and relieving congestion.

If these means fail, as they often will do, more effectual ones must be adopted. The cervix should be dilated by tents, and the uterine cavity thoroughly washed over by an injection of equal parts of tincture of iodine and water, or solution of persulphate of iron, one part to ten of water.

Should it be found that by this means even, hemorrhage is not sufficiently controlled, resort should be promptly had to palliative resources of a surgical character. These may prove efficient as hemostatics, while at the same time they prepare the way for curative means, if they should be in time deemed necessary.

It has been found that hemorrhage due to uterine fibroids is

often greatly diminished by section of the uterine neck, a practice which was first inaugurated by Amussat, and imitated 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, and thus diminish its vascular supply.

Curative Means.—Within the last quarter of a century we have rapidly advanced in our surgical resources for the cure of uterine fibroids. They are not even now, however, of such a character as to warrant a resort to them, when by other means we can avoid the dangers which attach to them. For this reason it may be stated that surgical procedures should be resorted to only under two circumstances: 1st, where the growth is so located as to render removal practicable and safe; 2d, where the disease is threatening the patient's life. In the removal of these growths the practitioner imitates, to a certain extent, the processes by which nature accomplishes a cure. Bringing to his aid some of her methods which have been mentioned, he adds to them others which she never develops.

Uterine fibroids, whether submucous, subperitoneal, or interstitial, may be removed by one of the following means:

Absorption;
Excision, écrasement, and galvano-cautery;
Avulsion;
Enucleation;
Gastrotomy.

Absorption.—Whether their absorption can be excited by any of those medicines styled absorbents, is not certainly ascertained. Tumors have in some instances been known to disappear while such 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." If such drugs be tried for this purpose they 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; that class of drugs supposed to possess the power of inducing fatty degeneration, as arsenic, phosphorus, and lead, "steatogenic" drugs, as they have been styled; preparations of lime; and the waters of certain mineral springs, as Kreuznach, Kissingen, Krankenheil, etc. Some of these may be employed externally in the form of hip-baths as well as internally.

About two years ago, a series of nine cases of uterine fibroids was published by Hildebrandt,[1] of Königsberg, in which the only treatment adopted consisted in the subcutaneous injection of ergot. In seven, an extraordinary improvement took place. The theory of the plan is this: compression of the tumor by ergotic contraction of uterine fibre interferes with nutrition; fatty degeneration in consequence occurs; and the tumor is thus rendered susceptible of absorption. The results obtained by Hildebrandt are so favorable, that the most sanguine must be led to fear that future experience may not prove as successful. His method has, however, even now been so far tested by others that it must be conceded that it promises better results than any other which has been employed.

The following is a condensed synopsis of some of Hildebrandt's cases:

Case 1. Patient æt. 31; tumor for three years; uterus as large as at seventh month of pregnancy; hemorrhages frequent and copious. Injections of ergotine practised daily for six weeks, when menses became regular and painless. Injections continued daily for fifteen weeks more, when tumor, which had been growing smaller from week to week, was found to have disappeared.

Case 2. Under use of injections uterus "diminished in volume by absorption of the intra-uterine tumor; menstruation became regular; and pain and leucorrhœa disappeared."

Case 3. Patient æt. 30; profuse sanguineous discharges, sometimes lasting from six to eight months, since the age of sixteen. Anæmia and emaciation extreme; fundus of uterus nearly midway between pubis and umbilicus; by touch, tumor distinguished in the anterior wall of uterus. Subcutaneous injections daily from January 17th to March 5th, when the patient was discharged; menses regular; general condition improved; and uterus notably diminished in size; the vaginal portion having in great part returned to its normal volume.

Case 6. Patient æt. 45; uterus reached to umbilicus; anteverted; large fibroid in anterior wall; hemorrhage; and irregular menses. After

[1] Berlin. Klin. Woch. Amer. Journ. Obstet., Nov. 1872.

resort to injections, improvement was well marked; fundus descending to a point midway between umbilicus and pubes.

The solution used by the hypodermic syringe consisted of three parts of the aqueous extract of ergot to seven and a half of glycerine and the same of water. The point of puncture was the hypogastric region. At each injection three grains of the extract were used.

In some cases this treatment produces severe ergotism at so early a period that it has to be desisted from, while at others it results in the production of small abscesses of painful character. Hildebrandt declares that the introduction of the needle straight down into the subcutaneous areolar tissue obviates the occurrence of abscesses. Should the subcutaneous method disagree with the patient, as it did in two out of Hildebrandt's nine cases, ergot may be given by mouth or rectum, with the prospect of exciting tonic uterine contraction, diminishing vascularity, and lessening sanguineous and mucous discharges, and subsequent growth of the tumor.

Since the publication of Hildebrandt's method I have adopted it in a number of cases, and while I cannot claim such results as he obtained, I am prepared to endorse it as one very promising of excellent results.

Surgical Procedures.—The two elements which govern success in the removal of these growths by the surgical processes which now come to be considered are these: 1st, the degree of projection of the tumor into the uterine cavity; 2d, the degree of dilatation of the cervical canal. I do not say that they decide the propriety of operation. Removal may possibly be practised where the tumor is to a great extent interstitial, only causing slight protrusion inwards of the mucous membrane, and where the cervical canal is completely contracted. But in such cases it is more difficult of accomplishment, and much more dangerous to the life of the patient. An interstitial fibroid excites uterine contractions, which in time usually extrude it, making it either subserous or submucous. In both cases it carries with it a covering of uterine tissue, which when it enters the uterine cavity is one of the influences which prevent its expulsion into the vagina; the closure of the cervix being another. In some cases nature unaided overcomes these obstacles. When they are too powerful for her, art comes to her aid and removes them for her.

Before all the operations practised for removal of fibroids from

the cavity of the uterus, the cervix must be fully dilated. This may be accomplished by three methods:

1st. The cervix may be gradually dilated, the attachments of the tumor broken little by little, and extrusion slowly effected by ergot.

2d. The cervix may be rapidly dilated in part before the operation, and in part at the moment of practising it.

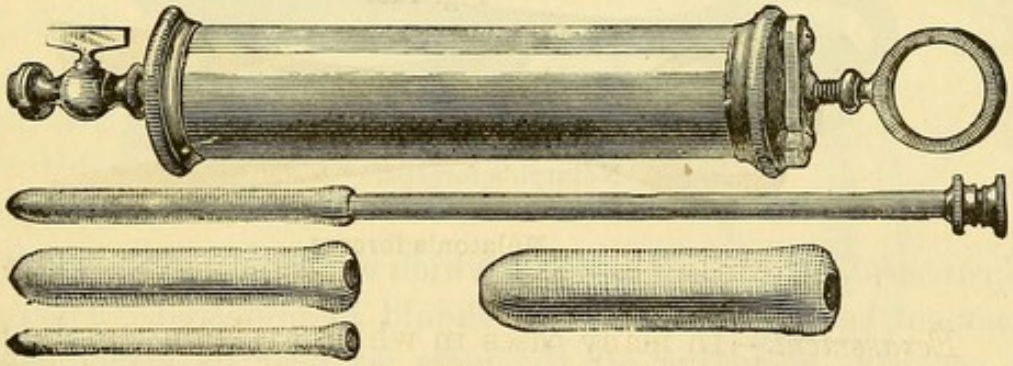
3d. The cervix may be gradually and fully dilated before surgical interference is established.

By the first plan the cervix is dilated by tents, its vaginal portion cut by scissors up to the vaginal junction, the fibres of the canal making the os internum severed laterally by a delicate knife, hemorrhage arrested by tampon, and ergot given to cause expulsion of the tumor and increase cervical expansion. As these preparatory measures usually control hemorrhage, further interference may be indefinitely delayed. Meantime ergot is steadily given, and whenever the attachment of the growth to the uterus can be reached, it is severed by the finger or a blunt instrument.

By the second plan the cervix is dilated by tents, and cut as above mentioned at the moment of operation.

By the third it is fully dilated by tents, or slit by scissors and knife, and dilatation secured and increased by use of water bags until time of operation, which is not long delayed. The ordinary water bags known as Barnes's dilators are not powerful enough for the expansion of the cervix of the non-puerperal uterus, and besides this they dilate irregularly. Molesworth's dilator, shown in

Fig. 143.



Molesworth's cervical dilator.

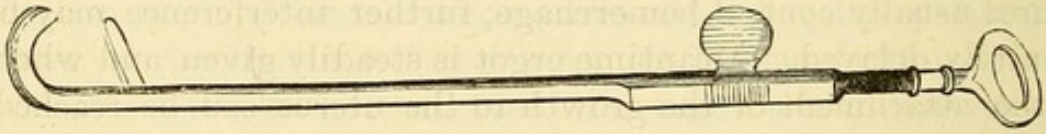
Fig. 143, is by far more efficient in these cases. This instrument consists of a series of long bags of pure rubber, constructed in such a manner as to secure lateral expansion without elongation, and a nickel-plated force pump, worked by screw power, by which water or air can be forced into the bag, to dilate it as rapidly or as slowly as desired. Each instrument has a small stopcock, enabling the

operator, if he desire, to remove the pump, leaving the bag in position, and thus continue his dilatation for any length of time.

Each instrument has two bags, the smaller is one-eighth of an inch in diameter, and capable of being dilated to from one-half to three-fourths of an inch. The larger bag is one-fourth of an inch, and can be dilated to from one to one and a half inches.

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 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. 144).

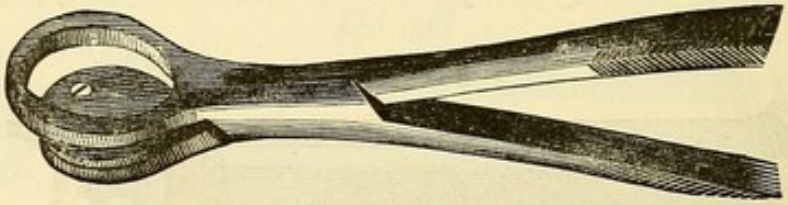
Fig. 144.



Aveling's polyptome.

Removal may likewise be accomplished by the forceps of Nélaton, represented in Fig. 145, 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 or the whole of the growth may be excised.

Fig. 145.

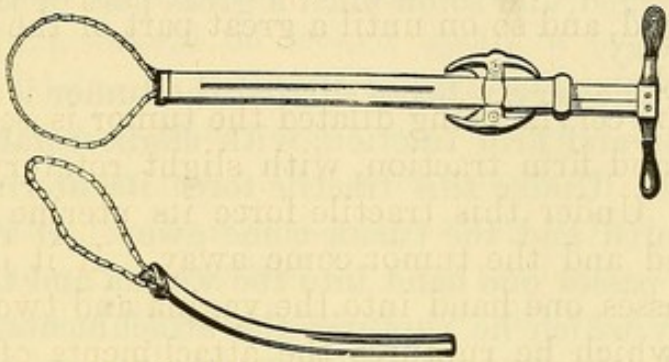


Nélaton's forceps.

Écrasement.—In many cases in which excision may be practised, 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. 146). 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

Fig. 146.

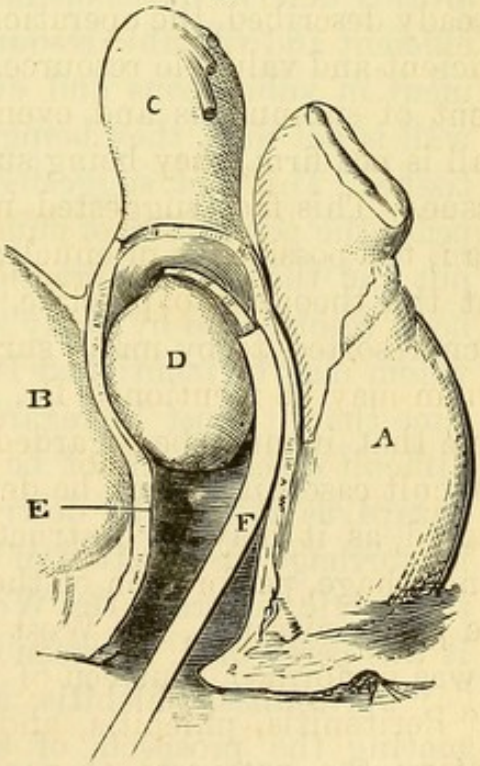


The écraseur, straight and curved.

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.

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.

Fig. 147.



The écraseur at work.

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, galvano-cautery, or écraseur, and the uterus replaced, after the

stump, should it bleed, has been seared by the white-hot iron. This process was first advised and practised by Desault and Herbineaux. The second plan is best carried out by the aid of the galvano-cautery or écraseur. As much of the tumor as can be secured is seized in the wire or chain and removed. Then another portion is engaged, and so on until a great part or the whole of the mass is cut away.

Avulsion.—The cervix being dilated the tumor is seized by Vulsellum forceps and firm traction, with slight rotatory movement, made upon it. Under this tractile force its uterine attachments may be ruptured and the tumor come away. If it do not do so, the operator passes one hand into the vagina and two fingers into the uterus, by which he ruptures the attachments of the growth and thus frees it. Meantime the hand of an assistant is placed over the hypogastrium to steady and depress the uterus. Dr. West,[1] writing in 1864, says, "the forcible avulsion of polypi is a rough and hazardous proceeding, a relic of barbarous surgery." Of late Dr. Duncan has ably advocated this excellent method, against which I feel that Dr. West inveighed too strongly.

Enucleation.—Where the attachments of the tumor are so extensive, or where it is so much embedded in the uterine parenchyma, as to render it impossible to practise upon it any of the procedures already described, the operation of enucleation offers itself as a most efficient and valuable resource. It has been stated that the attachment of submucous and even interstitial fibroids 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. At the same time that it must be regarded as an invaluable resource in many difficult cases, it cannot be denied that it is 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

[1] Op. cit., Eng. ed., p. 305.

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." The 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. I have by this method and avulsion removed seven tumors, varying in size from a hen's egg to that of a goose, and all my patients have recovered. Two others, however, have died from efforts at dilatation of the cervix preparatory to this procedure.

Enucleation may be practised by two methods: immediate, in which the fingers of the operator at one sitting accomplish the removal of the tumor; and gradual, in which the fingers of the operator merely inaugurate the process which contractions of the uterus are excited to complete.

If the first plan is to be pursued the patient, after previous complete dilatation of the cervical canal, is placed upon her back upon a strong table, the legs being held by assistants. An assistant firmly depresses the uterus by pressure on the abdomen, and the operator, by means of a pair of scissors, guided by two fingers, cuts into the capsule. Into this opening he passes the index finger and fixes the tumor. By means of scissors or a probe-pointed bistoury a crucial incision is then made through the capsule as freely as circumstances will admit. Passing one hand cautiously into the vagina, and forcing the uterus towards the vulva by his other hand and that of an assistant, he now proceeds to peel back the capsule and gradually to enucleate the mass. Usually the desired result will be accomplished, and an artificial os thus offered for escape of the tumor from its capsule. If the vagina be not very dilatable, it had better be prepared for these manipulations by copious warm vaginal injections and gradual distention by water bags.

If the second plan[1] is decided upon, the os being dilated or incised, a long crucial incision is made over the presenting part of the tumor, the lips of the capsule separated by the finger, and the patient put upon the steady and systematic use of ergot, 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

[1] An excellent *résumé* of this subject, including both the immediate and gradual forms of enucleation, will be found in the Med. Times and Gaz., Aug. 1857, by Mr. J. Hutchinson. I mention this particularly because some more recent writers appear to regard this mode of dealing with fibroids as entirely new.

in which this occurred is recorded by Dr. Grimsdale, in the Liverpool Med. and Surg. Journal for January, 1857, and of late a number of very striking cases have been reported by Dr. Meadows, of London, who has strongly advocated the claims of this plan. In some cases it will prove best to cut into the capsule, and thus give the tumor an opening by which to escape; at others it will be wiser to detach the tumor all around at its point of attachment and repeat this again as the mass descends.

I have already stated that when cervical obstruction is overcome and the tumor is liberated from its retaining capsule, the main obstacles to its expulsion are removed. The process of enucleation artificially accomplishes what nature fails to effect. Before enucleation by either method is resorted to two conditions should be secured: first, full dilatation of the cervical canal; second, thorough information as to the attachments of the tumor. The methods for accomplishing the first have been mentioned. The second, except in the case of tumors almost wholly interstitial, can be attained after the first is effected by use of the whalebone rod shown in Fig. 148.

Fig. 148.



Elastic whalebone probe for ascertaining attachments of intra-uterine growths.

This being passed up in succession along the lateral, anterior, and posterior faces of the tumor until it is obstructed by its base or attachment, is measured by application of the finger to its shaft at the os externum. Thus the area and position of the attachment are fully made out, and at the moment of operation the operator carries it as a picture in his mind. Where the tumor projects but little into the cavity of the uterus, this means will not answer; the finger must explore the attachments of the almost interstitial growth.

Gastrotomy.—Subperitoneal tumors are much less amenable to 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 subperitoneal tumor would become a matter of duty, and not remain one of choice.

The prospects of success in it will depend very much upon the character of the attachments of the tumor 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 adverse. And yet it is not more so than it was twenty years ago with reference to ovariotomy. It is highly probable, that, as experience renders the operation safer than at present, it will be resorted to for the same reasons which to-day cause us to perform extirpation of ovarian tumors, 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 impressions concerning it left by them, goes on to add: "but recent operations tend to modify our opinion 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."

Péan,[2] of Paris, reports nine cases of gastrotomy for fibrous or fibro-cystic tumors, performed by himself, with the result of seven cures and two deaths. "Amputation of the supra-vaginal portion of the uterus," says he, "is not an operation of much graver character than extirpation of ovarian cysts complicated by adhesions." . . . . "Ablation of the uterus," he continues, "is a perfectly justifiable operation, which the surgeon is as much warranted in undertaking under certain circumstances as ovariotomy." Péan gives the results of forty-four cases, by different operators, of partial or complete ablation of the uterus by gastrotomy. Out of

[1] Op. cit., p. 977.

[2] Hysterotomie, by J. Péan and L. Urdy. Paris, 1873.

this number fourteen recovered and thirty died, an equivalent of recoveries of 31.82 in 100.

It is certainly not venturing too much to say that if the fibroid be pedunculated and unattached, its removal is not much more dangerous than the ordinary operation of ovariotomy; that 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; and that even if the removal of the tumor 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
Kœberlé,	1	0
Baker Brown,	1	1
Wells,	1	1
Sands,	1	1
Buckingham,	1	1
Storer,	1	0
	24	18

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:[2]

	Operations.	Deaths.
Storer,[3] of Boston,	4	4
Cutter,[3] of Newark,	2	2
Wood,[4] of Cincinnati,	1	1
Hackenberg,[4] of Hudson,	1	1
Atlee,[4] Philadelphia,	2	1
Weber,[4] Cleveland,	1	1
Gaillard Thomas,[5]	1	1
	12	11

[1] "On Removal of the Womb and both Ovaries."

[2] I leave this statement as it was made in 1872.

[3] Personal communication. [4] N. Y. Med. Record, Jan 18, 1868.

[5] Uterus and both ovaries removed with fibrous tumor weighing fifty pounds, May 19, 1874.

No operator should undertake gastrotomy for a uterine fibroid without being prepared, if necessary, to remove the uterus with the tumor, for the connection is often so intimate that a determination of the attachments 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 one of the tumors 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, with this exception—the pedicle of the tumor is the uterine neck or upper portion of the vagina. This part being punctured, a double ligature is passed, and the two portions tied. 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 hemostasis at our command diminish the danger of the second; and the knowledge of the fact that keeping the peritoneum free of blood and other fluids by drainage 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.

I have, in cases of uterine fibroids, resorted to every one of the

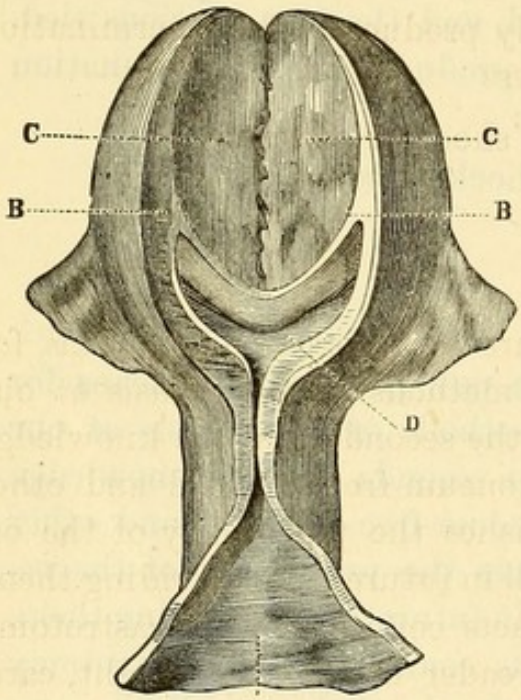
methods here described, and recommend none of them upon theoretical grounds alone. Each case will require its own carefully selected remedy; and success will be greatly influenced by wisdom in the choice. Let me endeavor to lay before the reader certain rules, which may guide him in his determination.

1st. In the case of a tumor which projects into the uterine cavity, offering a resting place for the chain of an écraseur or the wire of the galvano-cautery, these should be employed in its removal. Should their application not be practicable, or should the attachment of the growth be small, and be attainable by scissors, they should be employed.

2d. When the tumor is of such a character that although bulging into the uterine cavity it cannot be excised, nor grasped by a metallic loop, avulsion should be resorted to.

3d. If the tumor be to a certain extent interstitial, or be attached by a very extensive base, as in Fig. 149, enucleation offers itself as a most valuable resource.

Fig. 149.



Submucous fibroid.

4th. When the tumor is subserous, and it is apparent that its continuance will destroy the life of the patient, gastrotomy is the last resort.

5th. To recapitulate, no absolute rule can be given as to choice of procedure in cases of this affection. In a general way, it may be said, if excision, écrasement, or galvano-cautery can be accomplished *without great amount of manipulation within the uterine cavity*, they should be preferred. If the tumor project decidedly into the uterine cavity, and its base be found not to be very large, avulsion should be resorted to. Should its base be large, or the growth be in great degree interstitial, enucleation offers the best chance of success. If immediate enucleation be practicable, it should be preferred. If it require too violent and prolonged efforts, gradual enucleation should be selected.

Success in these operations does not depend upon skill in the removal of the growth, nearly so much as it does upon the operator having previously obtained full dilatation of the cervical canal.

Gastrotomy should be performed only when life is in jeopardy.

CHAPTER XXXII.

CYSTO-FIBROMATA, OR FIBRO-CYSTIC TUMORS OF THE UTERUS.

Definition, Synonyms, and Frequency.—The form of compound 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.

Our knowledge of these tumors is but recently acquired, and is even now exceedingly elementary. In two of its most important aspects, diagnosis and differentiation from other forms of abdominal tumor, we have been very deficient, and from this have resulted frequent and serious errors. Considerable attention is, however, being now directed to the subject, and already we are possessed of means which were wanting only a few years ago for arriving at correct and certain conclusions concerning them.

Cysts may develop in connection with the uterus in two entirely different ways; first, a cyst may grow and become very large, being enveloped by a layer of uterine tissue; second, 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 spaces 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.

It must not be supposed that this variety of tumor compares in frequency with the simple fibroid, or that cystic degeneration often affects that. It is not a matter of very common occurrence, but it is certainly sufficiently common to demand especial consideration at the hands of the gynecologist. As has been the case too with many other affections, as soon as special attention has been directed to it, it has been found to be much more frequent in occurrence than was previously supposed. Up to the year 1869, Kœberlé[1] tells us that only fourteen cases had been recorded, of which two were

[1] Gazette Hebdom., No. 16, 1869.

discovered post-mortem. Dr. C. C. Lee,[1] however, in that year, collected the reports of nineteen cases, nine in this country, eight in England, and two in France. Dr. E. R. Peaslee,[2] writing in 1872, says, "I have myself met with ten cases in the last two years, and have seen not less than fifty since my first operation of ovariotomy in 1850.

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 colloid material. "Within some fibroid tumors," says Klob,[3] "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 similar to the so-called 'apoplectic cysts.'" In speaking of neoplastic cysts, Billroth[4] 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," a view which was first advanced by Cruveilhier.

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.

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[1] Remarks upon Diagnosis of Ovarian from Fibro-Cystic Tumors.

[2] Ovarian Tumors, p. 107.

[3] Op. cit.

[4] Op. cit., p. 621.

Cystic degeneration affects submucous or interstitial fibroids much 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 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[1] described one which filled the 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 substance; and weighed forty-six pounds. Cruveilhier[2] mentions a similar one. Spencer Wells[3] 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. A very striking instance of this affection I saw submitted to operation 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.

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[1] Quoted by Klob, op. cit., p. 182.

[2] Klob, op. cit., p. 182.

[3] Diseases of Ovaries, p. 354.

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;
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, and to be elevated and lie in front of it. 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 practised 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, and if a trocar or a large needle of the aspirator be employed a quart or two of thick straw-colored fluid may be drawn off, leaving, usually, solid elements remaining. In rare cases of large uterine cysts the sac would be entirely emptied, and even these signs would be wanting.

Differentiation.—Many competent authorities have declared that the diagnosis of this form of tumor and its differentiation from ovarian cyst is impossible. Kœberlé says, "the diagnosis of fibro-cystic tumors has, up to the present time, been declared impossible by almost every author," and Baker Brown acknowledges that he knows of "no distinguishing marks between the two." Even after incision Spencer Wells declares that he knows of nothing but a darker hue of the sac-wall to put the operator on his guard. The result of this difficulty is illustrated by the fact that out of Lee's nineteen cases eighteen were operated on under a mistaken diagnosis of ovarian cyst.

The conditions with which this form of tumor will most likely be confounded are—

Pregnancy;
Fibroid tumor of the uterus;
Ovarian cyst.

From the first it may be known by absence of the gastric and mammary symptoms of that condition, by menstruation not only continuing but perhaps showing a tendency to increase in amount

and frequency, by absence of fœtal movements and heart sounds, and by the duration of the tumor beyond nine months.

From fibroid tumor it may be known by its yielding obscure fluctuation, its assuming usually larger proportions, its more rapid growth, and, beyond everything else, by its yielding fluid to the exploring trocar.

From ovarian cyst diagnosis is usually difficult and often impossible: the chief grounds upon which it will always depend, and upon which it may sometimes be made, are the following:

Shape and density of the tumor;
Its connection with the uterus;
The depth of the uterus;
The rapidity of growth and effect on health;
The effects of tapping;
The characters of the fluid withdrawn.

There are many other differential signs, but these are the really reliable ones. A great array of symptoms often confuses rather than helps the inexperienced diagnostician, and I wish to analyze the subject here as it should be analyzed at the bedside.

When a diagnosis is arrived at it is ordinarily done in the following way:

1st. The examiner in palpating has been struck by the fact that the surface of the tumor which he supposes to be ovarian is peculiarly irregular and resisting to the touch, and that fluctuation is obscurely yielded in certain places only. This renders him suspicious, and he determines to investigate fully before committing himself to the diagnosis which at first suggested itself.

2d. He now examines the uterus and finds that the sound proves it to be three and a half or four inches deep; that as he rotates this organ upon the sound it appears united to the tumor; that posteriorly to the uterus the tumor seems to join it and grow from it; and that as an assistant lifts, depresses, and rolls the tumor the uterus moves distinctly. His suspicions are strengthened.

3d. He now questions the patient more closely, finds that she is over thirty, (fibro-cystic tumors rarely appear before thirty,) and that this tumor has been slowly but steadily growing for four or five years without materially impairing her health. He feels the necessity for further information, and resorts to removal of the fluid by the aspirator or trocar.

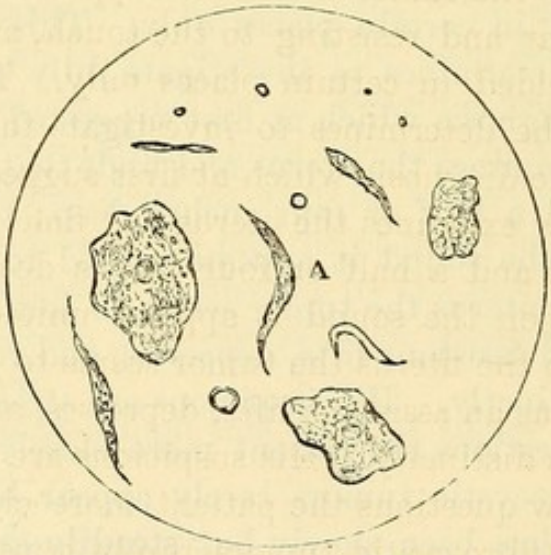
4th. The fluid which pours away is transparent and straw-colored, and as it ceases to flow he discovers that the sac only in part col-

lapses. Testing the matter, he finds that this is not due to the existence of other cysts, but that solid elements prevent collapse.

5th. He now examines the fluid withdrawn, and finds that it coagulates spontaneously as well as under heat. The whole contents of the tube give a large coagulum like that of the blood clot in consistence though not in color. Placed under the microscope, a peculiar fibre cell is discovered, which is characteristic, according to Dr. Atlee, of the fluid of fibro-cystic and not of ovarian tumors. It is a product derived from the tissue in which the cyst forms itself, the muscular tissue of the uterus.

From all but the last of these means only a doubtful conclusion could be drawn, for every one of them is often fallacious in typical cases, and always so in large cysts unaccompanied by any fibrous structure except that constituting their walls. The tumor may not be irregular nor hard; it may develop with great rapidity; the uterus may not increase in depth, may move independently of the tumor; and tapping may empty it. On the other hand, cases of true ovarian tumor are not rarely met with in which the uterus is increased in depth, the tumor and uterus move synchronously under slight impulse, tapping only partially empties the sac, leaving solid masses remaining, and the growth of the tumor is slow and has little influence upon the general health. Dr. W. L. Atlee[1] most truly remarks, that "no amount of experience will avail the sur-

Fig. 150.



The fibre cell (A) characteristic of fibro-cystic tumors.

geon in making a differential diagnosis by the ordinary methods of examination." "But," says that eminent ovariotomist in alluding to his past errors of diagnosis, "such errors need not be re-

[1] Ovarian Tumors, p. 263.

peated." He believes that we have now arrived at a period when diagnosis becomes at once simple and positive. Should the diagnostic method which he has furnished us bear the test of experience, a most important result will indeed have been attained. Dr. Atlee relies upon the physical properties of the fluid withdrawn from these sacs for diagnosis of their origin, whether uterine, ovarian, or of the broad ligaments. The characters of fibro-cystic fluid are these. It is transparent, of a deep amber color, and very thin when first drawn, but forms a hard and firm coagulum in a little while, which in a few hours shrinks and separates into a clot and a thin watery serum. It coagulates by heat, and resembles in every respect the *liquor sanguinis*. Under the microscope few cells appear in it. There are epithelium, oil globules, and a fibre cell, represented at A in Fig. 150. This is characteristic of the structure in which the cyst originated.

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 develops more slowly than ovarian cyst. I have recently had under observation two very large tumors supposed to be of this kind. One of them had existed for eleven years, and yet the patient still performed the functions of nurse in a hospital. It is true that her abdomen was immensely distended, and that she moved about with difficulty, but thus far she had not been completely incapacitated. In the second case the tumor had existed for about five years. It was quite large, when the patient, 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 stated in reference to this subject than has been already said in connection with uterine fibroids, and will be said in speaking of ovariotomy.

CHAPTER XXXIII.

UTERINE POLYPI.

Definition.—A uterine polypus is a tumor covered by the mucous membrane of the uterus, attached to that organ by a pedicle or stem, and originating in a hypertrophy or hyperplasia of some of its proper tissues. Portions of placenta, the fibrinous remains of blood clots, and parts of the fœtal envelopes, sometimes remain in utero, and take upon themselves the shape and develop the symptoms of true polypi. They might, with justice, be described as pseudo polypi, but the true polypus originates in morbid growth of the tissues of the organ from which it springs.

History.—While so many uterine disorders of great 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.

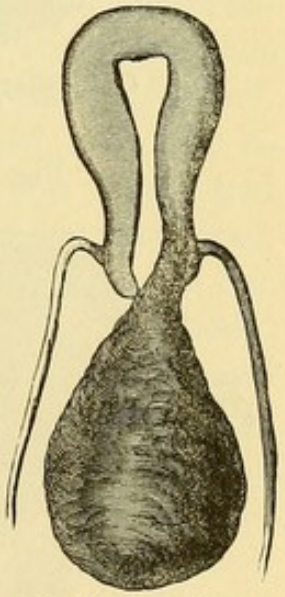
Varieties.—The student will meet with much difficulty in arriving at definite ideas concerning the varieties of uterine polypi. Almost all authors differ in their classification, and the number of names which have at various times been applied to them is too large even for repetition. Let it be borne in mind that since these tumors are formed by excessive development of one of the tissues existing in the uterus, there are but three elements which can give rise to them: the muscular tissue; the connective tissue; or the glands of the organ. It is true that by some a species of vascular polypus formed from development of the bloodvessels, a species of telangiectasis, has been described, but it is probable that this is only a form of the cellular or 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 "

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, in Plate 19 of her work. She calls it a 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 collected above. Some years 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.

Fig. 151.



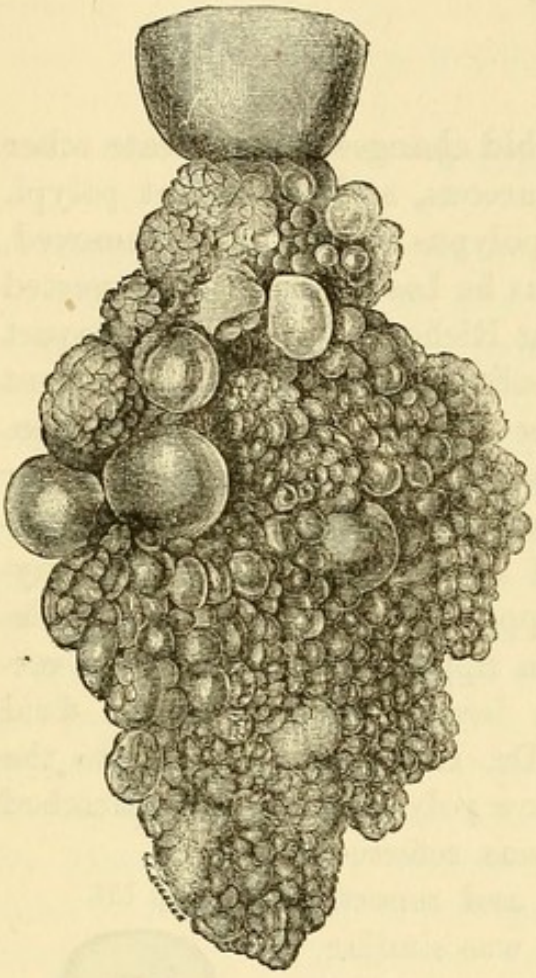
A cellular polypus attached within the cervix uteri.

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 connective tissue in a state of hypertrophy or hypergenesis. Its 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.

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

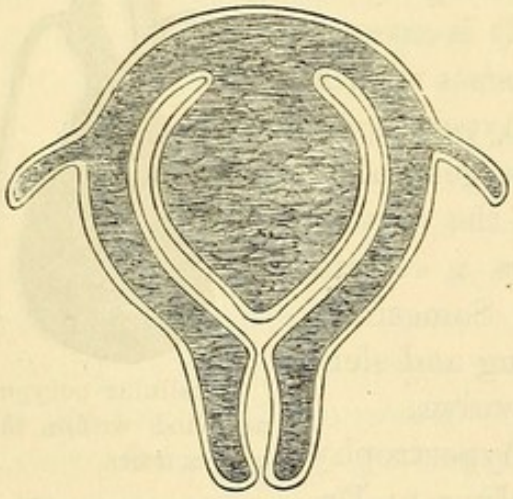
pediculated form. It may arise either from the cervix or body, but very generally grows from the former, and is commonly gregarious, a large number of very small ones often studding the walls of the cervical canal. The most remarkable instance of this variety with which I have ever met is that represented in Fig. 152. The whole growth measured in length $4\frac{1}{2}$ inches, and in longest diameter $2\frac{7}{8}$ inches. It filled the vagina completely, grew from inner wall and lip of the cervix, caused no symptom except leucorrhœa and pelvic neuralgia, and was not suspected until difficulty in sexual intercourse caused the patient to apply for examination. The mass was examined after removal by Dr. F. Delafield, and found to consist of enlarged cervical follicles, (the grape-like masses shown in the diagram, which was copied from nature by Dr. J. B. Hunter,) bound together by connective tissue. I removed it with great ease by the écraseur.

Fig. 152.



Glandular polypus.

Fig. 153.



A submucous fibroid being gradually transformed into a fibrous polypus.

The fibrous polypus is a submucous fibroid, resembling closely those which are subserous and interstitial. Slowly extruded from the uterine parenchyma by its contraction, the tumor gradually 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.

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 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, and the uterine sound will give no evidence of its presence. 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 uterus will often be found to be displaced, and 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 touch.

Even then a number of attempts will often be requisite before very 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 sound, and touch. By them, the mobility of the tumor, the point of its attachment, and the breadth of its base, may usually all be determined.

Course and Termination.—Nature may cure a uterine polypus by ejecting the mass with so much force as to fracture its attachment and disconnect it from the uterus; or calcification, fatty degeneration, ulceration, 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, leucorrhœa 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, and even inversion has been known to occur.

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 others. The dictum of Gooch that, "when hemorrhages from the uterus arise from a polypus, medicines are useless. The only effectual way to cure the hemorrhages is to remove the polypus," is undeniably sound. Lives have, however, been sacrificed to just such a style of assertion both in this and other diseases. When the young practitioner reads the brilliant record of an os dilated, an instrument carried to the fundus, a tumor removed, and a case of metrorrhagia cured, he feels

almost culpable if he have a case under treatment and do not follow a similar course, and 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 undervaluing 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 necessarily dangerous; that it should be undertaken only after careful consideration; and that its proper performance requires skill and experience.

Whenever it is practicable to do so, all manipulation should be delayed until expulsion of the tumor into the vagina is accomplished; 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 danger is involved in the process, for not only are we called upon to assume that 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.

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 evidence of regurgitation through the tubes.

3d. Keep the bowels regular, and avoid fatigue and over-exertion 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. During the inter-menstrual periods give ergot freely, to favor extrusion of the growth.

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.

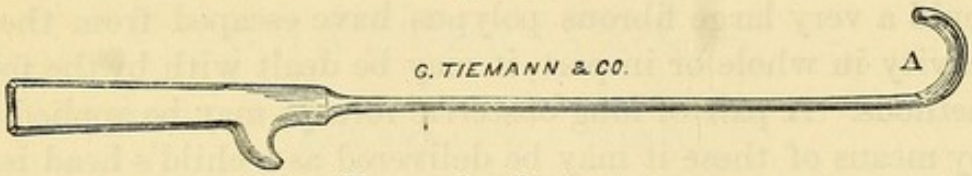
If it be discovered that the cervical canal has been dilated by the weight and wedge-like action of the polypus aided by uterine contraction, the walls of the cervix may be slit on each side nearly to the vaginal junction, and a tenaculum or vulsellum fixed in the tumor by which it may be drawn out of the uterus. Or by means of tents the resisting os may be dilated so as to admit the smallest size of Molesworth'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 and traction;
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. 154) may be employed. Should the growths be so small as not to be susceptible of seizure, they may be scraped from their attachment by a large steel curette; and should they be small and possess slender pedicles, they may be seized with forceps and twisted off. Should they be so small and slippery as to defeat this plan, or should they be numerous, or return very soon after removal, the cervix

should be slightly dilated, cleansed of mucus and blood, and thoroughly painted over by fuming nitric acid, as recommended by Dr. Lombe Athill in disease of the lining membrane.

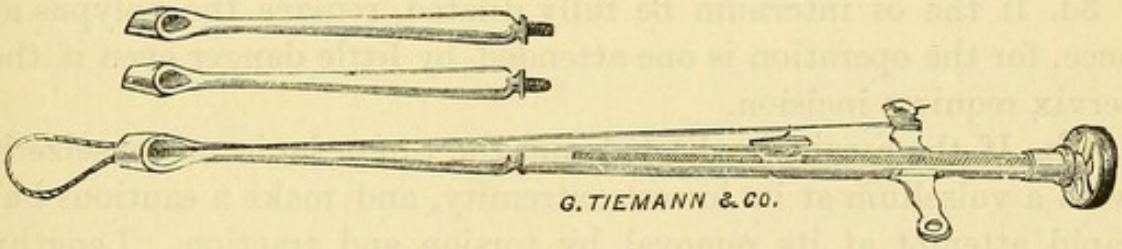
Fig. 154.



Simpson's polyptome.

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. 155) constitutes an excellent substitute. The polyptome of Simpson or that of Aveling often answers a good purpose in these cases.

Fig. 155.



Hicks's wire rope écraseur.

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 Nélaton's forceps, constructed for this purpose, or by ordinary curved scissors. Dr. Gooch long ago announced that when a ligature was 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 this 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, checks hemorrhage, and prevents septicæmia.

Should a very large fibrous polypus have escaped from the uterine cavity in whole or in part, it may be dealt with by the following methods. A pair of long obstetric forceps may be applied to it, and by means of these it may be delivered as a child's head is. If the perineum obstruct its escape, this may be severed by a bistoury and sewed up after the operation. If the tumor cannot be delivered in this way, the lowest portions may be cut away by scissors, and the base if it bleed too freely be seared by the actual cautery, or it may be cut away piecemeal by the galvano-cautery.

In conclusion, I offer a *résumé* of the methods of treatment recommended in this chapter.

1st. If a polypus exist in utero and the cervical canal be firmly closed, avoid immediate attempts at its removal unless the symptoms be so grave as to make that course advisable. Temporize by employing palliative means until dilatation of the cervix and perhaps expulsion of the growth into the vagina are effected.

2d. To facilitate expulsion, dilate by tents or incise the walls of the cervix laterally and use ergot steadily, either internally or hypodermically.

3d. If the os internum be fully dilated, remove the polypus at once, for the operation is one attended by little danger even if the cervix requires incision.

4th. If the cervix be dilated and the tumor be in utero, seize it with a vulsellum at its lowest extremity, and make a cautious but rapid attempt at its removal by torsion and traction. Lengthy manipulations carried on in utero are always very hazardous.

5th. If it cannot be removed in this way, slide up along the wall of the tumor, upon which steady traction is made, Hicks's écraseur or a pair of sharply curved scissors, and sever the stem.

CHAPTER XXXIV.

SARCOMA OF THE UTERUS.

History.—Scattered through medical literature may be found descriptions of a tumor growing from the cavity of the uterus, which appears to occupy a middle ground between myo-fibroma on the one hand and true cancer on the other. Presenting in many respects the ordinary physical aspects of benign fibroid growths in their early periods, these tumors demonstrate a marked tendency to return after ablation. Even after repeated and thorough removal, they again and again recur, and in many cases 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 throw out fungoid growths, which show a marked tendency to undergo molecular death and disappear by ulceration, which 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.

The clinical features of such growths will be found recorded in English literature by Callender,[1] Hutchinson,[2] Oldham,[3] and West,[4] to whose interesting accounts the reader is referred. Of course pathologists were struck by these two facts in connection with such tumors: first, their marked tendency to return after ablation, and second, the absence of micrographic evidences of cancer in pathological developments showing many of the features of malignancy. Paget grouped them under three heads, malignant fibrous tumors, recurrent fibroids, and myeloid tumors, while Lebert described them under the name of fibro-plastic tumors, and Rokitansky under that of fasciculated cancer. Not until the time of Virchow were they described under the old and previously loosely applied term of sarcoma. This pathologist clearly defined the disease and placed it in a distinct class, apart from developments somewhat similar in

[1] Pathological Transactions, vol. ix.
[2] Ibid., vol. viii.
[3] Wilks, Pathological Anatomy, p. 404.
[4] Op. cit., art. Recurrent Fibroid.

clinical features, but some of which were entirely benign and others truly cancerous.

Definition, Frequency, and Synonyms.—"Sarcoma," says Virchow, "is for me a production easily definable. I mean by it a growth the tissue of which, following the general group, belongs to the connective tissue series, and which is distinguishable from marked varieties of the groups of connective tissues only by the predominant development of cellular elements."[1] They possess, he declares, the characters of incomplete, rudimental, or embryonic development, and not those of perfect tissue. This peculiarity existing in the original tumor becomes more and more marked as recurrence takes place after successive removals.

Were I to draw my deductions from my own experience, I would say that sarcoma of the uterus was not very rare. Many cases which have been regarded as cancer, and not a few of supposed fatal fibroid tumor or polypus, have been unquestionably of this affection. Virchow,[2] however, expresses a different opinion. "The production of sarcoma on the mucous lining of the uterus," says he, "is often spoken of, and even in his first work Lebert describes a fibro-plastic polypus. Nevertheless from my observation sarcoma is very rare at this point, and the majority of tumors described as such are of a simply hyperplastic nature. True sarcoma, however, does originate in the uterine mucous membrane in medullary form difficult of recognition, often very soft, and with round cells, sometimes with all the characteristics of myo-sarcoma; the tissue may become in places more compact, and may form larger masses, and attain a degree of firmness so great that I have seen the best diagnosticians deceived as to the nature of the affection, and take it for a fibroid." Before my attention was especially called to this subject within the last three years, I confounded such cases with medullary cancer. Since that time I have met with four cases which, both from clinical and microscopic evidence, I am forced to regard as sarcomatous developments. None were confounded with simple hyperplastic growths as Virchow suggests, for all ended fatally.

Pathology.—Pathologists have commonly confounded sarcoma of the uterus with cancer. The reasons for this are probably these: after the former begins to ulcerate, it resembles the latter in many clinical features, both have a marked tendency to return, and they

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[1] Pathol. des Tumeurs, par R. Virchow, traduit par P. Aronsohn, vol. ii. p. 173.

[2] Op. cit., vol. ii. p. 344.

sometimes unite in the same tumor. The time has certainly arrived, however, when they should be separated both clinically and pathologically.

Of late years uterine sarcoma, as a disease apart from cancer, has received careful study in Germany, excellent reports of cases being furnished by Ahlfield, Hegar, Winckel, Gusserow, Spiegelberg, and others.

Unlike myo-fibromata, sarcomatous tumors have no capsules, but are immediately connected with the uterine connective tissue. Virchow declares that, "in accordance with their density, sarcomata may be, like all morbid tissues, divided into two groups: soft and hard sarcomata." As the disease consists merely in a multiplication of normal cells, homologous to the tissue in which it grows, and subject to no other disorder than hypertrophy, it is characterized by one of the cells typical of the connective tissue group. Thus we may have spindle, round, and stellate celled sarcoma, the second being the most frequent, and the first the rarest in the uterus. In some cases the cells are so large as to cause the name "giant-celled" to be given to the growth. "We may," says Virchow, "divide all sarcomata, and not simply those rich in cells, into two groups: the one with large, and the other with small cells." These cells are merely exaggerated reproductions of those of the mother tissue, and "behave like cells of parenchyma, not like surface cells (epithelium, cancer)," which are heteroplastic to the mother tissue. Between these cells the intercellular substance is always preserved, while in cancer we find cells of epithelial type pressed closely together in alveoli formed of trabeculæ created by connective tissue.

Sarcoma, usually primary, is sometimes engrafted upon myo-fibroma by the process styled metaplasia, and a true sarcomatous tumor may itself be affected by cancer. Sarcomata into which a great deal of fibrous tissue enters are dense, like myo-fibroma, and Hegar[1] admits a transition form, a fibro- and myo-sarcoma.

These growths are so rich in vessels that Virchow declares that this feature is characteristic of them. To this vascularity is due their tendency to give forth a watery flow, to bleed freely, and to absorb septic materials.

Causes.—With reference especially to uterine sarcoma little can with positiveness be said on this point. Virchow alludes, in speaking of sarcoma in general, to injuries, youth and old age, primitive debility in the part affected, inflammations, etc.; but whether uterine sarcoma has ever been traced to these I do not know.

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[1] Archiv für Gynäkologie, ii. 1, 1871

Symptoms.—These may be thus presented:

Pain;
Menorrhagia or metrorrhagia;
Offensive mucous discharge;
Pinkish watery discharge;
Discharge of shreds or portions of the tumor;
Pressure on rectum and bladder;
Uterine tenesmus;
Constitutional depreciation.

Gusserow declares that pain is constant and early, but Hegar denies this. My experience would lead me to endorse the opinion of the latter, though I have seen it very severe.

Physical Signs.—These will depend to a certain degree upon the individual peculiarities of the case. Sarcoma invariably develops in the cavity of the uterus. Only one case has been reported, (by Veit,) in which the cervix was primarily affected. The growth usually arises from the uterine wall by a broad base and projects into the cavity. In time, uterine contractions dilate the cervix, and a portion of the mass is forced into the vagina.

In rare cases sarcoma assumes a polypoid form, and in others, coincidently with the uterine development, an extra-uterine growth projects into Douglas's pouch or one iliac fossa. Another way in which sarcoma affects the uterus is by diffuse infiltration into one or both walls. This may affect mucous or submucous tissues alone, or even the muscular structure itself. This surface soon ulcerates and gives forth a fetid discharge. In some cases this diffuse infiltration may affect the whole uterus, giving it the appearance of symmetrical enlargement.

If the tumor can be touched, it is usually found to be soft, spongy, and friable, though in some cases it is hard and firm like myo-fibroma. By conjoined manipulation the uterus is found to be large and usually irregular in shape as if the seat of fibroid tumors. The uterine sound indicates enlargement of this organ. It is very common for the cervix to be dilated and portions of the mass to be expelled.

Differentiation.—Although these symptoms and physical signs will strongly point to the existence of sarcoma, the microscope alone will distinguish it from cancer, myo-fibroma, and simple hyperplastic growths.

Course, Duration, and Termination.—It runs a much slower course than true cancer; a much more serious one than fibroids and hyperplastic growths. In rare cases it terminates rapidly, but it

has frequently been known to last for five or six years. The patient gradually sinks under the following morbid influences: hemorrhage, septicæmia, spread of the disease to neighboring abdominal viscera, disturbances of nutrition, or peritonitis.

Prognosis.—This is invariably unfavorable; a fatal issue is a question merely of time, whether the growth be removed or left uninterfered with.

The microscope, to a certain extent, aids us in predicting the probable rapidity of the affection. The more nearly it approaches a hard growth, the preponderating element of which is fibrous tissue, the slower will be its course; the more it partakes of a soft character and shows itself rich in cellular elements, the more rapid will be its progress in molecular death. Again, the small-celled varieties show a more marked tendency to rapidity of production than those which are characterized by large cells.

Treatment.—If the cervix be dilated, and a sessile growth be discovered in the uterine cavity, it should be entirely removed by galvano-cautery, écrasement, excision, or the curette, and the base of the growth thoroughly cauterized with chemically pure nitric acid or some equally powerful caustic. If the cervix be not dilated, this may be accomplished by the use of tents, and the disease attacked by surgical means.

CHAPTER XXXV.

CANCER OF THE UTERUS.

Definition.—Between cancer of the uterus and the same affection in other parts of the system there are no marked differences. As in other organs, it may be defined as a disease which is characterized by great proliferation of connective tissue, excessive generation of cells of epithelial type, and marked tendency to extension to neighboring parts, to molecular death, and to return after removal. Waldeyer[1] concisely defines cancer as "an atypical, epithelial neoplasm."

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[1] Billroth, Surg. Path., Am. ed.

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 gynecology in France, the disease was confounded with fibrous tumors and areolar hyperplasia. 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. Blatin and Nivet,[1] in expressing their belief that scirrhus results from chronic inflammation of the parenchyma, append the following footnote: "Paul of Ægina, Galen, Andral, Broussais, Breschet and Ferrus, Piorry, Bouillaud, etc., place scirrhus among the terminations of chronic inflammation; some of them, however, admit the existence of a predisposition." 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 varieties, and its pathological characteristics.

Pathology.—With regard to the pathology of cancer the views of pathologists have, of late, undergone considerable modification. Formerly, the prevailing opinion was that it was always the local manifestation of a general blood state. At present, opinion is divided; many still adhering to the old view, while others are yielding to the cogent reasoning of those who regard

[1] Mal. des Femmes, Paris, 1842.

it as originally a local affection, one of the most striking features of which is a tendency rapidly to intoxicate the system. In an exceedingly able and interesting discussion upon this subject before the London Pathological Society in March, 1874, the former of these views was maintained by Messrs. DeMorgan, Hutchinson, Moxon, Arnott, and others; the latter by Sir James Paget, Sir W. Jenner, Dr. Greenhow, and others. So equally was the society divided in opinion that a commentator remarks that "in point of numbers the constitutionalists almost equalled the localists."

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 origin of cancer, 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 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 part. From this molecules arrange themselves and form the anatomical elements of cancer. Another party, of which Virchow[1] was the founder, maintains 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 part. "Only Thiersh, and recently Waldeyer," says Billroth,[2] "maintain, as I do, the strict boundary between epithelial and connective tissue cells. . . . I only call those tumors true carcinomata which have a formation similar to that of true epithelial glands (not the

[1] See an able and interesting *résumé* on this subject in the N. Y. Med. Journ. for September, 1869, by Prof. W. T. Lusk, M.D., to which I am much indebted.

[2] Surg. Pathol., Am. ed., p. 627.

lymphatic glands), and whose cells are mostly actual derivatives from true epithelium."

If the cervix uteri has 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.

[1] *Varieties.*—Cancer may attack the uterus in any one of the following forms:

1st. Scirrhus; fibrous, or chronic cancer;
2d. Encephaloid; or acute cancer;
3d. Epithelioma; cancroid, or epithelial cancer.

In addition to the varieties of cancer thus far recorded, a fourth, the colloid, is often mentioned. It is now very generally regarded as incorrect to look upon this as a true variety of cancer, for it is rather a mucoid degeneration of one of the preceding varieties. The same kind of degeneration may affect other growths; and, if the mere presence of colloid matter were used as the test of malignancy, many errors would result. Virchow declares in reference to this important point, "you may, therefore, say colloid cancer, colloid sarcoma, colloid fibroma. Here colloid means nothing more than jelly-like." When this change has affected one of the other varieties of cancer, the alveoli are found very large and filled with jelly-like, structureless material.

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

[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 will be met with, which occupies a middle ground between these varieties, and is neither pure scirrhus, encephaloid, nor yet epithelioma.

type of cell and connective tissue structure. It is certain, too, that the physical aspects of the varieties of cancer depend merely upon varying proportions, and anatomical arrangement of their component parts. 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.

Frequency.—Cancer is an affection of frequent occurrence, and 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 intestines, and especially the rectum; next comes cancer of the lymphatic glands," etc. 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 $\frac{2}{3}$, 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.

Relative frequency of the varieties.—Virchow[6] regards cancroid affections as constituting the majority of so-called uterine cancers. Hewitt[7] declares that "the form of cancer usually witnessed in the uterus is the medullary cancer. The 'epithelial' comes next in order of frequency." Courty[8] begins his remarks upon this subject thus: "Epithelioma of the vaginal portion of the neck, perhaps the most frequent of uterine cancers," etc.

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-

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[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] New York Med. Journ., vol. ix, p. 561.
[6] Lusk's *résumé*, N. Y. Med. Journ., Sep. 1869, p. 567.
[7] Op. cit., p. 575.
[8] Traité prat. des Mal. de l'Uterus, etc., p. 875.

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. From the facts that the patient had shown no previous symptoms of uterine disease which could have resulted in areolar hyperplasia, 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, etc. 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, and 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 different parts are

[1] Op. cit., p. 192.

secondarily 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.

Scirrhous cancer presents as its predominant anatomical characteristic the large amount of connective tissue and the small amount of cellular elements of which it is composed; and as its chief clinical feature, its gradual development and comparative slowness of growth and progress. The abundant stroma alluded to soon contracts, and in so doing checks epithelial generation, causes atrophy of almost all but peripheral cells, and by compressing bloodvessels limits vascular supply. These growths offer to the examiner, before ulceration has occurred, a hard, nodular, and resisting surface.

Encephaloid cancer of the cervix is characterized by a small amount of stroma and a large amount of cells. Clinically it is marked by its rapid growth, tendency to hemorrhage, and early disintegration. Upon physical examination during life it presents a soft, lobulated, elastic surface.

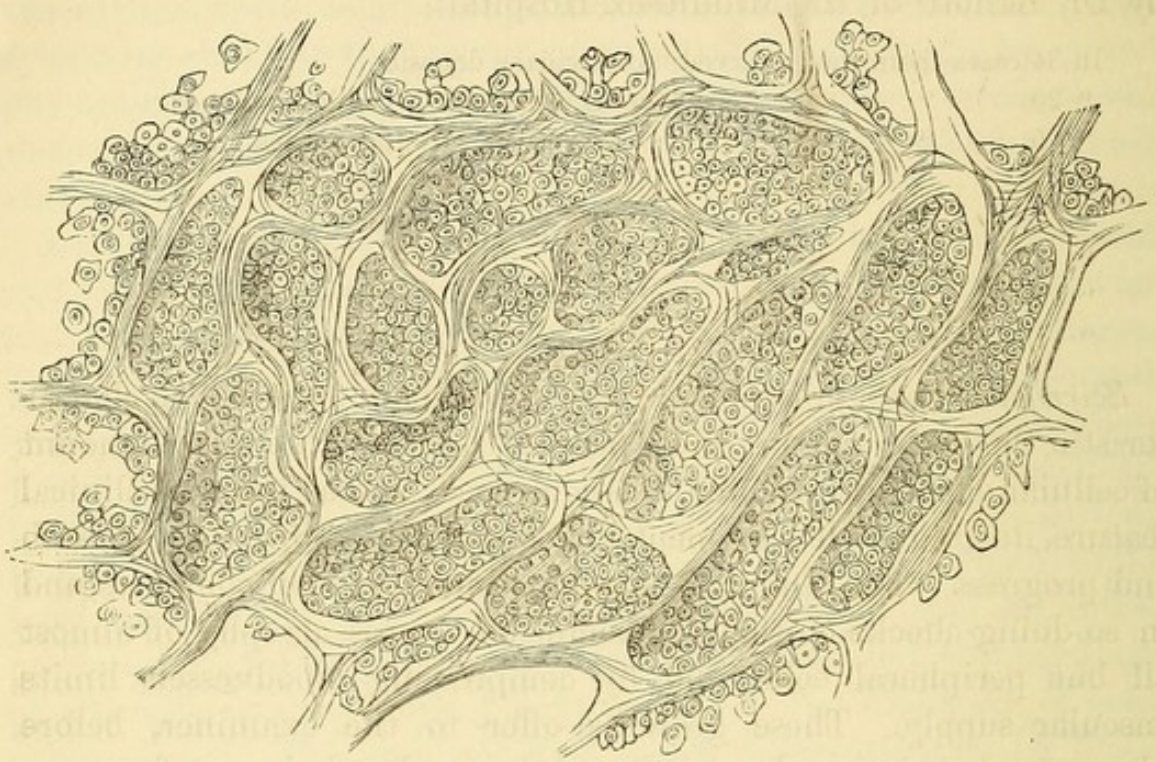
Figs. 156 and 157, after Billroth, showing the arrangement of cellular and connective tissue elements, will prove instructive.

Epithelial cancer differs greatly both in anatomical and clinical features from the forms just enumerated, and claims especial consideration. Commencing by excessive generation of the cells which characterize the part upon which the morbid influence is excited, it develops itself always in connection with epithelial covered surfaces—skin or mucous membrane. In some cases the stroma is very abundant; in others it is almost entirely wanting. As the cells increase in this they arrange themselves into epithelial brood nests or spaces.

The importance of the distinction between this form of cancer and those previously mentioned is at present not as generally accepted as it was twenty years ago. At that time pathologists thought it necessary to divide cancers 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

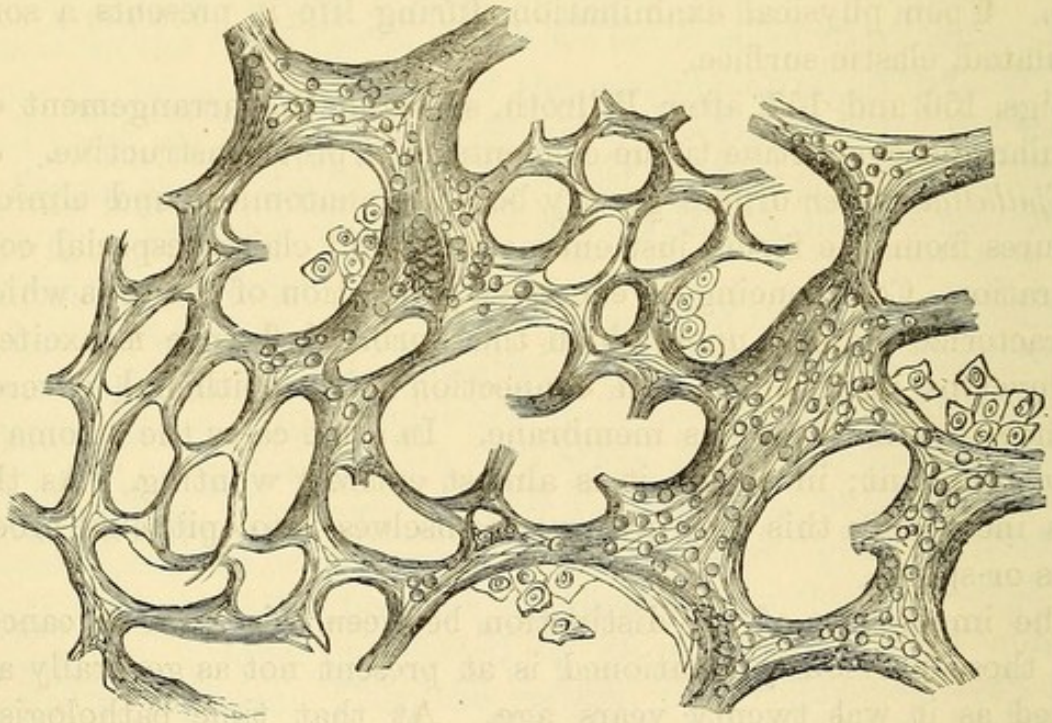
[1] Path. Trans., 1870.

Fig. 156.



Cancer of mamma; stroma and cells. (Billroth.)

Fig. 157.



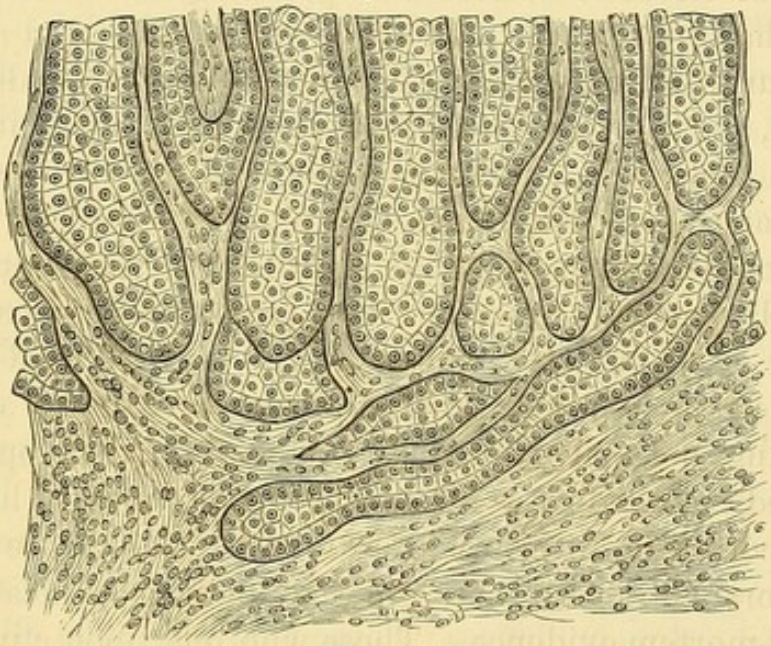
Connective tissue framework of cancer of mamma. Brushed-out alcohol preparation. (Billroth.)

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 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 condition of the system, and the other as one of local nature only. 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 features which I have mentioned. 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

Fig. 158.



Flat epithelial cancer of cheek. Glandular ingrowth of rete Malpighii into connective tissue. (Billroth.)

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

[1] Op. cit., vol. i, p. 217.

affections. He[1] has demonstrated the development of cancroid substance within the uterine wall as well as upon its mucous membrane.

In the commencement of each variety of malignant disease the clinical differences would be easily recognized; but as epithelioma advances, and the deeper tissues become involved, a differentiation will often become not only difficult but impossible.

Epithelial cancer may affect the uterus in two entirely different forms. The first is characterized by a strong tendency to ulceration; the second by formation of a tumor, or fungus-like mass, which at a later period is attacked by ulceration. These forms have been designated as—

Ulcerating epithelioma;
Vegetating epithelioma.

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. It has been described under the names of rodent ulcer, diffuse ulcerative cancer, epithelial cancer, and cancroid of the uterus.

All authorities agree that this affection is comparatively rare. Dr. Ashwell[2] 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 this 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[3] 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 unquestionable carcinoma, have run a course very similar to that of this affection. Ashwell states that on several occasions where a diagnosis of corroding ulcer had

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[1] Klob, op. cit., p. 19.
[2] Dis. of Women, p. 318.
[3] Op. cit., p. 217.

been made, post-mortem examination gave evidence of other forms of 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 carcinoma and adopt that of corroding ulcer, until the matter was settled by necropsy.

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.
Mr. De Morgan .	"A modification of epithelioma"	Essay before London Path. Soc., March, 1874.
Mr. Arnott . .	"A form of epithelioma" .	Discussion before London Path. Soc., March, 1874.
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. Columbat de L'Isère	Compares it to noli me tangere	On Females.
M. Courty . .	Epithelial cancer . .	Mal. de l'Utérus, p. 875.

Rokitansky[1] alludes to the disease thus: "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 com-

[1] Path. Anat., Sydenham ed., vol. ii, p. 220.

pared 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."

"In some dissections that I had made," says Mr. Arnott,[1] "it seemed to me that rodent ulcer was a form of epithelioma, for one sees deep down an appearance like the cells of the rete mucosum, and occasionally the bird's-nest body; the cells are more closely coherent than in epithelioma, because they resemble more the cells of the rete mucosum, not the epidermis cells; therefore they have a still lower malignancy than any ordinary epithelioma."

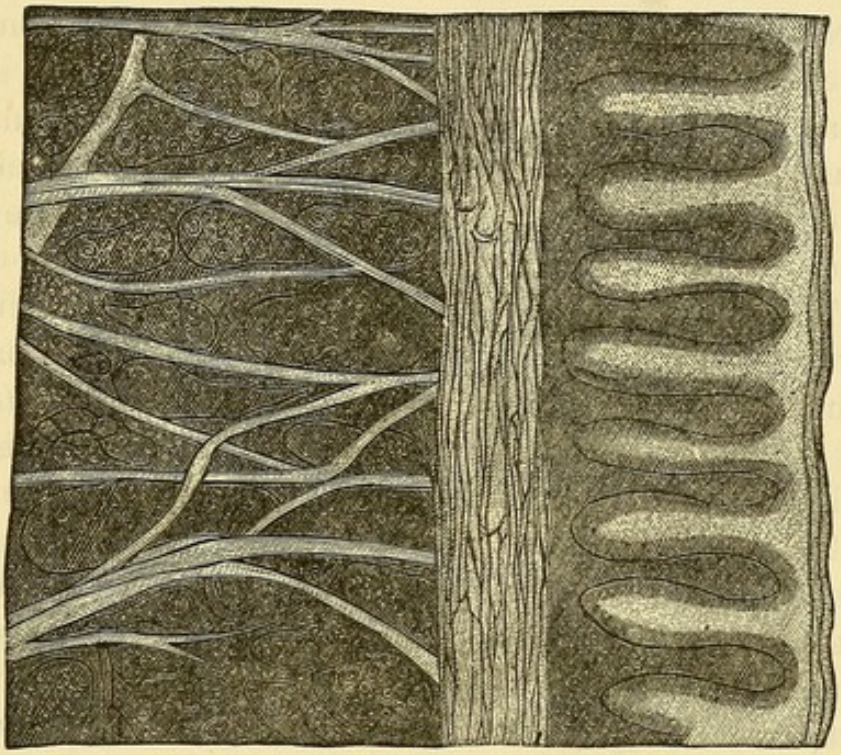
The tendency of the newly formed cells is to rapid death. As the process of destruction advances through the mucous membrane into the parenchyma beneath it, and profuse hemorrhages occur, the patient is gradually exhausted; and as the peritoneum in time becomes invaded, peritonitis of fatal type is excited. Unlike other cancers, however, its course is often slow, and years may pass before death results. All varieties of cancer ultimately ulcerate. The prefix, "ulcerating," as here employed, applies only to that variety whose primary feature is to break down in this way.

That form of epithelioma called "vegetating," and 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. There is an extraordinary development of cervical 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

[1] Discussion before London Path. Soc.

proliferating part of the human body."[1] Fig. 159 represents one of these growths in section.

Fig. 159.



Transverse section of a vegetating epithelioma. (Virchow.)

It must not be supposed that these masses are supplied with blood only by the vessels of the villi. These ramify outside of their proper canals, and, running into the masses 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. 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-

[1] Virchow, Cellular Pathology,

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 vegetating epithelioma, 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." It is a note-worthy and interesting fact that 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 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.

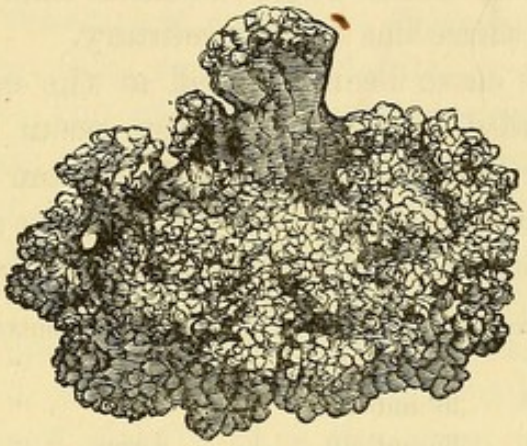
Klob[1] describes two forms of malignant papilloma; one which goes on to the creation of a tumor of some size and then breaks down; the other, which consists merely of small nodules upon the cervix, which rapidly ulcerate and eat away this part, and in time the body of the uterus. These tumors may grow from the vaginal portion of the cervix, from the cervical canal, or from the mucous membrane of the body of the uterus.

The authority of Virchow has been already quoted to prove how difficult is a differentiation of malignant from benign papilloma. 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

[1] Op. cit., p. 189.

is difficult in such a case, its great importance, as affecting the validity of deductions as to the results of 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

Fig. 160.



Vegetating epithelioma. (Simpson.)

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 practitioner correctly. Klob,[2] while guarding against the fallacy of judging by external appearances, gives this method of differentiation by the microscope. "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.'"

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.

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[1] Op. cit., p. 578.

[2] Op. cit., p. 187.

Hereditary tendency, once generally admitted as a fruitful predisposing cause, is now questioned by many.

Lebert found evidences of hereditary tendency in	14	out of	102	cases.				
Paget	"	"	"	"	78	"	322	"
Sibley	"	"	"	"	33	"	305	"

More recently Sir James Paget declares that in his experience, about one case in three has been hereditary.

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. Chisolm of Baltimore:

Registrar's report in South Carolina for 1859—
In 2423 deaths among whites, 20 were of cancer;
" 7277 " " blacks, 29 " "

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	"	"	11	"	
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, 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 once entertained by many, 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. There is, however, believed to exist, to use the words of Paget, "a local and a constitutional origin of cancer." Mr. Hutchinson humorously styles cancer "a rebellion of cells." It is the cause which incites this rebellion which has thus far eluded the search of pathologists and clinicists.

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 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 molecular death 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[1] 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 feces 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 stage 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.

For this period of the disease, a period at which diagnosis is of extreme importance, in view of the fact that then ablation offers the greatest hope for permanent or temporary relief, Spiegelberg offers a valuable resource in the use of sponge tents. If the induration of the tissue be benign, the dilating influence of the tent will produce a degree of softening, while, if it be due to malignant disease, the tissue will remain unyielding and hard.

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[1] I have never met with this symptom.

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 inflammation, 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 leave unnoticed, 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. This can, I think, most readily be done by a series of propositions.

1st. There is no typical cancer cell, which, separated from its surroundings and viewed as an entity, enables a microscopist to pronounce upon a growth.

2d. 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.

3d. 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.

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

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rise to errors of diagnosis with the inexperienced. It may be confounded with—

Eversion of cervix from laceration;
Papillary hypertrophy of the cervix (cock's comb ulcer);
Sloughing fibrous polypus;
Uterine fibroids;
Syphilitic ulcer;
Areolar hyperplasia of cervix with metrorrhagia;
Sarcoma of the uterus.

From these a differentiation should be arrived at by careful study of the progress of the case, by the degree of constitutional implication, by the results of microscopic examination, and by the development of a tendency to return after removal. A positive conclusion is not always easy, or, without delay, even practicable. An intelligent decision of the question 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 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,[1] "are of extreme rarity, but they do occur." "In opposition to the above phenomena, which inevitably lead to death," says Klob,[2] "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.

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 refer the reader to the history of a case recorded by Prof. Habit, of Vienna, which will be found in the Syd. Soc. Year-Book for 1864, at page 401.

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.

Part of Uterus Affected.—Cancer much more frequently affects the neck than the body of the uterus, although some authors, with

[1] Op. cit., vol. ii. p. 228.

[2] Op. cit., p. 203.

whom I decidedly agree, look upon cancer of the body as much more common than is generally thought.

Although cancer developed in the body of the uterus has attracted 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 its frequency as represented by two out of every thirty cases.

The most marked feature of the affection thus making its appearance is the obscurity which attends diagnosis. For a long time, and perhaps throughout the case, uterine hemorrhage and fetid discharges will be the symptoms which will excite suspicion. These leading to further and fuller exploration, a portion of the morbid tissue will be removed by the curette, examined by the microscope, and thus the diagnosis will be established.

Scirrhus, which is so rare as to be denied by some even in the neck, never affects the body, and so rarely does encephaloid do so that some pathologists declare that no unquestionable case is on record. The supposed cases are, according to them, really instances of sarcoma, tuberculosis, or sloughing fibroid growths. When malignant disease does originate in the cavity, it assumes the form of epithelioma.

Peculiar Features of Cancer of the Body.—The symptoms which mark the condition are:

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.

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[1] Courty, op. cit., p. 580.

Differentiation of Cancer of the Body.—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;
Periuterine cellulitis or peritonitis;
Cystic degeneration of chorion (hydatids);
Fibroid tumors or polypi;
Entero-vaginal fistula;
Intra-uterine vegetations.

I do not deem it necessary to go into detail upon the means necessary for accomplishing the differentiation of these affections from malignant disease. 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.[1]

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 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.

[1] 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.

Treatment.—The indications for treatment are these:

To amputate or destroy the diseased part as completely as possible;
To check hemorrhage;
To relieve pain;
To secure perfect cleanliness and correction of fetor;
To sustain the general strength.

Review the complications of uterine cancer, and it will be seen that many of them are of a most fatal character, and at the same time entirely beyond the resources of art. A certain number, however, which would prove fatal if not avoided or checked, are temporarily under the control of the physician. Examples of these are septicæmia, hemorrhage, exhaustion from pain, ichorous leucorrhœa, hydrorrhœa, excessive constitutional debility from the depraved blood-state, and last, though not least, the extreme mental depression which is the consequence of bereaving the unfortunate sufferer of all hope.

No single plan fulfils so many of the indications for alleviating these as removal or destruction of the growth, but no practice in reference to this disease can be so pernicious as that based upon the idea that because there is cancer of the uterus some surgical procedure must be resorted to. The same reasoning which applies to malignant diseases in other parts of the body should do so here. If the operator be convinced that decided benefit is to come to the patient from surgical interference, it should be practised, not otherwise. 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 scirrhous or encephaloid 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.

In the great majority of cases, patients suffering from uterine cancer are seen so late that surgical interference, established with a view to cure, necessarily fails to effect it; although, practised for relief of certain symptoms, and thus for a prolongation of life, it is frequently of a great deal of benefit. Should amputation of the neck promise entire removal of the morbid tissue, it should at once be accomplished, for by it absolute cure may be effected. Incomparably the best and safest means of doing this is the galvanocautery, and unless very urgent reasons dictate a resort to the écraseur or scissors, it should always be resorted to. In our time

it is usually practicable to send patients to large cities where this instrument can be placed at the disposal even of the most indigent. He, who in place of doing so, performs the operation by other methods, should reflect that he is unquestionably lessening his patient's chances for life. I have performed over twenty amputations for malignant disease by galvano-cautery without one fatal issue, and Dr. John Byrne,[1] who has employed this method more frequently than myself or any other operator with whose practice I am familiar, recommends it in the most enthusiastic terms. He says of it: "It would appear that not only are the bloodvessels securely sealed up, but the lymphatics as well, and hence the immunity from hæmatoxic and inflamatory complications." Whether this explanation of the innocuousness of the galvano-cautery is correct, I am not prepared to say, but certainly I can substantiate Dr. Byrne's reports of the absence of the secondary results after its use, which often succeed other methods. After the removal of the cervix by this means, it is surprising to see how little constitutional excitement shows itself.

To be effectual, amputation should be rendered complete, either by making firm traction, and stretching the resilient tissues of the neck before application of the wire, so that the remaining stump will be represented by a cone, with apex towards the fundus; or, by first removing the neck by the wire, then seizing the stump, and by the cautery-knife cutting out as much as practicable from the tissue of the uterus. This operation will, however, be fully described under the head of Amputation of the Cervix; and it would be a repetition to allude to it more fully here.

Although cancer of the uterus is in itself no more malignant in type than that of other parts, the mamma, for instance, 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[2] showing the results in the duration of life of removal of the breast in 150 women affected by cancer of that organ.

Of the 150 patients who had it removed, there survived—

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[1] Clinical Notes on Electric Cautery in Uterine Surgery. New York, Wm. Wood & Co., 1873.

[2] Graily Hewitt, op. cit.

Under 1 year,	8	Above 10 years,	2
Over 1 "	24	" 11 "	1
" 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		

But let us suppose that, as is so often the case, the whole of the diseased part cannot be removed by amputation; is it better, then, to let the malady progress uninterfered with, except by means to secure cleanliness, or to destroy as much of it as practicable, in the hope of thus prolonging life? This question is a very important one, for I feel sure that I often see "meddlesome surgery" uselessly and mischievously applied to such cases. On the other hand, there can be no question of the fact that many of the exhausting symptoms which steadily lead to death can, in many cases, be temporarily relieved by removal or destruction of the superficies of the cancerous mass. The best reply which I can suggest to the question just asked is this:—If the disease have advanced very far, and have affected the vagina, deep pelvic tissues, rectum, or bladder, and the patient's condition be as wretched as it usually is under these circumstances, operative procedures of all kinds should be avoided:—If the disease have advanced to such a degree as to make complete removal by amputation impossible, and the patient's forces be not profoundly prostrated, as much of the morbid surface should be destroyed as possible, by some procedure not involving great danger, in the hope that by this means all uterine discharges will be diminished, and the progress towards death be retarded.

This destruction of tissue may best be effected by strong acid, by the galvano-caustic knife or cauterizing stem, by removal of the superficies by tenaculum and scissors, by scooping it out with a cutting scoop, by charring it by means of the gas-jet cautery, or by the use of potassa cum calce.

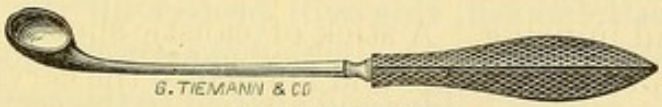
To the physician practising at a distance from a large city, the most attainable and efficient of these means is the thorough and repeated application of chemically pure nitric acid. To apply this the cervix should be exposed by a large glass speculum, which should be pushed with some force against the vaginal junction, to prevent escape of acid into the vagina. The cervix should then be

cleansed by a stream of cold water from a syringe, and thoroughly dried by dossils of lint, or bits of sponge. Then the acid should, by means of a glass pipette or rod, be thoroughly applied to the whole diseased surface. After this a stream of water should be again projected upon the cervix, and a pad of cotton saturated with glycerine made to envelop it. This produces a decided slough, which destroys many of the bloodvessels that have proved the source of hemorrhage. I regard this as the best method for accomplishing partial destruction of a cervix affected by cancer, and now resort to it frequently in practice with excellent results. Such an application as that just described may be repeated once in two or three months; and it is curious to see how patients will urge a repetition of it. I can fully endorse the statement of Dr. Churchill, who 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."

By the use of the tenaculum and scissors, as much of the tissue may be cut away as can be effected without great hemorrhage. Should this occur, it may be controlled by the immediate application of persulphate of iron in weak solution, followed by a tampon. Before resorting to this plan it is well to employ tampons of glycerine and cotton for a week, in order to disgorge the tissues to be removed, and secure thorough cleanliness. As the tampon is removed, the tissues thus treated look anæmic, and admit of removal with less hemorrhage than they would otherwise do.

The method of scooping out these growths originated with Simon, who employs the instrument represented in Fig. 161 for the purpose.

Fig. 161.



Simon's scoop.

Dr. P. F. Munde[1] thus describes this process: "The object is to scoop the morbid portions out of the normal tissue, by means of sharp, spoon-shaped instruments, which superficially, and in cases of large prominent tumors, are to be used as cutting tools; the deeper, larger, less prominent tumors and ulcers are to be merely scraped out. With the large scoops we remove the bulk of the

[1] See a very interesting article in Amer. Journ. Obstet., Aug. 1872.

growth, and with the smaller sizes we penetrate into the various cavities and recesses." The operation is usually so painless that no anæsthetic is required. This operation might with advantage be combined with the application of nitric acid.

The gas-jet cautery 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.

Potassa cum calce, which consists 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 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 pelvic cellulitis, or peritonitis, and I have in one case known tetanus occur with a fatal issue. There is no 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 of 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.

Means which destroy the superficies of the cancerous mass have a decided influence in controlling hemorrhage. It may further be controlled by rest during menstruation; astringent vaginal injections; and the use of styptics, by suppositories 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 a strong solution of alum, or with one part of solution of persulphate of iron to two of glycerine, may be placed against the os. In doing this the use of the cylindrical speculum should be avoided if possible, for its introduction always tends to excite hemorrhage.

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 frequently render opium objectionable.

When opium produces the painful results noticed where an idiosyncrasy exists against it, the persistent use of it will often effect a tolerance. In these cases the hypodermic use of morphia often becomes the greatest boon.

It is wonderful to see what large amounts of opium 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.

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 the contemporaries of Hippocrates.

The general strength should 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-

[1] These facts are recorded in Dr. Calkin's valuable work on "Opium and the Opium Habit." Lippincott & Co., Philadelphia.

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.

At the risk of becoming tedious by repetition, I offer the following *résumé* of the methods of fulfilling the indications in treating this affection.

1st. Secure cleanliness, prevention of fetor, and diminution of hemorrhage and pain by the free use of tepid vaginal injections of antiseptic and astringent character, such as the following:

℞.—Acidi carbolici (sol. sat.), ℥ijss.
Glycerinæ, Oj.
Aluminis sulphatis, ℥xiv.
Morphiæ sulphatis, gr. xvj.—M.

S.—Add one tablespoonful to two quarts of tepid water, and use as a vaginal injection morning and evening by Davidson's or the fountain syringe.

2d. Give an abundance of food *which the system can appropriate*, at regular intervals, bearing in mind that nutrition consists in the introduction into the blood, not into the stomach alone, of nutrient materials.

3d. Do not indulge in, what appears to be to a certain order of medical mind, the grim pleasure of making a fatal prognosis. As long as possible let the patient enjoy the "pleasures of hope." It is not the duty of the physician to hold constantly before her eyes the gloomy picture of a speedy and certain death which he is powerless to avert. No deception should be practised, and none need be, for these patients always suspect the truth and do not seek to be informed. Immediate relatives should have the facts plainly stated to them.

4th. Quiet pain by the systematic use of opium or one of its alkaloids. The use of the hypodermic syringe at a fixed hour every day is the most certain and frequently the most agreeable plan.

5th. If possible, remove the diseased part by electro-cautery.

6th. If complete removal be impossible, and the vagina, bladder, rectum, or pelvic tissues be involved, avoid surgical interference entirely.

7th. If the disease be confined to the uterus and complete removal be impossible, practise partial removal or destruction of the growth by galvano-cautery, the scissors, scoop, or curette, or by actual cautery, fuming nitric acid, the gas jet cautery, or potassa cum calce.

CHAPTER XXXVI.

DISEASES RESULTING FROM RETENTION AND ALTERATION OF THE FŒTAL ENVELOPES.

Uterine Moles.

Definition.—By this term is meant the existence in the cavity of the uterus of a fleshy mass which cannot with propriety be classed among tumors or polypi, and which consists in the retention of a part or the whole of the fœtal shell or of the placenta.

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

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[1] Capuron, Mal. des Femmes, p. 268.

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 dark 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, masses of coagulated blood, polypi, decidual membranes, etc., but it is very doubtful whether a true mole ever exists except as a result of conception.

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.—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, a mole may be suspected. 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 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

Submucous fibroid;
Sarcoma or cancer of the uterine body;
Subinvolution.

To the finger passed into the uterus, a fibrous tumor is usually hard, smooth, and resisting; while a mole is soft, spongy, and yielding to the touch, but this may prove deceptive.

Sarcoma and cancer may be known by the peculiar sensation yielded to touch, their fetid discharges, the constitutional depreciation attending them, and their microscopical characteristics.

Subinvolution demonstrates upon exploration the fact that the uterus is empty. It also frequently follows delivery at full term, while a mole rarely does so.

From all these conditions the differentiation may be positively accomplished in one way and one way only; dilatation of the cervix, removal of a small portion of the mass, and examination of this by the microscope.

Prognosis.—The prognosis is favorable.

Treatment.—The cervical canal should be fully dilated 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.

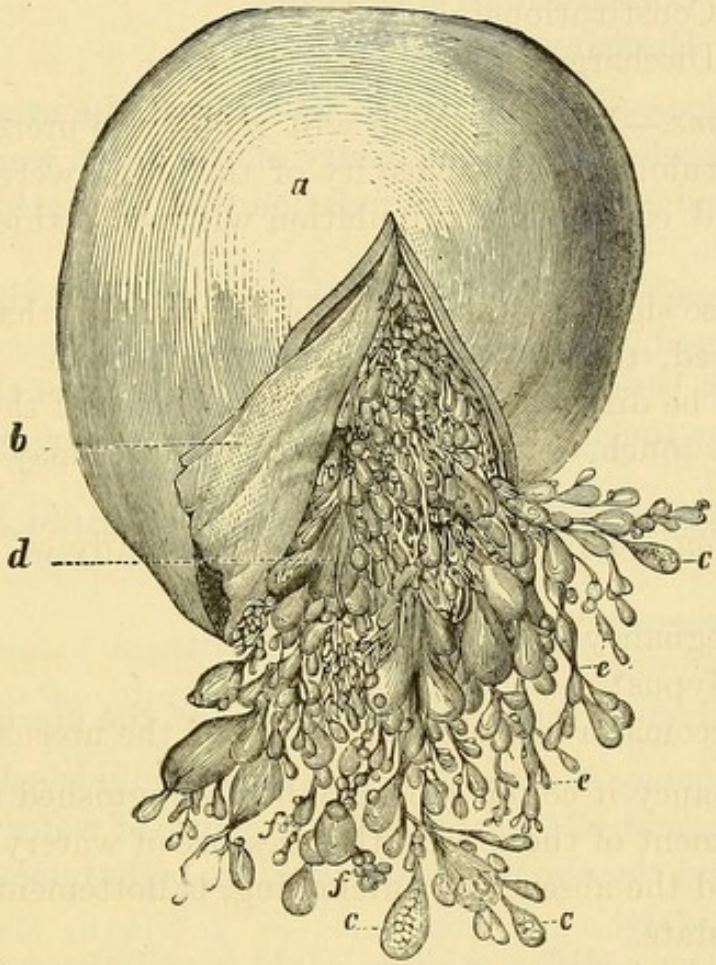
Definition.—The chorion, remaining attached to the uterine walls after expulsion or death of the embryo, sometimes undergoes a peculiar metamorphosis which receives this appellation. True hydatids, that is, cysts due to the presence of the acephalocyst, are very rarely met with in the uterus. Their extreme 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 them 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.

[1] Op. cit., p. 75.

Synonyms.—This affection has been described under the names already given, and under those of vesicular mole, in contra-distinction to fleshy mole just considered; hydatidiform mole; and hydatid pregnancy. In most works it is described only as a variety of mole.

Pathology.—Remaining in connection with the uterine walls after the expulsion of the fœtus, and absorbing nourishment which it no longer appropriates, the villi of the chorion undergo a kind of dropsical swelling, which results in the grape-like bodies styled hydatids.

Fig. 162.



Cystic degeneration of chorion. (Boivin and Dugès.)

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 parturition at full term, 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.

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:

Nausea;
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, 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;
Sarcoma or 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, the uterine sound, and the microscope.

Sarcoma and cancer would be known by fetid discharge, great constitutional decadence, and the 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 os and cervix uteri by tents, and then, if necessary, by Molesworth's hydrostatic dilators; and, 2d, in excitation of the

expulsive powers of the uterus by the free use of ergot. Should this drug fail in establishing the desired contraction, a large scoop, or, if possible, the hand, should be gently passed into the uterus, and the mass be evacuated. During this time, should alarming hemorrhage occur, it should be controlled by the tampon and by tannic acid, or sulphuric acid given internally.

In the management of such cases the difficulties do not lie in the way of treatment, but in that of diagnosis. This being once fully established, treatment becomes simple.

CHAPTER XXXVII.

DYSMENORRHŒA.

We have now arrived at the most appropriate place for the consideration of the derangements of the process of menstruation; and first among these we take up that of which the name heads this chapter.

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 carried conviction to the minds of most, 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 "Récherches 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.

Pathology.—Any condition, whether general or local, affecting the structure of the uterine walls, the ovaries, or the surrounding

[1] Ovarian Physiology and Pathology.

[2] I have five times performed double ovariotomy. In four of the cases menstruation has ceased. In one an occasional metrostaxis occurs.

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 do so in the second.

As a general rule, dysmenorrhœa is due to one or more of the three following factors: 1st, a depreciated condition of the constitution, beginning usually either in the nervous system or blood, which creates a tendency to neuralgia; 2d, an abnormal state of the uterus; or 3d, a diseased state of the ovaries. In a woman in whom the nervous system, the uterus, and the ovaries are normal, it is highly improbable that this condition would ever arise. Every practitioner can recall numerous instances in which any one of the three conditions mentioned has sufficed to establish it, and as this is true of each of them separately it is more so of a combination of the three.

Every case should be examined from this standpoint in practice, and the treatment adopted should be governed by the discovery of the existence of one or more of these conditions as causative agents.

Varieties of Dysmenorrhœa.—For convenience of study, dysmenorrhœa may be divided into the following varieties:

Neuralgic dysmenorrhœa;
Congestive or inflammatory dysmenorrhœa;
Obstructive dysmenorrhœa;
Membranous "
Ovarian "

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 menstrual 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, cases will be met with in which he will be baffled, it will be gratifying to perceive how rarely these will occur. 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 are many 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 blood states, as those of 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 another who before the flow was established experienced 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; no clots are discharged by spasmodic efforts, and physical examination discovers no obstruction. 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 periuterine 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 depletory 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 petroselinum 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 also 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 three drachms in a gill of warm water.

Congestive or Inflammatory 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 excessive hyperæmia, which may result from a mechanical cause, as displacement of the uterus, or from a vital cause, as the peculiar condition which we know as inflammation, gives rise to a variety of painful menstruation which has been styled congestive or inflammatory, and which has been synonymously styled accidental in contra-distinction to those forms which are habitual.

The state of inflammation which so alters the condition of the nerves immediately affected by ovulation or menstruation, may exist in or around the uterus, in the peritoneum covering it, in the ligaments which sustain it, or in the areolar tissue of the pelvis.

In a great many cases inflammation of the uterine mucous membrane is the cause of this form of dysmenorrhœa. The existence of disease in this part causes, perhaps, little pain until the erythism engendered by menstruation occurs. Then great local excitement takes place and dysmenorrhœa shows itself.

Causes.—It may result from almost any pelvic inflammation, or from any influence which exaggerates and prolongs the congestion excited by ovulation. Chief among these may be mentioned—

General plethora;
Exposure to cold and moisture;
Sudden mental disturbance;
Sluggishness of portal circulation;
Displacement of the uterus;
Fibrous tumors;
Areolar hyperplasia;
Endometritis;
Periuterine cellulitis;
Pelvic peritonitis.

Some of these causes, even 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 accompanied 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. In cases in which a local inflammation exists 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.—If the attack be due to hyperæmia merely, without inflammation, the constitutional disturbance and suddenness which characterize it 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. If it be due to the influence of existing pelvic inflammation, it will usually be marked by pain during the inter-menstrual periods, difficult locomotion, fatigue after exertion, leucorrhœa, etc.

Prognosis.—This will depend upon the prognosis of the condition 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. If the cause of the symptoms be a fibrous tumor, pelvic peritonitis or periuterine cellulitis, or even an irremediable displacement, the probability of relief is of course not at all great.

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.

Should any local inflammation be discovered as the cause of the evil, this, and not one of its many results, should be the subject of treatment.

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, contractions 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—

Congenital or acquired 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 of the 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. 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.

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 severe pain ceases for a time, until further distention 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 distention;

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 distention 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 unaccompanied by flexion 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 graduated ones of metal of three or four sizes. Those of Kammerer are very convenient. Dilatation by their means should be slowly and cautiously accomplished. A sound being passed should be left in position for several minutes, and upon its removal another should be inserted, until the distention 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.

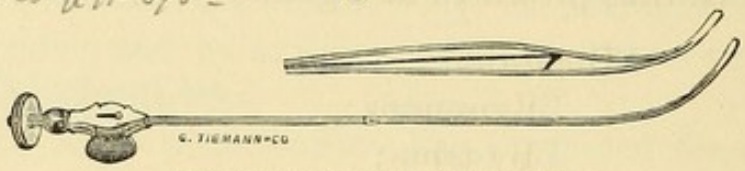
The same result may be accomplished by the use of tents of sea-tangle or sponge, but the danger attending this method should always be considered before it is selected.

Another method, which has been adopted with advantage in many cases, consists in the dilatation of the constriction by means of expanding instruments. One of the best of these is shown in Fig. 163.

A modification of Holt's stricture dilator is likewise employed

for this purpose. The action of these instruments is too injurious to the tissues to be safe, and they are by no means so promising of good result as the use of cutting instruments.

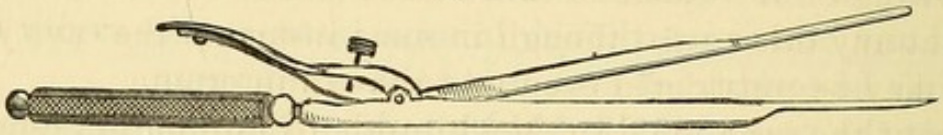
Fig. 163.



Priestly's dilator for the cervix.

In 1843, Prof. Simpson, of Edinburgh, advocated and practised cutting through the walls of the cervix, and thus gaining space without dilatation. He employed a single-bladed hysterotome, represented in Fig. 164.

Fig. 164.



Simpson's hysterotome.

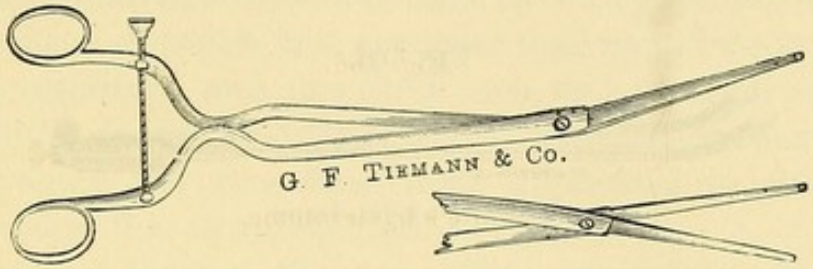
This instrument is introduced without a speculum, the patient lying on her left side. The hysterotome, with its blade concealed, is guided by the index finger up to, and if necessary, as is very rarely the case, through the os internum. If the cervical canal be too small to admit it, previous dilatation should be practised 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, a number of double hysterotomes have been devised with two blades instead of one. That of Dr. Greenhalgh, of London, has become popular. A very simple one devised by Mr. Stohlmann, of this city, is represented in Fig. 165.

Since Dr. Simpson introduced this plan of treatment several modifications of it have 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.

Fig. 165.



Stohlmann's hysterotome.

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. 124, is passed up, the tissue above the reach of the scissors cut, and, if it be deemed necessary, the os internum severed on each side.

4th. A roll of carbolized cotton saturated with glycerine is put into the wound, and a vaginal tampon applied.

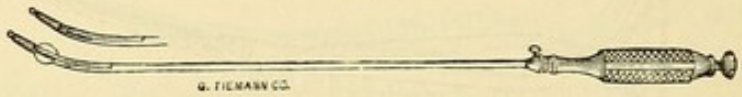
The patient should be kept in bed for a fortnight after the operation. In twenty-four hours the tampon should be removed, and on the third day the lips of the wound should be separated by a sound, and the carbolized cotton dressing reapplied. This should then be done every second day, or the cervix will rapidly contract and become as small as before the operation.

The results of incision of the cervix, when practised in suitable cases, are sometimes 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 place within the canal a roll of cotton saturated with a weak solution of persulphate of iron. This may be allowed to remain in place for forty-eight or fifty-six hours. At the end of a fortnight it may be replaced by a stem of glass or vulcanite.

This procedure, which I very much prefer to either of the others mentioned, may be accomplished by the use of a long narrow-bladed bistoury, or by such a hysterotome as that represented at Fig. 166.

Fig. 166.



White's hysterotome.

This instrument was invented fifteen 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.

Nothing makes the results of section of the uterine neck so successful, and as fully prevents subsequent contraction, as the maintenance within the canal of a stem of glass or vulcanite. It is, however, difficult to keep such a stem in place, and I refer the reader to Fig. 130 for a plan by which I have readily succeeded in accomplishing it.

The stem should measure two inches, and consequently cannot reach the fundus. By its base, which is globular, it rests in a cup, which is fixed between the bars of a small retroversion pessary. This stem tilts forwards, backwards, and laterally, under pressure, so that it moves freely in every direction, and does not resist change in position of the uterus, but merely keeps its place within the neck. The stem of this instrument may be made of glass, vulcanite, or pewter, and of any size desired. As constriction of the uterine neck is often accompanied by flexion, the use of an [1]anteflexion pessary for the support of the stem often answers a good purpose in overcoming that condition.

Treatment of Cases Dependent upon Flexion or Version.—Should version be the cause of dysmenorrhœa, it should be relieved not by operation, but by the means already mentioned when speaking of that displacement. If 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.

[1] It is necessary that I should state that the use of this instrument requires some practice and skill. I always select a small pessary and apply it through Sims's speculum. Without this speculum I doubt the possibility of using it.

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 practised such an operation successfully. This will be found described in the chapter on flexion. It is unquestionably the procedure most applicable to the relief of dysmenorrhœa due to anteflexion.

Treatment of Vaginal Stricture.—This condition, which may be congenital, or be 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 incised with extreme caution, and the second removed, if possible.

Membranous Dysmenorrhœa.

Definition.—This variety of dysmenorrhœa consists in the expulsion of organized material from the uterine cavity, at menstrual periods, which is found upon microscopical examination to consist of the lining membrane of the uterus itself. This may consist of a sac, representing the triangular cavity of the body of the uterus with its three openings, 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 microscopist 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 convinced that it is an exudation, the result of endometritis, thus returning to the position assumed by

our forefathers. In further reference to etiology I shall give a *résumé* of the views which have been and are received, and mention 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 adhered to 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." 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 endorsed by Tilt,[5] Braun,[6] and others.

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,[7] and admitted in some cases by Rokitansky;[8] and the second was advanced by Raciborski.

From my observation of this affection I cannot attribute it to

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[1] Op. cit., p. 348.

[2] For my citation 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. ii, 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.

[7] Mandl's article, p. 407.

[8] Klob, op. cit., p. 237.

endometritis, for evidence of the existence of that disease was entirely wanting in four cases out of five. Even if endometritis 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 five 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 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[1] 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 weeks of pregnancy." Rokitansky's[2] 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 membranous 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

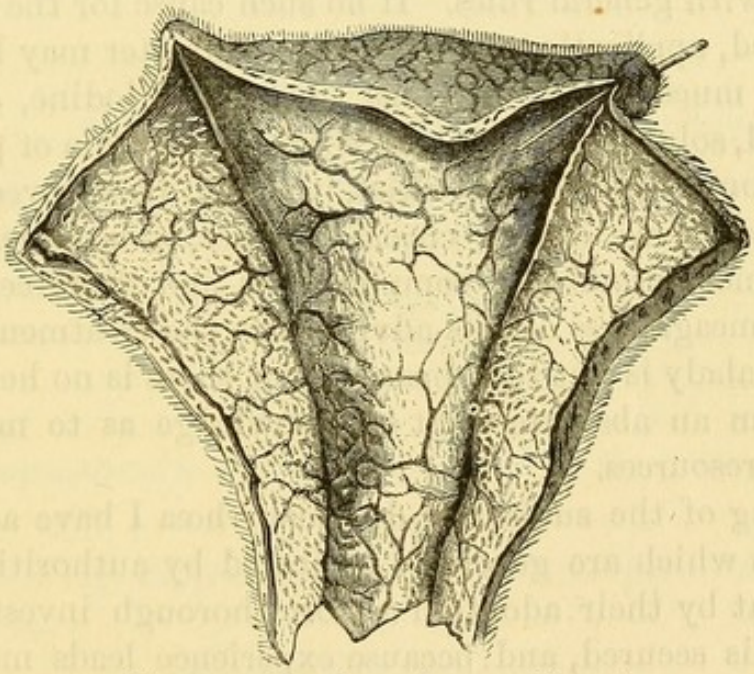
[1] Mandl, loc. cit., p. 415.

[2] Mandl, loc. cit., p. 416.

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, and 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. 167.

Fig. 167.



Dysmenorrhœal membrane. (Coste.)

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.

[1] Mandl, loc. cit., p. 423.

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 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.

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 the treatment of so distressing a malady is but too apparent, 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, ʒiij.
Tr. belladonnæ, gtt. xx.
Tr. opii, gtt. x.
Aquæ tepidæ, ℥iijss.—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.
Potassii bromidi, ʒij.
Morphiæ sulphat. gr. iss.
Syrupi aurantii cort. ℥iij.—M.
S.—A dessertspoonful 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, ʒss.
Butyr cacao, q. s.
M. et ft. supposit. No. vi.
S.—One by the bowel night and morning while suffering.

Ovarian Dysmenorrhœa.

Definition.—In a number of cases, unfortunately by no means small, no depreciated condition of the nervous system will be found to account for habitual dysmenorrhœa; and the most careful exploration of the pelvis will fail to discover uterine or periuterine disorder. In such cases, if by conjoined manipulation the regions to the side of and behind the uterus be investigated, a globular, slightly compressible mass, about the size of a large walnut or small egg, will often be found in the cul-de-sac of Douglas, or on one or both sides of the uterus, low down, and in close proximity to it. If the patient be now placed in the left lateral position, and two fingers of the right hand be carried up the vagina, their palmar surfaces looking backwards, the presence of these smooth and movable bodies will be still better ascertained. They are the ovaries, enlarged, congested, tender, and prolapsed.

In some cases their disordered condition will be accompanied merely by dysmenorrhœa; but in others it will be marked by hysteria, amenorrhœa alternating with menorrhagia, and even by true epilepsy. Whether epilepsy is in such cases due to the existing ovarian disease, I am, of course, unprepared to state; but I have so often seen it accompany it that I freely confess my belief that it is sometimes caused by it. This is the condition commonly styled chronic ovaritis; which consists in congestion as its first stage, and hyperplasia of tissue with excessive nervous hyperæsthesia as its second.

Symptoms.—It would be difficult to make the diagnosis of this form of painful menstruation by rational signs alone. It should rest upon a union of rational and physical signs; but a suspicion as to the nature of the case would generally be formed from the former. The pain precedes the bloody flow by several days, and diminishes as it is established. It is of a dull character, extends down the thighs, is peculiarly likely to be accompanied by nervous manifestations, and to create depression of spirits. The breasts often sympathize, becoming painful and tender to the touch.

One very curious phenomenon which now and then marks these cases is the occurrence of intermenstrual, or "intermediate pain," as it has been styled by Dr. Priestley. At times this occurs with wonderful regularity on a given day. In one case in my experience it occurred on the ninth day after menstruation had ceased; in another on the fourteenth; and in a third it commenced one week after the menstrual act, and continued for five or six days.

It must not be supposed that in every case in which the ovaries are discovered to be large, tender, and prolapsed, dysmenorrhœa will necessarily exist; nor that they will always be found in this condition where there are other reasons for suspecting ovarian dysmenorrhœa. The rule is as I have stated, but it is by no means without exceptions.

Pathology.—It is possible that the process of ovulation in a diseased ovary may excite, through its extensive and decided nervous connections, congestion and nervous hyperæsthesia in the uterus, which would create disordered menstruation of the congestive or neuralgic type. Ordinarily, however, the pain seems to be in the diseased ovaries themselves, and to depend upon the dehiscence of the follicles of De Graaf. This can be proved by touching these organs during the early periods of menstruation, and is made evident in cases in which ovulation occurs without menstruation, in cases of atresia or absence of the uterus.

Prognosis.—The prognosis of dysmenorrhœa due to this cause is very bad. In a young girl in whom ovarian disorder has advanced only to congestion, recovery may rapidly take place; but in a woman further advanced in life, and in whom chronic enlargement of the ovaries has occurred, and become associated with great tenderness and prolapse, the prospects of cure are very unpromising.

Treatment.—In such cases sterility is, I think, the rule. If utero-gestation should be inaugurated, the nine months of inactivity and repose secured by it to the ovaries, is likely to effect great good. I have yet to meet with a case of chronic character in which I have effected a cure by purely medicinal means. By anodynes and nervines, of course pain may be annihilated, but this is far from effecting cure, and their use possesses the additional disadvantage of exposing the patient to the dangers of contracting a bad habit in reference to their future use.

All means calculated to soothe local irritation, to give tone to the nervous system, and to combat sanguineous excitement, should be resorted to. Change of air and scene, a visit to the mineral springs and baths of Germany and France, and removal of all influences which severely or disagreeably tax either mind or body, will often accomplish great good. Warm sitz baths and warm and soothing vaginal injections should be employed, and complete rest in bed, or great quietude if the patient objects to bed, should be prescribed for a week before menstrual periods and for three or four days after them. Internally I know of no means which are so efficacious as the free use of the bromides of potassium and ammo-

nium, commenced a week before the menstrual act and continued until its close.

During menstruation opiates, alcoholic stimulants, and anæsthetics should, as far as possible, be avoided. Their use will probably give relief, and as a consequence they will be resorted to once a month thereafter. The danger of such a course is apparent. In place of them the tincture of canabis Indica, hyoscyamus, and camphor, or five grain doses of the monobromate of camphor, may be employed. In some cases I have known a rectal suppository of five grains of iodoform give great relief.

I am unwilling to convey the idea that even these means are prolific of good results in such cases. They are by no means so, and are merely offered as the best with which I am acquainted. My own experience leads me to dread the application for relief of one of these obstinate and unsatisfactory cases.

CHAPTER XXXVIII.

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 both functional and organic affections of the uterus. The uterus is the only organ in the body from which blood flows as a physiological process. Many organs and all the erectile tissues are subject to normal congestions, but from none except the uterus is a flow of blood ever other than a morbid process. It is not then astonishing that in this organ slight and numerous causes are apt to excite hemorrhage.

Pathology.—1st, any condition which induces a state of active or passive congestion of the uterine parenchyma or lining membrane;

2d, any influence creating a solution of continuity upon its mucous surface; 3d, any growth which, having a vascular connection with the uterine vessels, allows of a percolation through its tissues and from its circumference; and 4th, any agency producing dyscrasia of the blood may result in these disorders. Any one of these conditions existing alone may produce the flow; several combined are still more certain to do so. It must, however, be admitted, that very violent hemorrhages will sometimes take place from the non-pregnant uterus without our being able to determine their cause, none of the conditions just mentioned being recognizable.

Causes.—The conditions which most frequently occasion menorrhagia and metrorrhagia are—

General plethora;
Areolar hyperplasia;
Polypus;
Fecal impaction;
Granular degeneration;
Fibrous tumors;
Chronic ovaritis;
Cancer or sarcoma;
Retained products of conception;
Fungous degeneration of uterine mucous membrane;
Hematocele;
Subinvolution;
Any displacement of the uterus.

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, displacements, or chronic ovaritis.

Retention of some of the products of conception is very frequently a cause. The placenta may remain in part or in whole, the fœtal shell may become a mole, or the chorion may undergo degeneration, and uterine hydatids, as they are erroneously called, collect within the uterus.

That simple hyperplasia, styled vegetation or fungous degeneration of the lining membrane of the uterus, is not an infrequent source of both varieties of hemorrhage. The vegetations thus created were described by Récamier, who advised and practised scraping them off by means of a steel instrument. M. Aran, who

has written an 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 engorgement of the mucous lining of the uterus. As a consequence of subinvolution they are very frequently met with, and markedly complicate that condition.

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. This variety of fungoid growths follows so closely upon the parturient act, that it appears probable that they arise from minute portions of placenta, which, remaining attached, draw their nourishment from the uterine vessels. 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. Klob[1] mentions 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 women 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

[1] Op. cit., p. 139.

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.

Chronic ovaritis often results in great menstrual irregularity, sometimes for months the menstrual discharge does not occur, and then without any apparent exciting cause a dangerously profuse hemorrhage occurs which requires the most energetic means to control it.

My experience furnishes me with several cases in which fecal impaction produced prolonged metrorrhagia which was cured by its removal.

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, by the uterine sound, and the curette.

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 cause were obscure and difficult of removal.

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, etc., should be given freely; and the ingestion of all warm fluids strictly inter-

dicted. In addition, the apartment should be kept cool, the foot of the bedstead elevated about ten inches, the nervous system quieted by opium, or an appropriate substitute, and all conversation prohibited. Certain general hemostatics should always be tried; among the chief of which are gallic acid, ergot, and tincture of cannabis indica. The last is one of the best at our command.

In mild cases this treatment may suffice, but in severe ones it will not. In these 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 the tampon of cotton should be removed, and replaced by one consisting of the same material saturated with a strong solution of alum, or with the officinal solution of persulphate of iron diluted with four times its bulk of water. A stronger solution may cause sloughing of the vaginal mucous membrane. A solution of full strength has been known to produce gangrene of the vaginal walls themselves. Instead of using these solutions 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 yield temporarily, but some will be met with which will not do so, and in which even more energetic ones are called for to prevent death from loss of blood. In these exceptional cases the cavity of the body of the uterus should be freely injected, after dilatation of the cervical canal, with the tincture of iodine, or solution of persulphate of iron, one-third to two of water.

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.

Curative Treatment.—One great reason for the fact that this often proves fruitless is that the existing disorder, and not the disease which produces it, is kept before the mind of the practitioner. It should be borne in mind that the excessive hemorrhage is usually a symptom, and that the disease which creates it must be sought for

and eradicated. I believe that the statement already made that one of four great pathological factors will usually be found to be the source of excessive or prolonged uterine hemorrhage, will stand the test of experience at the bedside. I therefore place before the reader at a glance the ordinary causes for uterine congestion, solution of continuity, growths from uterine mucous surface, and blood dyscrasia. That there are other conditions, such as pelvic peritonitis, hematocele, etc., which may cause uterine hemorrhage, I do not deny; but when a bloody flow marks the existence of such grave diseases, it is overshadowed by them and requires no special treatment. I here give those which ordinarily produce a flow which requires treatment from its prominence and importance.

Congestion of uterine tissue may be due to	Areolar hyperplasia; Subinvolution; Fibroids; General plethora; Displacement; Fecal impaction; Chronic ovaritis.
Solution of continuity may be created by	Ulceration; Granular degeneration; Cancer; Sarcoma.
Growths from uterine walls may consist in	Polypi; Fungous growths; Adhering products of conception; Fibroids; Sarcoma or cancer.
Blood dyscrasia may be due to	Scorbutus; Chlorosis; Spanæmia from uremia or other grave constitutional disease.

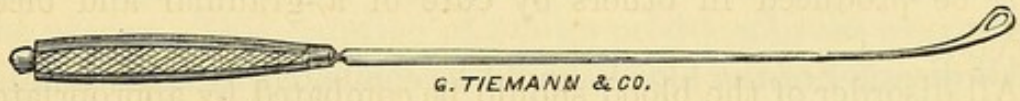
If the source of the disorder be discovered, its treatment is often very simple and effectual, and as the management of most of the conditions here recorded is familiar to every reader upon general medicine, or is given in other parts of this work, little more need be said except upon one or two points.

In a case of subinvolution, the free use of ergot will be found a valuable adjuvant to the means already enumerated for palliative

treatment, and it may prove serviceable as a curative agent. In the treatment of all uterine congestions the occasional use of an active 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 and physical signs; the first consisting in prolonged hemorrhage, without the existence of other disease; and the second in evidence afforded by touch, or the detachment or expulsion of some of these masses, the whole lining membrane of the uterine body should be thoroughly but gently scraped by the curette represented in Fig. 168.

Fig. 168.



Curette of wire without cutting edge.

Should the cervical canal be narrow, it may be necessary to dilate it by a sea-tangle tent; but, ordinarily, no previous dilatation is necessary for the use of this instrument, which should be passed with a slight degree of scraping action over the entire surface of the uterine body.

In recommending the curette as a most valuable resource in the treatment of menorrhagia due to fungous degeneration of the uterine lining membrane, I do so from very extensive and constantly increasing experience with it. I employ it frequently in private practice, and in the Woman's Hospital it is commonly used by Dr. Sims and myself. Not only has it proved in my hands, as Dr. Sims informs me it has in his, a very efficient instrument, but one attended by little danger unless employed in cases previously affected by peritonitis or cellulitis. For one using it with such results it is difficult to comprehend how it should be so unfavorably regarded by many able practitioners. The late M. Aran[1] was bitterly opposed to a resort to it; and Gallard[2] styles its use a "detestable operation." The latter author then goes on to speak of the "perfect[3] harmlessness of intra-uterine injections" in menorrhagia! Truly, experience does not teach to all men the same lessons, though all may sincerely strive to read its teachings aright.

[1] Op. cit., p. 473. [2] Op. cit., p. 242. [3] Op. cit., p. 254.

In place of the curette the lining membrane of the uterine body may be modified by the application of pure nitric acid, after the plan of Kidd and Athill, of Dublin, or by the injection of the uterine cavity by pure tincture of iodine, solution of nitrate of silver, or solution of persulphate of iron diluted with two or three equivalents of water. As a full discussion as to the dangers of intra-uterine injections will be found elsewhere, I shall not enter upon it here.

Should caustic treatment by strong acid be determined upon, a silver or vulcanite tube like that shown in Fig. 76 should be passed through the neck to protect this part, and preserve the acid for energetic action on the lining membrane of the body.

In many cases replacement and support of a displaced uterus will serve to relieve a prolonged metrorrhagia, while the same results will be produced in others by cure of a granular and bleeding cervix.

All disorder of the blood should be combated by appropriate constitutional means, even where it is secondary to the loss, and not a primary cause of it. Where the hemorrhage is due to a polypus, the resulting blood impoverishment renders escape of the vital fluid more easy and rapid.

In very obstinate cases a change from a warm to a cold climate, and from the lowlands to a mountainous region, often accomplishes a great deal of good.

CHAPTER XXXIX.

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 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, etc. 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 that 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 or ovaries;
Rudimentary uterus or ovaries;
Occlusion of uterus or vagina;
Uterine atrophy;
Pelvic peritonitis;
Atrophy of both ovaries;
Cystic degeneration of both ovaries.

Abnormal states of the blood.

Chlorosis;
Plethora;
Blood state of phthisis;
" " of cirrhosis;
" " of Bright's disease, etc.

Abnormal state of ganglionic nervous system.

Atony from mental depression;
" " indolence and luxury;
" " want of fresh air and exercise;
" " constitutional diseases, as phthisis, etc.

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, contraction 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 periods when the menses should occur, will help to lead the practitioner to a correct conclusion as to the character of the case.

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[1] On Uterine and Ovarian Inflammation, p. 54.

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 under these circumstances as under the last mentioned.

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, great benefit will be gained by the avoidance of means previously practised 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.

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 be discovered as the source of the affection, it should be developed by local stimulation and distention. 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 a 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 medical 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 practise 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—

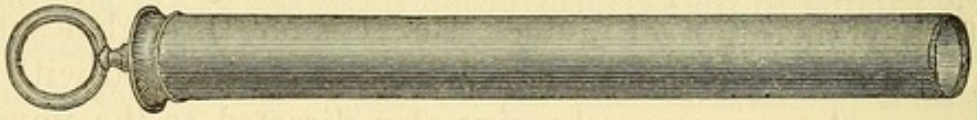
Passage of the sound;
Tents;
Cupping;
Electricity;
Stimulating enemata;
Baths.

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 dangers attending them being always borne in mind during their employment.

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 enclose the cervix within the mouth of the cylinder of hard rubber represented in Fig. 169, and then exhaust the air by withdrawing the piston.

Fig. 169.



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 irritating the walls of the uterus to too great an extent. To avoid this I have employed a stem composed of alternate beads of copper and zinc, held together by a small wire rope, 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. 170.) The disk or bulb of this instrument should be made globular so as to rest in the cup held between the branches of a Hodge or Smith pessary, as shown in Fig. 130.

Fig. 170.



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 is not possible to give clinical evidence of the fact, but it may 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 XL.

LEUCORRHŒA.

In my anxiety to impress the importance of regarding and treating this condition as a symptom of uterine or vaginal disease, and not as a primary affection, I have been in great doubt as to the propriety of devoting a separate chapter to it. In doing so, I confess that I yield to a conventional practice which I do not fully endorse, and I offer this fact as an explanation of any superficiality in the treatment of the subject which may strike the reader. I feel very sure that the writer of fifty years hence will omit the separate consideration of this symptom entirely.

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, etc., and Aëtius and Paul of Ægina speak of two forms of the affection, red and white flux. For the latter, Aëtius recommends gestation, vociferation, walk-

ing, etc. 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 gynecology 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 ordinary 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.

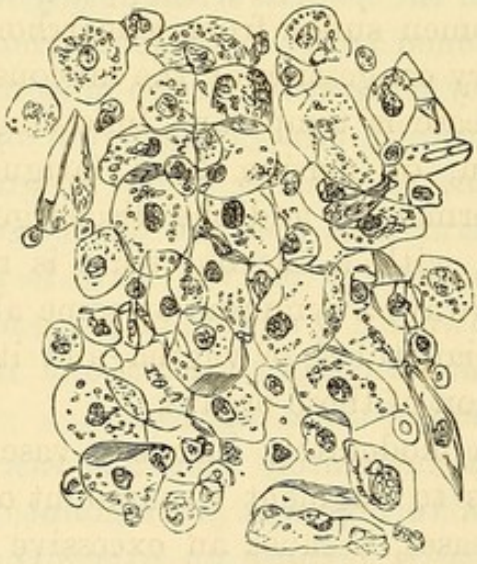
Varieties.—Leucorrhœa is divided into two varieties, according to its origin—vaginal and uterine. Either of these may exist separately, or the two may coexist. If it be vaginal, it may continue as such for a length of time, or pass upwards into the uterus and tubes. If the inflammatory action producing the discharge be confined to the uterine mucous membrane, it may remain so without implicating 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. 171.

Fig. 171.



Vaginal leucorrhœa under the microscope. (Smith.)

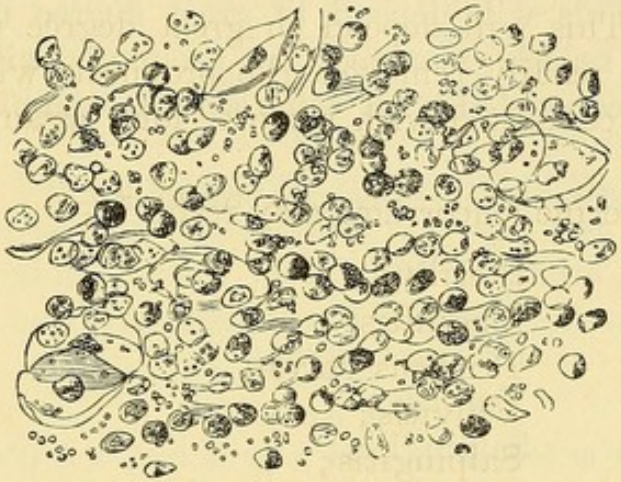
That arising from the canal of the cervix is thick, tenacious, and ropy, like the white of egg, and consists of—

Alkaline plasma;
Mucous corpuscles;

Altered cylindrical epithelium;
Pus-corpuscles;
Blood-globules;
Fatty particles.

Examined by the microscope it presents the appearance shown in Fig. 172.

Fig. 172.



Cervical leucorrhœa under the microscope. (Smith.)

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.

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.

Causes by Congestion.

Subinvolution of uterus or vagina;
Suppressed menstruation;
Fibroids, polypi, or fungous vegetations;
Prolonged lactation;
Gestation and parturition;
Excessive coition;
Anæmia;
Uterine displacement.

Causes by Inflammation.

Endometritis, corporeal or cervical;
Granular degeneration;

Syphilitic ulceration;
Fibroids or polypi;
Vaginitis, specific or simple.

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 an attendant circumstance of some grave pathological state of the uterus or vagina, and consequently difficult of cure.

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 may result in—

Sterility;
Vaginitis;
Pruritus vulvæ;
Vulvitis;
Salpingitis;
Granular degeneration.

Dr. Tyler Smith, in the work just referred to, declares that it is even the cause of parenchymatous disease. It is much more probable that the endometritis which results in the discharge also produces this by disordering nutrition.

Treatment.—When a patient applies to a practitioner for the cure of leucorrhœa, it should be his first endeavor to discover the cause of the muco-purulent flow. A suspicion as to the source of the difficulty may ordinarily be based upon examination into the rational signs, but a diagnosis of the condition which gives rise to the symptom which has excited anxiety in the mind of the patient can be more fully ascertained by physical exploration. If upon this, disease of the uterus, vagina, or Fallopian tubes be discovered to exist, either in the form of inflammation or congestion, this affection should receive appropriate treatment. To recapitulate the plans which should be pursued would here be entirely out of place, for they are laid down in other parts of this work in connection with the special disorders of these parts.

A course especially adapted to giving tone to the dilated blood-vessels of the mucous membrane, and overcoming the tendency to excessive creation of cells and exudation of blood plasma, should in addition be adopted. To begin with, the patient should be put

upon general tonic treatment, such as the use of quinine, Peruvian bark, strychnine, and iron; sea-bathing; change of air and scene; and the substitution of quiet and cheerful social influences for those which are exciting or depressing. The diet should also be made nutritious and simple, and all stimulants, spices, and condiments be strictly avoided.

In the way of local treatment the vagina, after having been carefully cleansed, should, by means of a sponge probang, be thoroughly washed over with a solution of the nitrate of silver, one part to eight or ten of water. After this a tampon of cotton saturated with glycerine should be left in the canal for twenty-four hours and removed by the patient, a thread being attached to it for this purpose. Then copious astringent and soothing vaginal injections should be employed night and morning. The best astringents for this purpose are alum, tannin, infusion of oak bark, zinc, and lead. As examples of good combinations I give the following:

℞.—Acidi tannici, ℥iv.
Glycerinæ, ℥xvj.—M.

S.—A tablespoonful to a quart of tepid water, to be used as a vaginal injection for five minutes every night and morning by means of Davidson's or the fountain syringe.

℞.—Zinci sulphat. ʒiss.
Aluminis sulphat. ʒiss.
Glycerinæ, ℥vj.—M.

Follow same directions as those above given.

Once a week the application of the solution of nitrate of silver, in diminishing strength, should be repeated and followed by the use of the tampon of cotton soaked in glycerine, or glycerine and tannin, until cure is effected. Cure will commonly be effected by these means, if no other disorder exist to reproduce a symptom which it has once proved itself efficient to establish. If such a condition exist and be overlooked by the practitioner, it will inevitably do again what it did before. Neither plan should be despised—treatment of the causative disorder nor that of the resulting symptom; and by a combination of the two plans better results will be obtained than could be accomplished by an exclusive adherence to either.

In cases of chronic vaginitis, astringents sometimes appear to do harm, and infusions of flaxseed, slippery elm, and similar substances often prove beneficial. On the other hand, in the treatment of chronic endometritis, it will often be found of benefit to use astringent injections which act not only by securing cleanliness, but

by hardening the vaginal mucous membrane and preventing the complication of vaginitis. 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 XLI.

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 four things are necessary as far as the woman is concerned.

1st. The possibility of the entrance of seminal fluid into the uterus;

2d. The possibility of the production of a healthy ovule;

3d. The possibility of the entrance of an ovule into the uterus;

4th. The absence of influences in utero destructive to the vitality of the semen, and preventive of fixation of the ovum upon the uterine wall.

Should these four conditions exist, 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, or those interfering with these conditions, may be thus presented:

1st. *Causes preventing entrance of semen into the uterus.*

Absence of the uterus or vagina;
Obturator hymen;
Vaginismus;
Atresia vaginæ;
Occlusion of cervical canal;
Conical shape of cervix;
Cervical endometritis;
Polypi or fibroids;
Displacements;
Very small os internum.

2d. *Causes preventing the production of a healthy ovule.*

Chronic ovaritis;
Cystic disease of both ovaries;
Cellulitis or peritonitis;
Absence of ovaries.

3d. *Causes preventing passage of ovule into uterus.*

Stricture or obliteration of Fallopian tubes;
Absence of Fallopian tubes;
Detachments and displacements of Fallopian tubes.

4th. *Causes destroying vitality of semen or preventing fixation of impregnated ovum.*

Corporeal or cervical endometritis;
Membranous dysmenorrhœa;
Menorrhagia or metrorrhagia;

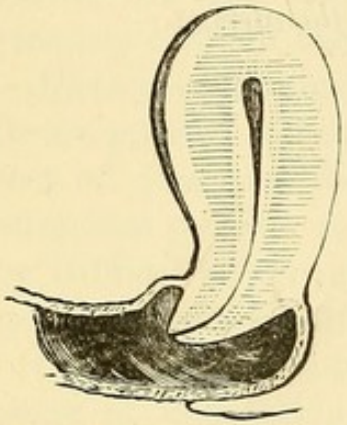
Abnormal growths;
Areolar hyperplasia.

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. 173 represents the variety of conoidal cervix generally met with as productive of sterility.

Fig. 173.



Conoidal 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 or destroys its vitality.

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.

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 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.

Although it is impossible to give positive proof of the fact that serious chronic disease of the ovaries results in a blighting influence upon the ovule, such a conclusion is rendered highly probable by the results of experience in such cases. Such a result is often found to attend chronic ovaritis, general pelvic peritonitis or cellulitis, and double cystic disease.

Some of the causes here enumerated are much more frequent than others. I would enumerate the most common causes in the order of their frequency in the following sequence: first, glandular cervical endometritis; second, areolar hyperplasia, the result of subinvolution of the uterus; third, conoid cervix, with contracted os; fourth, flexion and version of the uterus; fifth, contraction of os externum; sixth, fibroids, interstitial, or submucous; seventh, menorrhagia or metrorrhagia; and eighth, ovarian incapacity from chronic ovaritis or pelvic peritonitis. I do not state this sequence dogmatically, but merely to convey an idea of my impressions with reference to the matter.

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 subsequently 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 entirely depend 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 may, 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 practised after the method elsewhere described. If a slight constriction of the cervical canal appear to be the cause of the condition, dilatation 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. 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. Endometritis, whether of body or cervix, should be appropriately 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 practised. 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; that this affection is commonly 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 gynecology which yielded me the least satisfaction and the greatest disappointment, I should cite this.

CHAPTER XLII.

AMPUTATION OF THE NECK OF THE UTERUS.

Under certain circumstances where it is impossible to overcome morbid conditions of the cervix uteri by medicinal measures, amputation of this part is practised. 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 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,[2] 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,

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[1] Œuvres d'Ambroise Paré, lib. xxiv, p. 1012.

[2] N. Y. Med. Journ., vol. v, No. 5.

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[1] 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 certain extent fallen into disrepute, but is still resorted to in appropriate cases.

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.

Even these reports, favorable as they are, refer to the results of amputation by the knife. By galvano-cautery much better results are obtained. It is really surprising to see how little constitutional disturbance follows this operation. Out of the large experience of Dr. Byrne, of Brooklyn, with it, no fatal case is reported; and not one bad result has occurred in my own practice in over twenty amputations of the whole cervix.

Conditions demanding Amputation.—The conditions which ordinarily call for removal of the cervix are the following:

Malignant disease;
Great enlargement from cervical hyperplasia;
Longitudinal cervical hypertrophy;
Conical and projecting cervix;
Granular or cystic degeneration of intractable character.

One of these conditions, longitudinal cervical hypertrophy, not having previously received special mention, requires it here. The

[1] Pauly, Maladies de l'Utérus, Paris, 1836.

cervix may be congenitally very much elongated 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. M. Huguier, some years ago, maintained that this condition often 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 battery.

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, 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. When the stump is covered by mucous membrane, after this plan, recovery is much more rapid than when granulation is allowed to accomplish the cure. This operation is often a bloody one.

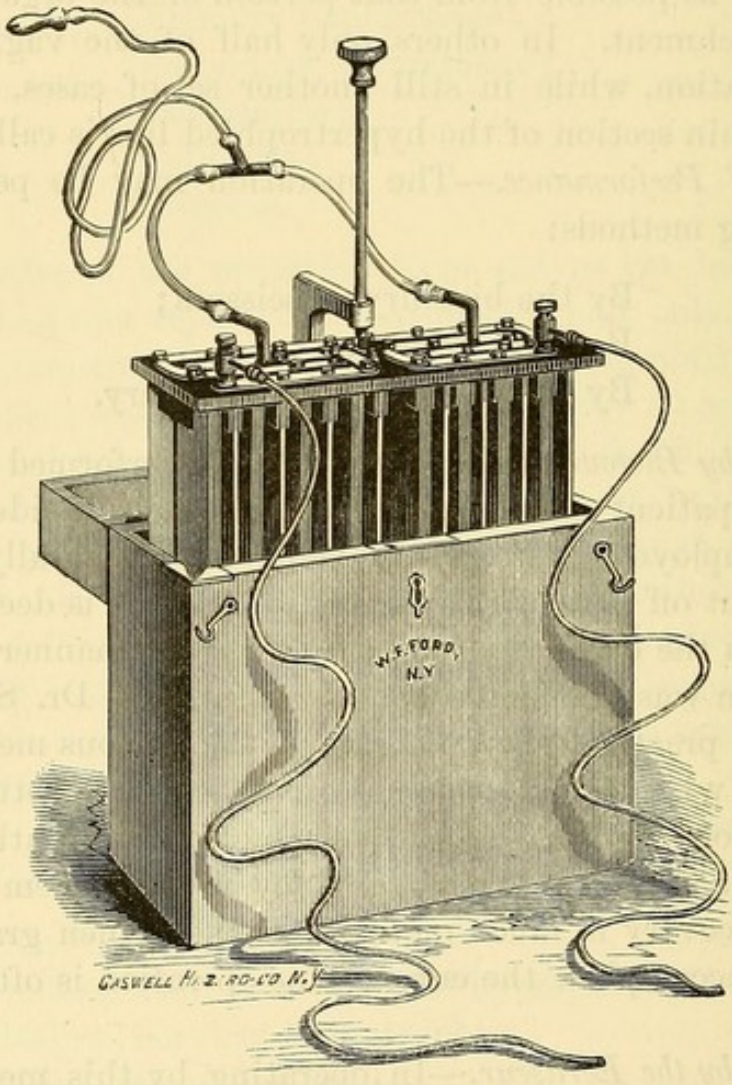
Operation by the Ecraseur.—In operating by this method, if the uterus be prolapsed, or if the degree of longitudinal hypertrophy be so excessive as to cause full protrusion of the cervix, or if such protrusion be attainable by moderate traction, the patient may be placed on the back. If the uterus be high up in the pelvis and strong traction be necessary to depress it, the best position will be

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 Galvano-Cautery.—The galvano-caustic apparatus 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

Fig. 174.



Byrne's galvano-caustic battery.[1]

through. The instruments generally employed here are a German battery, Middledorpf's, or Grennett's; a very compact instrument

[1] For details concerning this instrument I refer the reader to Dr. Byrne's interesting brochure entitled Electro-cautery in Uterine Surgery, Wm. Wood & Co.

made in London; and one constructed by W. F. Ford, of New York, after a method suggested by Dr. John Byrne. It would be out of place here to give details concerning these instruments; all of them answer the purpose in view very well. That of Dr. Byrne is, for an American, most attainable, and is certainly a very efficient and reliable apparatus. It is shown in Fig. 174.

In amputating the neck in this way, the patient may be placed upon the back, and the uterus drawn down between the labia; or if this depression of it be difficult, she may be placed upon the side, and Sims's speculum employed. By one of these procedures the part to be amputated is fairly exposed to view and manipulation. The wire loop of the galvano-cautery is passed around the neck as high up as is deemed safe, and tightened until it is fixed in the tissues so as not to slip. Then the current of electricity is made to pass through it, and the loop being slowly tightened by the turning of a screw by the operator the cervix is amputated.

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 tissues. 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 resembles 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 neck of the uterus and parts about the vulva is quite large, and I feel convinced that where the galvano-caustic apparatus 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 important surrounding parts. The results of operation after electro-cautery are also much better than after the other methods, septic absorption with its numerous consequences, and hemorrhage both immediate and remote, being by it very perfectly prevented.

CHAPTER XLIII.

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 gynecology 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. Unfortunately there is one set of ovarian affections with reference to which these statements are not true; those of inflammatory character. Our means of diagno-

sis 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 gynecologists 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. "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.	Crystosarcoma 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

[1] Catarrh of Sexual Organs of the Female. By Carl Hennig.

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. 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.[1] 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, 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 accepted as a fact by 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 process, 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 prob-

[1] For details with regard to these curious and recently discovered facts, the reader is referred to essays by Otto Schrone, Henle, and Sappey.

ably 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 peritoneum 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.

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;
Inflammation;
Neoplasms.

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. Where there is congenital absence of the ovaries 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. In some cases the mind is very deficient, a condition bordering upon idiocy sometimes existing. In others this is not the case, but the patient suffers from depression of spirits, and appears to lack vigor both of mind and body. Development into womanhood has never arrived for her, and she remains a child without the vivacity and cheerfulness of childhood.

Although certainty can only be arrived at post-mortem, a diagnosis may be made during life by the use of Simon's method, 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 of the ovaries, 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 month. This not only prepares the uterus for its part of the process of 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, more effectually, by carrying one pole, protected where it touches the vagina, to the cervix 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, when worn steadily and persistently.

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 fiftieth 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.

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 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 dependent portion of the pelvic cavity, constituting pelvic hematocele.

Symptoms.—The occurrence of apoplexy is often ascertained only

[1] Op. cit., p. 232.

[2] Kiwisch, op. cit., p. 232.

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 hematocele.

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, etc., 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, etc., 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

[1] Recherches sur la Hernie de l'Ovaire.

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 theoretical essay 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[1] even goes so far as to say that, "it would be difficult to point to a

[1] Op. cit.

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 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 periuterine 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 periuterine inflammation, discharge themselves into the peritoneum or into the organs in the neighborhood of which they are placed, rectum, bladder, vagina, etc., sometimes even by the surface, belong more particularly to the ovary or tube."

Since the writings of Aran, no one has done more to put in a strong and proper light, the intimate relations existing between inflammation of the ovaries, suppuration, and pelvic peritonitis and cellulitis, than Dr. Matthews Duncan. He regards these periuterine 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 periuterine inflammation as more frequently primary than he considers it, and as commonly

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[1] Op. cit., p. 473.

[2] Bul. N. Y. Acad. Med. vol. i, p. 549.

resulting in acute or chronic ovaritis and abscess, I admit that the sequence of events is often that which he states.

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 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, tube, and uterus, was about the size of a hen's egg. In its removal it was broken, and several ounces of pure pus escaped. No evidences of cellulitis could be discovered upon careful dissection. Other organs healthy."

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, the organ double, triple, or quadruple its 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;
Periuterine 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 dis-

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cover 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 in subacute or chronic ovaritis these physical signs are 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 or rectum. The patient should be kept perfectly quiet, and not allowed to rise from her bed even for relief to the calls of nature. Especial care in this regard should be observed 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.

Chronic inflammation of the ovaries is an affection of common occurrence, though very little has been ascertained as to the exact 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 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.

As a primary affection which creates secondary uterine disorder and results in dysmenorrhœa, sterility, and hysteria, it is by no means rare. Many cases supposed to be obscure and unmanageable ones of uterine disorder, many in which the physician is sorely puzzled in accounting for the wonderful disproportion between the existing symptoms and the degree of uterine disorder discoverable, are due to this affection. Instances will not rarely be met with in which

with slight uterine displacement, and a catarrh of no great moment, a patient will be entirely unable to stand or walk except for very short periods of time, will for years prove sterile, and will suffer from agonizing dysmenorrhœa from this cause. The revival of uterine pathology has drawn off attention too completely from the ovaries. The coming decennium will, I feel convinced, prove that in many cases disease of these most important organs in the female economy is the source of many ills now attributed to that less important viscus the uterus. It is in the study of ovarian, not uterine, pathology, that the next great advances in gynecology are to be made.

Symptoms.—The symptoms of chronic ovaritis are numerous and often perplexing; no two cases of the affection presenting the same features. In some they are physical entirely, while in others the mind and nervous system are decidedly involved. In two cases in my experience true epilepsy has existed, whether as a consequence or not I cannot say, but certainly as a very suspicious complication.

The rational signs may be enumerated as—

Dysmenorrhœa;
Fixed pain over one or both ovaries;
Tendency to hysteria;
Rarely inability to stand or walk;
Sometimes pain on sexual intercourse;
Pain and exhaustion after defecation;
Pain in rectum and down thighs;
Irregular menstruation;
Frequently leucorrhœa;
Sterility if both ovaries are diseased.

Dysmenorrhœa often precedes menstruation by several days. At other times it occurs just after the cessation of the menstrual discharge; while in a few cases it occurs in the interval between the menstrual periods. The last constitutes the intermediate dysmenorrhœa of Dr. Priestly, and is a most interesting symptom. At times it occurs with great regularity. In one case which occurred in my practice it showed itself invariably on the ninth day, and in another on the fourteenth. Ovarian dysmenorrhœa produces great nervous disturbance, which renders the patient peculiarly prone to seek relief in the use of opium.

Within the past two years I have met with three cases of this

disease in which the patients have been unable to stand or walk, except for a few minutes. Two of them are now under my care, and are almost bedridden.

If the ovary be prolapsed, sexual intercourse often proves a source of pain, but not otherwise.

The menstrual discharge is sometimes very irregular, remaining absent for months, and then showing itself as an alarming hemorrhage. In many cases it is quite regular both as to time of occurrence and amount.

The continued uterine irritation kept up by chronic ovaritis often engenders uterine catarrh, which proves, in consequence of its cause, very intractable to treatment.

That in many cases the patients become pregnant cannot be questioned, but, as a rule, where both ovaries are diseased sterility exists. It is highly probable that the diseased organs produce diseased or imperfect ova.

Physical Signs.—The patient being examined by touch and conjoined manipulation the uterus will, for some reason which I cannot appreciate, be usually found to deviate from its normal axis, laterally, anteriorly, or posteriorly, and from the cervical canal a thick mucous plug will often be found to hang. In Douglas's cul-de-sac, or on one or on each side of the uterus, a round, soft, tender body, about as large as a walnut, will be found. This, when caught between the fingers, in conjoined manipulation, will prove very sensitive to pressure, which will often produce nausea and tendency to hysteria; and even after it has been desisted from, a dull aching pain will generally remain.

Prognosis.—I know of few curable disorders which I dread so much to meet as this. The day will probably come when our treatment for it will be satisfactory and efficient, but it has not yet done so by any means. Many cases will entirely baffle treatment, while all will prove little amenable to it. That they in time recover is true, but recoveries have, in my experience, but little connection with treatment.

Treatment.—I have nothing better to offer than the following course, the meagreness of which I regret. If the ovaries be found prolapsed they should be carefully sustained by a light elastic ring pessary, and if the displaced uterus press upon them it should be kept in position. Sexual intercourse should be limited as far as possible. If scanty menstruation exist as a symptom, one or two leeches should be applied every month to the cervix uteri.

Rest should be prescribed during menstrual epochs, when the diseased glands are 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 organs 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 elsewhere explained. For the various nervous 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.

CHAPTER XLIV.

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 subject 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 an 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, and none which will prove so useful in clinical investigation.

For the purpose of facilitating the clinical study of ovarian tumors, it is probably best to consider them under two heads: first, those which are solid and free from cystic development; second, those which are characterized by such development.

The following table presents at a glance these genera and those of their species which are met with at the bedside, not as pathological curiosities, but as diseased conditions requiring surgical interference. Certain forms which are rarely met with, even by the most industrious morbid anatomists, will receive casual mention, but I cannot believe that good arises from blending these in description with others which are constantly presenting themselves to the attention of the practitioner.

- Ovarian tumors
  - Solid tumors
    - Carcinoma;
    - Fibroma.
  - Cystic tumors
    - Cysto-carcinoma;
    - Cysto-fibroma or sarcoma;
    - Dermoid cysts;
    - [1]Ovarian cysts and cystomata.
- Pelvic cysts closely resembling ovarian
  - Cysts of broad ligaments;
  - Parasitic cysts;
  - Hydro-salpinx;
  - Uterine cysts and fibro-cysts;
  - Encysted peritoneal dropsy;
  - Subperitoneal cysts;
  - Cysts connected with the spinal cord.

Under the head of solid tumors, enchondroma and osteoma have been reported, but the authenticity of the few cases noted is very doubtful. Under that of cystic tumors might be mentioned hydrops folliculorum, which sometimes creates a sac as large as a child's head, and Rindfleisch describes a rare form of cysto-colloid degeneration of both ovaries growing larger than a man's fist, to which

[1] A cyst is a collection of fluid developed within a pre-existing sac; a cystoma one which creates its own sac.

he applies the name of struma ovarii. These affections, of great interest to the pathologist, I have not thought it best to classify with the more frequent forms of ovarian disease which commonly call, not for diagnosis merely, but for surgical interference, for fear of uselessly complicating the already difficult subject of diagnosis.

Carcinoma.—The ovary may be affected by several varieties of cancerous deposit, which are here placed before the reader:

1. It 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. Distention 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 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, however, operative procedure may accomplish good by prolongation of life.

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.

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 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, 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 peri-

toneum 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 benign growths. Cystic ovarian tumors may unquestionably produce excessive ascites and all of the other rational signs which I have here recorded as evidences of cancer.

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. Periuterine 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 cysto-fibroma. 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 cystomatous growths fibroid tissue is commonly developed.

Virchow believes that of the well authenticated cases of true ovarian fibroma, the size has varied between that of a hen's egg and that of a child's head. Larger ones he regards as cases of cysto-fibroma. Fœrster reports, however, one case as large as a man's head; and Scanzoni and Van Buren similar ones. Dr. Peaslee[1] records a case of this size removed by me in 1864, but I cannot agree in his classification. It was, according to my view, a true cysto-fibroma. The following was the report of it published soon after its removal: "The tumor, when placed upon a table and

[1] Op. cit., p. 26.

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 numerus 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."

If in one of the solid tumors just mentioned, cysts develop themselves as essential parts of the growths, we give them the names of cysto-fibroma, cysto-sarcoma, or cysto-carcinoma.

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 scirrhous 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 a 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,	1823
"	ovarian tumors among them,	97
"	cases submitted to autopsy,	41
"	fluid tumors,	25
"	colloid tumors,	9
"	cysto-sarcomata,	5
"	cystic cancers,	2

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.

Cysto-fibroma or Cysto-sarcoma.—Between sarcoma and fibroma of the uterus a very broad distinction is now made by pathologists and clinicists, but at present these two terms are in reference to the ovaries used synonymously. That they have really been so for a long time in works upon gynecology, is evident from an examination with reference to the subject. Thus Scanzoni defines fibrous tumors of the ovaries to be "tumors formed of cellular tissue," and cysto-sarcomata as "tumors composed of cellular tissue in the middle of which are formed more or less considerable cavities." Peaslee refers to cysto-fibroma, and makes no mention of cysto-sarcoma, while Barnes and G. Braun treat of cysto-sarcoma without alluding to cysto-fibroma. It must be remembered that, even in reference to these affections in general, Rindfleisch[1] says, "I cannot separate the fibromas from the sarcomas; . . . . we distinguish three principal varieties of sarcoma, namely: round-celled sarcoma, spindle-celled sarcoma, and fibroma." "By cysto-sarcomata," says Lücke,[2] "those large tumors are especially meant which consist of solid masses, papillary 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.

These 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,

[1] Patholog. Histol., Am. ed., pp. 132 and 142. [2] Loc. cit.

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.

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 ovariotomy. 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.

Dermoid Cysts.—In various parts of the body, the orbit, the floor of the mouth, the brain, the eye, the anterior mediastinum, the

lungs, the mesentery, the testicles, and the ovaries, a peculiar cyst containing fat, teeth, hair, cholesterine, cartilage, and bone is sometimes found. Its wall gives evidences of the existence of sweat glands, sebaceous follicles, papillæ, and an investing epithelium, so that the microscopic appearances of the wall resemble closely those of the skin. Many fanciful theories have been indulged in as to the origin of these peculiar growths. It is now generally believed that they are the result of an irregular and eccentric development of the tissues of the fœtus during intra-uterine life. It was Lebert who 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 those products spring."

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.

Dermoid 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.

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

[1] Kiwisch, op. cit.

[2] Becquerel, op. cit.

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."

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 dermoid elements secreting fluid and changing its character to that of a fluid tumor. Out of forty-five ovarian tumors removed by me, two were large cysts having as bases dermoid tumors containing fat and hair, and in one case a small fragment of bone. In these cases the cysts containing the dermoid elements were not in communication with the large cysts filled with fluid colloid which constituted the mass of the tumor. In both cases the tumor was nearly removed when a cyst filled with fluid, fat, etc., was opened into. The large cysts appeared exactly like ordinary multilocular cystoma.

Very often they are discovered by accident only. Physical exploration reveals a hard, round mass, painless upon touch, and unless the size prevent it, perfectly movable. When of small size they require no special treatment, unless, as once happened to Dr. Ramsbotham, they obstruct parturition. When the cyst-wall undergoes suppurative action and the mass points, it should be managed upon the same principles as a pelvic abscess. When a large cyst or cysts develop, they should be treated as the ordinary cystoma ovarii.

We have now reached the proper point for the consideration of the subject of ovarian cysts and cystomata, which calls, on account of its paramount importance, for the closest investigation on the part of the gynecologist. That it may receive this I leave its study for a separate chapter. Meantime, before leaving this part of our subject, it appears best to me to say a few words upon colloid degeneration of the ovary, an affection which at present holds in the minds of many a doubtful position as to malignancy. For a long time the generally accepted opinion with reference to colloid (κολλά, "glue," and εἶδος, "like") or jelly-like tumors was, that they were of cancer-

ous 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 necessarily 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 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] strongly expresses himself upon this point. 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. His description of the so-called 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 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 over-distention; 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.

[1] Op. cit., p. 205. [2] Op. cit., p. 226. [3] Cellular Pathol., p. 512.

It is safe to conclude, from the present aspect of the subject, that, while colloid deposit may coexist in the ovary with true 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. It 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."

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 practised; but in a pure alveolar tumor, such an accumulation is not common. 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 XLV.

OVARIAN CYSTS AND CYSTOMATA.

This disease consists in the development of cysts within the ovary without coincident growth of solid elements, such as fibroma or carcinoma. Of all the varieties of ovarian tumor it is the most commonly met with, and hence for the practitioner it is the most important. It is fortunately, too, that which above all others is most susceptible of relief by surgery.

Pathologists are still at variance with reference to the origin of ovarian cysts. While some with Wilson Fox[1] agree, that "all the forms of cysts met with in the ovary originated from the Graafian follicles, and that the multilocular forms are not the results of any special degeneration of the stroma;" others, like Wedl, doubt their follicular origin entirely; and others still, with Rindfleisch, admit two different sources of cystic formation—one, the follicles, the other, the interstices of the stroma.

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[1] Med. Chirurg. Trans., 1864.

"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."

Lücke,[3] 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 theory certainly is not admissible. These tumors are essentially cysts from broken-down tissue."

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 become filled with a colloid material, due to abnormal secretion from their walls, and, according to Rokitansky and Rindfleisch,[4] probably the result of inflammatory disease of the wall of the follicle. This is not the insignificant hydrops folliculorum which creates small cysts, but a true colloid degeneration of the follicle of much more serious import.

2d. A development of cysts may occur in the stroma of the ovary without connection with the follicles. In this 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." In this view Waldeyer coincides in his excellent treatise upon ovarian tumors.[5]

Lücke makes Rokitansky's view as to the mode of formation of these cysts in the stroma so clear that I use his words instead of quoting the original: "Cysts may also be generated by exudation into new formed connective tissue—the fluid distending the

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[1] Op. cit., p. 249.

[2] Wedl's Path. Histol., p. 462.

[3] Chapter on Tumors in Billroth and Pitha's Manual of General and Special Surgery.

[4] Op. cit., p. 515.

[5] Waldeyer, Eierstock und Ei., Leipzig, 1870.

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." Rindfleisch[1] accepts both of these sources of ovarian cystoma in the following words: "An exact investigation also proves that at least the majority of all ovarian cysts proceeds from Graafian follicles; while, upon the other hand, until further information, a different mode of origin must be accepted for a group of cysts, although not so large, yet, at the least, just as important."

The development of a substance resembling the glandular element of the ovaries, and constituting the nidus of cysts, has recently attracted considerable attention. In 1862, Mr. Spencer Wells proposed for this the name of "adenoma" or "adenoid tumor." Further investigations appear to have satisfied pathologists that a degree of adenoid development occurs in every true ovarian cystoma. Mr. Wells himself, in his recent work on Diseases of the Ovaries, considers under the head of adenoid tumors all simple, multiple, and proliferous cysts; and Delafield[2] declares, that "in the ovaries most of the compound cysts are adenomata, with dilatation of the follicles." Klebs strongly advocates this view. As adenoma is then a frequent element of ovarian cystomata, it requires no separate and special consideration.

Until a recent period considerable attention has been paid to the character of ovarian cysts, based upon the existence of a few and of many cysts. Pathologists are beginning to lay less stress upon this feature than they formerly did. Rindfleisch declares that all are multilocular in the beginning, and that they become paucilocular, and, even in rare cases, unilocular, by fusion of adjacent cysts by breaking down of dividing septa. It must be admitted, however, that there is one class of tumors, the distinguishing characteristic of which is the existence of a few cysts only, one or two of which are usually very large, and another which is specially marked by numerous small cysts. The first constitutes the olygocystic tumor of Peaslee; the latter the polycystic tumor; or, as they are likewise styled, paucilocular and multilocular cysts.

Each class has usually certain well marked features, the recognition of which is of value in a practical point of view. The first is thus described by Rindfleisch: "Multilocular tumors up to the

[1] Op. cit., p. 515. [2] Post-mortem Examinations and Morbid Anatomy.

size of a man's head, or unilocular cysts up to two feet in diameter, with smooth, but little adhering surface, and comparatively thick, fibrinous walls, which are very commonly covered at their inner side with cauliflower-like or more tuberous papillary excrescences." This is the form of tumor which he regards as due to colloid degeneration of the Graafian follicles.

The second variety he describes in these words: "At the place of one ovary (the other, as a rule, is healthy, while in the first form the disease is often of both sides) there lies a tumor, not infrequently far above the size of a man's head, which is composed of several large, and very many smaller, and even the smallest cysts. The larger cysts are often constricted, and exhibit, at these places, the remains of former partition walls in the form of fenestrated membranes, or ramified vascular strands, which evidently succumb to a gradual maceration. The surface of the tumor is probably always connected with the peritoneum by a large number of inflammatory adhesions, upon which larger venous vessels run to and fro. The walls of the cyst are comparatively thin, and easily torn." These tumors he regards as due to colloid degeneration of the stroma.

While the statement of Rindfleisch that no "fundamental significance" can be attributed to the unilocular or multilocular character of these tumors is correct from an anatomical point of view, it is not the less so that the practitioner is greatly aided in prognosis and treatment by a recognition of the difference between the two forms of tumors just described; and also of that which exists between them and another, which being composed of both cystic and solid elements, receives the name of compound. We, therefore, proceed to consider the varieties of these growths in reference to the points mentioned, and to recapitulate succinctly what has been already said.

Ovarian cysts are characterized by three marked features: first, cysts with one or very few large compartments; second, those with a great many small compartments divided by thin cyst walls or thick trabeculæ; and third, those which are composed of solid and fluid elements in varying proportion. The first constitute the class styled the monocystic, unilocular, paucilocular, or olygocystic tumor; the second that known as the multilocular or polycystic tumor; and the third that which is commonly styled the compound ovarian tumor. "All cystoids are multilocular at the commencement," says Rindfleisch, but unilocularization he declares is especially frequent in those tumors arising from colloid degeneration of the Graafian vesicles. A true monocyst is rare, though it may grow

to the size of the uterus in the ninth month of pregnancy. Kiwisch[1] has met with one whose contents weighed over forty pounds. In the compound tumor, cysts having formed in the solid tissue, the presence of solid and fluid elements is detected by examination. These cysts result chiefly from softening of tissue, or as it is expressed by liquefaction. "As soon," says Billroth, "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 cyst from liquefaction becomes a secretion or exudation cyst and thus grows."

The walls of ovarian cysts consist of a covering of peritoneum, the proper tunic (tunica albuginea) of the ovary, and an epithelial layer. The peritoneum sometimes undergoes great hypertrophy; in rare cases being half an inch thick.

The size to which these cysts will grow is truly wonderful. It has been already stated that unilocular or monocystic tumors are rarely seen of very great size, but instances are on record of multilocular 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

Contents of Ovarian Cysts.—This subject has been exhaustively investigated by Scherer and Eischwald.[2] By the latter it has been so minutely dealt with that little is left to be desired as to the chemistry of such fluids.

These contents vary very much, between a clear, albuminous, serous fluid and a thick gelatinous material which will flow through no canula, and has to be manually removed. The specific gravity may be as low as 1007, though usually it is 1018 or 1020. The most important chemical constituent is an albuminate termed col-

[1] Op. cit., p. 102. [2] Würzburger Medizinische Zeitschrift, 1864.

loid, which is usually more dense in polycystic than olygocystic tumors, and denser in small olygocysts than in the same after having assumed a large size. Tapping appears to increase the density of this fluid in olygocysts.

According to Eischwald, two chemical transformations go on in the fluids of cysts simultaneously. Colloid material changes into muco-peptone, while the albuminates transuding from the blood are converted into albumino-peptone. A species of digestion of the raw material goes on under the heat of the body, as Rindfleisch expresses it, and consequently the larger and older the tumor the more fluid are the contents likely to be. Eischwald found these fluids chemically to consist of the following elements:

Of the mucous order—

Substance of colloid particles;
Mucin;
Colloid substance;
Muco-peptone.

Of the albuminous order—

Albumen (and fibrin);
Paralbumen;
Metalbumen;
Albumeno-peptone (and fibro-peptone).

As an example of the quantitative analysis, the following from one of Eischwald's cases will serve. 1000 parts contained—

Water	931.96
Organic substances	59.77
Débris	8.27
	1000.00

The débris (8.27) contained—

Salts soluble in water		7.53
Potas. sulph.	0.08	
" chlor.	0.59	
Sodæ nat.	6.29	
" phosph.	0.16	
" carb.	0.38	
Loss	0.03	
Salts insoluble in water		0.74
		8.27

Test for Paralbumen.—Leave the fluid at rest in a cool place, filter or decant, and thus separate sediment from supernatant fluid. Pass a stream of carbonic acid gas through this fluid, and instantly a precipitate of fine flocculi of paralbumen will occur.

Test for Metalbumen.—Digest another part of this fluid with absolute alcohol for three days. Filter off the precipitate, and heat with distilled water. Filter again and metalbumen may be precipitated by sulphate of magnesia. Paralbumen is precipitated from this fluid by a few drops of dilute acetic acid and redissolved by an excess.

To the naked eye the fluids of ovarian cysts present various appearances, as they are tinged with blood or pus from hemorrhage or suppuration of the cyst walls. The varieties generally met with are the following: a light colored fluid like barley-water; a light brown fluid like infusion of linseed; a dark red bloody looking fluid; a greenish-yellow colored, semisolid gelatine; a purulent fluid of very offensive character closely resembling pea-soup in appearance; very rarely an intensely black fluid; and in dermoid cysts a grumous gruel-like mass.

Does a true ovarian cyst large enough to call for surgical interference, that is to say, larger than the size of a child's head to which hydrops folliculorum sometimes attains, ever contain fluid free from albumen? This is evidently a question of a great deal of importance. Wells[1] and Barnes make three groups of ovarian fluid, the first of which they declare are devoid of fat and albumen. "Heat and nitric acid," says the former, "will neither coagulate nor precipitate them." W. L. Atlee relies upon absence of albumen as a sign that a cyst is not ovarian, and the following interesting case reported by J. L. Atlee[2] will show the estimation in which this point is held by him.

"I operated upon Mrs. M., aged over fifty years, in October, 1870. She had labored under abdominal enlargement from the presence of a fluid for several years, and had been tapped about twenty-seven times, filling rapidly after each operation. After the last two or three tappings a small tumor remained in the right iliac and pelvic regions; but at no time could albumen be detected in the fluid by the ordinary tests of heat and nitric acid; hence I diagnosed the case to be one of serous cyst attached to the broad ligament. The presence of the tumor, as large as a turkey's egg, in the right iliac region, an unusual thing in serous cysts, cast a doubt as to its true character; but the inability to detect albumen by the above tests decided me against the operation, and the patient was sent home. Under these circumstances, a portion of the fluid obtained from the last tapping was sent to Dr. Drysdale, who gave a very decided opinion that the fluid was from an ovarian cyst. Upon

[1] Dis. of Ovaries, Am. ed., p. 92.

[2] Essay by Dr. Drysdale, Trans. Amer. Med. Asso.

the strength of this opinion I told the friends of the patient that I would operate if she filled again.

"Accordingly, on the 14th of October, 1870, I removed a cyst weighing, with the contained fluid, fifteen pounds, and of an unusual character. The upper half of the cyst was very thin and of a serous nature. Below the umbilicus the cyst was much thicker, and, descending to the pelvis, proved to be the right ovarium, having one large cyst filling the abdomen above, with an aggregation of very small cysts constituting the iliac and pelvic tumor.

"The peculiarity of this case consisted in the rupture, probably at an early period of the disease, and before I saw her, of the tunica propria, or albugineous coat of the ovary, leaving the peritoneal covering intact, and of sufficient strength to retain, not only the small portion of the ovarian secretion, but of the serum secreted by the peritoneal coat. This also accounted, in some measure, for the very rapid filling after each tapping."

The correctness of the explanation given by Dr. Atlee is open to doubt, but his reliance upon presence of albumen as a sign of ovarian cyst is fully shown. Peaslee[1] expresses himself in these words "the fluid of an ovarian cystoma will probably always be found to contain albumen if it be limpid enough to flow through the fine tube of the exploring trocar." I can safely say that I have never met with a true ovarian fluid which did not contain albumen.

The solid elements of the fluid of ovarian cysts consist of the results of hemorrhage, and desquamation and fatty degeneration of epithelial structures. In them are found cholesterine, fat globules, blood corpuscles, and pigment cells.

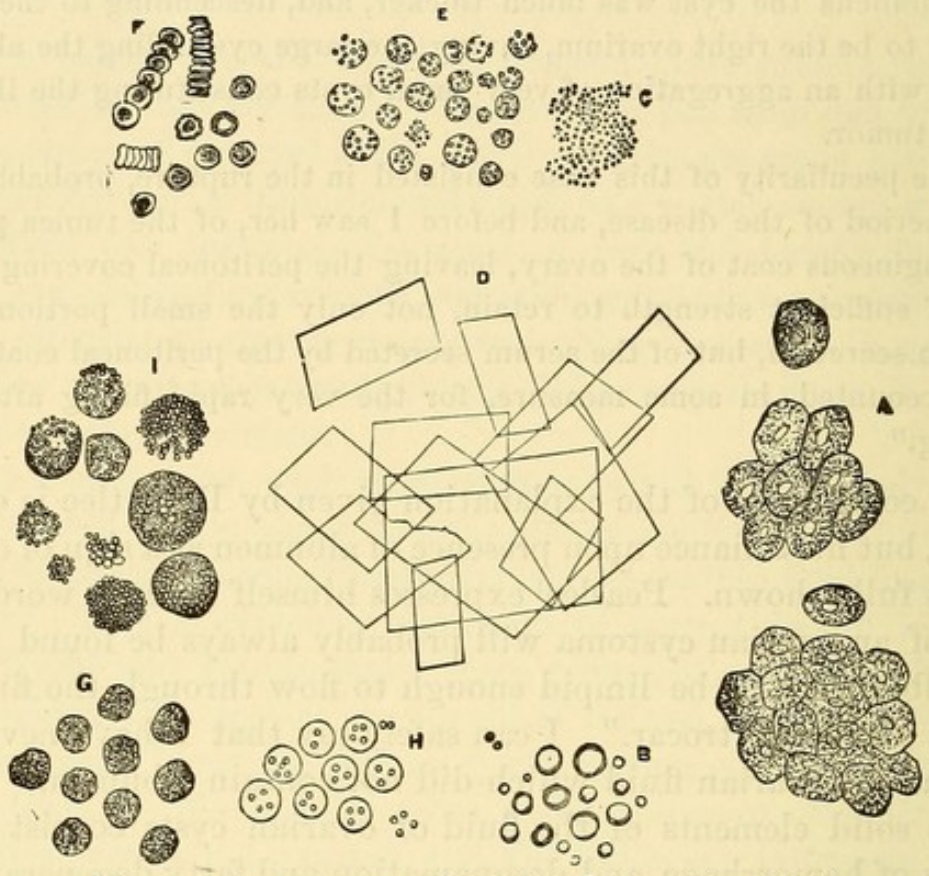
Microscopical Appearances of Ovarian Fluids.—The thinner, serous fluids present in comparison with those of colloid character few cellular elements. In the latter, under a power of from 300 to 550 Eischwald[2] found such an amount of morphological elements that the fluid had to be diluted with water before it could be examined. He then found fatty elements of various size; round cells, some serrated; large colloid cells; round cells similar to the pyoid bodies of Lebert, or the exudative corpuscles of Henle; globular aggregations varying in size; scales of horny epithelium; crystals of cholesterine; dark brown pigment; etc.

"On placing a drop of the fluid removed from an ovarian cyst under the microscope," says Drysdale,[3] "we usually find a number of granular cells, E, some free granular matter, C, and small oil globules, B; and frequently, in addition to these, epithelial cells of various forms, A, and

[1] Op. cit., p. 116. [2] Op. cit. [3] Op. cit.

crystals of cholesterine, D. These, together with blood-corpuscles, F, the inflammatory globules of Gluge, I, the pus cell, G H, and disintegrated blood and other cells, may all be sometimes seen floating in either a clear or a turbid fluid."

Fig. 175.



Microscopic appearance of ovarian fluid. (Drysdale.)

For the microscopist and pathologist all these are of interest. For the ovariotomist this is the chief point of importance: is there any characteristic, pathognomonic cell, or element upon the presence of which a positive diagnosis of ovarian cyst may be based? When this question can be unreservedly answered in the affirmative a great advance will have been made in this important matter. Spiegelberg, in an interesting lecture upon the diagnosis of ovarian tumors, enumerates cylindrical epithelium, colloid cells, cholesterine, etc., and appears to rely upon the character of cells furnished by the part from which the material was secreted rather than upon any particular cell.

Long ago, Nunn pointed out the existence of the "gorged granule" though not as a diagnostic point, and Paget, Bennett, Gluge, and others speak of the "granular corpuscle," the "compound granular cell," and the "inflammation globules." In an essay, already referred to, Dr. T. M. Drysdale, of Philadelphia, has recently described a cell which he calls "the ovarian granular cell," which,

when found in pelvic tumors, he regards as pathognomonic of ovarian disease, and, as such, he looks upon its diagnostic value as very great. This matter is of so great importance, that I prefer to describe this cell in Dr. Drysdale's words. In referring to the cells shown in Fig. 175 he says:

"To find them all present in one specimen, however, is rare; more commonly we can discover but three or four of them in the fluid. *But no matter what other cells may be present or absent, the cell which is almost invariably found in these fluids is the granular cell.*

"This granular cell, E, in ovarian fluid, is generally round, but sometimes a little oval in form, is very delicate, transparent, and contains a number of fine granules, but no nucleus. The granules have a clear, well-defined outline. These cells differ greatly in size, but the structure is always the same. They may be seen as small as the one five-thousandth of an inch in diameter, and from this to the one two-thousandth of an inch. In some instances I have found them much larger, but the size most commonly met with is about that of a pus cell.

"The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added the granules become nearly transparent, but the appearance of the cell is not changed.

"This granular cell may be distinguished from the pus cell, lymph corpuscle, white blood cell, and other cells which resemble them, both by the appearance of the cell and by its behavior with acetic acid.

"The pus and other cells, G, which have just been named, have often a distinctly granular appearance; but the granules are not so clearly defined as in the granular cell found in ovarian disease, owing to the partial opacity of these cells; and when the granular cell of ovarian disease and the pus cell are placed together under the microscope, this difference is very apparent. In addition to the opacity of these cells, we frequently find their cell wall appearing wrinkled rather than granular; and further, in the fresh state, they are often seen to contain a body resembling a nucleus.

"But, if there is doubt as to the nature of the cell, the addition of acetic acid dispels it; for, if it is a pus cell, or any of the cells named above, it will, on adding this acid, be seen to increase in size, become very transparent, and nuclei, varying in number from one to four, will become visible. (See G, pus cell before adding acid; and H, pus cell after adding acid.) Should the cell, however, be an ovarian granular cell, the addition of this acid will merely increase its transparency and show the granules more distinctly.

"The compound granular cell, I, the granule cell of Paget and others, or inflammation corpuscle of Gluge, is also occasionally present in these fluids, and might possibly be mistaken for the ovarian granular cell; but

it is not difficult to distinguish them from each other. Gluge's cell is usually much larger and more opaque than the ovarian cell, and has the appearance of an aggregation of minute oil globules, sometimes inclosed in a cell wall, and at others deficient in this respect. The granules are coarser, and vary in size, while the granules of the ovarian cell are more uniform and very small. By comparing them in the drawing these differences will be apparent. Again, the behavior of these cells on the addition of ether will at once decide the question; for, while the ovarian cell remains nearly unaffected by it, or, at most, has its granules made paler, the cell of Gluge loses its granular appearance, and sometimes entirely disappears through the solution of its contents by the ether.

"That the discovery of a granular cell in ovarian fluid is new, I do not assert, as J. Hughes Bennett and other writers have described granular cells which they have seen in these fluids; but, with one exception, their description does not correspond with the *ovarian granular cell.* Bennett,[1] for instance, states that the granular cell which he saw exhibited a distinct nucleus on the addition of acetic acid, which is not the case with this. Other writers have described the cells which they found as pus and pyoid cells; and yet others confound them with the compound granular cell, or inflammation globules. The exception referred to above is found in Beale's description of the microscopic appearance of ovarian fluid."[2]

The description given by Beale he declares to correspond closely to that of his "ovarian granular cell, but it is incomplete, and no test is given by which to distinguish it from other granular cells." Dr. Drysdale therefore claims to have been the first to describe a cell which has never been accurately described before, and to have given the tests by which it may be distinguished from others such as the pus cell, the white blood corpuscle and the compound granule cell which closely resembles it. He sums up in these words:

"I claim then, that a granular cell has been discovered by me in ovarian fluid, which differs in its behavior with acetic acid and ether from any other known granular cell found in the abdominal cavity, and which, by means of these reagents, can be readily recognized as the cell which has been described; and further, that by the use of the microscope, assisted by these tests, we may distinguish the fluid removed from ovarian cysts from all other abdominal dropsical fluids."[3]

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[1] Ed. Med. and Surg. Journ., vol. lxv. p. 280, 1846.

[2] The Microscope in its Application to Practical Medicine. By Lionel S. Beale, M.B., F.R.S., etc. 3d edit., p. 179.

[3] The views of Dr. Drysdale are not yet verified. The matter is at present *sub judice.*

Causes.—Very little is positively known upon this subject. The predisposing causes which are generally admitted are the following.

Age;
Childbearing;
Chlorosis;
Scrofulous diathesis;
Menstrual disorders.

It should be borne in mind that even as to some of these there is doubt and variance of opinion among gynecologists.

The great predisposing cause is age, the affection commonly showing itself 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. A case has recently been recorded in which ovariotomy was successfully performed upon a child of six years of age.[1]

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. In the great majority of cases these tumors develop in women who have led rational and quiet lives, in whom no prejudicial influence can be discovered as having existed, and who have detected the growth of the tumor when imagining themselves in very fair health.

Certainly nothing can with safety be assumed beyond this, that

[1] Med. Press and Circular, March 26, 1873.

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. Kiwisch, Rokitansky, and Rindfleisch all agree in thinking it probable that inflammation affecting the wall of the vesicle has an influence on the production of the disease.

Natural History of Ovarian Cysts.—Ovarian cysts develop 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 Hewitt, "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 to a rule 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. The olygocystic tumor grows much more slowly than the polycystic, and this is the more marked as it approaches the monocystic type. I removed one which had been under my own observation for nine years, and only at the end of this time did its existence affect the constitution.

If its type be multilocular, the tumor advances 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. The average duration of the cases of both types 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.

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, and 94 within five years. At the same time that the fact 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, it must not be accepted as certain that these were cases of true ovarian cystoma. Experience in this affection leads to the suspicion that these were instances of dermoid cysts, or of some variety of abdominal tumor which, while it closely simulates ovarian cystoma, runs a much more benign course.

Spontaneous Cures of Ovarian Cysts.—Sometimes nature effects a cure in one of 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 such 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.

With reference to nature's power alone, or aided by absorbents, to remove the accumulated fluid, Kiwisch 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." It is the opinion of many that absorption of the contents of these cysts does occur, and numerous instances are cited in proof; but, in these cases, the doubt arises whether a true cystoma ovarii existed, or one of the periuterine cysts which so closely resemble it.

Diseased Conditions affecting Ovarian Cysts.—I have already alluded to suppurative inflammation of the cyst walls, which may occur in consequence of tapping, or without operative interference. The pulse and temperature become elevated, the patient restless and

depressed, profuse perspirations occur, diarrhœa sets in, and, unless relieved, the patient dies with hectic symptoms. In a number of instances ovariotomy has been successfully performed under these circumstances. One such case is recorded by Keith, the suppurative action occurring seven days after tapping; three by Wells; one by Peaslee; and one by Teale.[1] I have operated upon one case in which ovariotomy was undertaken only as a last resort. The contents of the cyst were excessively fetid, and the patient very ill at the time of operation. A favorable termination, however, occurred. In another case, in which I practised drainage by the vagina, suppurative inflammation occurred, and eventuated in gangrene of the cyst wall and death.

Twisting of the pedicle is another accident which sometimes takes place. Gallez[2] in referring to this says, "this very curious and happy termination of ovarian cysts is unfortunately very rare, and likewise very difficult of artificial accomplishment; its effect is to produce strangulation of the tumor." Where the interference thus established in the vascular supply of the tumor goes just far enough to produce gradual atrophy, cure may be effected, and post-mortem evidence of such an occasional occurrence exists. Ordinarily strangulation and death of the tumor occur, which destroy life unless ovariotomy should intervene. In 1865, Rokitansky published an essay upon this subject, and since that time it has attracted considerable attention. He cited the details of thirteen cases, and Spencer Wells mentions two deaths thus caused before operation, and twelve cases discovered by him upon performance of ovariotomy. Klob reports an instance in which a tumor turned upon its pedicle five times; and in a case of fatal hemorrhage into the cyst Patruban found in autopsy torsion of the pedicle creating venous stenosis and rupture.[3] Crane[4] and Tait[5] record cases in which small cysts were thus rendered gangrenous, in consequence of which the patients died by septicæmia.

Sometimes an ovarian cyst increases very suddenly in dimensions, great pain from distention occurs, and symptoms of loss of blood develop themselves. This is due to hemorrhage from the cyst wall. In two cases in my experience it has occurred; in one ovariotomy demonstrated the source of the difficulty; and in the other aspira-

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[1] London Lancet, Am. reprint, Sept. 1873.

[2] L. Gallez, Histoire des Kystes de l'Ovaire, Bruxelles, 1873, p. 150.

[3] London Lancet, Am. reprint, Sept. 1873.

[4] Amer. Med. Monthly, April, 1861.

[5] Edin. Med. Journ., 1861.

tion, adopted on account of the severe suffering from distention, did so. Parry[1] records a case which almost proved fatal from this cause, and Patruban[2] one which did so. In the latter case torsion of the pedicle seemed to have produced the rupture of vessels. Wonder at such an occurrence will cease when it is remembered that veins[3] as large as the little finger have been found between the outer and middle layer of cysts.

Conditions likely to complicate Ovarian Cysts.—They may be complicated by pregnancy; ascites; fecal impaction; Bright's disease; pleuritic effusion; peritonitis with adhesions; a low type of gastritis marked by intensely red tongue, constant vomiting, and tenderness of the stomach; a low grade of septicæmia; diarrhœa; inguinal, umbilical, and crural hernia, etc.

Methods in which Death is produced.—There are several modes in which ovarian dropsy produces its usual fatal results when uninterfered with by surgical means.

1st. A cyst may rupture and produce peritonitis, either before or after suppurative inflammation of its walls.

2d. Inflammation of the cyst wall may result in the filling of the cyst with pus, which produces hectic and in time exhaustion and death.

3d. Fatal hemorrhage may occur into the cyst.

4th. Prolonged interference with the functions of nutrition and respiration may sap the powers of life.

5th. Death of the cyst may occur from twisting or rupture of the pedicle and cause septicæmia.

6th. A low grade of gastritis, pleuritis,[4] or enteritis may produce exhaustion.

7th. Finally, from the combined depreciating influences of this condition, gradual or sudden prostration of strength may close the scene by death.

We now approach the important subject of symptomatology of ovarian cysts and their differentiation from other morbid conditions met with in the abdomen. As the study of that subject will frequently involve allusion to pelvic cysts closely resembling ovarian but yet entirely distinct from the ovaries, I deem it best to take a rapid survey of them here.

Cysts of the Broad Ligaments.—Cysts of considerable size sometimes form between the layers of peritoneum making up the

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[1] Am. Journ. Obstet., Nov. 1871.

[2] Gallez, op. cit., p. 150.

[3] T. S. Lee.

[4] I have seen two cases in which hydrothorax proved a great source of prostration.

envelopes of the broad ligaments. They are supposed to arise from the collection of fluid in the meshes of areolar tissue of the ligaments, or from the parovaria or bodies of Rosenmüller. Within the external margin of the broad ligament, where the two walls of the peritoneum pass from the fimbriæ of the tube to the ovary, 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 may attain a large size, though they do not generally do so.

One of the most interesting cases of cyst of the broad ligament which I have seen in practice was in a lady from Mobile, upon whom ovariotomy was succesfully performed by the late 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[1] was found to occupy the left broad ligament, the peritoneal walls of which were immensely distended over its surface.

The peculiar features which have been found to characterize cysts of the broad ligaments are the following. They contain a clear, limpid, very slightly albuminous liquid, which takes on a purplish tinge when exposed to the rays of the sun; tapping generally, though not always, cures them; after tapping no cyst can be felt; they are always unilocular; and they have been found to contain in their walls nonstriated muscular fibre, which the walls of ovarian cysts never contain.

Parasitic or Hydatid Cysts.—Although cases of these cysts, developed in consequence of the presence of the echinococcus hominis and cysticercus cellulosæ, are reported as having occurred in the ovaries, it is doubtful whether such reports are authentic. These parasites may, however, develop in the mesentery, the omentum

[1] This cyst is now in my possession. Dried and stuffed with cotton, it measures 26 inches in circumference.

majus, and even in the cellular tissue; the vesicle of which the parasite consists becoming surrounded by a neoplastic sac. "I have seen," says Billroth, "cysticercus vesicles removed from the tongue and nose, echinococcus vesicles removed from the back and thigh." Spiegelberg reports a case of retro-uterine, left sided parasitic cyst, simulating ovarian cyst, in which he cut down and removed some of the characteristic contents. This procedure and tapping or aspiration are the only means of diagnosis which are at all reliable.

Tubal Dropsy.—This condition, which is described under the names of hydrops tubæ, salpingian dropsy, and hydrosalpinx, consists in the distention 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. But as this distention goes on, the mucous lining of the tube takes on the anatomical and physiological characters of a serous membrane, and secretes plentifully a serous, straw-colored, and slightly flocculent fluid. At times the distention of the walls of the tube proceeds so far that the fluctuating tumor which results gives all the physical signs of ovarian dropsy.

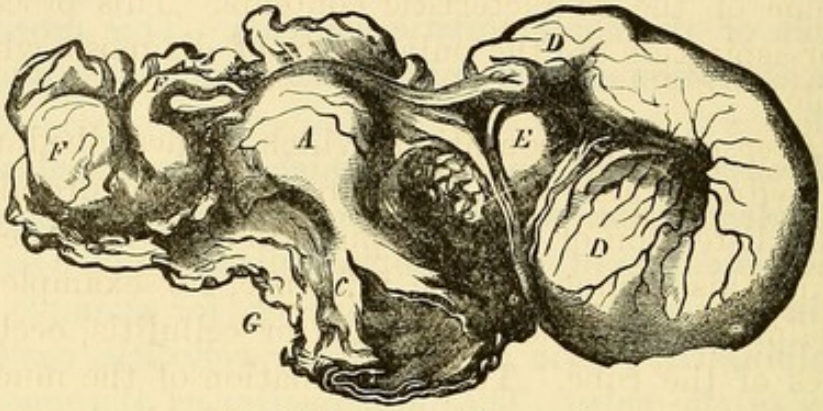
The testimony of authorities is almost unanimous that between this condition and ovarian dropsy there are no means of diagnosis without withdrawal of some of the fluid. M. Aran sounds the key-note to the general belief when he declares that,[1] "the tube distended by liquid, I am perfectly assured, does not give a sufficiently clear sensation to allow us to diagnosticate its existence." Prof. Simpson, however, assumes a different position.[2] He declares that, although "in practice this 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. 176, for instance, and he will see that both the shape and wavy outline will fail him. When it is re-

[1] Op. cit., p. 633.

[2] Op. cit., p. 432.

membered that the affection frequently results from pelvic peritonitis, it will be apparent that the freedom of motion will be often delusive. "The diseased tube," says Courty,[1] "is rarely free and without alteration at its periphery: generally it bears signs of old

Fig. 176.



Tubal dropsy. (Hooper.)

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 distention, 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 sceptical 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 reports an instance in which the sac attained the size of the head of a child of ten years of age.

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] Op. cit., p. 987.

[2] Supplement Cyc. Anat. and Phys., p. 619.

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, 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 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.

Cysts connected with the Spinal Cord.—In November, 1870, a woman aged 36 years entered the Woman's Hospital in this city and came under the care of Dr. Emmet.[1] He found a large cyst filling the hollow of the sacrum and there firmly fixed. To aid in diagnosis an ounce of fluid was drawn off by aspiration. This was clear and limpid, free from albumen, and revealed under the microscope only a few oil globules. The patient died, and Dr. F. Delafield on making an autopsy found a cyst, which contained some three quarts of fluid, filling completely the pelvic cavity and extending up to a level with the second lumbar vertebra. This communicated with the spinal cord by a funnel-shaped passage, which had as its lower outlet an oval opening extending from the upper margin of the second sacral foramen on the right to the position of the coccyx, which was wanting. Over the surface of the sac was a network of nerve tissue, extending posteriorly and to the right side. The sac was supposed to be one of spina-bifida or hydrorachis.

Symptoms.—During the earlier periods of the development of ovarian cysts, very few symptoms ordinarily show themselves. As enlargement goes on the patient becomes struck by the fact that her abdomen has increased in size, and, if both ovaries be affected, menstruation sometimes ceases, and she may imagine she has become pregnant. Pressure of the small but increasing tumor will sometimes create dragging sensations about the pelvis, irritability of the bladder, and, if the growth occupy the retro-uterine space, as it often does, pain in the back. This is, however, by no means

[1] This case is described in the Amer. Journal of Obstetrics, Feb. 1871.

all the inconvenience which may be experienced. A small, movable cyst, which may be pushed about in the abdomen, will sometimes cause severe pain. In one such case which I saw with Dr. Noeggerath, the account of which is published in Dr. Atlee's work on the Ovaries, ovariotomy was necessitated, when the cyst was no larger than a cocoanut, by excessive pain.

As the tumor grows and fills the abdomen, rising above the navel, a sense of distention is complained of, dyspnœa begins to show itself upon exertion, the patient feels more feeble than usual, and slight emaciation is observed. As it increases and begins to press upon the large viscera beneath the diaphragm, these symptoms increase, and the patient's face wears a peculiar expression, which has been styled by Mr. Wells, the "facies ovariana." This is created by an absorption of adipose tissue, an exaggeration of the natural furrows of the face, and an expression of anxiety and apprehension. To one who has studied this expression, an imperfect description such as this will recall it; but to one who has not become clinically familiar with it, it is impossible to convey a clear conception of it. To these symptoms the mammary and gastric symptoms of pregnancy sometimes, though rarely, add themselves.

Pressure upon the kidneys creates congestion of these organs, and scanty secretion is a common result. Occasional attacks of localized peritonitis are by no means rare, and hence, in many cases, ascites becomes a complication of the affection.

As the decadence of strength, the emaciation, and the impoverishment of the blood incident to this grave disorder increase with time, digestive and intestinal disorders show themselves, œdema of the feet and legs occurs, great feebleness appears, and the patient dies from progressive exhaustion.

A summary of the rational signs which may arise in consequence of ovarian cysts from the commencement of their growth to full development may thus be given: irritability of the bladder, dysmenorrhœa, constipation, hemorrhoids, pelvic pains of neuralgic character, symptoms of pregnancy, scanty urinary secretion, intestinal and digestive disorder, deranged respiratory function, peculiar facies, emaciation, œdema, venous distention on surface, ascites, vomiting, diarrhœa, cardiac irregularity, aphthous stomatitis, and hectic. In cases advanced in the last stage, all the last of these may show themselves, and in early cases, all the first mentioned; but, in many instances, some of the most prominent of these signs are entirely wanting.

Physical Signs.—The symptoms thus far enumerated are never sufficient for diagnosis. They are usually only sufficient to suggest physical examination, by which reliable signs will probably be discovered, and the diagnosis be made complete.

The physical signs of ovarian cysts are, therefore, 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?

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 constriction 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, steady, and prolonged pressure should be made by both hands over the whole abdomen, downwards towards the spine, and especially over the pelvic region. By this means a more or less 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:

1st. Abnormal thickness of abdominal walls;
2d. Tonic spasm of abdominal muscles;
3d. Intestinal distention;
4th. Distention of urinary bladder;
5th. Pregnancy.

With care and caution each of these conditions may usually be eliminated by means which we shall soon consider. A neglect of such means has often resulted in great and needless alarm to pa-

tients, and a painfully humiliating and often ludicrous exposure of the practitioner.

It having been now 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 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.

So great have the difficulties of diagnosis thus far proved that they have been urged by the opponents of the operation as a valid objection to it as a surgical procedure. At the same time that they are acknowledged, and that it is admitted that the most cautious and skilful diagnostician may be defeated by them, it can be confidently asserted that every year's experience greatly diminishes them, and that with the improved means now at command, an experienced examiner will rarely be misled. Let me, however, again insist upon the fact that immunity from often repeated errors can be obtained, even by such an one, only by strict adherence to a conscientious and exhaustive examination of every case, a resort to all the known means of diagnosis, and a methodical exclusion of all conditions calculated to mislead.

It is a fact which I daily see demonstrated that an inexperienced diagnostician usually arrives at a conclusion by the application of a much smaller number of tests than a veteran examiner would dare to do. The latter has been so often deceived that he knows his weakness; the former has yet to learn it.

The means of physical exploration which are at our disposal are the following:

Inspection and manipulation;
Mensuration;
Palpation;
Percussion;
Auscultation;
Vaginal touch;
Rectal touch;
The uterine sound;
Aspiration or paracentesis;
Chemical and microscopical examination of fluids of the tumor;
Explorative incision.

Solid ovarian tumors are rare and seldom assume very large proportions, and although ovariotomy is sometimes demanded for their removal, the operation is specially adapted to cystic tumors. We therefore pass to the more careful consideration of the diagnosis of these, and their differentiation from other abdominal enlargements.

An ovarian cyst usually develops markedly on one side of the abdomen, and if multilocular the abdominal distention is not symmetrical even in advanced periods. As it increases the cyst pushes the intestines aside into the hypochondriac regions. The ascending and transverse colon alone preserve their normal positions, and the omentum majus usually covers over the front of the tumor. While the cyst is in the pelvis the uterus usually lies in front of it, but as increase of growth occurs it is ordinarily pushed behind it. There are, however, exceptions to both these statements. In rare cases, fortunately for the ovariotomist, a portion of intestine runs across the face of the tumor, being fixed there by adhesion. The uterus, even late in the development of a large cyst, may be found in front of it or latero-flexed, latero-verted, or even drawn completely above the pelvic brim. Curious as it may appear, great diversity of statement exists concerning the relation of cyst and uterus among writers on this subject. "Simpson's remark," says Peaslee,[1] "that, 'if the sound show a tumor in front of the uterus, the disease is certainly not ovarian,' is incorrect. The uterus is in front of an ovarian tumor only in exceptional cases; but is often so in cases of uterine fibroma and fibro-cyst.

[1] Op. cit., p. 115.

Boinet mentions the fact as a remarkable one that Cruveilhier found the uterus behind an ovarian cyst in three instances." My observation certainly agrees with that of Dr. Atlee,[1] that "the uterus may be dragged up, or tilted up out of the pelvic cavity by the tumor; or, through these influences, it may be found on either side, or displaced forward or backward within the pelvis. It may also be crowded downward against the perineum, or entirely extruded through the vulvar orifice. So that there is no general rule as regards the position of the uterus in ovarian tumors."

When the tumor has ascended above the umbilicus as the patient lies upon the back the abdomen will appear rotund, a decided protuberance existing and very little flattening out by sagging of fluid to the flanks occurring. As the hands are laid upon the surface, and manipulation is practised, a firm, dense mass will be felt which yields fluctuation, not usually of a superficial character like ascites, but less superficial and perceptible. Percussion will yield dulness all over the surface of the tumor and in one flank, but in the other resonance will generally exist. The surface of the tumor will often feel irregular and lobulated, and in multilocular tumors be more voluminous on one side than the other. If pressure be made upon the tumor, as the patient lies upon the back, it will resist like a full sac, and not yield, and the pulsations of the aorta may be felt obscurely through it. By vaginal and rectal touch the lower surface of the tumor may be felt and obscure fluctuation elicited.

Mensuration practised from the umbilicus to the sternum, and the umbilicus to the anterior superior spinous processes of the ileum, will generally show a marked difference between the two sides in polycysts and less difference in monocysts. In ascites the two sides are symmetrical. Auscultation serves to exclude pregnancy. By vaginal touch the position of the uterus as well as its mobility is ascertained, and when combined with conjoined manipulation the solid or cystic character of a small or even a large tumor may be determined by it. Should the tumor be found low in the pelvis in the later periods of growth, it is probable that a short pedicle exists, and also probably adhesions. Should it have risen out of the pelvis the pedicle is probably, but by no means certainly, a long one.

The uterine sound informs us as to the capacity, the mobility, and the sensitiveness of the uterus, as well as, to a limited degree, its relations to the tumor.

Simon's method of rectal exploration, the introduction of the

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[1] Op. cit., p. 46.

whole hand, and if necessary of the forearm, into the bowel, constitutes one of the most valuable means of diagnosis and differentiation at our command. By it the point of origin of the tumor, as well as its general characters, may be very accurately ascertained.

Emptying the cysts of the tumor of fluid by aspiration or tapping is likewise a most useful means of gaining information; and of great moment is the careful and intelligent examination of the fluids removed.

Of late it has been proposed to determine as to the nature of such fluid by the discovery in it of "lutéine," a yellow substance found in the blood, the egg, and the fluid contents of ovarian tumors. As yet, this test has been too little investigated to enable us to decide what weight is to be given to it.

Lastly we reach the crucial test of explorative incision, the value of which cannot be exaggerated, but which is attended by considerable danger.

These are the means by which the positive signs of ovarian cystoma may be elicited, but before a diagnosis is arrived at by deductions based upon them, many other abdominal enlargements must be carefully considered and excluded. If this be necessary merely in arriving at a correct diagnosis where no operation is to be practised, how much more so is it in view of the grave procedure of ovariotomy. Any one of the following conditions may mislead the investigator, and each of them must be in turn considered by him who desires to do his full duty to his patient and himself.

Abnormal thickness or tension of abdominal walls	Obesity; Œdema; Elephantiasis; Tonic spasm.
Distention of abdominal viscera	Tympanites; Fecal tumor; Dilatation of stomach; Distended bladder; Hematometra; Physometra; Cystic chorion; Hydrosalpinx.
Fluid accumulation within the peritoneum	Ascites; Encysted dropsy; Hematocele; Colloid accumulation.

- Cystic disease of other parts in the abdomen
  - Cyst of broad ligament;
  - Renal cyst;
  - Splenic cyst;
  - Hepatic cyst;
  - Parasitic cyst;
  - Subperitoneal cyst;
  - Uterine cyst;
  - Uterine cysto-fibroma.
- Excessive development or displacement of other viscera of the abdomen
  - Uterine fibroma;
  - Enlarged spleen;
  - Enlarged liver;
  - Fibro-plastic tumor of peritoneum;
  - Sarcoma of abdominal glands;
  - Malignant disease;
  - Omental tumor;
  - Displaced kidney;
  - Displaced liver.
- Pregnancy
  - Normal;
  - Extra-uterine
    - Ventral;
    - Tubal
    - Interstitial;
  - With amniotic dropsy;
  - With ovarian dropsy;
  - With dead child.
- Diseased states of pelvic walls and areolar tissue
  - Enchondroma;
  - Encephaloid of bones;
  - Pelvic abscess.

Abnormal Thickness or Tension of Abdominal Walls.—Obesity will be recognized by obscure resonance on percussion over the whole abdomen; by absence of a defined, resisting outline to the supposed tumor; by the possibility of catching the fatty walls between the two hands, lifting them, and rolling them over the muscular floor beneath; by the deep depression which can be made when the patient is anæsthetized; and by the pendulous folds created by assumption of the sitting posture. It would be inexcusable in an expert to mistake this condition for ovarian tumor, but for an inexperienced examiner not at all so. I see numerous cases every year in which such an error is committed by very competent practitioners.

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.

Elephantiasis, of which Dr. Atlee records a remarkable case, would be recognized by the peculiar structural alterations of the skin which characterize it.

Tonic spasm of the abdominal muscles has more than once led, as has indeed obesity, to abdominal section for removal of a tumor. It often occurs under the name of "phantom tumor" in very hysterical women, and is not rare as a reflex result of caries of the vertebræ. It may be diagnosticated by resonance on percussion; absence of fluctuation; and absence of all signs of tumor under anæsthesia. In case of doubt, anæsthesia should always be resorted to. In addition to these signs, the unaltered position of the uterus constitutes an important one.

Distention of Abdominal Viscera.—Even without abdominal spasm a large amount of air sometimes accumulates in the intestines from hysteria, digestive disorder, or great obstruction in the canal. It may be known by resonance on percussion; absence of fluctuation; absence of all signs of tumor upon examination under anæsthesia; and the normal position of the uterus. By firm, steady pressure downwards towards the spine, kept up and increased after each expiration, resistance will be overcome, and deep exploration prove the absence of a tumor. This method was systematized by Rœderer.

Fecal tumor will be marked by absence of fluctuation; a peculiar "doughy" sensation upon manipulation; pain upon pressure; constipation; violent colic; and, most valuable sign of all, the creation of a distinct pit or depression when steady pressure is made at one point, the patient being anæsthetized. The action of cathartics and enemata is often entirely delusive as a test of fecal tumor.

Dr. Atlee relates a case of distention of the stomach in a man, in which that organ filled the entire abdominal cavity, and covered, like an apron, all the other abdominal organs. "Had the patient been a female," says he, "I should at once have pronounced it an ovarian cyst." Explorative incision would alone have accomplished diagnosis.

It may be thought unlikely that a distended bladder could be mistaken for an ovarian cyst, but it often gives the appearances of one. In one case in which this difficulty had existed for three weeks, I found the bladder distended so as to reach above the umbilicus, its neck being compressed by the neck of a retroverted pregnant uterus. Suspicion as to the nature of the tumor will be excited by interference with urination, constant involuntary dis-

charge of urine taking place, and the very frequent concurrence, according to my experience, of retroversion of the pregnant uterus. Should aspiration be practised, the physical and chemical features of the urine will suggest a resort to the catheter, which will settle the question of diagnosis.

In considering the differentiation of hematometra, physometra, and cystic degeneration of the chorion, little reliance should be placed upon rational signs in comparison with physical. Cessation of menstruation and many of the other signs of pregnancy will be discovered in most cases, and, in physometra and cystic chorion, characteristic discharges will usually attend—air in the former, and bloody serum in the latter. The enlarged uterus will be recognized as the tumor in question by conjoined manipulation and Simon's method; but the decisive test of these conditions consists in the passage of the uterine sound, or of a silver catheter to the fundus, in order to allow of escape of imprisoned material, which, being collected, may be submitted to chemical and microscopical examination.

Hydrosalpinx sometimes develops into a large tumor. De Haen describes one which weighed seven pounds. To differentiate such a condition from ovarian cyst, but two means can be relied upon: first, the removal of fluid, and examination by chemical means and the microscope; and second, explorative incision.

Fluid Peritoneal Accumulations.—It is often exceedingly difficult to differentiate between ascites and ovarian dropsy. The means which ordinarily enable us to do so are here stated. It must, however, be borne in mind that there are cases in which even the most important may be transposed. For example, an ovarian cyst sometimes establishes communication with the intestines, and becomes resonant; while, in ascites, where the amount of fluid is excessive and the mesentery short, dulness exists over the front of the abdomen. The rule is here adhered to, but the exceptions must not be lost sight of.

In Ovarian Dropsy.	In Ascites.
1st. A small, round tumor will often 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;

In Ovarian Dropsy.	In Ascites.
4th. Change of posture alters area of dulness but little;	4th. Change of posture alters area of dulness markedly;
5th. No evidences of cardiac, renal, or hepatic disease exist as a rule;	5th. Evidences of cardiac, renal, or hepatic disease almost always exist;
6th. Skin is normal as to color, moisture, etc.;	6th. Skin, in majority of cases, gives evidences of cirrhosis by its parchment feel and jaundiced hue;
7th. Œdema of the feet is absent until a late period, when the patient has become exhausted;	7th. Œdema of the feet exists as an early sign;
8th. Health fails slowly;	8th. Health fails early and rapidly;
9th. Sitting posture affects shape of abdomen but little;	9th. Produces bulging below and often between rectum and through navel;
10th. Fluctuation ordinarily not so superficial, level fixed to great extent, ceases where intestinal resonance begins;	10th. More superficial, level changes with change of posture, perceived even where intestinal resonance exists.
11th. Aortic pulsation transmitted;	11th. Not so.
12th. Fluid usually amber colored and tenacious, often like syrup, of various hues in polycysts, not spontaneously coagulable, always sticky when rubbed between fingers. Shows cylindrical epithelium, granular cells and matter, oil globules, and cholesterine, and contains paralbumen and metalbumen. The granular cell is characteristic and distinguishable from other cells by its merely becoming transparent by acetic acid; others increase in size;[1]	12th. Fluid of light straw-color; spontaneously coagulable from containing fibrin; without sediment usually; shows to microscope squamous epithelial cells, oil globules, pus cells, and amœboid bodies; does not contain paralbumen, metalbumen, or cholesterine;
Specific gravity, 1.018 to 1.024.	Specific gravity, 1.010 to 1.015.

Sometimes, however, peritoneal accumulations are sacculated by encompassing lymph in one portion of the peritoneum; among the intestines matted together by effused lymph; or, as in a case recorded by West, enveloped by the omentum. "Between four and five quarts," says he, "of a dark fluid were found collected between the folds of the peritoneum." The amount of fluid thus imprisoned is often very large, and hence the difficulties of diagnosis which have led Mr. Wells[2] to assert, "I am aware of no means by which such cases are to be distinguished from ovarian dropsy." McDowell himself once opened an abdomen in such a case under the belief that an ovarian tumor existed. The intestines do not rise above the fluid as in simple ascites, but there is less rotundity to the mass, and less interference with respiration than are found

[1] Drysdale.

[2] Dis. of Ovaries, p. 134.

to exist with ovarian cyst. Diagnosis in these difficult cases must depend upon the results of aspiration, examination of contained fluids, Simon's method, and explorative incision.

The sudden appearance of hematocele, the immediate and often urgent symptoms which it excites, and the removal of a little fluid by aspiration will settle the question of diagnosis.

Colloid disease sometimes affects the whole peritoneal cavity. In some cases it appears to escape into it from a ruptured ovarian cyst; in others it originates there. Removal of a small amount of the characteristic material by tapping is the only means of diagnosis.

Cystic Disease of Other Parts in the Abdomen.—Cysts of the broad ligament so closely resemble unilocular ovarian cysts as to be diagnosticable only by explorative incision or aspiration. Their character might be suspected from superficiality of fluctuation, slight implication of general health, absence of emaciation, and slowness of growth; but the chemical and microscopical features of the contained fluid would alone decide positively. This fluid is as clear and pure in appearance as distilled water, showing when boiled after addition of acetic acid only a trace of albumen as an albuminate, loaded with chloride of sodium, and containing only a few fat and blood globules. After evacuation the cyst walls cannot be felt, and tapping often proves curative. Spiegelberg removed such a cyst in 1869, the walls of which, unlike those of ovarian tumors, contained muscular fibres and the fluid of which contained albumen.

Renal cysts have several times deceived the most skilful diagnosticians. Their characteristics are these: they ordinarily push the intestines forwards and not backwards; pus, blood, and albumen *usually* occur in the urine; these tumors grow from above downwards; they are rare and grow slowly; *may* be pushed up so that resonance occurs between tumor and pelvis; and the fluid contained shows none of the microscopical features of ovarian cyst, while it shows the chemical and microscopical elements of urine. Sometimes echinococci, which are frequent in renal cysts and unknown in ovarian, are found. The tumor is apt to be crossed by the descending colon or to lie outside of the ascending colon; it is usually marked by renal and not by menstrual derangement; and is usually unilateral.

Sometimes, however, a renal cyst occupies a median position, extends like an ovarian tumor into the pelvis; is attached to the pelvic organs; pushes the intestines aside like an ovarian cyst; contains fluid free from elements of urine, and even presents cholesterine and paralbumen. In such cases the determination of the

point of attachment by Simon's method constitutes a most valuable resource.

Splenic and hepatic cysts are rare, grow from above downwards, give an area of dulness between tumor and pelvis, and in the fluid of the latter the echinococcus is often discovered. In both Simon's method is of great value.

Parasitic cysts, the result of the presence of the echinococcus, may develop in any of the organs or tissues of the abdomen. Should the position of the tumor be such as to lead to doubt as to differentiation between it and ovarian cyst, diagnosis would be attainable only by aspiration and examination by the microscope and chemical means. The former would show the presence of the parasite.

Subperitoneal cysts are distinguishable from ovarian only by physical features of contained fluid and explorative incision.

Cysts growing from the uterus itself are not common. They may be recognized by Simon's method, by the chemical examination of their contents, and by the curative effects of tapping. Atlee reports three cases thus cured. Furthermore the fluid which they contain separates into a coagulum and a pinkish or bright red portion which does not coagulate, and the peculiar cells of ovarian fluid do not appear in it. Ovarian fluid never spontaneously coagulates.

Fibro-cystic tumors are difficult of differentiation from ovarian cystoma, but when we compare our present position with reference to this subject with what it was only a few years ago we have great cause for congratulation. I here give only the most prominent differences between the two diseases, and hence those upon which reliance can really be placed. To many of these even, however, there are exceptions; to several there are none.

Uterine Fibro-cyst.	Ovarian Cyst.
Grows slowly and occurs usually after thirty years of age.	Grows more rapidly and is less governed by age.
Uterine cavity generally enlarged.	Uterine cavity not usually enlarged.
Connection of tumor and uterus usually, though not always, intimate.	Uterus more independent of tumor.
Fluid spontaneously and quickly coagulates.	Never does so.
Uterus sometimes lifted above pubes and out of pelvis, often in front of tumor.	Uterus generally behind tumor.
Health remains good for years.	Generally fails within three years.
Microscope shows fibre cell (Drysdale).	Shows the peculiar granular and epithelial cells of ovarian cyst.

Although these signs are all of some value, those which should be regarded as most reliable are the following: spontaneous coagu-

lability of the contained fluid; presence of the fibre cell; increased capacity of the uterus; and the determination of its connection with the tumor by means of Simon's method of rectal exploration. Explorative incision should not rank high as a diagnostic method, for simple section of the abdominal walls is not enough, and the exploration which is further required to decide the point exposes the patient to great danger.

Excessive Development or Displacement of other Viscera.—If ascites do not attend hepatic and splenic enlargement, there will never be any great difficulty in distinguishing them from ovarian cystoma. Should it do so, tapping should be resorted to.

Uterine fibroma may be recognized by its peculiar hardness, slowness of growth, absence of fluctuation, continuance of good health and absence of emaciation, tendency to increased menstrual flow, irregular surface, intimate connection with uterus, increase in capacity of this organ, and absence of fluid upon aspiration or tapping. It must not be forgotten, however, that the uterus may be normal in size, and the tumor entirely independent of it.

"The symptoms caused by the growth of large, fatty, and fibroplastic tumors from various parts of the peritoneum or mesentery," says Spencer Wells,[1] "so much resemble those of true ovarian disease, that their real nature can only be determined in some cases by an exploratory incision or tapping." Should fluid be removed from them it would lack the peculiar ovarian cellular elements, and would spontaneously coagulate, and Simon's method would in some cases demonstrate the fact that the point of origin is not the ovary.

A movable or floating kidney might be mistaken for an ovarian cyst, but for so small a one that the question of ovariotomy would not arise in connection with it. Time would prove that it was not a growing ovarian cyst.

[2]Dr. J. K. Dale, of Little Rock, Arkansas, reports an interesting case of tumor supposed to be ovarian, but which upon explorative incision was found to be the liver, which was, "free and movable, very much enlarged, occupying the right half of the pelvis, encroaching upon the bladder and rectum, and interfering very materially with the due performance of their respective functions." I have myself met with precisely the same experience in a case in which I made an explorative incision in New Haven, in presence of Drs. Whittemore, Jewett, and others.

Pregnancy.—The ordinary signs of utero-gestation, both rational

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[1] Op. cit., p. 146. [2] Richmond and Louisville Med. Journ., April, 1874.

and physical, should be carefully considered in eliminating normal and interstitial pregnancy. More than one woman has died from the passage of a trocar and canula into the pregnant uterus after abdominal incision, an accident certainly scarcely more deplorable for the patient than for the unfortunate practitioner whose carelessness causes it. I say carelessness, for the reason that the passage of the uterine sound as a means of differentiation would always prevent error. True, this would result in premature labor in normal pregnancy, but how much better this, even at the sacrifice of the child's life, than the terrible mishap just alluded to.

During the past eighteen months three cases of pregnancy at full term have been referred to me as ovarian cysts, and this not by ignorant men but by very capable practitioners. Two out of the three pregnancies were illegitimate, and the examiners were misled by relying upon rational instead of physical signs. Reliance should be placed especially upon discovery of the fœtal body and movements by careful palpation; upon ballottement between the fifth and seventh months; upon recognition, by vaginal touch, of the movable presenting part after that time; and upon the fœtal heart sounds and placental bruit. The gastric, mammary, and nervous symptoms of pregnancy sometimes result from ovarian disease.

Should the child be dead many of these symptoms will be absent, and if it be retained in utero, as it sometimes is, for many years, diagnosis must depend upon the history of the case, Simon's method, the uterine sound, and dilatation of the cervix so as to admit of digital exploration. In tubal or ventral pregnancy diagnosis would prove more difficult, but the same means will aid in making it, for even when the fœtus is developed out of the uterus that organ enlarges decidedly.

Not only should a differential diagnosis be made between pregnancy and ovarian tumor; even after recognition of the latter, the former should always be eliminated as a coincident condition.

Dropsy of the amnion gives very superficial fluctuation, and might deceive one not careful in diagnosis. A patient investigation of the case, and consideration of its history would ordinarily remove all doubt. The fibres of the cervix uteri are usually expanded, the cervix moves as the tumor is rolled in the abdomen, and the uterine sound passes far up into the cavity above. Should aspiration have been resorted to, the fluid removed will be found to present the following features. It is alkaline, with specific gravity 1005 to 1010, contains albumen but no fibrin, and presents

to the microscope epithelial cells and oil globules. Meconium and blood alter these features.

Diseased States of Pelvic Walls and Areolar Tissue.—Enchondroma or encephaloid disease of the pelvic walls is hard, free from fluctuation, and firmly fixed and united to the part from which it grows. Rectal exploration and abdominal palpation will prove these facts and if aspiration be attempted the absence of fluid will be evidenced.

Pelvic abscess usually results from cellulitis, which presents marked symptoms. It rarely extends to the umbilicus, hardness will be felt in one or other iliac fossa, it is fixed in the pelvis, and aspiration gives evidence of pus. Excessive pain attends it, with throbbing and pain down one thigh, and the outline of the mass is obscure and unsatisfactory. There is often a tendency to point, there is pain upon pressure, and there are generally chills and fever.

In the early days of ovariotomy, when adhesions were regarded as a bar to extirpation of these tumors, the question of the existence of adhesions possessed important bearings. Now, however, when even the firmest attachments are broken not only with impunity, but with results which are often better than those which follow the removal of a tumor from a healthy peritoneum, it sinks into comparative insignificance. This is a most fortunate fact, for the reason that the determination of the existence of adhesions is little more than guess-work. Beyond a few very general facts by which we may venture to form a surmise, all is empirical prediction with reference to the matter.

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, 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 already stated 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.

"*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 median 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

[1] Le Pédicule et son Traitement aprés l'Operation de l'Ovariotomie, Strasbourg, 1869; Archives Générales de Médecine, Juillet, 1870.

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 hemorrhagic 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 the determination of the length and character of the pedicle, by aid of these means, as M. 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 a tumor which is not very large be fixed in the pelvis so that it cannot be pushed out, the pedicle is probably a short one. The value of this 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 three 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:

Aspiration;
Tapping;
Explorative incision.

To these a certain amount of danger undoubtedly attaches; but when compared with the great danger arising from operation upon an uncertain diagnosis, it becomes trivial. 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 been previously employed. They are of course not to be confined to the determination of the character of a tumor alone, but that of the origin, attachments, and complications of any abdominal growth.

The introduction of aspiration into use for the diagnosis of

ovarian tumors constitutes a decided advance. The instrument generally employed in this country is that of Dieulafoy, shown on page 84. By this a delicate hollow needle is passed into the tumor, and powerful suction applied through an India-rubber tube connected with a strong syringe, in which a vacuum is created by an upward movement of the piston. Through the most delicate needle clear fluids will pass, and through the largest, which is very small when compared with an ordinary trocar and canula, very tenacious colloid material may be drawn. By this beautiful instrument a large polycystic tumor filled with tenacious, syrupy fluid may be readily emptied by turning the needle into new cysts as those first punctured are evacuated. And when complete evacuation is not desired, it furnishes a supply of fluid for chemical and microscopical examination. It greatly diminishes the dangers of such evacuation as compared with those resulting from tapping. The dangers attending that operation are the following: 1st, hemorrhage from a bloodvessel in the abdominal or cyst wall; 2d, admission of air to the cavity of the sac and decomposition of fluid, which may create inflammation of the cyst wall and septicæmia; 3d, subsequent escape of the contents of the tumor into the peritoneum; and 4th, fatal injury from wounding of an intestine or solid organ. Spencer Wells mentions a case in which an acquaintance of his tapped a patient who died soon after. Upon autopsy two and a half quarts of blood, which had escaped from a wounded varicose vein, were found in the peritoneal cavity. All these dangers are considerable from ordinary tapping; decidedly less so from aspiration.

It may then safely be said that aspiration accomplishes all that tapping does, at infinitely less risk, and that the former should, when practicable, always be preferred to the latter procedure. Unfortunately, the cost of the aspirator is large, and it may not be attainable. When it is desired merely to obtain a small amount of fluid for examination, the hypodermic syringe may be employed, even in preference to the aspirator. The use of this instrument, which was suggested by Dr. H. F. Walker and practised 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, slightly albuminous fluid or ichorous and irritating material; 3d, by means of several punc-

tures, whether it be multilocular or not. I have resorted to it many times, and have never yet seen inflammation result from it. In one case which I saw in consultation with Dr. Peaslee he drew off by the hypodermic syringe for examination a clear, albuminous fluid, and decided to operate by ovariotomy in a few days. Upon proceeding to do so the sac was found to have emptied itself into the peritoneum through this small opening.

Tapping is a means of great value in the diagnosis of ovarian cysts and, where the aspirator is not attainable, should never be lightly disregarded. Atlee, Wells, Peaslee, Spiegelberg, and many other leading ovariotomists of our day place great stress upon its value, and although some, like Stilling, have entitled it, in the warmth of deprecation, "a crime," it may safely be said to have overcome the greater part of the objections once urged against it, and to have fully established its claim to consideration as a valuable diagnostic and palliative measure. Wells[1] has proved that it does not considerably increase the mortality of ovariotomy. It is often even an excellent preparation for that operation, and, when practised with proper precautions, its dangers are greatly diminished. It must not be forgotten, however, that it is attended by dangers, which are not matters of speculation but of fact established by statistical evidence. Of 130 instances of first tappings analyzed by Kiwisch, 17 per cent. of the cases died within a few hours or days after the operation.[2] 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.

Of all the means for definite and certain settlement of the question of diagnosis in abdominal tumors, I esteem explorative incision most highly. As, however, it involves not only opening the peritoneal cavity, but usually considerable manipulation of its contents, it necessarily involves a certain amount of danger. While the other methods may be practised 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 the surgeon decide against operation, the opening made should be closed; if the light which it throws upon diagnosis favors the radical procedure, the incision should be at once enlarged and prolonged into the final abdominal opening.

Explorative incision should be thus performed. The patient

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[1] Op. cit., p. 275.

[2] Hewitt, op. cit., p. 637.

having been prepared for the procedure exactly as if we had determined upon ovariotomy, she is placed upon the table and surrounded by assistants, etc., 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 emptied with a *very small trocar*, so small that the opening made may be readily closed if it be deemed best to desist from radical operation, or by the aspirator. If the sac be emptied by this means, the hand is then passed into the abdominal cavity and complete exploration made. If it be not completely emptied, a sound should be passed into the uterus and two fingers 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 within the reach of the finger.

Before leaving this part of my subject let me lay before the reader a few rules, the observance of which will diminish very greatly the chances of his falling into errors of diagnosis in operating for ovarian tumors.

1st. Never perform ovariotomy without carefully exploring the uterus by the sound.

2d. Before operation always remove a small amount of fluid by the hypodermic syringe for chemical and microscopical examination.

3d. If any doubt whatever exist as to diagnosis, anæsthetize the patient and employ Simon's method.

4th. If doubt still exist, empty the cyst or cysts by aspiration or tapping.

5th. Should all doubts not be cleared up at the moment of operation, begin it as an explorative incision and proceed or not as instructed by what is discovered.

Treatment.—The medical treatment of ovarian dropsy by diuretics, hydragogue cathartics, diaphoretics, mercurials, absorbents, mineral waters, etc., 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; regulating 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, before the introduction into 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 practised, for such a list would encumber 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 established procedures:

Tapping;
Drainage;
Incision;
Injection of the sac;
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 more radical procedures adopted in these cases.

It is, however, attended by serious disadvantages, and, although in a limited number of cases it has been declared to have proved curative, it should never be practised with any reliance upon its doing so, for doubt exists as to the authenticity of the facts. Furthermore, it is attended by the immediate dangers recently mentioned, 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 operations 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 measure 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 may have 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. I have now under my care a patient who for five years has had a large cyst which has been tapped forty-five times.

I have stated that a considerable number of cases are on record in which it is asserted that simple tapping has cured ovarian cystoma. It is a matter of great doubt whether the cases thus cured were true ovarian cysts, or cysts of the broad ligament, which are often thus cured. Knowing of no well authenticated case in which

[1] Simpson, op. cit., p. 347.

ovarian cyst has been thus permanently cured, we are not warranted in regarding this measure as anything more than a valuable diagnostic means and a palliative resource, which often saves life when it is threatened by one of the consequences of the cystic disease.

In case the contents of the cyst do not appear to be those of true ovarian cystoma, but present the characters of the fluid of cyst of the broad ligament, tapping may be practised with a reasonable hope of curative results.

The circumstances which ordinarily indicate the propriety of paracentesis as a palliative measure 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. A fold of skin being now pinched up between two fingers, it is penetrated by a lancet or bistoury upon the linea alba, midway between the symphysis pubis and umbilicus. The trocar and canula are then plunged through

Fig. 177.

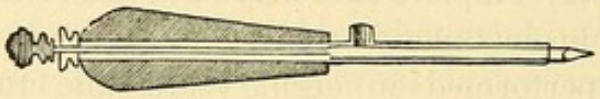
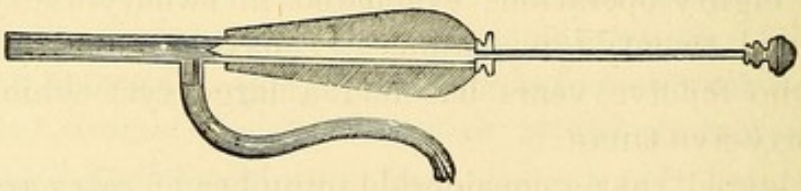


Fig. 178.



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. 177 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. The free extremity of this tube is kept carefully immersed in water in the tub, to prevent entrance of air into the sac.

Should other cysts be felt through the abdominal wall after emptying the main one, the canula may be made to empty them, by pressing it firmly against them.

The following rules should be observed in abdominal tapping of ovarian cysts. It is highly probable that a strict adherence to them would very favorably affect the statistics of the operation.

1st. Never tap while the patient sits, but always as she lies upon the side or back.

2d. Cut the skin with a lancet, and employ a trocar and canula, with tube immersed in water, so as to prevent entrance of air.

3d. When the fluid withdrawn is viscid, always wash out the cavity of the sac with warm, carbolized water.

4th. Should there be oozing of blood from the puncture, pass a harelip pin deeply through its lips, and affix a figure-eight ligature.

5th. Keep the patient recumbent and very quiet for two or three days.

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 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.

By this method, the advantages of which are thus strongly stated by the authorities just mentioned, two of the dangers of tapping, secondary escape of fluid into the peritoneum, and consequent peritonitis, are unquestionably avoided, but others are as surely increased, namely, those of injury to portions of the intestine, and entrance of air into the sac, with consequent decomposition of contents, septicæmia, and inflammation of the sac walls. My experience with the method is not large, but it leads me to agree with Spencer Wells[1] that, "as a rule, air enters the cyst, the opening fills up, and the fluid remaining in the cyst, or that freshly secreted, putrefies. Suppurative inflammation of the lining membrane of the cyst comes on, and is accompanied by a low form of exhaustive fever or pyæmia." Where a cyst is firmly fixed in the pelvis, however, this method, followed by drainage and antiseptic injections, is one of great value.

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 fingers 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 much 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, while at the same time the gases of the intestines may enter the sac and create greater

[1] Dict. de Méd., tom. xxii., p. 276.

evil than the admission of pure air. Except as a resource where all other varieties of paracentesis ovarii are entirely impracticable, this method should be discarded.

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, abdominal walls, 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, 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 the retention of a drainage tube, if such a procedure should be deemed necessary. In more recent times German gynecologists 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 redistention. 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 practised 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, even without being opened, shrivel and almost invariably disappear after the establishment of drainage.

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 from ten to 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.

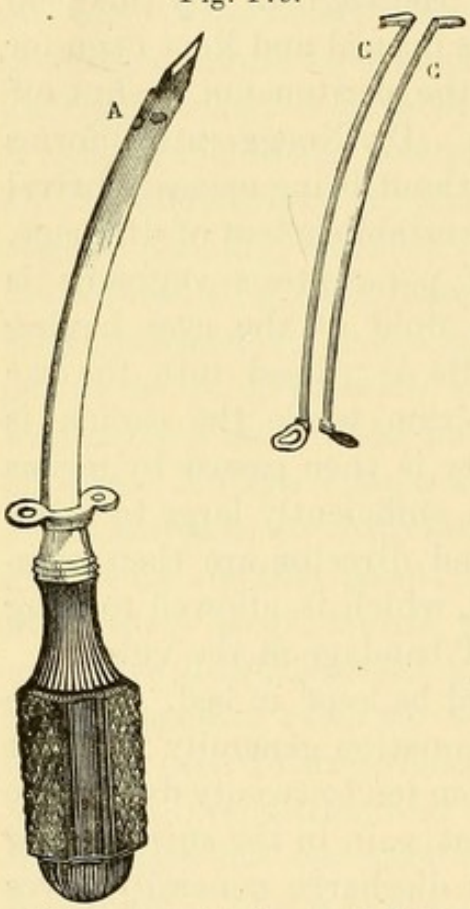
The tube should be kept in place until discharge ceases and diminution of the sac has occurred.

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]

Fig. 179.



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 project so as to prevent the escape of the canula. (Wieland and Dubrisay.)

The cyst may be opened by Scanzoni's long trocar and canula, or by a long bistoury.

The most ingenious apparatus which has been invented for the accomplishment of drainage by the vagina is represented in Fig. 179.

[1] This patient subsequently died of peritonitis resulting from ulceration of the cyst-wall which penetrated the peritoneum. Cystic inflammation and septicæmia were evidently set up soon after the operation.

The best of these methods, however, appears to me to be Noeggerath's.

Drainage through the abdominal walls has been frequently practised in Germany and Great Britain, as the imperfect statistical 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.

Cures 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

[1] Richmond and Louisville Med. Journ., Dec. 1870.

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, 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 adhesions between the sac and abdominal wall, but the plan has not met with success.

The treatment of ovarian cysts by incision and drainage will never become popular on account of its danger, but it can never pass away, for the reason that there is a class of cases the requirements of which can be met in no other way. As an example I instance this: I made an abdominal incision to remove a cyst, and upon tapping found its contents so thick and contained in so many sacs, that I had to incise the main sac and introduce my hand to empty them. The tumor was found so firmly adherent to the liver, large intestines, and parts adjacent to the large bloodvessels on the spine that its removal was entirely impossible. I therefore evacuated all the cysts, sewed the cyst-walls to those of the abdomen, closed the abdominal wound in part, and afterwards used antiseptic injections and drainage. The patient died on the twenty-first day of pneumonia. Had I not done this, what other resource would have been open to me by which to give the patient even the smallest chance for life?

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,	3	1	2
Pawling,	1	1	0
	33	21	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 may 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 good 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. Among gynecologists of our day the sphere of the operation has become very much limited, though it is still applied to monocysts of moderate size, the contents of which are not very viscid or are charged with blood or pus. "If the fluid," says Peaslee,[3] "is very dense and highly albuminous, oily, or gelatinous, the operation will not succeed." Wells[4] declares that, "when iodine injection is really useful, and, in my opinion, the only class of cases where its employment should be recommended, is in cases where, after tapping, either by the abdominal wall, vagina, or rectum, cyst inflammation has occurred and the patient is suffering from absorption of the decomposing contents of the cyst." Even here he advocates it merely as an adjuvant to drainage. "At present," says Courty, "the profession shows a strong tendency to abandon this treatment, the dangers of which are often manifested by fatal results."

The injection of iodine is not very painful, ordinarily producing merely a burning sensation, and, when it is practised in appropriate cases, yields a good proportion of success. 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.

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[1] Simpson, op. cit., p. 362.

[2] Peaslee, Ovar. Tumors, p. 11.

[3] Op. cit., p. 207.

[4] Op. cit., p. 287.

The view formerly entertained that the curative effect of the injection of iodine depends upon the establishment of adhesive inflammation in the cyst walls is now abandoned. It is regarded as producing an altered state of the walls, and thus checking excessive secretion of fluid.

Of the first hundred cases of cystic disease of the ovary treated in this method by Boinet, sixty-two were cured, sixteen died, and twenty-two were improved. Subsequently, after selecting his cases with more caution, he obtained a success of ninety per cent. Twenty-seven out of his last twenty-nine cases were successful. Courty reviews these statistics 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." 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, 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. The results of other operators are here given:

Author.	No. of cases.	Cures.	Failures.	Deaths.	Doubtful.
Cazeaux	62	48	11	3	
Gunther	158	32	61	59	
Simpson	40 or 50 (?)	—	—	1	
Scanzoni	4	—	—	4	
West	10	3	6	1	
Tyler Smith	12	2	9	1	
Peaslee	6	1	3	1	1

Wells has employed the method 8 times. In six, no more good was done than tapping would have accomplished; and in two, the contents of which had been limpid, refilling did not occur for two years. In such cases as these last, tapping often proves curative.

Boinet employs for injection always the same amount of fluid whatever be the capacity of the cyst, for all that he considers necessary is the contact of the alterative fluid with the entire area of diseased surface. He injects about six ounces of the following

mixture, brings it in contact with the entire surface of the sac by gentle agitation and then withdraws it.

℞.—Aquæ destillat. ʒxxv.
Tr. iodini (Codex), ʒxxv.
Potassii iodidi, ʒj.
Acidi tannici, ʒss.—M.

By others the pure tincture of iodine has been employed.

Should a great deal of the drug be left in the sac, disagreeable, but not dangerous symptoms, sometimes follow. Neither iodism nor any destructive inflammation of the sac walls has ever occurred even from leaving the whole quantity injected. That certain evils result from doing this, and from the escape of the surplus into the peritoneum, there can be no doubt, while the advantages likely to accrue from the practice are not apparent.

Boinet's method of injecting the fluid is this: 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. By Boinet 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 employed. All other operators remove the catheter immediately, close the wound carefully by adhesive plaster, apply a compress and bandage, and keep the patient strictly confined to one position.

It appears to me that the leaving of the catheter for subsequent injections should be restricted to vaginal tapping, followed by drainage.

I have recently, in several cases, emptied an ovarian sac by the aspirator, and without withdrawing the needle, filled it with tincture of iodine, and in ten minutes again drawn it off. It is a most simple, safe, and effectual method of practising this procedure, and must supersede that just mentioned, for it possesses all its advantages, while it is free from most of its dangers.

Even years after obliteration of the injected sac a return of the disease may take place. This probably arises from the development of a minute cyst whose growth was retarded by the alterative influence of the remedy, but whose vitality was not wholly destroyed.

Résumé.—We have now considered the following surgical means for the cure of fluid ovarian tumors:

Tapping;
Drainage;
Incision;
Injection.

In leaving the subject let me endeavor to point out those conditions which are especially appropriate for each:

1st. Tapping as a palliative measure may be practised upon any form of cystic ovarian tumor; as a curative means it should be relied upon only in cysts of the broad ligament and other pelvic cysts closely resembling ovarian cystoma clinically, but differing greatly from it histologically.

2d. Drainage finds its appropriate and important field in cysts which are bound down in the pelvis, are readily attainable through the vagina, or have formed attachments to the abdominal viscera, and are not susceptible of removal by ovariotomy. It may likewise be attempted in small oligocysts, in the hope of avoiding ovariotomy at a later period.

3d. Incision is a last resort which enables the operator to freely break up the cysts of a multilocular tumor which is so intimately connected with important viscera of the abdomen as to render its removal utterly impossible.

4th. Injection of iodine, which may with great advantage be combined with drainage, should be employed alone only in the hope of avoiding ovariotomy at a later period, in cysts of moderate size, with few compartments, and containing a fluid which is not very viscid and dense.

CHAPTER XLVI.

OVARIOTOMY.

Definition.—Ovariotomy, or, as Peaslee with greater regard for philology proposes to term it, Oöphorectomy, consists in the extirpation of the diseased ovaries.

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 practised 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, in 1722 by Schlenker, in 1731 by Willius, 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. 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, by some supposed to be the discoverer, 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]

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

[2] Med. Record, June 15th, 1867, from Exchange.

"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, the patient might not sometimes be cured by enlarging the puncture, pressing the cyst 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, 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. It may confidently be asserted that the history of no operation has been more thoroughly sifted than this, and that up to the present time, nothing can be clearer than the fact that to McDowell belongs the credit of priority of performance. It is

interesting to examine the competitive claims which have been put forward in reference to the matter. First, in chronological order, is that of Dr. Houstoun,[1] of Scotland, who operated in 1701, and whose case, says Mr. Wells,[2] makes it "appear that ovariotomy originated with British surgery, on British ground." This statement will excite wonder, and the claims of the operator fail to attract attention, when it is stated that nowhere does Houstoun claim to have removed the cyst or even a part of it. He merely treated a case of ovarian cyst successfully by incision.

The second is that of Laumonier, of France. Of him Baker Brown says: "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.

The third is that of Dzondi, of Halle. As the patient was a boy, the claim requires no further consideration.

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.

"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, and his results were certainly not such as to popularize a new and dangerous procedure. In 1828, the adverse criticism of the great Dieffenbach was pronounced in these strong

[1] Amer. Journ. of Med. Sciences, vol. vii, 1849, p. 534. [2] Op. cit., p. 299.

terms: "[1]Whoever 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 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." Dieffenbach's opinion, in 1828, has been given; let us see how the experience of twenty years 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 Lizar'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[2] collected the statistics of 54 cases, of which 51 ended fatally, and concluded that certainly over half of all submitted to operation died. It was soon after this that Scanzoni and Gustav Simon gave their evidence against the operation, and increased its disfavor to such a degree that, as Grenser says, "its

[1] Grenser, Report on Ovariotomy in Germany. [2] Grenser, loc. cit.

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, Spiegelberg, Martin, Stilling, Veit, Wagner, and Billroth. Grenser collects in 1871 the statistics of 129 operations performed in Germany, of which 60, a little less than 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 quickly she will stand abreast of other 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."

Up to July, 1868, Péan, of Paris, had had seven recoveries out of ten cases, and in 1870 and '71, out of thirty-two operations,

[1] Wieland and Dubrisay, the French translators of Churchill.

[2] N. Y. Med. Record, July, 1867.

twenty-six recoveries took place. In 1873, he wrote a work upon Hysterotomy for Fibroids and Fibro-Cysts, in which he claims seven recoveries for nine operations. Nothing could more surely mark the advance of the operation, as well as the rapidly increasing boldness and skill of French surgeons, than this announcement.

Ovariotomy has now been performed, and, in most instances, repeatedly performed in almost every civilized country of the earth. In Sweden, Sköldberg has performed it twenty-one times, with seventeen recoveries.

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 procedure, it has only within the last decade assumed its legitimate place in Germany and France, but in both countries it is not merely maintaining itself, but being improved and advanced towards perfection.

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 the first head, but very improperly so, for less than complete removal constitutes an entirely different operation, which is known as partial excision.

It has already been stated that extirpation of the ovaries not altered by disease was probably performed in very ancient times. This was done, if we may rely upon the vague allusions which come down to us upon the subject, for other than scientific purposes. Extirpation of the ovaries for the immediate accomplishment of the menopause, and the cure of certain very grave nervous phenomena and incurable disorders, which are excited by ovulation and menstruation, has recently been advocated and practised by Dr. Robert Battey,[1] of Georgia, U. S. The circumstances under which he proposes to resort to the procedure are here given in his own words:

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[1] Essay before Ga. Med. Association, April, 1873.

"What I do propose is this: *Ovariotomy to determine the change of life; and the change of life for* ANY GRAVE DISEASE *which is incurable without it, and which is curable with it.* * * * *
I have proposed for your acceptation a new operation in surgery, which I believe to be original with myself in its conception, original in its elaboration, and original in its successful execution. I have related to you the history of the case up to the present time. I have endeavored to show you that the change of life was a reasonable remedy for the morbid conditions present in the case; that it was reasonable to expect that the removal of the ovaries would determine the change of life. I have asked you to hold fast to your faith in the ovular theory of menstruation, notwithstanding some anomalous results of double ovariotomy."

Like every other bold innovation in medicine, this will have to run the gauntlet of prejudice, and stand the test of experience. It is too young as yet to be decided upon, and is unquestionably a procedure which may be greatly abused. Nevertheless, I freely commit myself to the opinion that it has a future before it which will be rich in good results. Since the publication of Dr. Battey's essay, I have met in the Woman's Hospital with one case which I felt demanded a resort to it, and, with the full endorsement of my colleagues Sims, Peaslee, Metcalfe, and Fordyce Barker, it was safely performed. Three months have since elapsed, a period too short to warrant a report of the case, but I may here say that the patient's condition has been greatly improved.

Advantages of Ovariotomy.—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 in connection with the treatment of these tumors, 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 table that peritonitis destroyed one-quarter of all who died from the operation, and septicæmia, or absorption of putrid material, one-sixth. After these causes followed 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.

Out of forty-five completed operations by myself seventeen deaths have occurred from the following causes:

4 died of peritonitis.
1 " " rupture of the pedicle on 14th day.
1 " " pneumonia on 21st day.
2 " " constant and prolonged vomiting.
1 " " gangrene of peritoneum.
3 " " shock.
5 " " septicæmia.

That peritonitis is often, in these cases, the consequence of immediate exposure of the peritoneum to manipulation and atmospheric influences there is no doubt. In many cases, however, both this affection and septicæmia, which the future will, I think, prove to be a much more common cause of death than is now thought, are undoubtedly created by the following conditions:

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 distal to 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 into 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 endorsement of the first obstetric surgeons in 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, and of later years in Germany and France, may be pointed to in reply to such a question; results which are fully as favorable as those of other important capital operations. Out of 660 operations in America, tabulated by Peaslee,[1] 453 were successful. One who reads without reflection the large proportion of deaths from this dangerous surgical procedure is apt to forget the evil results which commonly follow all surgical operations. Let them, for example, be compared with those published by a committee[2] of the medical board of Bellevue Hospital in this city during the present year. The period embraced is from January, 1872, to June, 1873: Number of amputations

[1] Op. cit., p. 248.

[2] Report by Drs. Janeway, Sayre, and Loomis.

excluding those of the fingers and toes, 58; recoveries, 26; deaths, 28; cause of death—4 from shock, 2 from secondary hemorrhage, 1 from tetanus, 11 from pyæmia, 1 from hospital gangrene, 8 from exhaustion, and 1 from osteo-myelitis. Amputations of the hand, 5; recoveries, 2; deaths, 3. Amputations of the forearm, 4; recoveries, 3; died, 1. Amputations of arm, including shoulder-joint, 11; recoveries, 6; died 5. Amputations of the thigh, 3; recoveries, 1; died, 2. Amputations of leg, including knee-joint, 28; recoveries, 15; died, 13. Amputations of the foot, 8; recoveries, 4; died, 4. Amputations for disease, 9; for injury, 49. In one case both forearms were amputated; in two cases both legs, and in two cases both feet.

The statistical tables of St. George's Hospital, London, for the years 1867 and 1868 were examined by one of this committee, with the following results: Amputations, 54; recoveries, 27; amputations for disease, 32; deaths from pyæmia, 11. Most of the amputations were of the thigh, leg, and foot.

An approximate 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[1]	collected	212 cases
In 1860, Dr. J. Clay[2]	"	425 "
In 1864, Dr. Peaslee[3]	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:

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 "	$3\frac{5}{7}$

[1] Prize Essay, Mass. Med. Soc. [2] Translation of Kiwisch on Ovaries.
[3] On Ovariotomy, Trans. Acad. Med. N. Y.

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 operative 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 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 are introduced into this table.

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[1] Gardner's Notes to Scanzoni, p. 255. [2] Op. cit., p. 471.

[3] Richmond and Louisville Med. Journ., April, 1871.

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.
Stilling.....	"	17	8	9	" "
Sköldberg	Sweden	21	17	4	N.Y. Med. Jour. May, 1870.
W. L. Atlee.....	United States	242	"⅞ 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.....	" "	12	10	2	" "
Emmet	" "	17	8	9	" "
Kammerer.....	" "	5	1	4	" "
McRuer.....	" "	22	16	6	Dr. Peaslee.
Axford	" "	7	5	2	Personal communication.
Allen Smith.....	" "	5	2	3	Dr. Blanton.
Noeggerath.....	" "	6	1	5	Personal communication.
Turner.....	" "	9	4	5	Peaslee, ovarian tumors.
Crosby.....	" "	5	2	3	" " "
Green.....	" "	8	5	3	" " "
Tewksbury	" "	7	3	4	" " "
Beebe.....	" "	6	4	2	" " "
Hill.....	" "	6	3	3	" " "
Tracy	Australia	13	10	3	" " "
Gaillard Thomas.....	United States	27	18	9	

The great difficulties attending the collection of statistics by correspondence has deterred me from bringing these up to the date of this edition.

Conditions favorable to the operation—

Clearness and certainty of diagnosis;
Good constitutional condition;
Patient being hopeful and desirous of operation;
Paucilocular character of cyst;
Absence of much solid matter in its structure;
Abdominal walls not very thick;
Absence of strong and vascular adhesions.

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

[1] Report on Ovariotomy in England, abstract by Brandeis. Richmond and Louisville Journ., April, 1871.

[2] Report carried up only to 1866.

[3] Extract from Swedish table. Brandeis. R. and L. Med. Journ., April, 1871.

[4] Report on Ovariotomy in Germany. Pamphlet translated by Grunhut.

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 a solid tumor 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 operated quite early, as soon as the diagnosis was 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 299 cases in which the general health was ascertained, displays the important fact that even great emaciation does not produce a very unfavorable result:

Class of cases.	Health good.	Health impaired.	Much emaciated.	Complicated with other disease.	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	18
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 to the abdominal viscera 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.

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;
Presence of much solid matter in tumor;
Extensive and firm adhesions to viscera;
Complication with other diseases;
Great thickness of abdominal walls.

Ovariotomy is applicable to cases between the 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 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 have resorted 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 practised through the vagina, which might exhaust the patient and prevent a resort to ovariotomy at a later period. Furthermore, I did not regard 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 the alternative of 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.

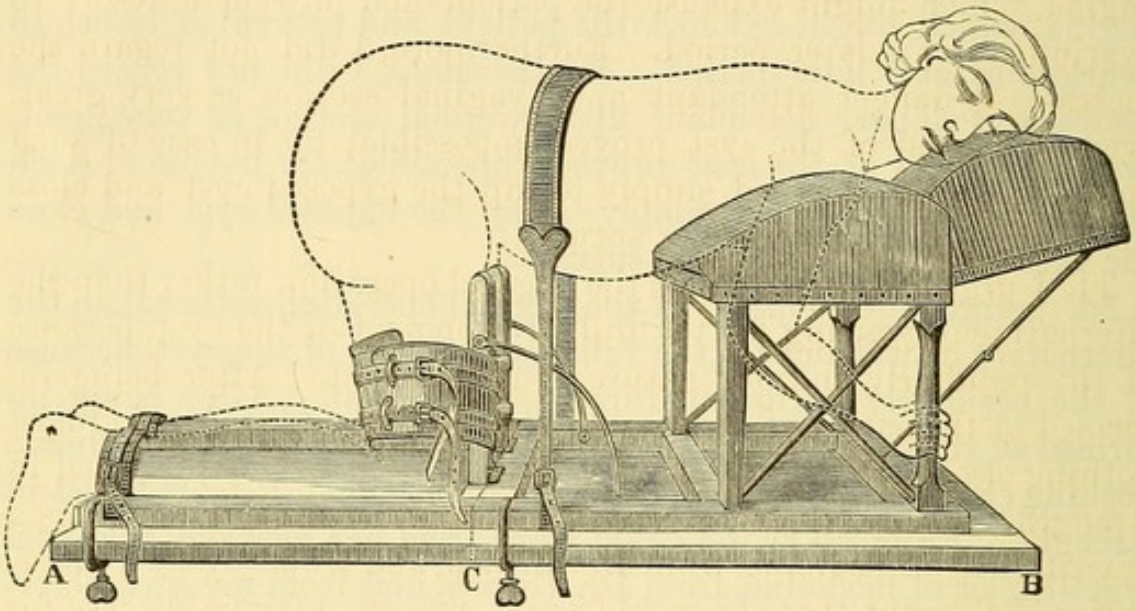
Dr. Brown prepared the patient for the operation by the use of cathartics and kept her upon a milk diet for forty-eight hours previous to its performance. On Sunday, February 6th, 1870, at 3 P. M., I proceeded to operate, in presence of Drs. Peaslee, Brown, Walker, Purdy, J. C. Smith, and Sproat.

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. 180.

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.

Fig. 180.



Bozeman's securing apparatus.

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.

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 periuterine 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.

Since the time of this operation I have met with two cases to which the method would have been applicable. In one the attending physician withheld his consent and the patient was guided by

his decision. In the other the physician with whom I saw the case preferred to tap and drain by the vagina. The operation has been twice repeated, once by Dr. J. T. Gilmore, of Mobile, the report of whose case I give from his account, and that of Dr. F. B. Hamilton, the attending physician; and once by Dr. R. Battey, of Georgia, an extract from whose letter describing it I likewise introduce.

Dr. Gilmore says:[1]

"By elevating the head and shoulders, I could distinctly feel in the retro-uterine space a tumor as large as a small orange. Your operation was fresh in my mind, and was advised for the following reasons: the woman had the habit of opium eating, acquired because of the pain in the left ovary; and at the age of forty-eight, with her habits and damaged health, abdominal ovariotomy would in all probability prove fatal. Secondly. Vaginal ovariotomy is safer than abdominal ovariotomy, for the following reasons: Through the vagina the incision is through structures that heal more readily than those covering the abdomen. Then again, the vaginal incision is better for drainage. Thirdly. Every practical surgeon knows, that the more remote an incision into the abdominal cavity is from the diaphragm, the less is the danger from acute peritonitis. These reasons influenced me to dissent from the opinions of Dr. Peaslee, expressed in his monograph on Ovarian Tumors. The patient, after appreciating her condition, readily consented to the operation. I placed her in Sims's position, and after introducing Sims's speculum, seized the posterior lips of the cervix with a Museux forceps, and drew the uterus gently forwards and downwards. I then carried the index finger of the left hand into the rectum, and the same finger of the right hand into the vagina. I found by this manœuvre I had a vaginal space of $2\frac{1}{2}$ inches through which to enter the abdominal cavity. I then introduced the speculum, the patient being all this time chloroformed, and the bowels having been thoroughly emptied by a purgative dose of castor oil. With a long-handled tenaculum I seized the vaginal mucous membrane, and examined carefully to determine the absence of all pulsating vessels. Being satisfied on this point, with a pair of curved scissors I divided the structures embraced by the tenaculum longitudinally, extending from a few lines posterior to the uterus to within a few lines of the rectum. I then awaited the cessation of all oozing of blood. Then I carefully explored the line of the wound, some two inches in length, and found myself down upon the peritoneum. By making firm pressure in the direction of the body of the uterus in the incision, I found that the rectum was out of the way, and with a small-pointed tenotome I punctured the peritoneum. This puncture I enlarged sufficiently to admit the index finger.

[1] N. O. Med. and Surg. Journ., Nov. 1873.

The opening into the peritoneum I then enlarged, so as to correspond with the external cut. I then readily introduced the index and middle fingers of the right hand. I found I could explore the pelvic cavity—could readily feel the fundus of the uterus. I embraced the tumor between the two fingers. After pressing firmly upon the lower part of the abdomen, and having brought it down until its lower part presented at the incision, it could be distinctly seen to be a cyst. One of my assistants, Dr. J. M. Collins, punctured it with a tenotomy knife, and evacuated its contents partly; when thus lessened, it escaped through the opening. By drawing upon the cyst, I dragged out the ovary, from which it grew by a peduncle. The ovary contained a cyst the size of a small marble; and the Fallopian tube, which could be felt before the abdominal cavity was opened, was brought out with the cyst, its fimbriæ being spread over the large cyst. The peduncle of the large cyst was about one inch and a half in length. With all these structures well drawn down into the vagina, I proceeded to effect their removal, by first using Nott's rectilinear clamp. I passed it up in front of the cyst, and embraced a portion of the broad ligament and Fallopian tube. After screwing it tightly down, I removed it, and applied at the crushed point a waxed silk ligature; then with a curved pair of scissors I removed the whole—the left ovary, the cyst, and the Fallopian tube—leaving a stump sufficient to prevent the slipping of the ligature, which I left hanging out of the vulva, and to the distal end of which I tied a piece of cotton to prevent it, perchance, from slipping into the abdomen. I finally closed the vaginal opening with three silver sutures. I passed one of the sutures through the pedicle, so as to keep the stump distal to the ligature in the vagina. . . . . I found the whole procedure extremely simple and easy. The whole operation was executed without a change of posture, and consumed only about ten minutes."

The operation was performed on September 6th, and the patient dismissed, cured, on October 1st, the temperature never at any time rising above 100°.

Dr. Battey's case is described as follows:

"On Monday, March 30th, 1874, I cut into the cul-de-sac and removed a cyst, the size of a small orange, for a lady from upper Georgia. The operation was executed with the greatest facility, the opposite ovary brought down into the vagina, examined, and returned to its place. My patient has not had an untoward symptom; her pulse has not risen above 90, and only for twenty-four hours has it exceeded 80. The ligature placed upon the pedicle came away yesterday, April 14th, and to-day an exploration of the vagina shows the wound quite healed."

I feel sure that this procedure will, when its merits have been fairly tested, occupy an important place in the treatment of ova-

rian cysts. It is fully as easy of performance as abdominal ovariotomy; is evidently attended by much less danger; holds out to the patient the opportunity of avoiding many weary months of suspense in anticipation of that more grave procedure; is equally applicable to multilocular and to unilocular cysts; gives abundant facility for securing the pedicle; and is, so far as my experience and knowledge go, defensible as a surgical procedure against all but theoretical objections.

Abdominal Ovariotomy.—I have already expressed my belief that only a limited number of 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 this operation, 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 very markedly depreciating 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 gynecologist 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 classed 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 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 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 means are 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 asked in reference to this statement, 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 an equally 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. 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—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 two days previous to the operation upon animal broths, beef-tea, milk, and gruels like those of farina or Indian meal.

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 last two days before the operation one grain of opium, or the equivalent of some of its preparations, should be given as often as every eight hours. This not only quiets the nervous system, but tests the patient's capability of tolerating the medicine. One hour before operating, 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 a flannel wrapper

and drawers. As the time for operation arrives, the bladder should be carefully evacuated, the patient anæsthetized, 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 five assistants, one to administer the anæsthetic, one to stand opposite to him and aid in manipulating the tumor and abdominal wall, one to take charge of the instruments, one to apply ligatures, the actual cautery, etc., and a fifth, to cleanse and supply sponges.

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 opinion exists. I shall avoid discussion, 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. Establishing drainage;
8th. 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 at a varying distance 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. An inexperienced operator may take this for 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, the 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 ceased, the parietal peritoneum should be lifted by the tenaculum, 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.

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 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 results of Mr. Wells as embodied in the following table prove, however, that short incisions are greatly to be preferred to long ones.

	No. of cases.	Recoveries.	Deaths.	Mortality.
Not exceeding 6 in.,	440	337	103	23.4 per cent.
Exceeding 6 in.,	60	36	24	40. " "

It is equally worthy of note that the same surgeon operated on 17 cases by an incision of 3 inches, and lost 23.53 per cent, and on 203 cases by an incision of 5 inches and lost 19.7 per cent.

The most rational deduction to be drawn from these facts is this: that the shorter the incision by which the sac can be removed "tuto, cito, et jucunde," the better for prognosis. The effort to remove the sac, however, through an opening so small as to involve delay, uncertainty, and inefficient manipulation gives the patient a poorer prospect for recovery than the practice of a freer one would offer.

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, visual examination, and removal of fluid by a very small trocar and canula or by the needle of the hypodermic syringe. Should connection with the uterus be suspected, before proceeding further its relations to this organ should be determined by passing the uterine sound, and rotating the uterus 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] The sac which is left should then be opened, thoroughly cleansed, touched all over its oozing surface with solution of persulphate of iron, and, if large, tied around a catheter which should act as a drainage tube.

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, may 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.

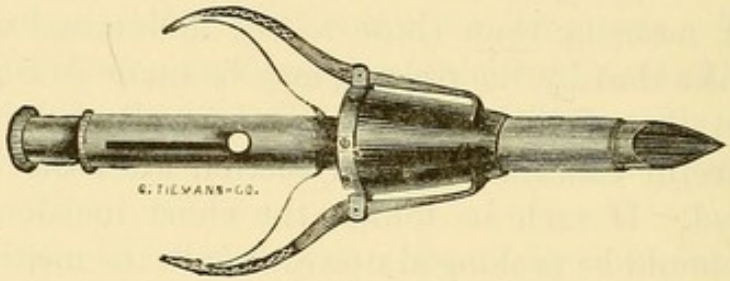
The requisite incision having been made, as soon as all flow from the severed vessels has ceased, the operator should break all adhesions within reach by carefully peeling off their attachment to the tumor. Great care must be observed not to tear the cyst-wall, lest escape of its contents or hemorrhage 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, according to the suggestion of Dr. Hutchinson, be turned on one side, in order to cause the tumor

[1] I have resorted to this method a number of 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.

to protrude through the incision, and the 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 compression 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 tumor, it should now be tapped with an exploring trocar, for a tumor supposed to be fluid may thus be proved to be solid, 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. 181, may be plunged in, fixed to the

Fig. 181.



Spencer Wells's trocar and canula.

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 should be kept from slipping into the abdomen by strong 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

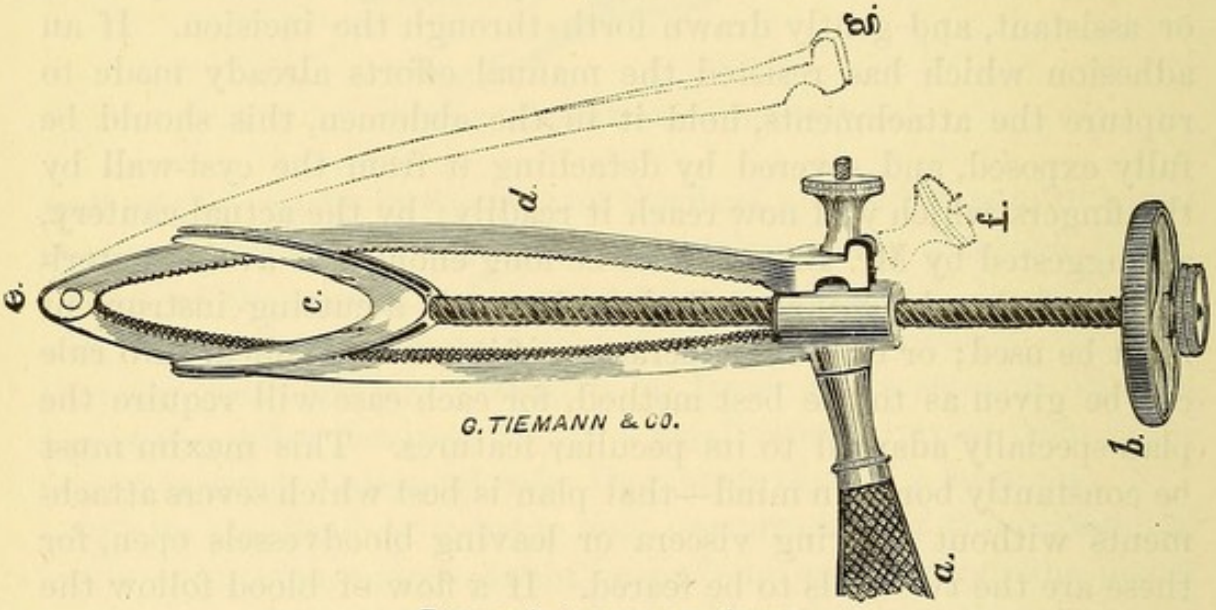
handle of a scalpel. By this means he may avoid the necessity of enlarging his incision, and succeed in breaking adhesions for a considerable distance up the sac-wall. This being done, the main sac, the flow from which has been meantime controlled by the fingers of an assistant or by forceps, should 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 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 attachments 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 an adhesion, the bleeding vessel should be exposed and ligated or freely touched with persulphate of iron, or with the actual cautery so lightly as not to create a slough.

By the means recommended, adhesions may generally be severed without the application of ligatures, but now and then this is necessary. If it be so, silk should be unhesitatingly employed as a method of ligation. Metallic ligatures are unwieldy and unreliable, and none of the other animal ligatures compare favorably with silk. In some cases 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. 182. By this the vessels of the pedicle are secured,

Fig. 182.



Dawson's temporary clamp.

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 be managed after one of the following methods, that one being selected which best meets the requirements of the particular case.

1st. The pedicle may be constricted by a clamp and held outside of the abdominal cavity.

2d. The pedicle may be securely ligated and held between the lips of the wound by pins or sutures.

3d. The pedicle may be transfixed by double ligatures, which being cut short, it is dropped into the pelvic cavity.

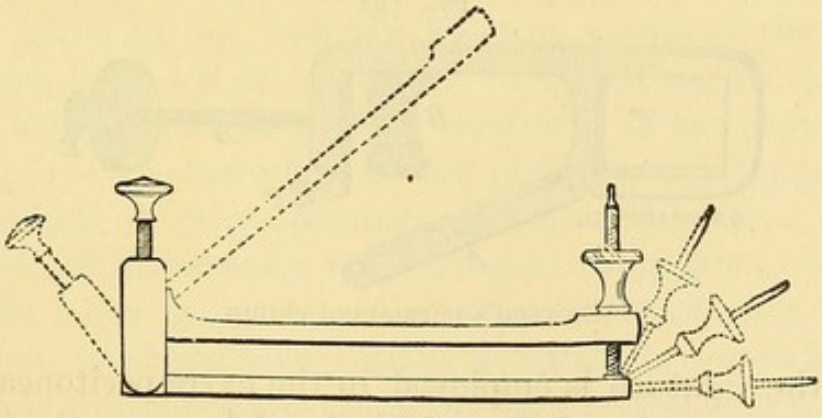
4th. The tumor may be enucleated.

5th. The pedicle may be constricted by a temporary clamp and severed by the actual cautery.

A large number of other methods have been advised and practised, and to those interested in the matter, I would recommend the work of Dr. Peaslee on Ovarian Tumors where they are considered at length. I mention here only those which appear to me deserving of special consideration and unquestionable reliance.

The prevention of hemorrhage by the ligature and clamp is 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 employed: the pedicle or neck of the tumor being held in the fingers, the clamp,[1] Fig. 183, is adjusted so

Fig. 183.



Spencer Wells's clamp.

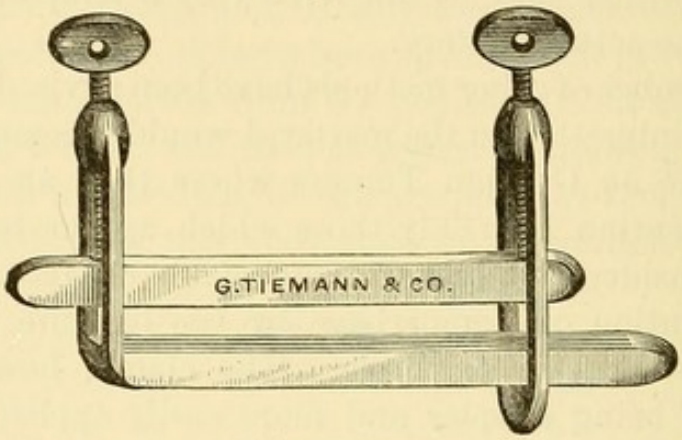
that one limb passes over one, and the other over the other side of it; the two branches are then closely approximated so as to oblite-

[1] Mr. Wells has devised another clamp since the introduction of this, but, as experience with both leads me to regard the later one as the more imperfect of the two, I do not delineate or describe it.

rate 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.

Although this clamp in the hands of its eminent originator, and in those of others, has accomplished grand results, it has certain inherent disadvantages connected with it. The chief of these consists in spreading out the pedicle instead of consolidating it or rendering it circular. Attempts have been made to overcome this objection, by first ligating the pedicle and then applying the instrument, and by the construction of other clamps, such as those

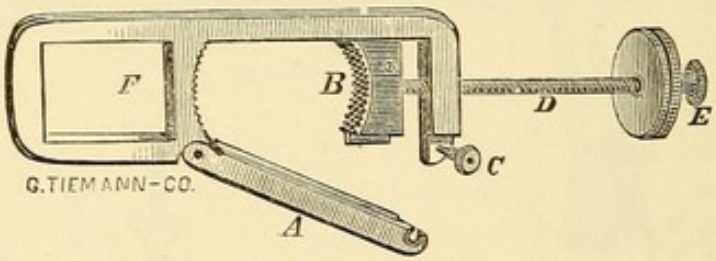
Fig. 184.



French clamp.

of Kœberlé and Atlee, a French instrument, Fig. 184, whose inventor I cannot learn, and the clamp of Dawson, Fig. 185.

Fig. 185.



Dawson's permanent clamp

When the ligature is employed in the extra-peritoneal method, the sac is amputated and the stump placed between the lips of the wound and transfixed by large pins, or the sutures which close this part of the incision.

Dr. Tyler Smith was instrumental in rendering popular a method which was practised, 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] operated upon seventeen cases, and lost only three patients. Dr. Peaslee, 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 Spencer Wells;[2] 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 five cases in which I performed double ovariotomy, eight 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?

Kœberlé, of Strasbourg, employs the clamp when the pedicle is long, but when short, he compresses the stump by a species of constrictor which tightens a metallic wire that surrounds the pedicle. Enucleation will never prove applicable to a large number of cases, for where a pedicle can be treated by any of the methods thus far mentioned, it will offer no advantages. Where, however, there is no pedicle, it presents itself as a most valuable resource, and comes into use in a class of cases to which no other plan is applicable.

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[1] His statistics are brought only up to 1866.

[2] Lond. Med. Times and Gaz., Nov. 28, 1868.

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 different plans, the following suggestions, not rules, may be of service:

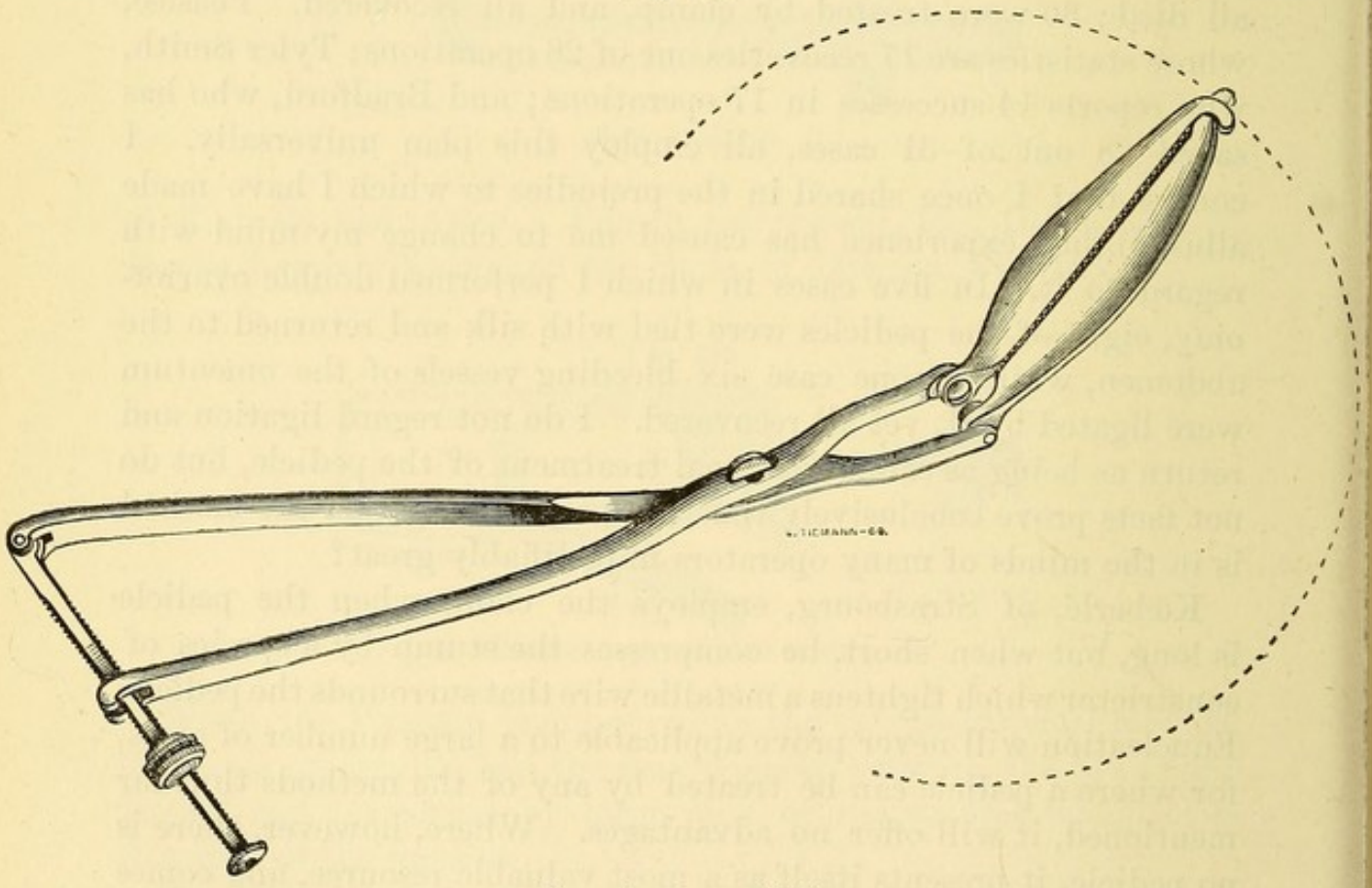
a. The clamp is applicable to long pedicles, requiring powerful ligation, and presenting a large amount of tissue for suppuration and decay.

b. The third method is applicable to tumors with pedicles too short for treatment by the clamp.

c. Enucleation gives a method of removal of tumors which have no pedicles.

d. Baker Brown introduced the plan of amputating the tumor by means of the actual cautery, and claimed the astonishing results

Fig. 186.



Storer's clamp-shield.

of twenty-nine cures in thirty-two operations. The insecurity against hemorrhage attendant upon the method will probably prevent its competing with those already mentioned, but, in certain

rare cases in which the part to be amputated is deep within the pelvis, it offers great advantages. In doing this, Storer's clamp-shield, Fig. 186, answers a good purpose in controlling hemorrhage, and protecting surrounding parts.

When it is decided to return the ligated pedicle to the abdominal cavity several animal substances may be selected for constricting material. Among these are horsehair, catgut, and silk. Of these I greatly prefer the last, as being much more manageable and efficient, and equally innocuous.

An objection to the use of the ligature cut short and returned to the peritoneal cavity has been raised upon theoretical grounds—namely, that gangrene of the portion of the stump distal to the ligature was likely to occur, and prove a source of septicæmia. Spiegelberg and Waldeyer have proved that after the application of a ligature upon the horns of the uterus the portions of tissue distal to them do not become gangrenous, but are encapsulated by effused lymph.

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 those who do not return it, with those of 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.	Écraseur 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

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 practised this method a fatal issue occurred in the following way: the patient did well until the fourteenth 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 drainage tube and ligating the neck around this, and securing it by pins in the wound. By this means antiseptic injection could be regularly practised.

I am very confident that I have succeeded by this plan of enucleation in extirpating 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 be 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 glass 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.

Establishing Drainage.—No one familiar with ovariotomy will to-day doubt the assertion that the two factors which prove most fatal after it, septicæmia and peritonitis, are both in great degree due to the retention of putrescent materials within the peritoneal cavity. These materials may have escaped from the cyst during or before the operation, may consist of blood or serum oozing from vessels while the operation proceeds, or some hours after it has ended, or arise from emptying of pus into the peritoneum from inflammatory action. The importance of not only preventing the entrance of such elements into the peritoneum, and of removing them before closing the abdominal opening, but also of giving them free vent during the period of convalescence has attracted the attention of many ovariotomists. Peaslee introduced the plan of leaving a cloth tent in the lower angle of the wound in order to facilitate drainage in case of the development of septicæmia. Kœberlé not only inserted channels of metal through the abdomen, but even opened through the cul-de-sac of Douglas and inserted tubes, so as to drain per vaginam, and Sims more recently has urged this plan as one very greatly calculated to diminish the liability to these conditions.

The removal of the cloth tent, fixed between the lips of the wound by congealed blood, is often difficult and painful, and the passage of a catheter or other tube down into Douglas's cul-de-sac, the most dependent part of the peritoneum, is not rarely impossible after a slight effusion of lymph has occurred.

Drainage per vaginam by means of tubes passed up into the peritoneum is, I think, calculated to increase the dangers of ovariotomy, by opening a way for putrid fluids from the peritoneum into the

pelvic cellular tissue. I have practised it twice and seen it adopted many times, and it is upon the evil results thus far observed at the bedside that I base my estimate of its value.

It is my uniform habit to insert a glass drainage tube eight inches long, and varying in diameter from half to three-quarters of an inch, just above the pedicle and into the depths of Douglas's pouch, in every case except where there is absolutely no fluid left in the peritoneum. Fig. 187 shows the tube employed.

Fig. 187.



Thomas's glass drainage tube.

Should no fluid be left in the abdominal cavity this tube should not be inserted, or if the operator be in doubt it should be placed in position and kept tightly corked. If fluid accumulation exist, or its occurrence be rendered probable by slight oozing from broken adhesions, the tube should be left uncorked, that serum and blood may drain away. If no increase of temperature mark the occurrence of septic absorption, nothing more is necessary than to keep this in place until all danger has passed away. Should septicæmia show itself a gum-elastic catheter cut off near its end should be inserted as far as possible, the glass tube drawn up for an inch, and a stream of warm water containing one drachm of chloride of sodium and sixteen grains of the crystals of carbolic acid to the pint, gently injected by means of a Davidson's or fountain syringe. No force whatever should be employed, but a free supply of water should be thrown in until the return current comes forth clear. I use this method in all cases, except in those rather rare ones in which the peritoneum is left free of fluids of all kinds. In no instance have I known this tube to excite inflammation. It is usually left in place, being withdrawn and reinserted occasionally, for eight or ten days, although I have kept it in much longer in some cases.

Closing the Wound.—This is accomplished by two sets of sutures, the deep and superficial. The first, composed of silver, 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-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.

Another excellent method is to pass through both walls of the abdomen a long needle with fixed handle and an eye near its point armed with a short loop of silk as recommended by Peaslee. Into this loop or into the eye of the needle a bit of metallic wire is fitted and immediately drawn into place.

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 the abdomen should be swathed in broad, long bands of adhesive plaster to oppose the succussion of vomiting. Should hemorrhage have existed when the abdominal wound was closed, folded towels should be placed under these over the abdominal muscles to act as compresses.

Then a sheet of soft, dry cotton should be laid over the whole, the patient given a dose of opium or one of its salts, and covered up warmly in bed with warmth to the feet even in hot weather.

After-Management.—The apartment should be kept at a temperature of 65° to 68° Fahr., and thorough ventilation secured, not by the unpleasant method of admitting cold, damp, and chilling air, but by the more philosophical one of causing the rapid escape of foul air. This can best be done by lighting a fire in the chimney, by immediate removal of offensive substances, and by general cleanliness.

A quiet, attentive nurse who understands the use of the catheter should be in attendance day and night.

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 catheter should be employed for evacuating 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 pro-

ducing 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.

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 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 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.

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.

Septicæmia, which I believe will in time be admitted to be the most frequent cause of death after ovariotomy, is, when once fully established, a most dangerous state. It is ushered in by dizziness; excessive muscular prostration; anorexia; great pallor; high temperature; 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 hemorrhage before closing the abdominal wound;
3d. Establishing drainage, whenever fluids are likely to collect in the peritoneum;
4th. Mummifying the stump by persulphate of iron.

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, but it may take place in two or three weeks after the operation.

The development of peritonitis and septicæmia should be carefully looked for. All the vital and physical signs which mark them should be constantly investigated, and their inception be met by appropriate therapeutic means. A written record of pulse rate, temperature, and number of respirations should be systematically kept, an entry being made as to the three conditions at least as often as every six or eight hours. In case a competent assistant remain at the bedside, it may be done more frequently, but never often enough to annoy or harass the patient.

After the lapse of twelve hours, in consequence of the anæsthetic, the vomiting which this commonly induces, and the effect of a capital surgical operation upon the nervous system, the pulse usually runs up to 110 or even 120, and the temperature to 102° or 103°, but as the irritative influence of these agencies passes off a subsidence ordinarily occurs, the pulse ranging from 90 to 105, and the temperature from 99° to 101° as convalescence proceeds.

If at any time the temperature should gradually or suddenly advance to 103°, 104°, or 105°, except just as the patient rallies from

the immediate effects of anæsthesia and operation, fears should be entertained that peritonitis or septicæmia is developing. If it occur within four days after operation, it is likely to be the former. If after that time, the probabilities are greatly in favor of the latter. The pulse will usually become rapid at the same time which-ever morbid condition is developing, and it must not be forgotten that the two are often combined.

I have already stated that in all cases in which fluid remains in the peritoneal cavity or collects there subsequent to operation, it is my invariable practice to pass to the very bottom of Douglas's cul-de-sac the glass tube elsewhere shown, and through this, should the temperature run up, to inject warm water containing enough carbolic acid to impart a taste to it, and about one drachm of chloride of sodium to the pint, once or twice in every twenty-four hours. In no instance have I seen evil result from this course. Even where a tube has not thus been left in place, when the temperature or pulse rises and the other symptoms of septicæmia develop, such an injection should be practised once in every eight hours. But without the tube left from the time of operation, it is difficult and sometimes impossible to reach the most dependent part of the peritoneum, and hence I urge its employment.

The following tabulated record of temperature taken by Dr. Kuentzler, in a desperately bad case of double ovariotomy occurring in my practice, will show what marked variations may occur, what elevations may be reached and yet the patient recover, and how decided is sometimes the effect of antiseptic injections into the peritoneal cavity in rapidly lowering the animal heat.

Fig. 188.

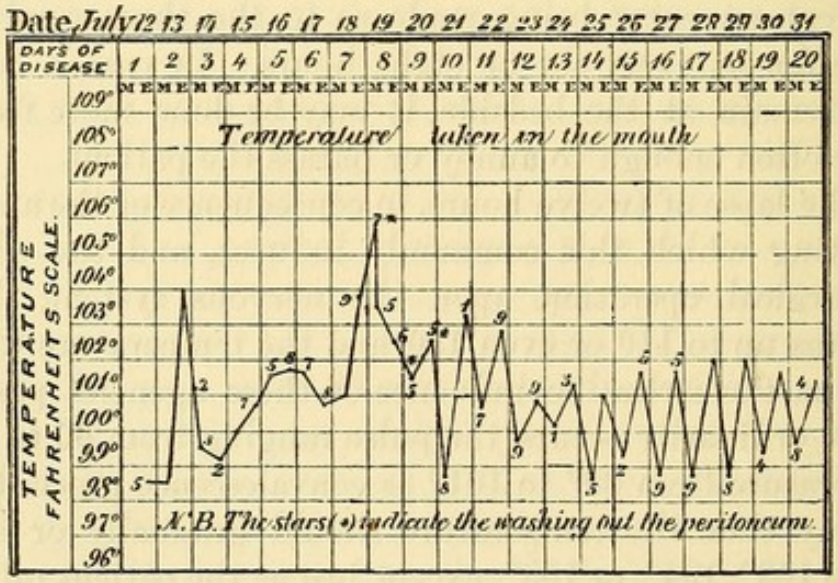


Fig. 189.

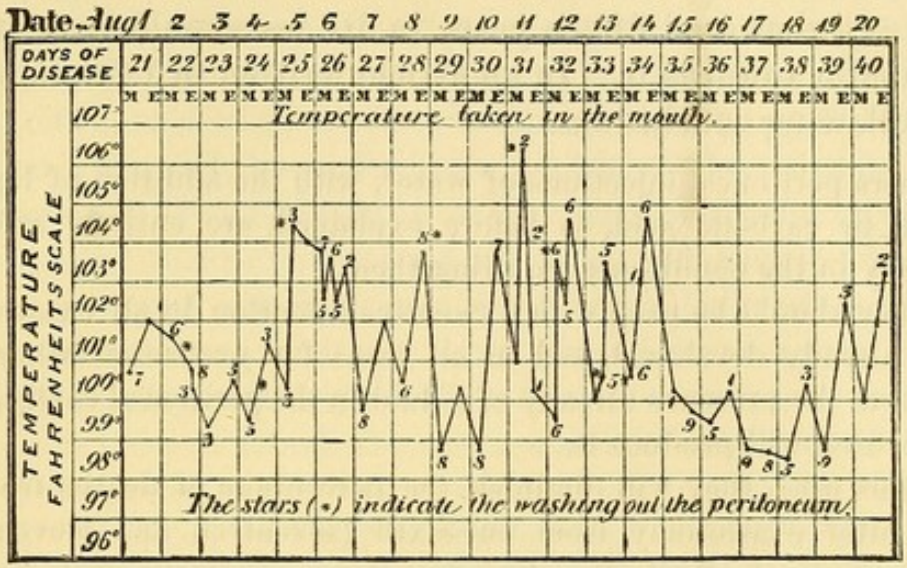
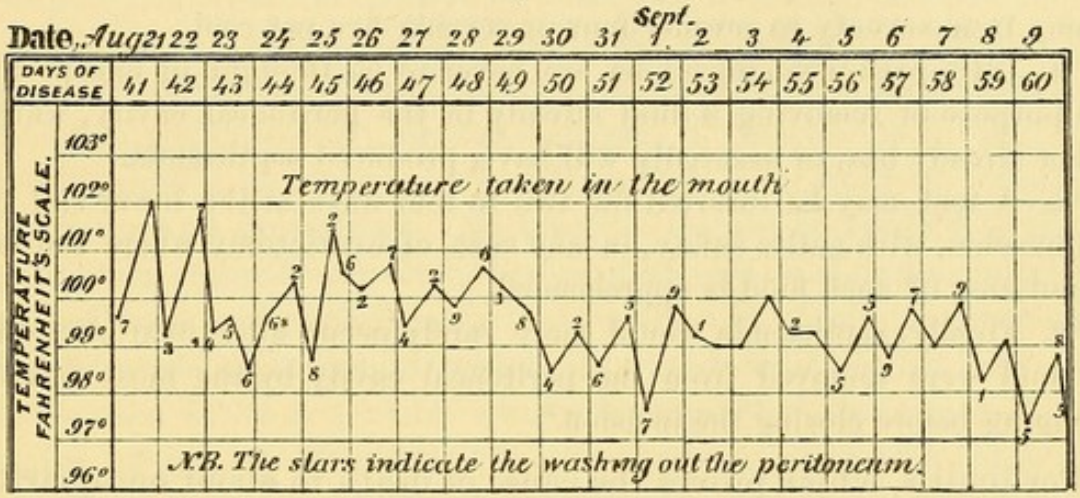


Fig. 190.



Let no one suppose that septicæmia once established becomes irremediable. 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."

This method of meeting in an efficient and satisfactory manner the most fruitful source of danger after ovariotomy, I regard as second in importance to no other improvement which has been introduced since the discovery of the operation itself. It emanated from Dr. E. R. Peaslee, and has even now, I think, not assumed its legitimate position in the scale of importance.

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[1] Boston Gynæcological Journal for 1869, p. 356.

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."

Peritonitis, which proves the cause of death in about one-quarter of all who die from this operation, is best avoided by leaving as few ligatures as possible in the peritoneal cavity, by removal of all putrefactive matters, and by keeping the abdominal viscera at rest by preventing vesical and rectal action and applying a bandage.

Should peritonitis develop early, and be evidently a result of operative interference with the peritoneum, and not of putrefaction of fluids left within its cavity, it should be at once treated by free and steadily continued use of opium, after the plan of Alonzo Clark. The bowels should be kept strictly constipated, the patient perfectly quiet upon the back, the diet be restricted to milk, and no other medicine than opium be administered. A difference of opinion exists as to the benefit arising from applications over the abdomen. Mine is, that, as a rule, stupes of turpentine, bladders of ice, and warm poultices, alike do harm. In cases where the disease is limited to the pelvis the last often do good, but in general peritonitis the comfort of the patient appears to be favored by an avoidance of them.

Should peritonitis arise after the lapse of four or five days, it should, I think, although I express the opinion with great reservation, be looked upon as probably due to putrefaction of contained fluids, and be treated in its very inception by peritoneal injections. Should it arise still later, for instance, about the tenth or twelfth day, it should be looked upon as a result of discharge into the peritoneum of encapsulated fluid material, and should likewise be met in this way if injection can be accomplished without reopening the abdominal wound. It is to avoid this necessity that I so commonly employ a drainage tube.

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 sixth, seventh, or eighth day. But great care should always be observed, and only those at points where the union is strong should be withdrawn. After withdrawal the abdomen should be firmly supported 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. Mr. 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 corset 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 tissue, and peritoneum. In one case these yielded to pressure, and one year after ovariotomy a tumor about the size of a kidney, with a mass of attached omentum, escaped.

CHAPTER XLVII.

DISEASES OF THE FALLOPIAN TUBES.

Anatomy.—The identity of structure of the Fallopian tubes and uterus will be appreciated by the 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. 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, 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 embryonic life; according to Dohm it is completed by the end of the second month. From the fact of this identity of structure there naturally exists between these organs a close sympathy in health and in disease.

In the adult woman, according to Carl Hennig,[3] the right tube is nine and a half centimeters, (three centimeters make an inch,)

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[1] Treatise on Human Physiology, by J. C. Dalton, p. 645.

[2] Prof. Dohm, of Marburg. Transac. Insbruck Convention, Obstet. Journ., vol. iii, p. 167.

[3] Uterine Catarrh. Translation in Obstet. Journ., vol. iii, p. 468.

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[1] 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 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[2] menstruation throughout its entire surface, it (the mucous membrane of the tubes) assumes a dark red color." Ruysch, an 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

[1] Loc. cit., p. 473. [2] Loc. cit., p. 470.

some of the writers upon the history of hematocele been construed into a record of that affection, but the passage appears to refer merely to a condition which depends upon ovulation. Messrs. Bernutz and Goupil[1] mention instances of the collection of blood in the Fallopian tubes in consequence of obstruction of these canals. Dr. Duncan[2] admits that some blood may come from the tubes in natural menstruation. In two of my cases of ovariotomy in which I employed the clamp, the patients 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 these cases 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;
Distention;
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.

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,

[1] Op. cit., vol. i.

[2] Fecundity, Fertility, and Sterility, p. 388.

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 two 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 in part

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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.

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:

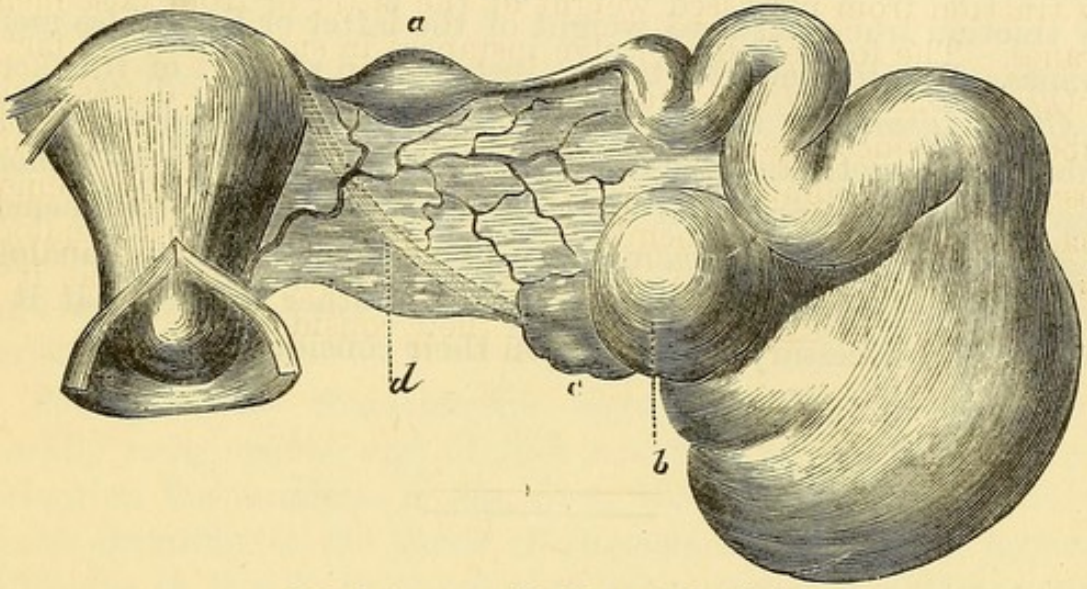
Calcific deposit;
Senile atrophy;
Salpingitis;
Pelvic peritonitis;
Tubercle or fibrous tumors.

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 hematocele 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 gynecologist, for it can neither be diagnosticated nor relieved by treatment.

Distention.—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 distention. This condition invariably has as its moving cause, stricture, which prevents the tube from emptying itself into the uterus. When very great distention takes place, the accumulated fluid either forces its way out of the uterine extremity, constituting the profluent dropsy of Rokitansky, or 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 some say even much larger, though there is doubt as to the authenticity of the latter cases. Virchow has established a class

Fig. 191.



Tubal dropsy. (Boivin and Dugès.)

of cysts which he styles cysts from retention, to which distention 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.

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

[1] Courty, op. cit.

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. Bérard.

Prof. Rokitansky,[1] 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.

CHAPTER XLVIII.

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

[1] Sydenham Soc. Year-Book, 1861.

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 Virginius, 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, etc. 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 cir-

[1] De Morb. Virgin.

[2] Syd. Soc. Ed. of Works, vol. ii, p. 288.

cumstance 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,[1] 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."

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.

[1] Flint's Practice of Med., 2d ed., p. 62.

ANÆMIA.	CHLOROSIS.
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 ordinarily produce sadness or great nervous disquietude.	Commonly produces sadness and nervous disquietude.
Is not especially accompanied 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 fails to benefit.
The cause of the disease being removed, patient will rapidly improve.	If supposed cause be removed, patient will often improve but slowly.

The rapid 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 of the 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, or 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 others times, the taste prompts her to consume acids, as vinegar, lemon-juice, pickled vegetables, etc. 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.

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[1] De la puberté, and de l'age critique chez la femme, p. 240.

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,[1] 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."

German pathologists very generally appear to repudiate the nervous theory of the production of chlorosis, and Rokitansky and Virchow have advanced the statement that severe and incurable cases are due to an aplasia, or, as Virchow would express it, a hypoplasia of the heart and large arteries and a defective development of the genital system. According to them the disease is of congenital rather than acquired character.

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

[1] Mal. de l'Utérus, t. ii, p. 490.

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 cephalagia;
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 frequently 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 send-

ing 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 resides in 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 tenpins, etc., 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, and congenial, society. This accomplishes a change in the nervous system which nothing else so surely effects.

In the mean time, 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 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.

Should the pathology of severe cases be, as suggested by some of the most eminent German pathologists, an undeveloped state of some of the important organs of the body, of course nothing will result from treatment except palliation by improvement of the existing blood and nerve states.

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