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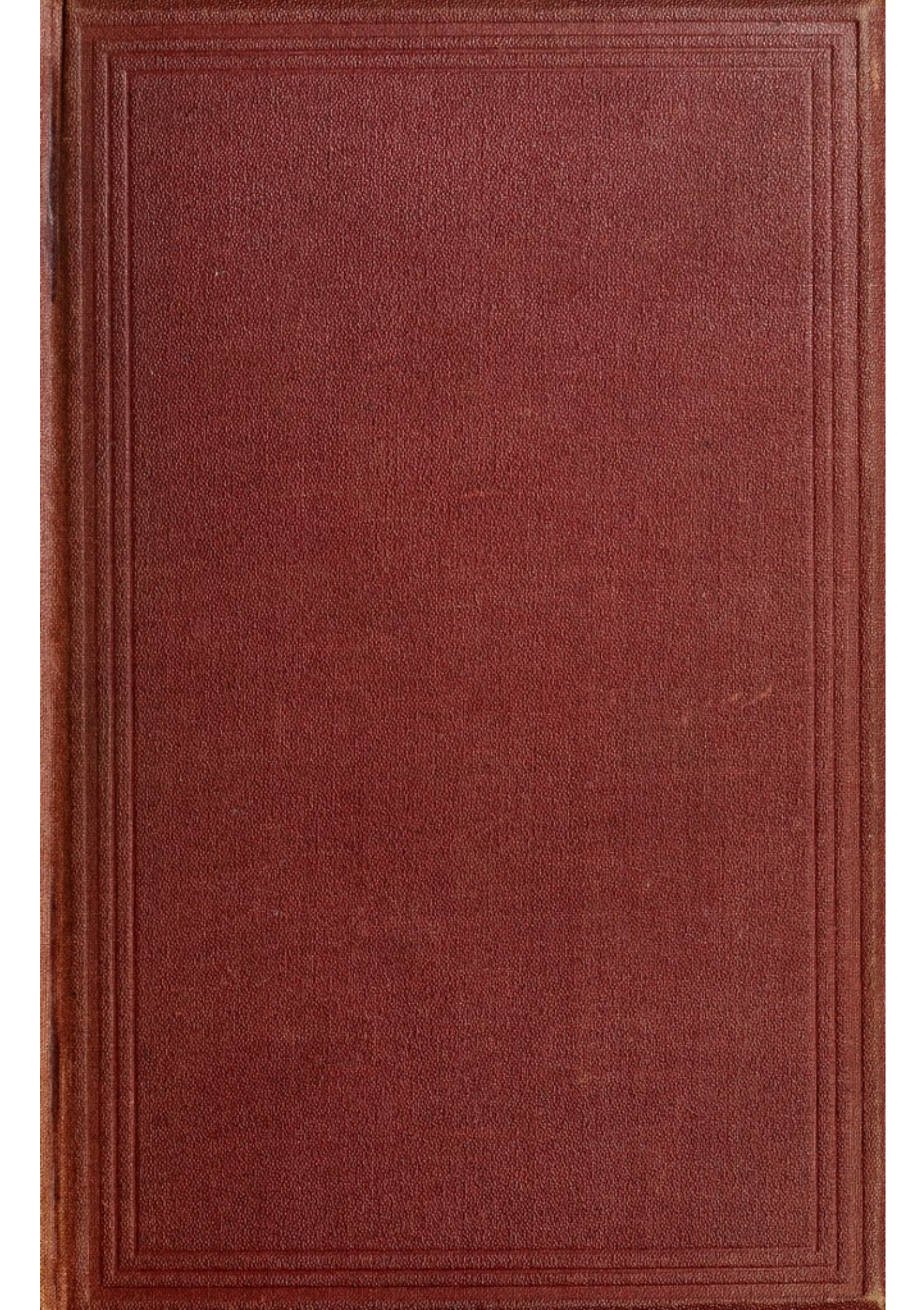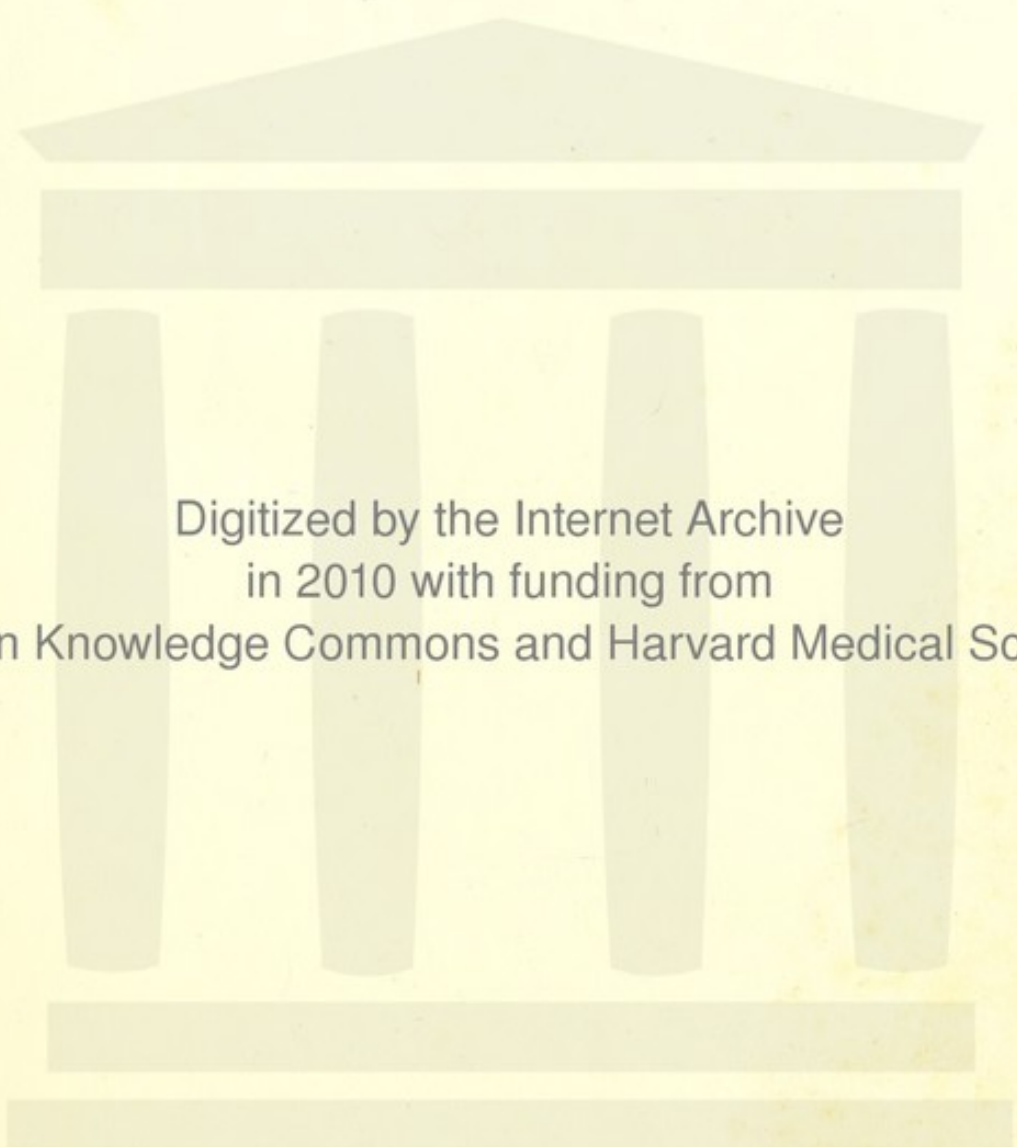
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DISEASES OF WOMEN.

THE

DIAGNOSIS,

PATHOLOGY AND TREATMENT

OF

DISEASES OF WOMEN,

INCLUDING

THE DIAGNOSIS OF PREGNANCY.

BY

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Professor of Midwifery and Diseases of Women, University College, and Obstetric Physician to the Hospital; Honorary Fellow of the Obstetrical Society of Berlin; Vice-President of the Obstetrical Society of London.

First American,

FROM THE SECOND LONDON EDITION, REVISED AND ENLARGED.

With One Hundred and Sixteen Illustrations.

TO

SIR CHARLES LOCOCK, BART., M.D.,

First Physician-Accoucheur to Her Majesty the Queen,

IN ADMIRATION OF HIS PROFOUND KNOWLEDGE

AND GREAT PRACTICAL SKILL

IN

THE DIAGNOSIS AND TREATMENT OF THE DISEASES OF WOMEN,

THIS WORK

Is Respectfully Dedicated,

BY HIS OBLIGED AND VERY FAITHFUL SERVANT,

THE AUTHOR.

PREFACE

TO THE SECOND EDITION.

THE PRESENT VOLUME differs from the first edition of this work, which has been now about a year out of print, in several important particulars. In the first edition primary attention was devoted to the subject of the Diagnosis of the Diseases of Women : the treatment of these diseases was considered separately in the latter part of the work, while the subject of the pathology of these diseases although not excluded was not systematically entered into. In this new edition the pathology has been considered in conjunction with the treatment of the diseases of women. Very considerable additions have been made for the purpose of rendering the work more complete in this respect, while in its present form it will be found, so far as the facilities offered for studying the diagnosis are concerned, in no respect different to those presented in the first edition.

Apart from the question simply of arrangement, further experience and observation of the diseases here treated of has necessitated changes and additions of other kinds.

Lastly, and this must plead my excuse for the delay in the appearance of the new edition, the work is now enriched by the addition of numerous illustrations. Concerning these a few explanatory remarks are necessary.

Upwards of sixty of these illustrations are original : a few of these are delineations of instruments, a few are drawings

from pathological specimens in the Museum of University College, but the greater portion of them are carefully planned representations of cases which have been under my own observation, and the majority of them in the wards of University College Hospital. These have been in the first instance carefully drawn in outline, life size, by myself, and embody the results obtained by examination of the case while under treatment. These outlines have been subsequently reduced by the camera, and made to assume their present form by the artistic hands of Mr. Bagg. The attempt has here been made by means of two sectional views of the same object to convey a more exact idea of the size and relations of certain pelvic tumors than could otherwise be given.

Of the remaining illustrations, seven are taken from original drawings by Dr. Arthur Farre in Todd's "Cyclopædia of Anatomy and Physiology," article "Uterus." The sources of a few from other publications will be found indicated in due order.

G. H.

36 BERKELEY SQUARE,
        November, 1867.

PREFACE AND INTRODUCTION

THE FIRST EDITION.

THE PRESENT WORK, founded on a course of lectures delivered at St. Mary's Hospital Medical School, is intended to form an introduction to the study of the Diseases peculiar to Women. The first and principal part is devoted to the elucidation of the diagnosis of these diseases, including the diagnosis of pregnancy; in the second part of the work the treatment of these diseases is considered.

The primary object of the work is to afford increased facilities for diagnosis; and a peculiar arrangement of the subject, adapted for the purpose of carrying out that object in the most efficient manner, has been here followed. It may be necessary to explain why it has been thought advisable to give this great prominence to the question of diagnosis, and why other questions have been made subservient to it. Very little consideration will show how completely subsidiary to questions of diagnosis are all others likely to present themselves to the student in his early attempts to investigate disease, of whatever kind, and wherever situate. In those admirable lectures on clinical medicine to which it was my privilege to listen, Dr. Walshe quotes the saying of Demosthenes, who, in answer to the question, what was the first part of oratory? answered, delivery; and the second? delivery; and the third? still delivery. "If

I were similarly asked," says Dr. Walshe, " what is the first object to be attained by clinical observation ? I should reply, diagnosis; and the second? diagnosis; and the third? still diagnosis."*

This is most true. Without diagnosis no advance can be made but on the imperfect basis of surmise and conjecture. Everything, in fact, turns on the diagnosis, and once the diagnosis has been made, the path is comparatively clear. In the words of Dr. Meigs, " Diagnosis is in practice like Captain Greatheart in Bunyan, encountering and overthrowing all obstacles, so that even Apollyon himself could by no means oppose a bar to his habit in his practice of succeeding always."†

In the study of no class of diseases do we meet with so many practical illustrations of the truth of what has been stated in reference to the importance of diagnosis, as in that to the consideration of which the following pages are devoted. A very large proportion of the cases coming under the notice of members of the profession are cases in which diagnostic knowledge as to these particular diseases is specially called for; moreover, this is a department of practice in which mistakes in diagnosis are very frequently disastrous to the patient, or destructive to the reputation of the practitioner. The very important question of the diagnosis of the presence or absence of pregnancy is of itself one for the practical dealing with which a very extensive and complete knowledge of the diseases of women generally is absolutely essential. The subject of the diagnosis of pregnancy has been fully considered in the present work, side by side with that of the disorders or conditions which are capable of simulating it. The importance of diagnosis, then, leads us to give it the first consideration.

In regard to the mode in which the subject is considered,

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* Lancet, 1849, vol. i, p. 2.

† Females and their Diseases, Philadelphia, 1848, p. 129.

the first part of the work—that treating of diagnosis—differs from most other systematic treatises on the subject of diseases of women, symptoms, not pathology, having been made the basis of the arrangement. This arrangement and mode of considering the subject of the diagnosis has been found best adapted for carrying out the object of the work, inasmuch as it is the one actually followed at the bedside. The difficulties encountered by every one in the first attempt to investigate disease clinically are considerable; the subject is not presented to us at the bedside pathologically, and to suit our convenience. It is the symptom, the sign, with which we have then to deal; and before a diagnosis can be made, we must know how to give to each of these signs its proper signification. Every practitioner who has acquired facility in diagnosis possesses, in his own mind, a sort of dictionary, to which he, from time to time, refers, in order to ascertain what diagnostic value a particular sign possesses, when present under such and such circumstances; while forming a conclusion in any particular case, he passes rapidly in review all the morbid conditions or diseases with which he has known the sign in question to be associated; carefully bearing in mind the many exceptional cases to general rules which his predecessors have left on record, or which have been observed by himself. To the student, however, the disease or morbid condition presented by the patient speaks in an unknown language—one which must be learned before a diagnosis can be arrived at; and thus it becomes an object of primary importance to the investigator of disease, that means should be available by which the value of symptoms and signs, as diagnostic of certain affections, may be duly estimated. The plan followed in the present work, will, it is believed, offer facilities for the kind of valuation required, while it further assists the observer by putting the question fairly: all the possible causes of certain symptoms being set forth, it is less likely that important disorders will altogether escape attention.

The plan of arrangement followed in the present work is not altogether a novel one; its utility and practical advantages have been tested as applied to other departments of medical inquiry. In the classical treatise of the late Dr. Montgomery, on the "Signs and Symptoms of Pregnancy," also in the work of my friend Dr. J. Russell Reynolds, "On the Diagnosis of the Diseases of the Brain and Spinal Cord," the plan adopted is essentially the same; and in the well-known work of Sir Charles M. Clarke the method of classification of the disorders there treated of is similar to that which is here applied to a somewhat larger field of inquiry.

The difficulties encountered in carrying out the proposed plan have been considerable. In reference to a few of the subjects which are here treated of, it has been found almost impossible, indeed, to avoid adhering to the methods of classification more ordinarily adopted. And the method adopted necessarily involves a certain amount of repetition. The particular disadvantages which are inherent to the method of treating the subject here followed, are, however, really trifling and will not, it is believed, be found to counterbalance the very obvious advantages and facilities for diagnosis which it secures. The diagnosis has had the chief place assigned to it; other considerations have been necessarily to a certain extent, and, it is hoped, usefully sacrificed. By means of the Index it will be found easy to ascertain, respecting any disease, what are the symptoms usually associated with it, and thus to obtain an idea of the disease in its entirety.

The subject of the pathology of the diseases peculiar to women has received a considerable amount of attention in the present work. The observations on pathology will be found in some cases incorporated with those on diagnosis; in some instances they have been placed distinct and separate; and in other instances the pathology has been considered in conjunction with the treatment. The great space devoted to

the diagnosis has rendered a fuller consideration of the pathology impossible, without extending the work beyond convenient limits.

With reference to certain much-debated questions in uterine pathology, the opinions expressed in the following work have been arrived at after an impartial consideration of the facts and arguments put forward by various eminent authorities, corrected by actual observation of cases which have occurred in my own practice. I have endeavored fairly to represent opinions which are not in unison with my own.

The second division of the work contains a concise account of the treatment of the diseases of women. In cases regarding which differences of opinion exist, while I have not hesitated to express decidedly my own views on the subject, I have, at the same time, done my best honestly and impartially to set before the reader the two sides of the question. It is well known that views apparently the most opposite have been held by various eminent writers on the subject of the treatment of uterine diseases; I believe, however, that with some few exceptions, which need not now be more particularly alluded to, these differences of opinion are not so great as they appear to be; in practice, certainly, the treatment recommended by eminent practitioners holding different views on the subject does not vary to the extent which might be anticipated. The great interest attaching, at the present moment, to the treatment of certain diseases of the ovaries, has necessitated a rather lengthened discussion of this subject.

In conclusion, I venture to express the hope that the work now submitted to the kindly judgment of my professional brethren will facilitate the acquirement of knowledge in this department of medical practice, and thus prove in some degree serviceable both to the profession and to the community at large.

G. H.

October 1, 1863.

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PART I.

DIAGNOSIS.

PRELIMINARY REMARKS.

On Diagnosis in general, and the Method to be pursued in attaining it.

In order that time may not be unnecessarily lost, it is very important, before commencing any particular investigation, to be aware not only of the precise nature of the object to be sought, but also of the best method of seeking it, and of overcoming the practical difficulties which lie in the way of its attainment. A short space will thus be not unprofitably devoted to the question of diagnosis in general, and the method to be pursued in attaining it.

The patient is before us. It is required to determine the nature of the disease under which she is laboring. The diagnosis can only be made out by a critical survey and comparison of the *data* afforded by observation and inquiry. These data have to be acquired before we can go a step further, and until they are all before us, no attempt can be made to solve the problem. The acquisition of these data, at all times a matter of difficulty, is often rendered more so by the perversity or stupidity of patients; not seldom great care is necessary to discriminate between right and wrong on mere questions of fact, owing to the desire of the patient to deceive. More often the difficulty consists in this, that the patient resolutely persists in stating the case in her own way, or in endeavoring to elicit an opinion before the observer is at all in a position for coming to a decision. Again, in another class of patients, data of importance are kept back intentionally: there is

a *suppressio veri*, although there may be no *allegatio falsi*. The "art of observing," which the student will do well to regard as the alphabet of diagnosis, can only be acquired by patient and systematic attention to the subject. In "taking a case," as it is called, at first the student cannot be too particular or too minute, but above all he must be systematic. It is only when he has had considerable experience in the art of acquiring data, that this fulness and minuteness of observation can be dispensed with, and then only in reference to certain heads or divisions of the subject.

The prominent symptoms of the case will almost always indicate the particular organ or system of organs in reference to which more minute inquiries and more careful examination are needed, but it is never safe to allow the attention to be drawn exclusively to these. As the experienced general, before proceeding on his march, takes care to leave no strong occupied fortresses in his rear, by irruptions from which his efforts may be weakened or paralyzed, so the wary observer will not hastily and unadvisedly venture on a particular road or branch of his inquiry, and proceed to form his opinion, before he has taken a general view of the question, and has explored and removed any sources of fallacy. In private practice it is often necessary or advisable to listen to details which are uninteresting, and quite devoid of importance in respect to the value of the information which they convey, and it is not always possible to pursue the inquiry in the order or with that degree of minuteness which may be wished for. This is, however, not the case at the early period of the student's career, when both leisure and opportunity are afforded for the necessary minuteness of observation; a careful and systematic examination of cases is then always possible.

"How to observe," and "what to observe," are the two first objects of attention to the clinical student, and the earlier he begins to observe for himself the better; for until the attempt is made, no conception can be formed of the nature of the difficulties to be surmounted. A valuable work published by the London Medical Society of Observation, entitled "What to Observe,"* should be in the hands of every clinical student, and the particulars of the "case" should be "taken" always in the order therein indicated. An error committed by most observers at the outset of their clinical studies, and which is generally afterwards perpetuated, is a more or less complete neglect of negative signs. Now negative signs are often quite as important in a diagnostic point of view as

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* 2d edit. London: Churchill.

positive ones. The experienced observer may know at once how far special facts can be safely neglected, but the student having yet to learn which are important, which trivial, must pass over none. The beginner will find that the labor bestowed by him on the investigation of the minutest details of the case before him will not have been thrown away. A habit of exactitude has been acquired, a habit of system has been induced, invaluable in so far as they tend to exactitude in the results obtained.

While thus occupied in the acquirement of the art of observing, the student learns much which it is impossible to possess himself of in any other way. The constant practice of putting questions familiarizes him with the art of cross-examination, and makes him acquainted with the best method of securing correct answers. It is always best to leave as little as possible for the patient to do. The questions put as to matters of fact should be put so as to require a simple negative or affirmative on the part of the patient, and it is hardly necessary to say that leading questions can elicit no information to be depended upon. When, however, the patient's sensations or feelings are matter of inquiry, it is the better course to allow them to be described by the patient, merely insisting on the arrangement of these in a proper chronological order.

In the next place it is well to be aware that facts stated, often do not warrant the interpretations put upon them by the patient. Thus, a patient may say that his or her father died of consumption, but it is not to be immediately concluded that such was the case. It must be ascertained what are the grounds for this opinion, and, if possible, corroborative evidence, *pro* or *con*, must be obtained. In short, the statements of a patient with reference to any disease are valueless unless accompanied by a description of the symptoms and course of that disease. In the case just supposed, if it be found that the father died at the age of twenty-eight after an illness of one year or upwards, which began with hæmoptysis and cough, and was followed by purulent expectoration, wasting, night sweats, and so on, the assertion that the individual in question really did succumb from the disease called consumption may be considered as nearly conclusive. These matters may seem of little importance; but, seeing how great are the difficulties which now and then present themselves in the attempt to form a diagnosis, no information is to be despised. The scale is often turned in favor of a particular view of the case by a fact in itself trifling, but which, in conjunction with others, forms an element in the consideration of very great value.

The account given by the patient, and proved so far as possible by cross-examination to be correct, furnishes us with data of importance. Next come the data derived from actual inspection and observation of the patient. Respecting this class of facts a greater degree of precision is attainable, and there are fewer sources of fallacy to be encountered, or, to speak more correctly perhaps, the sources of fallacy which exist are more capable of removal. Here, also, it is absolutely necessary that the description noted down by the observer be systematic in its arrangement. Minuteness of description is very necessary, for here, as in the former case, the clinical observer cannot at first be aware of what is important and what insignificant. The touch must also be trained and exercised, and the art of auscultation practised, and the results obtained by these methods of observation concisely noted down.

In very many cases the data for diagnosis—the facts on which an opinion is to be formed—are few in number. This renders it necessary, in the first place, to give great precision to the facts which are available or obtainable; and, in the second, to be aware of the exact diagnostic value of particular facts, as indicative of the presence of certain conditions or diseases. It is important to consider separately the value of each sign and symptom, and to be aware not only of the diagnostic value of these separate signs, but also of the proper inference to be drawn from their presence in various combinations one with the other. The value to be attached to a particular sign is generally almost entirely dependent on the association of that sign with certain others; and the value of particular signs necessarily varies in every case.

One of the quicksands to be avoided by the clinical inquirer is a too early decision as to the nature of the case—a decision formed on a limited number of data. It is extremely important that the case should not be prejudged. The student whose mind is duly impressed with the fact that a particular symptom may be associated with six or a dozen different diseases or conditions is evidently far less likely to make a serious mistake in diagnosis than one who has studied the subject in a less comprehensive manner, and who is disposed for that reason to attribute more pathognomonic value to certain indications than they really possess. The greater the number of data for diagnosis, the more likely is it that the diagnosis will be accurate. Occasionally it happens that the data obtainable are very few in number, and the share which conjec-

ture is called upon to take in the decision is not inconsiderable. This is more especially the case in reference to the class of diseases now to be treated of. The practitioner duly impressed with a sense of his responsibility and duty to his patients will not allow himself to be deterred by a false delicacy from pursuing his inquiries, and using those methods of examination which may appear necessary; nor will he consent, in an important case, to risk his reputation as a scientific observer by giving an opinion for the formation of which adequate opportunities have not been afforded. Very great difficulties may be now and then experienced in determining how far to go in a particular case; and the objection is constantly liable to arise, that such and such things might have been discovered by a particular mode of examination, had it been practised, and for the perception of which all other methods of examination were inadequate. Respect and consideration for the opposite sex will determine us in setting a limit to such investigations and inquiries as may tend to outrage the feelings of the susceptible patient, where such investigations are not absolutely called for; and if there be two equally good ways of obtaining information, to one of which the patient has a strong objection, the other should always be preferred.

In no class of diseases is it more necessary to be careful in the acquirement of data for diagnosis than in the case of the diseases of the generative organs of women; and although the *mode* of observation necessary to be employed is in some respects peculiar, involving as it does the occasional use of special instruments for the assistance of the senses in the acquirement of particular data, yet the " method " to be followed in observing is the same in this as in all other classes of disease. A rigid adherence to this particular method of observation—a fixed determination to be led away by no prejudgment of the case to neglect other, apparently less important, details, which may offer themselves to our notice— is the only sure method of avoiding mistakes and of insuring accuracy of diagnosis. Wearisome and tedious though it may be to the student to consider details which may ultimately prove to have no immediate bearing on the facts of the case before him, he cannot safely neglect them. He will in the end be amply repaid by the superiority he will soon perceive that he possesses in diagnostic tact and acumen over others who have preferred the shorter, the easier, but the less certain method of investigation, and whose knowledge is correspondingly limited, imperfect, and superficial.

SECTION I.

DATA OBTAINED WITHOUT PHYSICAL EXAMINATION.

THESE data will be considered in the following order: Age of the patient; sexual relations; disorders of menstruation; unusual discharges of blood from the generative passages; substances expelled from the generative organs; discharges of non-sanguineous character; disorders of micturition; symptoms referable to the rectum; abnormal sensations referable to the generative organs, including pruritus, pain of various kinds experienced during menstruation or at other times, and referable to the internal and external generative organs, motions, and pseudo-motions felt by the patient within the abdomen; and nausea and vomiting.

CHAPTER I.

THE AGE OF THE PATIENT.

Pregnancy; earliest and latest Age at which it occurs—Procreative Age in the Man—Uterine Cancer—Mammary Cancer—Cauliflower Excrescence of the Os Uteri—Fibrous Tumors and Fibrous Polypi of the Uterus—Diseases of the Ovaries.

THE deductions to be drawn from the simple fact of the *age* of the patient are not very numerous or very decisive, but the fact may, taken with others, be of extreme importance in a diagnostic point of view. Particular diseases are not always limited to certain ages; yet the range of age within which a certain disease is in the habit of showing itself is for the most part constant—sufficiently so, at least, to enable us to lay down general rules in reference to the diagnosis.

The age of the patient is important, looking at the matter from another point of view. The treatment to be pursued must always

be very much modified by the age of the patient ; the condition of the woman is a very different one during the period when the sexual organs are in a state of activity, and after that period of activity has come to an end. It is a fact that, whereas during the period of sexual activity a certain morbid physical condition of the generative organs may be attended with serious inconvenience, after this period is over the symptoms and inconveniences arising therefrom may undergo such abatement that treatment is very frequently quite unnecessary. There are often cases in which, for this reason, we anxiously await the arrival of the period of " sexual involution," as it has been termed, as a time when the condition of the patient may undergo a favorable change. It is sometimes a question whether the disease will or will not destroy the patient before this, the desired haven, have been reached. So far, then, it will be evident that the age of the patient may form a very important and essential element in the considerations on which our decision as to the propriety or utility of particular methods of treatment rests.

The more important conditions or diseases in the diagnosis of which the age of the patient may be a material question will now be considered.

Pregnancy.—Between the ages of 15 and 45—in this country, at least—fecundation occurs, and where childbearing takes place before this period or subsequent to it, the case is to be regarded as exceptional. It is important, however, to be aware of the extreme limits within which the occurrence of pregnancy may be considered possible. It is necessary for the moment to consider pregnancy apart from menstruation ; for although, in the large majority of instances, the period during which the woman is liable to pregnancy coincides with that during which menstruation is observed to take place, it is not always so. Many facts available for the determination of this question—Within what limits is pregnancy possible ?—will be found in Dr. Montgomery's well-known work,* also in Dr. Tanner's treatise.† The chief of these facts, however, it may be well to mention.

The *earliest* substantiated case in this country is probably that recorded by Mr. Roberton, in which pregnancy commenced in the 11th year ; another is *said*, by another authority, to have

* An Exposition of the Signs and Symptoms of Pregnancy, by W. F. Montgomery, M.D. London : Longman, 2d edit. p. 310 *et seq.*
† The Signs and Diseases of Pregnancy, by T. H. Tanner, M.D. Lond. 1860.

occurred in the 9th year. In a case cited by Dr. Montgomery as having been observed in the United States, pregnancy took place in the 10th year. Dr. Goodeve, of Calcutta, reports that the earliest age at which he had known a Hindoo woman bear a child was 10 years: he had heard of one at 9. The experience of Dr. Montgomery himself did not furnish him with an instance in which pregnancy commenced earlier than the 14th year. Dr. Wilson, of Glasgow, has only recently recorded a case in which conception took place at the age of 12 years and 9 months.*

The *latest* age at which pregnancy has been observed in this country is 54. The number of cases of pregnancy after the age of 45 is, however, small. Thus, of 10,000 cases observed at the Manchester and Salford Lying-in Hospital by Mr. Roberton, only fifty-one were over 45 years of age; the distribution of these being as follows:

In the 46th year, 12 cases	In the 50th year, 9 cases
" 47th " 13 "	" 52d " 9 "
" 48th " 8 "	" 53d " 1 case
" 49th " 6 "	" 54th " 1† "

In a volume recently issued by the Registrar-General of Scotland are contained certain facts relating to this question which came out in preparing the Glasgow table. Two women became mothers at the age of 51, four at the age of 52, and one mother was registered as having given birth to a child in the 57th year of her age.‡

In France, the possibility of pregnancy at the age of 58 was decided judicially in one case. In this country, in respect to an important case decided in the Court of Chancery, no evidence could be brought forward to the effect that pregnancy at the age of 60 was possible. Dr. Montgomery declares that no case of pregnancy has occurred, of the particulars of which he has reason to be satisfied, at an age later than the 54th year; but this able authority goes on to state that he "by no means pretends to deny the possibility of such occurrences." Recorded instances of late pregnancy it is right to mention. Thus Devergie quotes a case of pregnancy at 58. Casper states that Marsa, a physician in

* Ed. Med. Journ., October, 1861.
† Roberton, On Physiology and Diseases of Women, &c., p. 183.
‡ Times, February 12th, 1862.

Venice, treated a woman aged 60 for dropsy, which proved to be pregnancy.* Capuron cites a case of pregnancy at 65.

The cases in which it is especially necessary to be aware of the possibility of the existence of pregnancy are those in which a long term of married life has passed over without conception having taken place : the woman has arrived at "a certain age," and the mere fact of her having remained childless, either altogether or for some time previously, tends to put the practitioner off his guard. In addition to this latter circumstance, the other signs of pregnancy have occasionally been found absent in these cases of pregnancy at an advanced period of life. In a remarkable case occurring in Dr. Montgomery's practice, the patient first became pregnant in the 25th year of her married life. In another, pregnancy took place 17 years after a former delivery. Van Swieten records a case of pregnancy after an interval of 20 years; and Dr. Merriman another in which the interval was of equal length. It appears that pregnancy may even occur after the catamenia have ceased, and where there is, for this reason, an additional motive for deciding against the possibility of pregnancy, as in a case of Dr. Merriman's also quoted by Montgomery.

All these facts are sufficient to show that, within certain limits, neither the advanced age of the woman, nor this combined with the circumstance that she has arrived at this age unfruitful, or with the fact that she has remained unfruitful for a long series of years, is sufficient to exclude pregnancy from the consideration; and, in a doubtful case, other data must be sought for before the decision can be arrived at.

Procreative Age in the Man.—There are two parties necessary to the production of pregnancy; and it is incumbent upon us, therefore, to determine the limit within which the man is capable of fertilizing the woman.

In the case of the man no such exact limit can be placed on the duration of sexual power. Müller remarks: "The duration of the reproductive power in man cannot be so exactly defined. In general, it continues longer than in woman; and not unfrequently very old men manifest a remarkable degree of virile power."† Cases are on record in which men who have attained to the ages of 81 and 83 have at this advanced period of life become fathers; and the often-quoted instance of "Old Parr" must not be forgotten,

* Handbuch der gerichtlichen Medicin. Biologisch. Th., Berlin, 1858, p. 104.
† Physiology, Baly's Trans., p. 1488.

who, it is stated, did public penance for misbehavior, of which he was "capable," when over 100 years old.*

It must not then be hastily conceived that pregnancy is impossible because of the advanced age of the husband; nor on the other hand, if it be proved, on other grounds, to be present, must the wife necessarily be considered unfaithful because the husband is old.

As a circumstance also having some relation to a possible view of a particular case, it is worthy of remark, that a very considerable degree of debility or disease in the man is not incompatible with the existence and exercise of procreative power.

Cancer Uteri.—Cases of uterine cancer are noticed, for the most part, after the age of 30. The larger number of cases occur between the ages of 40 and 50, and about 1 per cent. of recorded cases occurred after the age of 70.

The following table is given by Dr. West,† as containing the results of his own observations combined with those of Lebert, Kiwisch, Scanzoni, and Chiari:

Between 25 and 30 years,	. . .	. 26 cases.
" 30 " 40 "	. .	. 120 "
" 40 " 50 "	. .	. 183 "
" 50 " 60 "	. .	. 73 "
" 60 " 70 "	. .	. 35 "
Above 70 "	. .	. 5 "
	Total, .	. 442

In 156 cases reported on by Mr. Sibley,‡ the average age at which the disease began was 43.28.

Before the age of 25, then, uterine cancer is a rare disease. Dr. Churchill states that he has witnessed a fatal case in a woman under 25; and the same authority refers to two other cases—one by Wigand, in which the uterus was affected with scirrhus at the age of 14; and another by Mr. Carmichael, fatal at the age of 21. In Madame Boivin's table, 12 cases out of 409 are set down as under 20 years of age; but these cases of early cancer related by Madame Boivin are justly objected to, as not being cases of cancer at all. The youngest of Scanzoni's cases was 23 years old.

The opinion of the best observers—of Dr. Walshe, of Mr. Paget, and others—is, that the proclivity to cancer generally increases

* Montgomery, op. cit., p. 321, 2d edition.
† Lectures on the Diseases of Women, 2d ed., p. 368.
‡ Med.-Chir. Trans., vol. xlii

steadily and progressively with the age. It is to be remarked that, after the age of 50, the frequency of *cancer uteri* appears to diminish; but the diminution is rather apparent than real, for it must be remembered that the proportion of individuals living, and therefore available, so to speak, for cancer, every year becomes less and less.

Mammary Cancer.—The period of life most of all liable to this disease is that between 45 and 50. Of 158 cases referred to by Mr. Paget,[*] only two cases occurred between 20 and 25, and forty between the ages of 45 and 50. The disease has been seen but very rarely before puberty. Hence the probability of a tumor of the breast turning out to be of a cancerous nature is small if the patient be less than 25 years old, but after that age it becomes greater until after the age of 50.

The above observations refer to scirrhus or hard cancer of the breast. Medullary cancer of this organ is so rare that, according to Mr. Paget, only two cases have ever come under the notice of Mr. Lawrence.

Cauliflower Excrescence (*epithelial cancer*) *of the Os Uteri* may be observed at all periods of life after the age of 20. Sir C. M. Clarke mentions a case fatal at the age of 20.[†]

Fibrous Tumor and Fibrous Polypus of the Uterus.—The particular period of life in which these growths have been observed is that during which the uterus is in the highest degree functionally active. Scanzoni considers that the fibrous tumor of the uterus is most common between the ages of 35 and 45; but of eighty-seven cases tabulated by Dr. West, twenty-one cases occurred between the ages of 20 and 30.

It is highly probable that the fibroid tumor of the uterus is very frequently present in cases where its existence is not suspected; for, in certain positions of these tumors, the symptoms are not such as to attract particular attention. For this reason we may perhaps be justified in presuming that the frequency of the disease before the age of 30 is not indicated in most tables given on this subject. The statement of Bayle, to the effect that the fifth part of women above 35 years old are affected with fibrous tumor of the uterus, does not appear to be borne out by more recent pathological inquiries. The disease is of frequent occurrence undoubtedly, but the case is overstated by Bayle.

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[*] Lectures on Surgical Pathology, vol. ii, p. 326.
[†] On Diseases of Females, vol. ii, p. 62.

Diseases of the Ovaries.—Ovarian cysts containing hair and fat, with or without bones and teeth, are not very uncommon between the ages of 6 and 10; and they may, of course, be found present at later periods. Kiwisch states that the medullary and the alveolar are the only forms of cancer of the ovaries which are met with in the early period of life. The practical deduction from this is, that if ovarian disease be met with before the age of 18, it is more likely to be of malignant character than when such disease is detected in a patient over the age of 20.

With maturation of ova and enlargement of the Graafian follicles, coincident with the advent of puberty—in some extremely rare cases, prior to this period—arises the liability to the more common form of disease of the ovaries known as *encysted dropsy.* The disease in question occurs with greatest frequency between the ages of 20 and 40.

The following tables from Mr. John Clay's valuable and comprehensive collection of statistics on ovariotomy* will be found useful as giving information under this head:

TABLE SHOWING AGES OF 281 WOMEN ON WHOM THE OPERATION OF OVARIOTOMY WAS PERFORMED.

Years,	17	18	19	20	21	22	23	24	25	26	27	28
Cases,	2	4	5	10	10	7	8	11	11	9	9	14
Years,	29	30	31	32	33	34	35	36	37	38	39	40
Cases,	11	14	9	12	11	2	9	4	9	11	8	8
Years,	41	42	43	44	45	46	47	48	49	50	51	52
Cases,	4	5	2	1	14	5	6	1	4	4	5	5

Years,	53	54	55	55 to 60	Above 60	
Cases,	—	—	—	13	4	Total, 281

TABLE SHOWING THE DURATION OF THE DISEASE IN 193 CASES OF OVARIOTOMY.

Duration,	6 and 12 mos.	1 and 2 yrs.	2 and 3 yrs.	3 and 4 yrs.	4 and 5 yrs.	5 and 6 yrs.	6 and 7 yrs.	7 and 8 yrs.	8 and 9 yrs.	9 and 10 yrs.	Above 10 yrs.	
No. of Cases,	32	60	28	19	11	15	5	4	1	3	15	Total, 193

Dr. Ashwell and Kiwisch have reported each a case in which the disease began at the age of 14; it has been observed in infancy.

* Chapters on Diseases of the Ovaries, translated from Kiwisch's Clinical Lectures, with Notes and an Appendix on the Operation of Ovariotomy, by John Clay, Lond. 1860, p. 128.

CHAPTER II.

SEXUAL RELATIONS.

Diseases particularly observed, respectively, in Single Women, in Married Women, and in Women who have borne Children.

THE condition of the patient, her proclivities or the reverse to certain diseases, may vary according as she is *single* or *married*, according to the circumstance that she *has borne children* or is the subject of *sterility*. Each of these conditions, and especially the latter, requires a separate notice.

The Patient is Single.

Statistics show that *cancer of the uterus*, one of the most formidable of the diseases to which the female generative organs are exposed, is far less common in single women. Thus, of 134 cases cited by Dr. West, only three occurred in unmarried individuals. According to the best authorities, also, single women are not so prone to *ovarian cystic disease* as those who are married. Dr. Ashwell, it must however be mentioned, was of a contrary opinion.

But, on the other hand, there are certain diseases to which single women (understanding by this term those not indulging in sexual intercourse) appear to be more liable than the married. Thus Safford Lee states that "*tumors of the uterus* are more frequently observed in virgins and those who have never borne children than in the married." Dr. Lever considered *polypus uteri* to be more frequent in the former than in the latter, in the proportion of seven to three. It is usually considered that single women are more liable to *hysteria* than those who are married. This is open to question.

The Patient is Married.

Encysted dropsy of the ovaries, as already remarked, is more frequent in married than in single women; thus, of 136 cases in which this disease existed, Safford Lee found that 88 were married, 11 widows, and 37 single. It seems probable that the greater

prevalence of this disease in married women is connected with that inordinate growth and development which take place in the various structures of the ovaries during pregnancy, or with the increased flow of blood to these organs dependent on sexual excitement. A very striking instance of the result of continued and sustained fulness of the nutritive vessels of the ovary is presented to us in the corpus luteum of pregnancy.

The Patient has borne Children.

The fact that the patient has had children leads us to look for certain alterations or diseases which are not met with under other circumstances. Many of the disorders and derangements with which we have to do are connected more or less directly with the effects of parturition. After the uterus has expelled its contents, the period of utero-gestation having expired, the return of the uterus to its proper size is frequently delayed, and this organ occasionally remains large and unwieldy for a longer or shorter time. The consequence of this is, that the position and the shape of the uterus are liable to undergo certain changes, these changes having for their effects grave inconveniences and troublesome disorders. The phenomena resulting from this *defective involution of the uterus, after delivery*, become thus exceedingly important and interesting to us as medical practitioners; this condition forms an important element in many cases likely to come before us.

The various affections known under the general term *prolapsus* of the uterus, *flexions* and *versions* of the uterus, are some of the chief of the conditions liable to be met with in women who have had children; and they are connected more or less intimately with an enlarged condition of the organ. Thence also arise, in many cases, *disorders of menstruation, leucorrhœa*, and secondary constitutional affections; also secondary mechanical derangements of the functions of the neighboring organs, difficulties in defecation, in micturition, &c.

Another affection liable to present itself under these circumstances is *inversion of the uterus*—a condition hardly ever noticed, indeed, except as a consequence of pregnancy. In rare instances, in single women affected with fibrous polypus of the uterus, the tumor, after dilating the uterine cavity, has been known to draw the uterine wall inwards and downwards, and inversion has been thus produced.

Incontinence of urine is an occasional result of pregnancy; it

may be due to paralysis of the sphincter of the urethra, or to the existence of fistulous passages between the bladder and the vagina, produced in consequence of the pressure of the head during parturition, unskilful or improper use of instruments, &c. *Vaginal rectocele*, *cystocele*, and *ruptured perineum*, are also, generally, mechanical effects of undue distension or rupture of certain portions of the vaginal walls or outlet during parturition.

It is a disputed point whether *uterine cancer* is most common in women who have had children, or in those who have had none. Dr. West says,* "Though ample proof to the contrary has been long since adduced, we still find it asserted sometimes that single women and those who have had no children are most liable to be attacked with cancer. The truth appears to be the direct reverse of this statement." Scanzoni gives it as his opinion that, in a certain degree, sterility predisposes to the disease. The statistics of these two observers give the following results: Of 131 married women affected with cancer, 8 were sterile (West). Of 108 married women affected with cancer, 36 were sterile (Scanzoni). All, however, including Scanzoni, agree in considering that, in women who have had *many* children, uterine cancer is more likely to occur, and this accords with my own experience. Thus in Dr. West's 123 cases of cancer, in which the marriage was fruitful, the average number of pregnancies per case amounted to 6.8. In Scanzoni's 72 cases the average number of pregnancies per case was 7.01. The average number of children per marriage in this country, given by Dr. West, is 4.2—an average certainly much exceeded in the cases of cancer uteri recorded by him, and still more so in the cases of Scanzoni. Mr. Sibley's researches, also the more recent statistics of Dr. Tanner,† all tend in the same direction. It follows, therefore, that uterine cancer is often associated with over-fecundity.

* Op. cit., 2d ed., p. 370.
† A Clinical Report on Cancer of the Female Sexual Organs. By T. H. Tanner, M.D., Lond., 1863.

CHAPTER III.

MENSTRUAL DERANGEMENTS; AND HEMORRHAGES FROM THE GENERATIVE ORGANS.

1. MINUS CONDITIONS OF THE CATAMENIA; DISCHARGE EITHER ABSENT OR LESS THAN USUAL.—(A) Cases in which Menstruation is not, and never has been present—The various Causes of this Condition; Defective Formation or Absence of the Organs concerned; Retardation of Puberty; Absence of Secretion; Retention; Pregnancy—Diagnosis of these one from the other.—(B) Imperfect Establishment of Menstruation.—(C) Menstruation, previously regular, has ceased—Causes of this Condition: Pregnancy, Suppression, Retention, Premature Cessation of Catamenia.

2. PLUS CONDITIONS OF THE CATAMENIA; considered in conjunction with UNUSUAL DISCHARGES OF BLOOD FROM THE GENERATIVE ORGANS; EXCESSIVE MENSTRUATION AND MENORRHAGIA.—(A) The Unusual Discharge coincident with Menstruation—Is the Discharge really excessive? —Various causes of the same—Diagnosis of these.—(B) The Unusual Discharge of Blood not coincident with the Menstrual Period; including an Account of the various Causes of Hemorrhages from the Generative Organs, General and Local—Pyrexial Disorders—Mental Disturbances—Abortion—Retention of Placenta in Utero—Inversion of Uterus—Clot of Blood in Uterus—Cancer—Cauliflower Excrescence—Polypi and Fibroid Tumors—Granular Condition of the Uterine Mucous Membrane—Tubercle—Enlargement of Uterus—Hypertrophy of Cervix—Flexions—Prolapsus—Diagnosis of these Cases one from the other.

A VERY considerable number of the disorders to which the female sex are obnoxious depend upon altered and morbid conditions of the generative organs; in all of which the menstrual phenomena are subject to deviation from the healthy standard. The alterations in question thus present us with a series of symptoms of great value in the determination of the nature of these various maladies. The variations in the quantity, in the periodicity, &c., of the menstrual secretion, usually spoken of as substantive disease, and too often indiscriminately treated as such, constitute of themselves the great bulk of the cases brought under the notice of practitioners in this branch of the profession. Patients attribute, and rightly too, a great degree of importance to "irregularity," of whatever kind, experience having shown them how intimately are related a sound condition of the general health, and a healthy physiological state of the menstrual function.

It is thus evident that the due discrimination of the varying

conditions which commonly pass under the name of "menstrual disorders" is one of the most important points to which those who are desirous of treating the diseases of women with success can direct their attention. In very many cases, these disorders are simply evidence of general indisposition; or, at all events, they are such as can only be successfully treated by general remedies, and to distinguish these from others in which the derangement is entirely local, and which are only appropriately combated by operative measures, by direct local applications, &c., requires great care and judgment.

There are two classes of cases, under one of which all disorders of menstruation likely to present themselves for examination can be included: 1. Those in which there is a *minus* state of the discharge; and 2. Those in which, the quantity being excessive, or above what usually obtains, it may be considered as being in a *plus* state.

1. MINUS CONDITIONS OF THE CATAMENIA: DISCHARGE EITHER ABSENT OR LESS THAN USUAL.

The series of cases which may be first examined, are those in which

(a) *Menstruation is not, and never has been, present.*

The first point which it is necessary to determine, in endeavoring to ascertain the cause of the non-appearance of the menstrual secretion, is: Are the organs essential to the performance of this function actually present? If the *ovaries be absent*, no menstrual discharge can take place; and the like holds good if, the ovaries being present, the *uterus* be absent. Cases coming under either of these categories are rare. In cases of absence of the ovaries the external signs of puberty are wanting; the breasts, under such circumstances, would be small and undeveloped, and absence of sexual desire and of other feminine characteristics might be expected to be observed. Women who have had the ovaries artificially removed when young are said to have acquired a masculine voice, and even a profusion of hairs on the chin and face, resembling the beard of the man. *Absence of the uterus*, or what practically amounts to the same thing—extremely rudimentary formation of this organ—is less rare than absence of the ovaries. No absolutely distinctive signs of the absence of the uterus can be given: the diagnosis presents great difficulty. In a case which came under my own observation, the catamenial discharge was quite absent; the sexual inclination was very slight, but still pres-

ent; the breasts rather small. The ovaries were probably present; but, on physical examination, no uterus could be detected.*

In cases where there is reason to suspect defective development of the generative organs of any kind, an examination would be necessary. The proper method of performing such an examination, and the conclusion to be drawn therefrom, will be hereafter described.

Absence of any one of the parts of the generative apparatus just referred to—of the ovaries, uterus, or vagina—is rare; but it is not so uncommon to find that the uterus and ovaries, although actually present, retain their infantile conditions; that degree of development necessary to the establishment of the catamenial function failing to take place. There may be no defective condition of the bodily health to be detected, and yet from month to month there is no appearance of the discharge. The "proper" age is gone by, and the friends of the patient become seriously uneasy. There are a few cases of this kind in which the vagina is healthy, the uterus present; the only thing wanting, in fact, is the discharge, and it has appeared that the cause, so far as capable of being ascertained, has been a slightly defective condition of the development of the uterus; this organ being found normally constituted, but retaining to too great a degree its childlike condition. Sir J. Y. Simpson has called particular attention to the connection of this condition with "amenorrhœa."† The signs of ovarian activity are generally absent, or present only in a very slight degree. These cases give no occasion for anxiety as regards the immediate effect on the patient; but the prognosis may be serious as regards her matrimonial prospects. It is, in a word, uncertain what course will be taken with the generative organs—whether they will remain in this functionally idle condition, or not; and, if not, when and how the appearance of the secretion will take place. The diagnosis, then, is a matter of extreme importance: much may depend upon it; and the nature of such cases cannot be too carefully scrutinized.

For the purpose of ascertaining, firstly, whether the vagina and uterus be actually present, and, secondly, if present, whether they

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* The subject of the congenital defects, malformations, &c., of the uterus, has been elaborately treated by Kussmaul in his work Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter, &c., 8vo. Würzburg: 1859. In this work there will be found a very large number of illustrative cases.

† Medical Times and Gazette, 1861.

present or not that imperfect degree of development alluded to, it will be necessary to undertake a physical examination of the condition of the external generative organs, and of the vagina and uterus.

It will be important to determine the question—*Is puberty retarded?* With reference to the arrival of puberty, we have first to look for the *outward* evidence of the same in the form, development, &c., of the body generally, and of the external sexual organs in particular; we have to seek for *internal* evidence of the functional activity of the reproductive organs, in the symptoms or signs described under the term menstrual molimen.

If both internal and external evidence be wanting, we may conclude that the case is one, purely and entirely, of retarded puberty; that is to say, if we have previously satisfied ourselves that the sexual organs are present, and are normally developed. It must not be forgotten that the presence of the menstrual molimen does not indicate anything more than that the ovaries are present. The uterus may be so defectively formed, that menstruation is not possible, although the ovaries are, so far as circumstances admit, exercising their normal function. Other questions connected with this subject will be discussed further on, in describing the results of examination of the vagina, &c.

If the patient exhibit other characteristic evidences of having arrived at puberty, and no menstrual discharge have been observed, the case must fall under one of the three following heads:

Either, *There is no secretion of the menstrual fluid;*

Or, *The menstrual fluid is secreted, but not evacuated—retention;*

Or, *The woman is pregnant.*

These several conditions must, in the first place, be separated one from the other; we may afterwards proceed to consider the circumstances which give rise to the two conditions first in the list.

Pregnancy.—It is possible for a woman to become pregnant in whom no catamenial discharge has ever been observed, as several well-authenticated cases prove.* In such cases, either conception takes place at the exact time when the function of menstruation is about to be established, and the pregnancy is then the cause of the absence of the menstrual flow; or, an instance is before us of a peculiar idiosyncrasy, now and then, but rarely, observed, owing to which no menstrual secretion ever occurs; although this circum-

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* Montgomery, op. cit., p. 77.

stance proves no bar to the woman's fertility. It is a mistake, then, to suppose that it is impossible for the woman to be pregnant because the menses have never made their appearance. It is in young women who have married early, and before the arrival of the catamenia, that instances of this kind are likely to be met with. It is in these very instances, moreover, that the real state of the case is most likely to be overlooked. It will be remembered, in investigating a possible case of this exceptional character, that if pregnancy be present, there will be a complete absence of the periodic menstrual molimina, a circumstance which will assist in distinguishing the case from one of retention of the menses. In both pregnancy and menstrual retention, the abdomen may be enlarged, and the uterus is necessarily increased in size.

But the woman may have been married for some years, and no discharge ever observed. Puberty, with all its external manifestations, this one excepted, is present. Here also pregnancy is possible, as has just been stated. Some women bear children, but never menstruate; of which fact we are assured on the authority of several writers and observers of repute. In these cases, however, the signs of ovarian activity were probably not wanting upon the occurrence of conception, though this circumstance is not alluded to in many of the instances of pregnancy without previous menstruation which have been recorded. The diagnosis of pregnancy will be hereafter fully considered; it is only necessary, at present, to warn the observer of a possible contingency.

In cases of *Retention of the Catamenia*, the ovaries and the uterus discharge their functions regularly, but there is no outlet for the secreted fluid. The uterus becomes enlarged, an abdominal tumor is felt, and the woman is often, under these circumstances, supposed to be pregnant. The ordinary history of such a case is as follows: Puberty arrives, and with it the indications of activity on the part of the generative organs, and recurrences of the menstrual molimina are observed from month to month. The pain and discomfort at these periods are at first inconsiderable, but after a time these symptoms increase in intensity; a sense of fulness and weight in the pelvis remains also in the intervals between the menstrual attempts. The symptoms become gradually more severe in character, the patient is never thoroughly easy and comfortable. The bowels are constipated; there are frequency of micturition, permanent and severe pains in the loins, all periodically increased in severity. The health fails, and the patient passes from a condition of perhaps robust health to the opposite

extreme; the appetite is lost, and nutrition greatly interfered with. And now the uterus, increasing in size from the presence of the retained catamenial secretion, forms a tumor readily detected in the hypogastric region. The patient is often considered to be pregnant, and the supposition that pregnancy exists is apparently, perhaps, confirmed by the presence of those gastric symptoms usually associated with pregnancy, such as vomiting and nausea. The breasts may also sympathize, and become painful and tumefied. The intensity of the symptoms observed, varies much in different cases; and the degree to which the uterus becomes distended is open likewise to great variation: it would appear that in some instances a portion of the menstrual secretion is from time to time absorbed, and a large accumulation thus prevented. When the distension of the uterus reaches a certain point, pains in the back resembling labor pains, and doubtless due to contractions of the uterus, are observed.

The diagnosis is arrived at by a consideration of the symptoms and by physical examination. The characteristic points so far as the symptoms go, are—the presence of puberty; generally complete absence of menstrual discharge; presence of periodic attacks gradually increasing in severity, of the kind already described; a fulness in the pelvic region, which goes on increasing from month to month, and which gives rise to difficulties in micturition and defecation; all these symptoms, be it observed, occurring soon (within the first year or so) after puberty has arrived. If the woman be married it will, in the large majority of cases, but not in all, be found that sexual intercourse is performed with difficulty, or that it cannot be performed at all. The physical signs, to be hereafter more fully investigated, are—presence of a tumor in the hypogastric region, discoverable by examination of the abdomen, and the want of an outlet for the menstrual fluid, discoverable by an examination of the vagina.

From pregnancy without previous menstrual discharge this condition is distinguished, firstly, by the symptoms, the periodic molimina being absent in pregnancy; and, secondly, by examination *per vaginam*, which, in the case of retention, would discover to us the existence of atresia of this canal, imperforate hymen, or closure of the canal of the cervix uteri. The rare case of absence of the uterus, the ovaries being well developed and in activity, is to be distinguished from retention, by the fact that the menstrual molimina, though present, are imperfectly marked and wanting in intensity; in addition to which, a simultaneous examination through

the bladder and rectum would fail to detect the presence of the uterus in its normal position. Practically this latter question is hardly likely to arise.

The only other condition to be eliminated from the consideration is non-secretion of the catamenial fluid. Here the menstrual molimen (possibly) and puberty are present, but no discharge appears. If there be an absence of all signs of accumulation in the uterus, of symptoms of fulness and pressure, and of the physical signs before referred to as observable when the case is one of retention, these are indications that the case is not one of the latter description. The examination *per vaginam* detects no atresia of this canal, and sexual intercourse is not impeded. It is not sufficient to determine that the vaginal canal is free; for although the retention is mostly due to obstruction in this situation, the obstruction may be situated in the cervical canal of the uterus itself. The latter condition existing in connection with retention is, however, very rare. The diagnosis of pregnancy from non-secretion of the catamènia rests on the absence of the molimina in the former, and on the absence of a pelvic tumor in the latter condition. When it has been ascertained definitely that retention is present, the next object in view should be to determine the cause of the retention. This question will be more conveniently considered further on. (See " Examination of the Vagina.")

Neither of these conditions, retention or pregnancy, being present, we adopt the alternative that the menstrual discharge does not appear because it is not secreted. (See chapter on " AMENORRHŒA.")

If nothing materially wrong be detected in the condition of the general health of the patient, while the signs of puberty previously spoken of are present, if no menstrual fluid be secreted or present in the uterus, and if pregnancy have been eliminated from the question, the conclusion to be formed—a conclusion liable to modification according to the age of the patient—is, either that the development or formation of the uterus is defective, or that owing to idiosyncrasy the patient does not menstruate.

(b) *Imperfect Establishment of Menstruation.*

There is a class of cases also very frequently presenting themselves in practice in which a discharge has occurred on one or more occasions, but very slight in amount, and only enough to show that menstruation is possible.

It is in connection with these cases of imperfect establishment of menstruation that a light-colored discharge appears—replacing in a manner the catamenial flow—at intervals. This spurious form of menstruation may occur, for two or three or more periods before the normal flow occurs, even in cases when there is nothing evidently abnormal present. It is in such cases also that the so-called vicarious menstruation may occur; and the diagnosis of such cases is especially interesting, not less from the frequency with which they occur in practice than from their actual importance.

The cases next to be considered are those in which

(c) *The menstrual function has been regularly performed at some previous time, but has subsequently altogether ceased.*

The "courses are stopped." The point to be determined is the cause of the cessation in question. The conditions capable of giving rise to cessation of menstruation of the kind now under consideration are the following:

PREGNANCY.—Suppression of the menses, as a sign of pregnancy, is one to which considerable importance is usually but erroneously attributed. "We are," says Dr. Montgomery, "quite justified in adopting, as a general rule, that in healthy women, whose menstruation has been established and continued regular, and who are not nursing, conception is followed by a suppression of the menstrual discharge at the next return of its period; but then this suppression may not so occur; and, on the other hand it may happen from a variety of other causes altogether unconnected with pregnancy."

In the investigation of a case of suppression of the menses, in order to determine the possible existence of pregnancy, the statements of the patient must be received with caution, and especially if there be reason for believing that any motive for concealment of the real facts of the case exists. "Nothing," says Casper,* "is easier for a person who is desirous of simulating pregnancy than to declare that menstruation has ceased for such and such a time ; and it is only by a favorable accident that an examination is made at the catamenial period, and the imposition thus discovered." In like manner, menstruation is now and then simulated, in order to avert the suspicion of pregnancy, and artificial staining of the

* Practisches Handb. der gerichtlich Medicin. Biolog. Th. Berlin, 1858, p. 201.

linen with blood has even been had recourse to, in order to carry out the deception. In one case related by Casper, pigeon's blood was used for the purpose, but on examination of the blood by means of the microscope it was found that the corpuscles presented an oval shape, and the imposition was thus at once made manifest.

These sources of error having been examined and dismissed, we have next to determine the value of menstrual suppression as a sign of pregnancy.

Its actual value amounts to very little. Suppression of the catamenia for three or four months not unfrequently occurs from causes altogether independent of pregnancy. In young women only just arrived at puberty, the interval is now and then as long as this before the function is thoroughly and completely established; further, it is not very uncommon for the menses to be suppressed just after marriage, for a month or two, without pregnancy taking place.

If pregnancy have existed for more than four months, other data for diagnosis, having a much more positive value as signs of pregnancy than the mere absence of the catamenia, enlargement of the uterus, mammary changes, &c., are available, and should be sought for by examination and otherwise. In women who have an object in concealing the fact of the existence of pregnancy, the absence of the catamenia for two or three periods is, however, to be regarded as a suspicious circumstance, and should be sufficient to put the practitioner on his guard, although it need hardly be observed that this suspicion should be confined to himself at this stage of the inquiry. If it be cruel and improper rashly to give utterance to suspicions damaging to the fair character of the patient, it is equally damaging to the reputation of the practitioner to allow the existence of pregnancy to escape his notice. Both extremes are to be reprobated. The presence of " morning sickness," associated with catamenial suppression, would make the suspicion of pregnancy a little stronger ; but some pregnant women are never " sick." As a rule, the suspicion of the existence of pregnancy may be dismissed, if, after four or five months, the physical signs of pregnancy, such as enlargement of the uterus, &c., do not show themselves; but even this rule is one to which there are exceptions. It now and then happens that the catamenia are suppressed for two or three months, and the woman *then* becomes pregnant. In such a case, the physical signs just alluded to would not, of course, present themselves at the end of the four or five months

from the date of the suppression, and an erroneous inference might thus be drawn. In some rare recorded instances, women have been known to present the peculiarity of never conceiving until after three or four months' previous suppression. Again, pregnancy may occur at a somewhat advanced period of life, and when the menstrual phenomena have for some years altogether ceased. The absence of menstruation in a woman over forty years of age, for a period varying from two to nine years, *may* be followed by pregnancy at the end of that time.*

More frequently, perhaps, the fact of the menses having ceased is made the basis of the conclusion that pregnancy exists by women who desire to be pregnant, and who, somewhat advanced in life and arrived at " a certain age," interpret facts according to their own wishes. Here embarrassment is not seldom produced; women at this age are ready with all those presumed corroborative facts with which their own experience or the experience of their friends has made them familiar; and it is only by a rigid adherence to the rule to take nothing which is simply asserted for granted, that the practitioner will prevent himself from being led to form equally sanguine expectations with the patient herself. At the period of sexual involution, that is to say, at the time when the functions of reproduction are about to come to an end, the mere cessation of the menses is therefore of less value as a sign of pregnancy than at any other period of life. It is the fact that, at this period of life, a suppression for two or three months, the discharge then returning, often rather profusely, is not at all unusual.

The absence of the catamenia, then, must never be considered as a proof of pregnancy; but in many cases it is of infinite service in directing attention to the view of its possibility. Examination of the abdomen, the vagina, and the breasts, gives more decisive information; and on the data thus afforded only can anything like a positive opinion be given.

Presence of Menstruation during Pregnancy.—In connection with the present question—the value of suppression of the menses as a sign of pregnancy—it is necessary to mention that, in a certain number of cases, even when the patient is pregnant, a discharge more or less resembling the menstrual discharge may occur from month to month. Elsässer† has collected nearly fifty cases, in

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* See Montgomery, op. cit., for several interesting cases of this kind, pp. 88, *et. seq.*

† Quoted from Henke's Zeitsch. Bd. 73, p. 402, by Casper, opus cit., p. 202.

which a discharge of this kind was noticed during pregnancy. Thus, in eight cases a discharge occurred once during pregnancy, in ten cases twice, in one twice or three times, in eleven cases three times, in four cases four times, in six cases five times, in five cases eight times, and in two cases nine times during pregnancy. And cases are related—one I have myself placed on record*—in which patients habitually menstruate only when pregnant. The discharge observed in these exceptional cases sufficiently resembles the ordinary menstrual discharge to be so regarded by the patient.

There are many circumstances which may give rise to a discharge from the uterus during pregnancy, such as cancer, inflammatory or congested conditions of the os, &c. An important class of cases, however, are those in which there is an occasional sanguineous discharge from the uterus, which may or may not simulate menstruation, in women the subjects of *extra-uterine* pregnancy. A rather common symptom in cases of extra-uterine pregnancy is a sanguineous discharge occasionally occurring during the two or three months immediately subsequent to the date of the supposed impregnation. Thus a woman six weeks after the date in question has a hemorrhage. This may be due to abortion, it may be simply undue retardation of menstruation, it may be due to extra-uterine pregnancy. The points to which attention should be directed, if extra-uterine pregnancy be suspected, are the following: Presence of unusual pain at a particular situation in the pelvis; detection, by digital examination of the vagina and by examination of abdomen, of a tumefaction corresponding with the seat of the pain—enlargement of the uterus. If the patient continue to present signs of pregnancy, while hemorrhage recurs occasionally, this conjunction of signs is to a certain extent confirmatory of the suspicion. And supposing the patient to be suddenly seized, at the end of two, or three, or four months, with symptoms of internal hemorrhage (see " Pain referable to Generative Organs "), a history such as that indicated, together with the symptoms of internal hemorrhage, point to the conclusion that the case is one of extra-uterine pregnancy and rupture of the cyst, or of some vessel in its neighborhood. In a remarkable case

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* Lancet, vol. ii, 1858, p. 91. See also a case, not, however, precisely of the same kind, more recently contributed by myself in vol. viii, p. 221, of the Obst. Trans.

of extra-uterine (tubal) gestation, related by Mr. Cheeseman,* the patient went beyond the full term, never even suspecting her pregnant condition, and deceived by the appearance of what she considered to be a menstrual discharge. There was a discharge from the vagina every five or six weeks, chiefly in clots. The case is the more remarkable that the patient had previously had four children.

Mole Pregnancy.—There is a form of pregnancy which is out of ordinary rules, and is rarely met with, viz., when the ovum becomes diseased and degenerated at an early period of pregnancy, and a "mole" results. In a case of this kind, either the ovum is rejected soon after, when the nature of the case becomes at once apparent; or it is retained for some months. Thus a woman may present herself with an abdomen but slightly enlarged, the uterus but little increased in size, and who has had suppression of the menses for from three to seven or eight months, or even considerably more than this, in whom the cause of the suppression is, first, pregnancy, and secondly, the presence in the uterus of the degenerated result of the same. If the "mole" grow to a large size, as is often the case with the hydatidiform variety, the abdomen and uterus are proportionately enlarged; and the attention is so directly attracted by this, that it cannot be easily overlooked; but in a case where the enlargement is neither so considerable nor so apparent, difficulty may occur. Such cases are rare; and, as a rule, it may be taken for granted that, when the catamenia have been absent for several months, and no enlargement of the abdomen or of the uterus occurs, the case is not one of pregnancy.

Cases in which menstruation, or, at all events, a discharge resembling it, is present for two or more periods, *coincidently with pregnancy*, and the pregnancy ending naturally, are not quite so rare as is usually stated.

SUPPRESSION.—The diagnosis between suppression of the catamenia of a pathological nature, and the kind of suppression just alluded to, in which there is a physiological reason for it, is occasionally difficult when the catamenial discharge has been absent only for two or three periods; for the pathological suppression is sometimes accompanied with some of the general symptoms of pregnancy, as morning sickness, swelling of the breasts, &c., when pregnancy is certainly not present. This form of suppression very closely simulating pregnancy is noticed by Denman and Montgo-

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* Lancet, Sept. 14, 1861.

mery as frequently occurring soon after marriage; and Montgomery characterizes such cases as always liable to great doubt, and extremely embarrassing to the practitioner. In an instance which came under my own observation, a like obscurity surrounded the case, but the patient had been married for several years. Under such circumstances the decision must be postponed, and a guarded opinion given.

Another case which is often a source of embarrassment is presented to our notice in young women in whom the catamenial function has only recently been set up; and here we may be in doubt whether the absence be due to suppression, to pregnancy, or to other causes which have been already considered. The absence of a known cause for suppression, the fact that the patient continues in good health, and the absence of signs of pregnancy, would lead to the inference that the case was one of retarded puberty (the age of the patient admitting of this hypothesis), rather than one of suppression in the sense of the word in which it is now used.

From retention of the menses, and from pregnancy, suppression would equally be distinguished by the absence of abdominal enlargement and tumor.

RETENTION may be present in cases where menstruation has been previously regularly performed. This form of retention, there is reason to believe, is not by any means common. It is probable, however, as will be shown in another place, that, in a less degree, retention is more frequently present, as in cases of dysmenorrhœa, where there is a partial retention of the menstrual fluid, but in which, however, the retention does not produce cessation of menstrual discharge of the kind now under consideration. Retention will be easily distinguished from pregnancy by due attention to the facts of the case. The symptoms of *complete* retention in a woman who has previously menstruated regularly do not differ materially from those already described as present in women who from the first suffer from retention. The diagnosis of retention from pregnancy, difficult at first, becomes easy afterwards.

It is extremely important to separate the conditions just alluded to—pregnancy, suppression, and retention of the catamenia—one from the other, a separation which will be easily effected by attention to the various diagnostic points laid down: endless difficulties present themselves in doubtful cases until the diagnosis has been advanced to this stage. Having made out that it is not a case of pregnancy or retention, the only alternative is *suppression*. It

will be proper, in the next place, to pursue the diagnosis of cases of "suppression" still further. (See AMENORRHŒA.)

2. PLUS CONDITIONS OF THE CATAMENIA: DISCHARGE GREATER THAN USUAL—EXCESSIVE MENSTRUATION AND MENORRHAGIA.

In order to deal with this subject clinically and practically, and therefore usefully, it will be convenient to group together cases in which the *menstrual discharge is excessive in quantity*, and those in which there is *hemorrhage from the generative organs ;* and for this reason, until the diagnosis is made out, it is impossible to say whether the sanguineous discharge be really a menstrual discharge at all. The case may turn out to be one of miscarriage, or of hemorrhage of independent character.

I propose, then, to consider together that large group of cases in which there is

Unusual discharge of blood from the Generative Organs.

In most of these cases, the discharge of blood proceeds from the uterus ; but it is well to be aware that bleeding from the vaginal walls (as in an interesting case related by my friend Mr. Obré), or from the vaginal outlet or urethra may take place. Sometimes the pudendal veins become varicose, and burst ; this rare accident generally occurring in women who are pregnant.

Excluding these possible but rare occurrences, we come to that large class of cases in which the uterus is the source of the discharge.

Now it may possibly save some misunderstanding, if we inquire, in the first place, *what is meant by an "unusual discharge?"* To this a very different reply would be given by different patients. One patient will think nothing of a discharge which to another would appear a very serious affair ; and it may be that both are right. The term "unusual" has two meanings, a relative and a positive one—a consideration which is most important as regards the diagnosis. It is also most important as regards the treatment. It does not follow, because it has become "usual" for a particular patient to have a profuse discharge at the menstrual periods, that it is therefore "right." What may be very usual may require very decided interference. Hence it will not do to admit without investigation, the statement of a patient that the quantity of the discharge is unusual, or the reverse.

Further, before entering on the question of the diagnosis, it

must be borne in mind that the uterus is lined by a membrane, from the surface of which blood is periodically exuded during what may be called menstrual life; and it requires but a small thing to provoke a hemorrhage from this surface. There is no necessary relation, in fact, between the cause and the effect. A very severe hemorrhage may occur in connection with some very trifling alteration in the uterus itself—even in the absence of any change at all. Indeed, in the question of the diagnosis of a case of unusual discharge of blood from the uterus is involved the whole pathology of hemorrhages. Lastly, the functional exercise of the female organs of generation, the processes of gestation, parturition, &c., involve changes and consequences with which discharges of blood from the uterus are very frequently associated.

In considering that large class of cases in which there is unusual discharge of blood from the generative organs, we may advantageously divide our cases into two series: (A) Those in which the unusual discharge occurs coincidently with a menstrual period; and (B) those in which the unusual discharge is *not* coincident in point of time with the menstrual periods. The latter series will, of course, include hemorrhages occurring after menstrual life has ceased.

(a) *Cases in which the unusual discharge occurs coincidently with the menstrual period: excessive menstruation.*

Under this head are included those cases in which an unusual discharge of blood occurs at the menstrual periods, the patient being in the interval free from discharge of a sanguineous nature.

Two distinct sets of inquiries have to be made when a reputed case of profuse menstruation (menorrhagia, as it is usually termed) comes before us. Firstly: Is the discharge really excessive? and secondly: If it be profuse, what is the cause thereof?

The previous history of the patient alone will supply us with an answer to the first question. Having ascertained what the individual type of the catamenia, so to speak, is, the deviations from that type will be more easily recognized. The catamenial secretion appears to be naturally more profuse in some individuals than in others, as already remarked; the quantity of the secretion being great, or the period during which it is observed being extended, from the presence of what may be characterized as idiosyncrasy, from the influence of climate, age, and the like. All these circumstances must be taken into account in giving an answer to the

question, "Is the catamenial secretion excessive?" In practice every form and degree of change from the normal individual type will be encountered. The change may be abrupt, or gradual; and the degree of importance attached by the patient to the fact of a change having occurred is by no means an indication of its importance, abstractedly considered. In many cases, the state of the general health informs us at once that the secretion is "excessive;" but it is not always so.

Having determined that the quantity is really excessive, we go a step further, and endeavor to ascertain the *cause*. This inquiry is often a very difficult one, the number of conditions capable of giving rise to profuse menstruation being so considerable, and the exciting cause being not unfrequently something so trifling as to elude our search. Moreover, having once begun to be profuse, the discharge sometimes continues to be profuse after the exciting cause has been removed and is no longer in operation. Hence it is by no means an easy matter to say, in some cases, whether the general disorder of the health which is present is caused by, or is a cause of, the excessive menstrual discharge.

The mere quantity of the discharge is no indication as regards the diagnosis. Neither do the symptoms accompanying the discharge assist us. Our conclusion must be formed from a careful examination of the previous history of the patient; and in many cases a physical examination of the uterus from the vagina must be made before we are in a position for giving an opinion as to the cause of the disordered condition present. In some cases, all the pains we may take are unavailing, and the cause eludes our investigation.

The local causes of profuse menstruation are very numerous. For the sake of convenience a detailed consideration of these is for the present postponed. They are all, almost without exception, capable of giving rise to discharges of blood at other times than the menstrual periods. Hence the *local causes of profuse menstruation* and the causes of *unusual loss of blood at other than the menstrual periods* will be conveniently considered together. Most of the conditions with which these irregular hemorrhages, of various degrees of intensity, are usually associated are insidious in their mode of origin; profuse menstruation is generally the forerunner of these hemorrhages, and arises from a similar cause.

Concerning the general causes of profuse menstruation, all that can be done here is to indicate, for diagnostic purposes, the direction in which inquiries should be made. There is one rule which

may be usefully kept in view, open, as it is, to numerous exceptions, and it is this : that when the only thing wrong about the discharge is its *excessiveness*, and when this state of things is, or has become chronic, it generally turns out that the cause in operation is a constitutional one, and that the uterus and adjacent organs are free from actual disease. This distinction often broadly, but by no means universally, serves us in practice to distinguish between cases which do not, and those which do, necessitate a vaginal examination.

Cases in which there is an *abrupt appearance of profuse menstruation* require a special mention. A sudden attack of this kind has been found, in a certain number of cases, to be associated with a most dangerous and alarming accident, the pouring out of blood in the pelvis, in the neighborhood of the uterus, either into the peritoneal cavity or into the cellular tissue beneath the peritoneum, giving rise to the formation of a tumor—*peri-uterine hæmatocele*—and the production of a series of symptoms of a highly interesting and important character. The sequence and intensity of the symptoms, of course, vary in each case ; they often present themselves in the following order : Previous good health, as regards menstruation, abrupt appearance of a considerable flow of blood from the uterus at a menstrual period, great pain in the abdomen, and symptoms as of perforation, a blanched condition of the skin, and all other signs of violent hemorrhage, syncope, &c. The patient may die from the actual loss of blood effused under these circumstances into the peritoneum, or from the effects of the subsequent changes in the clot there formed. The accident termed peri-uterine hæmatocele is not always accompanied by profuse menstruation ; indeed, it very frequently happens that at the time of the occurrence of the internal hemorrhage, the external discharge is not observed. The most common case is perhaps that in which menstruation, having been generally and for some time rather profuse, becomes for a time either suppressed or much less than usual ; the symptoms of internal hemorrhage then suddenly appearing. The peri-uterine hæmatocele is not, it must be recollected, the *cause* of the excessive menstruation. The cause of both the excessive menstruation and the hæmatocele will be found in some predisposing general condition of the patient, or some previously existing change in the ovaries, tubes, &c., or both general and local disease combined. Irregularity of menstruation of some kind or other generally precedes the attack, and the practical fact to bear in mind is, that a suddenly occurring attack of profuse men-

struation may be associated with this dangerous accident. The presence of peri-uterine hæmatocele—that is, of the tumor constituted by the effused blood near the uterus—is to be ascertained by vaginal and by abdominal examination. The tumor so formed is often of very considerable size.

Further remarks on the diagnosis of these cases of hæmatocele will be found under the head "Examination of the Vagina."

(b) *Cases in which the unusual discharge of blood is not coincident with the menstrual period.*

All cases of hemorrhage from the uterus which are not accounted for, so to speak, by menstruation, are included under this category. Care must be exercised in distinguishing between cases in which the discharge is menstrual, and those in which it is due to some other cause. The tendency with patients is to regard every discharge of sanguineous fluid from the genitals as menstrual; and many of the recorded cases of menstruation in women advanced in life turn out, on strict examination, to be really cases of hemorrhage due to other causes.

It is a matter of some importance to bear in mind, that the previous occurrence of hemorrhage, from whatever cause, or this combined with menorrhagia, produces after a time an actual appreciable change in the uterus itself; and there is a possibility of mistaking the effect for the cause. The uterus cannot be for a considerable time the seat of repeated hemorrhage, or, indeed, of continuous exalted activity, without becoming in a manner diseased. To this class of cases belong very many of those which come before us in practice; and, to treat these cases to advantage, we must endeavor to get at the whole truth respecting them. A soft, somewhat enlarged, flabby condition of the uterus, is discovered in many instances of this kind; and, besides this, there is no organic lesion discoverable. To determine the point of time at which the functional or constitutional passed into the local disorder is important; for that diagnosis is not complete which does not take cognizance of the successive changes and events which occurred from time to time.

Many of the causes now about to be considered, and which are capable of giving rise to losses of blood at irregular periods, are also efficient in producing excessive menstruation. The early stages of many local uterine affections are, in fact, attended with excessive menstruation as a symptom; and in such cases there

may be *irregular* hemorrhagic loss attending the same affection at a more advanced period. At least, such is frequently observed to be the case.

In most of the cases now to be considered, a vaginal examination will be found necessary in order to render the diagnosis a satisfactory one.

Hemorrhages appearing at the generative passages may arise from purely *constitutional causes*, the uterus itself being sound and healthy. In such cases the mucous membrane allows blood to escape, owing to some change in the composition or character of the blood itself, or to disturbances of the circulation from disease of other organs, just as is the case in reference to some other mucous membranes. Where the hemorrhage is due to constitutional causes, examination could reveal nothing of moment; and, unless the nature of the disturbing agency were very obvious and apparent, there might be some difficulty in determining the nature of the case. It is unnecessary here to repeat what has been already said in reference to the subject of the influence of constitutional conditions in the production of hemorrhage.

Irregular Appearance of Menstruation from Pyrexial Disorders.—Perroud (Gaz. Méd. de Lyon, Jan. 1862) has observed that an occasional effect of the onset of the pyrexial disorders is the appearance of the menstrual flow a few days before its time. In scarlet fever, in small-pox, in measles, unusual profuseness of the menstrual discharge, in some cases associated with the accident known as peri-uterine hæmatocele, has been observed. My friend Mr. Benson Baker, who has lately made numerous observations in reference to small-pox, informs me that this sudden appearance of menstruation was a frequent premonitory symptom.

Mental disturbances may give rise to a flow of blood from the uterus of purely menstrual character, although not appearing at the ordinary menstrual period.

Leaving these general causes of hemorrhage, we may now consider those special pathological or other conditions of the sexual apparatus known to be associated with hemorrhage from the organs in question.

The class of cases first demanding attention are those in which the loss of blood is connected with the presence, or previous presence, of the fruit of conception within the uterus.

Abortion.—A discharge of blood from the generative organs in a case where menstruation has been previously absent for a month, or for a period of two or three months, and in a woman whose age

does not forbid the idea of pregnancy, should *always*, whatever be the condition and circumstances of the patient, lead the practitioner to suspect the occurrence of abortion. It need hardly be stated, however, how important it is that these suspicions should not be rashly expressed, nor until further inquiry or examination throw more light on the matter.

In cases of abortion, the menses are found to have been absent for from two to four or five or six months; the hemorrhage which occurs begins suddenly, preceded sometimes by shivering, sickness, pains in the back and thighs, &c.; and is accompanied by pains at the lower part of the abdomen, resembling, and in fact identical with, those of labor. The hemorrhage is not continuous, but pauses, and recurs again after ceasing a few minutes or more. At each pause in the flow of blood there is a cessation of the pain. The fact that the pains continue, notwithstanding that there may have been a considerable flow of blood, is one of the points on which we are instructed most to rely in the diagnosis of a case of abortion from one of excessive menstruation following suppression; but, practically speaking, the distinction is not worth so much as has been claimed for it. It often happens that there is a persistent slight trickling of blood, the flow of blood being suddenly increased from time to time. There is generally, too, a periodicity in the recurring attacks of pain and hemorrhage. At the end of a few hours, or, in some cases, a shorter interval, the ovum, or portions thereof, are expelled, together with clots; and if the expulsion have been complete, the hemorrhage ceases, unless perchance there be a second ovum still in the uterus, as in cases of twins. The expulsion may be delayed for a much longer time, or the embryo may be expelled, leaving the membranes behind; and in such cases the hemorrhage continues, becoming at times very profuse. An abortion can, of course, only occur in a patient who has reached, but who has not exceeded the limits of, the childbearing age. Hemorrhage from the uterus, more frequently than is usually supposed, occurs from abortion at about the second month in married women; the real cause being often overlooked, and the case supposed to be one of simple menstrual irregularity. The diagnosis of early abortion from excessive menstruation is indeed often far from easy. If the abortion take place at an early period, examination of the uterus from the vagina gives no positive data for determining the point. The only reliable evidence obtainable at this period is that afforded by a very careful examination of the clots or matters expelled from the uterus. (See "Substances ex-

pelled from the Generative Passages.'') At a later period, the evidence from the physical condition of the uterus is more decided.

The diagnosis of abortion from cases in which there has been, previous to the occurrence of the hemorrhage, *retention of menstrual fluid*, is very important. The phenomena present—viz., the uterine contractions and pains, the discharge of blood, the previous absence of the catamenia—may be the same in the two cases. Whereas, however, in abortion, the attack is single, and there is generally an absence of like symptoms for the two or three months previous, in the other class of cases there have been more or less constant pains present at the lower part of the abdomen for two, three, or four months, increasing in severity periodically, and culminating in a sudden more or less profuse hemorrhage. At least, such is one method in which menstrual retention may terminate.

If an abortion have occurred recently, and hemorrhage take place a few days after, recurring possibly on successive occasions, it may turn out, on inquiry or on examination, that the embryo has been expelled, but the placenta, or some portion of the membranes, retained. The placenta is small in the case of an ovum at three to four months; but yet, when retained in the manner stated, it may be the cause of severe and extensive hemorrhage. When the embryo is expelled earlier than this, and before the placenta is formed, the part left behind is constituted chiefly by the decidua; and, as I have had occasion to observe, this substance may become thickened and hypertrophied to a very remarkable extent. A vaginal examination is always necessary in a case of suspected abortion. We must not rely too much on the assertions of patients. Sometimes clots only have come away, when it is stated that the abortion has occurred.

During the last three months of pregnancy, hemorrhage now and then occurs from the placenta being attached partially or entirely over the mouth of the uterus—*placenta prævia*. The character of the hemorrhage from placenta prævia is, that it comes on suddenly, and without external apparent cause, generally also without warning; that it is often very profuse, so much so as now and then to kill the patient before medical assistance can be obtained. The hemorrhage ceases, or, at all events, only a very slight loss is sustained, and again recurs, perhaps; but the noticeable fact about it is its uncertainty. Practically, we draw the inference, that when, in the latter part of pregnancy, hemorrhage suddenly occurs, the presence of placenta prævia is to be suspected; and, if we suspect it, it is our duty without delay to endeavor by

examination to put the matter beyond doubt; otherwise the life of the patient may be imperilled.

Between hemorrhage the result of an abortion, and of placenta prævia, there is this difference: in the case of abortion, the patient may or may not be aware of her pregnant condition, or, knowing her pregnant state, may have reason for wishing to mislead her attendant; in cases of placenta prævia, the patient is usually known to be pregnant.

Hemorrhage may occur during pregnancy, and may be profuse, when there is nevertheless no implantation of the placenta over the os uteri; the cause being a separation to a slight extent of the placenta from the uterus. Such hemorrhages have been called in obstetric language "accidental," as distinguished from the "unavoidable" hemorrhages the result of placenta prævia. An "accidental" obstetric hemorrhage may or may not be followed by expulsion of the child. Further information on these latter points will be found in any standard obstetric work.

Hemorrhage of irregular occurrence is noticed in cases of *mole pregnancy*, as they are termed.

Unusual discharge of blood *in a woman who has been recently delivered* may be due to *retention of a portion of placenta or membranes*, or to *inversion of the uterus*.

As regards the diagnosis of *cases of retention of a portion of the placenta or membranes*, there is not usually much difficulty. Hemorrhage occurring within a few days after delivery would lead us to suspect that a portion of the placenta or a supplementary placenta, has been retained. It may happen, however, that the amount of hemorrhage produced by the presence of the foreign body in the uterus may for some days be so inconsiderable as to attract no particular attention, may be considered as "regular" by the nurse, and yet at the end of that time there may be profuse attacks of hemorrhage. The facts relating to a case of this kind, which came indirectly under my notice many years ago, are strongly impressed on my memory; the hemorrhage was postponed in the manner here alluded to for some days, was then severe and continuous, and the patient sank under its effects. In cases of retention of a portion of the ovum after abortion, which cases are not uncommon, the previous occurrence of such abortion should lead us to suspect the nature of the case. The portion of placenta or of the ovular membranes retained may be very small, and yet be sufficient to give rise to very profuse hemorrhage.

Inversion of the Uterus, partial or complete, is a *post-partum*

condition capable of giving rise to severe hemorrhage. Curiously enough, the existence of this condition is sometimes found to have escaped recognition for so long a time after the delivery that the diagnosis of the nature of the case has been rendered very doubtful.

Hence the necessity for calling attention to the fact that hemorrhage, occurring some time after a particular labor, may be found to be due to this condition—inversion. As a rule, where the accident has escaped recognition, it is found that there has been hemorrhage occurring at intervals ever since the delivery; that the hemorrhage was at first very severe; that it gradually became less; that subsequently it assumed the character of excessive menstruation, the hemorrhages for the most part occurring coincidently with the usual catamenial periods; that between these, however, great losses of blood had been often observed. The hemorrhage is not profuse and sudden in character, but it is a continuous drain, going on for a certain time, and then ceasing partly or entirely. In such cases there is also profuse and purulent leucorrhœa. The symptoms, of course, date from a previous pregnancy; and, in nine cases out of ten, it is found that undue force was used in the removal of the placenta after the delivery in question. Polypus of the uterus gives rise to symptoms very closely resembling those of inverted uterus. Examination is, of course, necessary when the presence of inversion is suspected.

The cases next to be considered are those in which the loss of blood is *not connected with pregnancy*, or, necessarily at least, with menstruation, but in which there is some local or general condition present which determines the occurrence of the discharge. It must be recollected that many of the conditions in question do *also give rise* to profuse menstruation.

Here, perhaps, may be appropriately mentioned a rare cause of profuse loss of blood, viz., *the presence of a clot of blood in the uterus*. Thus, in a patient who is the subject of profuse menstruation, a portion of the blood coagulating in the uterus may give rise to subsequent very troublesome hemorrhage, the source and cause of which would not be at once evident.

Hemorrhages of severe and profuse character are produced by various organic diseases of the uterus, and under certain other circumstances also. These will now be enumerated, and their principal diagnostic features indicated.

Cancer of the Uterus.—Of this occasionally insidious, and very fatal disease, hemorrhage to a greater or less extent is a prominent symptom, though not invariably so. The amount and

periods of occurrence of the hemorrhage vary according to the seat of the disease and the stage to which it has advanced. When a woman has entered on what may be called the " cancerous age" and begins to suffer from menorrhagia with occasional losses of blood besides, or when, having ceased to menstruate, hemorrhages are observed, the possibility of this symptom being due to cancer must be recognized. Later, that is to say when the disease is more advanced, hemorrhage is rarely the only symptom present, and we have generally much pain, an offensive sanious leucorrhœa, and constitutional disturbance. One point must particularly be recollected, that, for a certain time, hemorrhage may be the only sign observed.

Thus, in a series of cases carefully observed by Dr. West, hemorrhage was the first symptom in 43.9 per cent. of the cases. In certain cases there may be an entire absence of the signs now under consideration, there being only profuse menstruation present. Another circumstance, also rare, but which may be subject of observation, is that the hemorrhage is unattended with pain. In an instance noted by myself, the first occurrence of hemorrhage was produced by sexual intercourse, the patient, aged 48, being affected with undoubted cancer.

Where the cancerous affection of the uterus is situated in an unusual locality, exceptional symptoms may be noticed. Thus, a case is related by Dr. Keating of Philadelphia,* where an enormous cancerous interstitial tumor of the uterus absolutely prevented delivery, in a patient æt. 30. The patient had had one attack only of hemorrhage four years previously ; menstruation had been contrary to what is usual in such cases, *scanty*. After death, it was ascertained that the menstrual discharge had been fetid. The patient had, it is stated, a suspicious cachectic appearance.

Cauliflower Excrescence of the Os Uteri gives rise, as a rule, to hemorrhages of an irregular character. The hemorrhage is usually brought on by walking, by exertion of any kind, by coughing, sneezing, &c. There is usually offensive watery discharge present in cases of this disease. Its duration exceeds that of ordinary cancer of the uterus.

Corroding Ulcer of the Os Uteri, a rare affection, is attended with hemorrhage, like that of ordinary cancer, of which disease it is probably only a variety.

* Am. Journ. Med. Sc., Ap. 1861, p. 405.

Respecting the diagnosis of all cases of suspected cancer, there is this remark to be made, that careful digital examination is always necessary. Here the diagnostic signification of the hemorrhage only has been alluded to.

Climacteric Hemorrhages.—Side by side with "cancerous" hemorrhage, we may consider what have been called "climacteric" hemorrhages; practically, the necessity of separating cases of the latter from those of the former kind often comes before us. When the menstrual flow is finally about to cease, profuse losses of blood are apt to occur, and to recur at intervals for a considerable time.

In distinguishing these climacteric from cancerous hemorrhages, the age of the patient does not help us, nor, indeed, can it be pointed out with ease what are the distinguishing features. In the nature of the blood itself, however, we find some data for diagnosis : thus, the blood is of a deep red and coagulable in hemorrhages of simply climacteric origin; whereas in cancerous cases, unless it be, perhaps, at the very origin of the disease, the blood is fetid and ichorous. Climacteric hemorrhages are more often observed in sanguine temperaments, and in those who have been the subjects of profuse menstruation.

The menses may have ceased for a few months before the hemorrhagic attacks; or the hemorrhage may be periodic, resembling so far the ordinary catamenial discharge. When there have been hemorrhages, recurring for some months, at about the period of sexual involution, we may presume, negatively, against the existence of cancer if there be no pain or offensive discharge; the absence of any marked deterioration of the general health would also, under such circumstances, be against the idea that such hemorrhages were due to cancer.

Conversely, we must be careful not to confound hemorrhages coming on a few months or a year or two after the cessation of the catamenial flow with climacteric hemorrhages. The distinction between hemorrhage due to cancer setting in subsequently to the cessation of the catamenia and climacteric hemorrhage, may be, and often is, difficult; but a careful digital examination will generally decide the question satisfactorily.

The several kinds of *Polypi* of the uterus produce hemorrhage, often very severe, and sometimes of an ultimately fatal character. The abundance of the hemorrhage is not by any means in direct proportion to the size of the polypus, but depends rather on the degree of vascularity present. The hemorrhage is irregular in character, and, coinciding more or less with the menstrual discharge

as it frequently does, it may be at first overlooked; its tendency is to increase in quantity, but the march of the symptoms is slow, and if the loss be not considerable, the general health may remain little affected. A most important class of cases are those in which polypi, entirely within the uterus, occasion severe hemorrhage, the cause of the hemorrhage escaping recognition owing to the absence of dilatation of the os uteri. Sir J. Y. Simpson was the first to point out the necessity for exploring the interior of the uterus, by dilatation of the os uteri, where the cause of the severe menorrhagia is only explainable on the supposition that a polypus is present. When the polypus becomes very large, "pressure" signs, such as difficult micturition, difficult defecation, accompany the enlargement of the uterus which results. Abortions are frequently due to the presence of uterine polypi. Clots or partial moulds of the uterine cavity are found sometimes in the discharges. With reference to the kind of polypus present, the nature of the hemorrhage gives us no precise information. Very profuse hemorrhage sometimes results from very small tumors—"mucous" polypi, as they have been called—situated just inside the os. In cases of polypus uteri, there may be profuse leucorrhœa, and there may be much pain; but the leucorrhœa is not, except in rare instances, offensive, as it is in cancer, and the pain is of a different character. Moreover, the patient with polypus may, comparatively speaking, remain *in statu quo* for some time—an observation which does not apply to cancer. Cases are not rare in which uterine polypi remain for years undetected, the hemorrhage, by its long continuance, finally sapping the very foundations of life, the skin becoming etiolated and withered-looking, and the patient reduced to an extreme state of feebleness.

Fibroid Tumors of the Uterus, which have a composition identical with that of fibrous polypi, both being but growths of the uterine tissues, may or may not cause hemorrhage, the position of the tumor very much affecting this result. Thus, if the tumor project into the cavity (submucous variety), the result, as regards the hemorrhage produced, will be pretty much the same as if a polypus were present. The further the tumor is from the mucous membrane, the less frequently, as a rule, does hemorrhage occur. The early stages of these growths may be unattended with marked symptoms; hemorrhage may be entirely absent. Menstruation is rendered excessive, both as regards duration and as regards the quantity poured out: this symptom may go on for some time without attracting attention, when, sooner or later, other symp-

toms, interperiodic hemorrhages, abortions, &c., are usually observed. When these fibrous growths attain a very considerable size, they often produce pressure signs, as in the case of large polypi. The hemorrhage produced by the presence of fibroid tumors is often accompanied by a good deal of pain, and the pain is spasmodic, somewhat resembling pains due to abortion. Cases of abortion are distinguished from cases of fibrous tumor with hemorrhage by the circumstance that the pain and the hemorrhage cease together in the former instance, but not in the latter. In the case of hemorrhage suspected to have its origin in the presence of uterine polypi or fibroid tumors, a careful examination is necessary; the uterus must be examined both from the vagina, and through the abdominal walls.

Granular Condition of the Mucous Membrane of the Uterus.— In certain cases, profuse menstruation is connected with an altered condition of the mucous membrane of the uterus, characterized by the presence of fungus-like vegetations on the surface.

Tubercle of the Uterus.—We should expect, in a case of uterine hemorrhage from this cause, to have evidence of the presence of tubercle in other organs, and of the constitutional effects thereof. Pathologically, tubercle of the uterus has been usually supposed to be rare; but hemorrhage from the uterus in tuberculous women, dependent on the state of the blood rather than on organic local changes, is not so uncommon.

Enlargement of the Uterus, due to chronic inflammation, defective involution after delivery, or to the presence of a sort of hypertrophied condition without previous impregnation, is very commonly associated with hemorrhages. This condition of the uterus is very frequently indeed associated with menorrhagia, and there are few ordinary cases of profuse menstruation in which this condition of the uterus is not present. The organ is larger than usual, its tissue is less firm, it is unduly congested and otherwise altered. The condition is frequently a result of imperfect involution of the uterus after delivery, the organ not subsequently returning to its proper size. The subjects of this condition of the uterus are generally very much debilitated and out of health, and they are very liable to pain in the pelvis and in the region of the uterus; they very commonly, also, suffer from profuse leucorrhœa.

Hypertrophy of the Cervix Uteri, the cervix being converted into a large rounded tumor projecting low down in the vagina, or even beyond it, may give rise to hemorrhage and other serious inconveniences. The symptoms closely resemble those of polypus

uteri, and the condition has been frequently confounded with polypus or prolapsus of the uteri. The condition usually termed *inflammatory enlargement of the cervix uteri* may also give rise to hemorrhages.

Hemorrhages may arise in connection with certain altered conditions of the position of the uterus, from causes which may, indeed, be termed *mechanical.*

Of these, *Flexions of the Uterus* are, unquestionably, the most important. The fundus uteri becomes tilted backwards, projects into the fossa between the uterus and the rectum, or it is tilted forwards and rests on the bladder: in both cases the uterus is bent on itself. Hemorrhage, either very profuse menorrhagia, or interperiodic hemorrhages combined with menorrhagia, are not seldom produced by the retroflexed condition of the organ. When this latter condition is present, there is a great tendency to abortion, and, indeed, impregnation is often thereby prevented; defecation is often painful, and micturition frequent or difficult. The hemorrhage is not severe, as in polypus; it is not accompanied by so great a degree of pain as when fibroid tumors are present; and it is more limited to the menstrual periods than in the case of polypus. Examination is necessary if flexions are suspected to be present.

Another form of mechanical disorder liable to produce hemorrhage is *prolapsus—descent of the uterus,* in the pelvic cavity, or even externally beyond the vulva. It is a condition of which hemorrhage is not, by any means, one of the most marked symptoms, occurring, as it does, only in a small proportion of the cases; but now and then the loss of blood is certainly considerable. The physical character of the ailment generally early attracts attention to its true nature.

CHAPTER IV.

SUBSTANCES EXPELLED FROM THE GENERATIVE ORGANS.

(A) FLESHY SUBSTANCES.—The early Ovum, or portions thereof; Placenta; Uterine Polypus; Coagula of Blood.

(B) MEMBRANOUS BODIES.—Exfoliations from the Vagina, the Dysmenorrhœal Membrane, Coverings of the Ovum, Exfoliations from the Bladder.

(C) VESICULAR BODIES.—Hydatidiform Degeneration of Ovum, Hydatids.

(D) FACTITIOUS BODIES.

IN this chapter are included the "data for diagnosis" derived from the inspection of those bodies, solid or otherwise, submitted or obtained for examination, and reported to have been expelled or removed from the female generative passages. Questions regarding the presence of pregnancy, the presence of abortion, the possibility of impregnation having occurred, as to whether the patient has been recently delivered, &c., may have to be answered; the data for forming a conclusion thereon being only those derivable from inspection of certain substances submitted to us. Uncertain as our diagnosis too frequently is, from want of reliable information, it is extremely important, when, as in the case before us, we have *substantial* data to go upon, that we should be able to make the most of those data. An accurate conclusion respecting the nature of these bodies is often very necessary; for upon it depend very frequently determinations as to the condition of the patient, and as to the nature of the affection present, of the most momentous character. An erroneous and hasty opinion given under such circumstances may involve consequences injurious both to the patient and to the practitioner.

An off-hand opinion ought never to be given respecting the nature of any substance said to have been expelled from the generative passages. A careful examination of the case should always precede a conclusion as to its nature. It need hardly be observed that, in order to institute a proper examination, an intimate practical knowledge of the normal *anatomy* of the ovum, and a familiarity with its outward appearance, on the part of the observer, are absolutely essential.

From a variety of circumstances, the substances in question are frequently difficult of recognition; and it is always expedient to

place them in water for twenty-four hours, or even longer, at the end of which time they will be in a much more satisfactory state for examination. The importance of adopting this precaution in the examination of cases of suspected abortion it is impossible to over-estimate. What appears on a cursory inspection to be a homogeneous fleshy mass may, after having been soaked for some hours in water, present a most elaborate structure. Great care must be exercised in receiving the statements of patients as to the nature of any particular substance which may have been expelled. Many are desirous of deceiving and giving erroneous impressions; but a much larger class are incapable of describing accurately what they do see. Ocular inspection of the specimen by the practitioner himself, and under the favorable circumstances just alluded to, is absolutely necessary, if the diagnosis is to be anything beyond conjecture.

In the very practical and valuable work of Dr. Montgomery, the substances which may be expelled from the generative passages are enumerated as follows: "1, an early ovum; 2, a mole; 3, uterine hydatids; 4, the membrane produced in dysmenorrhœa or other conditions of uterine derangement; 5, membranous formations from the vagina." This does not, however, include all the substances which may present themselves to be examined and reported on; and the arrangement here adopted will be somewhat different from that of the author just alluded to.

(A) FLESHY SUBSTANCES.

In the first place, we shall consider those substances expelled or removed from the generative passages more or less resembling *flesh* in their outward form and appearance. By the term "flesh" or "fleshy" masses, they would be popularly designated; and it is therefore useful practically to group them together.

The various "fleshy" substances presented for examination are: 1, an ovum cast off at an early period of its growth, or arrested in its development, and retained in the uterus, constituting what is popularly known as a *mole*; 2, the placenta, or a portion thereof, retained for a time, and subsequently expelled; 3, polypus of the uterus spontaneously detached and expelled; 4, fibrous tumors of the uterus similarly separated; 5, coagula of blood.

1. Is the substance examined *an early Ovum?* In order to answer this question satisfactorily, the observer must be acquainted with the structure of the ovum at an early period, and be able to

recognize its several parts. If any portion of the body or members of the fœtus be found in the mass expelled, there can, of course, be no doubt in the matter; we have to do with an abortion. When no part or parts of the embryo are to be found, we are obliged to search for other marks by which we may recognize the product in question as the result of conception. We proceed to search for one of the following structures: the decidua materna, or external envelope of the ovum; the decidua reflexa, internal to the latter; the chorionic villi; the umbilical cord, &c.

After soaking the specimen in water, it should be carefully examined in that fluid, a blunt probe and forceps only being at first used in manipulating. In ova which come away *en masse* (a rather rare occurrence) during the first three months or so of pregnancy, the external covering will be the *decidua materna ;* and this membrane is recognized by its ragged uneven appearance under water, by the presence of those bodies described first by Dr. Montgomery as " decidual cotyledons" on the external surface, by its pyriform shape, and by the fact that there are three openings—two superiorly, corresponding to the Fallopian tubes; and one inferiorly (which latter may, however, be closed), corresponding to the neck of the uterus. The decidua is further characterized by the smooth and velvety appearance of that surface of it which is internal, and by the fact that on this surface many minute openings, just visible to the unassisted eye, are perceptible, giving the membrane a cribriform appearance. After the fourth month, this membrane is found thinner, and some of the characters just alluded to are less marked. This decidua may come away by itself, torn or separated from the ovum, or filled with the degenerated structures of the ovum.

The *decidua reflexa* is a fibrous membrane thinner than the decidua materna; and it incloses the ovum proper in great part. The most characteristic structure of the ovum is, however, the *chorion membrane*, with the *villi* which grow on its external surface. The early ovum, separated from the decidual coverings, is a closed bag covered by little delicate processes, the villi of the chorion, giving to it a shaggy appearance. In a very early ovum the villi are small and simple; but in a more advanced ovum—of two months, for example—each original villus is found to have given off branches arranged somewhat like the branches of a stem of coral. Later still, these villi are longer, and they are then found *on one side only* of the ovum; those on the other side, not participating in the development described, shrink and almost

completely disappear. The presence of chorion villi may be considered quite conclusive as to the fact of impregnation and previous conception, whether the embryo be found or not; but it is a question whether the same degree of diagnostic value attaches to the presence of the decidua materna, it being the fact that *a membrane* may be expelled from the uterus quite independently of conception, and possessing many of the characters of the decidua as above described. In the decidua resulting from pregnancy, the decidual cotyledons are present; but not in the other. This is the best distinction which can at present be given; but, from examination of certain specimens, I have come to the conclusion that cases might arise in which this means of distinguishing them might fail.

If a small sac were found having attached at a point of its internal surface the remains of the umbilical cord, this would be conclusive on the question of impregnation. In the case of early ova expelled from the uterus, one of several results may be observed. The ovum enveloped in the decidua may come away entire; the decidua may remain behind for a time; and the chorion membrane covered by its villi, and inclosing the embryo, be expelled by itself. The chorion and amnion may remain *in utero* as well as the decidua, the embryo escaping from the uterus. In such a case, the membranes, fœtal and maternal, would be expelled subsequently.

Moles.—The various substances known under the designation of moles, and which are the products of conception,* are for the most part the result of arrest of development, which may coexist with continuance of growth of some portion of the ovum. It is very important to be aware of the fact, that an ovum, or some part of it, may remain in the uterus for a very considerable time, growing in an irregular abnormal manner, or just preserving a low form of vitality. A practical instance will show the importance of this knowledge. A woman having lost her husband five or six months may have an attack resembling an abortion, and there may be expelled a substance which the observer believes to be an ovum of two months, whereas it turns out, on examination by a more competent hand, to be a mole, the product of a conception previous to the husband's death. The "fleshy mole," as it is termed, consists of an ovum between the membranes of which

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* It seems proper to confine the use of the term "mole" to the products of conception alone.

blood has been effused. The blood effused has coagulated, and the result is a mass, the parts of which are glued together and separated with difficulty. The villi of the chorion must be carefully sought for; and they ought to be found in all cases where there is no reason for suspecting that the ovum, with its chorionic investment, has previously escaped. The presence of organized membranes and chorion villi distinguishes the "fleshy mole" from simple clots of blood, and from other substances presently to be more particularly considered. It must be recollected, that the chorion villi do not become developed so as to constitute a regular placenta until near the fourth month of gestation. It is difficult to imagine that a fœtus which has lived until the placenta has been formed could undergo a process of complete absorption, but there are very numerous cases on record to show that degrees of development of the chorion villi short of the production of a placenta frequently coexist with entire absence of the embryo, which in such cases perishes at so early a period that its size is very inconsiderable; and it then escapes detection.

There is another kind of true mole, the "hydatidiform" or "vesicular" mole, a description of which will be given presently.

2. *The Placenta.*—The fleshy mass expelled may be a part or the whole of a "placenta." When a woman has been delivered at or near the full time, and no placenta has come away, a fleshy-looking mass expelled a week or two after would in all probability be the placenta; and in such a case the signs of previous delivery would be present, the history of pregnancy, &c. The size, shape, &c., of the mass, and the presence of the umbilical cord, would externally indicate it to be the placenta. The expulsion of a retained placenta is, at least when the retention has existed for some time, usually preceded by an offensive discharge; but the placenta has occasionally been discharged apparently fresh, and without signs of decomposition.

Such cases are rarely open to much chance of misconception; but the nature of the case is not so obvious when the fœtus has been expelled at an earlier period of gestation. In cases of abortion at the fourth or fifth month, the placenta may be retained for some time, its removal not having, for some reason or other, been effected at first. Cases are on record which show that the placenta may be retained within the uterus after abortion for months and even years. An instance in point is quoted by Montgomery from Morgagni.* More than one case of the kind has in-

* Op. cit., p. 259.

deed come under my own observation. Meanwhile, its presence in the uterus has generally occasioned severe hemorrhages. An early placenta would be about the size of a pigeon's egg; later it would be larger. If recognized as a placenta, it would indicate a previous conception. The substances which might be mistaken for a placenta are a fibrous tumor spontaneously expelled, or a fibrous polypus similarly removed; and in both cases the symptoms, hemorrhages, &c., might be somewhat alike. In order to settle the point, the structure of the fleshy mass must be carefully examined, if evidence as to previous pregnancy be wanting, or if that which is obtainable be open to suspicion. An early placenta is rounded, rough on one side and smooth on the other. The presence of the umbilical cord attached to one side of it would be conclusive; but this might be worn away or torn off close to the placenta. A section of the mass would, however, show vessels arranged in a peculiar manner, radiating from the centre of one surface.

3 and 4. *Fibrous Polypi* of the uterus and *Fibroid Tumors* are sometimes expelled spontaneously from the uterus. Externally, these bodies might be easily confounded with a placenta, the more especially as the preceding hemorrhages might be considered evidence of abortion having occurred. Polypus of the uterus and fibroid tumors frequently produce abortion; and in certain cases abortion may occur in the first place, and the expulsion of the polypus which gave rise to the abortion in the second. This sequence happened, as I had reason to know, in a case under the care of a gentleman in the country; and the polypus which came away was considered, until after it had been more carefully examined, to be the placenta. The structure of a polypus or of a fibrous tumor differs widely from that of the placenta, the former presenting a fibrous texture, generally dense, and sometimes very firm; but now and then, in the case of a polypus, more spongy and loose. The insertion of the umbilical cord would be, of course, wanting. Fibrous masses containing fatty matter within them, which I believe are instances of *fatty degeneration* of fibrous tumors or polypi of the uterus, are sometimes spontaneously expelled, as in a case which I have placed on record,* or solidified by *calcareous matter*. Generally we find a previous history of " frequent and severe hemorrhages " when these uterine outgrowths have been expelled. The spontaneous expulsion here alluded to

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* Trans. of the Pathological Society, vol. xi, p. 173.

is not a frequent termination of their history. Masses of cancerous growths, in some rare instances, slough away and appear externally. The cancerous disease is usually far advanced in such cases, and a digital examination would reveal the origin of the expelled body.

5. *Coagula of blood* (blood-polypi) retained within the uterus for some time, and expelled subsequently in a more or less firm condition, require to be discriminated from the bodies hitherto alluded to. Coagula may form within the uterine cavity in connection with uterine hemorrhage of all kinds; after labor, in consequence of the presence of polypi, cancer of the uterus, profuse menstruation, &c. The uterine cavity is not, as a rule, very tolerant of the presence of clots; and for this reason they do not generally remain there sufficiently long to have become firm and dense. They are frequently connected with previous abortions. The manner in which blood polypi sometimes form is shown in the accompanying drawing of a "Polypoid Hæmatoma" following an abortion at the second month. The remains of the chorion structures attached to the uterus form the pedicle of a mass consisting of blood-clot, the whole assuming a polypoid form.* When the coagula are tolerably recent, they are easily broken down under pressure, or after soaking in water. Fibrous organized bodies are not
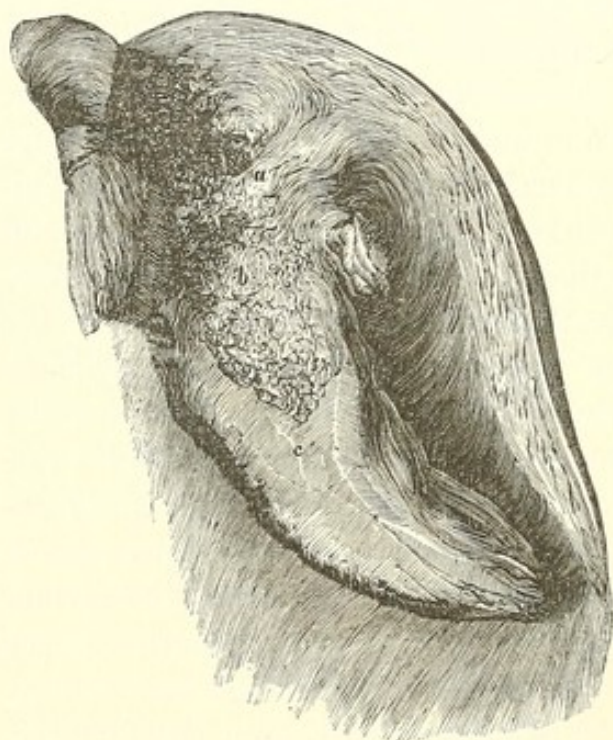
Fig. 1.

to be broken up in this manner. When polypi of the uterus are present, coagula sometimes come away having a circular form like segments of rings. The polypus at the same time excites hemorrhage, and prevents the escape of the blood; and the rings in question are thus formed. Coagula not recent may present a tolerably firm, dense, grayish, fibrinous-looking surface. The want of organization in the mass, the presence of blood-corpuscles,

* Copied from Virchow's Krankhaften Geschwülste, Band i, p. 146.

would assist in the diagnosis of the nature of the substance.   The centre of the mass, moreover, generally exhibits a clot of a darker color, comparatively unaltered, which was the original nucleus of the formation.*

In respect to the size and shape of clots of blood expelled from the vaginal aperture, some peculiarities are sometimes noticed. Thus, in a case which recently fell under my observation,—that of the sister of a medical man,—a large clot of blood, having the size and shape of the vagina, had been occasionally expelled, after much straining and pain, at the menstrual periods.   It was found that the aperture of the hymen was excessively small, and, the discharge of blood being more profuse than usual, an accumulation and coagulation of the same in the vagina had occurred.

(B) MEMBRANOUS FORMATIONS.

Bodies more or less resembling " skin" may be conveniently considered together under this designation.   The skin-like substances in question may have their origin in the vagina or in the uterus.

1. *Exfoliations from the Vagina.*—Under certain circumstances the lining membrane of the vagina separates in the form of thin, translucent flakes, which sometimes come away in great quantities. Dr. Tyler Smith† designates that condition of the vagina present in cases of this kind as " epithelial vaginitis."   The flakes in question are composed of the scaly epithelium of the vagina, and under the microscope exhibit the well-known appearances of this form of epithelium.   It is necessary to place them in water in order to render obvious the characters of these exfoliated products.

2. *The Dysmenorrhœal Membrane* (" menstrual decidua," Farre).—This is an exfoliation of the lining membrane of the uterus—a sort of skin occasionally expelled from the uterus, independently of conception, after a catamenial period, and exhibiting a certain degree of resemblance to the decidua lining the uterus during pregnancy.   This membrane is neither more nor less than the mucous membrane of the uterine cavity, hypertrophied and cast off.   I have no doubt that, normally, the mucous membrane of the uterus becomes thickened, softened, and cast off at every menstrual period; but ordinarily the membrane in question appears to be too thoroughly broken up for even shreds to be left.   Under

* See an account of some specimens reported on by myself in Trans. of Path. Soc., vol. xv, p. 169.

† On Leucorrhœa, p. 57.

the influence, however, of certain conditions, the nature of which is at present not perfectly understood, but which probably have the effect of setting up a sort of chronic inflammation of the lining membrane of the uterus, the mucous membrane of the uterus becomes sometimes greatly more thickened than usual, and being in accordance with the ordinary rule, thrown off, it is presented • externally. This is what appears to take place in these cases of membranous dysmenorrhœa. The membrane in question is smooth internally, rough and slightly flocculent externally. When thrown off in a single piece, the membrane presents three apertures, corresponding to the apertures communicating with the uterine cavity, and is of a pyramidal shape. It is expelled during the catamenial flow, which, as a rule, is more profuse than usual.

Fig. 2.*
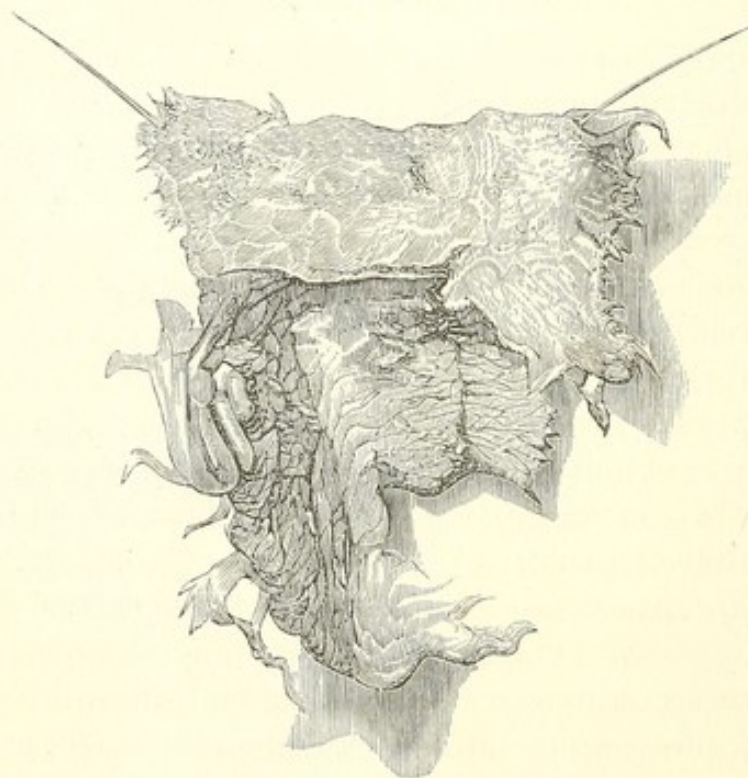
It is unlike the vaginal exfoliations just alluded to, being very much thicker. The distinction of this dysmenorrhœal membrane from the decidua of an early ovum might, under certain circumstances, be difficult, as already stated, viz., when the supposed de-

* This drawing, made for me by Mr. Tuson, represents the uterine lining expelled nine weeks after a catamenial period. There was no trace of an ovum nor evidence of attachment of one. The flocculent shaggy external aspect and the smooth velvety internal surface are well shown. The patient had had one child, and thought she was pregnant.

cidua is unaccompanied by any part of the chorionic structure. The concomitant circumstances will assist in the diagnosis: thus the " dysmenorrhœal membrane " is not expelled at one catamenial period only, but on successive occasions; whereas, in the case of an abortion, the same thing is not likely to recur, or at all events, with the same marked periodicity. For further remarks on this subject, see " Pain during Menstruation."

3. *The Covering of the early Ovum.*—Portions of the decidua maternâ, the decidua reflexa, the chorionic sac, &c., may come away in the form of membranous substances. It is unnecessary here to repeat what has been already stated as to the diagnosis of the nature of these bodies.

4. *Exfoliations from the Bladder.*—The coats of the bladder have in rare instances been expelled: in a case related by Mr. Spencer Wells, the whole lining of the bladder appears to have sloughed and to have come away by the urethra.*

(C) VESICULAR BODIES.

The Hydatidiform or Vesicular Mole.—Little bladder-like substances, singly or connected in series like beads, may be expelled from the uterus. These bodies were formerly considered to be hydatids formed in the uterus. They really result from certain alterations of the chorion villi, and they are always the result of conception. The embryo perishes at an early period, and the chorion villi continuing connected with the uterus maintain a slow growth, the *development* being arrested. The vesicular bodies are thus the result of dropsical swelling of the chorion villi. It appears that the period of pregnancy during which the chorion villi may take on this peculiar form of degenerative growth is limited, probably not later than the middle or end of the third month. If the embryo perish after the chorion villi have become pretty intimately connected with the decidua serotina, but before the placenta has become formed, while the villi are allowed still to retain a certain degree of connection with the uterus, they may continue to grow; but *development* is arrested, and the bladder-like bodies are the result.†

* See Obstetrical Trans., vol. iv; also Trans. of Path. Soc., vol. xv.

† For a more complete account of the arguments which are to be adduced in favor of the above explanation of the formation of these vesicular bodies than is here given, I would refer to my papers on the subject in vols. i and ii of the Transactions of the Obstetrical Society of London; also to a case published in the Lancet, vol. ii, 1862.

With the presence of the vesicular mole watery discharges are occasionally associated. The mole in question may attain a considerable size, and may remain sevēral months in the uterus, a few of the bladders from time to time breaking and discharging fluid from the os uteri. The mass may come away altogether, or clusters of the vesicles may be expelled at intervals.

Connected with this subject is an important practical question, which I have in another place thus attempted to answer, viz.: "*Can a portion of retained placenta take on the hydatidiform change?* The placenta belonging to a mature fœtus cannot, if healthy at the period of the birth of the child, become the seat of the hydatidiform change, the chorion villi having long since disappeared and become converted into bloodvessels. The only circumstances under which hydatidiform bodies might be subsequently expelled from the uterus, and give rise to the supposition that they arose from degeneration of a retained placenta, are, as I believe, the following: Firstly, in cases of double conception, when, one embryo having perished at an early period, the membranes thereto belonging have undergone the hydatidiform degeneration, and are

FIG. 3.*

not expelled from the uterus together with the normal placenta. In illustration of this position, a case may be referred to, which was published some years since,† in which a hydatidiform mass (in bulk about three pints) was expelled *together with* a normal placenta. In this case, it is most probable that there was a double conception; and if the remains of the diseased ovum had not been expelled *with* the normal placenta, but some weeks or months subsequently, the case would have come under the above category. A *second* possible case is, that a portion of the chorion villi may become separated organically from the fœtus at an early

* The drawing is a magnified representation of an early stage of the hydatidiform degeneration of the ovum, and exhibits very accurately the relations of the vesicular bodies, *b*, to the chorionic membrane, *a*, and the decidua serotina, *c*. For further illustrations, see my papers in Obst. Trans., vols. i and ii.
† Lancet, 1846, vol. i, p. 430.

period, and may undergo the hydatidiform degeneration, whilst the remainder may grow and nourish the fœtus up to the full time. . . . . If the diseased portion were retained in the uterus, the supposition before alluded to might arise."*

True hydatids may in very rare instances be expelled from the generative passages. They originate in the abdomen, bursting into this cavity from the liver; and they may possibly penetrate through the uterus, or into the vagina. True hydatids are closed sacs one within another; while the vesicular bodies resulting from chorionic transformation are arranged in a series like beads on a string, with slender peduncles or intervening connecting portions. The well-known "hooklets" are usually found when the cysts are really of hydatid origin. I have met with a case in which, death having occurred, several hydatid cysts were found in the abdomen, the pelvis, &c., and, had life been prolonged, some of these might have burst into the vagina or uterus. In the case in question, the patient was a young unmarried woman.

(D) FACTITIOUS BODIES.

Lastly, the observer must be cautioned as to the occurrence of cases in which, for a variety of reasons, women exhibit substances which they are desirous of leading the practitioner to believe have been expelled from the vagina. The careful examination of the bodies in question is, or should be, sufficient always to enable us to detect the fraud.

* Obstetrical Trans., vol. i, p. 263.

CHAPTER V.

NON-SANGUINEOUS DISCHARGES.

Preliminary Remarks on the Objects of the Diagnosis, and the Data necessary
    for the purpose.
WATERY DISCHARGES; Various Causes and Conditions leading to their Pro-
    duction.
MUCOUS AND PURIFORM DISCHARGES.
SANIOUS DISCHARGES; OFFENSIVE DISCHARGES.
CAUSES OF LEUCORRHŒA, Constitutional, Local, and Special, the latter includ-
    ing those of Syphilitic or Gonorrhœal Origin.

THE diagnosis of the nature and causes of various kinds of dis-
charges from the generative organs is a matter of the greatest
possible importance; and not rarely one of some difficulty. These
discharges are in themselves often a very great inconvenience, and
a great source of distress to the patient; and they are not seldom
the outward and visible signs of grave and serious disease.

The exact relations of the symptom " leucorrhœa "—a sort of
general term applicable to these cases—to the various local con-
ditions and derangements which are associated with it, cannot be
dwelt upon at any length. The symptom is one which is indica-
tive of some disturbance of the natural balance; but neither the
degree of intensity of the leucorrhœa, its quantity, nor its physi-
cal qualities, give us definite information as to the particular cause.
Many women suffer from leucorrhœa for years, without thinking
it necessary to consult their medical advisers with the view of pro-
curing relief; and practitioners themselves differ in respect to the
importance they attach to it, some satisfying themselves with a
knowledge of the fact that there is " leucorrhœa," others pursuing
the investigation further. It is necessary, in attempting to arrive
at the diagnosis of the cause, to consider the attendant circum-
stances. If the discharge be trifling in amount, and there be no
particular disturbance of the general health, a minute investigation
of the case, to the extent at least of actual manual or other exam-
ination, seems hardly necessary. Particular cases, however, un-
questionably require particular decisions as to this point. Some
cases require rather care in the investigation of the general facts
and attendant circumstances; others demand more imperatively
careful manual or visual examination.

The questions we have to determine in a given case are—1. What is the source of the discharge? and 2. What is its cause?

The data with which we must be put in possession, in order to answer these questions, relate to—

1. The physical qualities of the discharge itself.

2. The circumstances attending or preceding its appearance.

3. The physical condition of the parts, the uterus, vagina, &c., from which the discharge may or does proceed.

The physical condition of the uterus, vagina, &c., can only be learned by means of an examination. The latter method of obtaining information will be considered subsequently; but at present the object is to ascertain the diagnostic value of other available data, viz., the physical characters of the discharge itself, and the circumstances attending its appearance. It not unfrequently happens, that examinations cannot be had recourse to, and there are, besides, many cases in which it is desirable, for a variety of reasons, that an examination should be avoided.

The more prominent physical characteristics of the various discharges to which we have now to direct attention have been made the basis of a rough sort of classification. Thus, there are *watery* discharges, *mucous* discharges, *muco-puriform*, and *purulent* discharges. Then, we have discharges which occasionally assume a *sanious* character, in which there is an evident admixture of blood-elements. *Offensive* discharges also form a class the differential diagnosis of which may be usefully pointed out.

It will be convenient to discuss these several kinds of discharges *seriatim*, indicating as far as possible the characteristics which guide our decisions as to their nature, source, and cause.

An account of *the normal* secretions of the generative apparatus will be given in the article " Leucorrhœa."

WATERY DISCHARGES.

Discharges from the vagina of a serous or watery character, more or less profuse in quantity, form a class which may be conveniently separated from the other varieties.

Pregnant women are sometimes the subjects of a discharge of a watery nature, the origin of which is, doubtless, the amnionic sac. The fluid may escape gradually, and the flow may be persistent for a longer or shorter time; or the quantity may be greater, but the duration of the same less. The discharge of a watery fluid may go on for some time, extending at intervals over a consider-

able portion of pregnancy, and it is not necessarily destructive to the life of the fœtus, which may yet be born at the full time, and healthy. If the discharge of the fluid be accompanied by pains like those of labor, the supervention of a miscarriage is to be feared. In a case of watery discharge from this cause, the abdomen would be large, the uterus increased in size, and the signs of pregnancy would be present. The watery discharge, if in quantity, would have the effect of reducing the size of the uterine tumor.

There is another class of cases in which a watery discharge occurs from time to time, *i. e.* in cases where the uterus is occupied by the *hydatidiform* or *vesicular mole*—"hydatid pregnancy," as it was formerly called. Patients believed to be pregnant increase too rapidly in size, fœtal movements are not felt, the mammary symptoms are in abeyance, the whole aspect of the case being irregular, so to speak, and yet there are strong reasons for believing the woman originally to have been pregnant. After a time, slight losses of blood may occur, and slight but repeated discharges of watery fluid, which are generally accompanied by labor-like pains; or discharge of watery fluid alone is observed. The cause of the discharge is probably rupture of the cyst-like vesicles composing the chief part of the degenerated contents of the uterus; but it may be also due to expulsion from time to time of amnionic fluid. Respecting the appearances presented by the hydatidiform bodies themselves, which may be expelled together with the watery fluid, see p. 85.

Another cause of watery serous discharges from the vagina is found in the presence of that peculiar growth first described by Dr. Clarke under the name *cauliflower excrescence,* but which is now known to be constituted by epithelial cancer. The fluid discharged in such cases is described in the work of Sir C. M. Clarke as "little more than a clear watery fluid; blood, however, is sometimes mixed with it, or perhaps comes away alone in large quantities."* The quantity of fluid discharged is sometimes enormous. Dr. Ramsbotham records a case in which twenty dozen napkins were used in a week. Safford Lee describes the discharge as brownish, like colored saliva, and this description is very accurate. The symptoms of pregnancy are not, unless by a rare coincidence, present in such cases.

The presence of *polypi* within the uterus is occasionally the cause of a very profuse watery discharge. This fact has not been

* Op. cit., vol. i, p. 34.

sufficiently dwelt upon by previous writers. Some cases related by Dr. Elkington, of Birmingham, afford well-marked instances in support of this statement.* I have observed this symptom to be present in a marked degree in several instances. Here discharges of a watery nature are observed alternately with sanguineous discharges, and profuse menstruation, together with other signs of polypus, is present. The more usual form of discharge attendant on uterine polypi is not, however, that now under consideration. In a case of polypus the size of an egg, hanging down into the vagina by a slender peduncle, and which I removed by means of the ecraseur, there was rather profuse watery discharge, the other and more usual symptoms of polypus being wanting.

In a most interesting case related by Sir J. Y. Simpson,† an abundant serous, and sometimes offensive, discharge, which had existed for some time, was found to be due to the presence of a *fungous cancerous growth* within the uterine cavity. This is a form of disease of great rarity.

Tubercle of the Uterus.—In this rare disease a continuous profuse watery discharge, of a dirty yellow or pale brown color extending over a considerable period, may be noticed.

Sometimes an *ovarian cyst* becomes adherent to one of the Fallopian tubes, or, at all events, in some way becomes connected with it; the contents of the ovarian cyst pass into the Fallopian tube, thence into the uterus, and flow away gradually from the vagina. The signs present in such a case would be: previous existence of a tumor situated in the hypogastrium, or more or less to one side, subsidence of the same, an occurrence of simultaneous watery or serous discharge from the vagina. This mode of termination of an ovarian cyst is rare; Dr. West only noticed it in one out of sixty-eight cases.

Watery Discharge following Parturition.—In Dr. Ashwell's work‡ will be found related particulars of five cases in which a profuse watery discharge, coming away in gushes, was noticed some days after labor. In only one of the cases was opportunity afforded of ascertaining post-mortem the condition of the uterus; in that case, " three elevated masses, having a fungoid and melanotic appearance," were found growing inwards from the uterine wall. Such cases are rare.

Sir C. M. Clarke refers to another cause of watery discharges

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* Obstetrical Transactions, vol. i.   † Med. Times and Gaz., Jan. 15, 1859.
‡ On Diseases of Women, p. 507.

from the vagina, the "*oozing excrescence of the labia*," probably identical with what would be now termed chronic eczematous affection of the skin covering the parts in question, associated with a chronic inflammatory condition of the tissues beneath.

Lastly, it is just within the limits of possibility that the watery discharge present may be really an *involuntary escape of the urine* from the bladder, either caused by paralysis of the muscles surrounding the urethra, or due to vesico-vaginal fistula. The urinary odor present in such cases would almost certainly discover the nature of the case.

MUCOUS AND PURIFORM DISCHARGES.

The cases in which discharges having this character are observed form that large class of cases to which the term "leucorrhœa" is more usually applied. This group of cases differs from those just considered, not only in the physical characters of the discharge, but in regard to the manner of its appearance. Here the discharge is more or less completely continuous. The discharges now under discussion have this in common, that they are more or less opaque. The color varies exceedingly ; it may be whitish, decidedly yellow, yellowish-green, or of any intermediate shade. The consistence of the discharge also varies ; it may be viscid, gelatinous, of the consistence of cream, or quite fluid.

Most cases of "leucorrhœa" are of a composite nature ; that is to say, the discharge observed at the vaginal orifice proceeds from more than one source, and results from the mixing of secretions from the cervical mucous membrane, from the mucous membrane lining the vagina, and, in certain cases, also from the interior of the body of the uterus itself.

In most cases, there is a preponderance of secretion from one or other of the sources indicated. The difference in the source of the discharge has been made the basis of a division of cases of leucorrhœa into " uterine " and " vaginal ;" the former including cases in which the discharge proceeds chiefly from the uterus (the cavity of the cervix), and the latter including those cases in which the discharge has a vaginal origin.

Certain general deductions may be drawn from the character of the discharge as to the origin of the same. These may be stated as follows :

If the discharge consist of a curdy-looking fluid, of an acid reaction, and containing in suspension tessellated epithelium *débris*,

in quantity, it more generally happens that it proceeds from the mucous membrane of the vagina.

If the discharge consist of a soapy-looking matter, or of vitreous lumps of coagulated mucus, or of viscid tenacious mucus, the origin of the same is the cervix uteri. It is only in cases where the cervical glands are in a very active condition that products of this kind are seen externally in any considerable quantity.

If the discharge be of a creamy character, tolerably profuse, and constant, it probably proceeds from the cervix uteri, and possibly from the cavity of the body of the uterus also. It is the secretion of the cervix, altered and made creamy by the action of the vaginal secretions.

The words " puriform " and " creamy " are here used almost synonymously. The outward physical characters of a " puriform " discharge and of a " purulent " discharge are not very different, and hence the two are frequently confounded. It is most important, however, that always theoretically, and, whenever possible, practically also, a distinction be drawn between the presence of actual pus and of a fluid which only resembles it. Neglect of this rule has introduced great confusion into the subject.

Between discharges which are essentially mucous in their outward characters, and discharges which are decidedly purulent, we have all gradations; and it not rarely happens that it is difficult to say whether the discharge present would be more properly termed " muco-puriform " or " purulent." Further, it may happen that there is an admixture of the two, actual pus discharged from some portion of the generative surface being mixed up with mucous altered secretion : this would render the distinction still more difficult.

It is thus evident that, from the physical characters of the discharge alone, we cannot obtain in all cases positive information as to the precise spot from which it is poured out. Where circumstances render it necessary that more exact information be obtained, an examination must be resorted to.

PURULENT DISCHARGES.

There are two important distinctions to be made in reference to this class of discharges. Thus, those cases in which the discharge is *continuous* belong to one category ; those in which the discharge is *non-continuous*, taking place for a certain time only, and recurring after a shorter or longer interval, belong to another.

a. When the purulent discharge is *continuous*, the origin of the discharge is probably the vaginal mucous membrane, the uterine cervical glands, the surface of a cancerous or other ulcer, suppuration of retained membranes or placenta after abortion, &c. Respecting the participation of the cavity of the uterus itself in cases of profuse purulent "leucorrhœa" of the more ordinary kind, opinions are divided. An important class of cases, in which there is continuous discharge, are those in which the purulent discharge is the result of *gonorrhœal* infection. The diagnosis of gonorrhœa from other forms of purulent leucorrhœa will be considered further on.

b. Non-continuous Purulent Discharge.—In the other class of cases—those in which there is a purulent discharge only lasting for a time, ceasing, and then recurring—the source of the discharge is either the uterine cavity itself, or an abscess situated near the vagina, and opening into that canal. Purulent discharges, whether continuous or non-continuous, more often than has been supposed, proceed from the cavity of the body of the uterus; and we occasionally have positive evidence of its origin in this position in cases where, either from contraction of the uterine canal at the junction of the body and cervix (produced by senile atrophy, flexion of the uterus, &c.), an accumulation takes place within the body of the uterus, and in which the symptom we are now considering— occasional and abrupt discharge of purulent fluid from the generative passages—is observed. Sir C. M. Clarke and Dr. Ashwell both allude to a form of purulent discharge produced, as they describe, by formation and retention of pus in the uterine cavity, the pus so formed escaping from time to time in the manner just described. In a case of Dr. Ashwell's, the purulent fluid expelled amounted to nearly half a pint on two or three occasions. I have observed precisely similar cases. Profuse discharge of pus from suppuration of a polypus of the uterus has been noticed (Safford Lee). Dr. Matthews Duncan* has more recently called attention to such an occurrence, particularly in the case of old women who have ceased to menstruate. In a woman who is still menstruating the symptoms are, dysmenorrhœa, a peculiar feeling of tightness round the loins, sickness or vomiting, &c.; these symptoms finding sudden relief in the discharge of a certain quantity of purulent fluid. If menstruation have ceased, the symptoms slightly vary. One of the most important causes of this occasional purulent

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* Edinburgh Medical Journal, March, 1860.

discharge is *pelvic abscess*. The abscess may follow after, or be the result of, parturition; in which case, the other signs present would lead to a suspicion as to the origin of the purulent discharge in question. Another highly interesting class of cases is that in which an abscess, the result of suppuration of the contents of the cyst of a peri-uterine hæmatocele, discharges its contents into the vagina. In both classes of cases, however, the discharge appears suddenly, and they markedly differ in this respect from ordinary cases of purulent leucorrhœa.

SANIOUS DISCHARGES

From the generative passages are not unfrequently the subject of observation; that is to say, there is a discharge of a reddish tinge, and evidently containing a certain admixture of blood-elements. In women the subjects of profuse menstruation, as the discharge of blood is becoming less, there is generally to be observed a period when there is sanious discharge. Where an hypertrophied (so-called ulcerated) condition of the villi lining the cervix is present, slight bleeding readily occurs, and gives rise to a sanious discharge. Sanious discharges are not unfrequently found to be due to the presence of morbid growths within, or organic disease of, the uterus; a fungoid condition of the uterine mucous lining will give rise to it, malignant ulceration of the os uteri, &c.; and we find, combined, leucorrhœa and very slight but continuous hemorrhage. In polypus of the uterus, such sanious discharge, alternating with hemorrhages or with colorless leucorrhœal discharge, is observed. Whatever, in fact, is capable of giving rise to hemorrhage may occasion discharge of a sanious character. In cases of pelvic hæmatocele, where an opening has formed between the cyst and the vagina, and the contents are in process of evacuation, there will be a sanious discharge. The presence of a more or less continuous sanious discharge is a condition of things requiring a careful digital examination.

OFFENSIVE DISCHARGE.

This quality of the discharge is important in reference to the determination of the disease present in certain cases; but it is one on which too much reliance must not be placed, or serious mistakes may be made. Discharges of an offensive character have been usually considered as absolutely indicative of the existence of *cancer*. Now, it is true that, in almost all cases of cancer of

the uterus, there is to be remarked a particularly offensive odor of the discharge proceeding from the vagina; but it is also true that it may be absent. In cases of profuse purulent leucorrhœa accompanied by hectic and a generally low state of the constitutional powers, the discharge, when retained in the vagina for any time, is apt, as has been remarked by Dr. Tyler Smith, to become offensive, particularly if the retention of the discharge be favored by a contracted state of the ostium vaginæ.* The offensive nature of the discharge is so often looked upon as a material point in the diagnosis of cancer uteri, that a good deal of practical importance attaches to this observation. The smell of cancerous discharge has a peculiar fetor: so peculiar that it can hardly be mistaken for anything else, according to some authorities. It is certain, however, that the peculiarity is not equally appreciable by different observers; the absence of a peculiarly fetid odor, or indeed the absence of fetor of any kind, does not shut out the possibility of the presence of cancer. This fact cannot be too much insisted on, for there are records of cases in which disastrous results have followed the belief on the part of the practitioner that cancer of the uterus was necessarily associated with presence of a fetid discharge. The later the stage of the cancerous discharge the more constant is the fetor, the ulcerative process appearing to be generally associated with it. It must not be forgotten that there may be fetor in any of the diseases of the uterine organs in which hemorrhage is present, if cleanliness be not observed; clots of blood retained and decomposing are especially liable to give rise to it. The presence of a dirty brownish or bloody-looking discharge in a patient previously the subject of hemorrhages, and within the "cancerous" age, would make us suspicious of the existence of cancer; add to this the offensive character of the discharge, as just described, the suspicion would be still stronger. The actual decision could not, however, be arrived at without a physical examination.

Another cause of offensive discharge from the vagina is the *presence of a dead ovum or portions of the fœtal membranes, &c., in the uterus.* It is more generally connected with retention of the whole or portions of the *placenta.* The previous existence of pregnancy and the occurrence of delivery would point out the nature of the case. In a case which fell under my own observation, the presence of a fetid discharge was connected with retro-

* On Leucorrhœa, p. 93.

version of the gravid uterus, and consequent (apparently so, at least) sloughing of the decidua uterina. Offensive discharges in women *during the puerperal state* are so obviously connected therewith, that the relation of the two things as cause and effect could hardly escape recognition.

It sometimes happens that the discharges from the vagina are offensive without any obvious cause. Thus cases have been observed in which the discharge at the menstrual period was offensive, and preceded or followed by leucorrhœa having the same character. In such cases, a careful examination of the condition of the uterus would be necessary in order to discover the hidden source of the mischief.

Want of cleanliness is occasionally connected with the presence of an unpleasant odor of the discharges from the generative organs. When the sebaceous follicles situated at the entrance of the vagina secrete copiously, this phenomenon may be observed.

Among the physical qualities of discharges from the vagina, *their effects on the surface of the body with which they come into contact* have to be considered. Some discharges from the vagina are quite devoid of irritating properties; but the reverse is often observed. Irritating effects, such as redness, excoriation attended with smarting pain of the skin of the inner side of the thighs and the external genitals, are common in connection with excessive vaginal secretion, however produced; the constant contact with the vaginal secretion, often in a state of hyper-acidity, produces this result. Another class of cases in which excoriations of the same parts are frequently seen, are those attended with a caustic irritating discharge from the ulcerating surface of a cancerous disease of the cervix uteri. Again, *syphilitic* sores may spread and produce others in the immediate neighborhood; and we take advantage of the knowledge of this fact for purposes of diagnosis, when we inoculate the skin of the thigh with discharge from a sore on the labia, or on the vaginal wall, which we suspect to be of venereal character.

The interest attaching to the subject renders it necessary to devote a short space to the diagnosis of *syphilitic* and *gonorrhœal leucorrhœa*, and to mention some facts useful in the elucidation of cases suspected to be of this nature.

The subject is a difficult one, the pathology of these affections being still in a very unsettled condition, and observers being by no means agreed as to what is to be called gonorrhœa, and what

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syphilis. Thus Dr. Whitehead considers that the uterus, in cases of gonorrhœa, is more affected than the vagina; by others the vagina is considered to be the proper seat of the affection. Dr. Tyler Smith believes that many of the cases set down by Dr. Whitehead as cases of gonorrhœal leucorrhœa were cases in which the leucorrhœa was of syphilitic origin.

There appears unquestionably to be a *syphilitic leucorrhœa ;* but the difficulty is to distinguish it from the more simple form. It may be considered as probable that it is present when the leucorrhœa has been present for some time, associated with frequent previous abortions or birth of dead children; when secondary syphilitic affections of the throat, skin, bones, &c., are present; but above all, when it appears to be influenced by the administration of anti-syphilitic remedies. Further, the state of the glands in the groin is important. These become enlarged and indurated when syphilitic leucorrhœa is present, but do not suppurate; when there is suppuration, it must be considered as indicating the improbability that the individual is the subject of syphilis, or that she is likely to present secondary symptoms. It must not be forgotten that the glands in the groin may suppurate in scrofulous individuals who, it may be, are also affected with genuine syphilis. On external or internal examination, condylomata, ulcerations, or other characteristic evidences of syphilis, may be observed. The discharge from the vagina is said to be often very great in quantity in these cases, to be yellowish in color, and to contain much mucus. On these latter characters little absolute reliance can be placed for purposes of diagnosis.

In reference to the diagnosis of supposed *gonorrhœa*, it has always been found very difficult to substantiate the presence of the virus in the female subject, for the reason that the discharge arising from gonorrhœa and that of ordinary leucorrhœa are very much alike. Gonorrhœa in the female is, in its worst form, an intense vaginitis, the discharge being made up of epithelial plasma and purulent matter; more frequently it is a vulvitis, the inflammatory action being limited to the mucous surfaces at the vulva. The meatus urinarius very frequently participates in the discharge and irritation in cases of gonorrhœa. The collateral facts relating to the coming on of the attack are characteristic : the attack begins somewhat suddenly ; there are heat, pain, and burning along the course of the urethra, all intensified and increased during micturition; there is usually also a discharge from the urethra.

Sometimes blood follows the evacuation of the bladder. When the gonorrhœal discharge has become chronic, the urinary irritation may have become so much lessened in degree as not to attract attention unless inquired after. If the presence of a discharge from the urethra can be made out, it will very materially assist the diagnosis. Sir C. M. Clarke thought the diagnosis of gonorrhœa impossible; and it must be confessed that this is very often found to be the case. A method of observation by which the diagnosis is often much assisted, consists in ascertaining the effect of sexual intercourse in suspected cases: only it is liable to this source of fallacy, that a discharge in one sex producing a discharge in the other does not prove that the infecting individual is the subject of gonorrhœa; for it is a well-authenticated fact that an apparently simple discharge in the male may give rise to a discharge in the female, and *vice versa*. Cases in which these points rise up for determination require the exercise of great caution and careful investigation before giving an opinion. A case of spurious balanitis in the male, contracted by intercourse, may, it is said, be distinguished from a case of gonorrhœa by the fact that the symptoms of the former affection come on a few hours only after intercourse, whereas in gonorrhœa there is a period of incubation of from four to fourteen days, attended with chordee.*

It is impossible for the practitioner to exercise too great caution in pronouncing an opinion for or against the specific nature of a discharge from the female generative organs. In the words of the late Dr. Ashwell, "it is always his duty to cure the disease, but rarely to venture upon an exposition of its nature. If he can positively affirm that it is of simple origin, let him do so, if suspicion has been aroused; if not, it is better to avoid any distinct allusion to the matter."†

* See case by Mr. Nunn, quoted by Dr. Tyler Smith in his work On Leucorrhœa, p. 129.
† Diseases of Women, p. 175.

CHAPTER VI.

DISORDERS OF MICTURITION.

MICTURITION POSSIBLE.—(A) Micturition Difficult—(B) Micturition Painful —(C) Frequent Micturition—(D) Involuntary Micturition.—Various Conditions which may give rise to these Symptoms.
MICTURITION NOT POSSIBLE.—Retention and Suppression of Urine ; the Diagnosis of these Conditions, and of their Causes.

THE disorders and derangements of the function of micturition are of considerable interest from a diagnostic point of view. These disorders are frequently the occasion of great suffering to the patient; they owe their origin to a great variety of causes, the discrimination of which is not always easy, and hence the necessity for a close study of their diagnosis.

It will be convenient to divide these derangements of the function of micturition into two classes : 1. Those in which the patient is able more or less completely to evacuate the contents of the bladder ; and 2. Those in which, the patient being unassisted, micturition is impossible.

1. MICTURITION IS POSSIBLE.

But it may be difficult, or painful, or frequent, or involuntary.

Frequency is a symptom which, although it generally accompanies difficult or painful micturition, may be usefully considered by itself. Involuntary micturition is naturally divided from the other varieties. Micturition may then be abnormal, because it is *a.* difficult, *b.* painful, *c.* frequent, and *d.* involuntary.

This basis of division is artificial and open to criticism,—but it will serve the purpose of enabling us to consider the subject practically. We do not often meet with cases in which micturition is simply difficult, or with cases in which the one thing complained of is pain attending micturition—the pain and the difficulty frequently go together. Cases will, nevertheless, arrange themselves naturally under the one or the other head, according to the prominence of one or the other symptom.

(A) MICTURITION POSSIBLE, BUT DIFFICULT (DYSURIA).

It is frequently not easy to ascertain from the patient whether micturition is actually difficult or not, from the circumstance that pain is so readily confounded with difficulty, and *vice versa*.

Difficulty in micturition proceeds from one of two causes : either the bladder is incapable of expelling its contents ; or, the bladder being equal to the task, the exit of urine is prevented by some abnormal condition of the urethra.

The *bladder is inefficient* when its muscular fibres are paralyzed, or, which amounts to the same thing, when they do not act. *Paralysis of the walls of the bladder*, in this sense of the term, is not a common affection ; it is witnessed in the last stage of low fever —in puerperal fever, *e. g.*—and it may be the result of long-continued distension of the viscus, whereby the muscular fibres have their contractility destroyed or lessened, as during parturition.

The cause of the difficult micturition in cases of this kind would be tolerably apparent, except when the paralysis extended to the sphincter also, when the constant dribbling away of urine would render the distended condition of the bladder less obvious. Quite recently I saw a case of retention of this kind on the second day after labor. The bladder was very full, but the slight occasional escape of urine very nearly obscured the real state of the case. Cases of a more chronic nature sometimes present themselves : the bladder is largely distended, simulating abdominal tumor, and yet, the escape of urine being tolerably regular, attention is not called to the condition of the bladder itself. Lamentable results have followed under such circumstances from the want of a correct diagnosis. In cases of paraplegia, there is paralysis of the walls of the bladder, which, however, is more often present towards the close of the affection, the paralysis at first extending, in a marked degree, only to the sphincter. Chronic cases of paralysis of the bladder are characterized by the offensive condition of the urine, due chiefly to partial constant retention of the secretion within this organ.

In cases of *organic disease of the bladder—cancer, e. g.*—there is frequently difficult micturition accompanied with bloody urine ; micturition is also both frequent and painful. In another more rare disease of the bladder, viz., *polypus*, the urine may be prevented escaping into the urethra, owing to the mechanical interference of the growth in question.

The bladder being healthy, the difficulty in micturition arises from some morbid or unusual condition of the *outlet* of the bladder.

Organic stricture of the female urethra occurs very rarely, compared with what is observed in the other sex. In cases where the difficult micturition is due to this cause, the difficulty is more or less persistent, though liable to exacerbations; the bladder is evacuated slowly, the stream is small, pain is at times present, and the difficulty, as a rule, slowly increases as time advances. The history of the case might be of some assistance in the diagnosis; but an examination would be necessary to verify the conclusions formed.

Vascular tumor of the urethra, or *polypus of the urethra*, may be the cause of difficult and painful micturition. In the case of polypus of the urethra, there is difficulty and straining in micturition, and there may be occasional passing of blood.

Cysts or other tumors of the vagina, if growing near the urethra or neck of the bladder, may produce difficult micturition.

Inversion of the Bladder.—This rare condition will be mentioned further on, in connection with "painful" micturition, but it also occasions "difficulty."

In a large number of cases of difficult micturition, the outlet is itself in a normal condition; but the canal is either subjected to pressure, or so dislocated from its normal situation that the urine passes through it with extreme difficulty. Connected as the neck of the bladder is with the uterus, dislocations of the latter involve a certain amount of displacement of the former. *Retroflexion or retroversion of the uterus*, and especially of the *gravid uterus*, produces difficult micturition in a marked degree. The bladder is emptied with great difficulty in such cases; the urethra, as shown in the annexed drawing (Fig. 4), is thrust upwards behind the pubes, elongated, stretched, and pressed upon posteriorly by the uterine tumor. In early pregnancy, difficult micturition, persisting for some time and increasing, should lead us to suspect retroflexion or retroversion to be present; an important fact, for in order to treat these cases satisfactorily, the early recognition of their true nature is necessary. The other signs of retroversion of the gravid uterus are, flattening of the hypogastric region, involuntary straining or tenesmus, dragging in the loins and groins, constipation, &c.

Enlargement of the uterus, from the presence of *fibrous or other tumors*, may also produce difficult micturition; indeed, this symptom is very commonly observed in the early stage of this affection.

"A difficulty in making water," says Sir C. M. Clarke, "is a much earlier symptom attending the disease than a difficulty of passing the fæces."* In such cases, the difficulty is not so considerable as in retroflexion of the uterus, and the symptom is, so to speak, more chronic than acute.

Fig. 4.
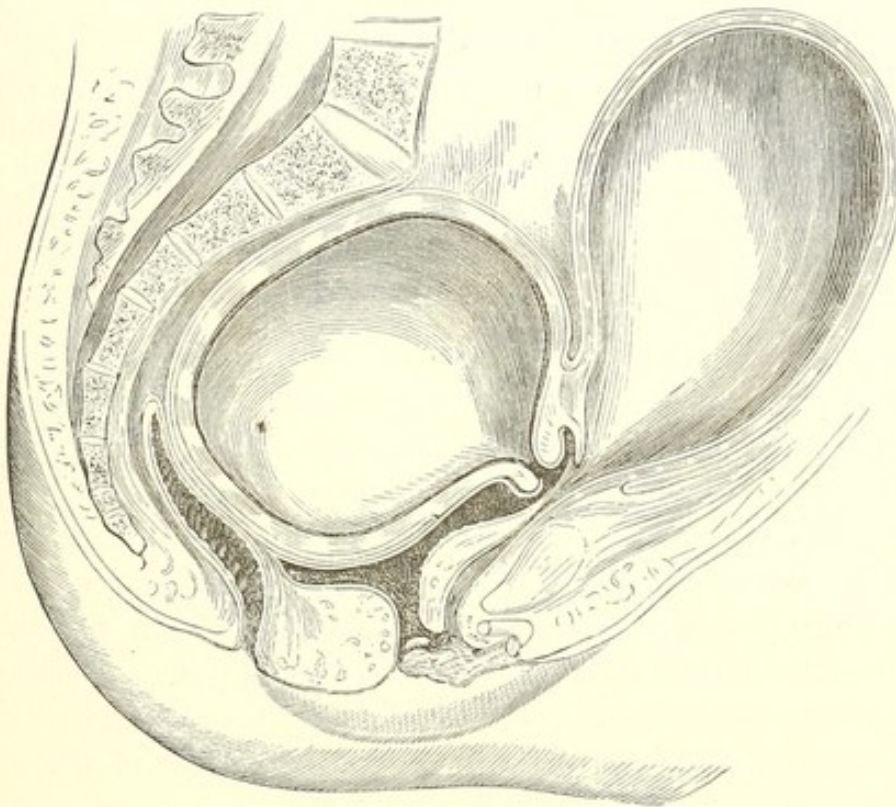
In cases of fibrous tumor of the uterus, a curious phenomenon is sometimes observed, not, probably, peculiar to these tumors, namely, the manner in which ability to evacuate the bladder is affected by the position of the body. Thus, a lady who recently consulted me has had a large fibrous tumor of the uterus for the last seven years; of late there has been occasional difficulty in micturition, which she has always been able to overcome by lying flat on the face. The uterine tumor is movable, and when the patient throws the body forwards the pressure of the uterine tumor is removed from the vesical outlet. Sir C. M. Clarke records a case in which the patient was capable of voiding small quantities occasionally if she lay on the back with the pelvis a little raised.† (See also "Enlargement of the Abdomen," in a subsequent chapter of this work, where a very interesting case of retention of urine is related.)

* Op. cit., p. 254.   † Ibid.

During the descent of the fœtal head through the pelvis in labor there is difficult micturition, the canal of the urethra being partially or completely occluded by pressure.

In *prolapsus of the bladder* (cystocele) the same symptom is observed; the position of the urethra is here precisely the opposite to that in retroflexion of the uterus, the canal being bent downwards instead of upwards. In these cases of cystocele the patient evacuates the bladder by simply pushing the tumor upwards; this restores the urethral canal nearly to its normal position.

Tumors of the ovaries, as long as they remain in the pelvis, frequently occasion great difficulty in micturition; when, in process of growth, they rise above the pelvic brim, the pressure on the urethra is removed, and, so far as the symptom now alluded to is concerned, the patient improves.

In short, difficult micturition may be caused by any tumor in the pelvis capable of exerting pressure on the canal through which the contents of the bladder are evacuated. It is characteristic of most of those cases in which the difficulty of micturition depends on pressure by tumors, &c., within the pelvis, that the difficulty is more or less chronic, and will be found on inquiry to have lasted for some time, unless in cases where the pelvic tumor is of very rapid growth. An instance of the latter exceptional kind we have in cases of *peri-uterine hæmatocele*, where blood rapidly effused in the neighborhood of the uterus forms a considerable tumor, and, in consequence, gives rise to difficult micturition.

(B) MICTURITION IS PAINFUL.

In the series of cases now to be considered, pain, during or in consequence of micturition, is the prominent symptom. There may be difficulty; but the pain attending it is the circumstance chiefly attracting attention. What is considered by the patient to be "difficulty" is often, on a more particular inquiry, found to be really "pain."

Micturition may be painful by reason of *abnormal conditions of the urine itself, of the bladder, of the urethra, of the vaginal mucous membrane*, or in consequence of *dislocations* produced by affections of other adjacent organs.

Urine.—The morbid conditions of the urine alluded to are undue acidity or alkalinity, presence of gravel, mixture of the urine with blood, in cases of Bright's disease, in cases of calculus of the kidney, cancer of the bladder, or from any other cause. If the

urine be of an irritating quality, it often produces excoriation of the vaginal outlet.

Bladder.—Cystitis, chronic or acute, is accompanied with pain during micturition, and there is often a great degree of frequency present at the same time. In these cases of cystitis, pain is present more or less constantly, as well as during the passage of the urine from the bladder. Cystitis itself may arise from the presence of a stone in the bladder, or from partial or complete retention of urine. In cases of calculus, there is pain on motion and at variable times; the pain during micturition is not considerable, as a rule, but there is generally pain just at the end of the process. The painful micturition in cystitis depends either on the condition of the urine, which is often very irritating, or on the associated inflammation of the urethra.

In malignant diseases of the bladder, the pain following micturition is a marked symptom, but it is associated with pain at other times also, with frequency of micturition, with turbidity of the urine, occasional presence of blood, &c. The disease in question is rare; the affection with which it would be most liable to be confounded is organic disease of the kidneys. To settle the point, an examination of the bladder would be necessary.

Urethra.—Painful micturition is, in the majority of cases, dependent on morbid conditions of the urethra. In urethritis, whether of a specific character or not, there is pain of a burning character (scalding, as it has been appropriately termed), which is more or less constant; but during the passage of the urine it is very intense. Micturition is not only painful, but very frequent. The suddenness of such an attack is, as a rule, characteristic of the presence of an inflammatory condition of the urethra. The symptoms present in inflammation of the urethra of a specific nature, *i. e.* produced by the gonorrhœal virus, are not, however, always characteristic. There is generally great pain in micturition; this pain is of a burning character, and is associated often with a spasmodic contracted state of the sphincter, to which the pain experienced is partly attributable. The presence of a urethral discharge, and the moral evidence attainable, would assist us in coming to a conclusion (see p. 97). In cases of gonorrhœal inflammation of the urethra, the stage of acutely painful micturition does not extend usually beyond two or three days; it attends the outset of the inflammation, but is less marked subsequently. We also find inflammatory conditions of the urethra as the result of mechanical injury, as from masturbation, too frequent or violent

sexual intercourse; or the inflammation may be the result of vesical irritation, as in cystitis or calculus.

An obstinate form of chronic urethritis, unconnected with gonorrhœa, has been noticed by Dr. Ashwell and by Dr. McClintock, as giving rise, amongst other symptoms, to painful and very frequent micturition. There is pain also irrespective of micturition, and pain is produced by passing a catheter. The condition appears to be a chronic inflammation of the mucous membrane lining the whole of the canal.

In cases of vascular tumor of the meatus the pain present is, as a rule, very severe, so considerable indeed that the patient dreads the process of evacuating the bladder. Painful micturition, extending over a considerable time, in a middle-aged woman, should lead us to suspect the presence of this affection. Examination of the meatus would then be necessary. In children, *eversion of the mucous membrane of the urethra, or inversion of the bladder itself,* is in some rare instances a cause of difficulty and pain in micturition.

Another class of cases of painful micturition are those in which the bladder and urethra are unaffected, but, the *ostium vaginæ* being in an inflamed condition, the passage of urine is productive of pain from the contact of the latter with the inflamed surface. Certain forms of leucorrhœa are associated with painful micturition, in consequence of the existence of this inflammatory condition of the outlet of the vagina. When the upper and inner part of the thighs are excoriated by contact with irritating discharges, such as are present in the ulcerative stage of cancerous disease of the uterus, and under some other circumstances, the patient will lead us to infer that there is painful micturition, the pain arising in the latter case also from contact of the urine with a raw inflamed surface. The immediate neighborhood of the outlet of the urinary meatus may be inflamed as the result of masturbation. I have been consulted in a case of this kind, in which painful micturition was the symptom most prominently attracting attention.

Alterations in the position of the uterus, by which the urethra is drawn out of its place, alterations of the bladder itself, or tumor of adjacent organs, may produce difficulty in micturition, as already pointed out. The difficulty is generally accompanied with more or less pain; but the pain is not, as a rule, the prominent symptom, though it may be so in a few exceptional cases. With a little care in cross-examination, it may generally be made out whether the

pain or the difficulty came first in order; and this point is of importance in reference to the diagnosis.

(C) MICTURITION IS FREQUENT.

There is, perhaps, no one diseased condition of the vagina, uterus, bladder, or adjacent organs, which may not, at one time or other, give rise to frequency of micturition, to say nothing of the varying conditions of the urine which may occasion the same phenomenon. Frequency of micturition can hardly, then, be considered as characteristic of the presence of any one diseased or altered condition.

Frequent micturition is often an early sign of pregnancy. During the first two months of gestation in primiparæ it is very generally present. Towards the latter end of pregnancy, also, it is pretty frequently observed. In hysteria, frequent micturition is a symptom often present during the attacks.

Displacements of the uterus may occasion frequent micturition; but more often difficulty and pain during micturition are produced thereby. *Ovarian* or other pelvic *tumors* occasion frequent micturition, owing to pressure on the bladder, as before remarked. Urinary difficulties are more frequently present during the early than the later stages of these tumors; when larger, they rise out of the pelvis, and the patient suffers less. One of the most important causes of frequent micturition is *retroflexion of the gravid uterus*, a condition in which urinary difficulties are rarely absent. There may be difficulty alone, but more generally difficulty and frequency of micturition are noticed; the latter may alone be observed. *Organic affections* of the uterus, as cancer, fibroid tumor, polypus uteri, or simple hypertrophy, or an inflammatory or hyperæsthetic condition of the organ, may, each of them, give rise to frequent micturition. Pressure on the bladder, and consequent frequent micturition, may be produced by abscess in the cellular tissue between the bladder and vagina, or by effusion of blood into the peritoneal cavity around the uterus in peri-uterine hæmatocele.

Dysmenorrhœa is often associated with frequent micturition; the tenesmus of the uterus extends to the bladder.

Certain conditions of the bladder itself may give rise to frequent micturition. *Calculus of the bladder, cystitis, cancerous disease of the organ,* the condition known as the "*irritable bladder*," occasion this symptom, which is, moreover, observed in the early stage of the affections in question. The *presence of blood in the urine*

occasions frequent micturition, as do also *various disordered conditions of the urine.* *Irritation propagated from the kidneys*, when these organs are diseased, *or from the rectum*, as when *hemorrhoids* are present, may occasion frequency of micturition. Cases in which hemorrhoids have to do with disturbances of the function of the bladder not seldom remain for some time obscure.

Inflammation of the urethra, as in gonorrhœa, or occurring irrespective of gonorrhœa, is a cause of frequent micturition: the urine is then passed in drops, with scalding pain. *Vascular tumor* of the meatus occasions frequency of micturition, distinguished from inflammatory conditions by the long duration of this symptom in the former case.

(D) MICTURITION INVOLUNTARY.

The conditions under which this symptom may be observed are the following.

Fistulæ in the Vesico-vaginal Septum.—In such cases, the patient has hardly the slightest control over the evacuation of the bladder, the urine escaping from the bladder by the unnatural opening as fast as it is secreted. The condition dates from a definite period, at which time the vesico-vaginal septum was injured, and since when there has been involuntary micturition. The formation of these fistulæ is generally connected with the act of parturition; but *syphilitic* or *cancerous* ulceration may be the source of the evil. If the existence of fistula be suspected, the vagina and the bladder must be carefully examined.

There are cases on record in which involuntary micturition was produced by the existence of a *vesico-uterine fistula.* Here the symptoms are very peculiar, but the nature of the case would be easily recognizable on careful study of its history, combined with examination of the vagina. If the urine were seen issuing from the os uteri, this would conclusively determine the question.*

At the latter part of *pregnancy* micturition is often involuntary, either entirely so, or only when the patient is in certain positions. The diagnosis under such circumstances presents no difficulty.

Retroflexion of the gravid uterus generally occasions great distension of the bladder; and not unfrequently a case of this kind comes before us in this form: the patient complains of involuntary

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* A most interesting case of this kind is related by Dr. Leishman, in the Glasgow Medical Journal, October, 1861. The patient in this instance could only retain urine within the bladder when lying on the side.

micturition; and on examination, it is found that the condition really present is one of *retention of urine*, produced by retroflexion; small quantities from time to time escaping, owing to the extreme distension of the bladder. The period of pregnancy at which this distension of the bladder most commonly occurs is the fourth month. The distension of the bladder was supposed by William Hunter to be the cause of the dislocation of the uterus. Dr. Tyler Smith has shown that the retroversion (in many cases, at all events) is the primary evil; the fact being, that the retroversion existed before the pregnancy occurred.*

When the bladder is paralyzed partially or entirely, as in the course of fevers, &c., great distension of the organ and *overflow* may occur, as in the case of retroflexion just noticed.

After parturition there is often involuntary micturition for a few days, which may extend to weeks or even longer. The muscular structure of the urethra has in such cases undergone undue pressure and injury during the act of parturition. In women who have large families, the neck of the bladder occasionally becomes thus permanently weakened, and the control over the bladder is subsequently always imperfect.

Tumors of the ovaries now and then produce involuntary micturition; the tumor drags on the bladder, and mechanically interferes with the action of the sphincter. This effect is more commonly witnessed when the tumor is large. Other tumors in the pelvis or neighborhood may have a like effect.

Great hypertrophy of nymphæ was a cause of incontinence of urine in a case recorded by Breslau.† Owing to the traction of the enlarged nymphæ, the action of the sphincter was interfered with.

Cancer of the uterus may extend to the neck of the bladder, and give rise to involuntary micturition, due then to ulceration of the under portion of the urethral canal, or of the bladder itself.

Congenital defect of power over the sphincter of the bladder is very rare, but the possibility of its existence should not be forgotten. Congenital incontinence of urine may be due to *imperfect formation of the urethral canal associated with epispadias*, of which a very interesting case is recorded by Dr. Röser.‡ The case was that of a young woman, aged 18, who had an inconti-

* Obstetrical Transactions, vol. ii.
† Scanzoni's Beiträge für Geburtsk. 1858.
‡ Würt. Corr. Bl., 1861, and Schmidt's Jahrb., vol. cxii. p. 47.

nence from birth. The clitoris consisted of two parts; the upper and anterior portions of the orifice of the urethra were wanting, and the orifice itself was very large. A cure was obtained by bringing the separated halves of the clitoris together by a plastic operation.

2. MICTURITION NOT POSSIBLE.

In cases where the patient is absolutely unable to pass urine, it is evident that there is either an impediment to the escape of the urine from the bladder, or that there is no secretion from the kidneys. In other words, the case is one of *retention*, or of *suppression of urine*. In the distinction of these two conditions, it is to be remarked that retention is, as a rule, accompanied by a desire to evacuate the bladder, which is for the most part absent in cases of suppression: the exception is noticed in cases of paralysis of the lower extremities, and some other instances where there is *sensational* as well as *motor* paralysis. Cases are rare in which there is a possibility of taking suppression for retention; but it might prove a dangerous mistake, and it is one more within the limits of possibility, to overlook retention, and set down the condition as one of suppression. Such cases occur in connection with the presence of diseases producing great prostration, fevers being the chief of these. The patient may for a considerable time have no evacuation from the bladder; and, this circumstance escaping attention, the bladder is allowed to go on increasing in size. The obscurity of the case is often increased by the fact (previously alluded to) of a small quantity of urine escaping from time to time from the distended organ, and retention all the while persisting to a dangerous degrèe. The fact that the patient has expressed no desire to evacuate the bladder must be disregarded; and, after a certain time has elapsed, an examination should be made, in order to ascertain whether the condition present is one of retention or suppression (see p. 101). A case is related by L. Vandeweren,* in which a woman believed to be dropsical died from the effects of rupture of the bladder due to retention. The definitive decision between retention and suppression depends, then, upon the results of examination.

After labor the bladder is not seldom left distended for too long a time, owing to the patient experiencing no desire to evacuate it.

* Larbaud, Recherches sur le Catarrhe, la Faiblesse et la Paralysie de la Vessie, p. 68.

Cases in which retention is combined with involuntary micturition have already been disposed of.

Retention produced by inability to evacuate the bladder, coupled with distress and strong desire for the same, may arise from mechanical pressure on the neck of the bladder, of whatever kind. Whatever, in fact, may produce mechanical *difficulty* may produce also *retention*. *Fibroid* tumors of the uterine wall, enlargement of the uterus by fluid, &c., act in this way, as do also, but more rarely, *ovarian tumors*. The explanation given by Dr. West of this fact is, that the uterus is central, and therefore more likely, when enlarged, to press on the neck of the bladder and produce retention, than an ovarian tumor, which is generally lateral. In such cases, difficult micturition has generally preceded the retention. *Retroflexion of the uterus*, or *retroversion* of this organ, when suddenly produced, may also cause retention, which either supervenes suddenly, or is not detected for a long time, in consequence of partial escape of the contents of the bladder occasionally taking place. In cases of *prolapsus of the uterus*, retention may occur during the catamenial periods, when the organ is larger and heavier, and in cases of prolapsus of the bladder itself, chronic inversion of the uterus, &c.

Another form of retention, not by any means uncommonly observed, is that witnessed in *hysterical* patients, arising from spasmodic contraction of the sphincter, associated, perhaps, in some cases, with an erectile condition of the clitoris. Retention from this cause is accompanied with a good deal of acute pain in the hypogastrium. The attack is of a more acute character than in the cases before considered. There is generally a history of previous attacks of a similar character; and the previous history of the case affords, on investigation, pretty complete evidence of the presence of hysteria in some one of its multitudinous forms. In many cases, the nature and cause of the presumed retention cannot be made out without an examination.

Lastly, there are cases in which no urine is passed, because there is none in the bladder. I lately saw a case in which the ureters were occluded by cancer of the base of the bladder, and no urine could pass into the bladder. This kind of *suppression* has been known to be produced by pressure of large ovarian or other tumors on the ureters. More ordinarily, however, suppression in the true sense of the word, is due to other causes, the consideration of which does not come within the scope of the present inquiry.

CHAPTER VII.

SYMPTOMS REFERABLE TO THE RECTUM.

DIFFICULTY and PAIN in DEFECATION—Derangement or Alterations of Generative Organs giving rise to these Symptoms.
Diarrhœa—Condition of the Fæces—Discharges from the Rectum.

IT is not intended here to enter on a full discussion of the disorders to which the rectum is liable, this being beyond the scope of the present work. It is necessary, however, to allude briefly to those affections of the rectum most frequently observed in women, some of which are associated with, and others of which are dependent upon, disorders or derangements of the neighboring organs, and especially of the uterus.

Cases do very frequently present themselves, in which there is evident disorder of the functions of the rectum, which disorder is found, on careful inquiry, to be due, in reality, to a primary, but not so evident, disorder of the uterus or its appendages. It is, therefore, necessary, in order to avoid mistakes in diagnosis, to indicate, as particularly as the nature of the case admits, those symptoms referable to the rectum, which should lead us to suspect the existence of an affection of the generative organs. When affections of the generative organs are known to be present, and disorder of the functions of the rectum is superadded, the nature of the connection is obvious; and the diagnosis is not obscured, as it is in the class of cases before referred to. Mr. Baker Brown has directed special attention to the subject now alluded to.

It requires but little reflection to perceive that between the uterus and its dependencies, and the rectum, there must exist very important relations, the thing being regarded from a mechanical point of view alone. The pelvis being a rigid bony canal, and incapable of dilatation, it is evident that enlargements, tumor, &c., of the uterus, may seriously impede the due performance of defecation. This is only one instance out of many which might be adduced to prove—what, indeed, daily experience renders familiar to the practitioner—the mutual interest, so to speak, which the uterus and generative organs on the one hand, and the rectum on the other, have in the healthy action and condition of each other.

DIFFICULT DEFECATION.—One of the most common of the disorders of the rectum which come under our notice is that consisting in *difficult defecation*—constipation, as it is ordinarily termed. As a rule, the origin of this condition is not local, but it is of a more general nature ; in other words, the cause is a *functional* one, although that functional disturbance (as in the obstinate constipation often associated with amenorrhœa) may arise from disorder of the generative organs.

The *mechanical* causes of constipation have a more direct interest for us, as coming more within the limits of the present inquiry.

The pressure of the enlarged uterus due to *pregnancy* often causes constipation, especially during the first third of pregnancy, before the organ rises above the pelvic cavity. In many cases, the constipation is, indeed, a sign of pregnancy ; as a rule, enlargement of the uterus is more likely to produce constipation when it is not so considerable as to induce the uterus to leave the pelvis. When pregnancy is added to displacement of the uterus, as in cases of retroversion of the gravid uterus, the disturbance of the functions of the rectum is usually extreme. Mechanical enlargement of the uterus, of another, but rare, kind, that due to *retention of the catamenia*, also produces constipation. *Ovarian tumors, fibroid* or *cancerous tumors*, or *polypi of the uterus*, may all give rise to more or less difficulty in defecation. In the cases hitherto mentioned, the defecation is difficult, and the difficulty noticed may be, but commonly is not, extreme ; and there is, moreover, only *difficulty* present in the majority of cases. The degree of difficulty observed is by no means in proportion to the size of the tumor, but depends rather on the extent to which the tumor encroaches on the cavity of the pelvis. Thus, the constipation produced by an ovarian tumor is often relieved by the increase in the size of the tumor, and its consequent rise into the abdominal cavity.

PAINFUL DEFECATION.—Those tumors or enlargements of organs within the pelvis hitherto referred to do not (cancer excepted) generally give rise to much pain ; they increase slowly, and the organs accommodate themselves to their altered circumstances. But there are cases of constipation of a mechanical origin, in which the difficulty of defecation is accompanied with pain during the act, and often with pain of a very acute character. Dislocations of the uterus or ovaries, attended with enlargement of these organs, frequently give rise to difficult and painful defecation.

Retroversion or flexion of the gravid uterus produces these symptoms in a marked degree: in flexion of the unimpregnated uterus, pain and difficulty are pretty constantly present; in short, any kind of dislocation of the organ may be attended by this combination of symptoms. Dr. Rigby believed the ovary to be liable to a peculiar displacement, and that, by falling into the fossa between the uterus and rectum, it occasioned both pain and difficulty in defecation, and it is probable that this is occasionally, but not frequently, the case. In cases of *prolapsus* of the uterus, difficulty and pain are observed very frequently; also in prolapsus of the posterior wall of the vagina; and in cases of *inversion* of the uterus. Dr. McClintock calls attention to a condition of the rectum which he has observed in connection with prolapsus uteri, and which was the cause of the latter affection—viz., stricture: the straining efforts of the patient in defecation brought about the uterine displacement. The presence of effusions of blood around the uterus—*peri-uterine hæmatocele*—causes great pain and difficulty in defecation. *Cancer* of the uterus is often associated with a degree of pain during defecation amounting to absolute torture; difficulty of defecation is not unfrequently one of the first symptoms of cancerous disease of the uterus. In *hypertrophy* or *tumor of the cervix uteri*, there is often great local tenderness, and consequent painful defecation; less commonly when the body of the organ is enlarged, but very commonly when the uterus is the seat of that affection to which Gooch gave the name of the " irritable uterus." It is worthy of remark that, in most of these cases in which the act of defecation is rendered difficult and painful by the presence of these affections, there is also pain attendant on locomotion.

Fissure of the rectum is a condition giving rise to extreme pain during defecation; and constipation is also usually present in such cases, the patient's dread of pain inducing postponement of the evacuation as long as possible.

Hæmorrhoids are often a cause of painful defecation in both sexes. In women we frequently find these troublesome tumors present, together with enlargement of the uterus of all kinds, but more especially in cases of engorgement and congestion of this organ. The enlargement gives rise to the production of hæmorrhoids, for the most part in a mechanical manner.

In many of those cases in which defecation is difficult, there is also an unusual *frequency* of defecation. It chiefly arises in consequence of the pressure produced by enlargement of some of the

pelvic contents. It is to be distinguished from an irritable condition of the rectum itself by the fact that pressure-signs of other kinds are also present. There is a form of nervous dysmenorrhœa in which the chief suffering is dependent on continuous straining efforts at defecation.

DIARRHŒA, it is hardly necessary to observe, is due to a great variety of causes. It is frequently, however, dependent on uterine affections. Pregnancy may produce diarrhœa, during the early months, of a very intractable, and occasionally obscure form. (Dr. Tyler Smith.)

CONDITION OF THE FÆCES.—Occasionally the condition of the fæces themselves furnishes us with data of a suggestive character in reference to the existence of uterine disease. Thus, in retroflexion of the uterus, the fæces have a banded or flattened appearance, indicative of pressure on the rectum. The flattening is not noticed when pelvic tumors of greater size are present, because the pressure then affects a part of the rectum higher up. Again, when stricture of the rectum is suspected to be present, the shape and condition of the fæces give us important negative or positive information.

DISCHARGES FROM THE RECTUM, of various kinds, call for a few remarks. In most of those cases where the amount of pressure exercised by enlarged pelvic organs or tumors is considerable, a *mucous discharge* from the rectum is observed. This discharge is kept up and aggravated by the frequent straining efforts of the patient. *Bloody discharges* from the rectum may proceed from pressure, from undue vascularity of the bowel, and straining on the part of the patient, combined; they may proceed from stricture of the rectum of non-malignant character (rare); or from cancerous disease of this viscus, which is very frequently associated with a like disease of the uterus, when in its advanced stage; or from opening the hæmatic cyst of a peri-uterine hæmatocele into the rectum, in which case flesh-like bodies may be from time to time passed by stool. Cases are not rare in which, cancerous disease of the uterus being present, the whole intensity of the symptoms is transferred, so to speak, to the rectum, the patient paying little attention to the uterine symptoms, but laying great stress on the sufferings attending defecation, &c. In these cases there is, of course, a liability to overlook the primary disorder. The great pain and difficulty in defecation, the occasional bloody and puriform offensive discharges, these are distinctive features of this condition.

Puriform discharge from the rectum, preceded, it may be, by slight sanguineous discharge, may occur from bursting of an abscess in the neighborhood into the canal. Now and then ovarian cysts are evacuated by spontaneous bursting of the same into the rectum, and then a *serous* or *glairy* discharge from the bowel may continue for some days until the cyst is emptied.

For further information respecting disorders of the rectum, the reader is referred to special treatises on this subject.*

CHAPTER VIII.

ABNORMAL SENSATIONS REFERABLE TO THE GENERATIVE ORGANS.

PRURITUS OF THE GENITAL ORGANS.—Diagnosis of the cause of the Pruritus in particular Cases.

PAIN REFERABLE TO THE INTERNAL GENERATIVE ORGANS.—(A) Painful Sensations associated with Menstruation (Dysmenorrhœa)—What is the cause of the Pain in Cases of Dysmenorrhœa?—Two Classes of Cases : 1. Those in which there are Pain and impeded Discharge ; 2. Those in which Menstruation is simply painful.—Diagnosis of these two classes of Cases.—(B) Pain experienced irrespective of Menstruation—Pain in the Back—Pain in the Hypogastric Region : Intermittent Pains ; Pains more or less constant ; Pain of Inflammatory Character ; Acute, intense Pain ; Hysterical Pain ; Bearing-down Pains—Pains in the lower Extremities.

PAIN REFERABLE TO THE EXTERNAL GENERATIVE ORGANS.

MOTIONS, OR PSEUDO-MOTIONS FELT WITHIN THE ABDOMEN.—Quickening : Description of the Phenomena so entitled—Sensations simulating those of Quickening ; their causes.

PRURITUS OF THE GENITAL ORGANS.

AN account of the pathology of this disease or symptom, as the case may be, will be given in the second part of this work. The exact diagnosis of the cause of the pruritus is often a matter of some difficulty. If pregnancy be present, the pruritus probably depends on that, and may then assume a very obstinate form. If the symptoms be at all urgent, or if they have been noticed for any considerable time, it is pretty nearly certain that some local changes, requiring actual inspection of the vulva and external genitals for their due recognition, will be found to be present ; and

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* See the well-known works by Mr. Quain, Mr. Curling, Mr. Ashton, and Mr. Syme, respectively, on Diseases of the Rectum.

whether we consider the latter as the cause or the effect of the pruritus, they will equally require particular treatment. Hence, in chronic cases especially, the necessity for actual examination in order to make a satisfactory diagnosis. If, on external examination, no alteration be detected, recourse must be had to digital or other examination of the uterus and vagina. And care must be taken that the *general* condition of the patient,—a point much insisted on by Dr. Rigby,—as well as the *local* changes actually detected, be allowed its due place in the estimate taken of the case; or the treatment which is adopted will either prove palliative only, or will fail entirely in giving the desired relief. I have met with cases in which the pruritus was evidently in great part dependent on disorder of the digestive apparatus produced by immoderate use of spirituous liquors, and where the nature of the case was at first not clear, owing to the concealment of the habit in question on the part of the patient.

PAIN REFERABLE TO THE INTERNAL GENERATIVE ORGANS.

Pains referable to the internal generative organs may, for the sake of convenience, be divided into two classes, viz. : 1. Those associated with the performance of the function of menstruation— dysmenorrhœa; and 2. Painful sensations experienced irrespective of menstruation.

(a) *Painful Sensations associated with Menstruation.*

The subject of the diagnosis of the cause of pain during menstruation is one which involves many considerations of a pathological nature, and the subject will consequently be dealt with in the article "Dysmenorrhœa." Accepting the pathological views there expressed, what we have to do as regards the diagnosis of particular cases is to determine whether the pain is due to retention of menstrual fluid in the uterus, or not.

The diagnostic distinctions between cases of dysmenorrhœa in which there is partial menstrual retention, and those in which there is no such impediment to the escape of the menstrual fluid as to produce this state of things, are the following: In partial retention, the pains are situated in the uterine region, and radiate from this point to the back and loins; they may be, and generally are, very severe, more or less paroxysmal in character, resembling, though on a small scale, the pains of labor, and often go on increasing in intensity until relieved. Coming on suddenly, lasting

for a certain time, and then going off, to return again after a few minutes or after a longer interval—such is the character of the pain. The patient may not be entirely free from pain throughout; but the occasional, it may be periodic, exacerbation—this it is which characterizes it. When the pain is excessive, it may induce disturbances of the nervous system of various kinds—hysteric convulsions, agitation, anxiety, palpitations, tenesmus, pain in micturition, &c. The pain differs from that present in the other description of cases: it is more severe and more limited to one spot. When there is no retention, the pain may be situated in the uterus, but more generally it is referred to the ovarian regions, deep down behind one or both groins, and it usually extends from this spot down the thighs. It may extend to the loins also. In menstrual retention there may be pains in the back, thighs, &c.; but it is not limited to these parts, and there is also pain in the uterine region.

Pain having its seat and origin in the ovaries is, as Dr. Rigby described it, " of the most agonizing character, frequently attended with severe nausea or obstinate and most distressing vomiting; in its peculiarly unbearable character resembling the sufferings from orchitis."* It is more frequently, however, less severe than this; and there may be observed all gradations of the same. In cases of simple ovarian dysmenorrhœa, it is most commonly the case that pains of analogous character are present during the intervals between menstrual periods. A more exact analysis of the cause and origin of pains due to uterine disease will be found further on.

As long as the menstrual discharge continues persistently, the presence of pain need not generally give rise to uneasiness, although, as previously observed, it by no means universally follows that, because there is a discharge, the size of the outlet is sufficient. It is the absence of the discharge coincidently with presence of the kind of pain above alluded to, which should make us suspicious of the existence of some obstruction, and more especially when the symptoms in question have been present for any considerable time, or have shown themselves recently in an individual known to have previously menstruated easily and regularly.

When, from the nature of the symptoms present, we are led to believe that there is a mechanical difficulty of some kind, in order to ascertain the nature of this supposed difficulty it will be necessary to make a vaginal examination, and in certain cases to use the sound.

* Op. cit., p. 33.

In those cases in which the dysmenorrhœa is connected with the discharge, from time to time, of a membrane from the interior of the uterus, the presence of the membrane itself will so far remove all obscurity from the diagnosis.

When there is painful menstruation, the discharge appearing scantily, disappearing for a time, then reappearing, perhaps in gushes, and again ceasing—when this condition of things is noticed at successive menstrual periods, it gives good ground for the suspicion that there is some difficulty in the escape of the fluid. When coagula having the form of casts of the uterine cavity, or a portion of it, are passed under such circumstances, this is also in favor of the presence of mechanical obstruction.

It is important not to mistake abortion for dysmenorrhœa, and *vice versâ*. In the case of abortion, there has been suppression of the menses for one or more periods; but in dysmenorrhœa, there have been usually preceding attacks of similar character, and no suppression of the menses has been (usually) observed. When there has been partial retention of the catamenial fluid, clots are often observed to be passed, accompanied with contraction of the uterus and pains quite identical with those of labor; and in such cases very careful examination of the substances discharged may be necessary to enable us to distinguish their nature.

In one case which came under my observation, the expulsive pains, such as those described above, were present at particular menstrual periods; and it appeared on inquiry, that they were due to the presence of a clot of blood in the vagina, the escape of which was rendered difficult by the circumstance of the orifice in the hymen being rather smaller than usual. Under ordinary circumstances, the aperture in question was sufficient for the escape of the menstrual product. That complete retention occasionally results from imperforate hymen is well known, but this latter class of cases belong to a different category altogether from those of which the case just related is an instance.

(b) *Pain experienced irrespective of Menstruation.*

There are very few cases of " painful " menstruation in which there is not also pain or discomfort of various kinds between the menstrual periods, these latter symptoms being due to certain morbid conditions of the uterus or adjacent organs. And the intermenstrual suffering is very frequently directly dependent on the abnormal performance of that function. Further, while menstrua-

tion itself is attended with pains which are in a manner peculiar to it, these very pains are not limited absolutely to this period, but may occur at other times. Correspondingly, there are other kinds of pain and inconvenience which may be experienced equally during menstruation and at times when menstruation is not going on.

The pains or painful sensations experienced by the patient, and which are referable to the generative organs, are exceedingly numerous. They vary in degree; they vary in position; there is not a constant relation between a particular cause and a particular effect. Nevertheless, the pains experienced by the patient are data which can be generally usefully turned to account in the diagnosis; in certain cases the data in question have a very great value.

It is well known that a feeling of pain at a particular spot is not always indicative of lesion or of appreciable change at the spot in question. The pain is frequently what is termed a "reflected" pain; at other times it is produced by pressure on the trunk of the nerve supplying the painful part. In the diagnosis of the nature and cause of a particular pain, the first thing to be done is to determine whether the locality of the lesion be identical with that of the pain; and if this question be decided in the negative, it must be further ascertained whether the pain be a reflected one, or due to pressure on the nerve supplying the part.

It very frequently happens that pains of all three kinds exist simultaneously. Thus a fibrous tumor growing in the wall of the uterus may give rise to pain of the three varieties above mentioned, viz., pain in the uterine region itself, pain in the back—the reflected pain—and pain in the lower extremities; the latter due to the pressure of the enlarged uterus on the sacral plexus within the pelvis. So also an ovarian tumor may give rise to pain in the pelvis, to pain around the hips or back, and to pain in the thigh, or leg, or foot.

Pains not situated within the pelvis may be, therefore, either reflected pains, or what may, for the sake of convenience, be termed *pressure pains*.

Dr. Snow Beck* has pointed out the connection between different disordered conditions of the uterus and vagina and reflected pains at various situations. Thus he believes that when the cervical part of the uterus is diseased, there may be produced a re-

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* On the Pathology of the Uterus, its Anatomy and Physiology. Medical Times, 1851, vol. xxiii, p. 583.

flected pain in the lower lumbar region, the hips, the iliac, inguinal, and hypogastric regions, and the inner part of the thighs; and that when the uterus is diseased higher up, the position of the reflected pains is correspondingly altered. This is, I believe, quite true.

Disease or irritation of the ovaries is also a frequent source of reflected pains, the seat of which may be the loins, the hips, and upper part of the thighs; the ovaries deriving their nervous supply from the same source as the uterus, the reflected pains will be seated in nearly the same parts. In the estimate of the causes of reflected pains now under consideration, the disorders of the bladder should also not be forgotten.

There is a class of pains referable to the generative organs, and very frequently observed, which may be conveniently described as " pressure " pains. The nerves which are most liable to suffer from pressure within the pelvis are those issuing from the anterior foramina of the sacral bone, which enter into the formation of the sacral plexus, and which supply also branches to the pelvic viscera. A tumor occupying the pelvic cavity may compress any one of the nerves in question. The nerves for a short distance lie close against the sacral bone, only separated from it by the fibres of the pyriformis muscle, and they may, during this part of their course, be compressed by a pelvic tumor against the hard surface of the bone in question. The nerves which are given off from the sacral plexus are, many of them, sensory nerves, and the effect of pressure on these nerves within the pelvis is therefore to produce pain in the skin supplied by the particular nerve so pressed upon. The following are the localities which may be affected in the manner above described: the hip-joint, the labia pudendi, the clitoris, nymphæ, perinæum, the back of the coccyx, the upper part of the inside of the thigh, the back of the thigh below the gluteus maximus, the leg, and the foot. The upper portion of the labia, and the portions of the skin or other parts of the lower extremity not included in this list, are supplied by branches of the lumbar nerves; these latter nerves are not liable to pressure from tumors situated in the pelvic cavity—that is to say, when such tumors are confined to that cavity alone.

Here it is necessary only to state, that in practice we frequently meet with cases in which enlargements or tumors of various kinds within the pelvis give rise to pains seated in the parts supplied by the nerves which emerge from the sacrum, and which supply the parts above enumerated.

The foregoing observations have certain obvious important applications in diagnosis, but it is not in the nature of things that any great regularity should be observed in the relation subsisting between location of lesion and location of pain thereby produced, many circumstances being likely to modify or affect the result in particular cases.

We may now proceed to point out the conclusions which may be drawn, from the presence of pains of various kinds, as to the nature and seat of the disease or disordered condition with which the patient is affected. And for this purpose it will be convenient to consider (1) the pains seated in the *back*, (2) those felt in the *hypogastric region*, and (3) those felt in the *lower extremities*.

PAIN IN THE BACK

Is one of the most common symptoms present in women laboring under uterine or allied disorders; it is also the one to which attention is directed, and of which special complaint is made, by the patient. The pain here alluded to more usually affects the lower dorsal and the lumbar regions and the parts adjacent; it is not usually an acute pain, but an ill-circumscribed, aching sensation, very wearying and often extremely distressing to the patient. The intensity of this pain is not by any means proportionate to the severity of the disease present. Women suffering from uterine disorder, combined with constitutional derangement, are liable to this pain in its most troublesome form, of which we have a very marked instance in cancer of the uterus, giving rise to long-continued menorrhagia and consequent anæmia.

One of the most common causes of pain in the back is flexion of the uterus. Pain in the back is not necessarily indicative of disease of the generative organs, but the fact that a patient has for a considerable period suffered from pain of this description should induce the practitioner to consider whether disease of the internal generative organs, up to that time possibly overlooked and unrecognized, be not present, and to take measures for satisfying himself on this point. The connection between the pain in question and the presence of uterine or other internal disorder is often substantiated by the fact that before, during, or immediately after the menstrual periods, it is most troublesome; sometimes, indeed, it is only present at such times. The pain of ordinary lumbago is the most likely to be confounded with it. Attacks of lumbago are, however, more acute in character, and they occur irrespective

of the menstrual periods. Diseases of the vertebræ, aneurism, diseases of the kidneys, &c., are some not uncommon causes of persistent aching or pain in the back.

PAIN IN THE HYPOGASTRIC REGION.

The hypogastric region is very frequently the seat of pain in women; and, consequently, the diagnosis of the various conditions capable of giving rise to pain in this part of the body is most important. For diagnostic purposes, we may consider: *a.* Intermittent pains; *b.* Pains more or less constant; *c.* Pain of inflammatory character; *d.* Pains, together with symptoms like those of perforation; *e.* Hysterical pain; *f.* Bearing-down pains.

(a) *Intermittent Pains.*

Of all the pains which women experience in this part of the body, the most characteristic and most interesting, from a diagnostic point of view, are those pains which may expressively be termed *labor-like pains.* The pains in question are peculiar in their nature; they come on in paroxysms, lasting a certain time, and leaving the patient pretty free during the intervals; and they are due to contractions of the uterus, generally excited by the presence of some body, substance, or fluid, within this organ. When, therefore, a woman is found to be suffering from pain in the hypogastric region, which possesses the characteristics pointed out, we generally set it down to the presence of uterine contractions. Under certain circumstances, it appears that pains very closely resembling these may be produced by the contractions of the vaginal wall itself, as in cases of clots of blood or foreign bodies in this canal. In most of these cases, uterine contraction is associated with the vaginal contractions in such a way that the latter element in the phenomena is unrecognized.

The typical "labor-pain" is that observed during parturition at full term. Here the uterine contractions are most severe and most powerful, owing to the great size the organ has then attained. In the case of a woman in labor at full term, it is not generally a question as to whether she be pregnant or not; the diagnosis has usually been made previously, and in other ways. It is necessary, however, to regard attentively the phenomena then observed, in order to be in a position to detect and recognize the presence of pains of the same nature when they are less severe and intense in

degree, and consequently more liable to be confounded with other kinds of pain.

The principal conditions under which labor-like pain may be observed will now be mentioned.

In *women who have never menstruated*, the presence of hypogastric pain of the kind in question would make us suspect closure of the hymen, of the vagina, or of the os uteri, and that the menstrual fluid, although secreted, could not be expelled. In cases of this kind, the pains at first felt are slight in degree; but as month after month passes without relief, they become more severe, and are finally of the most intense character. The enlarged uterus is usually then to be felt above the pubes.

In *women who have menstruated*, the presence of hypogastric pain recurring at intervals, sharp while it lasts, and leaving the patient free from pain in the intervals of the paroxysms, would give the idea of the presence of *abortion*. This idea would be substantiated, or the reverse, by the collateral evidence obtainable. If the patient had passed over one or more periods without menstruating as usual, and if the pains above described were accompanied by a discharge of blood from the vagina, this would render the suspicion of abortion so strong as to necessitate not only an examination *per vaginam*, but also a careful inspection of the matters discharged. Great caution should be exercised in expressing any conclusion on such a question, and a conclusion is only possible after a careful scrutiny of the facts elicited.

In abortion occurring before the third month, the collateral facts do not so unmistakably point out the nature of the case as in instances of abortion occurring later. Respecting an abortion taking place at four, five, or six weeks, for instance, it would be exceedingly difficult for the practitioner to affirm positively that the case was one of abortion, unless he were fortunate enough to secure the ovum itself.

Menstrual Retention occurring subsequently to more or less regular performance of the Menstrual Function.—In these somewhat rare cases, labor-like pains may be present. These cases only differ from those alluded to in previous pages (see " Pain during Menstruation ") in this, that the secretion escapes with difficulty in the one instance, and does not escape at all in the other. The pain is alike in both, and the other attendant phenomena are almost identical.

In cases of *Peri-uterine Hæmatocele*, labor-like pains are usually observed. They either precede the occurrence of the hemorrhage,

or are produced by the presence of the hemorrhagic effusion in the pelvis. In a patient who has, for a longer or shorter time, presented symptoms of menstrual retention (of which these labor-like pains form an important part), and who suddenly, at a menstrual period or at another time, becomes affected with symptoms of internal hemorrhage, the occurrence of peri-uterine hemorrhage is to be suspected. When the hemorrhage in question has occurred, the pressure of the tumor thereby produced gives rise to labor-like pains, to difficulty in micturition, defecation, &c.

Presence of Blood-clots, Fibrous Polypi, retained portions of Placenta or Fœtal Membranes, Degenerated (e. g. *Hydatidiform*) *Ova*, within the uterus, may give rise to labor-like pains, consequent on the attempt of the uterus to expel the bodies in question. In these cases the pains are more or less irregular in regard to the time of their occurrence, and they do not affect different individuals equally. The uterus appears, indeed, to be very capricious in regard to tolerance of the presence of bodies within it: large polypi are sometimes found in the uterus, which have given rise to comparatively little pain; while, in other cases, the patient may have been tormented almost daily by severe colic-like pains in the hypogastric region from a comparatively small growth of the same nature.

Tumors growing in the Substance of the Uterus.—Of these the fibroid tumor, which is the most common, is a frequent source of pains of the kind now under consideration. In cancer of the uterus, labor-like pains are frequently present, especially at an advanced stage of the disease; and they depend partly, in all probability, on uterine contractions excited by the disease, but partly also on the presence of the coagula which frequently form in the uterine cavity under such circumstances.

Collections of Puriform or other Fluid in the Uterine Cavity.— In women suffering from chronic disease of the cervix uteri, when the canal of the cervix is not so large as to allow a free passage of the fluid secreted; in women advanced in life, and in whom the atrophied condition of the uterus produces also contraction of the canal, the uterus sometimes becomes distended with serous or puriform fluid, and labor-like pains supervene.

In cases of *Flexion of the Uterus*, when the uterus is so twisted as to interfere with escape of its contents, also in cases where the uterus is *dislocated* from its normal position by presence of tumors in the ovaries, &c., these labor-like pains are frequently noticed.

Cases of *Difficult Menstruation* in which we have hypogastric

pains of this character have been already and specially considered (pp. 117 *et seq.*). It will generally be found that, in cases where labor-like pains are present at irregular times and periods, there is also disturbance of the function of menstruation.

Intestinal Irritation, e. g., *Dysentery.*—Pains due to this cause, and simulating the labor-like pains above described, may give rise, at all events at first, to obscurity in the diagnosis. Thus, recently I was called to a lady recovering from the effects of her lying-in, who had been suddenly seized with paroxysms of pain in the uterine region, faintness, and depression—the pains so closely simulating the labor-like pains just spoken of, that it was considered likely that the uterus was endeavoring to expel a retained coagulum. A few hours later, however, some well-marked dysenteric stools were passed, and it became evident that the pains in question were seated in the intestine. The pains produced by lead-poisoning, and known as *colic*, could hardly be confounded with those of uterine origin.

Neuralgia of the Uterus.—In a lady whom I have attended for some years, the subject of occasional severe neuralgia, the neuralgia is frequently accompanied by what she herself terms "labor-pains." The pains in question are temporary, and subside when the neuralgia has located itself elsewhere. Cases where such pains are more persistent are described by various authors as *rheumatism of the uterus.*

Retention of Urine.—That this condition may give rise to labor-like pains, the following case, the particulars of which were kindly furnished me by Dr. Leonard W. Sedgwick, will show: He was called to a young woman who was supposed to be in labor. In the abdomen was felt a tumor the size of a nine months' uterus; the patient was apparently in strong labor; violent bearing-down pains, with only a short interval, were observed. The woman denied pregnancy, the tumor was found to be elastic, and no fœtal limbs or body could be felt. Dr. Sedgwick tried the catheter and removed an incredible quantity of urine from the bladder. The straining efforts of the patient to evacuate the bladder gave rise in this case to "labor-like pains in very perfection."

(b) *Pains more or less constant.*

These may occur in all degrees of intensity, and the causes of the same are so numerous as almost to defy classification.

Pain in the hypogastric region may be due to some abnormal

condition of the uterus, or of the bladder, or of some other of the pelvic viscera. The pain due to abdominal disease is usually situated higher up, about the umbilicus, And although these limits are not always observed—although pelvic disease may occasion pain even higher than the umbilicus—and, *vice versâ*, although abdominal disease may occasion pain in the hypogastric region, yet the rule just stated generally holds good.

Some of the more salient points as to the diagnosis of the causes of the pain experienced may now be mentioned. The cases in which the pain is of a more or less chronic character, and unattended with symptoms indicative of inflammatory conditions, are those now to be considered.

In *Cancer of the Uterus*, severe hypogastric pain, which is generally remittent in character, accompanies almost constantly the more advanced stage of the disease; whereas at an earlier period in the history of the affection, the pain is not so severe, and is more generally situated in the back. The " lancinating " pain which has been considered by some authorities as an early sign of cancer, is correctly described by Dr. Rigby as " a sudden sharp burning dart of neuralgic severity, always proceeding from one spot, and sometimes transfixing the whole pelvis." It would be wrong, however, to rely on this sign alone as diagnostic of cancer, for pains having this character are occasionally present in non-malignant affections, and, indeed, in cases where there is no tangible disease at all. But when hemorrhage, offensive discharges, and pain of the kind now described are all present together, a careful physical examination of the uterus is necessary; for there is a presumption that the case is one of cancer. In cases of corroding ulcer of the os uteri, these symptoms are also present; emaciation and fever are also common to both. The pain in cancer is usually more acute than in that of corroding ulcer. An observation which applies to both is, that hemorrhage and pain are sometimes entirely absent. In cauliflower excrescence of the os uteri, really a form of cancer, there is generally a complete absence of severe pain for some time after the disease has commenced. The pain due to cancer frequently arises from local attacks of peritonitis.

In *Fibrous Tumor of the Uterus*, severe hypogastric pain may be present. The foul discharge is not present as in cancer, although this is a rule open to rare exceptions; but there may be profuse occasional loss of blood. The pain due to fibrous tumor may be quite as severe as that in cases of cancer.

Another cause of hypogastric pain is that condition of the uterus

—known since the days of Dr. Gooch as the *irritable uterus*—a neuralgic, or a neuralgic and inflammatory, condition of the organ.

HYPOGASTRIC CHRONIC PAIN.

In the cases which have come under my own observation, the neuralgic element present has been evidenced by the fact that the patient has been affected with well-marked neuralgia of the face, of the temples or other parts, at the same time that the uterine or ovarian pain was present, or in alternation therewith. The neuralgic pains have frequently a characteristic periodicity about them.

Pain in the hypogastric region, perhaps more frequently extending also to one or both ovarian regions, is almost always a most troublesome accompaniment of long-standing *disease of the cervix of the uterus*, where hypertrophy, hypersecretion, and chronic inflammatory conditions are conjoined. Pain due to either of these two latter causes is often very severe; it is much increased by motion, there is great tenderness on pressure, pain on sitting down, &c.

Ovarian Pain, referable to the ovaries, and situated deep down in the inguinal or iliac region, is rather commonly observed. The presence of pain in this region is not to be considered as diagnostic of any one condition in particular. Like the lumbar pain, or the hypogastric pain, pain in this situation may proceed from a vast number of causes.

It may be due to interrupted or "disappointed" (to use Dr. Farre's words) ovulation (see Dysmenorrhœa), which may be likened to the aching caused by distension of the testicles, or be due to chronic inflammatory action in the follicles themselves. In many cases the pain is a kind of neuralgia of the part without inflammatory action. There can be no doubt, however, that pathological alterations in the ovaries or on their surfaces, and such as are quite sufficient for the production of a good deal of pain, are much more common than has been usually supposed. (See " Diseases of the Ovary.")

Ovarian Pain from Sexual Irritation.—Undue sexual irritation in the male is accompanied by aching and pain in the testicles. This pain seems to be comparable with the sort of pain—not rarely a source of great and continuous suffering—which is observed in the other sex, and which is referable to the ovary.

Another cause of ovarian pain, to which attention has been directed by Bernutz, and in this country by Mr. de Meric,* is gon-

* Lancet, June 14, 1862.

orrhœal infection. An inflammatory action appears to be set up in the ovary, or in the peritoneal membrane near the ovary, in some cases of gonorrhœa, analogous to the orchitis witnessed in the male.

Pain in the Hypogastric Region during Locomotion.—My experience of late years has induced me to add this paragraph for the purpose of calling attention to the very frequent connection which subsists between uterine displacements, with or without relaxation of the ligaments of the uterus, and pains in the act of standing or walking. This pain is not uncommonly so troublesome that the patient is confined to her couch and sometimes permanently invalided. The pain is often dependent, I believe, on stretching or dragging on the ovaries. Thus, if the uterus be bent to the right side, the pain on standing or walking will be felt on the left, and *vice versâ*.

A variety of this form of pain is that described by Dr. Rigby as being indicative, together with other signs, of a displacement—a kind of prolapsus of the ovary. The pain alluded to is "a peculiarly sickening pain about the sacral region, extending to one or other of the groins, and coming on in paroxysms of such agonizing severity as to render the patient frantic with the intolerable suffering."* The pain is greatly aggravated by passage of the fæces; the part in the vagina corresponding to the ovary is tender to the touch. "It bears a close resemblance to the intense and peculiar sufferings in a case of orchitis." Further, says the author, "the menstrual periods are always attended with greatly increased suffering."

Pain in the ovarian region may be produced by chronic congestion of the uterus and its appendages; by inflammation of the follicles; it is frequently observed in cases where the cervix uteri is the seat of chronic enlargement or inflammation; it may be caused by displacements of the uterus and dragging on the ligaments; it is now and then witnessed in connection with undue sexual irritation. It is not rarely present as a simple neuralgia, the ovary presenting a condition analogous to that witnessed in the "irritable" uterus; and, like it also, this neuralgia of the ovary may be associated or not with some constitutional disturbance—anæmia, rheumatic or gouty diathesis. It may be found, as Bernutz has shown, to be dependent upon inflammation of the peri-

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* On Diseases of Women, p. 278.

toneum in the neighborhood of the ovaries, which inflammation may go on to suppuration and abscess.

Disease of the Bladder.—Pain more or less persistent, and of a dull aching character, is observed where the bladder is inflamed—*cystitis*—the symptoms varying according to the intensity of the inflammation present. The function of micturition is always disordered in such cases, there being generally great irritability of the bladder, and consequent frequent and painful micturition. The cystitis may be idiopathic, it may be secondary to diseases of the uterus, or it may be due to *malignant disease* situated either in the uterus or in the walls of the bladder itself. In some cases the sufferings experienced by the patient, and due to the presence of cystitis, are very severe. As a rule, the disturbances in the function of micturition, associated with this disease, render the diagnosis of the affection easy, but the presence of the disturbances in question does not necessarily point to the conclusion that the bladder is actually inflamed (see p. 104). The condition of the urine itself should be carefully inquired into, there being usually a large quantity of ropy mucus present in cases of cystitis.

(ε) *Pain of Inflammatory Character.*

Under this head are included all cases in which the ordinary signs of inflammation are present—pain, more or less acute in character; heat and throbbing; tenderness to the touch (which is to be distinguished from that very extreme tenderness met with in hysteria); feverishness, quickness of pulse, &c. These symptoms are often preceded by the occurrence of a rigor. They indicate inflammation of the uterus, of its peritoneal covering, or of some of the adjacent viscera or their coverings; and they are most commonly the consequence of labor, of abortion, of sudden disturbance of the menstrual function, or of operations about the genital organs. A frequent result in such cases is formation of *pelvic abscess.* The presence of pain in the pelvic region, with general *malaise,* in a woman recently subjected to any of the foregoing influences, should excite particular attention. (See " Examination of the Vagina.") Hemorrhage into the peritoneal cavity, from whatever cause, may give rise to severe peritonitis. The blood coagulates, effusion of lymph takes place, false membranes are formed over it, and pain of inflammatory character is under such circumstances observed. An important class of cases are those in which inflammatory action is set up in the interior of ovarian cysts. In a

woman the subject of ovarian dropsy, sudden access of pain of this kind would excite suspicion that inflammation of the cyst was present. Acute inflammation of the bladder is a condition giving rise to presence of hypogastric pain of the kind now under consideration.

It seems hardly possible to fail to recognize the inflammatory element in cases presenting the foregoing symptoms. The error most liable to be committed is that of taking for inflammation what is only an hysterical condition. As a rule, hysterical pain is marked by its severity, by its variability, by the suddenness with which it appears and disappears, and by the circumstance that the patient is known to be hysterical, or to have been the subject of hysteria. The condition of the pulse is the best criterion. In cases otherwise closely simulating actual peritonitis, or inflammation of the uterus or the adjacent organs, the frequency of the pulse present in the latter affections is wanting.

An important class of cases are those in which

(d) *Pain of an Acute and Intense Character is suddenly felt in the Hypogastric Region,*

Accompanied by great prostration, and depression and shock to the system generally. Fainting, continuing for a considerable time and frequently recurring, great pallidity of surface, cold clammy perspiration, weakness or almost complete absence of pulsation at the wrist, a feeling of sickness or violent and uncontrollable vomiting, are symptoms often witnessed in this class of cases. To these is usually added considerable swelling of the abdomen.

The symptoms in question are such as to excite suspicion of perforation or rupture of some of the abdominal or pelvic viscera, with consequent escape of blood or contents of the ruptured viscera into the peritoneal cavity, or rupture of an abscess and effusion of pus into the peritoneum, from bursting of an ovarian cyst, &c.

It is very necessary to distinguish these really alarming cases from a class of cases already alluded to, and which in certain respects may simulate them—those of hysterical origin. The severity of the pain is, by itself, of not much value from a diagnostic point of view. In hysterical cases, there is an absence of symptoms of depression and prostration; and there is, moreover, generally evidence of previous hysterical attacks, or, accompany-

ing the severe hypogastric pain, there are other unmistakable signs pointing to hysteria—the feeling of fulness and rising in the throat known as " globus," slight convulsions, &c. On the other hand, in the really serious cases, the patient has been previously in a state of good health, or at all events free from attacks of hysterical character, and the positive signs of great perturbation of the system only require to be looked for to be detected.

Further, examination of the abdomen gives valuable information. In hysteria, there is, together with the pain, great sensibility of the surface, the slightest touch giving rise to complaint, whereas deep slowly increased pressure is not painful: the reverse is true of the class of cases now under discussion. It is only at the onset of the attack that there is any possibility of confounding the perforation symptoms with those produced by hysteria.

The conditions which may give rise to the alarming symptoms above described will now be enumerated.

The pain may be produced by an affection of the abdominal or of the pelvic viscera, and there are no signs by which it can be absolutely determined at the moment whether the seat of the accident be in the abdomen or in the pelvis proper. The concomitant circumstances generally enable us to decide this point, or the course of the case determines the diagnosis in this particular.

In *Perforation of the Intestine*, as from typhoid fever, from tuberculous ulceration, or connected with organic disease of the abdominal viscera, &c., the previous history would generally suggest the proper interpretation of the symptoms; and the pain is more usually, perhaps, referred to the umbilicus, or a point above it, than to the hypogastric region.

Certain conditions of the pelvic viscera, especially, are capable of giving rise to the symptoms in question. The following are the most important of these:

Pelvic Hemorrhage from the Ovaries, Fallopian Tubes, &c.; including Cases of Peri-uterine Hæmatocele.—The accident mostly occurs during or immediately after the occurrence of a menstrual period. It may happen in women previously healthy, but is more generally observed in women who are anæmic, and in whom there have been menstrual irregularities (see p. 125). Walking a long distance, straining, the act of intercourse, or sudden muscular effort, may precede the attack; it may occur also without such apparent exciting cause. The symptoms observed in such cases vary in degree of intensity; there are reasons for believing that, in a slight form, the accident is rather common, and, the symp-

toms being less severe, its true nature escapes recognition. When symptoms of the above kind occur in an intense degree, and in a woman who has been subjected to the foregoing influences, it may be suspected that they are due to a sudden outpouring of blood. The diagnosis is established by recognizing the presence of a semisolid tumor above the pubes, or pressing on the vaginal walls— the effused blood—such tumors having been before wanting.

Hemorrhage in Extra-uterine Pregnancy.—There is an important class of cases, in which an outpouring of blood takes place in connection with pregnancy, and more particularly with pregnancy of an abnormal kind—extra-uterine pregnancy. The hemorrhage due to extra-uterine pregnancy may give rise to the formation of a tumor in the pelvis, of the same kind as that witnessed in pelvic hemorrhages of other kinds.

Cases in which the ovum is situated in one of the Fallopian tubes frequently occasion symptoms having the character of those described, and in a very intense degree; the suddenly occurring violent pain and the extreme degree of syncope being the most significant. Here the patient is usually known or suspected to be pregnant. There may have been nothing about the case to excite particular attention; but more generally the woman has experienced unusual pains, or more discomfort than in ordinary pregnancy. Slight occasional losses of blood are frequently observed in these cases of extra-uterine pregnancy, which are, under such circumstances, often mistaken for return of menstruation. The rupture occurs in the third or fourth month, or earlier in the majority of cases, when the ovum is in the Fallopian tube; it is rare that it is postponed much later than this. On the other hand, the time of rupture may be considerably later than this, if the ovum be attached just without the tubes, or in the abdominal cavity itself; and there may be no rupture at all, the pregnancy going to full term, with further results, which need not be particularly alluded to in this place. Rupture of the fœtal-containing cyst generally occurs when the fœtus is developed in the Fallopian tube; but in cases of extra-uterine pregnancy of the "abdominal" kind, rupture is, on the contrary, rare. The hemorrhage which takes place in cases of extra-uterine pregnancy is generally so great as to kill the patient, and death often takes place very quickly. In some cases the patient lives longer, and dies apparently from the effect of a succession of hemorrhages.

Rupture of the Gravid Uterus itself.—There are a few cases on record, in which this accident has happened, and without any

very obvious cause. The third, fourth, and fifth months, are the various periods during which this has been observed. The symptoms noticed at the time of the rupture would not essentially differ from those present in rupture of an extra-uterine pregnancy, but the previous history in the cases might be somewhat different.

Rupture of Ovarian Cysts, with escape of their contents into the peritoneal cavity, does not, as a rule, give rise to marked disturbance; in some cases, however, when, concurrently with the rupture, there is hemorrhage, severe symptoms may be produced, more or less identical with those described; and even without hemorrhage occurring, the escape of the contents of such cysts may give rise to severe symptoms and death. Thus, in a case recorded by Dr. Gillespie, an ovarian dermoid cyst, containing hair and pus, burst; the pus was effused into the peritoneum, and the case speedily proved fatal. In this instance, the symptoms were, for a few previous days, diarrhœa, occasional vomiting, abdominal pain. These, especially the vomiting, became suddenly aggravated, and death took place in a few hours from collapse. The symptoms closely resembled those due to irritant poisoning.*

(e) *Hysterical Pain.*

It is well known that, in hysterical patients, the pains complained of are occasionally very difficult to distinguish from others of more serious character. The abdomen is very frequently the region in which pain is seated in cases of hysteria. From other pains seated in the hypogastric region, hysterical pains are discriminated by careful inquiry into the history of the patient, when previous occurrence of hysterical symptoms is substantiated, and by the absence of signs of inflammation or mischief of other kinds. The character of the pain offers in itself no conclusive indication, for hysterical pain may resemble in degree and intensity almost all other varieties of pain.

Negrier† is probably right in believing that the phenomena of hysteria in general depend upon a morbid condition of the ovary —a kind of irritation which is irradiated to the ganglionic system —and that there are certain women of " ovarian temperament " who exhibit the phenomena ordinarily spoken of as hysterical: a very common symptom in cases of hysteria is tenderness on pressure in the ovarian regions, and presence of pain in the regions in question. There can be no doubt that undue excitation of the

* Ed. Med. Journal, May, 1862.   † Op. cit.

ovarian function is occasionally associated with hysteria, and there would seem to be a good reason for the distinction drawn by Negrier between cases in which actual tangible disease of the follicles is present (ovarian folliculitis) and others in which no such tangible disease is met with, and in which there is, nevertheless, evidence of undue excitation of the ovarian function. It is hardly necessary to observe that hysterical phenomena and actual textural changes in the ovaries may be met with together in the same patient.

Hypogastric pain of an hysterical nature may be seated in the ovary itself, but it appears to be not uncommonly seated in the abdominal walls. The muscles of the abdomen are frequently, according to Briquet,* the seat of hysterical pain. It is difficult, however, to ascertain in many cases whether the pain be really seated in the skin, the muscles, or still more deeply. In cases where the pain is of hysterical origin simply, a slight touch gives pain, but deeper pressure is generally borne very well: this is important from a diagnostic point of view.

Lastly, it should be mentioned that, in hysterical women, presence of pain in the hypogastric region is frequently associated with distension of the bladder and *retention of urine.*

(f) Bearing-down Pains.

In women suffering from chronic disease of the uterus, complaint is often made of what are called *bearing-down pains.* They more frequently occur in women who have lost flesh and who are in a bad state of health, and in whom the uterus is diseased. Diseases of the uterus involving enlargement of the organ more particularly cause them. In most cases where bearing-down pains are present there is partial or complete prolapsus of the uterus or of its cervix. The bearing-down sensation is also present in cases where tumors of the uterus, pregnancy, polypi or fibroid tumors, cancer, &c., exist. It may be due to prolapsus of the bladder. The presence of pains of this character generally points out the necessity for exploration of the uterus from the vagina.

PAIN SEATED IN THE LOWER EXTREMITIES.

It has been already explained (see p. 120) how and why it is that tumors or enlargements of various kinds of the organs within the

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* Traité Clinique et Thérapeutique de l'Hystérie. Paris, 1859.

pelvis may give rise to pains situated in certain parts of the lower extremities. These pains have a mechanical origin, and there is consequently no sign by which we can distinguish, by means of the pain alone, the nature of the substance that is exercising the pressure which is the cause of the pain. The "pressure" pains are very important, however, in directing attention to the presence of tumors in the pelvis which might be otherwise overlooked. I have several times noticed pain of this kind in *early pregnancy*, and the occurrence of the pain attracted attention to the possibility of the presence of a tumor in the pelvis. In cases of retroflexion of the uterus, pain of this kind is a very common occurrence.

The pain frequently felt at the upper and inner part of the thighs and in the perinæal region, in cases of *ovarian tumor*, is an instance of the same kind. Painful cramps are occasionally experienced in the calves of the legs, in cases where pelvic tumors are present. Cramps of this kind are frequently observed in labor, and these appear to be due to pressure of the hard parts of the fœtus on the sacral nerves. Pains situated in the anterior and outer parts of the thighs, which regions are supplied with nerves from a different source, do not indicate presence of a pelvic tumor. To this rule, however, there is an exception occasionally witnessed in cases of *pelvic abscess*, where the tumor rises up above the brim of the pelvis, and gives rise to pressure on certain branches of the lumbar plexus of nerves as they pass with the psoas and iliacus muscles from the abdomen to the thigh. Pain in the outer part of the thigh is not rarely a marked symptom in cases of pelvic abscess. Another symptom frequently noticed under these circumstances is painful contraction of the thigh, with inability to extend the limb.

In the majority of cases, the pains felt in the lower extremities belong to the "pressure" class. In some cases, however, reflected pains, originating in the manner described by Dr. Beck (see p. 120), are observed.

Lastly, it must be remembered that there are many conditions capable of giving rise to pains in the lower extremities, quite unconnected with diseases or derangements of the generative organs. The following case may be mentioned as showing how irritation or injury within the pelvis may occasion pains elsewhere : A lady had been operated on for stricture of the cervix uteri upwards of a year previous to my seeing her. She was now suffering from severe pain in the groin and pain in walking. The whole of the upper and inner part of the left thigh, the external part of the thigh, the

gluteal region, the crista ilii and the left side of the sacrum were found very tender and acutely sensitive. Pelvic abscess was feared. After three months' rest, the extreme sensitiveness still remained and localized in the same spots, but there was no evidence of formation of pus. This case is one of reflected pain, the primary cause being injury of a nerve in the operation.

PAIN REFERABLE TO THE EXTERNAL GENERATIVE ORGANS.

There are many conditions of the external generative organs capable of giving rise to pain and discomfort of various kinds, the mere enumeration of which in this place would serve no useful purpose; they will be found described in the second section of the present part of this work, under "Examination of the External Generative Organs." A few remarks on certain difficulties peculiar to the diagnosis of these cases appear nevertheless to be called for.

In the descriptions given to the medical attendant as to the sensations they experience, women are generally exceedingly vague; very frequently they for a long time disguise the real nature of their sufferings, in the hope of escaping the necessity for an examination. The statements made require consequently to be carefully scrutinized before any decision is based upon them; and of the two evils, to make an examination unnecessarily, and to omit to do so where circumstances really require it, the former is certainly the least.

Thus the symptom described by the patient as "pain in the lower part of the stomach" may turn out to be due to a bubo in the groin, prolapsus of the uterus, a discharge from the genitals, or an abscess in the labia.

Pain seated in the external genital organs, and of recent date, is generally connected with presence of abscess or boils of the labia, or with vulvitis. In these cases there is tenderness, difficulty in walking, or some other inconvenience clearly indicative of inflammatory action in the neighborhood of the vulva. The more chronic cases of disease of the external genital organs offer less difficulty of that kind above alluded to: the patients generally, knowing more of the nature of their disorder, themselves suggest an examination.

MOTIONS, OR PSEUDO-MOTIONS, FELT WITHIN THE ABDOMEN BY THE PATIENT.

It is well known that, at a certain period of pregnancy, the patient usually experiences a peculiar sensation in the abdomen

in the region of the uterus, due, as is almost generally admitted, to the actual movements of the fœtus within the uterus, and that the sensation in question usually continues to be felt by the patient until delivery has taken place. Popularly, the time at which the sensation in question is first perceived is termed the period of *quickening*, it being believed, although this belief is of course unfounded, that the fœtus only then begins to have a separate and distinct life of its own. The presence or absence of quickening—that is to say, of the sensations supposed to be due to motions of the child—is considered by women in general as complete proof of the presence or absence of pregnancy; and cases are not at all uncommon in which, in the face of facts demonstrative of the impossibility of pregnancy being present, women continue to imagine that they are with child, led away by their reliance on this supposed infallible sign of pregnancy.

It will be well to consider, in the first place, the nature and character of the sensations conveyed to the mother, and produced by the pregnant condition of the uterus, and, in the next place, other conditions which may give rise to sensations capable of simulating these.

The sensation termed "quickening" is experienced by a pregnant woman usually at the end of four calendar months from the date of conception (Hamilton); or "between the end of the twelfth and sixteenth weeks after conception, or, adopting another mode of calculation, between the fourteenth and eighteenth weeks after the last menstruation" (Montgomery). It is sometimes felt at an earlier period than this, in very rare cases in the tenth week from conception; and in some cases it is not perceived until a considerably later period. So far respecting the time at which it occurs. The phenomena of quickening are described by Dr. Montgomery as follows: " Under ordinary circumstances, when quickening does occur, but especially if it happens in conjunction with the sudden ascent of the uterus out of the pelvis, the woman is apt to feel an unusual degree of nervous agitation, which not unfrequently ends in faintness, or even complete syncope, after which she is sensible of a slight fluttering sensation, which from day to day becomes more distinct, until she fully recognizes the motions of the child."*

There has always been some difference of opinion as to the cause of the sensation termed quickening. Thus it has been considered by some to be due to the ascent of the womb into the abdomen, to

* Op. cit., p. 146.

the first peristaltic contractions of the newly-organized uterine muscular fibres (Dr. Tyler Smith); and the seat of the sensation has even been held to be in the abdominal parietes. The more general idea is that the sensation is due to the actual motions of the child.

This difference of opinion as to the cause and nature of quickening appears to depend on the fact that the phenomena witnessed in different cases, and termed "quickening," are in reality not always identical; and the term must be considered a composite one, meaning, in one case, the alteration in position of the uterus due to its increasing size; in another, the actual sensation of the child's movements; in a third, possible contraction of the uterine muscular fibres alone. This distinction has not been sufficiently insisted upon. It is very certain that by women in general the term quickening is not held to mean exclusively and always the sensation of the motion of the child: they often mean by the expression a particular attack of faintness, which may not be followed by the experiencing of actual sensation of motion of the child for some very considerable time afterwards.

Thus the word "quickening," taken in its popular sense, is one which serves to characterize phenomena not always identical.

After the period at which quickening is usually observed has passed by, the patient being pregnant, the motions of the child become more and more evident, and the sensations described by the mother are plainly and unmistakably due to the active motions of the fœtus in utero. Whatever doubts may exist as to the actual nature and seat of the first sensations experienced, there can be none as to their cause at a later period. The sensations attributable to the motion of the fœtus are now peculiar in regard to their suddenness, abruptness, and distinctness. At first the sensation communicated is that of "a slight pat or throb, sometimes scarcely more than a flutter," sometimes a tickling, or resembling the tremulous motion of a little bird when held in the hand (Montgomery); but later the motions give rise to sensations more distinct and intense.

The motions of the fœtus are not regular, and are not regularly produced by the operation of the same causes. All women do not experience these sensations equally. In some cases all sensation of the motion of the child has been absent from the beginning to the end of pregnancy, the mother never having perceived the slightest motion on the part of the child. In other cases the motions are violent, to such an extent that patients consult us in order

to obtain relief from the annoyance and inconvenience they occasion; they sometimes, towards the end of pregnancy especially, occur so uninterruptedly as to prevent the patient from sleeping; and there is usually some one position in taking which the patient is more particularly liable to be troubled with them.

Regarded as diagnostic of the presence of pregnancy, it cannot be too often repeated that the sensations described, and of the presence of which we are informed by the patient, have very little positive worth. The force of imagination is very great. Hardly a better instance could be afforded of the truth of this saying than is afforded so frequently by women who, imagining themselves to be pregnant, declare that they plainly perceive the motions of a child, and persist in their assertion until the lapse of time convinces them reluctantly of their error. And this mistake is not confined to women who have had but little experience in such matters. The observation of Hamilton should always be borne in mind, that "no woman ever yet fancied herself pregnant without also persuading herself that she felt the motions of the child."

In many cases where women are so deceived and deceive themselves, there is probably no actual mechanical cause for the sensation said to be experienced, but in other cases there are such present. Thus, in women with *abdominal tumors*, sensations of movement are sometimes present; in cases of ovarian tumor, an irregular pulsatile sensation is sometimes perceived, due, probably, to the pulsations of the aorta or of the great vessels lying behind and pressed upon by the tumors in question; in cases of menstrual retention within the uterus, they have been noticed. The motions felt under these circumstances are doubtless in many instances due to sudden movement of gaseous or other contents in the intestine, which phenomena would be more likely to be observed in cases where the intestines were pressed upon and thrust out of their proper place by tumors. Twitching of the abdominal muscles has also been described as an occasional cause of the peculiar sensations now alluded to. Where the uterus is distended by retention of menstrual fluid, by presence of the ovum in a condition of hydatidiform degeneration, or otherwise, and sensations like those due to motions of a child are present, the cause of the same is probably the contraction of the uterine muscular fibres. Dr. Montgomery relates three cases in which these anomalous sensations of motion were due to presence of "hydatid pregnancy." The sensation was different from that experienced in ordinary pregnancy, and was described as a peculiar crawling or sliding sensation.

Between cases in which the sensations experienced have their origin in real motions of a live fœtus and those in which these pseudo-motions or sensations of motion are present, there is usually so wide a difference that but little difficulty is experienced in distinguishing them. Thus, as regards their seat, the spurious motions are often described as present too high up to be due to pregnancy; as regards their character, they are different, as has been already shown. But the most important means of distinguishing between the two things lies in a careful examination of the accompanying symptoms, and their relation one to the other, especially in regard to the time of their appearance. Thus the pseudo-motions may be felt at a time too early for true pregnancy to have occasioned them, or, on the other hand, occurring for the first time late in a supposed pregnancy, the other conditions which should by that time have been noticed are entirely absent.

The diagnosis of the presence or of the absence of pregnancy should never be made to rest on the presence or absence of the sensations now under consideration, or very serious errors may be made. The onus of deciding for or against pregnancy on this ground alone should never be accepted by the attendant; an examination of the abdomen and of the vagina, together with a careful comparison of the results of these examinations with the results afforded by the rational symptoms, can alone furnish us with the means of solving the problem. It does not follow, because a woman has "quickened," that she is with child; nor is it to be inferred, because there have been no quickening and no motion of the fœtus, that therefore the woman is certainly not pregnant.

The sensations of motion within the abdomen felt by the observer, and which have a very different diagnostic value from those which have been here alluded to, will be considered under the head " Examination of the Abdomen."

CHAPTER IX.

NAUSEA AND VOMITING.

Nausea and Vomiting as Symptoms of Pregnancy—Presence of these Symptoms
in Diseases of the Uterus.

ALTHOUGH the presence of nausea and vomiting is by no means
necessarily connected with any altered condition of the generative
organs, yet it is so frequently observed in connection with such
alterations as to render necessary some observations on the diag-
nostic importance of the symptoms in question. The presence of
nausea and vomiting is one of the most commonly observed signs
of *pregnancy ;* its relation to pregnancy will in the first place be
considered.

The nausea and vomiting which occur in pregnant women are
usually observed during the early part of the day, while the patient
is moving about for the first time, often while she is dressing ;
hence the term " morning sickness." But it may be observed at
other times of the day, and not at all in the morning. It is often
a slight feeling of nausea only : very frequently it happens that
the patient retches once or twice, brings up a little mucus, and
there is an end of it for that day. In some cases it vexes and
harasses the patient during the greater part of one day, leaving
her free for the next day or two. It presents, in fact, infinite
variety in different persons. It may begin immediately after con-
ception, but more usually is first noticed a week or two later than
this. It is more generally, perhaps, than not, limited to the first
half of pregnancy. Some patients pass through the whole period
of gestation without once experiencing sickness. In a few instances
the sickness is so constant, so incessant, that life is actually en-
dangered. Such cases occasion great anxiety to the attendant
and her friends, and in some cases it becomes necessary to induce
premature labor.

As signs of pregnancy, sickness and nausea are probable ones
only, and are generally only of service in directing attention to
the possibility of pregnancy. In some cases, however, patients
are able to tell with certainty that they are pregnant, from ex-

periencing these sensations, in association with others which they have felt on former occasions when pregnant.

Sickness and vomiting are not rarely produced by *disorders of the generative system* when there is no pregnancy.*

The facts which have come under my own observation have induced me to conclude that in very many of such cases the sickness is indicative of, or at all events coincident with, contraction of the uterine fibres; which contraction may be produced in consequence of impediment to escape of menstrual fluid, &c. Thus sickness, and sometimes of an exceedingly distressing character, is observed in many cases of dysmenorrhœa where the discharge is in any way impeded (see " Pain during Menstruation "), and it is observed, in fact, more or less in all cases where the uterine cavity is distended and in process of enlargement. It is interesting, in connection with the question here raised, to learn from Dr. McClintock that he has observed sickness of stomach to be a symptom occasionally attendant on polypus of the uterus.†

Sickness and vomiting are observed also in cases where the uterus itself is engorged, or is affected with chronic inflammation, and in cases where there are no reasons for believing that the cause which has just been alluded to is in operation.

It is almost superfluous to remark that, taken alone, these symptoms are almost valueless as diagnostic of altered conditions of the generative organs.

* See an interesting paper by Dr. Tilt, " On the Treatment of Sickness in Uterine Inflammation and Diseases of Menstruation." Obstet. Trans., vol. iii.
† Clinical Memoirs on Diseases of Women, 1863, p. 162.

SECTION II.

DATA OBTAINABLE BY PHYSICAL EXAMINATION.

THE data for diagnosis now to be considered are only to be acquired by special methods of examination of the patient. We are enabled, by means of the physical examination in question, to give great precision to our diagnosis, and in certain cases it is quite indispensable to the making a diagnosis at all.

In no system of organs is physical examination capable of being carried to a greater extent than in the case of the female generative organs; by the aid of the speculum, the sound, and the stethoscope, we are enabled to pursue our investigations with an extreme degree of ease, and the variety of information obtainable by all the methods of investigation open to us is thus considerable. It is, however, always to be borne in mind, that physical investigations into the condition of the several portions of the female generative organs are very capable of being carried to excess, and there is a temptation, in the very facility an examination offers for arriving at a diagnosis, to make use too exclusively of this method of obtaining information. And with respect to the methods of examination themselves, it is not unfrequently the case that one especial method of examination is too often used to the exclusion of others. I have known of cases, for instance, in which the examination by means of the speculum had been had recourse to solely, and in which conditions escaped recognition which would at once have been detected by an ordinary digital examination.

The subjects to be now treated of will be discussed in the following order:

Examination, by inspection and digitally, of the external generative organs, of the urethra, and its orifice; examination of the vagina, digitally and by the aid of the speculum; examination of the uterus from the vagina, digitally, by the speculum, and by the uterine sound; examination of the abdomen, by inspection, palpation, measurement, auscultation, &c.; and examination of the mammary glands. In reference to each of the parts of the body to which the examination is directed, the differential diagnosis of the various morbid conditions likely to be met with will be described.

CHAPTER I.

EXAMINATION OF THE EXTERNAL GENERATIVE ORGANS.

Method of Examination—Diagnosis of Ulcerations of the External Genitals.

Method of Examination.—Concerning the method of examination of the vulva and orifice of the urethra, there is little to be said. For ordinary purposes the position on the side answers very well ; in others, the position on the back is best.   Concerning the diagnosis of the various affections of the organs here situated there is the less room to enlarge, inasmuch as these organs admit of being accurately and closely inspected.   With certain exceptions, then, the reader is referred to the latter part of the work, where will be found an account of the affections in question, and of the appearances characteristic of each.

Here may be introduced a few remarks on the diagnosis of

ULCERATIONS OF THE EXTERNAL GENITALS.

In reference to the diagnosis between ulcerations of syphilitic, cancerous, lupoid, or other nature, it may be remarked, *in limine*, that it is safer in doubtful cases to depend rather on the deductions to be drawn from attentive consideration of the history and general symptoms of the patient, than on the appearances presented by the ulcerated surface itself, these appearances, *per se,* being likely to lead to the formation of erroneous conclusions.

Ulcerations due to *syphilis* are distinguished from those due to *lupus* by the following characters.   In the case of syphilis, although the ulcers may be like those of lupus superficially, there is an absence of induration of the cellular tissue beneath.   The coppery hue of syphilis is wanting in lupus.   The history and course of the two affections, the absence of syphilitic affections in other parts of the body, in cases where the disease of the vulva has lasted for some time at least, would be against syphilis.   Syphilitic ulcers have a predilection for the internal or mucous surface of the vulva, and especially the labia minora.   In the case of lupus of more severe form, where there is considerable destruction of the tissues of the part, there might be a possibility of confounding

it with the phagedenic form of syphilis. Here the distinction would rest on the rapid course of the syphilitic, the chronic course of the lupoid, disease; added to which the previous history of the case would throw much light on the subject.

Ulcerations due to *cancerous* disease of the vulva have the characters ordinarily possessed by cancerous ulcers elsewhere. The hard, jagged, everted borders, the considerable hardening of the tissue beneath, greater than in the case of lupus, the occasional bleeding, lancinating pain, and progressive character of the disease —these are the chief distinctive features. There is less disturbance constitutionally in the case of cancer of the vulva than in cancer of other parts, inasmuch as cancer of the vulva is usually of the epithelial variety. Syphilitic ulceration, as a rule, could hardly be confounded with cancerous; the course of the affections is essentially different; the cancerous disease is limited to one spot, and there is, as in the case of lupus, absence of syphilitic disease in other parts of the body. The diagnosis of syphilitic ulcer is not always so easy. Dr. West has observed some cases of chronic ulceration of the mucous surface of the vulva, which he believes to have been forms of tertiary syphilis, but which proved so difficult to cure as to raise the question as to their malignant nature.* The ulcers in question were on the mucous surface of the vulva, for which they exhibited a preference. From epithelial cancer, and from rodent ulcer or lupus, these ulcers require to be distinguished. In lupus, there is more induration around and in the base of the ulcer, and the orifice is often contracted; whereas, in Dr. West's cases of supposed syphilitic origin, these characters were wanting.

Simple ulcerations are usually distinguished from syphilitic ones by the absence of inflammation around the ulcers in the syphilitic cases.

Twice I have observed a patch of ulceration, the size of a shilling, on the surface of the labia, in a young woman the subject of scrofula. This form of ulceration might be termed *scrofulous ulcer of the labium.* The edges were pretty well defined, there was little inflammation around, and not much pain. On both occasions the ulcer appeared simultaneously with great constitutional disturbance, and disappeared when, after removal to the country, the patient had become in other respects better.

* On Diseases of Women, p. 651.

CHAPTER II.

EXAMINATION OF THE ORIFICE AND CANAL OF THE VAGINA.

Methods of Examination; Digital and Ocular Examination—Normal Condition of the Vaginal Canal.

OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA; THEIR DIAGNOSIS.— Diagnosis of suspected Defective Development, or of entire Absence of the Uterus, Vagina, &c.

Double Vagina—Alterations in the Direction of the Canal—Alterations of Sensibility of Ostium Vaginæ or Vagina—Hardness or Resistance of the Vaginal Wall—Vaginal Fistulæ—Alteration in the Color of Vagina due to Pregnancy.

TUMORS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ.—Cystocele; Ascites with Prolapse of Vaginal Wall; Vaginal Cyst; Menstrual Retention— Vaginal Rectocele; Entero-vaginal Hernia—Tumors connected with the Uterus—Polypus of the Vagina.

TUMORS PROJECTING INTO THE VAGINAL CANAL.—Polypus of Vagina; Cysts of Vagina; Fibrous Tumors of Vagina; Cancerous Growths—Vaginal Enterocele.

Methods of Examination.—The ordinary method of obtaining information as to the condition of the vagina is by the introduction of one or more fingers into the canal—*digital* examination. It is sometimes necessary to add to this an ocular examination of the canal, either with or without the aid of the speculum. Information as to the condition of the uterus is obtained also by the methods of examination just noticed. The consideration of the latter subject—viz., examination of the uterus from the vagina— must be taken separately, and is therefore for the present postponed.

Digital examination of the vagina is effected in the following manner. The patient lying on the left side, the forefinger of the right hand, previously well oiled, is introduced between the labia and into the vagina. For the purpose of ascertaining the condition of the parts near the lower extremity of the canal, the introduction of one finger is sufficient; but it is generally necessary to introduce the second finger also, to examine the condition of the vagina higher up: in a few cases, the introduction of all the fingers is found necessary. In effecting this operation, the left hand should be placed on the right hip of the patient. This assists in giving the operator a correct idea as to the position of

the entrance of the vagina. The finger or fingers must be introduced slowly and with care.

The examination of the *canal of the vagina* is accomplished by the finger or fingers introduced as before described. Information is thus obtained as to the size, shape, and direction of the canal, as to the state of the lining membrane, its sensibility, smoothness or roughness, and its temperature. In certain cases, the eye may be also used, in order to ascertain the presence of undue redness or other changed conditions of the mucous membrane, and a more minute examination of the canal by means of the speculum is necessary where the presence of unnatural communications between the vagina and the bladder or rectum is suspected; also in some other cases.

Normal Condition of the Vaginal Canal.—With the patient lying on the left side, the distance from the upper extremity of the vagina to the situation of the hymen, is, in round numbers, three inches, as a rule rather less. This distance, measured off on the forefinger, extends from the point of the finger to the centre of the proximal phalanx; but the measurement from the upper part of the vagina to the lowest part of the commissure of the vulva is four inches. Practically, it is necessary to bear in mind that the distance from the external surface of the body to the extremity of the vagina is one inch greater than that of the vagina itself. Normally, when the tip of the forefinger touches the highest point of the vagina, the metacarpo-phalangeal joint corresponds exactly with the entrance of the vulva. In very stout subjects the distance appears greater because of the thickness of the lips of the vulva.

In effecting an *ocular* examination of the vagina, the patient is placed in the position above described, or, as is more convenient under some circumstances, lying on her back and the knees separated. The examination by means of the speculum is also effected in either of the two positions indicated, but most easily in the latter. In searching for fistulæ in the vesico-vaginal septum, the patient is sometimes placed on the hands and knees.

DIAGNOSIS OF OBSTRUCTIONS OF THE VAGINAL ORIFICE AND VAGINA.

First of the abnormal conditions discoverable by examination, may be considered the various forms of obstruction met with at the orifice or entrance of the vagina. Obstructions situated higher up, and in the canal itself, will be next treated of.

On attempting to introduce the finger at the vaginal orifice an obstruction may be encountered. This obstruction may be due to any one of the following conditions, more particularly described in the latter part of this work :

Adhesion of the labia majora ;

Absence of the vagina (congenital) ;

Imperfect formation of vagina ;

Presence of the unruptured hymen ; or,

Stricture of the lower part of the vagina (acquired).

Adhesion of the labia majora is distinguished from absence of the vagina by the use of the probe or finger. Imperfect formation of the vagina is also readily distinguished from either of these two former conditions. Obstructions due to the hymen is distinguished from the two former by its situation, the hymen being a short distance within the vaginal canal and not on a level with the perinæal surface.

In cases where the vagina is very short, ending at or near the position of the hymen, the physical examination may reveal conditions pretty nearly resembling those present where the hymen is the obstructing agent; the finger can only be made to pass a short distance. The distinction then rests on the presence of the catamenial discharge in the latter, its absence in the former class of cases. Where there is obstruction to intercourse, but menstruation is present, it is clear that the vagina cannot be, altogether at least, absent. But there may be obstruction to intercourse from presence of a thickened, but still perforated, hymen. If the hymen were absolutely imperforate, there would be menstrual retention with its peculiar signs, in addition to other signs of obstruction. Congenital stricture of the vagina is usually situated higher up than the seat of the hymen. Congenital narrowness of the vagina would be easily and obviously distinguished from obstruction due to thickened hymen. Spasmodic action of the sphincter vaginæ may produce obstruction to the entrance of the finger, or to sexual intercourse, but this form of obstruction could hardly be confounded with that due to thickened or imperforate hymen.

The varieties observable in cases of stricture of the vagina will be described in the latter part of this work.

DIAGNOSIS OF CASES OF SUSPECTED DEFECTIVE DEVELOPMENT OR OF ENTIRE ABSENCE OF THE UTERUS, OF THE VAGINA, &c.

The distinction between cases of simple adhesion of the labia, presence of the hymen, and stricture of the vagina, have been

alluded to. We have now to consider the further diagnosis of cases where the vaginal orifice is absent, or the canal small, short, and imperfectly formed. It is occasionally necessary to determine what is the state of the internal generative organs in such cases, in reference to the advisability of recommending marriage, &c.

In the first place, it appears from a careful consideration of recorded facts, that the conditions presented by the *external* generative organs give but little clue to the condition of the internal generative organs; that is to say, that there is no constant and invariable relation between the degree of the development of the generative organs, external and internal. Thus we meet with cases recorded in which the vulva being pretty well developed, the pubes well covered with hair, the breasts not imperfectly formed, the uterus is entirely absent. And the opposite condition has been met with, viz., absence of developed external generative organs with presence of a uterus sufficiently well formed to exercise its functions. Between the two extreme cases all sorts of gradations are witnessed and have been recorded. In cases where the internal generative organs are imperfectly formed, the variations from the normal standard are numerous in kind and degree; the uterus may be double, one cornu being well developed, the other imperfectly so, or both equally well developed. In extreme but very rare cases, the uterus is entirely wanting. Kussmaul,[*] whose elaborate work embraces all at present known on the subject, states that in many of the older recorded cases of absence of uterus, the nature of the condition which was actually present is not clear, as the diagnosis rested on the absence or defective condition of the vagina; and he believes that in the more modern instances, even where the more careful and extended examination to be presently described was performed, one cornu of the uterus may still have been present, escaping recognition.

The variations in the development of the vaginal canal itself, standing as it does midway between the external and internal generative organs, are very important and interesting. It is more usually the case, that where the uterus is defectively formed, the vaginal canal is also defective in some way; but cases are on record in which the vaginal canal has been altogether absent, while the uterus has been well developed enough to fulfil its functions. It is obvious that cases of the latter description have a great prac-

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[*] Op. cit.

tical interest, for in those instances most may be done in the way of relief to the patient.

1. The indications offered by the state of the *breasts*. These offer little assistance in enabling us to determine the condition of the internal generative organs. They may be found tolerably well developed in cases where careful examination convinces us that the uterus is wanting, and the vagina absent. And as Kussmaul very pertinently observes, the mammary glands do now and then become enlarged and developed in the opposite sex. The presence of breasts tolerably large and developed would, however, inform us that the patient had arrived at the age of puberty.

2. The development of the vulva, presence of hairs on the pudendum, &c. The vulva may be apparently well formed, there may be the usual amount of prominence of the mons veneris, the parts may be well covered with hair, and, in fact, the external appearances may be such as are observed under normal circumstances; and yet the uterus and vagina may be wanting. Indeed, cases have been observed, as the one related by Dr. Ormerod and Dr. Quain, in which, with these external apparent evidences of womanhood and capability for marriage, not only was the uterus absent, but the ovaries were wanting. A "small mass, apparently of a glandular structure," found in the left wall of the narrow sac representing the vagina, was the only possible representation of the ovaries.* The patient died in an anæmic state at the age of 33, and had suffered from nasal hemorrhages, the monthly periodicity of which seemed to point to the existence of a sort of vicarious menstruation. The case is remarkable as showing very clearly how little relation subsists, necessarily, between the development of the external and internal sexual organs. I have myself met with a case in which the breasts were normal, the pudendum normal, and well covered with hairs, but there was no evidence of the existence of a uterus, and hardly a trace of a vagina.

When it is an object to ascertain by examination whether the uterus and vagina be present or not, the method to be pursued is the following: a catheter is to be introduced into the bladder, which should not be empty at the time the examination is made, and held lightly but firmly therein. One or two fingers of the left hand, well oiled, are then to be introduced as far as possible into the rectum. The catheter can now be felt by the extremity

* Transactions of the Pathological Society, vol. vii, p. 271.

of the finger in the rectum, and a means is at once afforded of judging of the nature of the tissue intervening. If the uterus be absent, the catheter can be felt by the finger high up in the pelvis, and no intervening hard substance, such as that constituted by the uterus, can be detected; but it is necessary, in order that this point may be conclusively made out, that the catheter in the bladder and the finger in the rectum should be pushed as far as possible, for if the catheter be only just made to enter the bladder, the point of the instrument is, under ordinary circumstances, readily felt by the finger in the rectum. The uterus would of course be sought for in the first instance in the middle line of the body, but if a careful examination failed to discover any hard substance in that position, it should be sought for on each side. Where the uterus is double, it is very frequently not symmetrical, the one cornu being large and well developed, the other small and imperfect; and in such a case the larger cornu lying, as it would do, rather to one side, might not at first be made out, or if made out, might be mistaken for something else (Kussmaul). This double or combined examination by the rectum and bladder is thus capable of giving important information, for although we might not be able to affirm after making such an examination that the uterus was entirely absent, we could hardly fail of detecting the presence of an enlarged and distended uterus, supposing the uterus to be so enlarged and distended. The uterine sound is, in some cases, a better instrument to introduce into the bladder than the female catheter, as it is more under command of the hand and can be bent to any required degree.

The method of examination in question also enables us to form some idea as to the condition of the parts in suspected absence of the vagina. Thus, in cases where the only external evidence of the existence of a vagina is the presence of a small blind sac which is just capable of receiving the point of the sound, or in cases where the sac is large enough to admit the little finger for an inch or two, the combined examination furnishes data of some value. If the parts intervening between the point of the instrument and the finger be very thin, this gives reason to think that there is no vaginal canal between; but this is by no means conclusive evidence of the fact. If the uterus were found very small, or absent altogether, the vagina would be more likely to be also absent. But, on the other hand, supposing the uterus were found to be present, the septum between the rectum and the catheter being apparently very thin, it would require some care to decide

as to the presence or absence of the vaginal canal in this thin septum. In some cases the uterus is pretty well formed, and becomes distended with menstrual blood, which cannot escape, because the vagina is absent at some part of its course; and the vagina may be nearly the natural size at its extreme upper and lower portions, the intermediate portion being wanting; or it may be, as is the more common case, very small below, and absent above.

DOUBLE VAGINA.

The vagina may be double, in which case two canals open side by side externally. The septum between them is usually very thin.

ALTERATIONS IN THE DIRECTION OF THE VAGINAL CANAL.

The most remarkable alteration in the direction of the canal is that which is produced by retroversion of the pregnant uterus, or by retroflexion of the organ in the non-gravid state. When either of these conditions is present, the canal of the vagina is found to pass directly upwards behind the pubes, and close to it. Dislocation of the canal to one side, together with lengthening, is found in cases of ovarian tumors, or of large fibrous tumors of the uterus, which have risen into the abdomen. And lateral dislocation, unaccompanied by lengthening of the canal, exists in cases of ovarian tumors which are still in the cavity of the pelvis. A displacement of the upper part of the vaginal canal directly backwards and upwards, is sometimes observed in consequence of anteversion of the uterus; in extreme distension of the bladder the upper part of the vagina may also be pressed backwards.

ALTERATIONS IN SENSIBILITY OF THE VAGINAL ORIFICE AND VAGINA.

Under the name *hyperæsthesia of the vulva* are included an important class of cases in which the vaginal orifice is found unusually sensitive, further particulars concerning which will be given in the latter part of this work.

Such undue sensitiveness may be also due to *inflammatory changes in the vagina or adjacent parts*. Pain and tenderness on making an examination may be due to any one of the various inflammatory affections of the ostium vaginæ. In cases of *vaginitis*, the canal is generally hot, tender, and extremely sensitive, the condition being, however, very different from that described as simple hyperæsthesia. The presence of *cancer* of the vagina is

attended with pain and tenderness on examination. In *cystitis*, especially in the acute form, the vagina is tender anteriorly. The tenderness of the urethra in urethritis may be confounded with that due to vaginitis. The most important, perhaps, of the cases in which this symptom—tenderness of the vagina—is noticed, are those in which abscess forms in the pelvis, in close proximity to the vaginal canal. In these cases of *pelvic abscess*, as they are termed, tenderness, swelling, and heat of the vagina, particularly at one side of the canal, are then observed; the tenderness is in these cases limited to one spot. Circumscribed tenderness at one part of the vaginal canal will lead us to suspect formation of an abscess even when no evidence of swelling may be obtainable. (See " Diagnosis of Tumors felt through the Vaginal Walls.")

HARDNESS OR RESISTANCE OF THE WALLS OF THE VAGINA.

A condition of the wall of the vagina, recognizable by the touch and very important in a diagnostic point of view, is *firmness*, *hardness*, and *resistance*, especially at the upper and anterior part of the canal. The vagina appears to the touch fixed, rigid, and immobile; such a condition is one of the early signs of the presence of cancer of the lower part of the uterus. The non-resistant, soft, velvety feel of the mucous membrane is wanting in such cases at the affected parts.

Cancerous disease of the vagina, is more frequently not primitive, the disease usually spreading from the uterus. When the disease has far advanced, we may find the vaginal walls very much thickened by the cancerous deposit; nodulations may be felt; and ulcerations, which, when sufficiently advanced, give rise to production of fistulous openings, are detected by the finger. The diagnosis of cancer of the vagina is intimately connected with that of cancer of the uterus, the general symptoms present in the two cases being, for the most part, identical.

VAGINAL FISTULÆ.

In cases where the existence of *fistulous communications between the vagina and the bladder, or between the vagina and rectum*, are suspected, an examination of the vaginal canal by means of the speculum is called for, in order to ascertain the existence of the unnatural communication in question, and its size and position.

The method of examination to be pursued is to place the patient on the hands and knees; the lips of the vulva are then to

be separated by the hands, and the speculum invented by Dr. Marion Sims to be introduced. By means of this instrument, the perinæum is drawn upwards, the vagina distended, and a clear view afforded of the roof of the vagina. Hilliard's speculum is so constructed as to enable the examiner to dispense with assistants. The fistulous communication may be found in the canal of the urethra—urethro-vaginal fistula—or implicating the lower part of the bladder itself; the exact position, as also the size of the opening, are open to great variation. If any difficulty be found in detecting the fistula, the proper course is to inject the bladder with a colored fluid, and to watch for its escape into the vagina. In cases where the patient is the subject of involuntary micturition, and no fistula is found between the bladder and the vagina, the possibility of the existence of a fistulous passage between the bladder and the uterine cervical canal must be considered. By injecting colored fluid into the bladder, and observing its escape from the uterus, the fact of the existence of such a communication would be established. In cases of suspected recto-vaginal fistula, a careful inspection of the septum between the vagina and the rectum should be made, the patient lying on the back, and the univalve speculum used. The fistula is mostly found to be situated near the anus, but in cases of fistula due to cancerous ulceration extending from the uterus to the rectum, or *vice versâ*, the opening is higher up.

ALTERATIONS IN THE COLOR OF THE VAGINA.

A very remarkable alteration in the color of the lining membrane of the vagina is usually observed in *women who are pregnant;* and the presence of the alteration in question is a valuable sign of gravidity.

For a knowledge of this sign of pregnancy we are indebted to Kluge and Jacquemier. The statements of these observers have received confirmation from extended observations on the subject made by Dr. Montgomery.* The shade of color presented by the vaginal mucous membrane is a *livid, dusky hue,* "altogether different from the shade of color seen in ordinary vascular congestion, even when intense, or in cases where there are varicose veins," and it is not capable of being simulated by any other kind of congestion. The alteration in color affects the mucous membrane at the inside of the nymphæ near the orifice of the urethra

* Signs and Symptoms of Pregnancy, 2d ed., p. 239.

and the clitoris, and becomes more marked as we ascend towards
the upper end of the vagina and os uteri. The alteration is thus
most evident in the latter situations. It is seen in patches, not
being uniformly diffused. Hæmorrhoids will not produce this
color of the vagina. Dr. Montgomery had not seen an instance
in which it was clearly visible within the first two months; it was
frequently not developed until the fourth or fifth, and was some-
times hardly perceptible at all; but he had not seen a single in-
stance in which its perfect condition, as observed in healthy preg-
nancy, was simulated in any other state of the system.*

The absence of the dusky, livid hue in question is thus not in-
dicative absolutely of absence of pregnancy, but its presence,
when well-marked, appears to be a sure sign of pregnancy; and
one moreover which may be available at a very early period of
gestation.

TUMORS PROJECTING AT OR BEYOND THE OSTIUM VAGINÆ.

SOFT NON-RESISTANT TUMORS.

A soft *fluctuating* tumor presenting itself at the ostium vaginæ
may be constituted by a *prolapsed bladder* (cystocele), the cervix
of the uterus being very generally in such cases prolapsed together
with the bladder. Or there may be *prolapsus of the vaginal wall
in conjunction with ascites*. In the former case there is a peculiar
difficulty in regard to micturition, for the patient is unable to
evacuate the bladder perfectly unless the swelling be first reduced
by pressure upwards. Micturition is frequent and painful, a ropy
mucus is usually present in the urine discharged from the bladder.
The catheter introduced passes downwards into the tumor, the
nature of which is thus at once made manifest. In the case of the
other, but less common, affection, the tumor is also reducible by
pressure, but returns on the patient resuming the erect posture.
Dr. West† relates a case in which a *cyst of the vagina*, the size of
an egg, projected from between the vulva, and had just the ap-
pearance presented by a prolapsed bladder. By the use of the
catheter, however, the nature of the tumor was made evident.

In cases of *retention of the catamenial fluid from imperforate
hymen*, there will be found between the labia, on examination by
the finger, a somewhat tense tumor with fluid contents, and this
tumor may project slightly from within the os vaginæ. In such a

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* Loc. cit., p. 244.   † Op. cit., p. 634.

case the absence of menstruation, and the impossibility of finding an opening into the vaginal canal, would clearly indicate the nature of the case.

A soft but *non-fluctuating* tumor projecting from the vagina at its inferior part, and reducible by pressure, is present in cases of *vaginal rectocele*. In such cases the nature of the tumor is easily made out, the scybalæ in the projecting pouch of the rectum are felt by the finger: moreover the finger can be introduced in *front* of the tumor; in cases of cystocele, on the contrary, the finger passes only *behind* the tumor.

Entero-vaginal Hernia.—Another variety of tumor is that due to hernia of the intestines—entero-vaginal hernia. This is a rare affection. Some exceedingly interesting cases of the affection are related at length in the work of the late Dr. D. D. Davis.* A case of this rare affection was more recently recorded by Mr. Prescott Hewett.† The tumor projected beyond the labia, and proceeded from the floor of the vagina. The patient was suffering from symptoms of obstruction, and had not called attention to the existence of the tumor in question. The nature of the tumor is recognized by means of the tympanitic sound elicited on percussion, by the impulse produced on coughing, usually by the possibility of reduction of the tumor by the taxis, or on the patient assuming the horizontal posture. The employment of the catheter will distinguish the case from one of cystocele.

HARD RESISTING TUMORS PROJECTING FROM THE OSTIUM VAGINÆ.

When the projecting tumor is more or less solid or firm, it is due to *inversion of the uterus, polypus of the uterus, prolapsus of the uterus*, or to *elongation and hypertrophy of the cervix uteri.* With these may be combined prolapsus of the adjacent organs, the bladder, rectum, &c. To avoid repetition, the differential diagnosis of these tumors, all of which proceed from, or are connected with, the uterus itself, will be considered in a subsequent chapter.

TUMORS PROJECTING INTO THE VAGINAL CANAL.

Fibrous and other growths attached by pedicle or otherwise to the vaginal wall and projecting into it are readily recognized by the touch.

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* Principles and Practice of Obstetric Medicine, vol. i, p. 161.
† Brit. Med. Journ., Sept. 1861, p. 254.

These growths are not common. They occur of various sizes, and of different degrees of density and hardness. The *fibrous polypus of the vagina* resembles the fibrous polypus of the uterus in its hardness and general shape; Scanzoni describes *a mucous polypus of the vagina*. Both of these tumors would be easily recognized by the finger introduced into the vagina. The fibrous polypus of the vagina may be so large as to project externally, dragging the vaginal wall down with it.

The next cases are those in which rounded projections are felt on one side of the canal.

Cysts of the Vagina are generally found at the vulva (see p. 156). These cysts are not common; they could hardly be confounded with anything else. They give rise to difficulty and pain in intercourse, or to other difficulties. They may attain the size of a pigeon's egg, or larger, and they probably consist of enlargements of the mucous follicles.

It is more difficult, however, to distinguish the next series of cases—those in which a hard *fibrous tumor of the vagina* is found growing external to the canal, but projecting partly into it—from some other conditions. Occasionally fibrous tumors, resembling the fibrous tumors of the uterus, grow in the vaginal wall, originating primarily in the uterus according to Kiwisch, but sometimes also primarily in the vaginal wall itself according to Scanzoni. They are not by any means commonly met with in practice, but it is easy to see that there might be considerable difficulty in deciding whether a particular fibrous tumor felt in the vaginal wall close to the uterus, belonged to the uterus or not.

Cancerous growths in the vaginal wall are identified by their irregular shape and outline, by the presence of pain, offensive discharge, ulceration, &c.; generally also, but not universally, by the presence of the same disease at the cervix uteri. Fungous, cauliflower-like masses are sometimes met with.

In *vaginal enterocele*, a smooth rounded tumor projects into the vagina at one side. In a case I saw recently at University College Hospital the tumor, as large as a walnut, was situated just on one side of the cervix uteri. It would be a great and serious blunder to take such an enlargement for a cyst and to operate on it as such.

CHAPTER III.

TUMORS FELT THROUGH THE VAGINAL WALLS ON DIGITAL EXAMINATION: INCLUDING PELVIC TUMORS OF VARIOUS KINDS.

Enumeration of Tumors felt through the Vaginal Walls, and Summary of the Diagnosis—Distension of the Bladder—Calculus of the Bladder—Distension of the Rectum by Fæces—Cancer of the Rectum—Retroversion and Retroflexion of the Unimpregnated Uterus—Retroversion and Retroflexion of the Gravid Uterus—Anteversion and Anteflexion of the Uterus—Fibroid Tumors growing from, and in, the posterior part of the Cervix Uteri, or from the Uterus itself—General Enlargement of the Uterus from whatever cause—Enlargement of Fallopian Tube, due to Distension by Serous or Purulent Fluid, by Blood, and Fallopian Pregnancy—Abdominal Pregnancy—Blood Tumors of the Pelvis (Peri-uterine Hæmatocele)—Ovarian Tumors; Diagnosis of the Smaller and of the Larger Ovarian Tumors from other Pelvic Tumors—Cysts of Broad Ligament (Wolffian Cysts)—Hydatid Cysts—Pelvic Cellulitis and Abscess—Osseous or other Solid Tumors growing from the Pelvic Walls.

ON introducing the finger into the vagina, it may be discovered that there is a tumor projecting into the canal from above or at either side, or that the wall of the vagina is pressed inwards by a tumor situated external to it; or it may be discovered that there is a tumor in the pelvis, near the vaginal canal, the shape, dimensions, &c., of which can be determined by a digital examination. From the vagina, we thus also examine—by the finger—the condition of the uterus, and especially of its lower segment.

It is here intended to consider the diagnosis of tumors situated in the pelvis around the vaginal canal, and whose presence is perceivable by the finger. The diagnosis of "tumors projecting from the os or cervix uteri into the vagina" is reserved for separate consideration.

The points to which it is necessary to direct attention in forming a diagnosis as to the nature of a pelvic tumor are, the degree of resistance imparted to the touch, the presence of fluctuation, the mobility or fixed character of the tumor, its size, its shape, and its relations to the uterus, the presence of inflammatory signs, tenderness, puffiness, or swollen condition of the parts with which the finger is brought into contact. All of these points are important; and when by careful observation we have obtained a good

idea of the physical conditions of the tumor, the diagnosis is not a matter of much difficulty, unless in very exceptional cases. In many cases it is necessary, in order to complete the diagnosis, to conjoin with the vaginal examination, an examination of the abdomen.

A tumor felt through the walls of the vagina on digital examination may be caused by—

Distension of the bladder.

Calculus in the bladder.

Distension of the rectum by fæces.

Cancer of the rectum.

Retroversion and retroflexion of the unimpregnated uterus.

Retroversion and retroflexion of the gravid uterus.

Anteversion and anteflexion of the uterus.

Fibroid tumors growing from, and in, the posterior part of the cervix uteri, or from the uterus itself.

General enlargement of the uterus, from whatever cause.

Enlargement of Fallopian tube, due to distension by serous or purulent fluid; or by blood, and Fallopian pregnancy.

Abdominal pregnancy.

Blood tumors of the pelvis (peri-uterine hæmatocele).

Ovarian tumors, also enlargement or congestion of the ovary.

Cysts of the broad ligament (Wolffian cysts).

Hydatid cysts.

Pelvic cellulitis and abscess.

Osseous or other solid tumors growing from pelvic walls.

SUMMARY OF THE DIAGNOSIS OF TUMORS FELT THROUGH THE VAGINAL WALLS.

Taking the os uteri as a centre, we may group the different kinds of tumors felt through the vaginal walls, accordingly as they are found, behind, in front, or at the sides of this central point.

The tumors which may be *felt equally on all sides*—that is to say, which are not felt exclusively in one or other position—are the following: Enlargement of the uterus; peri-uterine hæmatocele; pelvic cellulitis; ovarian tumors; extra uterine pregnancy; fibroid tumors. Ascitic distension of the peritoneum should perhaps be added to this list, although there is no tumor in the strict sense of the word in such cases.

The tumors which are felt exclusively *behind* the os uteri are:

distension of the rectum by fecal matters; cancer of the rectum; retroversion or retroflexion of the uterus.

The tumors which are felt usually, but not exclusively, *behind* the os uteri are: ovarian tumors in their early stage of growth; distension of the Fallopian tube by fluid of any kind; Fallopian pregnancy; Wolffian and hydatid cysts.

The tumors felt exclusively *in front* of the os uteri are: calculus in the bladder, distension of the bladder with urine, anteversion and anteflexion of the uterus.

If for the word "behind" the word "laterally" be substituted, in the foregoing summary, the account given will still be true, for those pelvic tumors which are lateral are generally also posterior to the uteri, and *vice versâ*.

This short statement may serve to indicate the more prominent characteristics of the tumors included in the foregoing list. The several conditions in question will now be considered in detail, and their diagnostic peculiarities pointed out.

DISTENSION OF THE BLADDER.

The distended bladder sometimes forms a tumor projecting downwards and backwards into the vagina; it is more particularly observed when there is prolapsus of the uterus. In such cases the bladder may be partially protruded as far as, or beyond, the vaginal outlet. In labor, the distended bladder is occasionally protruded downwards in the same direction, and is at such a time liable to be mistaken for the bladder of membranes appertaining to the ovum. A very little attention would enable us to decide as to the nature of such a tumor. Its softness, the presence of fluctuation, its position, and the fact of its disappearance on using the catheter, are characteristic enough.

PRESENCE OF A CALCULUS IN THE BLADDER.

A stone in the bladder is readily felt through the lower wall of the bladder, by the finger introduced into the vagina; and the size and shape of the calculus or calculi can also be made out by this method of examination. A tumor of this kind could hardly be mistaken for anything else; its position, its mobility, &c., would at once suggest to the observer its nature, and an examination of the interior of the bladder, by means of the catheter or sound, would substantiate the diagnosis.

DISTENSION OF THE RECTUM BY FÆCES.

In this case a tumor is felt behind and through the vagina, in the position which the rectum is known to occupy. The distension is sometimes so considerable, that the tumor whose presence is made known to us by this method of examination is very large. It is hard and irregular, and its shape is identical with that of the rectum. Such a tumor it is hardly possible to confound with anything else.

CANCER OF THE RECTUM.

This is not a very uncommon disease. There may be felt behind the vagina, in such cases, a hard, irregular, nodulated tumor, evidently belonging to the rectum, and which is the seat of pain and tenderness on pressure. The cancerous mass may, and usually does, produce stricture, and accumulation of fæces in the tube above. It is generally necessary to unload the rectum by means of enemata, in order to ascertain the exact position and relations of the cancerous tumor. The pain in defecation, the discharges of blood from the rectum, and the cachexia generally present, are the chief of the rational signs of the presence of this disease. This malignant disease may be found to have extended to the vagina itself, at its upper part. The thickening of the vaginal walls, its adhesion to the parts beneath, and its continuity with the morbid and painful enlargements around the rectum, indicate its nature. Cancer of the encephaloid variety has in some rare cases been known to grow from the recto-vaginal septum, project into the vagina, and appear as a tumor between the nymphæ. Examination of the attachments of the tumor would clearly indicate its origin, as distinguished from tumors growing from, or connected with, the cervix uteri.

RETROVERSION AND RETROFLEXION OF THE UNIMPREGNATED UTERUS.

Retroversion differs from retroflexion in this respect, that whereas, in cases of retroversion, the canal of the uterus still remains nearly straight, in retroflexion it is bent on itself. In both there is a displacement of the fundus backwards, but in retroversion this is consequent on the whole of the uterine canal assuming a transverse instead of a vertical position in the pelvis; whereas in retroflexion, the cervical part of this canal may retain pretty nearly its normal direction, the canal above this being sharply

bent backwards. Between the two extremes all gradations may
be witnessed. Moreover, the two are frequently associated; where
there is retroversion, there is usually a little retroflexion also, and
vice versâ. The tumor felt in these cases is hard, smooth, and has
the shape of the fundus of the uterus. The organ being bent
backwards in the form of a retort, there is a space or fissure be-
tween the cervix and the tumor, and this is one of the chief char-
acteristics of retroflexion. The drawing represents this state of
the uterus; in this instance the organ is also enlarged from chronic
inflammation. The other signs are—the distortion of the os, the

Fig. 5.

lower lip of which is frequently projected considerably lower than
usual, the crescentic shape of the aperture of the os, and the gen-
eral displacement of the cervix forwards. The direction of the
canal of the cervix is normal, as a rule at least, but the cervix is
nearer the os pubis than it should be. The tumor is felt to move
with the uterus, and it is usually central, but it may be a little to
one side. The fundus of the uterus is usually larger when so
ᴀetroflexed. Retroflexion is a condition most likely to be met

with in women who have had children, or who have, at all events, been impregnated, but it appears to be occasionally congenital.

The tumor may be confounded with a fibroid tumor growing from the back of the uterus (see Fig. 6), or with one attached higher up, and hanging downwards behind the uterus; either of which might resemble the fundus in smoothness and hardness. The difficulty of the diagnosis is sometimes considerable; a fibroid tumor in this position may itself draw down the fundus, and produce slight retroversion. The use of the sound, however, affords the most conclusive evidence as to the presence of retroflexion of the uterus. When retroflexion is present, the sound cannot be introduced in the regular manner, that is to say, with the concavity directed forwards; but if it be held with the concavity backwards it readily enters, and the extremity of the instrument can be felt in the centre of the tumor behind the vagina. This is of course very conclusive evidence that the tumor is constituted by the fundus of the uterus. The precautions to be taken in using the sound will be considered further on.

RETROFLEXION OR RETROVERSION OF THE GRAVID UTERUS.

The diagnosis of this condition is peculiarly important. Behind the upper part of the vagina and cervix uteri is felt a smooth, firm, symmetrically shaped, and more or less hard tumor, which may be as large as an orange or larger according to the duration of pregnancy. It occupies a median position; it is continuous with the cervix. The os uteri is found to be softer and the orifice more widely open than usual, and the cervix is nearer the os pubis than it should be; indeed the os uteri is generally tilted high up behind the pubis so as to be reached with great difficulty. The rational signs of the presence of this condition are: retention of urine, a symptom present usually in advanced cases, pain of varying degrees of intensity, the cessation of the menstrual flow, and the presence of other signs of pregnancy. There is usually some little difficulty in defecation, but the disturbance in the function of micturition is very marked, and the bladder is occasionally enormously distended with urine which the patient is unable to expel. The latter difficulty is caused by the pressure of the tumor on the neck of the bladder.

The tumor produced by a retroflexed or retroverted gravid uterus is distinguished from the same condition of the uterus in the non-gravid state by its greater size (see Figs. 4 and 5). From ovarian cystic disease in its early stage, it is distinguished by the

fact that there are signs of pregnancy in one case, not in the other; by the condition of the os uteri, soft in the one case, hard in the other, and by the comparative rapidity with which symptoms of pressure supervene in the two cases respectively. When the gravid uterus constitutes the tumor, the symptoms show themselves with greater intensity and more quickly. The use of the sound would of course clear up all doubts, but unless the case be clearly not one of pregnancy, this instrument must not be had recourse to. The position of the os uteri is generally very different in the two cases; the ovarian tumor does not effect such an amount of dislocation upwards of the os uteri as is witnessed in the other case. From extra-uterine pregnancy, in which also a tumor may be present behind the upper part of the vagina, it is to be distinguished by the continuity of the tumor with the uterus, also by the non-symmetrical shape of the tumor in extra-uterine pregnancy. From fluid or bloody distension of the Fallopian tube, and from Fallopian pregnancy, the tumor due to retroflexion of the gravid uterus is also to be distinguished by its central position, its greater firmness, the continuity of the tumor with the cervix, &c.

Another condition with which retroflexion of the gravid uterus may be confounded, is retroflexion of the unimpregnated uterus, accompanied with hypertrophy of the fundus and of the uterus, generally, and with or without development of fibrous growths in the posterior uterine wall. Retroversion of the uterus with a fibrous tumor or tumors growing in its posterior wall, suddenly occurred to a patient who came under my notice with enormous distension of the urinary bladder. Here the effect was pretty much the same as if the uterus had been enlarged from pregnancy and had become suddenly retroverted. The greater elasticity, smoothness, and regularity of a tumor constituted by the impregnated uterus would, however, be the distinguishing character of the one, as the hardness, firmness, and resistance would be the distinguishing characters of the other condition.

When retroflexion of the gravid uterus persists, abortion usually occurs about the fourth month, or earlier; but a case is related by Dr. Oldham* in which the displacement persisted during the whole term of pregnancy. In endeavoring to make out the diagnosis of a case of retroflexion, the examination by the rectum is of great value.

* Obstetrical Transactions, vol. i.

ANTEVERSION AND ANTEFLEXION OF THE UTERUS.

If a tumor be felt through the vaginal walls in front of the cervix uteri, hard, smooth, and rounded in shape, while the os uteri itself is thrown somewhat backwards, the case may prove to be one of anteversion or anteflexion. The use of the sound, with the precautions to be mentioned more particularly by and by, would give us correct information as to this point, and prevent our falling into the error of Levret, who mistook an anteverted fundus for a calculus in the bladder. Anteversion gives rise to less urgent symptoms than the other condition.

FIBROID TUMORS GROWING FROM AND IN THE POSTERIOR PART OF THE CERVIX UTERI, OR FROM THE UTERUS ITSELF.

It is sometimes a matter of difficulty to distinguish between this condition and retroflexion of the unimpregnated uterus. In both there is a tumor, hard, smooth, and resistant, felt behind the upper part of the vagina and moving with the uterus. If a fissure be felt between the tumor and the cervix, the case is probably one of flexion of the uterus. It is not a common circumstance for tumors to grow in this position, the more usual seat of fibroid tumors being higher up than the cervix. Fig. 6 represents such a condition. In cases where there is any doubt, the use of the sound generally affords conclusive data. (See "Examination by means of the Sound.") Fibroid tumors growing from the uterus higher up and hanging down into the utero-rectal pouch might be mistaken for retroflexion of the uterus, provided that the shape of the tumor resembled that of the fundus of the uterus. The mobility of the tumor, and its want of connection with the lower part of the uterus, would distinguish it from that due to fibroid tumor growing lower down. There is generally in such cases, a want of symmetry in the tumor which is sufficient of itself to distinguish it from retroflexion of the uterus.

GENERAL ENLARGEMENT OF THE UTERUS, FROM WHATEVER CAUSE.

When the cavity of the uterus is considerably distended by the presence of a fœtus, by a large polypus, or from whatever cause, a tumor may be felt behind or in front of the upper part of the vagina. In cases of pregnancy, the recognition of the presence of this tumor is of the greatest possible assistance in establishing the diagnosis.

We have now to consider the diagnosis between enlargements of the uterus from whatever cause and other conditions. The determination of the *nature* of such enlargement will form a question for subsequent consideration.

When the tumor felt behind the upper part of the vagina is caused by an enlarged uterus, as in the case of pregnancy at the third or fourth month, it is rounded, smooth, and central, there is an evident continuity between the tumor and the cervix, and, moreover, the tumor spreads out behind, to the sides and to the

Fig. 6.
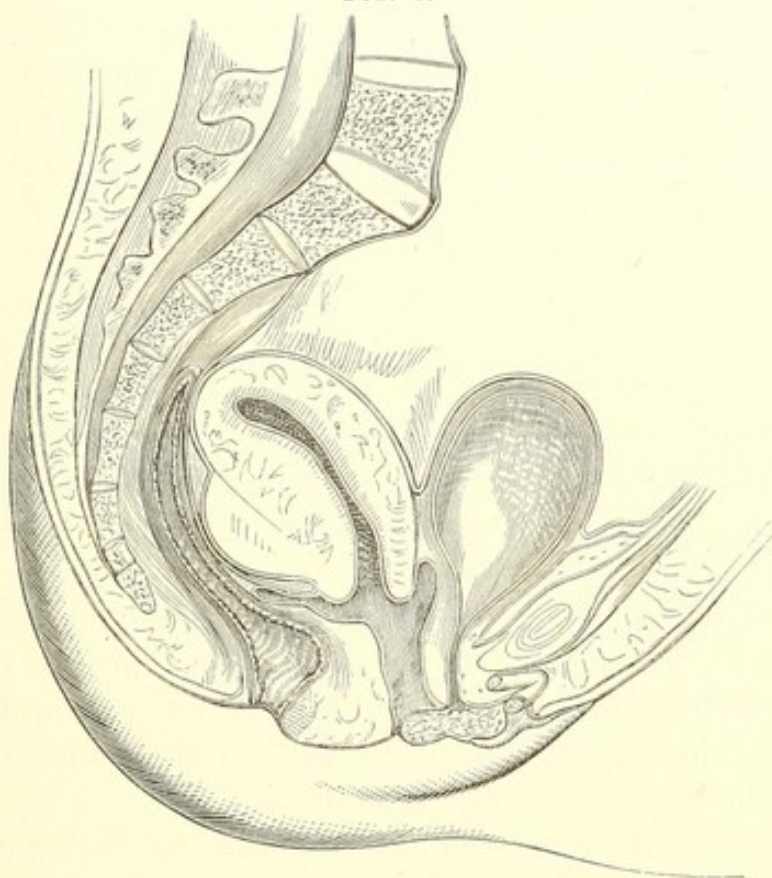
front of the cervix equally. It is not possible to detect any line of division, or any depression between the two parts; the cervix constitutes, in fact, the centre of a rounded symmetrical body, the shape of which, together with the absence of irregularities on the surface, show that it can be nothing but the uterus. If a rounded smooth tumor were felt behind the cervix, and no corresponding enlargement in front of the cervix, the only possible conclusion would be, either that the tumor felt posteriorly was not the uterus at all, or that it was the uterus bent backwards, as described above (p. 162).

The question—What is the nature of the enlargement of the

uterus? supposing such to be present—is usually to be resolved by a combined vaginal and abdominal examination. In some few cases the vaginal examination alone is sufficient. The vaginal examination of the "enlarged uterus" will be considered presently.

ENLARGEMENT OF THE FALLOPIAN TUBE

Gives rise to a rounded, somewhat pyriform elastic tumor, which may be felt through the upper vaginal wall. The Fallopian tube occasionally becomes distended, in rare instances very greatly so, by a collection within it of *serous, purulent,* or *bloody fluid:* the distension may be due to development of the ovum within the canal—*Fallopian,* or *tubal pregnancy.* The tumor constituted by a distended Fallopian tube is usually of a somewhat lengthened form, resembling in shape a portion of distended intestine. If the whole Fallopian tube be equally affected, a tumor of a semicircular, sausage-like form results. The distension may be limited to one or other end of the tube; one or both tubes may be affected.

The enlargement of the Fallopian tubes constituted by any of the conditions mentioned, is distinguished from other tumors in the neighborhood by the following characters:

The tumor, when of Fallopian nature, is rounded, movable, well-defined, separable (usually) from the uterus; situated in the retro-uterine pouch, a little to one side. Fluctuation may be evident in the tumor; it is elastic to the feel. There may or there may not be tenderness on pressure. Difficulty and pain in defecation, "pressure pains" in various parts (see p. 120), pain in walking—these are the symptoms more often observed.

The tumors with which the distension of the Fallopian tube is most likely to be confounded are—ovarian cystic tumors in their early stage of growth, Wolffian cysts, hydatid cysts, and abdominal pregnancy. There are no means of absolutely distinguishing between a chronic, serous, or hemorrhagic distension of the Fallopian tube and the affections in question: in all, the course of the affection may be slow; in all, there may be trifling inconveniences experienced by the patient: and on the mere shape and size of the tumor no absolutely reliable conclusion can be formed. When Fallopian pregnancy is present, the course of the affection is different; in almost all cases the affection ends fatally, by rupture of the tubes, and hemorrhage into the abdominal cavity, at the second or third month of gestation, rarely later. When we have

to do with a chronic enlargement of the tubes, this latter condition may be dismissed from the consideration. The diagnosis of tumors produced by distension of the Fallopian tube by fluid, from other tumors, will be again considered under " Examination of the Abdomen."

In *Fallopian pregnancy*, the patient is usually known or suspects herself to be pregnant; the tumor grows continuously and pretty quickly, the uterus simultaneously enlarges, almost to the same degree as if the ovum were within it. Menstruation is not so constantly absent as in ordinary pregnancy. The os uteri presents the conditions met with in pregnancy. Rupture of the Fallopian tube, escape of the fœtus into the abdomen, and death, are the ordinary issue of these cases, the accident generally occurring before the middle period of gestation has arrived: practically, cases of Fallopian pregnancy are for this reason rarely diagnosticated during life. The fœtus may, however, die, and undergo mummification within the tube.

As already stated in many of the cases reported as cases of tubal gestation, the condition actually present is defective development of the uterus, this organ being divided into two, and the ovum developed in one cornu of this double uterus. One cornu may be larger than the other; and when the ovum is developed in the imperfectly formed or lesser cornu, rupture almost invariably takes place; but when the ovum is developed in the more perfect cornu, pregnancy may proceed normally. Hence we may meet with cases in which the cavity of the uterus does not appear to contain an ovum, but in which a tumor containing an ovum is detected close to it, and yet the case may not be one of Fallopian pregnancy in the true sense of the word, but of pregnancy in one cornu of a bilocular uterus.

ABDOMINAL PREGNANCY.

In cases of abdominal pregnancy, the ovum may become fixed and encysted at the lower part of the pelvis behind the uterus, and between it and the rectum, and may in this position give rise to a tumor of a rounded elastic character. Symptoms, such as bearing down behind, pain and discomfort in the pelvis, show themselves earlier than in the case of Fallopian pregnancy.

The signs of extra-uterine pregnancy, particularly of abdominal pregnancy, are peculiar. There is suppression of the menses, but there are often (and this is a circumstance very likely to mislead) irregularly recurring hemorrhages, which may be considered to

be menstrual. The woman, from her sensations and condition, generally thinks herself pregnant. The patient may suffer greatly from pain during the whole course of the pregnancy : this pain was most severe in a case which fell under my own observation.

The diagnosis of abdominal pregnancy, the tumor being in the pelvis, from Fallopian pregnancy, would be difficult at an early period ; but if the pregnancy have advanced beyond the middle period, the presumption is, that the fœtus, if not in the uterus, is not in the Fallopian tube. The possible case of double uterus before mentioned, should be borne in mind. In a very extraordinary case recorded by Mr. L. R. Cooke, there was simultaneous intra-uterine and abdominal pregnancy, the pregnancy going on to full term.*

Occasionally we have to do with a tumor behind the uterus, which is constituted by the *remains* of the fœtus after abdominal pregnancy. These remains, inclosed in a sac which becomes adherent by inflammation to the adjacent peritoneal surface, and which may be recognized by the exploring finger as bones, may continue undischarged for months, or even for years. In a case related by Dr. Brandt,† a bony tumor, containing the remains of a fœtus, remained in the abdomen for fifty-four years ; the patient had borne two children naturally since she became pregnant with the fœtus which was afterwards retained. Several other cases of a like character but of less duration have been reported.

BLOOD TUMORS OF THE PELVIS; PERI-UTERINE HÆMATOCELE.

Those tumors felt through the vaginal walls, on digital examination, and constituted by the presence of blood, or masses of blood-coagulum in various stages of transformation, and of very various size, are included under the above head.

The tumor so constituted has, as a rule, the following general characteristics : its form is rounded, it is often tolerably well defined, it may be hard or soft, according to circumstances presently to be pointed out ; usually limited to one side of the pelvis—the posterior and lateral aspects more particularly—it may be less circumscribed, and in some cases the tumor is felt to surround the uterus on all sides. The vaginal wall is pressed downwards, and its canal thus encroached upon, according to the size and relations of the tumor.

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* Obstetrical Transactions, vol. v.   † Ed. Med. Journ., Sept., 1862.

The physical examination of the tumor, as effected by a vaginal digital examination, may, or may not, enable us to arrive at a diagnosis of its nature, but the physical examination, the symptoms presented by the patient, and the history of the case, all taken together, usually render the formation of a diagnosis comparatively easy.

Diagnosis of Peri-uterine Hæmatocele from other Tumors.

The history is of the most assistance in a doubtful case. The tumor most resembles that produced by pelvic cellulitis; from it it is distinguished by the suddenness of its occurrence, by the absence of that hot, puffy condition of the vagina, characteristic of

Fig. 7.*
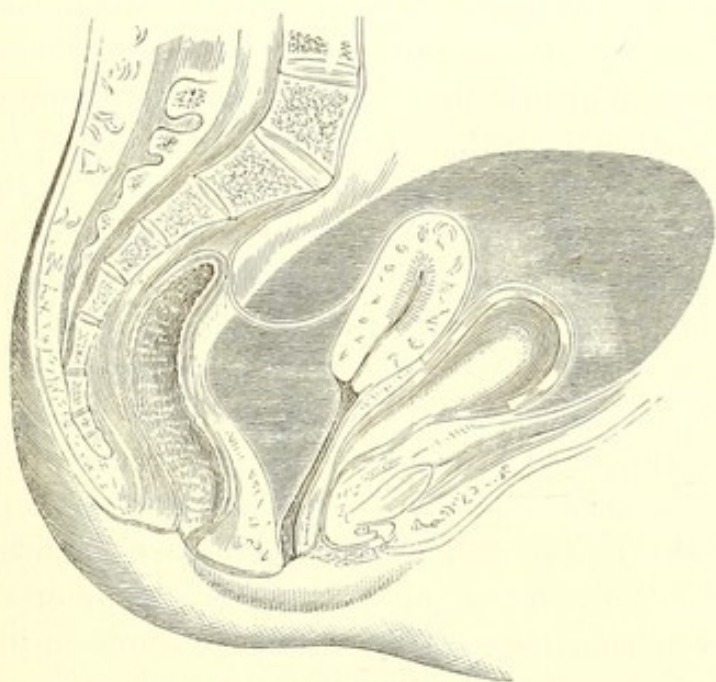
the induration stage of pelvic cellulitis, by the absence of constitutional fever, and by the absence of the thickened brawn-like condition of the vaginal wall. (Simpson.) The tenderness may be pretty nearly equal in both. In some cases, the hemorrhagic effusion undergoes after a time a sort of suppuration, and the physical characters may then be identical with those of pelvic abscess. It will thus be seen that the diagnosis of hæmatocele

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* Fig. 7 shows the position of the tumor, as felt from the vagina, in a case under my care at University College Hospital. Further illustrations will be found in the chapter on Hæmatocele.

from abscess is at first easy, but that it may be more difficult later. From fibroid tumor, peri-uterine hæmatocele is distinguished by its want of uniformity and comparative want of solidity. The diagnosis of (unruptured) extra-uterine pregnancy, from peri-uterine hæmatocele, may be difficult in some cases, especially when a hemorrhagic discharge is present. In extra-uterine pregnancy the uterus is enlarged, but enlargement, or at all events elongation of the uterus, may be also observed in hæmatocele (Duncan). If the case were one of suspected extra-uterine pregnancy, at about four months, the absence of the general symptoms of hæmatocele would be confirmatory of the suspicion. Retroversion of the gravid uterus has been confounded with peri-uterine hæmatocele; but a careful consideration of the case should prevent a repetition of such an error.

Ovarian tumors in ordinary cases could not be mistaken for hæmatocele. Dr. McClintock believes that such a mistake might be made if the ovarian cyst were in a state of inflammation, and the previous existence of the ovarian tumor were unknown.

In the majority of cases, the occurrence of the symptoms at a catamenial period, their instantaneousness, and the simultaneous appearance of a tumor rather soft or fluctuating, and of tolerably defined character, pressing on the vaginal walls—these, taken together, indicate a hemorrhage in the neighborhood of the uterus. In those cases of peri-uterine hæmatocele, however, where the development of the tumor is more insidious, there being an absence of marked symptoms at the time of the occurrence of the effusion, the diagnosis is more difficult. In these latent cases the effusion is at first slight, and the tumor slowly increases in size.

In doubtful cases, the use of the grooved needle or a fine trocar and canula has been suggested by Professor Simpson to determine the nature of the tumor. When the tumor is posterior, and we wish to ascertain the presence of fluctuation, we may with advantage make a double simultaneous examination from the rectum and the vagina. The diagnosis of cases of rupture of the fœtus-containing cyst in extra-uterine pregnancy from cases of peri-uterine hæmatocele produced by irregular menstruation, is by no means easy. In cases of rupture of the tube in Fallopian pregnancy, the diagnosis frequently rests chiefly on this, that the woman is known to be, or suspects herself to have been, pregnant. The attention of the attendant is likely to be diverted from the idea of pregnancy by the losses of blood which appear to be very frequently present

in extra-uterine pregnancy, and which are erroneously looked on as evidence of menstruation.

Lastly, it must be recollected that a hæmatocele becomes sometimes converted into an abscess: when this is the case a careful investigation of the history and physical signs alone will indicate the actual state of things present.

OVARIAN TUMORS.

Ovarian tumors are met with in the pelvis of all sizes, behind, in front of, or at the sides of the uterus. The position is for the most part determined by the size. A description of the physical character of ovarian tumors generally, their size, mode of growth, &c., will be given in a subsequent chapter; and the observer should be acquainted with the particulars in question, in order advantageously to consider the diagnosis of pelvic tumors from the vagina. The larger number of cases which come before us, and in which there is a question as to the presence of ovarian disease, are cases in which the tumor has become so large as to invade the abdomen: there is an abdominal enlargement. It thus generally happens that the tumor, when it comes under our notice, is capable of being examined both from the vagina and through the walls of the abdomen.

Diagnosis of Ovarian Tumors of Small Size.

When the ovary is enlarged, in consequence of the presence of inflammation, pain is always present, and on examination there is detected tenderness at the part of the vaginal wall corresponding to it. We are now and then able, in cases of ovaritis or neuralgia of the ovary, to detect the slightly enlarged ovary by digital examination; the ovary being sensitive to the touch, its position is then more easily ascertained. In the first stage of cystic tumor of the ovary, however, pain is usually absent, and there is generally nothing to suggest the necessity for a digital examination.

When the tumor attains to the size of a large orange, symptoms more or less troublesome may begin, however, to show themselves. If the tumor, together with the ovary, be firmly attached within the pelvis, the symptoms will become developed at an earlier period than when the tumor is pedunculated, and when the freedom of motion it possesses is consequently greater.

When an ovarian tumor is small, it usually occupies the utero-

rectal fossa, and is not quite in the middle line : growing backwards from the ovary, this is its natural position, and when examined early enough, here the tumor is found to be situated.

In endeavoring to form a diagnosis as to the nature of a tumor we suspect to be ovarian, our first object should be to exclude the uterus from the consideration. We endeavor to move the tumor away from the uterus, and if a line of separation can be distinctly made out, we have advanced a step in the diagnosis. The sound is sometimes of great service in enabling us to ascertain the existence of this line of division when not otherwise appreciable. (See "Examination of Uterus by Sound.") The tumor may, however, be adherent to the uterus ; in this case the sound is also of service, by informing us of the direction of the uterine canal, and further, as to the shape, size, and mobility of the tumor. In the early stage of an ovarian tumor it lies behind the uterus, or at the side, owing to the anatomical relations of the ovary ; and hence it could in this stage hardly happen that it should be felt in front of the uterus. If, therefore, the uterine sound were found to pass backwards, thus showing the tumor to be in *front* of the uterine cavity, it might be safely concluded that the tumor was probably not an ovarian tumor ; but this observation by no means holds good in the diagnosis of cases of large tumor.

In a few cases where the development of the ovarian tumor proceeds rapidly, and the tumor remains in the pelvis behind the uterus, the inconvenience and distress which are produced are so considerable as to create greater difficulty as regards the diagnosis; micturition and defecation are seriously interfered with, and severe pains in the pelvis or in the lower extremities are experienced.

Cases of retroflexion of the non-gravid uterus might simulate small ovarian tumors. The distinction would be, that in retroflexion the tumor is in the middle line, and that the sound, curved backwards, passes into it. In ovarian tumors, the copious hemorrhagic or mucous discharges generally observed in retroflexion are wanting.

From the tumor produced by presence of Fallopian dropsy, Fallopian pregnancy, or Wolffian cysts, small ovarian tumors might with difficulty be distinguished, the tumor being in all these cases chronic, and not giving rise, necessarily at least, to inconvenience. In cases of Fallopian pregnancy, the increased size of the uterus and its softness assists in the diagnosis.

In cases of abdominal pregnancy, when the cyst is situated low down in the pelvis, the tumor, in its roundness, elasticity, and

other physical characters, somewhat resembles that produced by an ovarian tumor. The rarity of the affection, the presence of signs of pregnancy already alluded to, are the chief points to which attention is necessarily directed in forming a diagnosis. From hydatid cysts growing in the peritoneal cavity low down, small ovarian tumors would be probably distinguished with difficulty. The hydatid cysts are usually more firmly fixed, and move with the vaginal wall; small ovarian tumors are usually movable, and single, unless indeed in cases of double ovarian disease; whereas hydatid cysts attached to the pelvis in the neighborhood of the vaginal canal are usually two or three in number.

The tumor produced by peri-uterine hæmatocele differs from ovarian tumor—first, in its shape, which is usually not globular, as is the case in ovarian tumor; secondly, in its relations, it being less easily definable and separable from the adjacent parts than ovarian tumors; thirdly, in regard to the accompanying or preceding symptoms (see p. 171); fourthly, in respect to its want of mobility as compared with ovarian tumor.

Abscesses, or plastic effusion, the result of inflammation of various kinds, might, under certain circumstances, be confounded with ovarian tumor. The history of the case should, under these circumstances, be carefully looked into, when its real nature will become at once apparent. Lastly must be mentioned the possible case of two tumors being found in the pelvis. It occasionally happens that pregnancy and ovarian disease are observed simultaneously.

Diagnosis of Ovarian Tumors of Larger Size.

What has been said hitherto applies only to the diagnosis of tumors suspected to be of ovarian origin, felt through the vaginal walls, which are of inconsiderable size, from that of a walnut to that of an orange, for instance. We have now to consider those cases which are, clinically speaking, more common, and in which the tumor felt by digital examination from the vagina is much larger than this—in which, indeed, it is found so large as to more or less completely fill the pelvis. There may be present a very large ovarian tumor, and yet comparatively little direct evidence of its presence may be obtained by digital vaginal examination alone; and for this reason, that the tumor may have escaped altogether from the pelvis, dragging up with it the ovary, and part of the broad ligament, to become a tumor nearly completely

abdominal. We have now, however, to deal with those cases in which the ovarian tumor is still wholly or in part in the cavity of the pelvis, and to point out the diagnosis of the tumor from others with which it may be confounded.

When the tumor is small, it may be impossible to obtain much information from an abdominal examination; but in the cases we are now about to consider, the tumor is so large that information is always to be derived from abdominal examination, and the diagnosis is arrived at by comparing the results obtained by each method. A large tumor of ovarian nature occupying the pelvis necessarily exercises an influence on the surrounding organs. Thus the uterus is pushed to one side, or dislocated in various directions; it may be pushed downwards or forwards by the tumor, or it may be stretched and extended, so that the cavity is materially lengthened.

The most important condition from which ovarian tumor is to be separated, is enlargement or tumor of the uterus; this distinction is not unfrequently attended with some degree of difficulty. The first point to be made out is the position of the cervix uteri, and this being ascertained, it is in most cases easy to decide whether the tumor present be constituted by the enlarged uterus or by a tumor separate and distinct from this organ. The most reliable distinction between an enlarged uterus and an ovarian tumor is the fact that in the former case the cervix uteri is in the median line, and an equal portion of the tumor is on each side of it, whereas in the other case the cervix uteri is on one side, out of the middle line, and the mass of the tumor lies to one or other side of this part of the uterus. Even this is likely, however, to mislead. When the uterus is considerably enlarged (by pregnancy, e.g.), the cervix may be high up, and difficult to reach in either case; but when a large ovarian tumor is present, it is usually thrust out of the middle line of the body. In the case of pregnancy far advanced, the vaginal portion of the cervix would be altered also in other ways still more characteristic, as will be described in the proper place. It may happen, however, that enlargement of the uterus from pregnancy and ovarian tumor coexist in the same patient; in such a case the diagnosis would be cleared up by circumstances subsequently observed.

A good deal of variation in the relations of the tumor in the case of ovarian disease is connected with the structure of the tumor itself. If the tumor become pedunculated at an early period, it soon becomes abdominal, and there is less evidence of its

presence afforded by a vaginal examination; but if it be sessile, this change does not so readily take place, and the tumor may be moulded, so to speak, below to the cavity of the pelvis, while it may at the same time spread upwards above into the abdomen.

When the ovarian tumor is large, or, at all events, when a considerable portion of such tumor occupies the pelvis, it may be confounded with retroversion of the gravid uterus, as well as with enlargement of the uterus of other kinds. In retroversion of the gravid uterus, the position of the cervix uteri is most peculiar: it is thrust upwards and forwards, and the fundus uteri forms the tumor which presses downwards in the vagina. Such a position of the cervix uteri is rare when ovarian tumor is present. Cases in which pregnancy persists as far as six months with the uterus in this unusual position are very rare, but they are cases in which such a mistake is most likely to occur.

Large ovarian tumors occupying the pelvis may be confounded also with large fibrous tumor of the uterus. In hardness and resistance they may resemble each other; but, as a rule, the ovarian tumors have greater elasticity than is the case if fibrous tumors be present. Further remarks on the diagnosis of this important class of cases will be found under the heads " Examination of the Uterus by means of the Sound " and " Examination of the Abdomen."

In ascites, with great distension of the peritoneal cavity, there may be felt a tense resistant tumor at the roof of the vagina. Such a tumor, however, could hardly be mistaken for one of ovarian origin. Its greater softness and want of definition are characteristic, and the results of an abdominal examination would soon set the question at rest. The distended bladder has, in some rare cases, been mistaken for an ovarian tumor. The previous history, the results of abdominal examination, and the use of the catheter, would decide this question should it by any possibility arise.

The diagnosis of the *nature* of large ovarian tumors will be considered under the head " Abdominal Tumors."

OTHER CYSTIC GROWTHS IN THE PELVIS.

The cysts of the broad ligament (Wolffian cysts) which generally do not attain a size greater than those of an orange, may greatly exceed this in size. Their diagnosis is obscure and chiefly rests on the chronic course of the tumor. (See second part of this

work.) Presence of hydatid cysts would be expected to be observed in association with similar disease of the liver.

PELVIC CELLULITIS AND ABSCESS.

The pathology and symptoms of this affection will be described in the later part of this work. The chief diagnostic points may be here enumerated. The fixed pain in the region of the broad ligament on one side; the tenderness on pressure above Poupart's ligament over the brim of the pelvis—a sign rarely absent; the tenderness on vaginal examination; the flexion of the thigh on the trunk on the affected side; the general disturbance, manifested

FIG. 8.*
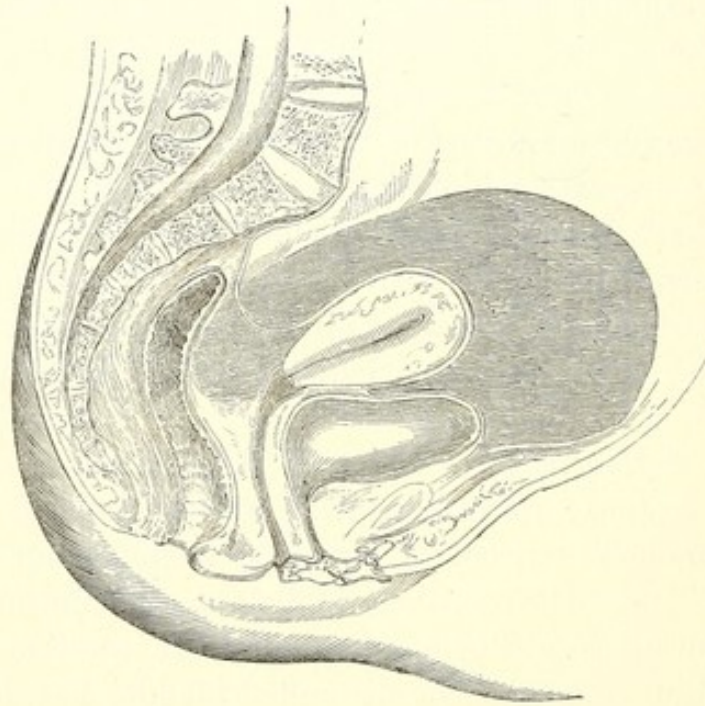
in feverishness, inappetency, hectic, frequent pulse, prostration, gastric disturbance, &c., the occurrence of rigors, or a feeling of coldness at the onset of the affection; the pressure signs: these are the most characteristic indications.

The vaginal examination is of great importance. The tumor perceived by the finger is generally hard, identified as it were with the pelvic wall, often inseparable from the uterus, situated to one side or in front of the uterus, or partly behind it. It is reached

* Fig. 8 represents the contour of the hard rounded tumor as felt from the vagina. Fig. 9 (on p. 179) represents the contour as supposed to be viewed from the front. These outlines illustrate a case lately in University College Hospital under my care.

with some little difficulty when the effusion occupies the brim of the pelvis, but even then a careful examination will enable the observer to define its lower border.   An abdominal examination will render evident its outline superiorly.

In the first stage the tumor is hard—when liquefaction has occurred fluctuation may be evident.

Diagnosis of Pelvic Cellulitis and Abscess from other Pelvic Tumors.

There are some affections with which pelvic abscess may be confounded,—peri-uterine hæmatocele, extra-uterine pregnancy, ovarian tumors of rapid growth (as in a case referred to by König), or which have become the seat of inflammation (McClintock).   The

Fig. 9.
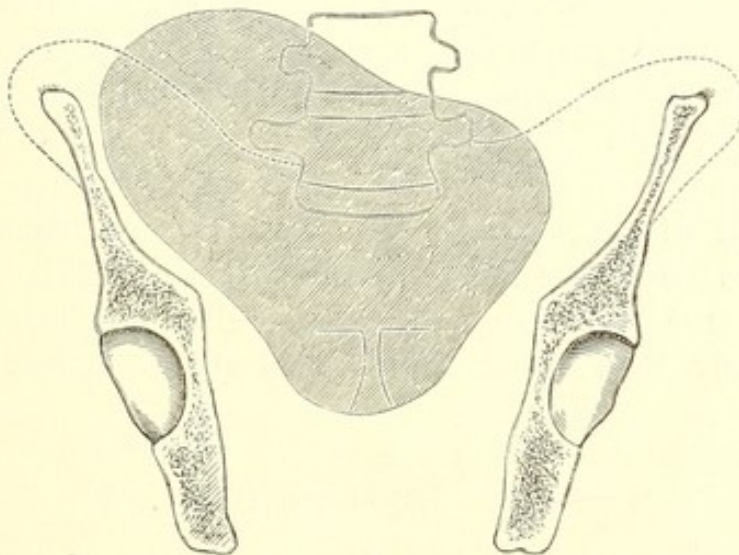
history of the case is exceedingly important in reference to the diagnosis.   Chronic cases of peri-uterine hæmatocele, where the tumor undergoes a process of liquefaction, offer, so far as the physical characters are concerned, most resemblance to cases of pelvic abscess.   Careful scrutiny of the facts relating to the development of the tumor, of the attendant symptoms, and the result of abdominal examination (as described further on), will afford means for deciding the question.

OSSEOUS OR OTHER SOLID TUMORS GROWING FROM THE PELVIC WALLS.

There are a few cases on record, in which osseous tumors,—exostoses—have been found growing from the walls of the pelvis, and forming masses of various sizes and shapes.   The diagnosis

of the nature of such a tumor would not probably be attended with great difficulty. Its growth is slow, it is necessarily hard and firm, and it is immovable. There is a condition, also rare, which might be mistaken for it, viz., projection of the body of the lowest lumbar vertebra forwards into the cavity of the pelvis, due to disease of the lumbo-sacral articulation; this disease being the result of injury, or simply constitutional.*

Cancerous growths from the inner surface of the ilium have been noticed. Kiwisch states that he saw a patient in whom a mass of this kind, of the size of a bead, in its shape and position resembled an ovarian tumor. Hard fibrous tumors are now and then witnessed growing from the sacro-iliac symphysis into the pelvic cavity.† Denman relates a case in which an excrescence of a firm fatty substance projected from one side of the upper part of the sacrum, and was so large as nearly to fill the pelvic brim. In Dr. D. D. Davis's work ‡ are related two very remarkable cases, in which large fibrous tumors were found growing from the floor of the pelvis, and occupying this part of the pelvis so completely as to interfere with delivery.

The diagnosis of these tumors growing from the pelvic walls from tumors of the viscera might present some difficulty. The object would be to determine the point at which the tumor grew, and, unless the tumor were of considerable size, this would be comparatively easy. Cases of the kind above alluded to are extremely rare.

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* See Dr. Barnes's exhaustive essay on Spondylolisthesis in Obstet. Trans., vol. vi.

† Kiwisch. Klin. Vortr. Bd. ii, edited by Scanzoni, p. 326.

‡ Principles and Practice of Obstetric Medicine, vol. i, p. 142.

CHAPTER IV.

CONDITION OF THE UTERUS AS ASCERTAINED BY DIGITAL EXAMINATION.

Preliminary Remarks; Position of the Patient—Position of the Uterus as a whole; unusually low and unusually high Position of the Organ as Diagnostic of certain Conditions—Lateral Displacements of the Uterus; Causes—Mobility of the Uterus; how altered in Cases of Cancer, or by Presence of Tumors.

Enlargement of the Uterus; various Causes; their Diagnosis—Pregnancy not advanced beyond Four Months—Pregnancy of upwards of Four Months' Duration; " Ballottement "—Mole Pregnancy—Missed Labor—Enlargement due to Sanguineous Distension of Uterus—Dropsy of the Uterus—Physometra—Tubercle of the Uterus—Fibrous Tumor and Fibrous Polypus of the Uterus—Cancer of the Fundus Uteri—Chronic Enlargement or Hypertrophy of the Uterus; its various Causes.

THE present chapter will be devoted to the consideration of the diagnostic significance of certain altered conditions of the *uterus as a whole*, ascertained by a digital examination of the organ from the vagina. The results of digital examination of the *os uteri* will be considered in the succeeding chapter. In subsequent chapters the conditions of the uterus appreciable by other methods of examination will be pointed out. In reference to the diagnosis of the cause of enlargements of the uterus, further remarks will be found under the head " Examination of the Abdomen."

To practise digital examination of the uterus from the vagina, the patient is usually placed on the side. It is sometimes necessary in cases of suspected pregnancy, *e. g.*, to examine the patient in the standing position, in order to detect more readily increase in the size and weight of the uterus, the presence of ballottement, &c. In the case of unmarried women, with an unruptured hymen, digital examination of the uterus should be performed with care. The cases are very few in which obstruction to digital examination of the uterus due to this cause is present. The finger may generally be introduced a sufficient distance to reach the os uteri, by exercising gentle and continuous pressure, if this mode of examination be considered absolutely necessary: distension thus effected is not permanent.

THE POSITION OF THE UTERUS AS A WHOLE.

The Uterus may be too low down in the Cavity of the Pelvis.—
Normally, the length of the forefinger represents the distance of
the os uteri from the vaginal outlet, that is to say, if the patient
under examination be lying on the side or back. If the patient
be examined in the standing position, the uterus falls lower, and
will be reached more easily by the exploring finger. When, how-
ever, the uterus is lower than usual, this distance is diminished.
Prolapsus is constituted by this descent of the uterus.

Fig. 10.
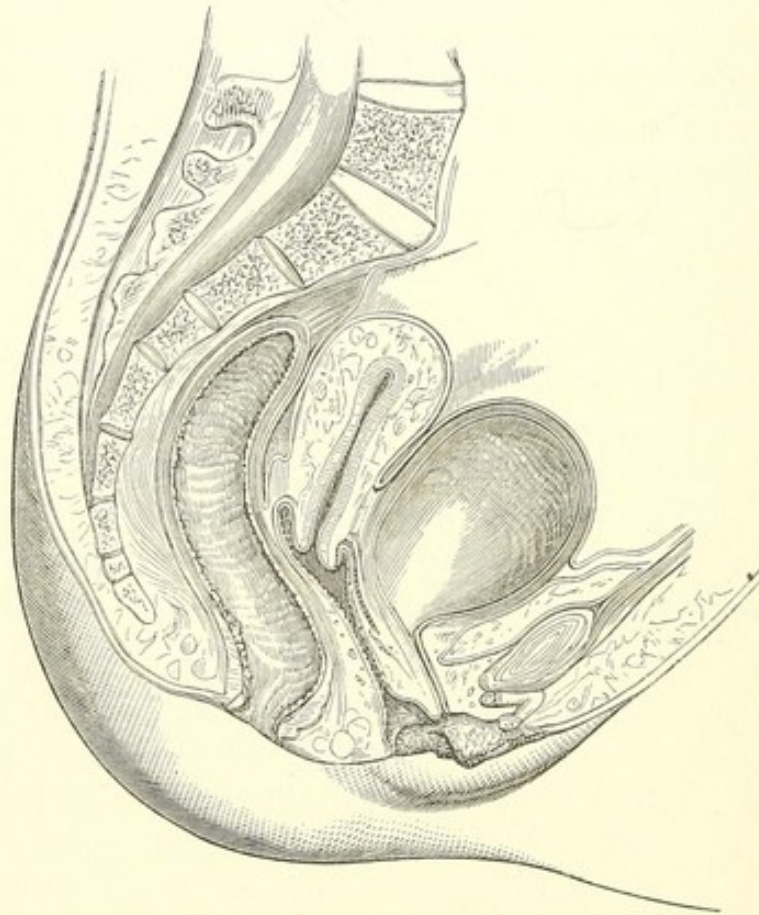
The annexed drawing exhibits what I believe to be the normal
position of the uterus with the patient lying on the side in the
ordinary position for examination, the uterus being supposed to
be that of a woman who has had children. The direction of the
canal of the uterus of course varies in different individuals. Tested
by the repeated use of the uterine sound, the most ordinary po-
sition is that here indicated. The drawing, a little altered in ac-
cordance with this view of the matter, in other respects closely
follows a good delineation given by Kohlrausch. The measure-

ments of the pelvis, the concavity of the sacrum, &c., are very carefully reduced from a plan which I have been at considerable pains to render exact. The fundus of the uterus inclines more backwards (as here represented) in women who have had children than in virgins.

The several conditions which may cause an unusually low position of the uterus, and therefore of the os uteri, in the vagina, are the following:

Early Pregnancy.—During the first three months of pregnancy, the effect of the progressive enlargement of the uterus is to give the organ an apparently lower position in the pelvis than usual; thus, in a case in which the menses have been absent two or three months, and the texture of the cervix itself is softer than usual, the fact that the uterus is lower than usual would tend to strengthen the suspicion of pregnancy. This fact is the more important as after the third month of pregnancy the uterus is higher than usual in the pelvis. In *retroversion or retroflexion of the uterus*, also, the uterus as a whole is often lower down than usual. *Chronic inflammatory enlargement, hypertrophy of the uterus*, enlargement due to *cancer of the uterus*, or any circumstance capable of increasing the bulk of the organ, gives the uterus a lower position than ordinary. Many of the cases of prolapsus (so-called) are really cases of this kind. The diagnosis of these causes of enlargement, one from the other, will be considered presently. *Fibrous tumors of the uterus*, when small, cause a descent of the organ. In cases of large fibrous tumors of the uterus, the effect is usually precisely the reverse. *Ovarian tumors*, when small, and especially when they appear to be impacted behind the uterus in the retro-uterine fossa, push down the uterus. The opposite effect results, as a rule, when these tumors are large and leave the pelvis for the abdomen. In *ascites*, the distension of the abdomen and pelvis by fluid pushes the uterus lower than usual. *Distension of the bladder*, owing to retention of urine, may have the same effect. Violent, continued, *straining efforts*, attendant on coughing, difficult defecation, and the like, may have the effect of producing prolapsus of the uterus.

Apparent, and Real, Prolapsus.—In many cases of prolapsus, the real condition present is one of hypertrophy and elongation of the cervix uteri, the fundus and body of the uterus retaining their normal position, or nearly so, in the pelvis. (See "Hypertrophy of the Uterus.")

Unusually high position of the uterus in the pelvis may be found to be due to any one of the following causes:

Pregnancy advanced beyond the Third Month.—The uterus, now become too large to remain conveniently in the pelvis, mounts up, partially or entirely, into the cavity of the abdomen. The position of the cervix is peculiar; it is tilted backwards and upwards towards the promontory of the sacrum; the later the pregnancy has advanced, the higher is the os found to be placed. *Considerable enlargement of the uterus from any other cause, fibrous or other tumors of large size, distension of the uterus by blood, serous fluid, air*, &c. In these cases also, the uterus leaves the pelvis and the cervix is reached with difficulty. The cervix may, in cases of fibrous tumor, be twisted more or less to one side, and otherwise altered. The uterus is generally, but by no means always, drawn up by *ovarian tumors of large size* out of the pelvis, and it is at the same time dislocated more or less to one side.

Lateral dislocations of the uterus indicate the presence of tumors in the immediate neighborhood, or in the substance of, the uterine walls, or enlargement of the organ alone, the effects and concomitant symptoms of which have been already incidentally mentioned. In a small number of cases, the lateral dislocation of the uterus is *congenital*, and nothing else of an abnormal character can be detected: lateral dislocation of the uterus does not therefore necessarily imply presence of a tumor in the immediate neighborhood.

MOBILITY OF THE UTERUS.

Normally, the uterus enjoys a certain degree of mobility. The vaginal part of the cervix, when pushed by the finger, is moved with ease to one or the other side, or upwards and downwards, to a limited extent, the body of the uterus evidently moving with it. The presence of this mobility is very important in the diagnosis of *cancer of the uterus*. When this disease is present, the mobility alluded to is ordinarily lost, or at all events diminished, at a comparatively early period; the cervix is not readily moved in one or the other direction. There may be loss of mobility of the uterus, also, in cases of *ovarian tumor*, and, indeed, in all cases where *tumors of considerable size occupy the pelvis*, e. g., fibrous tumors of the uterus, peri-uterine hæmatocele, &c.; but these cases are readily distinguished from cancer of the uterus, by paying attention to the following criteria. The loss of mobility in cases of uterine cancer is due chiefly to the thickening, induration, and deposition of morbid products in the cellular tissue, situated at the

junction of the cervix and the vagina.   There is often considerable
puckering and contraction of the vagina at its junction with the
cervix in cases of cancer, and by the extension of the disease, the
uterus, becomes, in advanced cases, fixed, and the vagina with it.
Loss of mobility is a sign which, though quite valueless taken by
itself, is of essential importance when observed in association with
other signs as diagnostic of cancer, as will be elsewhere fully
explained.

Excessive mobility accompanies cases of prolapsus.

ENLARGEMENT OF THE UTERUS.

The diagnosis of an enlargement of the uterus, to whatever
cause due, from other tumors in the pelvic cavity, has been already
considered (see p. 166). We have now to deal with cases in which
the uterus is clearly the organ which is enlarged, to indicate the
various causes of such enlargement, and the means by which cases
of this kind are to be discriminated one from the other.

In determining the nature of an enlargement of the uterus, the
results of the vaginal examination require to be checked by, and
compared with, the results obtainable by an examination of the
abdomen.   The differential diagnosis of the causes of the enlarge-
ment of the uterus, will be also, and more fully, considered under
the head, "Examination of the Abdomen."   In this place will be
pointed out the means of arriving at a diagnosis which the vaginal
examination affords.

PREGNANCY.—The recognition of the presence of enlargement
of the uterus is of the utmost importance as a sign, and one of the
most reliable, of the existence of pregnancy. We find that the
difficulties which practically present themselves in connection with
this subject are of two kinds. In some cases of pregnancy, it is
not easy to establish the presence of a uterine tumor by a vaginal
examination, when such undoubtedly exists; in others, a uterine
tumor being present, the difficulty is to associate it with pregnancy.

In normal pregnancy, the increase in the size of the uterus is
not at first considerable, nor easily appreciated. The organ re-
mains in the pelvis for about the first three months, and it is only
towards the end of that time that, by a digital examination from
the vagina, this increase in size can be substantiated. It may be
easy to follow the growth of the uterus in a given case, when ex-
aminations are made from time to time, and opportunity for com-
parison is thus afforded, but it is not so easy to pronounce upon

the actual state of matters on the results afforded by a single examination. The increase in the size of the uterus, such as is due to pregnancy at a later period, is however more obvious, and it is then possible, also, to correct the results of a vaginal examination by the information derived from an abdominal examination.

Evidence of the enlargement of the uterus due to pregnancy is to be sought in the space between the cervix uteri and the pubes, *i.e.*, through the roof of the vagina. At the middle of pregnancy —during the fifth month—a rounded, smooth, tense, resistant tumor is here encountered by the finger, and this tumor shades off insensibly into the cervix uteri, there being no separation between them. It has been already remarked that there is sometimes a

FIG. 11.*
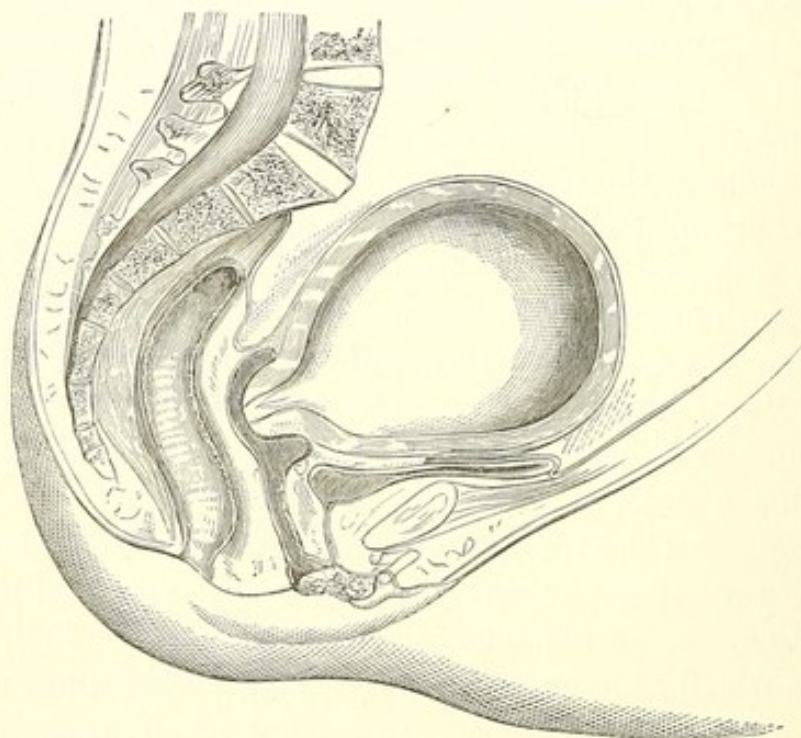
difficulty in recognizing this tumor when it is present; Gooch expressed the opinion that "the young practitioner finds more difficulty in satisfying himself about this symptom than about any other which is detected by touch;" and the statement is undoubtedly true. The difficulty sometimes arises, apparently, from the fact that the bladder, somewhat distended with urine, intervenes; at other times, from the tense elastic condition of the walls of the vagina and adjacent structures, interfering with the recog-

* Fig. 11 represents the position and relations of the uterus at the fifth to the sixth month.

nition of the tumor. If the supposed pregnancy have gone so far as the fifth month, the difficulty is almost always capable of removal by placing the other hand above the pubes—by, in fact, employing conjointly the abdominal and the vaginal examination. Before the fourth month, however, the difficulty of detecting the enlargement is greater, and there is less possibility of correcting an error by having recourse to another method of examination.

During the early months of pregnancy the uterine tumor is harder, firmer, and more resistant than it is subsequently, and the enlargement is not so easily got at, so to speak, from the vagina, owing to the interposed, and at first not materially altered, vaginal portion of the cervix uteri.

From chronic enlargement of the uterus, early pregnancy is distinguished by the fact that in pregnancy the menses are (usually) absent, that the os is soft, whereas in chronic enlargement or hypertrophy of the uterus, the lips of the os are unchanged in this respect; further, by the progress of the case, in the one the enlargement remaining pretty much in statu quo, in the other the enlargement constantly progressing. To this statement exception is to be made in those rare cases when the fœtus dies and remains in the uterus for some considerable time afterwards. The diagnosis of enlargement of the uterus due to fibroid tumor or polypus uteri from early pregnancy, rests on nearly the same grounds; moreover, these fibrous growths generally give rise to hemorrhage, or to more or less profuse menstruation. But a case may come before us in which it is a question whether a particular hemorrhage be due to abortion, to fibrous tumor, or to polypus of the uterus, and the examination is to be the means of deciding the point. The state of the uterus may be identical in the three supposed cases—it is enlarged and fuller than usual. The difference which exists is in the state of the os uteri: in abortion it is large, soft, and open, whereas in fibroid tumor occasioning hemorrhage, the aperture is smaller, and the os is not soft as is the case in pregnancy. In cases of threatened abortion the os may, however, be found small. In polypus uteri the os may be open as in abortion, but the softness of pregnancy is not present. All these statements must be received subject to certain qualifications, elsewhere to be mentioned, in reference to the condition of the os during the early months of pregnancy. Cancer confined to the body of the uterus alone, which is a rare disease, could not well be mistaken for early pregnancy; the discharge, hemorrhages, pain, &c., would put pregnancy out of the question.

The possibility of one of the conditions alluded to coexisting *with* early pregnancy must not be forgotten. In such cases much more difficulty would be encountered in making a complete diagnosis.

In cases of extra-uterine pregnancy, the uterus is enlarged and undergoes the same kind of changes, though not to the same degree, as in normal pregnancy.

After the fourth month of pregnancy the enlarged uterus is to be felt more distinctly between the cervix and the os pubis. The tumor which it here forms is tolerably firm, unless under exceptional circumstances, and it is reached with a variable degree of ease. It gives an obscure sense of fluctuation, and "ballottement" is perceivable. This, as one of the most reliable of the signs of pregnancy, requires particular attention in this place. The position of the patient which is most favorable for the purpose of ascertaining the existence of ballottement, is the erect posture. The rectum and bladder having been thoroughly evacuated, the finger is pressed upwards, resolutely but slowly, against the uterine tumor, and it is then very suddenly made to retreat for the space of half an inch or so, and there retained. The following instant the point of the finger is conscious of a slight tap, and this is produced by the fœtus, at first pushed upwards, falling suddenly by the force of gravity on the lower part of the uterine cavity, at the point with which the finger is in contact. The sensation communicated is very peculiar and characteristic.

There is another kind of ballottement which is performed through the abdominal walls, and which will be described further on.

In forming a conclusion from the presence of ballottement, we must bear in mind, that in very rare instances, by depending too exclusively upon it, we may be led into error. Thus cases are related by Depaul and Cazeaux in which the fundus of the uterus, enlarged and tilted forwards, was felt through the walls of the bladder, and communicated a sensation like that of a fœtus within the uterus. The presence of a stone in the bladder might equally give rise to the sensation.

On the other hand we cannot affirm in cases where ballottement is not perceptible, that the patient is not pregnant. "This difficulty may arise in some cases, from the fœtus being unusually small, or from the cervix being unusually long; and in some instances I have been satisfied it arose from the uterus lying too much beyond the reach of the finger at the time of examination,

the success of which may also be defeated by the presence of the placenta low in the cervix, or over the os uteri, and of course interposed between the finger and the child, which we are thus prevented from feeling." (Montgomery.*)

It may not be possible in all cases to obtain the evidence which ballottement affords, even when pregnancy exists, and when it is sought at the most appropriate period; a want of dexterity on the part of the observer may, of course, render the test useless. There are some circumstances which render ballottement impossible, or at least more difficult to obtain than usual. One of these—the implantation of the placenta at the cervix uteri or over the adjacent anterior part of the uterus, has been mentioned. Another is, absence, more or less complete, of fluid in the amnionic bag, for the presence of fluid is essential to the development of the sign in question: another circumstance is mal-position of the fœtus. Ballottement enables us to distinguish pregnancy from that distension of the uterus which is present in cases of hydatidiform degeneration of the ovum; also from collections of serous or of sanguineous fluid in the uterus. In either of the cases in question the uterus may be enlarged and distended so as to simulate pregnancy, the vaginal portion of the cervix may be reduced in length as in advanced pregnancy, the menses absent, and the increase in the size of the abdomen may also favor the same idea. The existence of pregnancy, indicated by ballottement, would of necessity be corroborated by the presence of other local and general signs of this condition. The softness of the os, the shortening of the vaginal portion of the cervix, the more posterior position of the cervix, the presence of an abdominal tumor, changes in the breasts, &c., &c. Respecting the period of pregnancy at which ballottement is perceivable, there is a variation. It is best perceived between the fifth and seventh months: as Gooch remarks, "earlier the fœtus is too light to be felt, and later it is often too closely packed." It is, however, from the fifth to the seventh months that this sign of pregnancy is most useful; at a later period, other signs are available. It may, in favorable cases, be felt as early as the fourth month.

The diagnosis of pregnancy thus far advanced, from fibrous tumors or fibrous polypi enlarging the uterus, rests on the greater hardness and firmness of the tumor in the latter, the absence of softness at the os uteri, the slow growth and long-continued pres-

* Op. cit., p. 200.

ence of the tumor, the presence of hemorrhages or still continuing menstruation. In cases of large polypus of the uterus distending the cavity, there are especially remarked the occurrence of hemorrhages, copious discharge, and general and local disturbance. In most cases the os would be open to a certain degree, and although it might be somewhat soft, the hard tumor projecting from within would be at once recognized as a polypus. The os is not, however, always open in this manner in cases of polypus.

Although fibrous tumors of the uterus, equally with polypus growing within the cavity, usually prevent the occurrence of pregnancy, or at least cut it short at an early period, the coexistence of pregnancy with either of these conditions is now and then observed: these complicated cases present, as might be expected, peculiar symptoms, and require careful examination and attention for their recognition.

Mole Pregnancy.—The most important of the conditions comprehended under the above title is that known as the hydatidiform (see p. 90). The symptoms are at first those of pregnancy, but no movements of the fœtus are felt at the proper time for their appearance; the breasts do not pass through the regular series of changes, and yet the uterus continues to enlarge. The enlargement progresses more, often very much more, quickly than is the case in normal pregnancy. On examining from the vagina the uterus is found enlarged as in pregnancy, and the alterations met with in the vaginal portion may be pretty nearly identical with those peculiar to this condition, but the uterus is harder than is the case in normal pregnancy. It is, as before remarked, larger than it should be, considering the time the catamenia have disappeared. If the condition in question have existed for some months, we are generally informed that hemorrhages have been occasionally observed, that there has been an occasional discharge of a watery fluid from the vagina. It is not possible to detect ballottement as in regular pregnancy. The os uteri may or may not be open sufficiently to allow the observer to detect the presence of some of the hydatidiform cysts, in the cavity. The physical condition of the uterus, however, as ascertained by vaginal examination, may be such that it is impossible to distinguish it from normal pregnancy; even the fact that ballottement is absent does not positively assure us that there is not a living fœtus within the uterus, as already remarked; and the diagnosis must then be guided by the result of abdominal examination, by a consideration

of the rational symptoms, and by the history of the case. (See "Examination of Abdomen.")

The hydatidiform or vesicular mole is not the only one which may be present, but it is the only one which is associated with considerable enlargement of the uterus.

True hydatids of the uterus are extremely rare. "Rokitansky's often quoted case," says Dr. Farre, " appears to be the only certain instance of acephalocysts in the uterine cavity which pathologists in the present day are able to adduce."*

Missed Labor.—Under this term have been classed certain very rare and extraordinary cases in which, pregnancy having advanced nearly to its completion, the fœtus has perished, and has been retained in the uterus for a variable time. In such a case the symptoms would be necessarily very unusual and peculiar; first apparently, normal pregnancy, absence of delivery; then, cessation of all signs of pregnancy, the abdominal and uterine enlargement still continuing.

Enlargement due to Sanguineous Distension of Uterus (Hæmatometra).—Cases in which the uterus is largely distended with blood come before us very rarely. In most of the cases of this kind, the distension is due to retention of the menstrual fluid, which is unable to escape owing to some abnormal condition of the canal of outlet. Where menstruation has never occurred, this retention is mostly due to imperforate condition of the hymen. More rarely, the canal of the vagina being found patent, the retention is due to congenital closure of the os uteri, also in patients who have never menstruated. The patient would in this case present the following combination of symptoms: Vaginal canal patent, os uteri closed, uterus enlarged, menstruation never present. In patients who have formerly menstruated, retention of menstrual fluid, and consequent enlargement of the uterus, may be due to one of the following causes: *occlusion of the os uteri*, in consequence of the *use of caustics*, or in consequence of *adhesion following on parturition;* diseases of the uterus, *e.g. polypus uteri, hypertrophy of the cervix uteri, cancer* of the inferior part of the uterus, possibly also pressure of *tumors external to the uterus.* These have in rare cases led to retention of menstrual fluid, by blocking up the outlet.

A sign common to the conditions just described, is absence of

* Loc. cit., p. 698.

the catamenia,—and care will be consequently necessary to distinguish such cases from pregnancy.

The diagnosis of that form of enlargement of the uterus due to menstrual retention from other conditions capable of giving rise to enlargement of this organ, turns partly on the history of the case, partly on the results of examination. The remarkable symptoms produced by retention of the catamenial fluid have been elsewhere described. With reference to the physical characters of the tumor in the cases now before us, it is elastic, rounded, giving evidence of fluctuation, and, if large, this fluctuation can be made evident by simultaneous abdominal and vaginal examination.

Cases of Hydrometra are rare. The physical signs of enlargement of the uterus from this cause resemble closely those present in menstrual retention; the tumor is elastic, tense, and spherical. But the history is very different. The hydrometra is usually present in women beyond the climacteric age; the enlargement is of slow growth, giving rise to few symptoms. There are, however, occasional severe labor-like pains, which are due to contractions of the uterus. It would be hardly possible to confound this condition with pregnancy.

Purulent Collections in the Uterus.—The uterus may be distended with pus or with a puriform secretion, which may be considerable in amount. These purulent collections are by no means common. The puerperal state furnishes the majority of the cases coming under this category.

Physometra.—Here the uterus is enlarged from the presence of gas within its cavity. This disease is very rare, but the enlargement due to it may be very considerable. In hydrometra, as in physometra, the uterine orifice is generally closed, partially or completely. The circumstances under which this tendency to the formation of gas in the uterine cavity exists will be referred to under the head "Examination of the Abdomen;" where also the diagnosis will be pointed out.

Tubercle of the uterus is a very rare disease. The enlargement may be considerable. Attacking the mucous membrane in the first place, the cavity of the uterus may at a later period become "filled by a purulent pulpy fluid" (Farre), and thus the uterus becomes enlarged in another way.

In cases of enlargement of the uterus due to any of the causes considered up to the present point, the tumor is to the touch more or less soft or elastic, or conveying an impression that there is fluid within. The next class of cases are those in which the en-

larged uterus is hard, and firm, and resistant. The conditions which may under such circumstances be present, and between which we have to distinguish, are the following :

Fibrous tumors of the uterus.

Fibrous polypus within the uterus.

Cancer of the body of the uterus.

Chronic enlargement or hypertrophy of the uterus.

These different conditions are, with the exception of cancer of the uterus, all more or less chronic in character. Each of them may be attended with more or less profuse losses of blood, especi-

Fig. 12.*
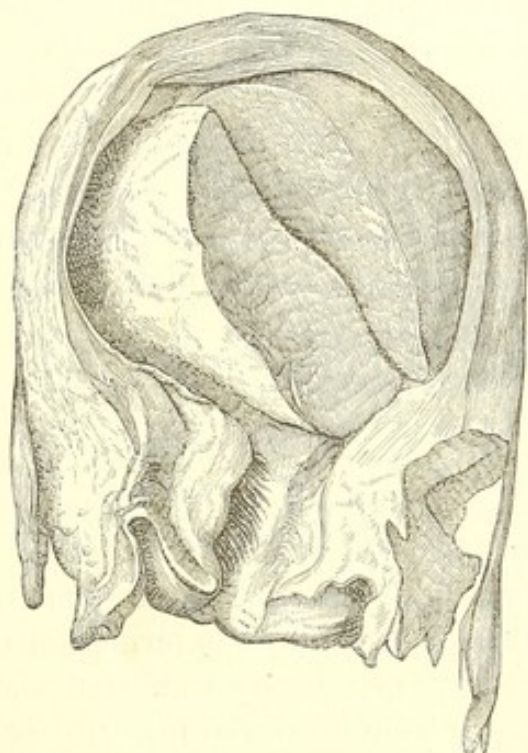
ally the three former. The prominent characteristic and diagnostic symptoms of each will be now described, but the subject will again engage attention under the head "Examination of the Abdomen."

Fibrous Tumors and Fibrous Polypi of the Uterus.—Whether the tumor be in the wall of the uterus or in its cavity (Fig. 12), the uterus is equally hard and resistant externally. In the case of a polypus, the position of the uterus is more symmetrical, whereas a large fibrous tumor growing in the walls gives rise to distortion of the organ. The os uteri may be alike in the two cases— it may be open or closed: in the case of polypus, however, it is

* Fig. 12, showing an intra-uterine fibrous polypus, is drawn from a preparation in the museum of University College.

more generally open, so as to admit the point of the finger, and frequently a portion of the surface of the polypus can be felt within the os, even if it be not found projecting into the vaginal canal. In some cases it is impossible to ascertain whether the case be one of fibrous tumor or fibrous polypus, until after dilating the os uteri artificially as first practised by Sir J. Y. Simpson. The hemorrhages and discharges are generally profuse in cases of polypus, more than in the case of fibrous tumors. When the enlargement due to polypus or fibroid of the uterus is not very considerable, the diagnosis of the case from simple chronic hypertrophy of the uterus, or from cancer of the uterine fundus, may be, the physical signs alone being considered, by no means easy; but the symptoms observed in these different cases are not identical. In fibroid tumor and in chronic hypertrophy, the case is one of slow progress—the symptoms are not necessarily so important; but in polypus and in cancer of the uterus there are generally leucorrhœa, profuse menstruation, hemorrhages, &c. Further observations on enlargement of the uterus from these causes will be found in the chapters on abdominal tumors.

Cancer of the Fundus Uteri.—The diagnosis of cancer in this position, from polypus, chiefly turns on the rate of progress of the case, unless recourse be had to artificial dilatation of the os for the purpose of exploring the interior of the uterus, and thus obtaining further information. (See also " Examination of the Abdomen.") The more ordinary cases of cancer of the uterus, where the affection is seated in the cervix, will be described in the next chapter. The body of the uterus may become affected secondarily, and so enlarged, but the condition of the os uteri in such cases offers decisive diagnostic data.

Chronic Enlargement or Hypertrophy of the Uterus.—An enlargement of the uterus due to this cause is limited in degree; pure and simple hypertrophy never gives rise to considerable enlargement. Hypertrophy of the uterus is an affection which is of a peculiar character; the uterus is thickened, increased in size, increased in vascularity; and it gives rise often to great discomfort from the pain, dragging sensations, feeling of weight, and from the effects of the mechanical pressure on the neighboring organs. It is usually associated with enlargement and hypertrophy of the vaginal portion of the cervix uteri; and, indeed, the condition of the cervix is the one which more usually attracts attention to the exclusion of the other morbid condition, viz., the enlargement and hypertrophy of the fundus or body of the uterus.

CHAPTER V.

DIGITAL EXAMINATION OF THE OS UTERI AND OF THE VAGINAL PART OF THE CERVIX UTERI.

Normal Condition of the Os and Vaginal Part of the Cervix Uteri before and after Pregnancy has occurred—Apparent absence of the Os Uteri; due to absence of Uterus, Occlusion of the Os Uteri, Elevation of the Os in Pregnancy, Obliteration of the Vagina, certain Abnormities of the Hymen, Retroversion of the Uterus—Unusual Softness of the Os Uteri from Pregnancy or other Causes; Diagnosis of these Conditions—Unusual Hardness of the Lips of the Os Uteri: its Causes—Enlargement of the Os Uteri; Causes of this Condition—Diminution in the length of the Vaginal Portion of the Cervix Uteri; Relation of Pregnancy to this Condition—Enlargement of the Os and Vaginal Portion associated with a Fissured, Irregular, Indurated Condition; due to Child-bearing, Hypertrophy of Uterus, Chronic Inflammation, Fibroid Tumor, Cancer in its early Stage, or Tubercle—Irregular Enlargement, Induration, Destruction and Loss of Substance, all more or less combined; due to Cancer of the Uterus in the Ulcerative Stage—General Symptoms present; Corroding Ulcer—Unusual sensibility of the Os Uteri; its Causes.

Tumors Projecting into the Vagina from the Position of the Cervix Uteri.—Various Conditions associated under the Term " Prolapsus Uteri," viz., Hypertrophy of the Cervix Uteri, supra- and infra-Vaginal; true Prolapsus of the Uterus—Inversion of the Uterus, complete and partial: Diagnosis of Inversion from Polypus—Polypi of the Uterus: various Forms, Fibrous, Malignant, Recurrent—Smaller Polypi—Products of Conception, Coagula, &c.

Tumors growing from the Os Uteri.—Cauliflower Excrescence—Medullary Tumor—Cystic Enlargement of Cervix—Simple Fibroid Tumor.

Much importance is very justly attached in a diagnostic point of view to the condition of the os uteri. The size of the orifice, its shape, the hardness or softness of the lips of the os and of the adjacent structures of the vaginal portion of the uterus, are all open to considerable variation, and upon these variations conclusions may be very safely based as to the nature of the pathological or physiological alterations present. The subject of the pathology of the os and cervix uteri must be studied before undertaking an examination, either digitally or with the aid of the speculum.

To appreciate the various changes which are liable to occur in the condition of the lower part of the uterus a knowledge of the normal condition and relations of the parts is essential. The finger must be educated and accustomed to associate a particular

sensation with a corresponding condition: an observer with an educated finger will be thus enabled to draw conclusions wholly unattainable by an inexperienced person. In the words of Gooch, "the finger soon gains the power of feeling when the mind has acquired the knowledge of what to feel for."

As preliminary to the discussion of this subject, some account of the normal condition of the os and cervix uteri is necessary.

"In the virgin and unimpregnated condition of the uterus," says Dr. Montgomery, "its mouth and the lower section of its neck, when examined by the finger introduced into the vagina, can be felt, as it were, projecting into that cavity from a quarter to half an inch. The part so projecting feels remarkably firm, is slightly tapering or conical in form, and about as large as the end of a man's thumb; having, in its termination in the vagina, a transverse opening, whose lips or margins feel firm and well defined. This may be so far open as to allow the extremity of the finger to be insinuated to the depth of an eighth or a quarter of an inch, sometimes a little more, sometimes not so much; or it may merely communicate a sensation of a slight depression almost without a cavity, such as is felt when the tip of the finger is pressed between the lateral cartilages, at the extremity of the nose. Sometimes the os uteri differs very considerably from this description, being almost imperceptible from its diminutive size, and perfectly circular, and it is not very rare to find it opening at once from the upper extremity of the vagina without any projection of the cervix uteri into that canal, which to the finger seems to taper gradually to a point, and there terminate in the orifice of the womb, the margins of which are very indistinctly felt. . . . Once a woman has borne children, or sometimes even one child, the conditions of the uterus are liable to be altered in several appreciable circumstances. The whole organ is apt to remain permanently larger than it was originally, and the cervix partaking of this change, is found broader, less prominent, and less firm in texture, while its shape is sometimes the reverse of that noticed in the virgin or nullipare, being indeed somewhat conical, but having the base of the cone downward instead of above; under the same circumstances the os is found of greater dimensions, and its opening much more distinctly transverse, admitting more readily the introduction of the end of the finger, and not unfrequently having its circumference or margins uneven, perhaps fissured, and giving the sensation of being a little lobulated."*

* Op. cit., p. 170.

The annexed drawing, copied from one by Dr. Farre, represents the orifice as having a transverse shape. The transverse length of the orifice as here shown is, I believe, greater than it is found to be in the virgin os in the majority of cases.

FIG. 13.

The changes produced by pregnancy will be presently described more particularly. The above remarks apply only to the uterus in the non-gravid condition.

APPARENT ABSENCE OF THE OS UTERI.

In a woman who has never had children and who has never menstruated it may be that this arises from the fact that the uterus is *altogether wanting*. The other signs indicative of this condition have been mentioned at p. 151. In order to ascertain whether the uterus be really absent, it is necessary to perform a simultaneous examination by the rectum and by the bladder, as previously described more particularly (*loc. cit.*).

Cases of complete absence of the uterus are exceedingly rare. When the woman has had children, or when there has been a menstrual discharge, the case cannot be one of absence of the uterus. The vaginal part of the cervix, as already remarked, is generally shortened in women who have had children; in some cases it almost entirely disappears. It occasionally happens that in such cases *the os uteri becomes occluded*, and no opening can be found. Cases have been recorded of women who were pregnant, and in whom this occlusion had occurred apparently soon after conception, an incision in the lower part of the uterus having been rendered necessary in order to effect delivery. It may be, then, that the os uteri is not to be felt because it has become occluded in the above manner; but the signs of pregnancy would under such circumstances be observed: or it may be that the *os is situated unusually high*, and is not readily reached, as is the case more or

less in the last month or two of *pregnancy*: there the presence of pregnancy should suggest the explanation. Or the *vagina may have become narrowed and constricted* by inflammatory adhesions (after a difficult labor), and the vagina may appear to terminate lower down than is really the case. *Abnormities of the hymen* may lead to a like erroneous inference.

In *retroversion of the gravid uterus* the os uteri and the cervix uteri are often dragged up so high behind the pubic symphysis that no os can be felt. The same result may occur when *large tumors*, fibroid, ovarian, &c., occupy the pelvis. In cases of pregnancy, tumor, &c., dragging the os out of its place and so preventing its being felt by the finger, the pelvic tumor is so large that the explanation of the apparent absence of the os would be obvious.

In the next place it is proposed to consider the physical conditions of the os and cervix, and their variations, *seriatim*, excluding for the present that class of cases in which the cervix is considerably increased in size.

UNUSUAL SOFTNESS OF THE LIPS OF THE OS UTERI.

The physical conditions of the os uteri described as "hardness" or "softness" are perhaps the most important to which attention can be directed. Normally, the textures of the os, under which term we may conveniently include the parts surrounding the aperture, are, in the virgin, firm and resistant, and a peculiar impression is conveyed to the finger hardly to be described in words. This is to be considered as its typical physical condition, and it is necessary to be familiar with it in order to be able to detect the variations from the healthy state.

Pregnancy.—Unusual softness of the os uteri and of its vaginal part is one of the signs of pregnancy, and, as such, deserves special and particular mention in this place. It is a peculiar kind of softness, giving the sensation of a soft texture overlying a harder one, and imparting a cushiony elastic feel, quite characteristic. It has been well compared to the sensation given to the finger when pressed into the glans penis in a state of erection. The surface of the lips of the os are at the same time, in primiparæ, smooth and uniform; in multiparæ there may be fissures giving the lips a slightly lobulated arrangement. As regards the period of pregnancy at which this peculiar softness is observed, it is present during the second month pretty distinctly, but not so distinctly at this early period in primiparæ as in women who have already

borne children. At the end of the third or the fourth month, however the softness of the os uteri is very distinctly present in most cases, and, what is very important, the softness becomes associated at about the fifth month, and subsequently, with a peculiar shotty feel, arising from the muciparous glands around the os uteri becoming enlarged. Moreover, the softness becomes intensified as pregnancy advances: in many cases I have found the lips in an almost spongy condition, from extreme softness, near the end of pregnancy. The existence of this softness, and of the other physical changes, in the vaginal portion, forms a very strong presumption in favor of the presence of pregnancy. This is well shown in Fig. 14 from a drawing by Dr. Farre. The softness alone,

FIG. 14.
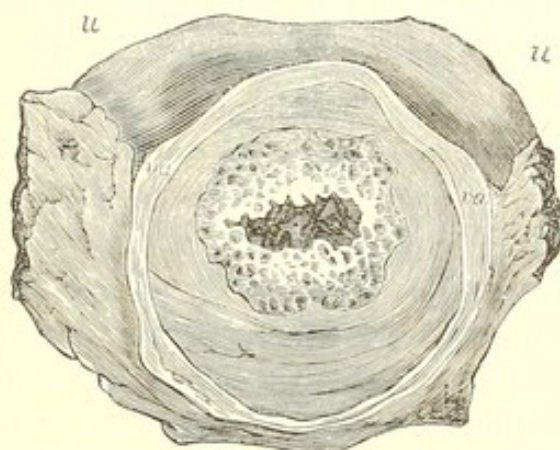
or a condition which at all events closely simulates it, is observed under other circumstances than pregnancy. The menstrual nisus is attended with a certain degree of softness of the part; but this could hardly mislead the observer if care were taken to make a second examination after the interval of a fortnight from the date of the first. Distension of the uterus, owing to the presence of fluid, a large polypus, hydatidiform degeneration of the ovum, may, each or either of them, give rise also to softening and fulness of the os in some degree simulating that due to pregnancy. In cancer of the cervix uteri there may be softness due to the presence of fungous growths, having a soft consistence, but in this case there is also *irregularity* of the surface.

When the uterus is inflamed and congested, the os and vaginal portion may become swollen and puffy; and it has been stated that in cases of masturbation an œdematous condition of the same parts has been observed. These sources of fallacy would have to be guarded against in drawing any positive conclusion as to the presence of pregnancy.

As Montgomery observes, this softness of the os is most reliable from a negative point of view; thus, if the patient were supposed to be five months advanced in pregnancy, the absence of the softening would be strongly against such a supposition. This statement does not hold good in cases of cancer of the cervix uteri; in such cases there might be an absence of softness, and the patient might yet be pregnant. In ordinary cases, however, the presence or absence of this softening of the os and vaginal portion is extremely valuable from a diagnostic point of view.

Softness of the os is observed in cases of cauliflower excrescence of the os uteri. The softness due to this cause is, however, associated with a lobular enlarged condition of the lips and margins of the os uteri, eminently characteristic of the affection. In the very early stage of this affection, however, when the lips of the os are not much enlarged, this softness might, by a beginner, be possibly mistaken for that due to pregnancy.

UNUSUAL HARDNESS OF THE LIPS OF THE OS UTERI

Cannot be said to be diagnostic *per se* of any particular disease of the uterus. Normally, the degree of hardness presented to the touch is considerable, and if the shape and size of the os and of the vaginal portion be not altered, the hardness alone is not significant. It would, however, enable us to decide against the presence of pregnancy in a case supposed on other grounds to have gone as far as the fourth or fifth month. Conjoined with *other* physical changes in the vaginal portion presently to be alluded to, it may become positively significative of other important conditions.

The os uteri is occasionally found to convey to the touch an impression as if hard rounded masses like shot, of variable size, were imbedded in it. It appears probable that these bodies are generally the follicular glands of the part distended with accumulated secretion. It has been already mentioned that during pregnancy rounded bodies are usually found to be present in the substance of the os, and there seems to be an identity between the bodies in question and those occasionally met with in this position under other circumstances, which may attain a larger size, and which have been termed by several writers *Ovula Nabothi*.* And in cases, to be more particularly referred to subsequently, where

* Some remarks on the nature of these bodies will be found in Dr. Tyler Smith's work On Leucorrhœa, p. 143.

small cysts are found growing from the os, it appears probable that these cysts have a like origin.

ENLARGEMENT OF THE ORIFICE—THE "OS UTERI."

In the virgin, the uterus being healthy, the aperture is large enough to be just perceived by the touch. In the pregnant uterus the orifice enlarges, and at the fifth month is nearly large enough to admit the point of the finger. In the latter case, this enlargement of the orifice is associated with softening of the lips of the os, with the presence of the muciparous glands, uterine tumor, &c. When the orifice is so large as to admit the finger, softness being absent, this increase in size may be dependent on one of the several following conditions: In cases of large fibrous tumors of the uterus encroaching on the cavity, the lips are separated to a considerable extent, but they are hard and firm. Such is also more usually the case where polypus of the uterus of large size is present. The separation of the lips occurs earlier in polypus than in cases of fibrous tumor.

The os is also widely open in cases of enlargement of the uterus due to deficient involution of the organ after delivery. In women who have been recently delivered an open condition of the os is necessarily present, and this condition of the os is a very valuable sign in cases where evidence of recent delivery is required for medico-legal purposes. Under such circumstances, also, the condition of the os uteri is in other respects peculiar. It is soft, flabby, and relaxed. The open condition of the os gradually diminishes after labor, so that after two or three weeks the sign is no longer useful: in cases where abortion has occurred, the open state of the os after delivery is less marked, and it is a less decisive test than when delivery has taken place at full term.* The subsequent *progressive closure* of the os is a valuable diagnostic sign in these cases. (See also "Examination by the Sound.")

An open condition of the os is found, often to a marked extent, in cases where the uterus is enlarged from the presence of chronic inflammation or congestion. In cases of leucorrhœa connected with an increased action of the numerous glands of the cervix uteri, the os is open more widely than usual. In cases of cancer of the uterus, the aperture is often much larger than it should be, and the first stage of this disease has in this respect a great simi-

* A most valuable chapter On the Signs of Delivery will be found in Montgomery's work, jam cit., p. 573.

larity to other conditions of less serious import. But in cases of cancer of the os uteri, the opening has lost its symmetrical shape ; there is, moreover, irregularity, of a kind to be particularly described presently.

On the other hand, the *opening of the os may be too small*, or altogether wanting. If there be any reason to suspect that either of these conditions be present, as in cases of sterility, dysmenorrhœa, &c., &c., it will be necessary to resort to another method of examination, and to use the uterine sound as a probe. (See " Examination by Sound.")

DIMINUTION IN THE LENGTH OF THE VAGINAL PORTION.

Variations in respect to the length of the vaginal portion of the cervix are important from a diagnostic point of view. In *pregnancy* there is a diminution in the length of the vaginal portion, the nature and degree of which must be now explained. In the first place, it is a mistake to suppose that there is always a perfect regularity in the degree to which the abbreviation of the vaginal portion proceeds at the same period of pregnancy in all instances ; in the second place, it must be recollected that comparative, not positive, measurements are only to be relied on. In order that we may draw correct conclusions in particular cases, it is necessary to be aware of the normal length of the vaginal portion in the case before us ; after repeated pregnancies, the portion of the cervix projecting into the vagina becomes shorter and shorter. Normally, the vaginal portion begins to be reduced in length about the fourth month of pregnancy, and as pregnancy advances the shortening also progresses, until at full term the whole, or very nearly the whole, of the vaginal portion has been drawn up out of the vagina. Dr. Matthews Duncan has shown that the length of the cervix itself is very little altered during pregnancy ; the apparent shortening is due to drawing up of the cervix out of the vagina, which process has the effect of reducing the length of the vaginal portion. My own observation enables me to confirm Dr. Duncan's views on the subject. Fig. 15, copied from Dr. Farre's drawing, shows the extent to which the abbreviation of the vaginal portion proceeds at the eighth month of pregnancy.

This shortening becomes useful as diagnostic of pregnancy when the patient is under observation for some months, and it can be ascertained from time to time that a *progressive* shortening is

actually taking place. If the other signs present be not against pregnancy, this is one of the strongest proofs in its favor. Enlargement of the uterus and softening of the os uteri would under such circumstances be associated with it. The vaginal portion may be found *actually* shortened from several other causes — previous pregnancies, dislocation of the uterus upwards by ovarian tumors, distension of uterus by large polypus or by

FIG. 15.

fluid, as in cases of hydrometra, also from dragging of the uterus upwards by large fibrous tumors of the uterus. In cases of extrauterine pregnancy, the shortening is wanting. (Kiwisch.)
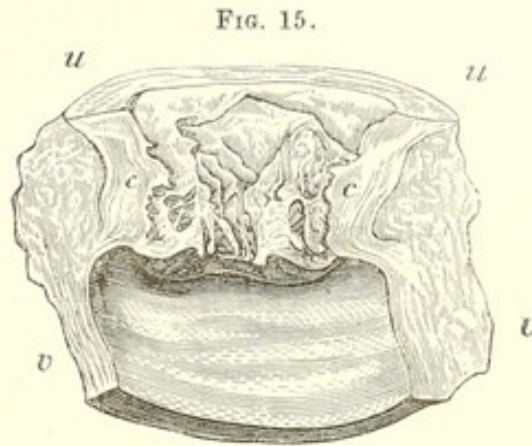
ENLARGEMENT OF THE OS UTERI AND VAGINAL PORTION OF THE CERVIX, ASSOCIATED WITH A FISSURED, IRREGULAR, AND INDURATED CONDITION OF THE PART.

It must be premised that the cases to be considered under this head do not include those in which there is any *considerable* increase in size of the vaginal portion; these latter will be more properly considered under the head of tumors of the vaginal portion.

We here enter on a question of exceeding practical interest and importance, viz., the diagnosis of *cancer of the uterus*, in its early stage, from certain other conditions which may produce somewhat analogous physical alterations in the os and cervix uteri, and which may give rise also to symptoms more or less resembling those witnessed in the early stages of this justly dreaded disease. A fissured, irregular, indurated, and enlarged condition of the vaginal portion of the uterus and of the lips of the os may proceed from a variety of causes. In *women who have had children*, the os uteri is generally more or less fissured, giving the portio vaginalis a sort of lobulated feel; the number of fissures and lobes varies from three to four, five, or six; and in women who have had severe labors, rendering the use of instruments necessary, the os may be found very deeply fissured, the parts having been torn during labor. If the uterus be healthy, however, there is no marked enlargement of the part,—on the contrary, there is a tendency to a diminution in its size, the diminution being more marked as the

patient becomes older. The fissured condition of the os uteri is then quite compatible with the presence of health. When, however, in addition to this, the lips of the os uteri are indurated and larger than usual, the whole vaginal portion participating in this condition, this combination is indicative of disease. It may be due to the comparatively harmless *hypertrophy of the uterus* (generally synonymous with defective involution of the organ after childbirth), to a *chronic inflammatory condition of the cervix*, to the presence of *fibrous tumors* in the walls of the uterus, to *carcinomatous deposit* in the substance of the portio vaginalis,—the latter being the first in a series of changes which may result in the death of the patient at no distant period—to *tuberculous affection of the cervix uteri*, or to presence of *small fibrous tumors* in the portio vaginalis. The diagnosis between these several conditions is often one of great difficulty, and is only arrived at by an attentive consideration, not only of the physical signs themselves, but of the attendant phenomena, and of the present and past general condition of the patient. Further remarks on the physical condition of the os uteri in cases of "inflammation" will be found in the next chapter.

Dr. Henry Bennet, whose searching analysis of the abnormal conditions of the os uteri in relation to the diagnosis of cancer cannot be too highly spoken of, and who first laid down exact rules for the diagnosis of cancer from a condition with which it was formerly very frequently confounded, viz., chronic inflammatory induration, has accurately pointed out some of the diagnostic points in reference to the question now at issue in the following words:

"When the lobular, knotty, irregular condition of the cervix is the result of laceration, and is simply inflammatory, the fissures which separate the lobes radiate round the cavity of the os on a centre, which is not the case in a cancerous tumor,—each separate lobe being perfectly smooth in itself, and free from tubercles or superficial inequalities."*

The mere *size* of the lobules indicates nothing of malignant character, provided they be tolerably smooth; the depth of the fissures is of favorable import also when the lobules are smooth. Extreme hardness is often observed when no serious disease is present. Uniformity in the degree of the hardness of the lobules is favorable. Slight excoriation of the surface of the lobules is quite compatible with simple inflammation, or similarly innocuous

* On Inflammation of the Uterus, 4th ed., p. 90.

conditions. A deeply *excavated* ulcer on some portion of the surface would excite apprehension as to the cancerous nature of the enlargement. When the lobulation and enlargement is limited to one side of the os, this may be due to growth of a non-malignant tumor in the substance of the cervix. The smoothness of the tumor, the absence of general signs of disease, absence of bloody and offensive discharges, would generally, but not always, put suspicion of cancer on one side. A quickly growing lobular enlargement of one lip of the os uteri is probably malignant in character.

Time is of great importance in the diagnosis of these cases. An induration and enlargement of the os uteri, which is known to have existed for some years, may be pronounced to be non-cancerous.

Negatively, the points now alluded to are of great diagnostic value. Thus, supposing the patient to be suffering from pain, offensive discharge, occasional hemorrhages, &c., and suspecting herself to be the subject of cancer, a very simple examination might, by revealing an absence of all induration or enlargement of the os uteri, render it almost certain that the case was not one of cancer. The rare occurrence of cases in which the disease begins in the fundus uteri prevents this rule being quite absolute.

Unquestionably the most important, and perhaps the least fallacious guide to the diagnosis in a doubtful case, is the mobility or immobility of the uterus—a point which has been already alluded to; and when the uterus is found to be as movable as usual, while there is an absence of induration in the cellular tissue before and behind the cervix uteri, no considerable pain, no offensive discharge, no particular constitutional derangement, we may safely conclude that the case is not one of cancer. The immobility due to pressure of tumors within the pelvis must not be confounded with the condition produced by cancerous disease of the uterus itself. Lastly, it must be recollected that mobility of the uterus is not necessarily and always lost, even in advanced cases of cancerous disease, although as a rule it is so lost.

With all the helps to diagnosis which have been mentioned, several cases will remain of which it may be for some time difficult to determine the true nature, and to say whether the diseased condition of the cervix be of malignant or of non-malignant character. The inequality of the induration present is generally an indication of malignant disease. Again, the fissures which separate the lobes of the os may be at an early period of the disease smooth at their edges, as in the non-malignant form; but they soon assume a sharply distinct shape. Hemorrhage from the generative organs

is a symptom of cancer usually observed at an early period, but hemorrhage may be entirely absent, the catamenial discharge only being slightly increased. The value of "hemorrhage" as a symptom of cancer has been discussed at p. 70. Another symptom also early observed is pain in the uterine and lumbar regions—not merely discomfort, but actual pain. Weakness and general debility may be observed also from the very commencement. The importance of time has been alluded to, and much aid will be derived from observation of the progress of the case in making a diagnosis. Thus, if a thickened, fissured, indurated, condition of the os uteri have existed in a particular case for a considerable time, say twelve months, and no particular disturbance of the general health be observed, it is highly probable that the affection is not malignant. It is not in the nature of cancer affecting the substance of the cervix uteri, and giving rise to physical changes, such as those described, unless under very exceptional circumstances, so long to delay its progress.

In the diagnosis of cancer at an early period, Dr. Montgomery laid particular stress on a shotty condition of the margins of the os, associated with turgidity, and with a crimson discoloration of the os tincæ generally. In the first stage of cancer of the uterus Dr. Bennet states that he would expect to find "shot-like, pale indolent indurations, all but insensible to pressure, strewn irregularly over the cervix, or an irregular hard tumor similarly characterized developed on its surface." In a case related by Becquerel,[*] there was a small, hard, violet-colored tumor, projecting from the surface of the cervix at a very early stage of the disease. It was unequal and nodulated. The condition of the os in the early stage of cancer in a few cases in which I have had the opportunity of getting accurate information on this point was as follows: nodular irregular eminences, the mucous membrane covering them having a livid or deep blue color, and contrasting with adjacent structures not yet affected with induration and irregularity of contour. This applies to cases of cancer commencing in the substance of the os uteri, and not to cases of cauliflower excrescence when the disease attacks primarily the papillary structures on the surface.

The largely patent condition of the orifice usually present in cases of cancer is not peculiar to it, as already remarked.

The presence of a fetid discharge from the vagina is too often

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[*] Traité Clin. des Maladies de l'Uterus. Paris: tome i, p. 321.

looked upon as indicative of cancer. Wherever there is hemorrhage, there may be fetid discharge due to decomposition of clots of blood which have been detained. (See p. 95.)

There may be a healthy condition, or a comparatively healthy condition at least, of the os and cervix uteri, and still cancer of the uterus may be present, the disease being confined in some rare cases to the body or fundus uteri. In such cases, a digital vaginal examination might reveal little or nothing. If the patient present constitutional signs, like those of cancer, with occasional hemorrhages, profuse and continuous fetid discharges, watery or purulent, while no alteration of the os and cervix is revealed by examination, cancer of the fundus uteri should be suspected. The upper part of the uterus is generally much enlarged in such cases, and may be felt so enlarged above the pubes. (See " Examination of the Abdomen.")

In conclusion, it should be borne in mind that the condition of the os and cervix, to which the previous remarks apply, is one simply of induration, slight enlargement, and lobulation. Ulceration, marked loss of substance, associated with hardening, &c., is a condition to which the remarks in question are not at all applicable.

Irregularity, unevenness, &c., in different parts of the vaginal portion, may be due to presence of *small rounded tumors* imbedded in the tissue of the cervix. Such tumors, which are of fibrous character, might give rise to suspicion of cancer, from the fact that one side of the cervix would under such circumstances be hard or nodulated, and the other side soft and natural. These tumors are, however, very rare : they are of slow growth, give rise to little inconvenience, and never to grave symptoms, such as are observed in cancer.

Tuberculous enlargement of the vaginal portion is a condition of exceeding rarity. It is characterized by presence of tumors of uncertain size, of rounded form, at first firm, afterwards softer, yielding to the pressure of the fingers, and indistinctly fluctuating ; always accompanied by considerable engorgement of the cervix uteri. It is a condition due to presence of masses of tubercle yet unsoftened, to tubercular infiltration, or to inflammatory action attendant on softening.* Occasionally are seen small yellow deposits on the surface of the cervix the size of a split pea, or smaller, and giving issue, on being pricked, to a small quantity of

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* Robert's description, quoted by Dr. West, op. cit., p. 362.

matter of the consistence of pus. These deposits, which have been alleged to be tuberculous, Dr. West, the accuracy of whose description of them I can quite confirm, looks upon as due to hypertrophy of the Nabothian follicles.

Practically, the importance of the question at issue is not great. The existence of tubercle of the cervix is denied by Rokitansky; it is certain that tubercular infiltration of the cervix with tubercular softening, &c., is very rare. I believe, however, that in women of tubercular tendency, and in whom the cervix uteri is sometimes found enlarged, hypertrophied, and indurated, this enlargement is of tubercular origin, though, anatomically speaking, there may be no deposit of tubercle. I have in private practice seen cases which might be referred to this category. This is a point which is, however, more interesting in connection with the subject of treatment than that of pathology.

IRREGULAR ENLARGEMENT, INDURATION, DESTRUCTION, AND LOSS OF SUBSTANCE OF THE VAGINAL PORTION AND OF THE LOWER PART OF THE UTERUS, ALL MORE OR LESS COMBINED.

The condition of parts characterized as above is that present in the ulcerative stage of cancer of the uterus; and it is a condition which is so characteristic, that it can hardly be mistaken for anything else. The degree to which the destruction of substance is found to have proceeded varies very much. The os uteri may be found to have lost its natural shape, or the vaginal portion has wholly disappeared, and the finger passes into an excavation with hard irregular walls, which are constituted by the remains of the vaginal portion, or by the carcinomatously-infiltrated cellular tissue at the upper part of the vagina. Above is felt a hard irregular mass, the somewhat enlarged uterus, fixed and immovable, and not easily definable from the surrounding hardened structures. A not unfrequent condition of the os uteri in cancer is presence of a hard, smooth, sharply-defined surface, just as if a piece had been actually removed by the knife, leaving the edges well marked. Such a condition is represented in Fig. 16, showing at one part of the os nodular projections, at another the peculiar condition just described. "When you feel," says Sir J. Simpson,* "a rough irregular excavated or anfractuous ulcer seated on a hardened base, and surrounded by hardened tissue, cancer is present." The process of ulceration may be found to have extended to the

* Med. Times and Gazette, Jan. 15, 1859.

rectum, in which case fæces and flatus pass from the vagina to the bladder, occasioning involuntary micturition, or to both; in the latter case the rectum and bladder open into the common cloaca, resulting from the destructive process which has now been going on. The destructive process may have affected one side of the os,

FIG. 16.
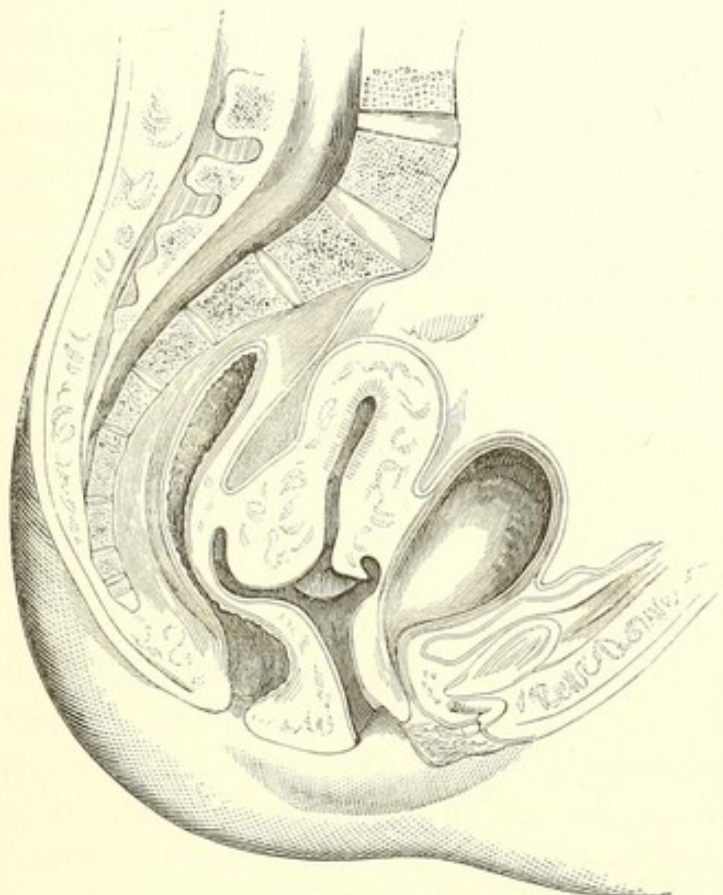
the other only being as yet enlarged, and denser and firmer than usual. It is not uncommon to find fungous softish masses, which bleed when touched, growing from the already ulcerated surface. This ulcerative stage of the disease is almost universally characterized by the presence of an offensive leucorrhœal discharge, this discharge becoming tinged with blood after examination or after exertion. There is a general failure of the strength of the patient, emaciation, want of sleep, and disturbances of the digestive organs, shown by nausea, vomiting, &c.; and, what is important, there occurs from week to week perceptible increase in the intensity of these symptoms, often a very rapid one; the skin of the patient has in many cases a remarkable straw-colored tint; there are lancinating pains, severe in character, felt in the uterine region: at this period, also, pains depending on pressure of the enlarged uterus on the nerves in the pelvis are very commonly

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observed, viz., pains along the course of the sciatic and other nerves. Other symptoms attending this stage of the affection are, pains in the breasts, and, not seldom, increased sexual desire. The occurrence of " hemorrhages " and the presence of " offensive discharges " are characteristic, but the value of these as signs of the presence of cancer has already been discussed (see pp. 70, 95).

With reference to the value of "cachexia" as a means of diagnosis, Mr. Sibley, in his valuable " Contribution to the Statistics of Cancer,"* makes some important remarks.

" The cachexia," says Mr. Sibley, "is closely proportionate to the amount of hemorrhage, discharge, and pain. In cases where there is but little hemorrhage, and a small amount of discharge, the cachexia is hardly obvious, and this is usually observed even where the cancerous tumor has attained great magnitude. It sometimes happens that the cachexia becomes well-marked, even where there is but little hemorrhage or discharge ; but in these cases the cancer is usually found to have involved some important internal organ, and to have interfered with some vital function. On the other hand, in those patients with whom there is profuse discharge, and frequent attacks of hemorrhage, the wasted sallow visage of advanced cancerous disease becomes obvious at an early stage of the complaint. In no class of cases is the cachexia more pronounced than in uterine cancer." And he has come to the conclusion that "the presence or absence of cachexia is valueless as an aid to diagnosis. It appears to be the result of a local disease, and is not to be regarded as evidence of a state of system which leads to the production of cancer."

In a few rare cases destruction of the uterus by cancerous ulceration progresses to a very advanced stage, all the usual symptoms of cancer—pain, offensive discharge, hemorrhages, constitutional affection—being entirely absent. When cancer of the uterus in the ulcerative stage is present, the diagnosis is not usually difficult when digital examination is practised, those rare cases excepted in which the lower part of the uterus is sound, or apparently so, there being cancerous disease of the interior of the body of the uterus. In these cases, the result of the ordinary digital examination would be liable to mislead, unless corrected by due attention to the more obvious and symptomatic signs of the presence of cancer.

The diagnosis of cancer of the uterus advanced to the stage of

* Med. Chir. Trans., vol. xlii, p. 194.

ulceration, and presenting to the touch the physical characters above described, is not a matter of difficulty; the difficulty lies, and especially with those whose sense of touch is uneducated, in determining that cancer is *not* present. Thus a patient may present herself suffering a good deal from pain, who is the subject of profuse menstruation, of a profuse discharge, which is, she states, occasionally "unpleasant" to the smell. On digital examination of the os uteri, a decided enlargement and hardening is felt at one part, and a softer velvety surface at another. But the hardness and induration may be due, as already pointed out, to simple hypertrophy, inflammation or congestion of the vaginal portion: the feeling of the presence of a softer portion may be produced by the inner surface of the os, with its lining in an hypertrophied, shaggy, and villous state.

A peculiar form of destructive ulceration of the cervix uteri has been in a few rare cases observed, all that has been met with on examination being *loss of substance*. The lower part of the uterus has disappeared, and in place of the cervix there is a rough irregular border, above which the body of the uterus, movable as usual, is felt by the finger: there is an "absence of any thickening, hardness, or deposit of new matter in its vicinity, as in carcinoma." (West.) This condition is described as *corroding ulcer of the os uteri*. The symptoms present in cases of this description are not distinctive. Recent writers do not confirm the observations of Sir C. M. Clarke, that the pain is peculiar in these cases. So far as the results of digital examination are concerned, corroding ulcer is characterized by absence of induration in the neighborhood, by absence of fixation of the uterus, and by the sharpness of the margin of the ulceration. It is an interesting fact that corroding ulcer differs from cancer in respect to its fatality and duration. The observations hitherto made appear to indicate that the disease may continue for some years, indeed for several years. Dr. West believes that the affection ought to be classed with rodent ulcers. On the whole it appears right to consider it a form of cancer.

UNUSUAL SENSIBILITY OF THE OS UTERI.

As a rule, the os and the vaginal portion of the cervix exhibit little evidence of sensibility, but under certain circumstances there is extreme tenderness of the part on digital examination. In cases of *cancer* this unusual sensibility is very generally present, but more particularly when the ulcerated stage of the disease

has arrived. In cases of *neuralgia* of the uterus—the "irritable uterus" of Gooch—there is an extreme degree of sensibility present.

Tenderness, less in degree than in either of the cases alluded to, is present where the whole uterus, including the cervix, is in a state of *chronic inflammation*, whether the patient be of a "nervous" temperament or not.

In *acute inflammation of the uterus*—a disease of exceeding rarity—tenderness to the touch is one of the chief signs observable.

TUMORS PROJECTING INTO THE VAGINA FROM THE POSITION OF THE CERVIX UTERI.

Here it is intended to group together all those cases in which a mass is felt projecting into the vagina from the situation of the cervix uteri, whether constituted by an enlargement of the cervix itself, by a tumor of the part, or by a mass projecting through the os uteri.

We have to distinguish between the following conditions:

The various conditions known under the name " prolapsus of the uterus."

Inversion of the uterus.

Polypus of the uterus, or other bodies projecting from the cavity of the organ into the vagina.

Tumors growing from the os uteri and occupying the vagina.

Concerning these several conditions, one remark applies to nearly all—that each may constitute a tumor which may project downwards and outside of the vagina, and be therefore apparent externally to the generative organs. Further, it may be remarked that these conditions may be associated with varying degrees of prolapse of the adjacent pelvic organs, of the bladder, rectum, &c.

The first point to which we direct our attention, in endeavoring to determine the nature of a tumor either felt by the finger in the vagina, or projecting beyond the ostium vaginæ, is the position of the os uteri. If the os uteri be found at or near the lower or depending portion of the tumor, the case is one of " prolapsus of the uterus," partial or complete; but if the opening be situated high up, and the tumor project considerably below it, the case comes under one of the other divisions above alluded to.

We shall first consider those cases in which *the os uteri is at, or near, the lowest part of the tumor.*

All cases of *prolapsus uteri* have this in common, that the os uteri is the lowest point. In other respects, the variations observed are exceedingly great. In the most simple form of the affection, the cervix uteri is felt rather lower than usual, and the vagina proportionately shortened. In its extreme degree, on the other hand, the uterus descends so low down as to be almost altogether outside the ostium vaginæ; and in this case the vaginal canal is completely inverted, the bladder is dragged externally

Fig. 17.
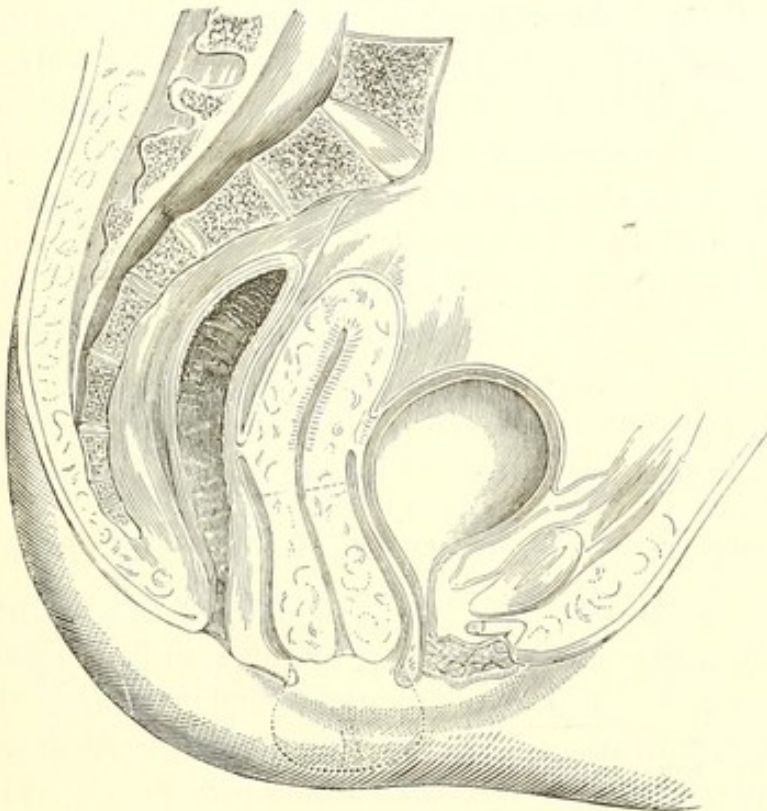
also, and the rectum may be displaced in like manner. Thus, in a bad case of prolapsus uteri, we may have combined, descent of the uterus with prolapsus of the bladder and rectum (vaginal cystocele and rectocele).

But this is not all. The condition of the uterus itself presents very different conditions in different cases. There may be prolapsus of the uterus, the organ retaining its natural size and shape; this appears to be rare. It is more common for the uterus to be *altered in size and shape, as well as in position*. It may be generally too large (defective involution after delivery, chronic inflammation or hypertrophy being present), or it may be too long. The appearance of the os uteri lower down than usual does not necessarily imply descent of the whole uterus.

To return from this explanatory digression—if we find a conical, firm tumor, smooth on the surface, projecting downwards in the vagina or beyond it, and the os uteri situated at, or close to its extremity, the case is one of

HYPERTROPHY AND ELONGATION OF THE VAGINAL PORTION OF THE CERVIX UTERI.

With such a condition there is usually found to be no considerable amount of prolapsus of the vagina, and the finger encounters the cul-de-sac of the vagina in about its usual position. Fig. 17 (p. 213) represents hypertrophic elongation of the vaginal portion from a young single woman. The dotted line indicates the position of the os when the patient was standing. (See chapter on Prolapsus.) The shape of the tumor is generally conical, but it may be larger at the extremity than at the base; one portion of the lip may be larger than another, in which case the opening appears to be not quite at the extremity of the growth, and the os itself may be fissured and ulcerated according to the degree of irritation to which the part is exposed. The general shape, the firmness of the tumor, and the position of the os uteri, sufficiently distinguish it from other tumors occupying the vagina.

HYPERTROPHY OF THE SUPRA-VAGINAL PART OF THE CERVIX.

In this class of cases there is prolapsus of the vagina, and the finger cannot, consequently, be introduced as far as usual. The use of the sound will render it evident at once whether the descent of the os uteri, bringing with it the vagina, is due to descent of the whole uterus, or to hypertrophy of the lower part of this organ— the cervix. When the descent of the os uteri is considerable, the portio vaginalis is usually found reduced in length, the os being simply an aperture in the centre of a rounded projecting mass: the aperture is larger than usual, and the edges are everted and gaping, this being due to the fact that the os is pushed downwards, and that the parts are put on the stretch. The attachments of the cervical part of the uterus to the bladder in front are such, that when the cervix is projected downwards the bladder comes with it; the extent of the prolapsus of the bladder is, as a rule, dependent on the degree of the former. (Fig. 18 represents a well-marked case of this kind, the measurements accurately taken. The patient had had children.) In like manner, the rectum is liable, but in a less degree, to be prolapsed with the lower part of the uterus; and the result is that in cases of extensive prolapsus of the cervix,

whether with or without hypertrophy of the part, there is a soft tumor in front—the bladder—and a smaller one behind—the rectum—between which two the os uteri is situated. A combined examination of the rectum by the finger and of the bladder by means of the sound, will determine whether or not the fundus uteri is in its proper position; the use of the uterine sound gives information of a like character.

TRUE PROLAPSUS OF THE WHOLE UTERUS

May be found associated with ascites, ovarian tumors (or both, as in a case which came under my own observation), or with relaxation of the vaginal structures, consequent on frequent childbearing.

FIG. 18.
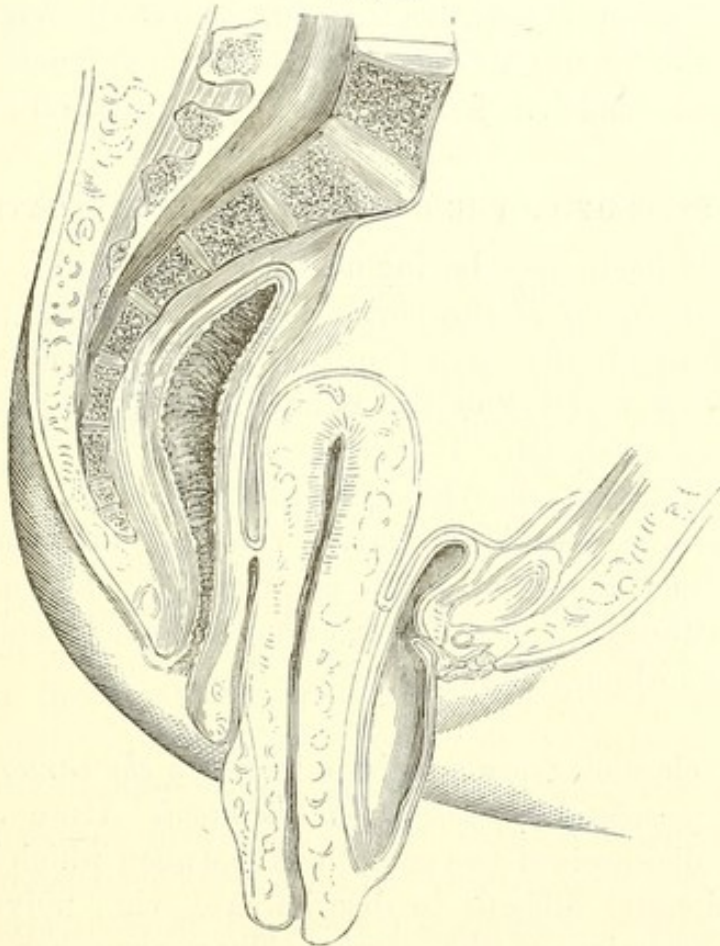
In cases of prolapsus of the uterus, whether true or false, there are often extensive ulcerations of the inverted vaginal mucous membrane, or of the mucous membrane covering the vaginal portion, such ulcerations being dependent on the friction to which the parts thus unnaturally exposed are liable, and to the continued contact with urine.

Prolapsus, complete, or produced by hypertrophy of the supra-vaginal portion of the cervix, could hardly be mistaken for poly-pus, inversion of the uterus, or large tumors growing from the os uteri, if attention were paid to the position of the os in reference to the body of the tumor. Cases of hypertrophy of the vaginal portion alone might possibly be confounded with a polypus pro-jecting into the vagina from the interior of the uterus, in those instances in which the os uteri is distorted, partially effaced, or so altered as not to be recognized as such, by a casual observer. I have known an instance in which a lady was treated for prolapsus and made to wear a pessary for several months, the tumor being a well-marked specimen of polypus, attached by a slender pedicle to the interior of the cervix uteri.

Prolapsus combined with Pregnancy.—In some rare cases the uterus, although prolapsed, becomes impregnated. It would be a serious mistake to use the sound in such a case, and to induce abortion. It is sufficient here to give this caution on the subject.

HYPERTROPHY OF THE CERVIX WITHOUT ELONGATION.

Under this head may be included cases in which there is a uniform enlargement of the cervix uteri, due to the presence of hypertrophy of all the tissues of the part without elongation. The nature and varieties of this enlargement of the cervix have already been considered. It is necessary here only to call atten-tion to the fact, that the enlargement due to this cause may be very considerable, that it is characterized by the comparatively regular, uniform character of the enlargement, and further, that the cervix, although it may be somewhat distorted, retains for the most part its ordinary shape.

The next class of cases are those in which *the tumor in the va-gina is not terminated below by the os uteri.* Here we have to consider the diagnosis of two conditions, between which it has been found occasionally difficult to discriminate, viz., polypus of the uterus and inversion of the organ. There are other conditions also, the diagnosis of which will have to be pointed out.

INVERSION OF THE UTERUS.

In cases of inversion of the uterus a tumor is felt occupying the vagina, which varies in size according to the degree of the in-version, and the time which has elapsed since the occurrence of

the inversion. Thus, if the inversion be recent and complete, the tumor in the vagina may be so large as to project beyond the vulva, but if some weeks have elapsed, it may be no larger than the fist, although still complete. The tumor is smooth, uniform, and no opening is to be detected on the surface. On digital examination, it is found that the vagina terminates above, round the pedicle of the tumor, in a perfect cul-de-sac, and the surface of the tumor is actually continuous with that of the vagina. At the point where the os uteri should be situated this pyriform tumor projects downwards into the vagina. The tumor itself is hard and firm, and resistant, when the inversion has lasted a few weeks. If the patient have been recently delivered, if a tumor has occupied the vagina since delivery, and if, further, it be known that there was no tumor previously, the diagnosis is not usually difficult to establish, provided the inversion be complete. This statement is, however, not quite universally true, for pregnancy may be associated with polypus, and the polypus may be thrust down into the vagina immediately after the expulsion of the child; Gooch and others have related cases of this kind. There is no possibility in complete inversion, of passing the finger above the pedicle of the tumor, nor can the uterine sound be made to pass in this direction. The symptoms attending the production of inversion during labor are characteristic: excessive pain—which may, however, be absent—prostration, syncope; the uterine tumor is no longer felt above the pubes; hemorrhage is usually observed. Inversion may occur just at the end of labor, or a few days after, from incautious exertion on the part of the patient. Inversion of the uterus usually gives rise to frequent and profuse hemorrhages, together with great discomfort and pain; but it does now and then happen that the symptoms are not so urgent as to attract much attention, until the disease has lasted for some time. That the symptoms and history of the case are not always demonstrative of its true nature, is proved by the fact that inversion of the uterus has been frequently looked upon and treated as polypus.

With reference to *the diagnosis of complete inversion from polypus:* in both cases the tumor is generally more or less pyriform; in both cases it is hard, resistant, smooth; in both the tumor terminates above by a constricted portion; in both there are hemorrhage, leucorrhœa, and symptoms produced by pressure on the adjacent viscera; but in the case of inversion, neither the sound or the finger can be passed upwards beyond the pedicle of the tumor, whereas in the case of a polypus projecting down into the

vagina from the interior of the uterine cavity, an instrument can be passed into a cavity beyond the neck of the tumor; the neck of the tumor being encircled by the os uteri, the sound can be made to pass into the interior of the uterus. This distinction is not a perfectly reliable one, for there is occasionally a difficulty in detecting the cavity above when it really exists,* and sometimes there is found to be adhesion of the sides of the polypus to the adjacent wall of the vagina or to the interior of the cervix uteri (West, Blundell); and, thirdly, it may happen that the polypus grows from a part of the uterine cavity close to the orifice (Gooch). It is said that in cases of inversion the tumor is very sensible; that this sensibility is wanting in cases of polypus; that the surface of the inverted uterus is rough, whereas the surface of a polypus is smooth; but no reliance can be placed on such supposed distinctions. If an examination be made within a week after the labor, the fact that the normal uterine tumor is absent from the hypogastric region, associated with that of the presence of a rounded firm tumor in the vagina, will demonstrate the nature of the case: at a later period this remark would not hold good, or at least in the same degree. Another mode of examination, enabling us to distinguish between inversion and polypus, is the combined examination by the rectum and by the bladder, *i. e.*, the finger introduced into the rectum and a sound into the bladder, by which means an absence of the body of the uterus from its normal position can be substantiated (Arnott).

In cases of *partial inversion of the uterus*, the difficulties as regards the diagnosis are more considerable than when the inversion is complete. Here the pedicle of the tumor is encircled by the os uteri, as observed when a polypus projects downwards from the uterus into the vagina. In cases of partial inversion, however, the sound cannot be passed so far beyond the encircling band formed by the os uteri as usual, whereas in cases of polypus the cavity may be even longer than ordinary. A complex condition has been now and then observed, in which the diagnostic mark alluded to might fail; that, viz., in which there is a polypus of the uterus forming the lower part of the tumor, this tumor having dragged down the fundus uteri with it and produced partial inversion, where, in fact, the two conditions, polypus of the uterus *and* inversion of the uterus, are associated. Dr. McClintock† calls attention to a new diagnostic sign of the presence of inversion.

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* See Lancet, 1827–28, vol. i, p. 327.   † Op. cit., p. 91.

It is this: when the case is one of inversion, on drawing the tumor downwards the lip formed by the os disappears: on ceasing this traction the lip is again evident. A very careful consideration of the previous history, combined with examination of the parts, are necessary to come to a correct conclusion in these doubtful cases. The tumor due to a partially inverted uterus is hard and firm, like a fibrous polypus; the symptoms produced by it are pretty much the same—hemorrhages, discharges, &c.—but there is more pain, more discomfort to be looked for in the case of inversion than when there is only a polypus present. Again, the double exami-nation by the rectum and bladder is very important in assisting the diagnosis, the more so as in cases of polypus partly projecting from the os—the particular cases, in fact, which most closely simu-late this partial inversion of the uterus—the body of the uterus is generally more or less enlarged, owing to the presence of the polypus within it.

Some further remarks concerning the diagnosis of polypi from partial inversion of the uterus will be found under the head "Ex-amination by the Sound."

UTERINE POLYPI.

These growths may present themselves at, or may project from, the os uteri, forming usually smooth, rounded, or pyriform tumors of variable size. The tumor may be so large as to fill the vagina, or even to project very considerably beyond the vulvar aperture. The general relations of a fibrous polypus projecting into the vagina are well shown in Fig. 19, taken from a case operated on in University College Hospital not long since. The tumor was the size of an egg. The tumor is more generally characterized by hardness and density, but, in a few exceptional cases, to be pres-ently mentioned, its structure may be much softer. The propor-tion of the fibrous and muscular element varies. So also the vascularity, and therefore the softness of these tumors. Some are very vascular.

Malignant polypi—Recurrent fibroid tumors.—These form a very interesting group. They occur rarely, run a course very different indeed from that of ordinary fibrous polypi of the uterus, and hence their diagnosis is a matter of considerable importance.

There are two classes of cases comprehended under the above term, viz., *cancerous tumors*, growing from the wall of the uterus

and projecting into the cavity, and the *recurrent fibroid polypus* of the uterus.

In *Cancer of the fundus or body of the uterus*, a cancerous mass, of the medullary variety, may project downwards, its lower surface being felt as a softish rounded body. In cases of cancer in the more ordinary position, viz., at the *uterine cervix*, there may
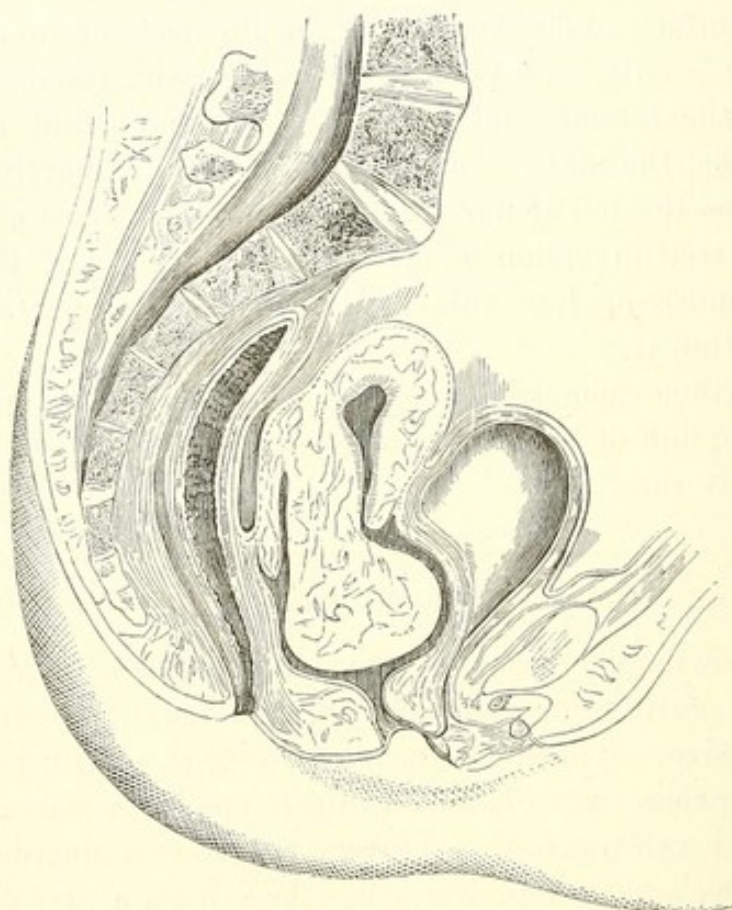
be found polypoid masses projecting into the cervical canal. Here the origin of the masses from the cervix would be apparent on slight examination. Cases of cancer of the fundus uteri are rare; fungous excrescences growing from the interior of the cervix are not so uncommon. The mass projecting at the os uteri is in both cases softer than the ordinary fibrous uterine polypus. The characteristics of the recurrent fibroid tumor of the uterus will be described in the latter part of the work.

Respecting the diagnosis of malignant polypi from the more common variety, it is to be remarked that the malignant polypi are softer to the touch, give rise to greater constitutional symptoms, and the patient presents an intensity in reference to the principal symptoms—hemorrhage, discharge, prostration, &c.,—

which is rarely witnessed when the case is one of non-malignant polypus.

Fatty polypi are of extreme rarity. Tumors having a *fatty* composition, and growing from within the uterus, may be found projecting in a polypoid form at the os uteri. They are very rare (see p. 81). Possibly *cretaceous* bodies also might be met with, occupying a similar position. They are extremely rare.

The diagnosis of polypus of the uterus projecting at or beyond the os uteri, from inversion of the uterus, has been already considered; concerning the diagnosis of the various kinds of polypi one from another, little remains to be added to what has been already said.

Smaller polypi.—The foregoing varieties of uterine polypus may each of them attain a considerable size. The *mucous polypi* are small, delicate, cyst-like bodies, attached by a pedicle just within the os. The *glandular polypi* are larger and are attached higher up within the uterus. They are readily recognized by a digital examination, but the speculum is of assistance in such cases.

PRODUCTS OF CONCEPTION: PORTIONS OF PLACENTA, OR COAGULA, LEFT IN THE UTERUS AFTER LABOR OR ABORTION.

A rounded tumor projecting from the os uteri, formed by the ovum itself, by its remains, or by a clot of blood left behind in the uterus, may be very easily mistaken for one of the forms of polypi which have been just described, the physical characters of the tumor alone being considered. The foregoing circumstances in the history of the particular case should be subjected to close investigation, in order to render the diagnosis clear. Blood-polypi of the uterus, as they have been termed, may occasion more difficulty in the diagnosis. They are probably the results of abortions; for a clot of blood may remain in the uterus for a considerable time after what has been considered to be the end of the abortion, during which interval it may have become hard, firm, and more like an ordinary polypus. It is sufficient for diagnostic purposes to mention the possibility of such an occurrence. In some rare cases, coagula of some size have been expelled from the uterus, unconnected with the previous occurrence of conception (see p. 82).

TUMORS GROWING FROM THE OS UTERI.

These are of very variable size, shape, and consistence. The first here to be mentioned is the *cauliflower excrescence of the os uteri*, the characters of which are as follows: from the greater part or the whole of the circumference of the os uteri a somewhat soft granular mass grows downwards into the vagina, at the centre of which is the aperture of the os, and above which is felt a narrowed constricted portion, the junction of the vaginal portion of the cervix with the vagina. The size of the cauliflower excrescence of the os uteri varies. The more usual circumstance is that it escapes detection at an early period of its growth, owing to the symptoms at first produced being slight; and when first discovered it may be so large as to fill the upper part of the vagina. It may grow to such a size as to reach to the ostium vaginæ. Ordinarily, the growth consists of several portions, each of which is lobulated in shape, and separated by a fissure from the adjacent portion. One lip of the os is usually larger than another, and sometimes it is not at first easy to distinguish the orifice of the os between the mass of tumors in question, some of which may be as large as an apple, others smaller, but all attached to, and continuous with, the margin of the os uteri. If the patient be examined at an early stage of the growth, the os is found slightly puffed out, softer than usual, and presenting a granular feel. If the examination be made at a later stage of the disease, the vagina may be found filled and distended by a large spongy mass. At a still later period the growths may have partly disappeared, having ulcerated away, and then the os uteri may present the changes met with in the ulcerative stage of ordinary cancer of the uterus, together with those just mentioned. And in not a few cases, when the patient is for the first time examined, it is found that while presenting well-marked tumors of the cauliflower kind, the cervix itself is hardened, greatly thickened, and the uterus more fixed than usual. We may find that above the situation of the excrescences, the cervix uteri forms a pedicle comparatively healthy in structure; the pedicle may, however, be very short, and hardly to be felt. It not unfrequently happens that growths similar to those proceeding from the os uteri are found situated on the vaginal walls, in proximity to the os uteri.

The cauliflower excrescence of the os uteri is soft to the touch, unless under the constricting influence of astringent injections; it has a peculiar granular feel, bleeds easily when touched, or after

intercourse, sneezing, or straining; and an almost constant symptom is the presence of a copious watery, and latterly fetid, discharge from the vagina. The drawing (Fig. 20, after one in Sir J. Y. Simpson's Lectures) represents a large mass of this kind, and its relation to the os uteri. The characteristics of this condition are physically those above stated; the one in which most reliance is to be placed diagnostically is the origin of the mass from *all* or the greater part of the circumference of the os uteri. The soft pulpy mass may give to the finger a sensation like that experienced on touching the os uteri in cases of placenta prævia, but the other circumstances present would hardly admit of the two conditions being confounded.

Fig. 20.
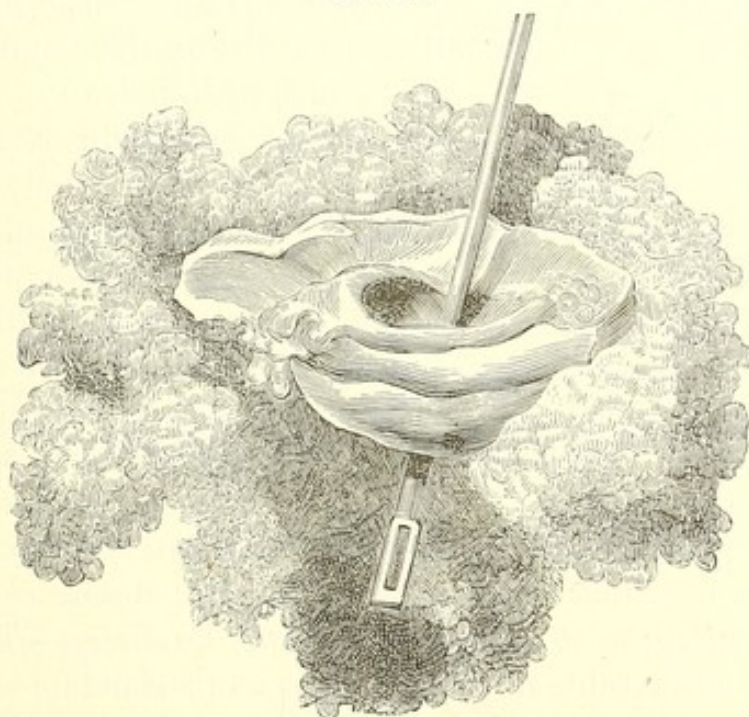
The symptoms of this disease are frequently very indistinct at first. The distinctive signs, watery offensive discharge, occasional bleeding, &c., may not show themselves early in the disease, or, if observed, they may be so slight as not to attract particular attention, and thus a considerable time may be lost before the disease is detected, or its presence even suspected.

Another tumor which may be found growing from the os uteri is the *medullary tumor*. From it the cauliflower excrescence is distinguished by its regular and extensive attachment or departure from the os, the medullary tumor growing from one side or other of the cervix, and being more or less pedunculated; by its granular structure, that of a medullary tumor being more consistent,

and firmer, and lobulated; and by the progress of the case, which advances much more rapidly to a fatal termination when the tumor is a medullary one. These medullary tumors have a surface more firm and even than that of the cauliflower excrescence, but not so firm as that of a *fibrous polypus* projecting into the vagina. From the latter tumor it would also be distinguished by the nature and the mode of attachment, the pedicle of the polypus being surrounded by the os uteri, whereas the medullary tumor grows from the side of the os, and not from the interior of the uterus. Profuse hemorrhages, fetid discharges, &c., may be observed equally in cases of medullary tumor, and of polypus. In those cases of

Fig. 21.

polypus where the tumor is so large as to fill the vagina, or where the surface of the mass is apparently or actually adherent at the os, the diagnosis might be attended with difficulty. The presence of a large medullary mass growing from the os uteri is not, it must be remarked, a common phenomenon in cases of cancer of the uterus. The drawing (Fig. 21) represents a tumor removed by me in University College Hospital, June, 1866. On microscopic examination it proved to be malignant, although smooth and tolerably hard. The patient has lately appeared again, and the uterus is now (February, 1867) affected with carcinoma.

Cystic Enlargement of one Lip of the Os Uteri.—The tumor may be so considerable in certain cases as to simulate a tumor of the medullary character, from which, however, it would be distinguished by the greater smoothness and firmness present in the former, and by the absence of the fetid discharge, hemorrhages, &c., observed in the latter. The course of the disease in cases of cystic enlargement is essentially a chronic one.

Simple Fibroid Tumor.—These are not very common. The growth generally becomes pedunculated. Its size may vary. The diagnosis of such a tumor from one of malignant character is sometimes very difficult, the physical characters being occasionally identical.

CHAPTER VI.

EXAMINATION OF THE UTERUS BY MEANS OF THE SOUND.

General Objects for which the Sound is used—The Instrument—Method of Introduction—Difficulties encountered.

LENGTH OF THE UTERINE CANAL GREATER THAN USUAL : due to, Recent Delivery—Longitudinal Hypertrophy of the Uterus—Fibrous Tumor of the Uterus—Polypus of the Uterus—Hypertrophy of the Uterus—Cancer—Tubercle.

UTERINE CANAL SHORTER THAN USUAL—Congenital—Stricture or Obliteration of Canal by Pressure of Tumors—Partial Inversion.

ALTERATIONS IN THE DIRECTION OF THE CANAL—Flexions and Versions of the Uterus.

"IT is possible," says Sir J. Simpson, through whom, in this country at least, the use of the instrument became known, "by the use of a uterine sound or bougie introduced into the uterine cavity, to ascertain the exact position and direction of the body and fundus of that organ; to bring these higher parts of the uterus, in most instances, within the reach of tactile examination; and to ascertain various important circumstances regarding the os, cavity, lining membrane, and walls of the viscus."

The sound itself is a slender rod of flexible metal, terminated by a slight knob at one end and by a flat handle at the other. It is graduated in inches, and $2\frac{1}{2}$ inches from the bulbed end there is a slight projection. The instrument is very slightly curved at this point. The bulbed extremity has a diameter of one-eighth of an inch. A second instrument provided with a much smaller bulbed extremity is sometimes useful.

This instrument must never be used without a previous digital examination, and there are circumstances under which the uterine sound is not to be used at all—that is to say, where there is the slightest reason for suspecting that the patient is pregnant. The introduction of the sound into the uterus under these circumstances would almost inevitably occasion miscarriage or abortion. In cases where the patient is the subject of amenorrhœa, this caution is particularly appropriate; for during the early months of pregnancy she is sometimes unaware of her condition, or desirous of concealing the fact when known to her. Under such circumstances, the sign on which it is customary to place most reliance in deciding

as to the propriety or not of using the sound is the presence or absence of *softness* of the vaginal portion of the cervix and of the edges of the os uteri; and, where the softness in question is detected, to refrain from using, or at all events to postpone the use of the instrument until the nature of the case is made more evident in other ways. As it must be admitted, however, that the presence or absence of this sign is by no means a positively sure criterion, unless perhaps in very experienced hands, it will not be safe to rely exclusively upon it: it will be better in a case where there is the slightest doubt to be on the safe side.

Another caution is required. It is not so very uncommon for women to suffer from slight losses of blood at the beginning of pregnancy: such losses might be readily taken to be evidence of menstruation, and the sound might in such cases be injuriously used.

It has occasionally happened that the sound has been introduced into the pregnant uterus, and no evil result has followed. It is thus shown that the instrument may pass into the decidual cavity between the decidua uterina and decidua reflexa without *necessarily* inducing abortion.

As a general rule, patients experience no inconvenience from the use of the sound, if it be carefully introduced; but in a few cases the passage of the instrument gives great pain, and its use should not then be persevered in.

Method of Introduction.—The patient is conveniently placed for the use of the sound, either lying on the left side close to the edge of a high couch or bed, or lying on the back: as a general rule, the former position is preferable. The fore-finger, or the first and second fingers, of the left hand are first introduced into the vagina, and the tip of the finger brought into contact with the os uteri. The left hand is more conveniently used for this purpose, leaving thus the right hand free to use the sound. The uterine sound, previously warmed and oiled, is then lightly grasped by the right hand, and the point of the instrument carried slowly towards the os uteri, the fore-finger of the left hand being made use of as a director. If these directions be well attended to, the point of the instrument is readily made to hit the orifice through which it is desired to pass the instrument. When the point of the instrument is engaged in the os uteri, the first part of the operation is completed. If the patient be lying on the back, the left hand is more conveniently used to hold the sound than the right.

The passage of the sound through the canal of the cervix and

into the cavity of the body of the uterus requires very careful management, and occasionally is only to be accomplished by those possessed of considerable dexterity. It is imperatively necessary to bear in mind that the introduction of the sound should be accomplished without using the smallest degree of force; resistance encountered is not to be overcome in this manner. Ordinarily, if the operator has introduced the sound in the proper direction, the curvature of the instrument and the curvature and direction of

FIG. 22.*
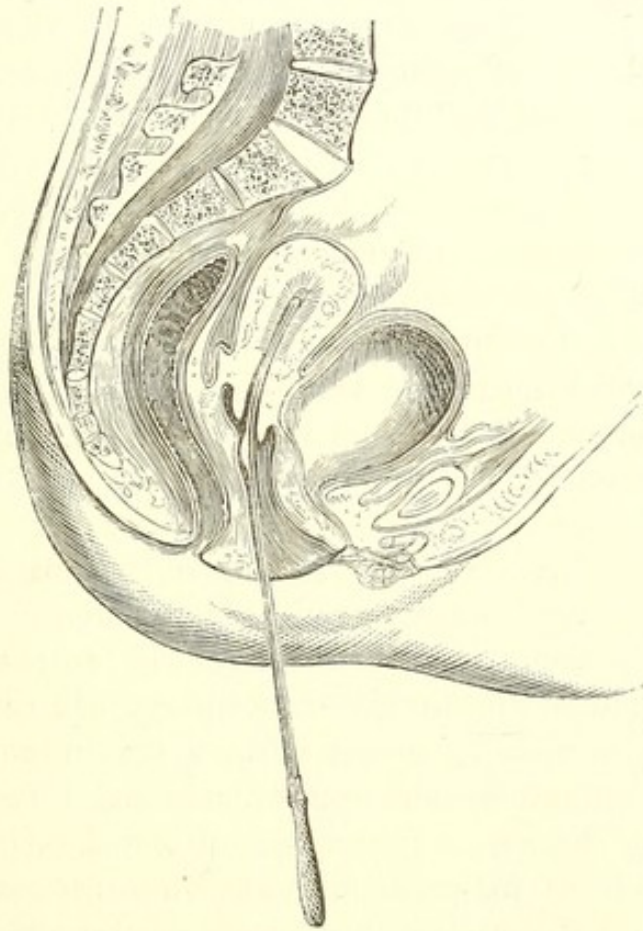
the canal being identical, the instrument is easily made to pass upwards until the knobbed extremity reaches the fundus uteri. Normally, the canal of the uterus passes at first upwards in the direction of the pelvic axis, but higher up there is a slight inclination forwards. This slight inclination forwards is usually sufficiently provided for by the curve given to the sound. If the uterus be of the average size, the instrument can be introduced 2½ inches beyond the os uteri, and the projecting elevation on the

* Fig. 22 represents the sound completely introduced, the position of the uterus normal.

convex side of the curve of the sound is felt by the fore-finger to coincide with the os uteri. When the sound has been introduced a couple of inches, greater care is required in pushing it onward. It occasionally happens that the tissue of the uterus is diseased, and so soft that an instrument such as the uterine sound may be driven through the fundus by the exercise of force not very great in amount. The advisability of avoiding all risk of such an accident need not be enlarged upon.

The sound is sometimes used through the speculum. It is far preferable, however, to introduce the sound in the manner above described; I believe that there is far more risk of doing injury to the uterus when the sound is used in conjunction with the speculum.

Supposing that an impediment is encountered to the introduction of the instrument, this may proceed from one of the following causes:

The point of the instrument is not directed in the axis of the canal. This is the most common cause of difficulty, and it is one which is only to be got over by practice. It is often necessary to withdraw the instrument and bend it so as to give it a different curve. If the actual direction of the vaginal portion of the cervix be previously ascertained by digital examination, this difficulty is less likely to occur.

The os is not pervious to the instrument. This is a cause of difficulty which is generally anticipated by digital examination, for the practised touch easily recognizes the presence or absence of the depression and opening of the os uteri. In cases where the finger fails to find an aperture, it is necessary to have recourse to the speculum, in order to ascertain by actual inspection of the part whether a minute opening can be detected. The absence of an opening is rare; such a condition is, in most instances, a congenital one, and the patient has never menstruated. In a few cases, however, the os becomes sealed up, no trace of its existence being observed, in women who have had children, and also, rarely, in women who have been subjected to operations the nature of which is such as to lead to contraction of the tissues around the os uteri.

Contraction of the Canal of the Cervix.—When the instrument is engaged in the canal, its further passage may be prevented by contraction of the canal itself. It is not very common to meet with an obstruction to the passage of the instrument, from this cause at least, lower down than 1 inch or $1\frac{1}{2}$ inch from the os uteri, although the occasional existence of contraction at this

point, congenital or acquired, is not to be denied. The cavity of the cervix uteri is tolerably capacious, but at its superior termination—the *internal os*—the canal is ordinarily narrowed; and in the nulliparous uterus it is customary to find that when the instrument reaches the point of junction of the cavity of the cervix and the cavity of the body of the uterus, there is a slight resistance. The nature and kind of resistance here alluded to will be better understood by reference to Fig. 23, copied from an exceedingly accurate drawing by Dr. A. Farre. It represents a section of the uterine cavity, and the extent and direction of the cervical canal. In women who have had children, however, this kind of difficulty no longer exists. Without exercising anything like forcible pres-

sure, this ordinary resistance, as it may be termed, is readily got over. It requires care to discriminate between contraction and those other conditions which may impede the progress of the instrument, next to be alluded to.

The point of the instrument may become engaged in one of the lacunæ or depressions of the cervix uteri and its further progress arrested thereby. This is one of the most common causes of difficulty in introducing the uterine sound. By gently withdrawing the instrument and again introducing it, at the same time slightly altering the direction in which it is pointed, this kind of difficulty will be readily overcome.

The point of the instrument may

FIG. 23.

be arrested by the *existence of curvature or distortion of the canal of the uterus*. When the uterus is bent backwards (retroflexion) or forwards (anteflexion), the instrument is stopped abruptly at the seat of the flexure. When the resistance met with is due to retroflexion, a tumor may be felt behind the upper part and back of the vagina—the fundus uteri; and it is necessary, before introducing the sound, to turn it so that the concavity is directed not forwards, but backwards. With a little management, the sound then passes round the curved part of the uterine canal, and back-

wards into the centre of the fundus uteri. In like manner, in the case of anteflexion, the obstacle to the introduction of the sound is to be removed by giving the instrument a sharper curve forwards than usual, the concavity in this case being directed anteriorly.
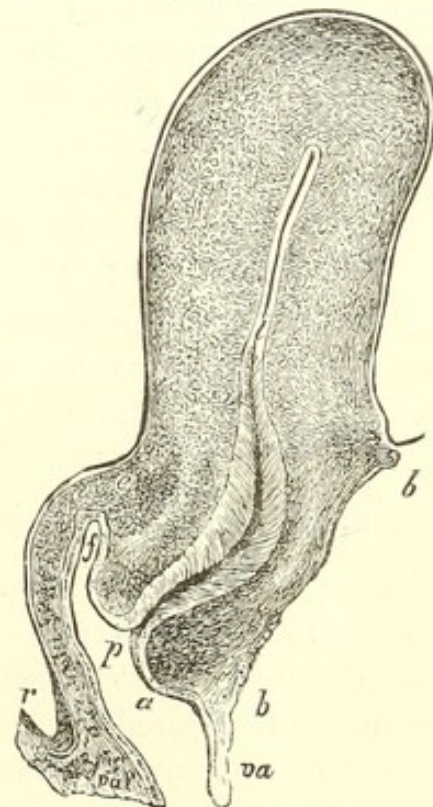
In cases where the sound does not readily pass, it is a good plan to use the speculum, to draw the anterior lip of the os down gently by means of a small tenaculum hook, and then to introduce the sound. The canal is thus drawn more nearly straight and the entry of the sound facilitated (see Fig. 26).

In the use of the sound we have, of course, a very complete and easy method of measuring the *length of the cavity* of the uterus. These variations are themselves signs of great value in the diagnosis of uterine disease; the deductions to be drawn therefrom are now to be pointed out. Professor Simpson has, in one of his original memoirs on the uterine sound,* so fully considered this branch of the subject as to leave little to be added. In the subsequent remarks, I have chiefly followed the account given in the memoir in question. The usual length of the uterine canal from the os to the fundus is $2\frac{1}{2}$ inches, but a slight increase or a slight diminution of this measurement (*e. g.* to the extent of $\frac{1}{4}$ inch) is very frequently observed, and quite consistently with the uterus being in a healthy state.

THE LENGTH OF THE UTERINE CANAL GREATER THAN USUAL.

This may be caused by any one of the following conditions :

Recent Delivery.—If the woman has had a child, the increased length may be due to a persistence of the hypertrophy with which the uterus is affected in consequence of pregnancy. After delivery the uterine cavity measures from six to eight inches, and this measurement is found gradually to diminish, until after six or eight weeks it resumes, under ordinary circumstances at least, its previous size. It is obvious that the uterine sound is capable of rendering valuable assistance in the diagnosis, in cases where it becomes a question as to the presence of "signs of delivery." For, on the one hand, where the patient was desirous of concealing the circumstance of her having been delivered, the sound would put us in possession of the fact of the uterus being larger and longer than usual—a condition the existence of which would

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* Obstetric Works, vol. i, p. 63.

have to be explained; and, on the other, in a case where the patient was desirous of having it believed that delivery had recently occurred, nothing of the kind having in reality taken place, the sound would inform us that the cavity was of the normal length, and that therefore recent delivery of a child was impossible. The examination should follow the date of the supposed delivery pretty closely in order that the inference drawn from the premises alluded to may be of a decisive value. Further, the mere fact of the cavity of the uterus being considerably increased in length would not of itself be sufficient to justify us in stating that recent delivery had occurred: as will be explained immediately, the cavity of the uterus may be lengthened from other causes. In a woman who has within the last few months borne a child, and the cavity of whose uterus is longer than it should be, there is presumptive reason for suspecting that it is a case of defective involution of the organ after delivery.

Longitudinal hypertrophy of the uterus is another condition of the organ in which the sound passes inwards for a greater distance than usual. This species of hypertrophy occurs quite independently of pregnancy. For the most part the cervix of the uterus is the portion affected: this is lengthened out and extended, whereas the cavity of the body of the uterus remains nearly as usual, or, at all events, participates but little in the change.

It has been elsewhere explained (see p. 213), that in many cases where the uterus is apparently prolapsed, the os uteri being very low down, this does not proceed from prolapsus of the whole organ, but from the presence of hypertrophy and elongation of the cervix alone, of that part of the cervix which is above the vagina. The sound, when used under these circumstances, is a most valuable means of diagnosis. In prolapsus constituted by hypertrophic elongation of the cervix, the sound can be made to pass upwards for a much greater distance than usual. Dr. Simpson mentions cases in which it passed inwards to a depth of four or five inches; and Huguier, whose observations are more recent and extensive, in the average of a large number of cases, found the length of the uterine canal to be $4\frac{3}{4}$ inches; in extreme cases, a length of 9 inches was attained. In many cases which I have examined, with the object of testing Huguier's statements, the results were such as to fully confirm their truth and accuracy. I have found the length of the uterine canal to amount to as much as $6\frac{1}{2}$ and 7 inches (see Figs. 17 and 18). There is a fallacy connected with the use of the sound in these cases, with which it is well to be ac-

quainted, in order that an erroneous inference may not be drawn. The sound is sometimes arrested two inches or so from the os uteri, by the curve which the lengthened cervix uteri makes at this point, and in one instance I found it necessary to pass the finger into the rectum, when, by pressing against the convexity of the curve in question, the sound readily passed inwards between two and three inches further. We have two categories: (a) those in which the *cervical* cavity is lengthened and at the same time prolapsed; and (b) those in which the *uterine and the cervical cavity* are both lengthened, the os uteri remaining at or about its usual place, at the summit of the vaginal canal, or not remaining in this position. I have seen a case in which tumor of both ovaries was present, the upper part of the uterus was dragged up, and at the same time the lower part was pushed downwards. The canal of the uterus had an excessive length. (See " Prolapsus.")

Fibrous tumors of the uterus frequently occasion a considerable increase in the size of the cavity of the organ—a circumstance rendered evident by the use of the sound. The size of the tumor may, however, be considerable, and the size of the uterine cavity remain unaffected. If the tumor be situated externally to the uterus—that is to say, if it grow beneath the peritoneum—it may attain an enormous size without entailing any considerable alteration in the size of the cavity of the uterus. When the original seat of the tumor is, on the other hand, beneath the lining membrane of the uterus, the cavity of the uterus is constantly, or nearly so, increased in size, the increase being almost directly in proportion to the size of the tumor. When the fibrous tumor grows in the centre of the thickness of the uterine wall, the cavity is increased in size, but not to so great an extent as when it is situated nearer the lining membrane. The increase in the length of the uterine cavity due to the presence of fibrous tumor may reach to such an extent that the sound passes in to a depth of six, seven, or eight inches. A possible fallacy Sir J. Simpson calls attention to in connection with this subject. In long-standing cases it sometimes happens that the pressure produced by large fibrous tumors occasions the opposite sides of the uterine cavity to adhere, and the sound is arrested some distance below the real position of the fundus uteri.

The diagnosis between lengthening of the cavity caused by dragging of the fundus of the uterus upwards, and that caused by the presence of fibrous tumor in the walls of the uterus, turns on the relation which is found to subsist between the sound while in the

uterus, and the tumor occupying the pelvis and projecting upwards in the hypogastric region. As a general rule, when an ovarian tumor is dragging the fundus uteri upwards, and thereby lengthening its cavity, the sound is found to be anterior to the tumor. To this rule there may be occasional exceptions; and when the tumor is situated laterally in reference to the sound, this means of distinguishing between the two is not available. When the tumor dragging up the uterus is extra-uterine, one side and corner of the uterus is generally more drawn up than the other: this gives the course of the sound upwards a certain obliquity, often characteristic.

Fibrous Polypus of the Uterus.—When the polypus remains within the cavity of the uterus, the length to which the sound can be introduced is increased in proportion to the size of the polypus. By means of the sound, a very perfect idea can sometimes be obtained of the relations and place of attachment of the polypus, for the point of the instrument can be made to travel round the included mass between it and the uterine walls. Care must be exercised not to fall into the error of taking the pedicle of the polypus for the summit of the uterus; it is possible for the point of the sound to be arrested at this point when first introduced.

Hypertrophy of the Uterus.—The increased length of the uterine cavity may be due to hypertrophy of the organ, a condition which is now and then found to be present, unassociated with any of the conditions causing lengthening of the cavity hitherto described. The lengthening which occurs in connection with this condition is never very considerable in amount, the measurement not generally exceeding $3\frac{1}{4}$ to $3\frac{1}{2}$ inches. This hypertrophy of the uterus, and consequent lengthening of the canal, may be due to chronic inflammation, to long-continued congestion of the uterus, repeated miscarriages, or to defective involution of the uterus persisting for a long time after delivery.

In *cancer of the fundus of the uterus*, the organ might be found unduly lengthened, without marked evidence of disease of the same kind at the cervix. In the very rare disease, *tubercle of the uterus*, elongation and increase in the size of the organ has been observed to be present.

In attempting to ascertain the cause of undue lengthening of the uterine canal in the case actually before us, it is always necessary to examine carefully into the previous history of the patient, and to compare the results of examination by the sound with those derived from examination of the hypogastric region of the abdo-

men, &c. It is indeed, in all cases, advisable to come to no conclusion until a combined examination by the sound internally, and by the hand placed over the hypogastrium, has been performed.

THE UTERINE CANAL IS SHORTER THAN USUAL.

When the depth to which the sound can be introduced is less than usual, this may proceed, following Sir J. Simpson's classification, from one of the following causes :

Preternatural Shortness of the Organ generally, a congenital condition.—This congenital shortness of the canal is met with where the uterus is imperfectly developed, the whole organ being smaller than usual, or in cases in which the organ is unequally developed on the two sides. The condition of the external generative organs may be apparently quite normal, and the sexual instinct present to the usual degree, and yet there may be imperfect or defective development of the uterus itself. The uterus may be double, or one side only may be developed, or one side may be developed to a certain degree, and on the other side may be found a less fully developed cornu. These conditions are not frequently met with in practice,* but the possibility of their occurrence must be kept in view, or the results of examination by the sound might prove embarrassing. The relation subsisting between congenital defects of the vagina and those of the uterus have been described in previous pages.

Stricture of the Uterine Canal, or partial Obliteration due to Pressure of Tumors, &c.—The apparent shortening of the canal due to stricture has been already alluded to in speaking of the difficulties attending the introduction of the sound. In old people the internal os uteri, which is the point at which the stricture, when present, usually exists, is often obliterated (Mayer, Matthews Duncan). The cavity of the uterus proper—that is to say, the portion above the internal os uteri—may also be obliterated, and the sound is then arrested at the same point. When the canal is obliterated by *pressure*, as by large fibrous tumors growing in the walls of the uterus, shortening of the canal may be a consequence.

Partial Inversion of the Uterus.—The shortening due to partial inversion could not possibly be mistaken for that due either to

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* For further information on this subject the reader is referred to the work of Kussmaul, Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter. Wurzburg: 1858.

stricture or imperfect development of the uterus. In partial inversion, there is a tumor projecting from the os uteri ; the sound passes into the os uteri by the side of this tumor, but cannot be introduced so far as usual. Practical experience has shown that, in some cases, the diagnosis between partial inversion and polypus of the uterus is one of the extremest difficulty ; but with the aid of the data obtainable by a careful use of the uterine sound, we may hope to surmount this difficulty. The important diagnostic fact is, that the sound passes inwards to a less depth than usual on *all sides* of the projecting mass. If the case be one of polypus, the sound passes inwards to the usual extent, and the hand over the hypogastric region discovers the fundus of the uterus in its usual place. When polypus is *combined* with partial inversion the difficulty is greatly increased, and in such a case careful measurement of the depth of the cavity, examination of the tumor itself, examination *per rectum*, and of the hypogastric region, must all be brought to bear in forming a decision.

Atrophy of the uterus is in rare instances observed after labor ; here also the cavity of the uterus is found to be shorter than natural.

Lastly, the caution may be repeated, that flexion of the canal, causing arrestment of the progress of the instrument, *may* be confounded with actual shortening.

ALTERATIONS IN THE DIRECTION OF THE UTERINE CANAL.

When, in order to reach the fundus uteri with the point of the sound, it is necessary to curve the instrument *backwards,* this indicates, of course, that the canal itself is curved in that direction, and that retroflexion of the uterus is present. The retroflexion, may be associated with a more or less hypertrophied condition of the fundus uteri, or with the presence of fibrous tumors in the posterior or upper portion of the uterus. Whatever be the exact cause of the displacement in question, the condition itself is easily made obvious by means of the sound. Having introduced the sound into the displaced fundus, further information may be obtained as to the condition of the uterus. If there be no adhesions forcibly retaining the fundus in its unnatural position, it will be generally possible, by gently turning the handle of the sound half round, to restore the fundus to its proper position, and to give the canal of the uterus its normal direction. When the manœuvre is successful, the finger in the vagina feels the tumor behind the cer-

vix uteri retiring from this position; and when the restoration is complete, the tumor constituted by the displaced fundus uteri is no longer to be felt in its former position. When the retroflexion has existed for any considerable time, adhesions may or may not have formed, binding down the fundus uteri. In the majority of cases, adhesions do not exist, or, at all events, the possibility of replacing the fundus by means of the sound would appear to indicate that such is the case. When the point of the sound, together with the fundus uteri, have been turned forwards, we are in a position to learn somewhat of the nature of the retroflexion, by observing what takes place. In some cases the uterus having been

Fig. 24.
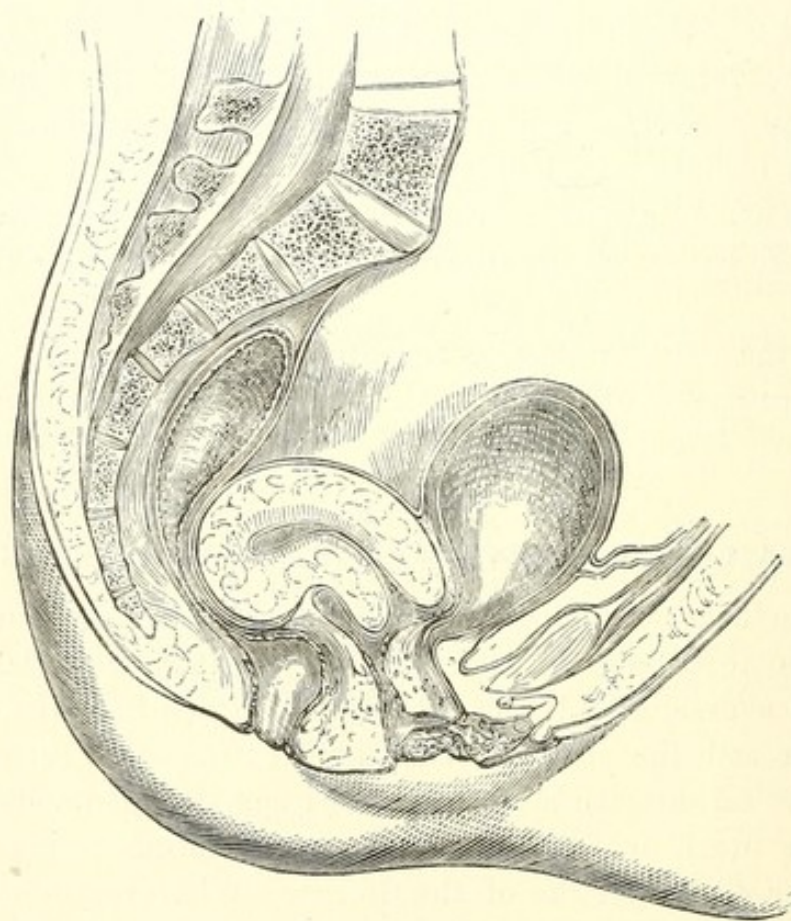
replaced, remains in its proper position, but in many cases, in the majority indeed, the retroflexion returns when the sound is withdrawn. It is a good plan, after restoring the uterus to its proper position, to let go the handle of the instrument; it frequently happens that the instrument, slowly or quickly, according to the degree of resistance the flexion offers, revolves, until the concavity is again turned completely backwards. It is obvious that those cases will be most easily cured in which the uterus remains

longest in the position artificially given to it. In endeavoring to turn the fundus forwards, it would not be proper to exercise anything like force: if there be no adhesions, the necessary reduction is easily effected, and if adhesions be present, the sound could not be turned forwards, unless by using force to an unwarrantable degree, and the uterus might be torn, but the retroflexion unaffected.

While the uterus is in its proper position, the sound still within its cavity, it will be useful to examine the fundus from the hypogastric region, with a view to ascertain its condition as to size, shape, &c. The upper part of the uterus can be thus subjected to such a complete scrutiny as would be impossible without the aid of the instrument.

In *anteflexion of the uterus*, the canal is bent forwards—an exaggeration of the normal inclination in this direction. When this condition is present, the instrument can be usually introduced without altering the natural curve of the instrument, by simply inclining the handle towards the coccyx when the point reaches the internal os uteri.

In *retroversion* and *anteversion of the uterus*, the canal is not bent on itself, but it is displaced. Thus, in retroversion, the axis of the canal is more or less horizontal, instead of coinciding with the axis of the pelvis, and in anteversion the same thing occurs— the only difference being, that in the first case the os uteri is nearer the symphysis pubis than usual, while in anteversion the os approaches the promontory of the sacrum. This definition applies to a typical case. Practically, it is found that when retroversion is present, there is combined with it a certain amount of retroflexion, and the same holds good, but in a less degree, with reference to anteversion. Moreover, the displacement of the canal is not always such that the canal maintains its usual position in the middle line of the body; the circumstance which determines to one displacement often determines the other also. The sound may be found to pass to one side indicating *lateriversion*. When the direction of the canal is altered, so that it no longer preserves its median position—a fact indicated by the direction the sound must be made to pursue—this very often indicates the presence of a tumor, *e. g.*, ovarian cystic tumor, or fibrous tumor of the uterus. A small extra-uterine tumor within the pelvis, whatever be its nature, does not effect a material alteration in the direction of the canal of the uterus. It is chiefly in cases where the bulk of the tumor is greater, and particularly in those cases where it encroaches on the abdominal cavity, that the displacement of the canal of the

uterus is most marked. In such cases, a knowledge of the direction of the uterine canal is of most material assistance, and this we can always obtain by the use of the sound. We can thus ascertain whether the great bulk of the tumor be behind, in front of, or situate laterally with respect to the uterine canal, and whether the tumor be separable or not from the uterus. This subject will again be considered in pointing out the diagnosis of abdominal tumors.

CHAPTER VII.

EXAMINATION OF THE OS UTERI BY MEANS OF THE SPECULUM.

General Rules respecting the Use of the Speculum—Method of Using the Speculum—Instruments to be preferred—Appearances of the Os Uteri, revealed by the Speculum.

By the use of the instruument known as the "speculum," we are able to obtain ocular evidence of the condition of that part of the uterus which projects into the vagina, and of the orifice or os uteri.

The speculum should never be used without a previous digital examination. The digital examination will be the means of informing us whether the state of the parts be such as to render it unadvisable or impossible to use this instrument. Further, a knowledge of the size, length, &c., of the vagina, ascertained by means of a digital examination, is necessary in order that the instrument selected may be adapted to the peculiarities of the case. The use of the speculum is, as a rule, objectionable in the case of young unmarried women, and more especially in those in whom the hymen is intact. For purposes of diagnosis the use of the instrument can but rarely be considered essential under such circumstances.

The cases in which the speculum is most commonly used for purposes of diagnosis are the following : Cases of obstinate leucorrhœa in which there is reason to suspect the presence of an abnormal condition of the cervix uteri and of the glands there situate ; cases of menorrhagia, or recurring hemorrhage, for the purpose of ascertaining the presence or absence of small polypoid growths within the os uteri, and which may be so small as not to be de-

tected by digital examination ; cases in which it is considered advisable to examine ocularly the condition of the portio vaginalis and os uteri, and thus of obtaining evidence as to the presence and nature of ulcerations, abrasions, excoriations, &c., of the parts in question. It is employed in cases in which it is considered advisable to explore the interior of the uterus itself, to facilitate, in some cases, the use of the uterine sound, and it is essential in the performance of some operations involving the cervix or os uteri.

Method of using the Speculum.—The mechanical contrivances for getting a view of the os uteri are very numerous. Simple tubes, tubes slit up into two or three segments, and lastly, the duckbill univalve instrument,—now known as Marion Sims's,— have been successively employed. It is needless to describe these various instruments in detail.

The two instruments which are, in my opinion, best adapted for the purpose are a short bivalve instrument (a modification of Cusco's speculum), and Sims's speculum.

Fig. 25.
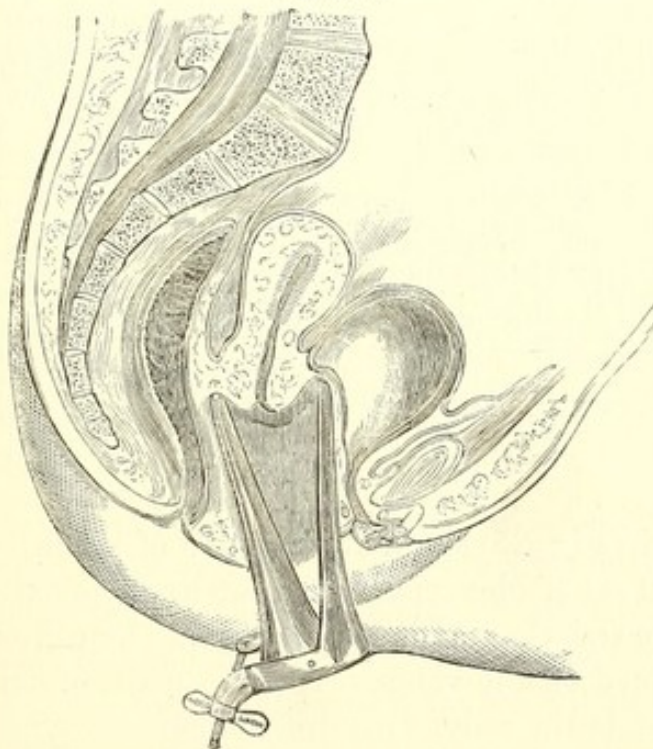
Cusco's speculum I have used for some time, and in the Obstetrical Society's catalogue, recently published, will be found a description of one which I had constructed on this model, but a little larger at the mouth, and more portable. Messrs. Weiss have since improved the method of separating the blades, and it is now a very complete instrument (Figs. 25 and 27). It has the advan-

tage of bringing the os uteri near to the ostium vaginæ, a most important point, and the aperture or mouth being large (1½ in. by 1⅜ in.) great facilities for operations are offered. Its length is only four inches. It is kept in place by its own action and requires no assistant.

In using this instrument, the patient should be placed on the side with the knees drawn up, and the hips, a little higher than the thorax, should be quite at the edge of the examining couch. The speculum, previously oiled and warmed, is introduced in the collapsed shape, and care taken to direct it backwards. The chief difficulty is at the ostium vaginæ, but this is overcome by drawing the fourchette a little back with the fore-finger of the left hand, and inserting the speculum just at first a little obliquely as regards the plane of the aperture. It should be passed as far as possible before screwing the blades open, and when the screw has been turned about three times it should be ascertained whether the os uteri is in view. It frequently happens that the speculum has now to be directed a little more backwards, in order that the os may be brought into view. The further separation of the blades is then effected. When the vagina is very long and narrow this speculum does not answer quite so well, but if the vagina be dilatable it is of great service, for in separating the blades the os is brought down into view by a mechanism which will be sufficiently obvious. In cases where the ostium vaginæ is very narrow, a smaller sized instrument of the same kind would be probably equally useful; but under such circumstances the use of the speculum is not often required. In withdrawing the instrument it is best to allow the blades to collapse to within half an inch of each other, so as to prevent the vaginal walls being caught between them.

The drawing (Fig 25) shows the position of the instrument when introduced and the blades separated to an average extent (1⅝ inch). It will be observed that a good deal of the length of the instrument is expended on the vulva. A great merit of this instrument is that it expands the vulvar part of the canal.

Another speculum is that of Dr. Marion Sims, and a most valuable one it is. This instrument requires the aid of an assistant. The patient must be placed in position as follows: Having been brought quite to the edge of the couch, which should be about the height of an ordinary table, she is laid on the side, and the knees drawn up to the abdomen. The left arm is then placed at full length behind the back. This throws the chest a little forwards.

I have found it best also to raise the hips by means of a thin hard pillow or otherwise. The speculum is then introduced, care being taken to keep the point of the blade close to the posterior wall or floor of the vagina. The larger or smaller blade is used according to circumstances. When the blade is in situ, the whole instrument is pulled backwards in such a manner that the whole of the floor of the vagina is pressed against the rectum. The perineum is thus stretched, and at one and the same moment the ostium vaginæ and the vaginal canal are dilated. The fundus of the uterus falls a little forwards in consequence of the position of the patient, and air of course enters the vagina. It is found that in some cases a

Fig. 26.
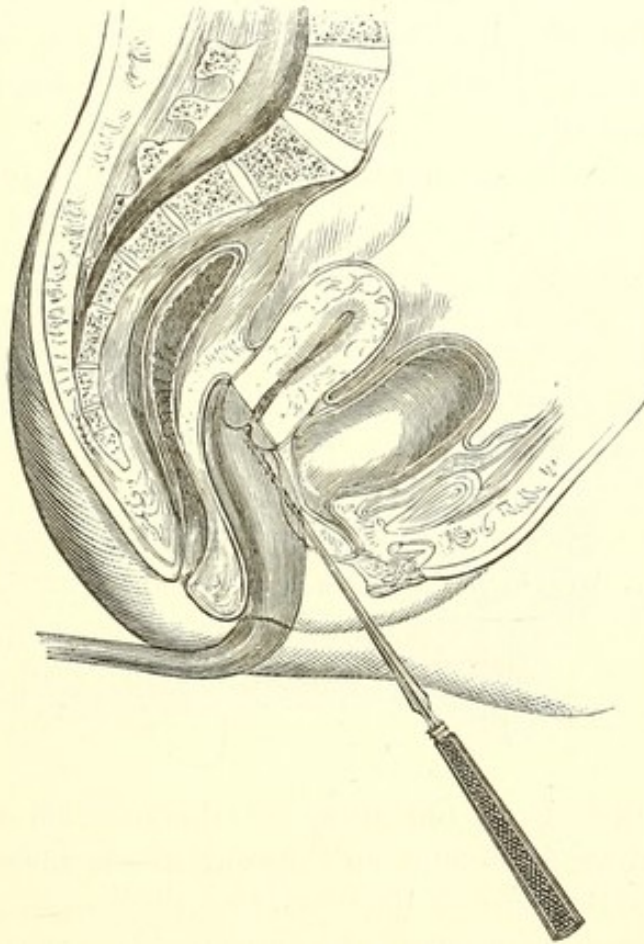
perfect view is now given of the os uteri. In others the bladder and anterior vaginal wall project backwards so as to impede the view, and when this happens the uterine sound or the finger must be used to push the projecting part aside, or, what is still better, a hook may be fixed into the anterior lip of the os and the uterus gently drawn down. Dr. Sims uses a small delicate tenaculum hook for this purpose. The one here figured (Fig. 26), and which I have been in the habit of using, is a little firmer and stronger,

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and more bent back. It will be found that in drawing down the uterus it is necessary simultaneously to draw the speculum a little in the same direction.

The view thus afforded of the os and the cervix uteri is exceedingly good. Manipulations on the parts in question are effected with extreme facility. The use of the hook is not attended with any bad result, but when the patient is straining, as not unfrequently happens during the exhibition of chloroform, care is required so as not to lacerate the parts.

Fig. 26 represents the large blade in situ, as when first introduced. The hook having been inserted is drawn down about an inch in the direction of the vulvar aperture bringing the os uteri with it.

In some cases the bivalve instrument is better than the univalve; but where assistance is easily procurable the latter will be generally preferred.

The new bivalve instrument (Fig. 27) is so superior to the older

Fig. 27.
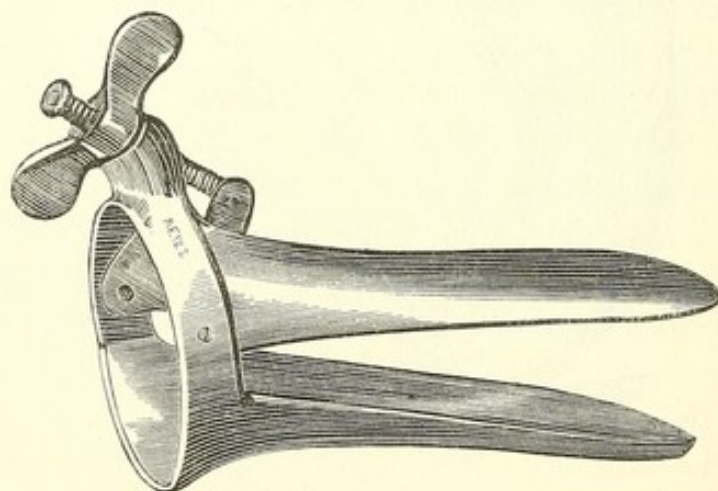
instruments, that I do not describe them. The tubular glass speculum—known as Fergusson's speculum—is also very inferior to it.

In a few instances, as when the speculum is used to explore the condition of the vesico-vaginal septum in cases of fistulæ, it is advisable to place the patient on her hands and knees, so as to give the observer a good view of the roof of the vagina. The univalve speculum is the best to use in this class of cases.

The bivalve speculum may be used with the patient in the lithotomy position, but the other plan is far preferable. It is generally necessary, by means of a dossil of lint held at the extremity of a pair of long dressing forceps, to remove the secretions with

which the surface of the exposed part is covered, in order that the mucous membrane itself may be inspected.

APPEARANCES OF THE OS UTERI, AS REVEALED BY THE SPECULUM.

It will be unnecessary to describe these at length. As regards diagnosis, the speculum is used mostly to verify the results of the previous digital examination. Respecting ulcerations of the os uteri, reference must be made to the description of these in the article on "Inflammation and Ulceration of the Uterus."

Appearances presented in cancerous affections of the os and cervix uteri.—It is necessary here to say a few words as to the appearance of the surface presented when cancer is present, although, as has already been remarked, we have rarely occasion to use the speculum for the purposes of diagnosis in cases of uterine cancer.

But little advantage can be derived from the use of the speculum in cases of advanced cancer of the uterus, the diagnosis of which by the aid of digital examination alone, is not usually attended with difficulty; and, unless employed with great care, the use of the speculum may, under such circumstances, occasion hemorrhage, and produce mischief of other kinds.

When, however, the os uteri is found on digital examination to be indurated, irregular, and when there is doubt as to whether cancer in its first stage may or may not be present, the use of the speculum may be the means of resolving that doubt. The physical condition of the os and cervix uteri, as felt by the finger, in the early stage of cancer, has been already fully described; it only now remains to give an account of the appearances presented to the sight in such cases.

Respecting the *color* of the surface in induration due to cancer, there is a difference of opinion; and this arises from the fact that the first stage of cancer of the uterus so very rarely comes under observation. Supposing cancer to be present, and the ulceration to have only just commenced, the ulcer will be found to have peculiar characters: it is excavated and depressed below the surface, the edges irregular, jagged and somewhat tumid, and sharply defined. In chancre, the ulcer is distinguished by its being more superficial, by the absence of enlargement and induration of the tissues beneath and around, by the absence of general signs of cancer, and by the effects of anti-syphilitic treatment.

Judging by ocular inspection alone, there are undoubtedly cases

in which difficulty might occur in deciding between cancerous ulceration and ulceration due to other causes; but it cannot be too frequently repeated that it is by combination and comparison of the general and particular data that a diagnosis must be arrived at. In the case of suspected cancer, more will be learned from digital examination than by the most careful use of the speculum.

The appearances presented by the os in cases of *cauliflower excrescence of the os uteri* are described by Sir C. M. Clarke as follows: "There is a striking resemblance between itself and a portion of the upper surface of a cauliflower or a head of broccoli. The surface is granulated, and it consists of a great number of small projections, which may be picked off from the surface as the granules may be detached from the vegetable." The surface, as seen by the aid of the speculum or otherwise, is of a bright red color. It is very delicate, and the least touch sometimes suffices to make it bleed. Hence, if the speculum be used, great care must be exercised not to injure the surface. A digital examination affords most conclusively the desired information.

CHAPTER VIII.

EXAMINATION OF THE ABDOMEN:

GENERAL REMARKS ON THE DIAGNOSIS OF THE CAUSES OF ENLARGEMENT OF THE ABDOMEN.

The Methods of Examination—Position of the Patient during Examination. ENLARGEMENT OF THE ABDOMEN.—Results obtained by Inspection as to Diagnosis of Nature of Enlargement—Results obtained by Palpation; Discovery of a Tumor—Results of Percussion: Distinction between Gaseous and Fluid Distension; Fluctuation Test—Presence of a Tumor doubtful—Obscurity produced by Fatty Condition of Abdomen.

THE diagnostic data obtainable by examination of the abdomen require a very careful attention and consideration. The several conditions made known to the senses by the various methods of examination of the abdomen which are at our disposal will now be considered, and their diagnostic value pointed out.

For clinical purposes, it is usual to divide the abdominal surface as follows: The portion of the abdomen above a horizontal plane passing through the anterior extremities of the tenth rib on either

side, is the *epigastric region*, the lateral portions of which are the *right and left hypochondria*. The *umbilical region* is bounded above by the lower limit of the epigastric region, and below by a line passing between the anterior superior spinous processes of the iliac bones on either side. The *hypogastric region* comprises that portion of the abdomen situated below the line last mentioned. The inferior boundaries of this region are the ossa pubis, and Poupart's ligament on each side.

The *methods* of examination which we employ in investigating the condition of the abdomen are: 1. *Inspection*, by which we are made cognizant of the size and shape of the abdomen, the condition of the integuments covering it, &c. Measurement of the abdomen belongs to this division of the subject. 2. *Palpation*, by means of which we ascertain the presence of varying degrees of resistance, hardness, softness, and the like, of the abdomen generally, or of different parts of the same, and are thus enabled to correct erroneous impressions conveyed by inspection alone. Under this head is included *fluctuation*, a physical sign of the presence of fluid. 3. *Percussion*, by the assistance of which we are able to distinguish between tumors or enlargements depending on the presence of solid bodies, and distension by air or fluid. 4. *Auscultation*, in which the sense of hearing is employed for the detection of certain sounds. 5. A combined vaginal and abdominal examination by means of palpation over the hypogastric region, while the finger of the other hand is within the vagina, or with the uterine sound within the uterus. In the diagnosis of pelvic tumors of doubtful nature, this combined examination is often of the greatest possible service.

It is hardly necessary to state that all these methods of examination are not employed in all cases. Inspection, palpation, and percussion, combined, are the methods of examination most commonly employed, and most generally serviceable in enabling us to form the necessary diagnosis. Frequently they prove insufficient, and in a few cases we find in the employment of auscultation a means of arriving at a conclusion which other methods do not afford. In forming the diagnosis, too, it is quite impossible to omit from the consideration the facts relating to the history of the case before us: the physical examination without a knowledge of the history of the case, and the history of the case without the physical examination, would in most cases be equally valueless.

The most common case in which a diagnosis is required is that in which the abdomen is enlarged, and it is required to determine

the nature and cause of the enlargement. The causes of abdominal enlargement are, it is hardly necessary to remark, very numerous, and the possession of readiness in their diagnosis and discrimination implies the possession of no small amount of knowledge of the pathology and history of abdominal diseases. In endeavoring to ascertain the cause of the enlargement of the abdomen presented by the patient before us, our inquiry must be of a somewhat extensive character. That enlargement may depend on a morbid or altered condition of some one of the generative organs, or it may not; and in order that we may not fall into error, it is necessary to start with no preconceived view of the case. Where this preconceived view is thrust upon us, by the expressed convictions of the patient or other circumstances, it is important that our mental training be such as to allow of its being kept in the background as much as possible until reliable data for diagnosis have been obtained, and our inquiries have been made to cover possible sources of fallacy. The principle is to take nothing for granted, to know for ourselves, and not to accept anything as reliable which only comes to us second-hand.

Position of the Patient during the Examination of the Abdomen. —The patient should be placed, lying on the back, on a firm unyielding couch or bed, the shoulders somewhat elevated, the knees a little drawn up so as to relax the abdominal parietes; the whole body should be in a state of absolute repose. It is sometimes desirable to engage the patient in conversation, in order to prevent a kind of involuntary contraction of the recti muscles, which is often present, and which interferes materially with the attainment of the object desired.

It is unnecessary to entirely uncover the skin of the abdomen in order to examine the abdomen by palpation. If, however, auscultation is to be practised, the stethoscope must be applied to the skin, or fallacies are likely to arise. In many cases, an inspection of the skin itself is desirable. It is best, however, to commence the examination without entirely uncovering the abdomen, and to obtain thus a general idea as to the shape and size of the same, the presence of tumor, and the like. Lastly, before undertaking a regular examination of the abdomen, the contents of the rectum and of the bladder should be evacuated.

ENLARGEMENT OF THE ABDOMEN: THE ELEMENTARY DIAGNOSIS OF ITS NATURE.

The first question to be determined in a case of supposed abdominal enlargement should be—

Is the enlargement real, or only apparent, or assumed for purposes of deception?—It is a fact that some patients, desirous of being thought pregnant, or for other reasons wishing to impose upon us, can acquire the power of projecting the abdomen forwards, so as to simulate the enlargement due to pregnancy. This arching of the abdomen is effected by sharply bending the vertebral column in the lumbar region; and when patients presenting this factitious enlargement are made to lie down, on placing the hand over the centre of the loins a corresponding hollow is felt there. In a case which came under my own observation, the patient, a young woman about 25 years of age, had been supposed to have an abdominal tumor. On a casual examination, the appearance and general form of the abdomen were strongly corroborative of this supposition; but no tumor could be detected, no resistance was anywhere felt, and the tympanitic sound, on percussion, was decisive as to the correctness of this negative view of the case. The nurse in attendance directed my attention to the condition of the back, and it was then found that the patient was affected with angular, and also very slight lateral, curvature of the spine in the lumbar region, the consequence of an injury received a few years before. Here the arching of the abdomen was real, but there was no enlargement of the abdomen in the true sense of the word. Then there is a remarkable class of cases in which the abdomen is enlarged, the patient believes she is pregnant, and endeavors to persuade others that this is the case. Chloroform is an essential aid to the diagnosis of these cases, as first recommended by Sir J. Y. Simpson, the discoverer of this invaluable therapeutic agent.

Having determined that the abdomen is actually enlarged, our next step is to endeavor to obtain some general idea as to its cause and nature.

RESULTS OF INSPECTION.

Size of the Abdomen.—From the mere element of size alone there is nothing very positive to be deduced. It may, however, be stated, that the most common causes of extreme persistent enlargement of the abdomen in women are ovarian dropsy and ascites.

As regards the *shape of the abdomen* in cases of abdominal enlargement, there is not very much of a conclusive character to be stated. If the enlargement be *symmetrical*, affecting the two sides of the abdomen equally, this is in favor of the presence of ascites or tympanitic distension of the intestines; but, on the other hand, a want of symmetry is usually observed when the enlargement is due to the presence of a tumor, as in cases of ovarian dropsy (generally), fibrous tumor or polypus of the uterus, enlargement and tumor of the liver or spleen, &c. To this general statement there are many exceptions. Thus, in large simple cyst of the ovary, the abdomen is often symmetrically enlarged at an advanced period of the disease. Similarly, ascites, when associated with tumors of the abdomen, often produces, superficially at least, a symmetry in the appearance of the abdomen on the two sides.

When we have to distinguish between ascites and ovarian dropsy, there is a point in reference to the shape of the abdomen which is of assistance, and it is this: that, whereas in cases of ovarian dropsy the enlargement is rounded anteriorly whatever be the position of the patient, in cases of ascites the anterior surface becomes flattened when the patient is laid on the back. This distinction, however, may fail us when, as is sometimes the case, the distension of the abdomen from ascites is considerable in degree.

RESULTS OBTAINED BY PALPATION.

These are most important. The position of the patient necessary for carrying out this mode of examination is that already described. The hand is to be spread out flat, so as to bring as much of the palmar surface of the fingers into contact with the abdominal wall as possible. Pressure, slight at first and gradually increased in force, is to be then made over the whole of the abdominal surface, beginning with the hypogastric region, the general direction of the pressure being towards the vertebral column. One or both hands may be employed in this operation. It is important that the pressure made be at first slight in degree; otherwise contractions of the muscles are produced, and the attempt of the operator will be defeated. Normally, the abdomen offers no resistance to the pressure of the fingers (the patient being placed as above directed), save that produced by spasmodic and involuntary, or intentional contraction of the recti muscles; everywhere the fingers are allowed to sink inwards to a considerable depth, and it is usually possible to touch the vertebral column posteriorly.

Discovery of a Tumor.—Our first object in exercising palpation should be to ascertain whether the distension of the abdomen which is observed be due to a tumor within the abdomen of a solid nature.

If the abdomen be only moderately distended, and the fingers can be made to sink inwards equally at all points, whether above or below, but especially below, without encountering a hard resist-ant body, we may pretty confidently predict that no solid tumor is present. When the abdomen is largely distended, however, the case is different; the fingers may in some such cases be made to sink inwards to a considerable depth without encountering a solid resisting body, while such a one is nevertheless present. This now and then happens when the abdomen contains a solid ovarian tu-mor together with a large amount of ascitic effusion.

The difficulty arising from rigidity of the recti muscles has next to be dealt with. Women desiring to frustrate the purpose of the examiner, and to disguise the presence of a uterine tumor, oc-casionally have recourse to the expedient of contracting these muscles. The practitioner will generally be able to procure the relaxation necessary, by engaging the patient in conversation—in extreme cases by giving chloroform, as mentioned above. The contraction is sometimes also purely involuntary. Such cases are extremely perplexing, as will be explained farther on; contraction of the recti muscles may actually simulate the presence of a tumor. In cases of suspected pregnancy, the recognition of the presence of a tumor is of extreme importance; for however positive the other signs of pregnancy may be, they are worth nothing if it can be clearly made out that there is no tumor discoverable in the abdomen. Many circumstances, then, render it desirable that the practitioner should be an adept in the discovery of an abdominal tumor such as that caused by the gravid uterus. By palpation we are usually able to detect the presence of such a tumor at an early period of pregnancy, and the examination for the discovery of this, or, indeed, any abdominal tumor, should be conducted as follows: The patient lying as above directed, the rectum and bladder having been previously emptied, the operator, having placed the hand flat on the abdomen close above the os pubis, is to follow the admirable procedure recommended by Rœderer. This consists in directing the patient to set the abdominal muscles in action by breathing very deeply, the hand being made all the while to follow the movements of the abdominal wall very closely. At the moment when the expiration is completed, the hand comes in contact with the hard, round, ball-like uterine tumor. In the

discovery of tumors in the abdomen, which are not otherwise easily detected, this method of examination is quite invaluable. If the tumor be so large as to fill the abdomen, the method in question is of course of no service.

The recognition of a tumor is frequently, especially in cases of pregnancy, made difficult by the presence of a *fatty condition of the abdomen*, which prevents us from ascertaining the presence of the tumor due to the enlarged uterus.

Supposing that by careful kneading of the abdomen at every point no hard tumor is discoverable, our conclusion must be shaped in this wise: If the abdomen be soft, and everywhere non-resistant, allowing the fingers to sink inwards equally at all points, the enlargement not being considerable, it will be evident that the enlargement is not constituted by a solid tumor of any kind. We may even go further than this, and state that neither can it be caused by a circumscribed fluid tumor (such as encysted dropsy of the ovary, for instance). If, however, the enlargement of the abdomen be *considerable*, the conclusion formed under the above circumstances cannot be so exact and definite. The fingers may be allowed to sink inwards some distance without encountering solid resistance, but there may nevertheless be a solid tumor. Such a condition is met with, as before remarked, when there is a solid or other tumor of the ovary, or a solid tumor of the uterus or of other organs *associated* with ascitic distension of the peritoneal cavity, or, again, when there is a very large unilocular cyst of the ovary occupying the abdomen, and which is not very tense or resistant. If, on the other hand, the condition of the walls of the abdomen be such as to prevent the sinking inwards of the fingers, this does not necessarily imply that there is, or that there is not, a solid tumor present.

The result of examination by palpation being that no tumor is discoverable, we must have recourse to the other method of examination, next to be described.

RESULTS OBTAINED BY PERCUSSION.

The middle finger of the left hand, being pressed closely against the abdominal wall, is to be struck by the tips of the fingers of the right hand, sharply but lightly. If a clear sound be elicited, it is evident that there is gaseous distension present; but if the sound be dull, the distension is due to fluid or solid matters. We have in this mode of examination a ready method of distinguishing *gaseous* from *fluid distension*: palpation would give but little as-

sistance in deciding between these two. When the enlargement is due to the *presence of fat* in undue quantity, percussion affords no decisive results.

When it is a question between gaseous and fluid distension, valuable aid is afforded by the *fluctuation* test. The palmar surface of the fingers of the left hand is pressed closely over one side of the abdomen, and the abdomen is lightly tapped by the fingers of the other hand on the opposite side. When fluid is present between the two points in question, an impulse is communicated through the aqueous medium, and the fingers of the left hand experience a sudden impulse, varying in character with the nature of the fluid and with the degree of tightness of the distension. No impulse of the kind is communicated when there is gaseous distension alone; but when there is an accumulation of fat present, a sensation somewhat resembling fluctuation may be conveyed. This, however, could only deceive an inexperienced observer. The test of fluctuation is only of value when applied by an educated hand. A sensation closely resembling that of fluctuation is sometimes felt when the abdomen is largely covered with fat.

To apply these several methods jointly to the consideration of the case before us—that, namely, in which there is an *enlargement of the abdomen, offering no resistance on employment of palpation.*

If the note on percussion be everywhere *clear*, the enlargement is due, in all probability, to gaseous distension of the intestines; the only other condition capable of simulating it being the rare case in which the uterus is distended with gaseous contents, or that in which an ovarian cyst derives gaseous contents from a communication with the intestinal canal. If, on the contrary, the percussion-note be dull, the case is one of fluid effusion into the abdominal cavity (ascites), or of cystic disease of the ovary. It is rare to meet with a form of ovarian disease which would give this combination of signs,—a non-resisting abdominal enlargement with dull sound on percussion. When, therefore, by the presence of fluctuation, by palpation, or by percussion, we are enabled to decide that there is fluid, or that there is gaseous distension, the difficulty is so far at an end. The consideration of the further diagnosis of these several cases will come presently.

Results of Percussion or Palpation doubtful.—We must next consider those cases in which nothing very decided has been made out from the employment of the tests applied. The cases are by no means infrequent in which we are unable to make out whether

there be or whether there be not a tumor; the results obtained by palpation are not decisive; the sound elicited on percussion is not decidedly clear, nor is it the reverse; what is certain is, that the abdomen is enlarged. In most cases, the difficulty experienced is connected with an unduly fatty condition of the abdominal parietes or of the omentum, one or both, associated with tympanitic distension of the intestines; very frequently there is no tumor actually present, although the observer has the greatest possible trouble to convince himself that this view of the case is the correct one. The gaseous distension of the intestines is masked by the presence of the thick covering of fat spread over them, and a clear sound is consequently not elicited on percussion. This combination of slight tympanitic distension with accumulation of fat in the omentum and abdominal parietes is very commonly met with in women about the period of sexual involution, just at that period of life when the activity of the sexual organs is about to terminate; and when it happens that the patient is desirous of becoming pregnant—a not by any means unusual circumstance— the presence of this combined tympanitic and fatty distension of the abdomen, associated, it may be, with amenorrhœa, leads her to suspect that she is pregnant. Some most instructive cases illustrative of the points here set forth have been related by Dr. Gooch.* An examination of the state of the breasts and of the vagina must be made if the percussion and palpation results are indecisive, and if there be reasons for suspecting that a tumor is present.

A condition is sometimes met with where the abdomen is enlarged, no actual tumor discoverable, and where the intestines, more protuberant than usual, constitute the enlargement. This condition is met with sometimes during the two first months of pregnancy, while the uterus is yet too small to be felt above the pubes. In such a case, a subsequent examination, after an interval of two months or so, would clear up the difficulty. In all cases of suspected pregnancy, indeed, the element of time is a very valuable assistance to us in our diagnosis. The persistence for six months or upwards of an enlargement of the abdomen, with no signs of a tumor discoverable, would negative the suspicion of pregnancy.

In some cases, the difficulty experienced in the detection of the tumor, no undue amount of fat being present, arises from the

* See the late edition of Gooch, published by the New Sydenham Society, pp. 111 et seq.

fact that there are *great tenseness and resistance*, the distension being, for the most part, uniform and symmetrical; and the difficulty is greater, because this tenseness and resistance preclude us from exploring beyond the surface of the abdomen. We are unable to determine positively whether a tumor be actually present or not. Here the fluctuation test and the results of percussion only are available.

The foregoing observations are intended to indicate generally the diagnosis of the several forms of enlargement of the abdomen one from another, and to assist in the first endeavor to discriminate roughly between them. In the following chapters will be considered separately:

1. Cases in which the enlargement is due mainly to presence of fluid. 2. Cases in which the enlargement is due to gaseous distension. 3. Cases in which the enlargement is evidently due to presence of a tumor.

CHAPTER IX.

EXAMINATION OF THE ABDOMEN (*continued*).

CONSIDERABLE ENLARGEMENT OF THE ABDOMEN DUE TO FLUID OR GASEOUS DISTENSION.

Enlargement due mainly to Presence of Fluid.—Ascites—Ovarian Dropsy—Ascites and Tumor—Extreme Distension of the Bladder or Uterus—Diagnosis of these Conditions one from another.
Enlargement of the Abdomen from Gaseous Distension.

The cases first to be considered are those in which the results of previous examination are such as to show that

THE ENLARGEMENT IS DUE MAINLY TO THE PRESENCE OF FLUID. NO TUMOR DISCOVERABLE.

At present it is proposed to consider the diagnosis of those cases only in which there is widespread fluctuation, this being evident over the greater part of the surface of the abdomen. And it must be recollected that at present, also, the inquiry is limited to cases in which the increase in the size of the abdomen is very considerable.

The conditions between which we have ordinarily to distinguish,

and which may be accompanied by the physical signs in question,
are :

Ascites ;

Ovarian dropsy ;

Ascites combined with presence of a tumor or tumors ;

Some rare conditions, to be presently mentioned, and not in-
cluded under either of these three categories.

DIAGNOSIS OF ASCITES FROM THAT FORM OF OVARIAN DROPSY IN WHICH THE CYSTS ARE OF LARGE SIZE.

First, as regards the *size of the abdomen*. This gives us no
reliable information. In both ascites and ovarian disease, the size
of the abdomen may be very great.

As regards the *shape* of the abdomen, however, there is more
to be said. In ascites, the abdomen becomes flattened when the
patient lies down, while in ovarian disease this flattening is not
observed. In ovarian disease largely distending the abdomen, the
floating ribs are pushed outwards ; the thorax is thus made to as-
sume a peculiar conical shape. The enlargement of the abdomen
in ascites is generally symmetrical, whereas in ovarian disease
there is usually a swelling or prominence, more decided on one
side than the other. This latter is a distinction which will not at
all hold good when there is ovarian dropsy with only one very large
cyst. The shape of the abdomen, speaking generally, is more
ovoid in ascites, rounder in ovarian disease.

The *condition and appearance of the skin* vary usually in the
two cases. In ascites, there is generally a marked enlargement
and distension of the superficial veins, wanting in the other case.
This is, however, not to be depended upon. I have seen the *lym-
phatics* enormously distended in an advanced case of ovarian dis-
ease, but this condition of the lymphatics is probably the exception
rather than the rule. Moreover, I have seen a precisely similar
condition of the lymphatics in a case where the bladder was very
largely distended from retroversion of the uterus, the uterus being
the seat of fibroid growths. The lower part of the abdomen pre-
sented, in this latter instance, a most remarkable appearance ;
there were large cord-like sinuous lines running upwards, most of
them in the direction of the umbilicus. It would not be possible
to arrive at any definite conclusion as to the nature of the enlarge-
ment, either from the condition of the veins, or from the condition
of the lymphatics covering the surface.

There is *fluctuation* both in ascites and in ovarian dropsy. This

sign presents some peculiarities requiring notice. In ovarian dropsy it is often very indistinct, and where the abdomen is distended by two or more large cysts, it is unequal at different parts of the abdominal surface. This inequality is of course not noticed in ascites. In cases of ascites, fluctuation is perceived equally well, whatever may be the points between which it is sought for. If, however, there be one very large cyst, the same equality is observed in cases of ovarian dropsy. In both cases, the degree of facility of perception of this sign varies extremely, this being dependent on the degree of distension present.

Between ascites and ovarian disease the results of *percussion* practised at different parts of the abdominal surface would offer generally decisive distinctions. Thus, in cases of ovarian disease the fluid-containing cyst travels slowly upwards, displacing the intestines laterally, or thrusting them backwards against the vertebral column, the result being that there is a dull sound on percussion, which may, if the cyst be large enough, extend up to the ensiform cartilage, while there is a clear sound on percussion in the flanks, where the intestines are situated. In ascites, on the other hand, the intestines float on the surface of the liquid, and over the epigastric region there is a clear intestinal note on percussion, while in the flanks there is dulness on percussion. Thus, with the patient laid on the back, the most prominent portion of the abdomen is dull on percussion if ovarian tumor be present, but clear on percussion in ascites. The only exception to this latter statement is when the stomach and intestines happen to be glued down, and prevented rising and so floating on the ascitic fluid, by presence of adhesions. There is an exception to the other statement also, and that is when the ovarian tumor is *associated with ascites.* In such a case, there might be dulness above in the epigastric region, and in the flanks also.

The test as regards dulness or clearness on percussion in the flanks is not an absolute one ; for there is nothing to prevent what I have two or three times witnessed—viz., the occurrence of gaseous distension and enlargement of the ascending or descending colon ; and supposing such distension to be present in conjunction with ascites, there would be a clear note on percussion in the flanks.

Another distinctive mark between ascitic distension and that due to ovarian disease is the result of percussion practised over the abdomen *in different positions of the patient.* Where there is ovarian cystic disease, the result of the percussion is the same whether the patient be lying on the back or on the side ; but in

ascites the fluid is generally at liberty to fall by the force of gravity according as the body is placed, and a particular part of the abdominal surface might be clear and resonant on percussion with the body in one position, and dull when it is placed in another. In a doubtful case, this test should be applied.

The previous history of the case generally offers almost conclusive data if rigorously scrutinized. The fact that the abdominal enlargement began from below, on one side, and with a circumscribed actual perceptible tumor, points to ovarian disease; the absence of such a history would be in favor of ascites. The "one-sided" origin of the tumor is not, however, so often to be made available as is usually stated. In such cases, as observed by the late Dr. Bright, "the growth of this tumor is, on some occasions, so unperceived, that, though it may have originated on one side, it has already risen into the pubic and even the umbilical region; and when the medical man is first consulted its lateral origin is with difficulty ascertained. At other times the enlargement is at first slow, and after some indefinite period the increase takes place suddenly, so that in a few months the whole abdomen presents to a common observer the size and appearance of pregnancy far advanced."*

FIG. 28.†
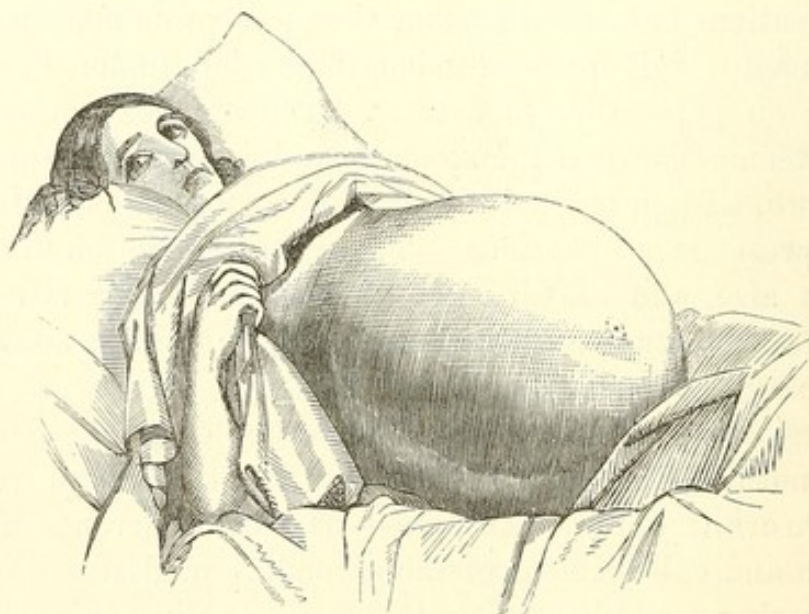
Again, as regards the history, in ovarian disease the enlargement is more often chronic—slower in progress than is the case in as-

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* Clinical Memoirs on Abdominal Tumors, New Sydenham Society's ed., p. 63.

† Fig 28 (from Bright) shows the general aspect of the abdomen in a case of great distension from ovarian dropsy.

cites; it is, in the case of ascites, attended with greater disturbance of the general health, and, in the latter case, there are generally to be detected signs of serious organic disease of the heart, of the lungs, of the liver, or of the kidneys. Moreover, dropsical effusion into the peritoneal cavity is more often than not associated with similar effusion (anarsaca) in the lower extremities. It is in the last stage of ovarian disease only—that is, of the *kind* of ovarian disease now under consideration, and not including cases of *cancerous* disease of ovaries—that anasarca of the lower extremities is noticed. The dyspnœa produced by large distension of the abdomen in ovarian disease is generally much less considerable than that attendant on ascitic effusion, because in the latter case the dyspnœa is often of organic, not mechanical origin.

DIAGNOSIS OF ASCITES FROM ASCITES WITH A TUMOR.

We have hitherto considered the diagnosis of cases where the abdomen is much distended, and no tumor is perceptible to the touch, so far only as ascites and ovarian dropsy are concerned;

Fig. 29.*
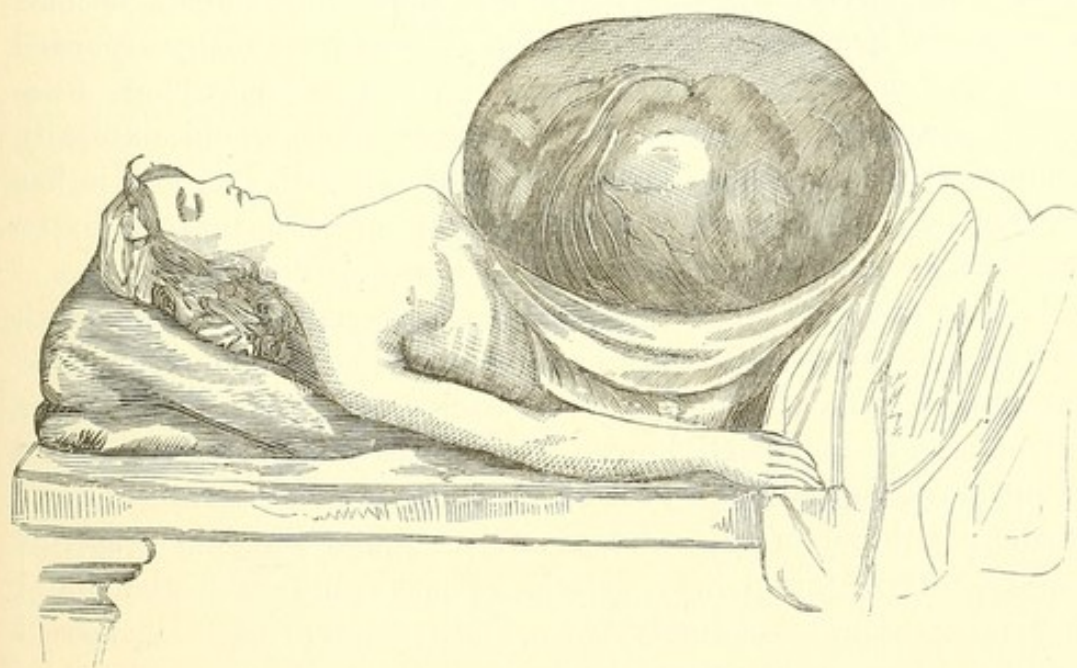
but the condition present before us may be one of a somewhat different kind—that is to say, there may be ascites together with a tumor.

* Fig. 29, from Bright's work, jam cit., represents a large ovarian tumor, the abdominal covering removed.

It most ordinarily happens that, when this conjunction of events comes under observation, the tumor is readily perceptible to the touch; and if such were the case, this would remove it altogether from the category of cases now under consideration—that, viz., in which no tumor is perceptible. But now and then a tumor is present in the abdomen associated with ascitic fluid, so considerable in quantity, that the presence of the tumor is not discoverable, or, at all events, readily so. Hence, a case where there is a tense enlarged abdomen, presenting fluctuation at all points, the fluctuation evidently indicating fluid in the peritoneum, may turn out to be one of the kind here alluded to. Kiwisch alludes to a case of ascites associated with *pregnancy*, where the operation of paracentesis was performed, and the trocar passed into a gravid uterus. Other instances are mentioned in Dr. Montgomery's work. It would appear, at first sight, perhaps, that a very simple consideration of the facts of a particular case would prevent the observer from falling into a similar error; but recorded experience shows that the question is not so easy of solution in many cases. Examination of the uterus from the vagina, examination of the state of the breasts, a careful scrutiny of the circumstances preceding and attending the enlargement, become necessary. Pregnancy may be, as is evident from many recorded facts, very easily overlooked unless inquired after. Thus, a patient the subject of ascites, becoming pregnant, would naturally connect the increasing size of the abdomen with increase in her previous disorder; while the absence of menstruation might be set down by the medical attendant to the same circumstance.

It is to be remarked of these cases of pregnancy combined with ascites, that there is often present a dropsical condition of the lower extremities. In advanced cases of ascites, anasarca of the lower extremities is, as is well known, frequently present, and the case might be not unreasonably looked upon (by one not aware at least of the possibility of the existence of pregnancy) as one of ascites simply. Dr. Montgomery relates a case where the abdominal parietes were so exceedingly tense, and the quantity of interposed water so considerable, that the outline of the uterus could not be detected, nor the foetal movements felt, although the patient was seven months pregnant.* This circumstance alone is sufficient to indicate the nature of the difficulties which are liable to be encountered. There is no doubt that the mistakes which have been

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* Op. cit., pp. 139, 149, 162.

made in diagnosis have arisen from the observer overlooking the possibility of the existence of pregnancy. It is therefore very important to recollect, in all cases where the woman is in a state for having children, and has an enlarged abdomen, that it is not sufficient at some previous period to have established the diagnosis of ascites. The diagnosis must be made afresh from time to time, and the state of the abdomen must undergo regular investigation; and this is more especially necessary if any operative measures, such as tapping, be contemplated. The observer should always make it a practice before going further to demonstrate to himself that the patient is not pregnant.

Ascites may be associated with other tumors. One of the most common cases is perhaps that in which there is an *ovarian tumor together with ascites*. Here the remark applies equally as in the case of pregnancy, that usually the distension is not so great as to prevent recognition of the tumor. Still it may be so. This association of ascites and ovarian tumor is more generally observed in cases where the ovarian tumor is of a malignant character than where simple cystic disease is present.

In an advanced stage of the disease, ascites, combined with *hydatid disease of the liver and peritoneal cavity*, may give rise to great distension of the abdomen. The history of such a case, but chiefly the presence of great enlargement of the liver, would point to the true conclusion, or, at all events, would afford indications sufficient to negative the idea that the enlargement of the abdomen was due to disease of any of the generative organs. Where a tumor is recognizable, the difficulty in diagnosis is necessarily not so great as in the case above supposed.

Lastly, respecting the diagnosis of these cases of extreme distension of the abdomen, where a tumor is suspected to be present together with ascitic effusion, it is to be remarked that, if the operation of tapping be performed, it is afterwards very easy to substantiate the presence or absence of such tumor. And, in point of fact, in some cases of ovarian dropsy associated with ascites, a preliminary operation of this kind may be necessary to enable us more nearly and more conveniently to ascertain the size, position, and relations of the tumor.

SOME RARE CONDITIONS CAPABLE OF SIMULATING ASCITES OR OVARIAN DROPSY.

There are certain conditions very rarely met with, but which require to be mentioned, inasmuch as they may give rise to a con-

siderable distension of the abdomen, and may present physical signs such as those observed in cases of ascites, or of ovarian dropsy, or of tumor with ascites. One of the conditions in question is *extreme distension of the bladder* from prolonged retention of urine. A case will be found mentioned by Dr. Gooch,* in which retention of urine was associated with pregnancy, the distended bladder assuming a flattened form, owing to the resistance of the gravid uterus behind it; there was fluctuation, and the case was, in fact, assumed to be one of "dropsy." The case was originally related by Dr. Lowder, who stated that paracentesis was performed, that the trocar passed through the bladder, through the wall of the uterus, and even into the head of the child. Here the mistake probably arose from the presence of fluctuation over a considerable surface; but if percussion had been practised near the lumbar regions of the abdomen, or if even the suspicion of pregnancy had crossed the mind of the observer, the mistake might probably have been avoided.

In some very rare cases, *extreme distension of the uterus by fluid* has simulated ascites. The causes of distension of the uterus by fluid will be more fully considered further on. Here it is sufficient to call attention to the fact.

Cystic Disease of the Abdomen, not of Ovarian Character.—In some rare cases, large cystic growths have been met with simulating ovarian dropsy. They will be further described in another place. It is just within the limits of possibility that such a case might, the cyst being of large size, resemble one of ascites.

ENLARGEMENT OF ABDOMEN DUE TO GASEOUS DISTENSION.

When the note on percussion is tympanitic at any particular part of the surface of the abdomen, this indicates necessarily the presence of gaseous distension at that spot. When the greater part of the abdominal surface presents this condition, the distension in question generally proceeds from the presence of gas in the intestines, in the stomach, or both. This form of *tympanitis* is witnessed in the advanced stage of fevers of various kinds, in puerperal fever, and under other circumstances. The comparatively sudden occurrence of the enlargement, the perfectly normal state of the abdomen previously, and the results of physical examination generally, render the diagnosis a matter of no difficulty.

Cases are very common in which the surface presenting a tym-

* Quoted also by Montgomery, op. cit., p. 324.

panitic note on percussion is more limited. These cases need not be considered, however, just at present; and they will engage our attention in speaking of the diagnosis of " tumors " of the abdomen.

Some remarks bearing on the question of diagnosis where the abdomen is tympanitic, and where the walls of the abdomen contain an undue quantity of fat, will be found further on.

CHAPTER X.

EXAMINATION OF THE ABDOMEN (*continued*).

ENLARGEMENT OF THE ABDOMEN DUE TO PRESENCE OF A TUMOR. ENUMERATION AND CLASSIFICATION OF ABDOMINAL TUMORS.

Cases simulating Presence of a Tumor; Phantom Tumors—Distinction of Abdominal Tumors into those which proceed from the Pelvic Cavity, and those which do not—Enumeration of the Tumors coming under these two Heads—Method of determining the Position and Origin of the Tumor.

THE previous analysis has been limited to those cases where the enlargement is not due, or not evidently due, to presence of a tumor in the abdomen. Before considering the cases now before us—cases of real, tangible tumor—we have to dispose of

CASES SIMULATING PRESENCE OF A TUMOR.

The difficulty occasionally experienced in substantiating what we have every reason to suspect—the presence of a tumor in the abdomen—has been already pointed out. We have now to consider a difficulty of an opposite kind—viz., where, although the appearances present simulate those of a tumor, these appearances are altogether deceptive.

There are a very considerable number of cases on record in which the event has proved that no tumor could have been present, and in which a very positive, but erroneous, diagnosis has been made to the contrary, often with very serious results to the patient. Facts of this kind will be found recorded in the work of Dr. Montgomery. One of the most extraordinary was the case of a woman who, in the year 1828, was operated upon in Berlin, under the idea that the case was one of extra-uterine pregnancy : on cutting into the abdomen, no tumor, and no enlargement of

any viscus, was detected. The abdomen has been opened with the intention of removing ovarian tumors, no tumor of any kind being discoverable. And the case is very far from uncommon in which women are supposed to be pregnant, and to have a tumor in the abdomen, when the event completely falsifies the diagnosis. In many cases, where such mistakes have been made, it is easy to see that sufficient care was not taken in substantiating the presence of a tumor, in defining its limits, &c. ; but in some instances the appearances present were evidently calculated to mislead.

So-called " Phantom" Tumors.—The cases which present most difficulty are those in which an abdominal tumor is simulated, in hysterical women, the abdominal muscles being contracted in such a manner as to give the impression of a tumor to the hand of the observer. The tumor, however, has this peculiarity : " If," as Dr. Montgomery remarks, " the patient can be made to forget that she is under examination, by completely diverting her attention, as by keeping her in conversation on some subject unconnected with her own case or state, while, at the same time, the hand is kept pretty firmly pressed on the abdomen, the tension gradually relaxes, the size diminishes, and all sensation of a tumor is lost."* Change of position may succeed in producing this disappearance of the tumor ; but by giving chloroform, as was first pointed out by Sir J. Y. Simpson, the reality of the tumor is most completely tested. While the patient is under chloroform, the hand is allowed to sink inwards at the point were previously the tumor appeared to be situated. When the abdomen is covered with an undue quantity of fat—a condition often also associated with presence of fat in the omentum—the difficulty the observer experiences in satisfying himself that no tumor is actually present becomes more considerable ; and chloroform may in such cases be quite essential to the making of the diagnosis. It is not absolutely certain how the deceptive appearances of a tumor are actually produced, but it is probable that in most cases they are due to partial contractions of the recti abdominis muscle, a particular segment of the muscle being in state of chronic contraction, and forming a rounded mass under the hand.

With a careful exercise of the various precautions recommended, the number of cases in which there will be a difficulty in ascertaining that a tumor is actually present, or the reverse, should be inconsiderable ; and the observer who is forewarned respecting

* Op. cit., p. 398.

these cases of phantom tumor, will find the recognition of their true nature comparatively easy.

Having cleared up any doubt as to whether there be actually a tumor present or not, the further steps to be taken will now be considered.

It may perhaps be necessary to observe, also, that it is not intended to discuss at length the differential diagnosis of *all* tumors of the abdomen. So far as is necessary to the elucidation of the questions which do fall within our province, the subject must be treated generally; for, until a certain amount of knowledge of the case before us has been acquired, we cannot tell whether we have to do with a disease of the liver, of the spleen, of the uterus, ovaries, &c.

It will be found convenient for purposes of diagnosis to begin with determining, by physical examination of the tumor, under which of the following heads it should be placed; and, this elementary diagnosis having been made, to pursue further inquiries in the direction thus necessarily indicated: (A) The tumor proceeds from, or is connected with, the pelvic cavity; (B) The tumor is not connected with, or not distinctly traceable into, the pelvic cavity.

(A) TUMORS WHICH ARE TRACEABLE, OR MAY APPEAR TO BE TRACEABLE, INTO THE PELVIS.

Enlargement of the uterus, from pregnancy, fibrous tumor, &c.
Ovarian cystic disease or tumor.
Enlargement and distension of Fallopian tube.
Extra-uterine pregnancy (usually).
Peri-uterine hæmatocele.
Distension of the urinary bladder.
Pelvic cellulitis and abscess.

The more uncommon causes are:
Fecal tumor.
Sub-peritoneal cysts.
Cysts in omentum.
Fibrous, cancerous, or osseous growths from pelvic bones.
Hydatid tumor.
Enlargement of spleen (when the spleen is so enlarged as to extend into the pelvis).
Cancer of peritoneum.
Cysts or tumors connected with the kidneys.

Distension of ureter.

Enlargement of liver.

Retained encysted fœtus (which may also come under the next head (B).

Cysts of the broad ligament (Wolffian cysts).

(B) TUMORS NOT TRACEABLE, NECESSARILY SO AT LEAST, INTO THE PELVIS.

Disease of the liver, giving rise to enlargement of the organ, hydatid tumor, &c.

Enlargement of the spleen.

Hydatid tumors in cavity of abdomen.

Fecal tumor.

Fibrous tumor of the uterus, pedunculated.

Cancer of peritoneum.

Fat in omentum.

Enlargement, &c., of kidneys.

Movable kidney.

It will be seen that while some of the tumors mentioned come under both heads, being traceable or not into the pelvis according to circumstances, the great majority of them lie distinctly on one or the other side of the line of demarcation. It will generally be found comparatively easy to determine the series to which the tumor before us belongs. Commencing at the most prominent part of the tumor, and pressing gently but firmly through the abdominal parietes on its surface, the continuity of the surface in question is to be traced in all directions, and the limits of the same accurately made out. Thus, a tumor, the most prominent part of which is just above the umbilicus, may be traced upwards from that point to the margin of the ribs on the right side, being at that point not separable from the liver; while, on endeavoring to trace it downwards, it may be found to cease abruptly at the umbilicus, or a little below it. Such a tumor would belong to the second of the above series. The fact that the tumor ceases at the point indicated may be made out simply by palpation, the abdominal wall being lax or thin; but palpation alone may not be sufficient to establish this when the opposite state of things prevails, and percussion is then of service. Thus—to take again the above illustration—the tumor being hard, firm, and dull on percussion superiorly, the fact that at a particular point this dulness was exchanged for a tympanitic note, this tympanitic note being

identical with that obtained over the lower part of the abdomen generally, would lead to the desired conclusion as to the lower limit of the tumor. Again, in the case of a tumor presenting the fluctuation sign, the limit of the fluctuation would of course indicate the limit of the tumor; it would be necessary to recollect that, in the case of a tumor of a composite character, fluctuation might cease at a particular point without this necessarily indicating that this was the boundary of the tumor. And with reference to this particular sign, fluctuation, there is this general caution to be given: that it by no means follows, because a tumor contains fluid, that fluctuation should be perceivable; when the walls of the cavity containing the fluid are very tightly stretched, fluctuation may be entirely absent. Lastly, in determining whether the tumor proceeds or not from the pelvis, the history of the case may give important information. This information, however, is very often found to be either wanting, or so devoid of accuracy as to be practically worthless.

Having proceeded so far with the diagnosis of a tumor of the abdomen as to have ascertained that it clearly belongs to one or other of the series—that is to say, either traceable into the pelvis, or not so traceable—we may advance still further our diagnosis by adopting one of two or three procedures: (*a*) By an attentive consideration of the *history* of the appearance and growth of the tumor and the attendant phenomena; (*b*) by a careful comparison and estimation of the data derived from physical examination of the tumor itself, by palpation, percussion, auscultation, &c.; or (*c*) by a combination of these two procedures.

The diagnosis is usually arrived at, by experienced observers, by a mental process of the following kind: The general facts relating to the history of the case induce the observer to make a presumptive diagnosis at once. A theory is adopted, and this theory is forthwith tested by a more particular examination; and if it be found to break down under that examination, another theory is taken up, to be tested in like manner, until a result is arrived at which is considered satisfactory. A beginner should postpone forming a theory on the matter at all until all the data available have been got together, and can be compared in such a manner that undue prominence and significance be not given to particular ones among them.

CHAPTER XI.

EXAMINATION OF THE ABDOMEN (*continued*).

TUMORS TRACEABLE INTO THE PELVIS.

RARER FORMS OF TUMOR.—Enlargement of the Liver—Hydatid Disease of the Liver—Cancerous Disease of the Abdominal Viscera—Enlargement of the Spleen—Cysts or Tumors connected with the Kidneys—Sub-peritoneal Cystic Tumor—Cysts of Omentum—Retained Encysted Fœtus—Fibrous, Cancerous, or Osseous Tumor of Pelvic Bones—General Remarks on the Diagnosis of these Tumors—Tumors of the Fallopian Tubes, of various Kinds—Pelvic Cellulitis and Abscess—Peri-uterine Hæmatocele—Fecal Tumor.

TUMORS MORE COMMONLY OBSERVED.—Enlargement of the Uterus, including Pregnancy, Tumors of the Uterus, &c.—Ovarian Tumors—Distension of the Bladder, liable to be mistaken for Ovarian Tumor—General Remarks on the Diagnosis of Uterine from Ovarian Tumors.

THE present chapter will be devoted to the consideration, first, of certain of the more uncommon varieties of tumor originating in the pelvis, or connected therewith, an enumeration of which will be found at page 263; and, secondly, of the general diagnosis of ovarian from uterine tumors.

TUMORS TRACEABLE INTO THE PELVIS, MORE RARELY MET WITH.

ENLARGEMENT OF THE LIVER

To such an extent that the tumor reaches to the pelvis is exceedingly rare. In a case of this kind, a careful examination shows a perfect continuity of the tumor with the liver above. The tumor is hard, resistant. The history of the case is agreeable with the theory that the tumor originated in the liver. But although simple enlargement to a considerable extent is rare, cases are not so uncommon in which a tumor growing from the liver extends downwards even as far as the pelvis, or which is, at all events, apparently continuous with tumors which do so extend into the pelvis (see next paragraph).

HYDATID DISEASE OF THE LIVER

May give rise to a tumor extending from the liver into the pelvis, and the abdomen may become enormously distended by the parasitic growth in question. A very remarkable case related by Dr. Bright* may be referred to, although the case in question was that of a male, as showing how far the disease in question may go. The nature of the case was clearly evident during life, the hydatids forming " round, well-defined elastic tumors " all over the abdomen, and in places forming elevations visible to the eye. The patient's age was 14. The hydatids were first developed in connection with the liver. The first sign of disease was the feeling a hard lump in the right side below the false ribs. The disease rapidly progressed, general emaciation and constantly increasing abdominal enlargement being the chief symptoms. There was dulness on percussion all over the abdomen, except at one part, just to the left of the umbilicus. It would seem difficult to avoid recognizing the nature of an abdominal enlargement due to this cause; an ovarian tumor reaching to the liver, and presenting rounded projections due to the contained cysts, might be possibly mistaken for it by an inexperienced observer. But an ovarian tumor growing to such a size as this would generally have a history essentially different. The ovarian tumor would have grown from below upwards, and at some previous time would have been limited to the lower part of the abdomen. This distinction may fail in some cases. The physical characters of an ovarian tumor of this magnitude will be given further on. Here also may be mentioned an interesting case related by Dr. Bright, in which the tumor present was due to hydatids, but closely simulated an ovarian tumor. The woman was 54 years old, and presented an enlargement of the abdomen, dating from nine or ten years previously, but only very obviously noticed for three years. The abdomen " was greatly enlarged; the upper two-thirds occupied by an irregular tumor, indistinctly fluctuating, and, in various parts, somewhat tender on pressure : the lower part of the abdomen was also occupied by a fluctuating tumor, apparently a large cyst arising from the pelvis. The intervening space was short, and was the only part which gave a clear or tympanitic sound on percussion." A drawing accompanies the description of the case. "From its peculiar and irregular form," Dr. Bright concluded "that it con-

* Op. cit., p. 30.

sisted either of hydatids extensively distributed, or was an ovarian tumor; and if the latter—which, from its very singular form, and more particularly from the existence of the upper portion so separated from the lower, I could scarcely believe—I supposed that it must be one of those complex and malignant forms of disease. . . ."* The case turned out to be one of hydatids. There were two large cysts, one above and one below, the upper one incorporated with the liver, and between and in front of the two was stretched the transverse colon. Cases of this kind are extremely rare.

CANCEROUS DISEASE OF THE ABDOMINAL VISCERA, ABOVE THE PELVIS,

May give rise to a tumor which is found to extend downwards as far as the pelvis. Practically, however, such a tumor can hardly be confounded with any of the tumors with which we are more particularly concerned. In *cancer of the kidney*, the lower margin of the tumor would, even in extreme cases, be felt above the brim of the pelvis, unless distension of the abdomen from ascites prevented it. "*Colloid cancer of the omentum*," says Dr. Walshe, " spreading like a sort of apron in front of the intestines, gives rise to dull percussion-sound in proportion to its extent."† This is a very rare disease. *Cancer of the post-peritoneal cellular tissue*, also a very rare affection, may give rise to a tumor slow in growth, and which may moreover grow downwards into the pelvis.‡ The presence of nodules of a cancerous nature, perceivable in the abdominal walls externally, is an important diagnostic sign, although it is one not by any means always observed.

ENLARGEMENT OF THE SPLEEN,

The organ attaining such a size as to extend into the pelvis—an occurrence which must be very rare—could hardly be mistaken for an ovarian or uterine tumor, if the smallest pains were taken in investigating the history of the case.

CYSTS OR TUMORS CONNECTED WITH THE KIDNEYS.

A case is detailed by Dr. Bright in which a large cyst, containing puriform matter, and connected with the left kidney, simulated disease of the ovary. The patient was married, æt. 34. " For about three years she had a tumor on the left side of the abdomen; the exact situation of the part at which it commenced is not ascer-

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* Op. cit., p. 13.   † Op. cit., p. 310.   ‡ Op. cit., p. 311.

tained, but it appeared to have been sufficiently low down to have excited a suspicion that it depended on the ovary." After death, " a large but soft tumor was seen occupying the greater part of the left lumbar and iliac regions." It was an enlargement of the kidney, and had, when cut into, the appearance of a membranous cyst, the walls of which were an eighth of an inch thick. It contained dirty, discolored, watery pus.* I saw some time since, with Mr. Scott, a case of very considerable abdominal enlargement simulating multilocular ovarian disease which proved to be, as I have since heard, one of cystic disease of the kidney.

In cases of *distension of the ureter*, a tumor may be detected on one side near the vertebral column, but it does not appear that such a tumor has ever been confounded with tumor of pelvic origin : ordinarily the circumstances are such that tumors connected with the kidneys or ureters are not confounded with those originating in the pelvis.

SUB-PERITONEAL CYSTIC TUMOR.

A very rare and exceptional case is that in which cysts situate externally to the peritoneum grow and form tumors capable of simulating ovarian cysts. Such a case is alluded to by Kiwisch.† The tumor formed gradually, attained a large size, was repeatedly tapped, and large quantities of fluid evacuated. The patient's age was 20, and the tumor first appeared after suppression of menstruation, the suppression occurring very soon after menstruation had begun. After death, three large tumors, one composed of a large cyst, and the two others of cysts together with fibrous tissue, were found behind the peritoneal membrane, occupying the lumbar and hypochondriac regions, and extending down into the pelvis.

Somewhat analogous to this is a case reported by Mr. Safford Lee,‡ in which a large tumor of the abdomen had existed for twenty-five years. It at last completely filled the abdomen and killed the patient. It was found to have commenced on the left side, just under the pancreas, but below the peritoneum, so that it rested on the posterior walling of the abdomen. A narrow pedicle six inches long, of the size of a quill, connected it with the uterus. It was filled with turbid fluid, balls of fat and hair, calcareous matter, and a mass containing teeth and bones, strongly resem-

* Loc. cit., p. 223.   † Klin. Vortr., bd. ii. (by Scanzoni), p 327.
‡ On Tumors of the Uterus, &c., p. 124.

bling an imperfect fœtus. This appears to have been a case of "included fœtus."

CYSTS OF OMENTUM.

Mr. Safford Lee reports a case which was under the care of Dr. A. T. Thomson. The patient had been tapped forty-eight times. The tumor began on the right side of the abdomen. After death it was found to have originated in the omentum close by the pancreas, and was attached by a long thin portion to the uterus, but was entirely unconnected with the ovaries. At the upper part of the abdominal cavity, attached to the peritoneal surface, were a number of well-defined cysts containing a clear fluid.*

RETAINED ENCYSTED FŒTUS.

In some very uncommon cases, the fœtus, the product of an extra-uterine pregnancy, dies, having attained a certain stage of maturity, and remains, inclosed in a kind of cyst, in the abdomen of the mother, for a time which varies from a few weeks to many years. The history of these cases is necessarily peculiar and characteristic. The woman states that at a certain time she was pregnant, that the symptoms of pregnancy advanced pretty regularly, that at the time pregnancy should have terminated pains set in, and these, after lasting a certain time, went off, no delivery having occurred, and that the tumor which is felt through the abdominal walls dates from the period in question. Presence of such a tumor is not incompatible with further pregnancy and healthy delivery, instances being known of women bearing mature and healthy children, the mummified body of the extra-uterine fœtus still remaining within the abdomen. The tumor in these cases is usually low down in the pelvis, or at all events partially so, and it is usually recognizable by vaginal examination.

FIBROUS, CANCEROUS, OR OSSEOUS TUMORS, GROWING FROM THE PELVIC BONES INWARDS,

May give rise to tumors perceivable through the abdominal walls. The firmness of these tumors, their want of mobility, and other physical characters, render their diagnosis from other more common abdominal and pelvic tumors easy. They are excessively rare.

Of the conditions which have now been mentioned, viz., enlarge-

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* On Tumors of the Uterus, &c., p. 123.

ment of the liver, hydatid disease of the liver, cancerous disease of the abdominal viscera, or in the abdominal walls, enlargement of the spleen, cysts, &c., originating in the kidneys or uterus, cystic tumors behind the peritoneum or in the omentum, retained encysted fœtus, fibrous or osseous growths from the pelvic bones, some are exceedingly rare, others are more common. One distinction between these tumors and those originating in the generative organs is very important, and one which can generally be relied upon, viz., that when the tumor originates in the generative organs, the vaginal examination shows some displacement, or some abnormal condition, of the uterus, or is the means of detecting a tumor in the pelvis. This negative evidence is of great weight.

The tumors next to be considered are met with rather more frequently.

TUMORS OF THE FALLOPIAN TUBES.

The conditions capable of giving rise to tumors of the Fallopian tubes are, distension of the tubes by serous, purulent, or bloody fluid, and Fallopian pregnancy. These conditions have been severally and particularly described already (see p. 168). When these tumors attain a certain size, they are perceivable also by examination of the hypogastric region of the abdomen, and even when they are of no considerable size, they may be felt in this position if the abdominal walls be thin and non-resistant. Tumors of the Fallopian tubes exceeding the size of an apple are rare, but it should be known that they *may* attain so large a size as to be capable of being mistaken for ovarian tumors. The tumor is generally elongated or pyriform in shape, and movable, and there may be a tumor on both sides. The position in which the tumor is felt is just above the groin—behind and below Poupart's ligament. The history of the progress of the tumor is generally diagnostic, to a certain extent, of its nature. Cases of tubal pregnancy are very rarely diagnosticated, inasmuch as rupture of the tube takes place before anything wrong is suspected; and if the pregnancy proceed to a later period, the case is usually looked upon as one of normal gestation. There are no physical signs by which a case of very extreme dropsical distension of one tube could be certainly distinguished from an ovarian tumor. In such a case, the history would probably throw some light on the subject. For further particulars see p. 168.

PELVIC CELLULITIS AND ABSCESS.

When an enlargement at the lower part of the abdomen is observed in a woman who has been delivered recently, who has recently had an abortion, or who has been the subject of an operation involving the generative organs, the formation and development of the tumor having been attended with inflammatory symptoms, tenderness, feverishness, &c., the existence of pelvic abscess is to be suspected. The chief diagnostic symptoms have been already described (see pp. 178, 179).

The diagnosis of pelvic cellulitis and abscess is usually easy. The tumor forms in the pelvis, it may rise above this cavity, and be perceivable in one or other groin, or even considerably higher; or it may form a tumor, rising in the middle line above the pubes. Its limitation is made by palpation and by percussion. The skin covering the tumor may become red and inflamed, when evacuation of the abscess is to occur through the abdominal wall. The abscess may, however, burst into the vagina, or into the bladder, rectum, &c.

In the diagnosis of the tumor, Dr. McClintock, attaching, and most justly, much importance to its early recognition, advises that the iliac regions be carefully and daily examined by the hand, in all cases of convalescence after uterine inflammation, or when the patient has been subjected to the operation of causes tending to produce pelvic abscess.* A persistent hardness and swelling in one of the iliac regions, unconnected with the uterus or ovary, with more or less tenderness on pressure, continuous uneasiness, and presence of febrile symptoms, should excite suspicion.†

There are other conditions capable of giving rise to abscess, which abscess may present at some portion of the abdominal wall, above the groin, or in the middle of the abdomen. In some rare instances these conditions might be confounded with pelvic abscesses of the more ordinary kind.

Abscess in the iliac region may be due to caries of the vertebral column; abscess above Poupart's ligament on the right side may be due to inflammation or obstruction of the appendix vermiformis. In cases of retained encysted fœtus, suppuration, formation of abscess, and spontaneous discharge of the contents through the abdominal wall, are frequently observed. In this latter event

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* Op. cit.   † McClintock, op. cit., p. 49.

there would be a history of peculiar character (see p. 169). Ovarian tumors sometimes suppurate, and the resulting abscess opens externally.

FIG. 30.
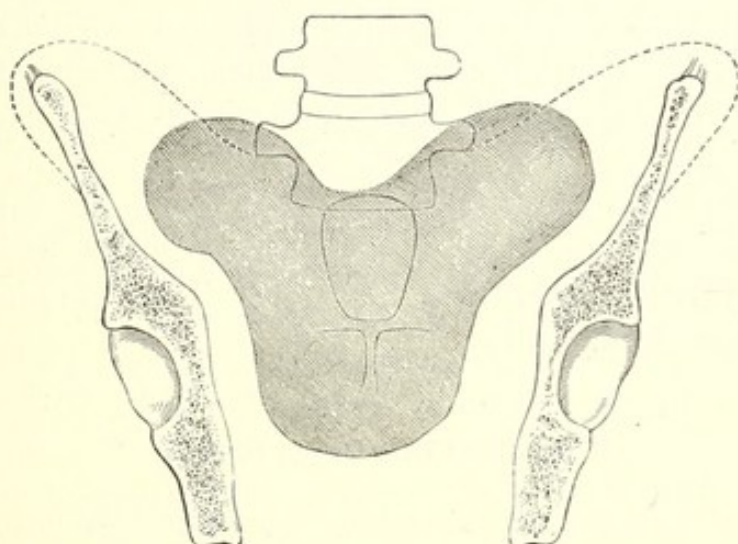
The condition with which ordinary pelvic abscess is more likely to be confounded, is peri-uterine hæmatocele.   Fig. 30 represents

FIG. 31.
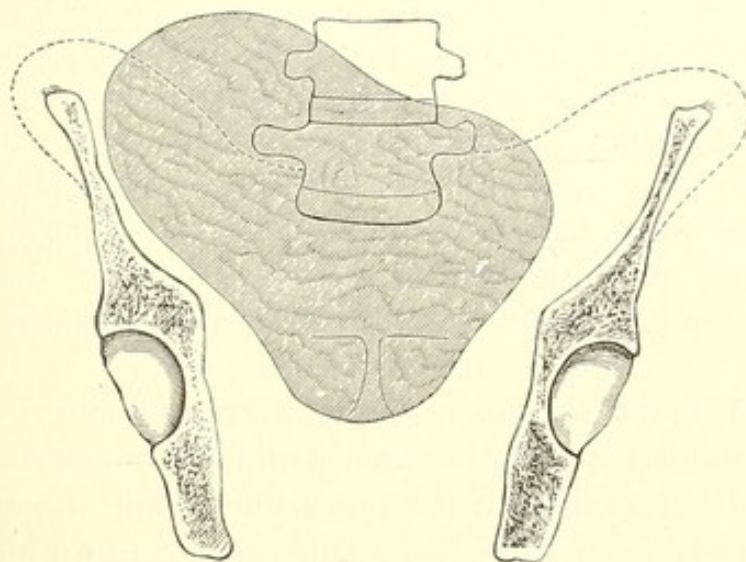
the shape of the abdominal tumor in a case of peri-uterine hæmato-cele.*   Fig. 31 gives an idea of the tumor in a case of pelvic cellulitis.†   The resemblance between the two as regards the con-

* Case of Owen, Univ. Coll. Hospital, 1866.
† Case of Parnell, Univ. Coll. Hospital, 1866.

18

figuration of the tumor is obvious. [The *lateral* aspect of the tumor in these two cases respectively is shown in Figs. 7 and 8.] In both the tumor rises from below, and in both cases the margin of the tumor is rounded, generally rising higher on one side, presenting variations in hardness and resistance, or softness and fluctuation, according to the stage of the affection. And it now and then happens that the contents of the hæmatocele undergo a process of suppuration, the hæmatocele becoming converted into an abscess.

The tumor due to peri-uterine hæmatocele forms rapidly, that due to pelvic cellulitis slowly : this is the principal distinction.

See also further remarks on this subject in the chapter on Vaginal Examination (p. 159).

PERI-UTERINE HÆMATOCELE.

In cases of peri-uterine hæmatocele, a defined tumor, or a hardness, resistance, and dulness not well defined, may be found to extend upwards a variable distance above the brim of the pelvis. It may reach beyond the umbilicus. There is in such cases an effusion of blood, and this blood, at first fluid, afterwards coagulated, forms the intumescence. The history of such cases is peculiar, the formation of the swelling occurs quickly, is attended with alarming faintness and prostration, and with an assemblage of symptoms which have been already alluded to more than once (see pp. 170, 179). The physical characters of the tumor vary according to the stage at which the observation is made. Retention of urine, which may be produced by the condition in question, might possibly mask the true nature of the case; the distension of the bladder might, under such circumstances, disguise the other swelling.

One form of ovarian disease might be confounded with peri-uterine hæmatocele; thus, in one of an interesting series of cases, related by Dr. McClintock, the tumor due to the hæmatocele was for a time considered to be an ovarian tumor, into which hemorrhage had occurred. The principal points to be borne in mind in the diagnosis of tumors suspected to be due to hæmatocele are, the sudden occurrence of the swelling, the previous occurrence of marked menstrual disturbance of some kind, and the peculiar feel communicated by the tumor. The preceding menstrual symptoms are the least constantly significative.

In cases where peri-uterine hæmatocele is suspected, a vaginal

examination should be made. The distinction of the various causes of peri-uterine hæmatocele must be gathered from what will be stated further on as to the pathology of this condition. The distinction of cases in which the effusion of blood is due to rupture of the walls of the containing cyst in extra-uterine pregnancy (tubal or abdominal), from cases of hæmatocele unconnected with gestation, is difficult. Unless the pregnancy have advanced beyond the third or fourth month, pregnancy may have been unsuspected at the time of the appearance of the tumor, and it would be exceedingly difficult to say, in the absence of a definite history, what is the precise nature of the case.

FECAL TUMOR.

A tumor due to fæces accumulated at any particular part of the intestinal tract, may extend into the pelvis and simulate a tumor growing from that part. A fecal tumor is known by its irregular shape, by its doughy feel; it is dull on percussion at one part, and clear at another (from presence of flatus); the state of the bowels also is peculiar, great costiveness being present; and, moreover the tumor disappears, or partially so, on administration of purgatives. Dr. Walshe gives an important caution, however, in reference to the uncertainty of such deduction, viz., that occasionally the solid matters cling to the wall of the bowel, leaving a passage in the centre; the tumor remains, and is a fecal tumor, while the patient is passing daily liquid stools.*

TUMORS TRACEABLE UNDER THE PELVIS, MORE COMMONLY OBSERVED.

We have now eliminated from the inquiry several out of the list of tumors traceable into the pelvis, enumerated at p. 263. The most important remain for consideration, and we have now to determine whether the tumor which is present be due to

Enlargement of the uterus, including pregnancy, normal and abnormal, tumors, &c., of the uterus.

Ovarian tumor.

Distension of the bladder.

The tumors of the abdomen, respecting which a diagnosis is most frequently required, belong to this series, the cases not so included being, comparatively speaking, very few in number.

* Walshe, op. cit., p. 315.

The three conditions above enumerated have this in common, that the tumor constituted by either one of them is generally situated in the middle line of the abdomen at the time that an abdominal examination is made; for although an ovarian tumor begins necessarily on one side of the pelvis, by the time that it forms the subject of investigation it usually comes to occupy a nearly central situation.

Let us suppose a case as follows: A rounded, well-defined tumor is found extending from the pubes up to the umbilicus, dull on percussion, slightly movable to one or the other side. Such a tumor may be constituted by a distended bladder, by enlargement of the uterus (due to pregnancy, catamenial retention, polypus, &c.), or by an ovarian tumor, and taking the physical signs just mentioned *alone*, as criteria, they offer no means for positively distinguishing between the three. In the majority of such cases, the history often enables us to pronounce nearly confidently on the matter, and with further help from a vaginal examination little doubt usually remains as to the diagnosis; but now and then the diagnosis between uterine and ovarian tumors is very difficult.

DISTENSION OF THE BLADDER.

We may dispose of this condition before proceeding to the consideration of the other classes of cases. The tumor due to this cause is always (in uncomplicated cases) of recent formation, and it dates back but a short time. A very instructive case, and one illustrating well the nature of the difficulties liable to be met with in determining this point, came under my care at St. Mary's Hospital some years since. The case was that of a woman æt. 46, married, the mother of one child, 17 years old. She presented herself at the hospital with an enlargement of the abdomen of three weeks' duration, and it was supposed by those who had seen her that there was a tumor present. Her legs were very œdematous, the abdominal wall externally presented enlarged lymphatics with great puffiness of the skin covering the hypogastric and inguinal regions. There was a distinct well-defined tumor rising from the pelvis and reaching to three inches above the umbilicus. This tumor was not tender. It was hard, firm, not fluctuating, and gave the impression at first sight of being an ovarian cyst. Vaginal examination was difficult owing to the extreme pain it occasioned; the vaginal walls were protruded in a swollen œdematous state, and in the form of tumors, through the vulvar aperture.

The os uteri, however, was felt to be high up behind the pubes, and a round, firmer, hard tumor occupied the pelvis itself. There was, judging from the history of the case, no evidence of pregnancy. She stated that she passed water freely, and had done so for the last three weeks. The examination *per vaginam* was so difficult as to be unsatisfactory; the *primâ facie* view of the case was that it was an instance of rapidly growing ovarian cystic disease. As a preliminary to further exploratory measures, a catheter was introduced into the bladder. The discovery was then made that the tumor was due to an enormously distended bladder, and nearly six pints of urine, slightly, but not greatly offensive, were drawn off, the tumor above the pubes entirely subsiding. The further information was then obtained by examination that the uterus was enlarged, that a large fibrous growth occupied the posterior wall of this organ, that the whole organ was retroverted in the pelvis, and that this was the cause of the retention of urine. The fibrous growth was situated chiefly external to the uterine wall, and altogether the uterus was about the size of the gravid uterus of between three and four months. Further inquiry now elicited some interesting facts in the history of the case, but which had not been alluded to by the patient until they were specially asked for. It appeared that three days before the abdomen began to swell she had slipped down stairs over five or six steps, and strained herself in so doing, but she took no notice of this, as no immediate inconvenience resulted. There was a little difficulty in micturition, but nothing marked, and the retention had been disguised by the fact that there had been a more or less constant overflow. The involuntary micturition was naturally enough misinterpreted by the patient, and was not mentioned until specifically inquired after. The uterus had become retroverted, the tumor sinking down into the sacral concavity, and the pressure and dragging on the neck of the bladder occasioned the retention.

The particulars of this case sufficiently illustrate the nature of the inquiries, and the mode of examination necessary to be made. The case just described is somewhat analogous to others which have been recorded. It might be said perhaps that the duration of the tumor in the case above related (only three weeks) would at once have settled the question as against ovarian disease; but in some cases it has been found that ovarian disease progresses with extreme rapidity. Kiwisch says, "We have seen a cyst from the size of a fist to that of a child's head, appear in the course of fourteen to twenty-four days, accompanied by severe local and general

symptoms."* Further, in dealing with the statements of patients as to the duration of a particular condition, we are always treading on uncertain ground. There was nothing, for instance, in the above case to prove that the duration of the hypogastric tumor dated back from only three weeks previous. It might well have existed, although much smaller, for some time antecedently.

Having, therefore, excluded distension of the bladder from the consideration—a step which should always be taken, and neglect of which may be attended with most disastrous results to the patient—we have in the next place to *determine whether the tumor be ovarian or uterine*.

The distinction between an ovarian and a uterine tumor, the size of the tumor not exceeding that previously stated, is by no means easy by the abdominal examination alone. The distinction is much easier when the tumor is more considerable in size. As a general rule, hardness and slow growth of the tumor are against the idea of ovarian disease. Thus, a rounded firm tumor, reaching to the umbilicus, and which had been slowly increasing for two or three years or more, would be far more likely to be uterine than ovarian; and a very large tumor in the abdomen of slow growth may be considered uterine, if it be universally hard and firm; if it be soft or give evidence of fluctuation at certain points, it is almost as certainly ovarian.

There are other means, however, to which we can resort in order to satify ourselves whether a given tumor in the hypogastric region be uterine or ovarian, viz., the employment of a vaginal examination, and by combining this with an abdominal one. Further, the use of the sound is often of the most essential service in guiding us to a right conclusion.

By means of the vaginal examination we are able, in many instances, to assure ourselves that the tumor above the pubes is continuous with a tumor which we recognize as that of the uterus by means of the vaginal touch. Such is the case, for instance, when the woman is pregnant, or when the uterine cavity is enlarged and distended by fluid or other contents. By pressing upwards from the vagina we can frequently also, under such circumstances, establish the continuity of the two tumors—the vaginal and the hypogastric. The mere fact, however, that motion is thus communicated is insufficient to establish the identity of the two.

* Translation by Clay, p. 112.

Thus, when an ovarian tumor is closely applied to and pressing down the uterus, motion would necessarily be communicated to the tumor above by pressure on the uterus below. And sometimes the relations of the uterine orifice below are such that it is no easy matter to determine whether a hard mass felt from the vagina is uterine or ovarian. It is in such cases that the sound is employed with such good results as regards the diagnosis, for by establishing the fact that the uterine canal lies in a certain direction, important deductions as to the nature of the tumor follow.

The diagnosis, as made out by an abdominal examination, should be corrected and checked, so to speak, by a vaginal one ; a positive opinion should hardly ever be given as to the nature of any case, however clear it may appear to be, simply on the results obtained by the former method of investigation. Mistakes, ludicrous or serious, or both, have not by any means unfrequently followed neglect of this important rule.

Plan now to be pursued in making a Diagnosis between Ovarian and Uterine Tumors.

The determination of the diagnosis of a tumor, which it has been decided is either uterine or ovarian, is a matter which presupposes some knowledge of the pathology and physiology of the uterus and ovaries. The course which it is now proposed to take, in order to facilitate the forming of a diagnosis between ovarian and uterine tumors, is as follows: 1. To enumerate the various forms of enlargement of the uterus liable to be met with, calling attention more particularly to the features which distinguish them especially as uterine tumors, from a clinical point of view ; 2. To point out the successive steps by which the diagnosis between uterine and ovarian tumors is to be arrived at ; 3. A separate chapter will be devoted to the diagnosis of the various forms of ovarian tumors, one from the other.

CHAPTER XII.

EXAMINATION OF THE ABDOMEN (*continued*).

TUMORS TRACEABLE INTO THE PELVIS (*continued*). ENLARGE-MENT OR TUMOR OF THE UTERUS, INCLUDING PREGNANCY.

Causes of Enlargement or Tumor of the Uterus—General Remarks on the dif-ferential Diagnosis. Cancer of Fundus Uteri—Tubercle of the Uterus—Abscess of the Uterus—Fibro-cystic Tumor of the Uterus—Gaseous Dis-tension of the Uterus—Distension of the Uterus by Fluid; Retention of Menstrual Fluid; Purulent or other collections of Fluid—Fibroid Tumor and Fibrous Polypus of the Uterus—PREGNANCY; Description of the Physical Characters of the Tumor due to the Gravid Uterus, its Shape, Size, Position; Ballottement; Spurious Pregnancy; various Sources of Fallacy; State of the skin covering the Abdomen, and Condition of the Umbilicus; Auscultatory Signs; Sounds due to Passage of Flatus, Mo-ther's Heart, Pulsation of the great Vessels, Respiratory Sounds of Fœtal Heart, Uterine Souffle, Funic Souffle, Sounds due to Fœtal Movements. Special Remarks on the Diagnosis of Pregnancy—Estimate of the comparative Value of the different Signs of Pregnancy: General Summary.

IN the present chapter it is proposed to consider the diagnosis of uterine tumors one from the other, including also a very im-portant subject, viz., the diagnosis of pregnancy.

The causes of enlargement or tumor of the uterus are the fol-lowing:

Simple hypertrophy of the uterus.

Pregnancy, normal and abnormal.

Uterine polypus and fibroid tumor of the uterus.

Retention of the menstrual or other fluid in the uterine cavity (hæmatometra and hydrometra).

Gaseous distension of uterus (physometra).

Abscess of the uterus.

· Tubercle of the uterus.

Carcinoma of the fundus uteri.

Fibro-cystic tumor of uterus.

The least common of these pathological conditions are those which have been placed last on the list. Carcinoma of the fundus uteri and tubercle of the uterus are very rare. Osseous tumor of the uterus also is very uncommon. The same remark applies to

abscess of the uterus. Accumulations of gas in the interior of the uterus are very rarely witnessed. Accumulations of fluid in the uterus, unconnected with pregnancy, do not often come under our notice; in retention of the catamenial fluid, a condition now and then present in young women who have never menstruated, more rarely in others, the uterine tumor due to such catamenial accumulation may attain a very considerable size. Simple hypertrophy of the uterus, although not an uncommon condition, does not produce more than a slight increase in the size of the uterus as felt above the pubes; a tumor reaching beyond two inches above the pubes might be concluded not to be due to simple hypertrophy of the uterus. The most common conditions met with, and giving rise to uterine tumor, are—pregnancy, fibrous tumor, and fibrous polypus of the uterus. By far the majority of tumors in the abdomen of any considerable size, and which are uterine in their nature, are found to be constituted by the presence of one of these three conditions mentioned; and in practice therefore the diagnosis of these, one from the other, is of the most importance. Here it may be mentioned that the diagnosis of these three conditions, one from the other, is far easier than the diagnosis of one or each of them from certain tumors of the ovaries, as will be presently shown.

With these general remarks we may now proceed to describe more particularly the characteristics of the various forms of uterine enlargement.

CANCER OF THE FUNDUS UTERI.

Respecting the diagnosis of this uncommon variety of carcinoma uteri, the following remarks may be made: the enlargement of the uterus felt above the pubes is, compared with that due to pregnancy, of slow growth, though not so slow as in the case of fibrous tumor or ordinary fibrous polypus. The shape and feel of the tumor varies according to the precise seat and stage of the growth. If the growth be superficial, it is uneven, irregular in shape; if it be internal to the uterus, or interstitial, the tumor is smoother, more uniform. In these respects the facts elicited are not very decisively significant. With respect to the discharges present, in both fibrous polypus and cancer of the interior of the uterus, we may have serous or offensive or bloody discharges, but in the duration of such discharges, and in their effect upon the patient, we have diagnostic criteria of importance: an ordinary polypus may exist for years with more or less constant discharge of the above characters, and yet the patient may not very greatly suffer, but

the cancerous disease is more deadly in its effects, and constitutional derangement, very decided in kind and degree, soon shows itself. Fibrous tumor of the uterus, the physical characters of which as felt through the abdominal wall might, in some respects, resemble those of cancerous tumor, is distinguished from the latter by its comparative innocuity, and by the absence of general indisposition therewith associated. The *duration* of the disease, as will have been gathered from the preceding remarks, is then an important element in the decision. The pain present in cases of cancer is often peculiar in kind and degree, as previously stated ; and although pain is frequently present in cases of polypus, yet it is pain of a different kind, less constant and less severe. Lastly, the diagnosis may be summed up in the statement that the patient presents signs of uterine cancer ; that a vaginal examination fails, or may fail, to give evidence of it; while a careful examination of the uterus above the pubes reveals the existence of an irregular, or possibly of a regular, tumor which may be of considerable size. It is necessary here to remark that, in ordinary cases of cancer of the uterus, the organ is usually felt on examination to be somewhat enlarged above the pubes: in a few cases the enlargement in question is more considerable.

TUBERCLE OF THE UTERUS.

In a case of this very rare disease, recorded by Mr. Tomlinson,* the uterus was felt to be considerably enlarged above the pubes. The course of the disease was chronic, death taking place upwards of three years from the commencement of the symptoms. The circumstances likely to attract attention in cases of this kind are, the slowly increasing enlargement of the uterus, the presence of more or less continuous discharge (in Mr. Tomlinson's case it was brownish and offensive); absence of the peculiar constitutional affection met with in cancer ; absence of a tumor within the uterus as ascertained by vaginal examination. The cases are so rare that it is difficult to lay down more precise rules for their discrimination.

ABSCESS OF THE UTERUS.

Inflammation of the uterine tissue going on to the formation of pus, and consequent abscess, is very rarely observed, excepting after abortions, after labor, or after operations performed on the

* Obst. Trans., vol. v.

genital organs; the attending circumstances are such that there could hardly be any difficulty in deciding on the nature of a tumor due to such a cause. The presence of the tumor would be associated with pain, great febrile disturbance, and symptoms of an acute character. In some rare cases, abscess in the uterus has resulted from decomposition and putrefaction of a retained fœtus. Cases of abscess of the uterus in which the purulent collection forms in the uterine wall, or between the uterus and its peritoneal covering, are closely allied, in their symptoms and general features, to cases of pelvic abscess. The only difference is that, in the former class of cases, the tumor appears to be an enlargement of the uterus itself, is more limited and more definable than in the latter series of cases.

FIBRO-CYSTIC TUMOR OF THE UTERUS.

Some particulars concerning this rare, but important, form of disease will be found in the latter part of the work.

GASEOUS DISTENSION OF THE UTERUS.

The tumor due to gaseous distension of the uterus occupies the middle of the abdomen; it is well-defined, hard, and firm, and it differs from all other uterine tumors in this particular, that the note on percussion is clear and tympanitic.

Clinically, the uterine tumor due to such accumulation will rarely come before us. The tympanitic tumor, evident in the middle line above the pubes, is continuous with an enlargement of the uterus as felt from the vagina. Menstruation is absent, the enlargement is stationary or progressive. Interference with the performance of the functions of the neighboring viscera, the rectum and bladder, will be in proportion to the size and extent of the tumor. When the uterus is distended to any extent, the presence of pains, more or less resembling those of labor, might be expected to be observed. These cases might be mistaken for simple tympanitis, from which, however a vaginal examination would distinguish them. The very rare case in which an ovarian cyst is spontaneously evacuated into the bowel, air afterwards entering and distending the cyst, would offer many points in common with that now under consideration.

DISTENSION OF THE UTERUS BY FLUID.

The cases coming under this head are some of the most important with which we have to deal, and their diagnosis possesses great interest. There is this general remark to be made concerning them, that as regards the shape and relations of the organ, the uterus usually expands under the distending force pretty much as in the case of pregnancy. If the distension be at all considerable, the tumor produced by it is readily recognized above the pubes, and also from the vagina. Fluctuation is usually present when the tumor is large, but it is not a sign the presence of which can be greatly depended upon. One form of distension to which the uterus is liable, is that produced by *retention of the menstrual fluid*, in young women who have never menstruated. In women who have menstruated also, menstrual retention may occur in consequence of the *os uteri or the vaginal canal becoming occluded*, as after parturition, or by the presence of tumors in the canal of the cervix uteri. (See "Examination of Uterus from Vagina.") Then there are cases in which *purulent collections* from various causes take place in the uterus, or in which fluid of a more or less *serous* character is found distending the organ. The latter class of cases are those which are more particularly described by authors under the term "hydrometra." Lastly, cases of *pregnancy;* for although, normally, the amount of fluid in the uterus under such circumstances does not entitle the "enlargement of the uterus due to pregnancy" to be considered in this place, yet occasionally the quantity of fluid present in the uterus, together with the fœtus, is very considerable indeed, and it has even been sufficient to obscure the diagnosis of pregnancy in some instances.

The diagnosis of these various forms of distension of the uterus is generally to be made out by a careful consideration of the attending circumstances and of the history of the case. They have all of them this in common, that menstruation is absent, a necessary condition of fluid distension of the uterus being closure of the outlet for the menstrual fluid. [The only possible exception, and that only an apparent one, to this statement, is in the case of cancerous disease of the lower part of the uterus occasioning purulent distension of the cavity above, and at the same time, possibly, giving rise to a sanguineous discharge below.] The symptoms produced by menstrual retention in young women who have never menstruated have been fully described at p. 52. The physical

signs are identical with those of early pregnancy, so far as the abdominal examination is concerned, but the vaginal examination throws light on the matter by revealing the presence of an imperforate hymen or other occluding barrier to the escape of the menstrual secretion.

Enlargement of the uterus due to menstrual retention in women who have menstruated does not very frequently come before us clinically, for the retention rarely proceeds to such a degree as to give rise to a considerable enlargement of the uterus. The uterus may be found as large as a gravid uterus of four months, or even larger.*

We may have purulent distension of the uterus from fœtal remains undergoing decomposition in the uterus, or from cancerous disease of the organ, for cases are on record in which pregnancy having proceeded regularly up to a certain point no delivery of a fœtus has occurred. Such may be the origin of a purulent collection in the uterus. The so-called cases of *hydrometra* are also rare, and their diagnosis rests chiefly on the facts that the uterus is distended with fluid, that this is not due to pregnancy, that menstruation is absent, and that the course of the affection is slow and chronic. Moreover, it has been observed chiefly in women somewhat advanced in years. The degree of the distension in some recorded cases has been very considerable. These cases would be distinguished from cases of ovarian tumor by the fact that the uterus is the organ enlarged, also by the absence of menstruation, though this latter would be no guide in a woman past the climacteric age. Judging from recorded experience, the true nature of the case might be very readily overlooked. Distension of the bladder could hardly be confounded with it; if any doubt existed, the use of the catheter would be the means of removing it.

In cases where the woman is pregnant, but the quantity of liquor amnii is very excessive, it is just possible that on the first view of the case some difficulties might present themselves in the way of the diagnosis. A slight investigation of the history of the case, its progress and symptoms, would very shortly indicate the true explanation of the matter, and the signs of pregnancy revealed by a vaginal examination and otherwise would generally be conclusive as to the presence of that condition. Cases of this

* See a case related by Prall, Schmidt's Jahrb., vol. cxvi, p. 65; also one by Dr. Hall Davis, Obst. Trans., vol. iv.

kind have been occasionally rendered additionally obscure by the presence of dropsical effusion in the cavity of the abdomen.

FIBROID TUMOR AND FIBROID POLYPUS OF THE UTERUS.

A hard, firm, resisting, well-defined tumor, involving the uterus, reaching as far as, or beyond the umbilicus, which has been growing for two or three years, will, if uniform and symmetrical in shape, probably prove to be a fibrous polypus of the uterus, but if there be a want of symmetry about the tumor we have probably to do with a fibrous growth which is not within the uterine cavity. More generally we are able to recognize this latter fact at once,

FIG. 32.
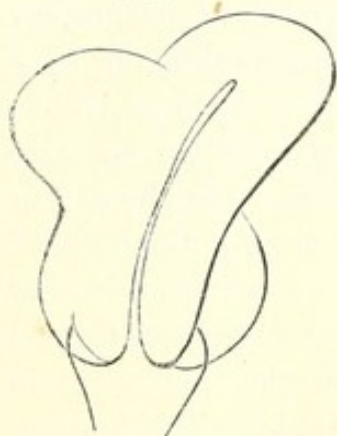
judging by the unevenness of the surface of the tumor felt through the abdominal parietes, while in other cases it is still more evident from the circumstance that the fingers recognize the presence of rounded, knob-like masses, which are fibrous tumors growing from the exterior of the uterus. Sometimes these growths are pedunculated and then they are movable to an extent varying with the length of the pedicle.

Fig. 32 represents the uterus enlarged by fibroid growths, and its general relations. In this* instance the whole tumor was not very large.

Fig. 33 represents an enormous fibroid growth connected with the uterus† filling the abdominal cavity, and even extending under the cartilages of the ribs. This latter was a case of ten years' standing.

It will thus be seen that when the case before us dates back for any considerable time, the diagnosis, up to a certain point, is comparatively easy; the firmness and density of the tumor being peculiar and characteristic. The slow growth of the tumor, and its firmness and solidity, separate it from the ordinary forms of ovarian tumor, but there are some forms of ovarian tumor with which it may more readily be confounded. In cancerous enlargement of the uterus the progress is less chronic than in fibrous tumor; moreover, cancer is often present in other organs also. There are other considerations which are equally significant in the diagnosis of fibrous growths. When the fibrous growths are exter-

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* Case of Woodman, Univ. Coll. Hosp., 1866.
† Case of Mrs. D., Univ. Coll. Hosp., 1866.

nal to the cavity of the uterus, the symptoms are often very slight, and the general health of the patient may be unaffected, unless the shape or position of the tumor be such as to mechanically interfere with the evacuation of the bladder or of the rectum. In the early stage of the growth of such tumors there may be, however, mechanical derangements, these being entirely absent at a later period when the tumor has risen out of the pelvis into the abdomen. If, on the other hand, the uterus be enlarged *together with* the tumor, as it necessarily is when the tumor is inclosed within it, the symptoms are almost always more severe and such

FIG. 33.
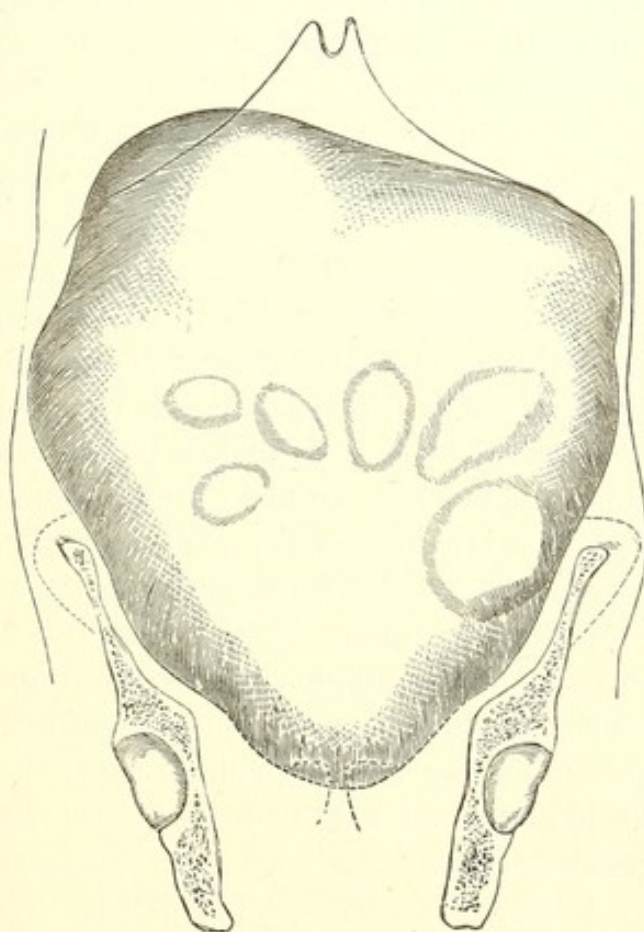
as to attract attention at an early period. Profuse menstruation, hemorrhages, serous discharges, more or less constant pains, and discomfort of various kinds, which by their association and long continuance not rarely reduce the patient to a very low debilitated state, are present under such circumstances; and a slow-growing, hard, symmetrical tumor, felt above the pubes in a patient with symptoms such as those described, generally proves to be a large polypus of the uterus. The only condition capable of closely simulating this condition is internal cancer of the uterus—a very rare

disease, and one which might be expected to have a less chronic course than fibrous polypus. The state of the lower segment of the uterus affords valuable diagnostic information in cases of hard uterine enlargement. When a polypus is present, the examination of the os, and through this opening of the interior of the uterus by means of the uterine sound, generally gives conclusive information on this point. Slight consideration will be sufficient to show that between fibrous tumors situate in the wall of the uterus, but partly projecting into the cavity, and fibrous polypi, the diagnostic signs would not be very decided. The symptoms presented by the patient give, however, some material assistance. Thus, as observed by Scanzoni, in the case of fibrous tumors growing near the cavity but interstitial in character, the pains experienced by the patient are generally more severe than when there is a polypus present, while, at the same time, the amount of hemorrhagic loss is generally much less considerable in the former than in the latter case.

That solid tumors of the ovaries may, under certain circumstances present physical signs very closely resembling those present in the case of fibrous tumors of the uterus, has been just observed. The greatest amount of difficulty is in deciding between a tolerably large fibrous tumor pedunculated, and, to a certain extent movable independently of the uterus, and some solid tumors of the ovary, both being chronic in their course, while the physical inconveniences produced may be identical in the two cases. Practically, it does not often happen that the diagnosis in question is of extreme importance. The diagnosis of ovarian tumors, of which the contents are chiefly fluid, from fibrous tumors of the uterus, is more interesting and at the same time more easy, the presence of fluctuation and other characters, to be alluded to presently, giving important diagnostic criteria.

PREGNANCY.

Many of the difficulties more ordinarily presenting themselves in ascertaining whether, in the particular case before us, the enlargement is due to pregnancy or not, have been cleared away by what has been already said on the subject. It is necessary to remind the reader that not one of the precautions mentioned some pages back as to placing the patient in a proper position, as to the previous evacuation of the bladder and rectum, &c., can be safely neglected, if we are to make a complete and successful investigation of a case of suspected pregnancy.

Before pointing out the diagnosis more particularly, it is necessary to describe the physical and other characters of the tumor constituted by the gravid uterus under ordinary circumstances. A description of these physical and other characteristics will include a reference to the nature of the feel communicated by the tumor to the fingers, its size, its position in the abdomen; after which those signs, most important of all, derived from the employment of auscultation, will have to be considered.

The Feel of the Tumor due to the Gravid Uterus.—It is during and after the fourth month that we can feel the gravid uterus above the pubes. Up to the fifth month the tumor so felt is tolerably firm, not sensitive, giving the impression of a rounded, smooth, fleshy mass. After this period the tumor is usually felt to be softer, this being due to the presence of fluid within it, and the degree of the softness will vary with the amount of the fluid. There is often an obscure fluctuation perceivable. Soon after the fifth month harder masses or nodulations may be felt within the tumor, which gradually become more pronounced as it grows, these being the limbs or other parts of the body of the fœtus which may come into contact with the uterine wall. If, as occasionally happens, the amount of liquor amnii is very small, the uterine tumor is felt to be everywhere hard and more resistant, but the elevations and depressions corresponding to the irregularities presented by the fœtal surface are still to be detected. Usually, it is necessary to press inwards with the point of the finger to detect the elevations in question, but now and then both the abdominal and the uterine walls are so lax that the members or other part of the fœtus are more easily felt on application of the hand.

In cases where the uterine tumor is not to be felt above the pubes, from presence of fat, from resistance, or other causes, there is a peculiar hardness and fulness of the region in question. The importance of engaging the patient in conversation while endeavoring to ascertain the physical characters of the tumor should be now kept in view. It will be found exceedingly useful also to make the patient inspire and expire very deeply several times in succession, while the hand rapidly follows the movement of the abdominal walls. Often, in this way, a tumor becomes recognizable, the existence of which would be otherwise problematical.

As regards the surface of the tumor due to the gravid uterus, it is usually perfectly smooth and uniform (unless when so lax that the projecting angles or parts of the fœtus within cause irregulari-

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ties); but cases may occur in which there are fibroid tumors growing externally to it, giving a nodular character to the surface. It would be important not to overlook such a possible coexistence of fibrous tumors of the uterus with pregnancy. In cases of hydatidiform pregnancy, the surface of the uterus is remarkably hard and resistant, but the hardness and resistance are uniform.

The discovery of the limbs or other parts of the fœtus through the abdominal walls is not usually available as a diagnostic sign of pregnancy until a late period, when other equally significant data are also obtainable. But there are other signs of pregnancy obtainable at an early period, by simply feeling the tumor, which are of great importance,—viz., the *feeling of the movements of the fœtus within the uterus.* We have elsewhere (see p. 137) considered the movements felt by the mother, and their value as signs of pregnancy. The data now under consideration have a higher value. During the fifth month frequently, but after that time in the majority of cases, if the hand of the observer be laid smoothly over the abdomen and the suspected tumor, and gently pressed against it, a sharp, slight, but decisive tap is felt, due to the movement of the fœtus within. This is felt with more or less ease in different cases. The woman may be undoubtedly pregnant, and with a live child, this sign being yet undiscoverable; but if a little patience be exercised, by manipulation and pressure the slight impulse will be perceived. It is often felt immediately on applying the hand, and is only felt again on removing and reapplying it. It is capable of being simulated by that sudden and spasmodic contraction of the recti muscles occasionally liable to be set up by the application of the hand in hysterical subjects; possibly also by the peristaltic movements of the intestines. The celebrated Joanna Southcott appears to have deceived her medical attendants by thus contracting the recti muscles. They believed that she really was pregnant. It has been recommended that the hand should be dipped in cold water in order more easily to excite fœtal movements, but this is unnecessary. The following remarks of Dr. Tanner are very much to the purpose: " I would especially mention that the cold diminishes the acuteness of the sense of touch, while it is very likely to induce spasmodic contractions of the recti muscles, which are almost certain to be mistaken for fœtal movements."*

There is still another sign of pregnancy derivable from palpa-

* Signs and Diseases of Pregnancy, p. 76.

tion of the tumor through the abdominal walls, viz., hypogastric repercussion or ballottement. The patient is to be placed on the side, or, as Dr. Montgomery recommends, on the knees, "with the shoulders depressed, so that the fœtus may be caused to gravitate towards the fundus uteri, which is also brought into more complete contact with the abdominal parietes." The fingers are then to be pressed against the most dependent part of the tumor firmly but gently, and then very suddenly this pressure is to be withdrawn. In the act of withdrawing the pressure the fœtus is felt to fall against the retiring finger, and this constitutes the sign in question. It is identical with the internal ballottement previously described. (See p. 188.) Without placing the patient in this position, this external ballottement is often practicable when the pregnancy is far advanced; that is to say, the patient lying on the back, pressure is steadily made by one hand on one side of the uterus, and manipulation by the other hand is performed on the opposite side of the uterus as above directed.

The value of this ballottement as a sign of pregnancy is great, but it is possible that an inexperienced observer might be led into error by it. Thus if the abdomen contained a solid pedunculated movable tumor, together with ascitic effusion, the sensation described above might be communicated. The internal ballottement from the vagina is not so liable to be simulated, and indeed if the previous instructions have been duly attended to, it is not possible to mistake the external ballottement due to a fœtus within the uterus for anything else.

The Size and Position of the Tumor constituted by the Gravid Uterus.—Under ordinary circumstances the gravid uterus is, at the end of the third or beginning of the fourth month, so large that the fundus of the uterus can be perceived above the brim of the pelvis, and during the succeeding months, unless interfered with by some abnormal occurrence, the uterus rises progressively higher and higher. In the sixth month the upper border of the uterine tumor is as high as the umbilicus. In the seventh month it reaches two inches or more above this point, and at the end of the eighth month it reaches the ensiform cartilage. After this time, that is to say during the ninth month, although the uterine tumor increases in size, this increase does not show itself so much in the upward direction as laterally and anteriorly; and during the last week or two there is, more often than not, an actual sinking of the tumor to a slight extent. [Fig. 34 shows a not uncommon position of the gravid uterus at the sixth month.]

Then as regards the *position* of the tumor, it must not be supposed that the gravid uterus rises up in the median line and maintains this position throughout the whole period of pregnancy. This is a very common error, and one which has frequently led to misconception and even worse. The fact is that the uterus does at first, and during the first two or three months, occupy a median position—until it becomes bulky and rises into the abdomen. But once in the abdomen it generally occupies for the next two months—that is to say, speaking broadly, during the fifth, sixth, and part of the seventh months—a lateral position, being most frequently found on the right side of the abdomen. The degree of the lateral displacement varies in different cases, it being greater in some cases than in others, and when the abdomen is large, the intestines tympanitic, and the uterine tumor small in proportion

FIG. 34.
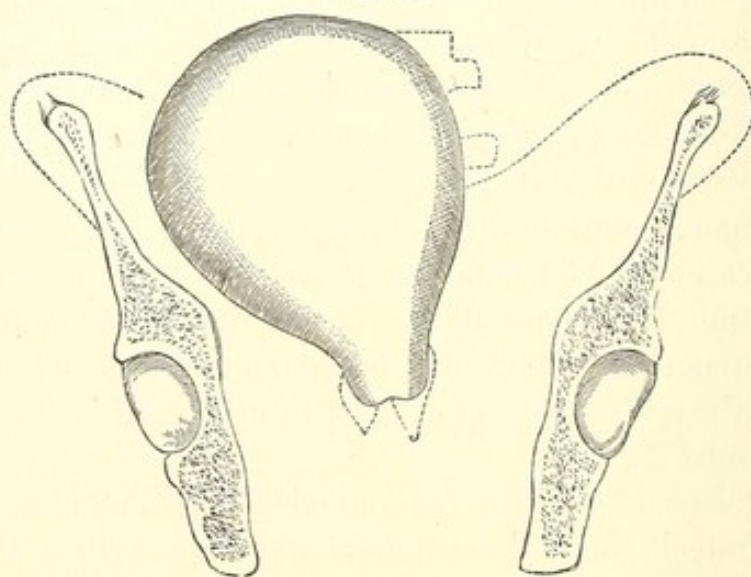
to the period of the pregnancy, the tumor may be, and has been, overlooked, owing to the observer not being aware of this normal lateral deviation. See Fig. 34.

We may now consider for a moment the indications to be drawn from the size and position of the tumor in the abdomen, as to the existence or absence of pregnancy in the case before us. The most important circumstance to bear in mind in deciding for or against pregnancy—size and position of the tumor alone considered— is the *relation which we find to subsist between the size and the duration of the tumor*. Thus we examine the abdomen on a particular day, and find a tumor extending to half way between the pubes and umbilicus ; and examining the same case two months later, we find the upper border a little way above the umbilicus.

If other signs of pregnancy be present, or rather if they be not absent, such an amount of growth in such a space of time in itself favors the presumption that the case is one of pregnancy. This evidence, therefore, has its value. Again, supposing we have a case before us which on other grounds—such as absence of menstruation for five months, &c., &c.,—we conclude *may* be one of pregnancy, and on examination we find that there is absolutely no tumor to be detected above the pubes, this would be exceedingly important in a diagnostic point of view, because, if the patient were five months pregnant, there should be a tumor discoverable in the hypogastric region. To put another case, supposing we find menstruation absent for six or seven months, and a tumor reaching to the umbilicus is detected, while no increase in the size of the tumor is found to have occurred on examination of the tumor two months later, this would be presumptive evidence against pregnancy.

Considered alone, then, the size and duration of the tumor have significance. Taken alone, no absolute conclusion as to the presence of pregnancy can be drawn therefrom, but we can frequently pronounce very positively, from the result of our examination, that there is no pregnancy. And in point of fact, the larger number of cases that come before us are cases in which the determination of this single point is quite sufficient. Thus a woman is suspected to be pregnant, and it is known that if she be pregnant the pregnancy must have advanced, say six months. We examine and find absolutely no tumor in the abdomen, which is possibly fat and tympanitic. Positively, and without going a step further, we can say, with this fact before us, that pregnancy is impossible —pregnancy of the duration supposed, at all events.

To return from this digression: we derive important indications from the size of the tumor as to what further procedures it is necessary or advisable to take to ascertain the nature of a case in which pregnancy is suspected. If we find no tumor above the pubes, to examine the patient *per vaginam* will give us no *certain* information whether the patient be or be not pregnant, in the majority of cases at all events; but if we find a tumor reaching to the umbilicus, a vaginal examination should give exceedingly important indications for the diagnosis, and would therefore be had recourse to.

A very interesting account might be here given of the many cases in which practitioners—some of them men of high standing and reputation—have been led to form erroneous conclusions re-

specting the existence of pregnancy. In many of such cases the mistake has been committed owing to the patient's statements having been attended to, and either no examination, or a very superficial one, instituted. The account given by the patient and the symptoms observed not unfrequently very closely resemble those present in pregnancy; so much so indeed, that by many writers the condition has received a special name, " spurious pregnancy," "pseudocyesis" (Good); and the symptoms present under these circumstances may be such that they deceive even patients who have had considerable experience in child-bearing. Accounts of such cases will be found in most modern text-books—Montgomery, Tanner, &c. The latter author thus describes a typical case: " We shall find the following succession of phenomena occurring possibly in a woman about forty-five years of age, the mother of a family, but who has not been pregnant for some six or seven years; the catamenia have either ceased or become irregular, or the flow comes on at the proper period, but is very scanty; the abdomen began to swell from the pubic region, in the same gradual manner as in pregnancy, but the enlargement is seen to be more diffused when the patient lies on her back than it is in true pregnancy, and there is an appearance of unusual constriction around the lower ribs or over the diaphragm; the breasts have become painful and enlarged, blue veins are seen traversing their surface, the areola is darkened and a serous fluid resembling milk is secreted, and escapes on pressure from the orifices of the milk ducts; the digestive organs are disordered, there is a capricious appetite, a frequent sense of nausea, with morning sickness, salivation and diarrhœa alternating with constipation; there is muscular debility, an excitable condition of the nervous system, cramp and retraction of the leg, with a change in the hue of the skin; the veins of the lower extremities have become varicose, and the patient is sensible of movements in the abdomen, which she asserts can only be those of a live fœtus, though if closely questioned she will allow that they are not altogether identical in character with such as she has felt on occasions when really pregnant. As these movements are at least partially due to the passage of flatus from one portion of the intestine to another, they are appreciable by a second party, who therefore confirms the patient in her erroneous views."* It is hardly conceivable how closely in fact the symptoms may resemble those of pregnancy, and the only safe rule to

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* Op. cit., p. 127.

be followed is never to consider the diagnosis as actually established, unless some physical sign on which we can place reliance as a sign of pregnancy be detected. What these reliable signs are will be pointed out in their due order. The foregoing observations apply to ordinary cases. Here, however, must be mentioned a few of the more important exceptional cases, in which deductions, drawn as directed, might prove fallacious.

Thus, a woman ceases to menstruate, there is no menstruation for a period of three months; at the end of the three months she becomes pregnant, and three months later she informs her medical attendant that she is certainly six months pregnant. An examination is made, but no tumor is detected above the pubes, and the erroneous opinion is given that the patient is deceived, and that she cannot be pregnant. Cases of this kind are not very uncommon. Another instance is that in which a woman becomes pregnant, the foetus dies (at the age, for instance, of three months) but is not expelled. The woman does not increase in size, and for this reason the case may be supposed not to have been a case of pregnancy at all. This case is not a common one, however. Another is that in which the uterus having become impregnated grows with inordinate rapidity, and we find the uterine tumor very much larger than can be accounted for on the patient's statement of the history of her case. A very instructive instance of this kind is the following: The patient, aged 28, had been married three months, was last unwell the week previous to her marriage. Three weeks before I saw her, she experienced a slight strain in getting over a stile, and dating from that period there had been a slight "show." For a fortnight she had been treated as for an impending miscarriage. The day before I saw her, a severe flooding occurred, soon after which I was requested to visit her. On seeing the patient, I was struck with the great size of the abdomen; a tumor, evidently the uterus, extended to two inches above the umbilicus. The first impression produced on my mind was that the pregnancy must have advanced farther than the time stated—three months. On passing the finger, and subsequently the hand, into the os uteri, the organ was found distended with a mass sufficient to half fill a wash-hand basin, and composed of an ovum which had undergone the hydatidiform degeneration.* The facts of this case bear out the observations of Montgomery and other writers, that in this peculiar affection, an unusually

* The case is more fully reported in the Lancet, vol. ii, p. 369, 1862.

rapid increase in the size of the uterus may be observed, a rate of increase not observed in normal pregnancy. Dr. Moorhead has recorded a case in many respects resembling the above.*

In cases of retroversion of the gravid uterus (see Fig. 4) there is a fallacy liable to rise in reference to the diagnosis, although other circumstances usually lead to the detection of the real nature of the case. The tumor which should be present above the pubes is then absent, but it is usually replaced by another—the distended bladder. And it is just possible that the observer, finding a tumor above the pubes answering in position, in size, and in shape, to the tumor expected to be found there, might make an important error in diagnosis. The urinary difficulties, the extreme pain and tension in the pelvis, and the other symptoms usually present, generally, however, attract attention, and point out that there is something about the case very unusual at all events. A vaginal examination would at once enable us to explain the nature of the condition present.

Lastly must be considered those cases in which extra-uterine pregnancy is present. These cases are not very common, but the symptoms observed under such circumstances are generally such as to occasion more or less obscurity in the diagnosis. The more common case is that commonly known as Fallopian pregnancy, the fœtus being inclosed in one of the Fallopian tubes. The less common case is that in which the fœtus is developed in the abdominal cavity. The tumor presented to the touch in such cases may be situated in the middle line, but more usually it is to one side. Speaking generally, there is little in the tumor itself which is characteristic or which would enable us to distinguish between these cases and cases of normal pregnancy, unless the nature of the case were suspected, and special care taken. The accompanying symptoms are, however, usually peculiar and to these we must look for aid in the diagnosis. It more frequently happens that one of the terminations of this abnormal pregnancy has arrived before the diagnosis has been made out. The terminations are various. Thus the fœtus may grow to its full development, then die and remain in the abdomen, or it may burst from the cavity in which it is inclosed (whether the Fallopian tube or a cyst) into the abdomen, before arriving at full development, occasioning in the latter case often frightful hemorrhage into the abdomen and sudden death to the mother. Or the death of the mother not en-

* Lancet, vol. i, Feb. 21, 1863.

suing, the fœtus becomes encysted, and remains inclosed in the abdominal cavity. When the fœtus is in the abdominal cavity, this being its primary or its secondary location, it may there remain for many years, giving rise to no particular inconvenience; or after a variable time, a process of supppuration may be set up, in the course of which the remains of the fœtus are expelled, through a fistulous opening in the abdominal walls, into the intestinal canal, or into the bladder.

A woman, the subject of extra-uterine pregnancy, may present no symptoms of an unusual character up to a considerably advanced period of gestation. Such may, however, set in at a much earlier period, and this depends, partly at all events, on the location of the fœtus. The symptom which in some cases first attracts attention is the fact that the patient, though supposed to be pregnant, has what she considers to be a catamenial discharge. This point has been already alluded to (p. 58). Discharges occurring in a pregnant woman should lead us to investigate the case more particularly. One of the most frequently observed symptoms of extra-uterine pregnancy is presence of pains of a dragging, sharp character in the pelvic region, the abdomen being often also tender to the touch. Yet there is nothing very significant in such symptoms, for patients who are the subjects of normal pregnancy not uncommonly present symptoms such as those which have been described. And if the patient be examined *per vaginam*, we usually find the os uteri presenting characters such as are present in normal pregnancy. The use of the sound would of course inform us whether the uterine cavity were empty or not; but there is this difficulty in the use of the sound in the diagnosis, that it is only safe to use it when we are absolutely sure that the uterus does not contain an ovum. Practically, the sound is of little service in the diagnosis.

State of the Skin covering the Abdomen, and Condition of the Umbilicus.—Under certain circumstances, various peculiarities in the condition of the skin covering the abdomen, and of the umbilicus, have diagnostic significance and value.

The most important peculiarity in question is a change observed in the greater number of cases of pregnancy. There is found "a colored line of about a quarter of an inch in breadth, extending generally from the pubes to the umbilicus, but not unfrequently thence to near the ensiform cartilage; its hue is some shade of brown, but sometimes partaking of the yellowish tint of ochre, and sometimes amounting to a full-bodied dark amber." (Mont-

gomery.) Around the umbilicus, too, a dark-colored disc is often found, which Dr. Montgomery terms the "umbilical areola." The two may, and often do, exist together, but the umbilical areola is considered by Dr. Montgomery as of higher value as a positive indication of pregnancy than the dark abdominal line. These changes in the skin above and round the umbilicus are not found in all cases of pregnancy; they are not found equally developed in different individuals at the same period of pregnancy; they are most marked in dark women; they are less to be depended upon as diagnostic of a second than of a first pregnancy.

As suggestive of the idea of pregnancy, the presence of these discolorations must be regarded as very important. If, for instance, we have to examine the abdomen of a patient, and find it enlarged and presenting the discoloration such as described above, this of itself would suggest to us the view that the enlargement was due to pregnancy. The observer must be cautioned, however, that until he has actually acquainted himself with the nature of the discoloration due to pregnancy, by inspection of some few undoubted cases, he will not be in a position to make use of this means of diagnosis.

Lastly, the sign in question has a certain amount of value in medico-legal cases, where there is a doubt as to whether the woman has been recently delivered of a child or not. In a woman suspected of having given birth to a child three or four days previously, the presence of a well-marked abdominal line and umbilical areola would be very strongly confirmatory of the suspicion. Its absence would not equally prove the negative, however, especially in the case of a woman with light hair.

Auscultation of the Abdomen.—In the employment of auscultation we have a means of diagnosis, in cases of suspected pregnancy, of the greatest possible value and importance. Every student of medicine should diligently prepare himself for making use of this means of diagnosis by practising it on all occasions.

It is now necessary to give an account of the sounds heard on auscultation of the abdomen—1, under ordinary circumstances; 2, when pregnancy is present; to indicate the value of the latter as diagnostic of pregnancy; and to point out how, and what, fallacies are likely to be encountered.

A few words first, however, in reference to the method to be pursued in thus investigating the condition of the abdomen. For very obvious reasons the stethoscope should be preferred to the application of the ear directly to the abdominal parietes. Some

care is necessary in adjusting the stethoscope so as to be able to listen easily and with success. The abdomen must be quite uncovered, though a practised observer may allow a very thin handkerchief to be interposed, if it appear advisable. The patient must be lying down, and the abdominal walls relaxed by instructing her to draw up the knees. The observer, standing on the patient's right side, holds the stethoscope with the left hand, grasping it firmly close to the end which is to be applied to the abdomen. The stethoscope is then firmly, gently, but steadily pressed inwards over the spot to be examined, and there maintained while the ear is applied. When the abdomen is tight, it will often be impossible to hear the fœtal heart, unless these precautions are attended to; and, indeed, it is sometimes necessary to press the end of the stethoscope inwards a considerable distance, to obtain the desired result. This is particularly the case when there is a tolerable quantity of liquor amnii in the uterus, when there is any fluid in the abdomen covering the tumor to be explored, when intestines are interposed, or when the walls of the abdomen are unduly loaded with fat. Unless the stethoscope be held as directed, it is apt to roll about over the surface of the uterine tumor. The employment of sudden force is very objectionable: the pressure of the stethoscope inwards, when necessary, should be slow and gradual. The examination must be conducted in a quiet room.

The sounds which may be heard on applying the stethoscope to the abdomen of a woman who is not pregnant, may be confounded with those due specially to pregnancy, and *vice versâ*. The sounds coming under the first head are—*a*. Sounds produced by passage of flatus from one part of the intestines to another; *b*. Sounds due to pulsation of the heart; *c*. Sounds due to pulsation of great vessels in abdomen, in aneurisms of the abdomen, &c.; *d*. Sounds due to respiration. Now, respecting the sounds due to motion of flatus, &c., within the intestines, a very little practice will prepare the observer to at once recognize them. Respecting the sounds due to pulsation of the heart, some important facts are to be remembered. It has been occasionally found that the beats of the mother's heart were quite audible very low down in the abdomen, and there are cases on record in which, the heart beating with unusual rapidity, *e. g.* 120–130, and heard about the neighborhood of the umbilicus, these pulsations have been mistaken for those of the fœtal heart. This shows the necessity for counting the pulse of the patient before employing auscultation. The sounds proceeding from the great vessels, &c., of the abdomen, will not be

described just now, as they will be more fully considered presently. Lastly, the sounds produced by the respiration of the patient are in rare instances transmitted to that part of the abdomen likely to be examined in cases of suspected pregnancy.

Next as to the sounds heard in cases of pregnancy. These are —*a*. Sounds produced by pulsation of the fœtal heart; *b*. The placental or uterine souffle; *c*. Sounds due to pulsation in the funis accidentally pressed upon—funic souffle; *d*. Sounds due to the movements of the fœtus. Each of these requires a separate description.

a. Sounds of the Fœtal Heart.—If the patient be advanced in pregnancy, to the seventh or eighth month, and the circumstances of the case are ordinary ones, the fœtal heart is usually heard to beat over a space comprising three or four square inches of the abdominal surface, this spot being situated to the left of the umbilicus and a little below this point, or, as it is generally stated, midway on a line drawn from the umbilicus to the anterior superior spine of the ilium. The situation in which the sound is heard will vary according to circumstances. Thus, if heard at the very earliest moment at which it is audible, the stethoscope would be applied in the middle line just above the os pubis; as pregnancy advances, the point of maximum intensity of heart's beat would travel upwards and to the left. The precise modification of situation here indicated would be observed only in normal cases. Again, the locality is affected by the position of the fœtus *in utero*. Generally speaking, when pregnancy is far advanced, the fœtus lies with its head downwards, its back to the left side, and it is through the back of the fœtus, which is made by pressure of the stethoscope to come into contact with the uterine wall, and the latter with the abdominal wall, that the fœtal heart-beat has to be conducted, in order to reach the ear of the observer. If the fœtus be differently placed, in the uterus, if the back be turned to the right side—the next most common circumstance—then the heart-beat is heard below and to the right of the umbilicus. And if the fœtus be so placed that the breech is lowest in the pelvis, the heart-beat is heard to the right or left of the umbilicus, according to circumstances, but *above* it—that is to say, supposing the pregnancy to be pretty far advanced. Thus it will be seen that, pregnancy being far advanced, there are four points at or near which the fœtal heart-beat may be expected to be heard: most commonly to the left and below the umbilicus; next in order to the right, but still below the umbilicus; next in order above, and to the right of the

umbilicus; next above, and to the left of the umbilicus. At the period when the uterus lies to one side of the abdomen, the situation at which the fœtal heart is heard will be correspondingly modified.

Next as regards the nature of the sound itself, as heard by means of the stethoscope. The sound is like that of the heart of a child in miniature—it is a double sound, or rather a succession of a pair of sounds, the one rapidly following the other. They have "generally received the familiar name of tic-tacs, from their resemblance to the sounds of a watch." (Montgomery.) It is scarcely possible to mistake this peculiar sound for anything else, and *vice versâ:* the sound is one *per se.* Its force and intensity are liable to variation: thus, it is very weak and feeble when first heard, and acquires strength as pregnancy advances. But the *rapidity* of the fœtal heart-beat, the fœtus being healthy, remains almost constantly the same up to the time when labor has fully set in; and this fact has been established by the observations of several eminent obstetric auscultators, one of the most recent being Hüter.* The average rate of the fœtal pulsation, according to Hüter, who has made 1195 observations on the subject, is 132. In 10 per cent. of his cases it amounted to 144, in 83 per cent. to 132, in 7 per cent. to 120, and the higher figure was due to the presence of a disturbing element—movements of the fœtus—in most of the cases. It may here be mentioned that in practice it is found very convenient to follow the method of Schwartz in counting the fœtal pulse—that is to say, to reckon the number of beats in *five* successive seconds, instead of the ordinary method of counting the number of beats in fifteen seconds. Thus, the ordinary fœtal heart-beat is 11 for five seconds, mounting to 12 and descending to 10 in exceptional cases. The statement of Montgomery is, that the pulsations "vary in number from 120 to 160; but the limits are in general between 130 and 150." This does not really differ from the figures given more recently by Hüter. The rate of frequency is affected by certain circumstances, as previous observers had noticed; but Hüter gives more precise indications on this point. His general results are, that, ordinarily, fluctuations in the maternal have no effect on the fœtal pulse; that when the mother is the subject of severe inflammatory disease, the fœtal pulse may be permanently increased in frequency; that movements of the fœtus always accelerate the fœtal pulse, this elevation being transitory. Franken-

* Monatsschrift für Geburtsk. Sup. vol. for 1861.

häuser has broached the theory, that the frequency varies according to the sex of the fœtus—that the fœtal pulse has a low average when the fœtus is of the male sex, and a high average when of the female sex; the average number for males being 124, the average for females 144. The truth of these conclusions has been tested separately and independently by Breslau, Hennig, and Haake, whose observations, made on an extensive scale, do not confirm the theory in question. Steinbach has made further observations, with a similar object, in 56 cases. Out of the 56 cases, a wrong diagnosis was made thirteen times only. Steinbach finds it necessary to modify the figures given by Frankenhäuser, the mean number for males being 131, and for females 144. The evidence, so far, appears to be insufficient to enable us to draw any positive conclusions on the subject. Many circumstances are capable of modifying the frequency of the fœtal heart-beat; and even if Frankenhäuser's theory should prove on the whole to be correct, this would vitiate the results obtainable in particular cases.*

Next as regards the period of pregnancy at which the fœtal heart may be heard. Practically, it is a sign of pregnancy which may be ordinarily detected in the *fifth month*. If the observer be experienced, and if circumstances be favorable, it may be heard earlier than this. Depaul heard it as early as eleven weeks and four days after conception—that is, near the end of the fourth month. After it has been once heard in a particular case, it should be possible to hear it up to the end of pregnancy. Hüter states that he has never failed to hear the fœtal heart in the sixth month, unless in cases where the fœtus has proved to be dead. Depaul and Jacquemier failed to hear the fœtal heart in only eight cases out of 906, and in six of these the fœtus proved to be dead.

With respect to the value of the sound of the fœtal heart as a sign of pregnancy, it is at once the surest and the best sign available; and to an observer experienced in obstetric auscultation, and knowing the fallacies to be avoided, it is an absolutely sure sign of pregnancy. The fact that in a woman whose pulse is 80 in the minute, a double sound can be heard in the hypogastric region, 130 in the minute, is a positive indication that pregnancy is present. The sign in question is the more valuable that it can be dis-

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* The observations on this interesting subject, and above referred to, will be found in the volumes of the Monatsschr. für Geburtsk. for the years 1859–1861.

covered (pregnancy being far enough advanced) without any other examination of any kind—without asking a single question. Such is the case when the fœtal heart *can* be heard. But the absence of the sound, or the inability of the observer to hear the sound, is not always a proof that the woman is not pregnant. The fœtus may be dead. The value of the observation in this particular will entirely depend on the skill of the observer. In a case where a difficulty is found in hearing the sound, it is well to seek for a hard part of the tumor, and to apply the stethoscope over that point; and, again let it be stated, practice will do much to remove difficulty of this kind. If the abdomen evidently contain fluid in addition to the tumor we suspect to be the pregnant uterus, care must be taken to apply the stethoscope *on* the tumor. If the quantity of liquor amnii be much larger than usual, we may be able to hear the fœtal heart only after careful and prolonged search, and then very faintly. The fœtal heart-beat, when heard, is a positive sign of pregnancy; when it is not heard, we have to make our diagnosis of pregnancy on other grounds.

b. The Uterine Souffle.—This is a sound synchronous with the mother's pulse, and varying, as does the mother's pulse, in frequency. It is ordinarily, and very accurately, compared to the sound produced by blowing gently over the mouth of a wide-mouthed bottle; still more closely it resembles the sound heard in the large arteries of the body, when these are at all subject to pressure. The uterine souffle is heard more generally in one or other of the inguinal regions, at an advanced stage of pregnancy —most commonly, according to Montgomery, at the situation of the right Fallopian tube. It is, however, variable in position, and may be heard in rare cases as high as the fundus of the uterus. Generally, the surface over which it can be heard is limited to a space a few inches in diameter or less. It is not always to be heard; thus, Naegele found it absent in 20 out of 600 cases. There has been much dispute respecting the cause of the sound in question. By many it is supposed to be produced in the walls of the uterus, near, or at the insertion of, the placenta (hence the name occasionally given to it—the " placental souffle"); by others it is supposed to be produced by the pressure of the gravid uterus on the large vessels behind it. It is very certain that, whether produced in, or by means of, the uterus in a gravid state, it is capable of being closely simulated under conditions altogether different. It may be detected at a somewhat earlier period of pregnancy than the sound of the fœtal heart. As regards the

value of the uterine souffle as a positive sign of pregnancy no dependence can be placed upon it, unless, indeed, the observer is well-skilled. It is a sign of pregnancy which has undoubtedly value, but no practitioner could be recommended to make oath as to the presence of pregnancy judging from this sign alone. In cases where the fœtus is dead and this souffle is heard it is of good diagnostic service.

c. *The Funic Souffle.*—In rare cases, the funis lying over a solid part of the fœtus, and being interposed between it and the stethoscope, a souffle is heard, *double*, and having the frequency of the fœtal heart-beat. This, which is Kennedy's explanation of the matter, is the one more generally received. The sign has little practical value, as it is so rarely and so accidentally heard.

d. *Sound produced by Fœtal Movements.*—This sound, as a sign of pregnancy, has received some attention from the fact that Naegele, its discoverer, ascertained that it could be heard first at a very early period of pregnancy—in the third month—before other auscultatory signs are available, and indeed before other signs, some more, some less important, are discoverable. Depaul, who has written an almost exhaustive work on fœtal auscultation, confirms Naegele's views. The sound in question is a slight dull sound accompanied by a slight or sudden impulse or jerk, and it is the sound of the movement which can be felt by the fingers as before described (see p. 290). Depaul heard the sound in question in nine out of twelve women who had not passed the twelfth week of gestation.

The value of the sign may be gathered from what has been stated. An experienced observer might thus obtain very early evidence of the presence of pregnancy. One not very well experienced in obstetric auscultation would pause and wait until more positive and reliable information could be procured before pronouncing a decided opinion.

Lastly, in respect to all the signs derivable from auscultation, it will have been gathered from what has been said that it is the fœtal heart-sound, and that alone, in which any confidence can be placed in the diagnosis of ordinary cases. Unless the observer be very acute, auscultation is of no service when the woman has not passed the thirteenth or fourteenth week. Four months passed, auscultation becomes of the highest practical value.

Special Remarks on the Diagnosis of Pregnancy from other Forms of Abdominal Tumor.

The physical characters of the abdominal enlargement due to pregnancy have now been described ; and it is not too much to say that an observer who has made himself practically familiar with these characters will rarely find much difficulty in the diagnosis of pregnancy, when this condition is present. It will now be necessary, however, to mention the other conditions with which pregnancy may be, or has been, confounded, and to indicate briefly the diagnostic points to be kept in view.

From *fibrous tumor* of the uterus pregnancy is distinguished by the duration of the disease, usually chronic, by the absence of changes, such as are due to pregnancy, in the os uteri, by the absence of the changes in the areola, by absence of auscultatory signs of presence of a fœtus, absence of ballottement, &c. A most painful case is recorded by Dr. Bedford, of a young lady affected with a fibrous tumor of the uterus and who was pronounced by two medical men to be pregnant, there being no ground whatever for the assertion. The case will be found related at length in his valuable work,* and should be a warning to all as to the danger of positively expressing opinions which are not based on firm and sufficient grounds. The possibility of pregnancy coexisting with a fibrous tumor of the uterus should not be forgotten.

From *polypus of the uterus* pregnancy is to be distinguished in the same way. The hemorrhages more usually associated with polypi of the uterus would generally lead the observer to exclude pregnancy from the consideration.

From *distension of the uterus with fluid* pregnancy is distinguished by the history, which shows a progress unlike that of pregnancy, by the absence of the areolar changes, and by the absence of auscultatory signs. In both, menstruation would be absent ; in both, the breasts might be swollen and painful. In cases of distension of the uterus by *gas*, the signs are peculiar—clearness of percussion over the tumor, &c.

From *carcinoma of the fundus uteri*, and from *hypertrophy* of the uterus, pregnancy is distinguished by the pain, discharge, and

* Clinical Lectures on Diseases of Women and Children, p. 50, 4th ed., quoted in Dr. Tanner's work, p. 162.

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general indisposition present in the former affection; by the progress of the case in the latter. The hypertrophied uterus does not grow. In neither instance can auscultation give other than negative results.

The *distended urinary bladder* could hardly be mistaken for the gravid uterus, unless great carelessness were shown. The catheter should be used in any case where there is the smallest doubt. It may happen that the bladder is distended while the patient is at the same time pregnant (see p. 102), or while there is a large fibrous tumor of the uterus present.

From *ovarian dropsy* pregnancy is distinguished most certainly by the presence or absence of auscultatory signs. The history of the case generally throws great light upon the diagnosis, but not invariably so. The most certain means of diagnosticating between the two, auscultation apart, is by vaginal examination. Thus, if we find a tumor in the abdomen reaching above the umbilicus, while the os uteri is unaltered, the cervix hard and firm, and the body of the uterus not enlarged, pregnancy is under these circumstances nearly impossible. The other diagnostic indications drawn from a vaginal examination have been described. Ovarian dropsy may coexist with pregnancy, and in such a case the symptoms would be necessarily, at first sight, perplexing. The two tumors might or might not be detected, and be separable, externally. The os uteri would be altered as in pregnancy; auscultation would give positive results. The other symptoms present would vary in different cases.

From *ascites* pregnancy should be readily diagnosticated. The clearness of percussion in the flanks, and the presence of a rounded tumor in the hypogastric region, would be conclusive against ascites. Auscultation and vaginal examination would give positive evidence of pregnancy. Pregnancy and ascites is a combination not very rare, and its diagnosis may be difficult; for if the ascitic effusion be considerable, the uterine tumor may be completely surrounded by it and hidden from external view. Auscultation might give negative results under such circumstances; but a vaginal examination and an inspection of the breasts would give some reliable indications.

Fat in the omentum and abdominal parietes could not be mistaken for pregnancy, if auscultation and vaginal examination were had recourse to. It could only deceive those who depend on abdominal enlargement as a sign of pregnancy. The case of the celebrated so-called prophetess, Joanna Southcote, must be

mentioned in connection with this question. This woman, aged 64, affirmed that she was pregnant, and deceived several medical men. The chief grounds for the belief that she was pregnant appear to have been the presence of a rounded tumor in the hypogastrium, and a sensation conveyed to the hand as of fœtal movements. After death the abdominal walls were found four inches thick in fat, the omentum was one mass of fat, the uterus small. It was believed that the tumor felt during life was the bladder purposely distended with urine; and the pseudo-motions of the child, it is conjectured, were due to contractions of the recti muscles, over which the woman had obtained such control as thus to simulate fœtal movements.

Fecal tumor, hæmatocele, abscess in the pelvis, hydatid tumor of the peritoneum, cancer of the peritoneum, cysts of the omentum, &c., are distinguished from pregnancy, positively, by the presence of signs of enlargement of the uterus and auscultation; negatively, by the course of the particular affection, and by the absence of that regular onward progress in the degree and intensity of the symptoms witnessed in pregnancy.

Comparative Estimate of the Value of different Signs of Pregnancy.

This place appears to be an appropriate one for summing up generally the signs of pregnancy, for considering the whole of these signs together, and for assigning to each its proper comparative value. At the same time, it will be necessary to state the period of pregnancy at which the different signs are available for diagnosis.

Perfect evidence of the existence of pregnancy is not obtainable until after the third month, unless in those very rare cases where the fœtal heart may be heard just at the end of this time. The evidence obtainable before this date only enables us to come to the conclusion that pregnancy is *probable.* The signs (probable ones) of pregnancy up to this time are—suppression of the menses, swelling of the breasts, descent of the lower part of the uterus in the pelvis, flattening of the abdomen.* An examination will not

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* This flattening of the abdomen was reckoned by the older authorities as an early sign of pregnancy.

> " En ventre plat
> Enfant il y a."

Thus ran the old proverb. Montgomery, op. cit., p. 157.

usually enable us to give a positive opinion, if undertaken at this time.

After the end of the third month, during the fourth and fifth, an abdominal and a vaginal examination give, or may give, decisive indications. Menstruation ·is still absent in ordinary cases; the breasts continue to enlarge, and the areolar changes become developed; the os uteri undergoes its characteristic changes; the uterus can be felt to be enlarged from the vagina and above the pubes: the vagina assumes a dusky hue; the motions of the fœtus can be felt by the observer and by the patient; ballottement is recognizable; the sounds of the fœtal heart can be heard.

After the first month and up to the end of pregnancy, the symptoms just described *continue* and become intensified.

The signs of pregnancy have been divided into three classes by Dr. Montgomery: 1. Presumptive; 2. Probable; 3. Unequivocal. Practically, however, there is no great difference between what is presumptive and what is probable; and if distinctions are to be drawn between shades of belief, the division might be extended *ad infinitum*. It appears quite sufficient to arrange these signs under two classes—1, the certain, and 2, the probable, signs of pregnancy.

1. The *certain signs of pregnancy* are:

The active movements of the child unequivocally felt by another;

The presence of the child in utero ascertained by ballottement;

The sounds produced by the pulsations of the fœtal heart.

A positive opinion may be expressed if any one of these be distinctly observed, the observer being one experienced in such inquiries, and aware of certain possible sources of fallacy. These latter have been described in their proper place. On the other hand, no positive opinion can be expressed if none of these signs be discoverable, however strongly the observer may feel inclined on other grounds to give his final decision. And as caution should be exercised in this particular, so also caution is necessary in giving an opinion that pregnancy is not present unless the negative evidence be very decisive.

2. *The probable signs of pregnancy* need not be enumerated. They include all those not included under the first head, and to each of them this remark more or less applies,—that their value as probable signs of pregnancy is exceedingly different in different cases and at different times: the circumstances of the case may elevate one of these probable signs into the position of a certain one, so far as that case is concerned, but this particular sign may

be valueless in the next instance. Probable evidence should always be regarded as probable only; when a scientific opinion is to be given as to the presence of pregnancy, probable evidence should never be made the basis of the expression of a decided opinion.

CHAPTER XIII.

EXAMINATION OF THE ABDOMEN (*continued*).

TUMORS TRACEABLE INTO THE PELVIS (*continued*). DIFFERENTIAL DIAGNOSIS OF OVARIAN AND UTERINE TUMORS.

Enumeration of the various Forms of Uterine and Ovarian Tumors now to be distinguished one from the other—Diagnosis as affected by the Condition of the Menstrual Function—Cases in which Menstruation is absent: Pregnancy to be eliminated first—Diagnosis as affected by other Particulars; the History, Results of Examination, &c.—Method to be pursued in particular Cases—Use of the Sound in conjunction with Examination through Abdominal Walls—Results obtained—Fluctuation Test—Illustrative Cases—Causes of Mistakes in Diagnosis.

THE abdominal tumor which is present, and which is traceable into the pelvis, having been determined (see previous chapters) to be either ovarian or uterine, the further diagnosis is now to be considered.

The following is an enumeration of the various uterine and ovarian tumors between which it is now our object to distinguish.

The UTERINE series include: pregnancy, polypus, fibroid tumor; distension of uterus by fluid (menstrual or other fluid accumulations); distension by gas; abscess of the uterus; carcinoma of the fundus of the uterus; and fibro-cystic tumor.

The OVARIAN series—a particular account of which will be found in the chapter on "Diseases of the Ovaries"—include: simple encysted ovarian dropsy; multiple and compound cysts; composite tumors, partly cystic and partly solid, including "alveolar degeneration," "glandular" tumors; cystic cancer; dermoid cysts; and solid tumors of the ovary—fibrous tumors, "adenoma," cancer, and simple enlargement; hydatid cysts; to these must be added, though not really ovarian, cysts of the broad ligament, also termed Wolffian cysts.

The Diagnosis as affected by the Condition of the Menstrual Function.—The method to be pursued in order to determine the

nature of the tumor will necessarily be somewhat different under different circumstances. Presuming, however, that no special considerations interfere, the better course for the inquirer now to adopt will be to ascertain the state of the menstrual function. It will be found that from the several data—the presence of an abdominal tumor, either ovarian or uterine, and the condition of the menstrual function—it will be possible to learn a great deal as to the nature of the tumor.

Thus supposing that the patient inform us that *there has been no menstrual discharge for some time previous*, we should immediately suspect pregnancy, and the next thing to be done would be to ascertain whether the size of the tumor, its shape, &c., fall in with this view of the case. If the tumor had only lasted a few months—say six—and there had been no menstruation for six or eight months, this would constitute a sort of preliminary justification of the pregnancy theory. If the tumor had lasted six years, and menstruation had been absent for six months, this would be against pregnancy, but not absolutely so, inasmuch as there might be a tumor *plus* pregnancy. The mere fact that menstruation is not going on should, under almost all circumstances, induce us to give the pregnancy theory a full consideration. With the theory in question before us, especially if circumstances seem to favor it, proper means should be taken to decide the point definitively before attempting to proceed further. This will be accomplished by ascertaining the physical characters of the tumor by external examination, comparing the results with those laid down as the ordinary results of such examination in cases of pregnancy (see previous chapter). If the external examination by hand, stethoscope, &c., give no indication, or insufficient at least on which to form a conclusion, then a vaginal examination, an examination of the breasts, &c., would be required.

There is one method of examination which is always to be avoided until we are able to assure ourselves that the case is not one of pregnancy—viz., passage of the sound into the cavity of the uterus; the use of the sound is never to be thought of as long as it is unproved that there is no pregnancy. This is an important fact to be kept in view in cases similar to the one just now alluded to, viz., where a tumor having existed for some time, the possibility of pregnancy having been added thereto does not at first enter the mind of the patient or the attendant.

The question of pregnancy therefore comes before us either *primarily,* as in cases where the tumor is of recent growth—*i. e.*

has not been in existence longer than six or eight months—or *secondarily*, where the continual presence of a tumor, during a period of upwards of nine months, has been substantiated.

The investigation of the history of the case and the examination practised, giving, we will suppose, no evidence of pregnancy, the next step to be taken is to prove a negative, and to determine positively that the patient is *not* pregnant. This second question is more difficult, or may be more difficult, to deal with than the first, for very obvious reasons. Thus the case before us may be of this kind: the patient has not menstruated for four months, there is a tumor in the abdomen the size of the gravid uterus of six or eight months, there is no sound of a fœtal heart, the breasts are painful, perhaps swollen, the uterus is, from the vagina, felt to be enlarged, but there is no ballottement. In such a case the observer will, on the data mentioned, find it difficult to exclude pregnancy—to prove the negative. It may be that his ear is defective, his touch untutored; the case may still be one of pregnancy; it may be one in which—as is not so very rare—there is a slight menstrual-like discharge for one or two months, or longer, pregnancy really dating from an earlier period ; or it may be pregnancy with destruction of the embryo, and hydatidiform degeneration of the ovum, as in an instance recorded at page 295. The condition of the orifice of the uterus would under such circumstances help the observer either to prove the desired negative, or be sufficient to show him that the making of the diagnosis must be for awhile postponed. The state of the lower segment of the uterus, also, would very greatly assist in the desired solution. Thus, in the case of an abdominal tumor as large as a seven or eight months' gravid uterus, it would be sufficient to prove the required negative, if we found that there was absolutely no evidence of the os uteri being continuous with a rounded tumor, perceptible to the touch equally behind, in front, and at the side of the same. The precise value of the signs derivable from digital examination of the os uteri, in suspected pregnancy, has already been considered at length (see p. 195). The point to which it is necessary to direct attention, in this place, is that when the suspected abdominal tumor is of the size of the six months' gravid uterus, and upwards, the vaginal digital examination is of the greatest service in enabling us to prove the negative, when the case is really not one of pregnancy. It is particularly valuable in those cases where a tumor having existed for some considerable time—say a year—there is a possibility of pregnancy being also present.

In trying to prove this negative, we may fall in with cases of enlargement and distension of the uterus from other causes than pregnancy; one of these, occupying a sort of intermediate position, viz., hydatidiform degeneration of the ovum, has already been alluded to. The others are—retention of menstrual fluid, other collections of fluid in the uterus, gaseous distension. With respect to the diagnosis of pregnancy from each of these conditions, no great difficulty is likely to be experienced. Retention of the menstrual fluid, giving rise to distension of the uterus simulating pregnancy, is almost unknown except in girls who have never menstruated at all. Hydrometra—dropsy of the uterus—is excessively rare; so also physometra—distension with gas—is uncommon. Here only it is necessary to remark on the possibility of their occurrence, for the attending or preceding circumstances would at once indicate the diagnosis, to one alive to such possibility. The mere element of time might be sufficient to show, in a particular case, that the enlargement of the uterus could not be due to pregnancy. The point at which our investigations will or may enable us to arrive in particular cases, will be found to be either an affirmation of the pregnancy theory, or a negative, to the following extent, that, admitting the possibility of pregnancy, it cannot be conceived that the tumor present is constituted entirely by the gravid uterus. Various shades and differences of the latter will hold in different cases.

The pregnancy theory will not come before us if the patient be decidedly past the climacteric age, but it will be well to bear in mind the exceptional cases of pregnancy at a late age, previously alluded to (p. 40).

The above considerations enable us to assume that the tumor present is not due to pregnancy, to gaseous or fluid accumulation in the uterus, but they do not of course assist in carrying the diagnosis beyond this point.

The next class of cases to be considered are those in which *menstruation is present*. If the patient be menstruating regularly, and the fact be undoubted, it may be almost certainly concluded that the tumor is not due to either one of the following conditions,— viz., pregnancy, distension of uterus by fluid or gaseous accumulation, abscess of the uterus.

It is perhaps necessary here to remind the reader that the conditions mentioned in the above list of uterine and ovarian tumors are not the only ones with which pregnancy may be confounded.

The condition of the menstrual discharge has enabled us to ex-

clude from the list above given certain cases. The task now before us is to point out the diagnosis of the conditions which remain. The state of the menstrual function will not help us further on the road with any degree of certainty. Thus, in fibroid tumors of the uterus, in carcinoma of the fundus uteri, in the various forms of ovarian disease, whether cystic alone, or composite tumors, or solid tumor, menstruation may be still regular, or comparatively so, or it may be completely absent. Presence or absence of menstruation may be thus equally observed in certain uterine and in certain ovarian tumors.

The menstruation criterion failing, we have to fall back upon the data afforded by other particulars of the history of the case, and the results of examination, abdominal, vaginal, &c.

We may dispose of several of the minor and less frequent of the causes of abdominal, uterine, or ovarian tumor, now remaining on our list, in a very few words.

Thus, the *osseous tumor of the uterus* could only be confounded with fibroid tumor of the uterus; possibly also with a retained extra-uterine foetus which had undergone a process of mummification.

Carcinoma of the Fundus Uteri.—The symptoms attending the presence of this rare disease would be likely to resemble those attendant on polypus of the uteri, *i. e.*, copious bloody discharges, leucorrhœa, but in some cases such have been wanting. The supra-pubic examination by the hand would substantiate little beyond the existence of a tumor of a rounded character, the size of which is limited (see p. 281).

We may get rid of the *simply solid tumors* of the ovary in one paragraph, with one or two reservations. It is vary rare to find a *simply solid* ovarian tumor of any considerable size. Thus simple cancer of the ovary rarely produces a tumor of any magnitude, although certain *composite* tumors of the ovary, partly cancerous, may grow to an enormous size. Moreover, simple cancer of the ovary is rare, unless in cases where there is extensive carcinomatous affection of the adjacent or other parts, and consequently profound constitutional disturbance. *Enchondroma* of the ovary is a very rare disease, the existence of which even has been questioned and it need not therefore detain us. With *simple hemorrhagic effusions* we have no practical interest in this place. *Hypertrophy of the ovaries*, in the single case recorded by Dr. Bright, produced a tumor not larger than the kidney, and this was a most rare phenomenon. The *Wolffian cysts* of the ovary rarely exceed the

size of an orange, but when larger the tumor would with difficulty be distinguished from an ordinary ovarian cyst. Adenoma of the ovary may constitute a hard tumor of considerable size. The *fibroid tumor* of the ovary is not often observed, but it may grow to a considerable size, and may be confounded with other more common ovarian diseases to be presently mentioned, and also with some uterine tumors. To *dermoid* cysts the same remark applies: they are rare, but in their physical characters, mode of growth, &c., do not present any very characteristic symptoms. They do not, unless in very rare cases, grow so large as the other more common cystic tumors of the ovary. The *hydatid* tumor of the ovary is very rare, and might be expected to be witnessed only in cases where the liver is affected, and in conjunction with symptoms of chronic or acute peritonitis. Practically, its diagnosis does not possess much interest for us in this place.

Without much difficulty, most of the conditions mentioned may be severally eliminated from the consideration. And that being done, the diagnosis now rests between the following conditions:

Fibroid tumor of the uterus.

Polypus of the uterus.

Fibro-cystic tumor of the uterus.

Cystic disease of the ovaries, viz., simple, multiple, or compound cysts.

Composite tumor of the ovary.

Fibroid tumor of the ovary.

Dermoid cyst.

And to these might be added the case of a large Wolffian cyst.

The conditions in question give rise to tumors which in many particulars resemble each other. The characters which they have in common are the following:

The tumor is, or may be, rounded in shape.

It may be slightly movable in the abdomen.

It may have a more or less chronic course.

It may be associated with serous effusion into the peritoneal sac.

The firmness and resistance of the tumor may be equal in each.

The size of the tumor does not, unless in the case of a very large tumor, offer any help in the discrimination.

It is quite true that generally we find marked differences in respect of some of the foregoing characteristics; but these differences are not always so considerable, and by relying too implicitly on distinctions of this kind mistakes are frequently made.

The diagnosis between the various pathological conditions just

mentioned is to be made by careful external and internal exami-
nation, and by consideration of the previous history. We have
now no scruples as to using the uterine sound, having excluded
pregnancy from the consideration by the previous analysis.

In many cases certain characters of the tumor, as felt through
the abdominal parietes, are conclusive as to its ovarian origin;
one of these is, presence of *distinct fluctuation* from one border of
the tumor to the other.   If the tumor were constituted by a fibrous
tumor of the uterus, or polypus of the uterus, there could be no
fluctuation.   Fluctuation of this kind might be observed in that
rare disease, fibro-cystic tumor of the uterus.   It is hardly neces-
sary to mention that we are presuming that all cases of ordinary
ascites, or of ascites combined with tumor, or of distended bladder,
have been excluded from the question by following the instructions
contained in the preceding chapters.   The *absence* of fluctuation
does not, however, indicate that the tumor is not ovarian.

If we examine the uterus from the vagina digitally and by
means of the sound, and clearly ascertain that the os is natural,
that the cavity of the uterus has its normal length, the conclusion
to which we may come as regards the diagnosis of the tumor be-
fore us is, that it cannot be a polypus of the uterus; but this is
the extent of the knowledge afforded.   Polypus of the uterus may
be excluded in other ways from the consideration.   Thus, the
previous history in cases of polypus is usually one of occasional
hemorrhages, profuse menstruation, leucorrhœa, &c.   The tumor
when due to such a cause is very hard, externally it has the shape
of a pregnant uterus, it is rare that it exceeds in size the gravid
uterus of six or seven months, and the presence of a tumor *within
the uterus* is generally plainly to be made out by a digital exami-
nation from the vagina and by the use of the sound.   In some
cases the polypus partially occupies the vagina.   The diagnosis,
so far as regards the exclusion of polypus of the uterus from the
list above given, is generally easy.   The diagnostic signs are in
brief as follows: there is a hard, smooth, well-defined, abdominal
tumor of slow growth, the uterus evidently enlarged from the
vagina, its cavity greatly lengthened, a hard tumor is perceptible
within the uterus.

But it is not so easy to distinguish fibroid tumors of the uterus
of large size from others of the above tumors not uterine in origin,
and there is in fact very considerable difficulty frequently encoun-
tered in making a diagnosis between them.   It will now be pointed
out how these difficulties may be best surmounted.   It is useless

to attempt to distinguish the ovarian tumors *inter se* until we have thus separated the uterine and ovarian tumors one from the other.

They have the following characters in common : the pelvic cavity may be found distended by a tumor firm to the touch in both cases. The abdominal tumor may be firm to the touch in both cases. It may be of slow growth in both cases. It may be rounded, smooth, and have a tolerably uniform surface, in both cases. The disturbance of the functions of menstruation and defecation may be equal. In the shape of the tumor we find no absolutely distinguishing sign.

Let us pursue the investigation further. Supposing that by examining *externally* through the abdominal walls we are able to detect fluctuation in places, or even supposing that we find that in certain parts the tumor is softer and not so resistant as at others, this would enable us to say the tumor is of ovarian origin. To this statement there is one single reservation—that if the rare fibro cysic tumor of the uterus were present, the sign in question might prove deceptive. The absence of such partial fluctuations, or of such partial softness, does not, however, prove that it is uterine. Or, supposing we found the surface of the tumor very unequal, presenting hard, smooth, rounded, distinct elevations three or four or more in number, and varying in size from that of a walnut to that of an apple or larger—these elevations being evidently integral parts of a central mass, the consistence of which is identical with that of the elevations—this would prove it to be a case of fibrous tumor of the uterus. On the other hand, in the case of very large fibrous tumor, the surface is quite smooth and uniform, and irregularities and eminences of the surface are then quite wanting.

The *internal* examination as a means of discriminating between ovarian and uterine tumors must now be considered. What has been previously mentioned respecting the diagnosis of tumors felt through the vaginal walls (see p. 159) may be consulted with advantage, but the more salient points must be here again briefly mentioned.

And before going further, we must describe what may be termed the *natural history of an ovarian or extra-uterine tumor, so far as relates to its growth and the effect of that growth on the position of the uterus.*

A fibrous tumor growing on the peritoneal surface of the uterus, and reaching a large size, and an ovarian tumor, may affect the

uterus in like manner. Thus the fibrous tumor may in its growth carry the side, or back, or front of the uterus—according as it may happen to be placed—along with it ; the cavity of the uterus may be thus, in the case of a very large fibrous tumor, very considerably elongated ; or, it may leave the cavity of the uterus unaffected, the body of the uterus undergoing not an expansion but an actual atrophy, and under such circumstances the small atrophied uterus is flattened and pressed downwards into the pelvis, while the large fibrous growth mounts up into the abdomen. It is evident that the internal examination by the sound will reveal correspondingly different signs, according as one or other of the events mentioned happens. Take next the case of an ovarian tumor. Here the circumstances are precisely analogous. The ovarian tumor, in its growth up into the abdominal cavity, either draws the fundus uteri up with it, thus necessarily lengthening the uterine cavity, or it presses the whole uterus downwards, the length of the uterine cavity being in nowise altered. Again, whereas it most commonly happens that the ovarian tumor presses the uterus forwards while engaged in elongating it, the reverse may be the case, the uterus being sometimes posterior, and the pelvic part of the ovarian tumor may push the uterine fundus to one side of the pelvis, elongating its cavity at the same time. Another effect which may be produced on the uterus during the growth of an ovarian tumor, is, propulsion downwards of the lower segment of the uterus concurrently with dragging upwards of the superior segment. This may happen when the ovarian tumor fills the pelvis and grows there, at the same time that it grows also upwards into the abdomen.

And now, with the above facts before us, the value of the signs derivable from digital examination *per vaginam*, and from the use of the sound, will be more intelligible.

If there be a large tumor in the abdomen and the sound pass into the uterus for a distance of three inches or upwards, and the cavity of the uterus be found more anteriorly than it should be, this will probably indicate its ovarian nature, but not certainly, for it may be a case of large fibrous tumor growing behind the uterus. The history of the case will now probably throw light on the subject. Thus, if the abdominal tumor increase quickly, it is ovarian (the reservation being again made as to presence of the rare fibro-cystic tumor of the uterus); or if the abdominal tumor be distinctly fluctuating, it is ovarian. It will be well to recollect that the sound might pass in this direction and in this manner in

a case of large polypus of the uterus. In a case which came under my notice, the vagina was drawn upwards and ended in a cone just behind the os pubis; the cervix was obliterated so far as its vaginal portion was concerned, and the sound entered for upwards of three inches. There was a hard unyielding tumor felt behind the vagina, extending upwards into the abdomen. My first impression about this case was that it was a large fibrous growth from the posterior part of the uterus; but having examined the abdomen, and finding there a tumor which was as large as the head of an adult, the diagnosis made was that the tumor was ovarian; and this diagnosis was justified by the rapidity with which the abdominal tumor subsequently increased in size. Again, another case may be mentioned to show particularly how the diagnosis is made, and on what data it rests. The patient, æt. 26, had been married four years, never pregnant, abdomen greatly enlarged, suffering severely from dyspnœa; she was very weak and ill. Catamenia absent for eight months, but there had been a slight show fourteen days before. Examining *per vaginam*, the uterus was found to be small, atrophied, flattened, and pushed a little downwards; its long axis lay horizontally instead of nearly vertically; above it was a tumor. Examining through the abdominal walls, there was found to be marked fluctuation below a line extending from the splenic region to the right crista ilii, tumor well defined by percussion, but not by palpation. The diagnosis was ovarian dropsy. The vaginal examination showed absence or enlargement of uterus, the abdominal showed fluctuating, distinct tumor; the results of the two methods of examination indicated clearly the diagnosis. These two cases are not mentioned because they presented anything remarkable in the way of difficulty—rather the reverse. Fig. 35 gives a view of the abdominal tumor in another case of ovarian dropsy, where the tumor was of considerable size. The uterus was pushed downwards and backwards.

To appreciate more particularly the value of the indications given by the sound, we may divide our cases into two classes—those in which the uterine cavity is found decidedly elongated and those in which it is not. The cavity may be decidedly elongated, as above stated, from a fibrous growth of the uterus or from presence of an ovarian tumor. In all cases it is not possible during life to diagnosticate between these two conditions, judging at least from the fact that very eminent observers have not always avoided falling into error on this point; but generally the attendant cir-

cumstances enable us to do so pretty easily. In the second of
the cases above related, the fluctuation of the abdominal tumor,
its rate of growth, and absence of uterine enlargement, were con-
clusive; in the first of the cases, the rate of growth too was one
of the points which were of importance. But we sometimes meet
with cases where the uterus is lengthened, the tumor so close to
the uterus as not to be separable from it; where the tumor grows

FIG. 35.
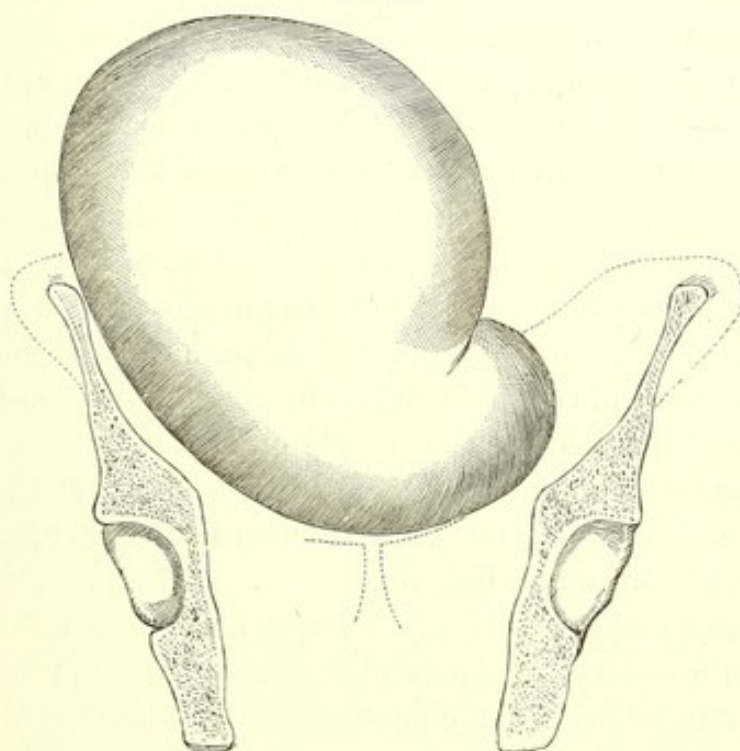
slowly, and where, nevertheless, the case turns out to be ovarian.
When the tumor grows rapidly, this is in favor of its ovarian
nature, but the absence of this rapidity of growth does not prove
the contrary. To mistake a uterine for an ovarian tumor is to
commit an error of greater importance than a mistake of an op-
posite kind, for the reason that serious operations are undertaken
when the tumor is supposed to be ovarian, which would not be
contemplated if the tumor were considered uterine. The follow-
ing are the most reliable distinctive signs in a case presenting
difficulty:

For ovarian tumors, are, rapidity of growth, impediment of the
circulation in the lower extremities, evidenced by presence of
œdema, varicose state of veins, severe constitutional disturbance,
e. g. great weakness and debility, emaciation, and pelvic continu-
ous pain. These signs are in fact the signs usually present in
cases of solid tumor of the ovary of cancerous nature, or in cases

of cystic cancer, where the growth happens to be for a time stationary. Absence of such signs is, however, not so strongly evidence of a negative kind, for some chronic ovarian tumors give rise to very little mechanical or other disturbance. If, in a case of elongation of the uterine cavity, the sound passed quite into the centre of a large tumor, this would almost, but not quite, conclusively indicate its character. If the sound passed laterally, or marginally as it might be termed, as regards the tumor, and the tumor were felt from the vagina to be fluctuating, this would favor the theory of its ovarian nature.

The cases in which there is no ascertainable elongation of the uterine cavity come next. Here the diagnosis between ovarian and uterine tumors is not usually attended with so much difficulty. The tumor, if uterine, is most likely to be a large slow-growing fibrous tumor, causing little inconvenience except from the great size to which it may attain. If the tumor were fluctuating, as ascertained by a vaginal or abdominal examination, it could not be uterine—the rare fibro-cystic tumor of the uterus being excluded from consideration; but if there were no fluctuation, considerable difficulty might be experienced in deciding whether the case was one of large fibrous or other solid tumor of the ovary, or a fibrous semi-pedunculated tumor of the uterus. There are, in fact, no signs enabling us positively to distinguish between them.

It will be found that in some cases in which, theoretically, difficulty might have been anticipated, no such difficulty occurs, and we are able at once to say the case is not uterine. This conclusion is most safely come to when we are able, by the use of the hand, or by digital examination, one or both, to separate the uterus from the tumor.

It must be recollected that sometimes the uterus becomes imbedded in and surrounded by a mass of disease of ovarian origin. The composite tumors of the ovary occasionally grow in this manner. The signs afforded by use of the sound might, in such a case, lead to the supposition of uterine disease; the *general* symptoms would usually be of ovarian character.

Having made use of the sound, having carefully examined the abdomen in the hypogastric region, what is the result at which we may expect to arrive in the diagnosis of uterine from ovarian tumors? It is probable that the number of cases in which insuperable difficulties occur in arriving at a correct judgment on this point will year by year become less, but it is the fact, nevertheless, that the cases are not few in which an erroneous diagnosis has

been made.   There appear to be some cases in which the diagnosis is really impossible; but it fortunately happens that these are not often cases in which the decision is of vital consequence.   The difficult cases are those in which a slow-growing, not large, tumor exists, which it is just as probable is ovarian as uterine.   A pedunculated or even a sessile fibrous tumor of the uterus may occupy the same position, present the same physical signs, produce even the same symptoms, as a fibrous or solid tumor of the ovary.   We may make a diagnosis which is an infinitely probable one, but which it is just possible *may* be wrong, viz., that the tumor is uterine because an ovarian tumor of this kind is so rare; and this is all we can do or may be able to do in such a case.   If we encounter a tumor of this kind at an early period of its growth, and before there has been afforded an opportunity of knowing whether it be a slow-growing tumor or not, the diagnosis is still more difficult, for then the tumor may be a non-fluctuating specimen of ovarian cystic disease, or any one of the other varieties of ovarian disease, or it may be a uterine fibrous tumor.   The nature of such cases can only be definitively diagnosticated by waiting, unless indeed we use a grooved needle and endeavor to obtain thus some notion of the nature of the contents of the tumor.   When the necessity for a diagnosis of this kind arises, the tumor is generally a pelvic one, not having yet passed up into the abdomen.

Looking carefully over the records of cases where mistakes have been made in diagnosis—where ovariotomy, for instance, has been attempted, but the tumor found to be uterine—it will be seen that the element of " time " was not allowed to have its due weight in the decision arrived at prior to the commencement of the operation. Thus in one case the tumor found to be " uterine " had existed for four years; in another there was a cyst connected with the uterus of eight or nine years' duration; in another a " large fleshy tubercle of the uterus " of " many years' " duration; in another a solid vascular tumor connected with the uterus six years.   It is probable that in these cases the tumor was solid, at all events non-fluctuating, and it is likely that similar mistakes may be avoided in future, when hard tumors simulating ovarian tumors are present in the abdomen, by attention to the diagnostic value of this element of time.

The diagnosis of *fibro-cystic tumor of the uterus* is one of great difficulty, because we have here the two things combined—a solid outgrowth from the uterus which itself contains cysts.   The difficulty arises from the physical resemblance this bears to a case of

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cystic disease of the ovaries. To estimate aright the difficulties of the question and the best method of surmounting them, careful study of the cases actually published is essential. Some of these cases are given at length in the chapter on " Fibroid Tumors of the Uterus." Mr. Spencer Wells mentions two circumstances of assistance in the distinction : one is that the color of the cyst-wall in fibro-cystic uterine tumors, when laid bare by abdominal incision, is darker than that of ovarian cysts; another that the cysts in the former case contain a thin serum with 5, 10, or 15 per cent. of blood intimately mixed with it, and not separating until after standing some hours.*

CHAPTER XIV.

EXAMINATION OF THE ABDOMEN (*continued*).

TUMORS TRACEABLE INTO THE PELVIS (*continued*). DIAGNOSIS OF THE NATURE OF AN OVARIAN TUMOR.

Enumeration of Ovarian Tumors—Complications—The Diagnosis as affected by Duration of the Tumor—The Condition of the Surface—Differential Diagnosis of the smaller Tumors of the Ovary—Distinction between the Compound Cystic and the Composite Tumors—Tapping, or Tapping combined with Internal Use of a Probe, as a Means of Diagnosis.

THE diagnosis having been advanced so far that we are able to pronounce the tumor present to be of ovarian character, it remains to determine more precisely the nature of the tumor.

It will be unnecessary to consider here the smaller and less important of the tumors originating in the ovaries; the remarks previously made enable us to dispense with this, and we shall now only consider the diagnosis of those which are practically important, and which may attain great magnitude, or at least produce considerable and marked enlargement of the abdomen.

The ovarian tumors now before us, and particularly described in the latter part of this work, include :

Simple, multiple, and compound cysts.

Composite tumors, and cystic cancer.

Solid tumors.

In addition to the conditions in the foregoing list, a diagnosis of the nature of an ovarian tumor will not be complete which does

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* Diseases of the Ovaries, vol. i, p. 362.

not have regard to the complications liable to be observed.   One of the most common of these is *ascites ;* another, the existence of which is, however, more liable to be overlooked, is *pregnancy.*

The diagnosis of the several ovarian tumors above mentioned, one from another, is sometimes easy, at other times extremely difficult, at other times again simply impossible, by any kind of examination we may devise, short of exploration by means of tapping, and in some cases we cannot even then obtain such a perfect knowledge as may be desirable.   In the majority of cases, however, we can get as much information as is needed to enable us to decide as to the treatment.   Attention is now directed simply to the determination of the *pathological* character of the tumor. There is another kind of diagnosis, a sort of mixture of diagnosis and prognosis, the consideration of which comes under the head of "Treatment."

The Age of the Tumor.—It will be usually found practicable to reduce the list of possible conditions in the case before us, by attention to the prominent characters of the history, progress, and physical characters of the tumor.   Thus, if we find the tumor has been growing rapidly, and has only dated from, say a year previously, we may pretty safely exclude from consideration the simply solid tumors of the ovary and dermoid cyst.   If the tumor has been growing slowly, say three years or longer, and the subject of the case be a young or, at all events, not a very old woman, this would lead us to consider the possibility of the case being one of dermoid cyst; if on examination, under such circumstances, a distinctly fluctuating tumor is ascertained to be present, this would militate against such a view of the matter; but if the tumor is found to be non-fluctuating, it may be either a case of dermoid cyst, or a case of composite tumor, or, possibly of compound cyst of the ovary unusually slow in growth.   A slow-growing, non-fluctuating, well-defined, smooth tumor, which on other grounds has been determined to be "ovarian," in a woman not old, is more likely, however, to prove to be a dermoid cyst than anything else. Judging from experience, the actual diagnosis of these dermoid cysts during life and before operation is not easy, and this is partly due to the fact that this condition is sometimes met with in association with the more ordinary form of cystic disease of the ovary.   Respecting the fibrous tumor of the ovary, it is to be remarked that its diagnosis from other tumors of the ovary is not so difficult as its diagnosis from uterine pedunculated fibrous tumors. Its very slow growth, hardness, and well-defined outline, are the

principal characteristics. "Adenoma" of the ovary, which may give rise to a solid tumor of considerable size, would be distinguished by its comparative rapidity of growth.

When we have before us a case in which the abdomen has become markedly enlarged in the course of the previous year, this enlargement being due to the ovarian tumor alone, and not partially to ascitic effusion superadded, we may nearly safely leave fibroid tumors and dermoid cysts out of the consideration. The further diagnosis is guided by the size, the consistence, the resistance, smoothness or inequality, rapidity of growth, of the tumor, by the symptoms to which it gives rise, and by the general condition of the patient's health.

We may take the chief of these criteria one by one, and ascertain what information is to be procured from them as to the nature of the tumor.

The *condition of the surface of the tumor* affords, necessarily, more information respecting the physical character of the tumor than can be obtained in other ways. Supposing we find the tumor perfectly smooth and uniform, and offering equal resistance at all parts of its superficies, whether felt from the vagina or through the abdominal walls, such a tumor is likely to be made up of one large cyst. To confirm this view of the case, we might have the additional fact that the tumor presents fluctuation from one side to the other, and from above downwards. We might not get fluctuation, and nevertheless the case may be still one of simple cyst, for fluctuation cannot always be made out when the cyst is very tight. Thus the fluctuation test might or might not be available. A smooth uniform tumor, not fluctuating in the manner alluded to, might prove to be one of compound cysts of the ovary, one large cyst being the common covering for a large number of smaller cysts within it. The fact that the tumor is large, smooth, and uniform as regards its surface, even when fluctuation is absent, is presumptive evidence that the tumor is not a composite tumor of the ovary; it is more likely to belong to the other series, though on this point there is no rule. Sometimes we find that while, generally speaking, the tumor is smooth and rounded, the hand, slightly passed inwards, encounters one or more rounded bodies *within* the larger tumor. This is a condition of things only met with when there is one large cyst, not tightly filled with fluid, and having within it other cysts; and under such circumstances we get therefore more information as to the nature of the interior of the tumor. Care must be exercised not to confound with this

condition one which rather closely resembles it, viz., the combination of ascites and ovarian tumor. Such a mistake could only be the result of great carelessness, but still it might be made. An event which is quite possible, is that there may be a large cyst giving the fluctuation-sign at all parts of the surface, and which therefore conveys an idea that the whole tumor is made up of this cyst, whereas it may prove afterwards that within this cyst is a considerable mass made up of several smaller cysts. The circumstances are sometimes such, that until a portion of the fluid in the large containing cyst is evacuated by tapping, the true nature of the case cannot be made physically evident.

On the other hand, when we find the tumor *unequal* as regards its surface, we draw inferences which may be approximatively stated as follows: If the tumor present a large rounded eminence at one point, a second eminence of a like character at another, the depressions between forming divisions across which fluctuation is not transmitted, and we find the tumor to be made up of two or three such large eminences, the whole forming a tumor which possibly extends up to the umbilicus or some way beyond it, then we have probably to do with a case of multiple cyst of the ovary, or possibly there may be a tumor growing from both ovaries. Fluctuation evident at all parts of the surface, limited as above stated, would be evidence nearly conclusive that the case is not one of compound cysts, or one of composite tumor. Absence of such fluctuation might be due to great tightness of the cysts, or to great thickness of the walls of the cyst, to the presence of jelly-like contents; or it might be that each of the large cysts contained other smaller ones.

To take another case: we find the tumor unequal as regards its surface; it presents a rounded eminence at one part, and fluctuation is here evident; while close to it is felt a portion of the surface harder and more resistant; at other situations the surface is perhaps still more irregular. Such a condition might be due to presence of compound cysts, or to presence of a composite tumor, either glandular (cystic sarcoma, alveolar degeneration) or cystic cancer of the ovary; or there might be tumor of both ovaries. Rounded nodular eminences on the surface of an otherwise smooth tumor may indicate either presence of small cysts at the situations in question, or of cancerous nodules; but we may draw one important inference from their existence, viz., that either the mass beneath these nodules is composed of solid matter of some kind or other, or that the whole tumor is a compound cystic one: the

growth of small cysts *on* the surface of simple cystic tumor, or multiple cystic tumor of the ovary, is not common.

It is only in the case of rather small tumors, *e. g.* tumors not exceeding the size of the head of an adult, that much difficulty is found in determining, approximatively, at all events, the physical construction of the tumor. When the tumor is of large size, if it be a case of simple or multiple cysts, there is evident generally, at some period or other, fluctuation, and the surface is smooth and comparatively even. But in the case of a large composite tumor, or in the case of a large compound cystic tumor, there is at some situations a marked peculiarity as regards the surface, in respect to the consistence and degree of resistance of the kind above alluded to. The diagnosis of the nature of the smaller tumors requires a more particular examination. It has been already stated that a moderate-sized rounded tumor, in which fluctuation is not evident, may be either a simple cyst with very tight walls, having very dense contents, or a tumor of compound or composite nature. The tumor may be irregular on the surface or not: if irregular, this will help us in the way previously remarked, but if not, the diagnosis has to rest on other data. Under such circumstances, something is often to be made out from the general view of the case, apart from the physical characters of the tumor. Rapidity of growth, in the case of a non fluctuating tumor, would incline us to believe it to be one of compound cysts or a composite tumor. " Rapidity of growth " may be considered to be present if, in the course of six or eight months, the tumor has attained the size of a pregnant uterus of seven or eight months' gestation. Rapidity of growth, alone, means nothing, for we see repeatedly that large cysts after being emptied by tapping, refill in a very short space of time; but if we have before us a non-fluctuating tumor, the fact is of some importance in determining the construction of the tumor.

Is there anything which can be learned from the *position* of the tumor, as to whether it be a purely cystic tumor, or a compound cystic tumor, or a composite tumor? Nothing absolutely. We may find a large semi-cystic tumor occupying the abdomen, and not at all engaged in the pelvis (the more common event); or we may find a part of such a tumor in the pelvis and a part in the abdomen. And if the tumor be made up of compound cysts, or if it be a composite tumor, we may find a portion of the same in the pelvis, or the whole may have passed upwards into the abdomen.

We may now consider the diagnosis of that class of cases in

which, having made out by previous examination that the condition present is either "compound cystic tumor" or composite tumor—it is considered desirable to pursue the analysis still further. Speaking of these cases generally, it is to be remarked that in each the growth of the tumor may be very rapid, but it is not necessarily so. In each of them there is cyst growth going on, which growth may proceed with different degrees of vigor at different parts of the tumor. The superficial part of the tumor may be therefore solid to the feel, or it may be chiefly cystic. The degree of resistance communicated to the touch is not the same in all cases, even when the tumor is identical; and during life no very precise differentiating indications can be drawn from data of this kind. The degree of hardness may not in a case of cystic cancer be very different from that present in a case of compound cyst. We may often, however, learn something from the condition of the surface of the tumor. Thus the presence of hard knobs or excrescences on the surface is presumptive evidence for cystic cancer, if we find they are unlike small cysts in shape or other physical characters. Absence of such knobs is not conclusive of the non-cancerous nature of the tumor. Again, the association of ascites in these cases is of some importance. Ascites may be present in association with all kinds of ovarian tumors, but it is more frequently found to be present when the ovarian tumor belongs to one of the series now under consideration; it is most common when the tumor is composed of cystic cancer. And hence, when the tumor presents knotty hard elevations, and there is ascites, a suspicion would arise that the tumor is of a cancerous nature. The other points to which attention should be directed, for confirmation or otherwise of this suspicion, are of a general character. The more simple cystic disease of the ovary produces, at first constantly, but little effect on the health of the patient; but in the case of cystic cancer of the ovary, we find that although the tumor is not very large, and has possibly not existed a very great length of time, yet the health of the patient has notably given way.

Cystic cancer of the ovary has ordinarily a course differing from that of glandular tumors. The latter often grow persistently, and with such great rapidity that the whole abdomen may become, in a short space of time, distended to the utmost by a mass made up partly of cysts, partly of a sarcomatous substance. In cystic cancer the tumor is not so large.

The "compound cyst" tumor of the ovary, on the other hand,

presents characters somewhat allied to those observed in more simple cystic disease; but there is great variability; and this arises from the fact that the tumor remains, sometimes, quiescent for a time, and then, perhaps suddenly, starting into active growth, produces rapidly enormous enlargement of the abdomen.

Possible Complications of Ovarian Tumor, to be considered in arriving at a Diagnosis.—When an ovarian tumor rapidly increases in size, the question should always occur—Is the enlargement due to *pregnancy?* If the tumor be of a solid character, or partly so, this is more important, but in all cases the first question which should be determined has reference to the possibility of pregnancy having supervened. Proper means must be taken, by vaginal examination, auscultation, &c., to decide this question. Experience has shown that the mistakes which have been made in undertaking operations in ignorance of the presence of pregnancy, have arisen, not from the inherent difficulties of the diagnosis, but from circumstances generally controllable.

Ascites is another complication which is rather common. It is more frequently present when the ovarian tumor is irregular in outline than when the shape is more rounded and equable. It is sometimes necessary to get rid of the ascitic fluid by tapping, in order to explore satisfactorily the ovarian tumor.

Another important though rare complication of ovarian tumor is presence of gas within it. Sometimes an ovarian cyst bursts into the intestinal canal, and gas enters the cyst. Thus an ovarian tumor, one day dull on percussion and fluctuating, may on another be found to have become tympanitic. The occurrence is rare.

Tapping as a means of Diagnosis of the Nature of a presumed Ovarian Tumor.—Under some circumstances it is necessary to tap an ovarian tumor in order to release the patient from suffering; at other times this operation is undertaken as a curative measure alone, or combined with other proceedings which will be discussed in their proper place. At other times, again, tapping is had recourse to in order to throw further light on the diagnosis.

The tapping, when performed for the former of the above reasons, can be always made subservient to the further diagnosis of the nature of the tumor.

An important piece of information relates to the nature of the *contents* of the tumor. Sometimes when tapping is performed it happens that no fluid can be made to pass through the canula on withdrawal of the trocar. This may be due to great viscidity of the contents, or to the fact that in the interior of the tumor there

are a multitude of small cysts, or to the circumstance that the tumor is of a solid nature. By passing a probe through the canula something more may be learned. The fluid which comes away is different in different cases, as already stated, and it does not appear that examination of the fluid affords any particular indication as to the kind of ovarian tumor present. To this there is one exception in the case of the dermoid cysts of the ovary, which contain often a fluid which has this peculiarity, that on cooling it undergoes transformation into a solid mass resembling butter. Presence of such fluid would show that we have to do with a dermoid cyst. In a case related by Dr. Alex. R. Simpson,* there was removed from an ovarian cyst of this kind a single red hair, and it was subsequently found that the cyst contained a mass of tangled hair. It was further noticed that this hair had the same color as that covering the pubes of the patient.

In cases of the more common kind, however, the nature of the fluid will not inform us as to the nature of the ovarian tumor.

To distinguish between an ascitic and an ovarian fluid is important. Ascites and ovarian dropsy should be distinguished on other data (see p. 254) than an examination of the fluid procured by tapping. The microscopic and other characters of the fluid are of service in determining its origin (see " Diseases of the Ovaries "). The cells and granules vary greatly in size even in the fluids from different cysts of the same ovary : the fallacies involved in a dependence on these characters for a diagnosis are, that the ovarian fluid may have burst into the abdomen, become ascitic in fact, and thus mingled with peritonitic effusion ; further, lymph and pus are not uncommonly found in ovarian cysts—hence a microscopical examination of the fluid may serve to strengthen an opinion, but alone ought not to decide one. The results of tapping in cases of fibro-cystic tumor of the uterus have been mentioned at p. 321.

If, after tapping and emptying an ovarian cyst, we find the whole of the ovarian tumor gone, we may reasonably conclude that the case is one of simple ovarian cyst. Frequently it happens that immediately after tapping there is evidence of the existence of a second cyst, or of a solid mass or masses which were not perceptible before, and of whose existence as parts of the tumor we could not otherwise have been informed, and a case which at first appears to be one of simple cystic disease may thus prove to be one of compound cystic tumor, or of composite tumor of the

* Ed. Med. Journal, March, 1862, p. 886.

ovary. In order to diagnosticate more particularly the nature of fluctuating tumors of the abdomen in conjunction with the operation of tapping such tumors, I devised, some time since, an apparatus for probing the interior of the cavity containing the fluid. It consists of an ordinary canula, which is provided with a perforated diaphragm of India-rubber. The canula, armed with a trocar, is thrust into the tumor, the trocar is then withdrawn and replaced by a long metallic probe having the thickness of the ordinary uterine sound, thirteen or fourteen inches in length, and having a rounded blunt point. The India-rubber diaphragm tightly grasping the probe prevents escape of fluid, and the observer is now in a position leisurely to examine thereby the interior of the cavity, to ascertain its dimensions, its shape, the size and configuration of the solid contents, &c.* Such probing is of course only possible when the cavity is full of fluid. In a case of ascites mistaken for ovarian dropsy, the use of this instrument would inform the operator of his error. In a case of ascites with ovarian tumor the relations of the latter could be more readily made out than by examining the tumor in the ordinary way after evacuation of the ascitic fluid. Further, when there is a large cyst containing fluid and extending down into the pelvis, a combined digital vaginal examination and an internal probing such as above described would, in some cases at all events, give information as to the presence of other smaller cysts in the lower border of the tumor, of whose existence we could not otherwise obtain a knowledge. This latter circumstance seems important, for the reason that our curative procedures may vary according as we find evidence, or no evidence, of presence of smaller cysts growing upwards from the ovary.

If after tapping we find a tumor still remaining, this may be another cyst from the same ovary, contained within the first, or simply in juxtaposition with it; or it may be a solid tumor or mass of cysts; it may be a cystic tumor of the other ovary, or it may be a tumor of the uterus. The diagnosis of this secondary tumor should be made carefully and with due consideration of the possibility of pregnancy.

* Obstetrical Transactions, vol. i.

CHAPTER XV.

EXAMINATION OF THE ABDOMEN (*continued*).

ABDOMINAL TUMORS NOT DISTINCTLY TRACEABLE INTO THE PELVIS.

Pedunculated or Transplanted Fibroid Tumors of the Uterus—Movable Kidney—Fat in Omentum—Ascites together with Tumor of Uterus or Ovary—Fecal Tumor—Cancer or Cystic Disease of Omentum.

IN the previous chapters the diagnosis of tumors traceable into the pelvis has been pointed out. To complete the subject of the diagnosis of abdominal tumors, it is necessary now to consider those cases in which there is a tumor in the abdomen not traceable into the pelvis.

It will not be necessary to enter at any length into the consideration of the diagnosis of tumors in the abdomen not traceable into the pelvis, inasmuch as the subject is one scarcely coming within the compass of the present work. There are, however, some tumors of the abdomen which may not be traceable into the pelvis, and yet have their origin in the generative organs, concerning which some mention is required.

Fibrous tumors of the uterus sometimes become pedunculated, and the pedicle elongated to such an extent that they enjoy great mobility and freedom of movement. It might be difficult to say of such a tumor very positively whether it belong to the uterus or to the ovary.

The fibroid tumors of the uterus, when growing from its peritoneal surface, may become detached from the organ, and remain fixed at any part of the abdominal parietes. When so fixed and separated from the uterus, the diagnosis of the nature of such a tumor would be necessarily difficult. It appears that the ovary also may become separated from its attachment by twisting of or dragging on the Fallopian tube, and that it may similarly become attached to some other part of the abdominal wall. The occasional occurrence of separation of fibroid tumors, or of the ovary, from their normal attachment, is a circumstance to which attention has been directed by Rokitansky* and Turner.†

* See Schmidt's Jahrb., vol. cx, p. 306.
† Edin. Med. Journ , Feb. 1861, p. 698.

A pedunculated fibroid tumor of the uterus might be confounded with *movable kidney*, the rounded shape and the firm feel of the tumor being observable in both cases. The diagnosis of a fibroid tumor, detached and transplanted as above pointed out, would not be easily made out.

Cases in which the *omentum* is the seat of a considerable deposition of *fat* occasionally create embarrassment as to their diagnosis. It might be difficult to ascertain whether the tumor perceivable was actually traceable into the pelvis or not, owing to the usually associated fatty condition of the abdominal parietes; such tumors are most liable to be confounded with pregnancy, as already pointed out.

An exceptional case here requiring mention is the presence of a tumor due to an *extra-uterine fœtation*, and so situated as to give the idea that it is not traceable into the pelvis.

A difficulty is more frequently experienced in determining whether the tumor proceeds from the pelvis or not, in cases where solid tumors of the uterus or ovary are associated with *ascites* to an extreme degree. This class of cases has already been alluded to, in speaking of the diagnosis of the causes of considerable enlargement of the abdomen with the fluctuation sign present.

Some cases of *fecal tumor* may give rise to difficulty when the tumor is situated low down. The observations already made on the diagnosis of fecal tumor here again apply.

Cancerous or cystic disease of the omentum, forming a tumor of considerable size, may closely simulate tumor originating in the pelvis. Ovariotomy has been attempted in some such cases. The surest means, perhaps, of avoiding similar errors of diagnosis in future is to indicate, as has now been done, the possibility of their being committed. If ascites were superadded in such a case, the difficulty would be greater. Attention to the mode of growth of the tumor would be most likely to give satisfactory information.

In all cases where doubt exists as to whether the tumor extends into the pelvis, the history of the case is of great consequence. It generally happens that tumors of ovarian and uterine origin do, at some period or other of their growth, give rise to what may be termed pelvic symptoms—difficulty in defecation or micturition, pains in the lower limbs, &c. &c., and absence of such pelvic symptoms, therefore, would be against the theory of pelvic origin of the tumor, though on these grounds alone it would not be safe to come to a conclusion. We should, however, certainly

hesitate to perform ovariotomy in a case where pelvic symptoms had been absent from first to last, unless there were very good grounds for believing the tumor to be ovarian.

CHAPTER XVI.

EXAMINATION OF THE BREASTS IN REFERENCE TO THE DIAGNOSIS OF PREGNANCY.

ALTERATIONS IN THE SIZE AND TEXTURE OF THE BREASTS.—Distinction between Enlargement due to Pregnancy and to Deposition of Fat—Other Causes of Enlargement.

CHANGES VISIBLE TO THE EYE.—The Nipple: Enlargement; Presence of a Milky Fluid—The Areola: Changes in Color, in Size; Presence of Glandular Follicles; Secondary Areola—Enlarged Veins—Cracks in the Integument—General Summary.

THE examination of the breasts furnishes us with very important data for the diagnosis of certain conditions or diseases. In cases of suspected pregnancy, the appearances presented by these organs offer not rarely decisive evidence for or against the supposition, as the case may be; provided always that the observer be experienced in the matter, and has so familiarized himself with the usual appearances and changes in these organs produced by pregnancy, as to be able to distinguish them, and to assign a due value to the particular changes noticeable in the case under examination. Such familiarity can only be acquired by practice and careful observation.

The diagnosis of pregnancy from an examination of the breasts is not always possible, but in many cases it is so; and, as remarked by Dr. Earle,* the signs of pregnancy observable in the breasts have the peculiar value, that while from a variety of causes an examination of the abdomen or vagina is often not obtainable, there is never any difficulty in procuring an examination of the breasts.

The changes observable in the breasts may be considered under the following heads: alterations in the size and texture of the breasts; and alterations visible to the eye only.

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* On the Mammary Signs of Pregnancy and Recent Delivery. London, Davies, 1862.

1. ALTERATIONS IN SIZE AND TEXTURE.

A swelling of the breasts is popularly considered a good sign of pregnancy. As will be now shown, however, it is a sign which is not in any way to be depended upon. As a rule, the breasts increase in size during pregnancy, and they begin to increase in size usually at a very early period; but many other causes may produce a like increase in the size of the glands. The increase in size may be due simply to *fat*. The fact that the other parts of the body participate, or not, in the increase of the fatty deposit, would assist us in distinguishing the true nature of the enlargement in such a case. The breasts when thus increased in size are more pendulous in appearance, and, what is more important, are much softer to the feel, than in cases of pregnancy. The increase in size is evidently due to deposit of a soft cushiony elastic material—fat—in and around the glands, and beneath the skin covering them. At the same time there is an absence of certain important changes in the skin, which are visible to the eye; these latter will be presently described. Enlargement of the breasts from pregnancy is recognizable by the touch, the sensation conveyed differing essentially from that due to fatty deposit in the gland; hard, knotty, tolerably well-defined masses—the lobules of the gland—are felt beneath the skin, these being arranged symmetrically around the common centre. The normal anatomy of the mammary gland must be known, or the observer will fail to appreciate to the full the characters now alluded to. In the simply fatty breast the enlargement present is chiefly constituted by a soft, uniform structure: the lobules of the gland may still be recognizable to the touch, but they are small in proportion to what is observed under other circumstances. An increase in the size of the breasts due to fat is likely to be observed in women at the climacteric period; and the fact that the menses are irregular, or absent, that the breasts are painful, while at the same time the abdomen is noticed to be larger, often induce women at this age to believe themselves pregnant. In such cases, too, it has been occasionally noticed that a serous fluid, not unlike milk, exudes from the nipples, and this appears to confirm the erroneous conclusion formed. It is hardly necessary to observe that the breasts may be enlarged from chronic diseases of various kinds. In most of such cases, however, the enlargement has this distinguishing peculiarity, that it is limited to one breast, or to one side of the breast; in pregnancy the enlargement is uniform, and affects the gland on the

two sides equally. There is a rare form of disease, a kind of hypertrophy of the breasts, in which may be exhibited a more general and universal enlargement, but for many reasons it would be difficult to confound such cases with cases of pregnancy.

Enlargement of the breasts is sometimes a consequence simply of marriage; the glands become tumefied, painful, and more knotty than usual, and, in point of fact, the changes observed somewhat resemble those present in cases of pregnancy. The swelling is, however, temporary; after a few days it subsides, or, if it continue, no further changes are observed in the skin around the nipples, such as will be presently described as associated with pregnancy. A slight enlargement of the breasts is frequently present at the catamenial periods under ordinary circumstances; here the breasts return to their normal state during the catamenial interval. Temporary suppression of the menses is very generally associated with mammary enlargement.

Any condition resulting in distension of the uterus may occasion swelling of the breasts. Retention of the menses in cases of imperforate hymen is perhaps the most common of the cases coming under this category. The presence of ovarian tumors is frequently associated with enlargement of the breasts.

From what has now been said it will have been rendered evident, that the enlargement of the breast must be a peculiar kind of enlargement to give good occasion for the suspicion that pregnancy is present. The mere increase in size is of itself worth nothing in the matter of the diagnosis.

It does not always happen that when the patient is pregnant the breasts become enlarged. Thus, neither positively nor negatively does the sign in question give reliable information.

2. CHANGES VISIBLE TO THE EYE.

The great value of certain appearances in the skin surrounding the nipple as diagnostic of pregnancy has been pointed out particularly by Dr. Montgomery, and more recently in the work of Dr. Earle. The changes produced in the nipple itself, in the skin immediately surrounding the nipple—the areola—and in the skin covering the remainder of the breast, must be severally considered.

Changes in the Nipple.—One principal alteration in the nipple visible to the eye, and consequent on pregnancy, is a slight increase in its size. It is more turgid and vascular, it is rather

darker than previously,* and towards the end of pregnancy the color may become very dark, approximating to that of the skin around, presently to be alluded to. The apex of the nipple during the latter half of pregnancy is usually more or less scaly in appearance, due to the fact that a slight exudation has been going on, on the drying up of which little scales are left behind. Dr. Earle correctly observes, that the condition of the nipple itself is of little practical importance from a diagnostic point of view. But the most important diagnostic fact connected with the nipple is the possibility or not of squeezing from it a secretion. The precise value of this latter sign must now be particularly examined.

In order to ascertain in a given case whether a secretion be actually present or not, it is necessary to manipulate in a peculiar manner, too familiar to need description. The secretion is thus pressed outwards from the recesses of the gland, and exudes at the orifices of the ducts on the nipple. It must be remembered that human milk is a serous-looking fluid, almost transparent, and unlike the milk of cows. The presence of a secretion of milk in the breasts is a valuable sign, but by no means a certain sign, of pregnancy. Cases are on record in which girls have had such a secretion quite unconnected with pregnancy. Montgomery refers to three very well-marked cases of this kind: in one case, that of Baudelocque's, it was observed in a little girl aged eight years only. Again, women advanced in life sometimes exhibit this secreting power in the breasts: and this is not astonishing, when we find it indisputably proved that under certain circumstances, the breasts of individuals of the male sex have been known to secrete a fluid to all intents and purposes identical with milk. These exceptional cases will be found recorded at length in the treatise of the author just referred to, and in Dr. Tanner's more recent work. Next it is to be observed, that women who have once borne one or more children not unfrequently continue to secrete milk for a very considerable time—for many years in some instances; and hence if a woman has had children, presence of milk in the breasts has very little value as a sign of pregnancy, very little, at least, compared with the other case, that of a woman who has never been pregnant before. "Altogether," says Dr. Montgomery, "it is a sign which we cannot expect to make generally available as a guide in forming an opinion in a doubtful case." Dr. Tanner has found

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* " . . . . crassescit papilla, inflata videtur, color ejusdem fit obscurior, simili colore distinguitur discus ambiens." Roederer, Elem. Art. Obst.

the presence of milk indicative of pregnancy as early as the ninth or tenth week, and he considers the presence of a secretion containing, on microscopic examination, the characteristic milk globules, with large oil particles and colostrum granules, as an early and reliable sign of pregnancy in a woman who has never given birth to a child.* And this opinion is doubtless a correct one, applied, as Dr. Tanner observes, to the diagnosis of cases of amenorrhœa, such as ordinarily come before us, and when there is no reason for supposing that the patient has been stimulating the mammary glands by the application of galactagogues, or allowing the nipples to be sucked by an infant. And whether we accept the evidence drawn from presence of milk as positive or not, the sign has this great value, that it is one easily observed, and that we may be thus led to search for, and detect, the presence of other more reliable and more decisive signs of pregnancy.

Changes in the Areola.—The changes observable in the areola are of very great importance. William Hunter, and more recently Montgomery and Earle, have attached a great degree of value to these changes as a sign of pregnancy. The changes in question will be now described. Around the nipple there is a narrow band of integument of a delicate texture, resembling pretty nearly the surface of the nipple itself. This circular band is of variable width in different cases; it is the areola. When pregnancy occurs, the areola becomes larger, altered in color, presents on its surface certain eminences not before observable—not observable to such a degree at all events—and it becomes altered in some other particulars. Each and all of these changes require a separate consideration, but it may be premised that the presence of one alone of them is generally valueless for purposes of diagnosis.

One change observed, and to which Montgomery has specially directed attention, " is a soft moist state of the integument, which appears a little raised above the surrounding skin, and in a state of turgescence."† This change is observable as early as the end of the second month. It is of more diagnostic value in the case of primiparæ.

The deepening of the *color* of the areola is the one which has been the best known. The degree of the change in the color varies in different subjects. In light-haired women it may be slight, but in dark-haired women it is often very striking and intense, the areola in such cases presenting an almost complete

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* Op. cit., p. 63. † Op. cit., p. 105.

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blackness at the end of pregnancy. The period of pregnancy at which the change in the color is evident is not by any means the same in all women. During the first two months little alteration of color is evident, but in the third month the tint becomes perceptibly darker in most cases. In the fifth month it is ordinarily decided, and from this time to the end of pregnancy the tint deepens. In Montgomery's work will be found some beautiful and accurate pictorial representations of the areola at the third, fifth, seventh, and ninth months respectively; the areola of an albino is also depicted. A dark-colored areola is by itself, and in a woman who has had children, more especially if she be of dark complexion, not of great value as diagnostic of pregnancy. In conjunction with other changes it has great value.

The *size* of the areola is next to be considered. This also varies in different persons. The areola may be only a quarter of an inch broad, or it may have a diameter of as much as three inches. When it is very dark it is usually very large also. The point to be observed is *increase* in the width of the areola: ". . . discus ambiens, qui in latitudinem majorem expanditur" (Roederer); and
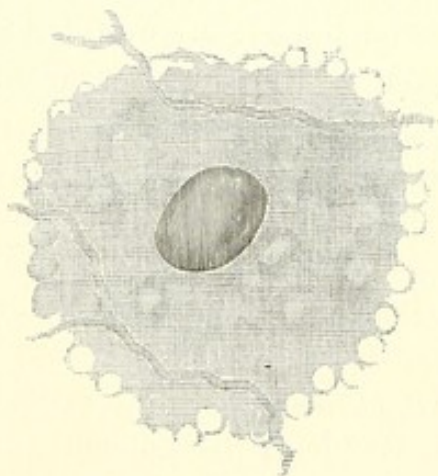
Fig. 36.*   Fig. 37.†
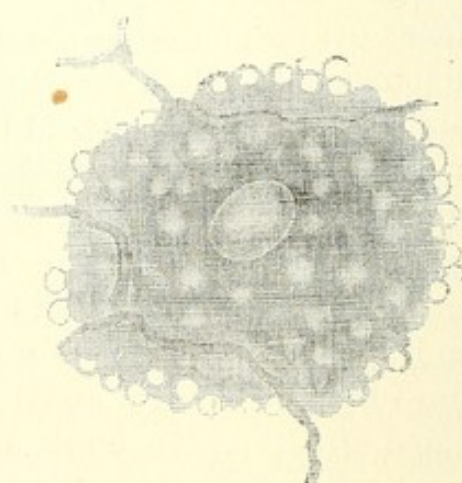
this is, other signs agreeing therewith, indicative of pregnancy. As the pregnancy advances, the width of the areola increases. The areola may in rare cases be found at the end of pregnancy not more than a quarter of an inch broad; absence of a wide areola is therefore not a positive sign that pregnancy is absent.

The Areolar Glands or Follicles.—The most important, the most characteristic, and the most universal of the changes observable

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* Fig. 36, after Montgomery, shows areola at third month.
† Fig. 37, from Montgomery, shows areola at seventh month.

in the areola, and due to pregnancy, consists in the formation of little glandular eminences projecting from the surface of the integument covering the areola, not unlike the head of a pin in size and shape, well described by Roederer in his celebrated work in the following terms : " discus ambiens . . . parvisque eminentiis, quasi totidem papillulis, tegitur." These little eminences have been termed miniature nipples ; Morgagni detected lactiferous tubes going to each of the little tubercles in question, and the milky fluid, it has been stated, has been observed to issue from them under favorable circumstances. The little eminences now under consideration begin to show themselves as early as the end of the second month of pregnancy ; they subsequently increase in number, and also in size. They are more thickly placed close to the nipple ; are usually from twelve to twenty in number ; the elevations to which they give rise are perceptible to the eye and to the touch.

In the work before referred to, Dr. Earle, who has investigated anew the "follicular" signs of pregnancy, expresses conclusions somewhat different from those ordinarily received. He finds that there are several varieties of follicles observed, and he classes them under five heads. 1. Follicles which may be termed vesicular, consisting of little eminences arranged in clusters of three, four, or five, over the areola, but placed concentrically as regards the nipple. 2. The pustuloid variety, arranged singly. These two varieties are distinguished by presence of a sebaceous secretion within them, which may be pressed out. They are characteristic of pregnancy. Next he describes a series of small follicles, only evident when the skin of the areola is put on the stretch, and which are closely grouped together immediately round the base of the nipple : they resemble the ultimate saccules of a vesicular gland. They also are characteristic of pregnancy. Lastly, two other varieties are described, the papular, and the mastoid, which do not secrete sebaceous matter, and which are not characteristic of pregnancy. There appears to be an unnecessary degree of refinement in these distinctions ; the single, separate, large follicles are the characteristic ones in my opinion. Dr. Earle believes that the characteristic follicles are frequently absent in primiparæ, and that in any case there is no progressive growth of them during pregnancy, such as has been described. Further, he disputes strongly the statement originally made by Morgagni, that the areolar follicles have a communication with the lacteal ducts. The latter point is important, for, as he observes, if such communication be held to be present, those who think lightly of the milk test

will also think lightly of the "sebaceous" test; they would argue that if the breast may be stimulated to secrete milk without conception, so these cases might, through the supposed communication, become filled with lacteal secretion. In multiparæ, the presence of the sebaceous-containing follicle is a very important sign during the early months.

There is another point of some importance. The little eminences due to presence of areolar glands often persist and do not disappear after pregnancy and suckling have come to an end. In one case I distinctly noticed areolar glands well marked, when the lady had not had a child or given suck for five years. The mere presence of these areolar glands cannot therefore, I believe, be relied on as a sign of pregnancy in a woman who has had children. As a sign recognizable at a very early period, as a sign which we find most constantly of all present, the presence and *growth under observation* of the areolar glands or follicles is, however, of the greatest practical assistance in the diagnosis of pregnancy.

Secondary Areola.—This term is applied to a change in the areola of a peculiar character. At the fifth month, not earlier, according to Dr. Montgomery's experience, are observed "numerous round spots or small mottled patches of a whitish color scattered over the outer part of the areola, and for about an inch or more all round presenting an appearance as if the color had been discharged by a shower of drops falling on the part."* As pregnancy advances these appearances are intensified. Dr. Montgomery's opinion was that these appearances are quite distinctive, "exclusively resulting from pregnancy."

To sum up these remarks on the characteristic changes in the areola—we have increase in size, change of color, development of areolar glands, presence of secondary areola, moist puffy state of the integument. If the case before us be one of pregnancy, we shall find these changes present in association with each other; some will be found more marked than others in different cases.

Other Changes in the Breast visible to the Eye.—In cases of pregnancy the veins running beneath the skin become more visible than usual. This enlargement of the veins is symmetrical; it is accompanied always by hardening of the breasts, by increase in their size.

Another change to which reference must be made is presence of little cracks in the integument, giving rise to formation of narrow

* Op. cit., p. 108.

sinuous white lines radiating irregularly from the centre of the breasts, and produced by the tension and stretching of the skin. The presence of these lines is a sign of pregnancy, if the patient have never conceived or given suck, and if the enlargement of the breasts before us is evidently not due to fat; but under other circumstances it is valueless and may mislead.

General Value of Changes in the Breast as diagnostic of Pregnancy.—Of the value of the individual changes in the breast as signs of pregnancy, which have been now considered *seriatim*, but little remains to be added. It is to be remarked that these signs, taken as a whole, should, in reference to the diagnosis of the case before us, be considered side by side with other signs of pregnancy before we proceed to pronounce a positive opinion. In cases of pregnancy the symptoms march onwards with a certain amount of regularity, and if one sign be present another should be present also. Thus, if in the case before us we find what we consider to be a perfect instance of the pregnancy areola of about the fifth month of gestation, there should be at this time a tumor discoverable in the abdomen; failing to find a tumor, we should at once conclude further investigation of the case to be necessary. The mistakes which have been committed in the diagnosis of pregnancy will on inquiry be generally found to have resulted from the observer attaching an undue importance to some one sign on which he has been accustomed to rely, and from his having omitted to ascertain the presence or absence of other, perhaps more important, signs of pregnancy

PART II.

PATHOLOGY AND TREATMENT.

CHAPTER I.

PHENOMENA OF MENSTRUATION AND OVULATION.

Vascular and erectile apparatus of female sexual organs; Bulb of the Vagina;
Bulb of the Ovary — Mechanism of Ovulation — Rouget's researches —
Menstruation; Source of the blood; Phenomena observed; Menstrual
Molimina; Age during which it occurs; Periodicity; Duration; Quantity
and quality of the Discharge.

THE importance of the physiology of menstruation and ovulation in the study of the morbid processes witnessed in the female generative organs renders a summary of the subject essential in this place.

All the generative organs are well supplied with blood. When in a state of rest the generative organs contain but a moderate supply of blood, but under excitement the vascular supply is very largely increased. This increase is effected by the distension of certain structures—erectile organs—which are at other times comparatively empty.

The orifice of the vagina has on each side of it an elongated leech-shaped body, the *bulb of the vagina*, composed of a large number of tortuous veins, closely packed together in a fibrous investment, prolonged upwards in the middle line to the glans clitoridis. This is a provision for erection, the blood being detained in the veins by the action of suitable muscles. Further, the vaginal canal is surrounded with a belt of bloodvessels, forming a large plexus of veins. The arrangement of the vessels supplying the uterus is of considerable importance, and Rouget*

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* Recherches sur les Organes érectiles de la Femme. Brown-Séquard's
Journ. de Physiol., tom. i.

has particularly investigated this subject in a memoir of great value. The utero-ovarian artery, which supplies the uterus with blood, passes upwards. Its first branches, to the cervix, are small; but opposite the body of the uterus, it gives off suddenly twelve to eighteen short trunks, which pursue at once a spiral direction and divide into a large number of smaller branches. When injected, these vessels are seen to lie so close as to quite cover the sides of the uterus. The body of the uterus thus receives a very profuse arterial supply, and the spiral convolutions of the branches may be seen projecting into the sinuses of the uterine structure. The veins in which these arteries terminate are still more numerous and capacious, and they form a plexus covering the sides of the body of the uterus. Below, these veins end in the pudendal veins, in the middle they end in the uterine veins, and above in the spermatic veins. It results that the sides of the uterus are covered with a layer of considerable thickness, composed of bloodvessels having great capacity, and it is further to be recollected that the tissue of the uterus itself contains large sinuses—receptacles for venous blood.

The ovaries are supplied with blood from the utero-ovarian artery and from the spermatic. The arterial trunk passes along near the base of the ovary, and in its passage gives off a series of ten or twelve branches; these branches divide at once, assume a convoluted arrangement, and finally enter the ovary. The veins coming from the ovary form a special bulb, *the bulb of the ovary*, composed like the vaginal bulb of a series of tortuous veins, susceptible of considerable distension. The bulb of the ovary has an elongated form, its length a little exceeding that of the ovary, it is a little flattened, not quite half an inch

Fig. 38.

thick, and a little deeper than this; altogether its size is not much inferior to that of the vaginal bulb. The pampiniform plexus of veins, a further portion of the vascular apparatus here met with, lies below the ovarian bulb in the folds of the broad ligament. The bulb of the ovary is a structure only recently known. The first allusion to it seems to be in a paper communicated by Mr. Traer to the Anatomical Society of Paris. It is well depicted in
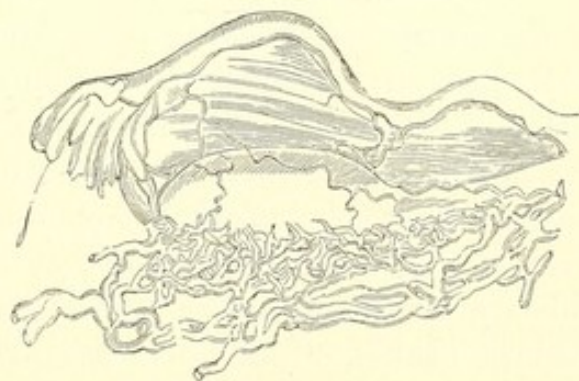
Dr. Savage's beautifully illustrated work,* and in Rouget's memoir (*loc. cit.*) it is made the subject of an elaborate investigation conjointly with those of the other erectile structures of the female generative organs (see Fig. 38).

Certain muscular structures connected with the generative organs must next be considered. In the memoir of Rouget it is shown that the function of ovulation is probably greatly dependent for its efficient performance on the presence of muscular structures not before described in the human subject. Erectility is dependent, as Rouget remarks, on association of structures for reception of a large quantity of blood, and for detention of that blood. The bulb of the vagina is an erectile structure: the muscular apparatus connected with this is well known. And with reference to the bulb of the ovary Rouget endeavors to show that there is a muscular apparatus for the control of its vascular supply, and for constituting it in fact as an erectile organ. In lower animals the ovary is brought into coaptation with the oviduct by a mechanism which is not quite the same, though on the same general plan, in different cases. Thus in birds, where we find the muscular apparatus connected with the ovaries very well marked, the oviduct is surrounded by a muscular structure or envelope within which the coils of the oviduct lie. The contractile fibres are so placed that a twofold effect follows from their contraction, viz., the infundibulum is opened out, and at the same time approximated to the ovary in order to receive the ova. The muscles producing this effect are of the involuntary kind, and radiate after the manner of a fan in the folds of the membrane inclosing the oviduct.

Rouget, after adducing other anatomical facts in reference to the comparative anatomy of the subject, goes on to state that in the human female there are to be found muscular fibres arranged on an analogous plan, that they form a system covering the uterus, ovaries, and appendages; and that the muscular fibres belonging to this system pass from the lumbar region to the ovary and to the fimbriæ near it, while others pass from the uterus over the ovary, and onwards to the fimbriæ of the Fallopian tube also, and that the simultaneous contraction of these two sets of fibres has necessarily the effect of bringing the fimbriæ near the ovary. The mechanism of the process is, he contends, identical in the case of the human subject and in animals lower in the scale.

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* Illustrations of the Surgery of the Female Generative Organs. London, Churchill, 1863.

Thus, then, the muscular fibres described, together with the vascular apparatus of the uterus and ovary, constitute together, if we follow Rouget, the erectile structure of the internal generative organs. Ovulation is accompanied by the following phenomena: the Graafian follicles being mature, or nearly so, the muscular fibres above described are set in action and the fimbriæ of the tube are thus made to grasp the ovary, at the same time that they induce and maintain a condition of erection of the ovarian bulb. This spasmodic erection is present so long as the ovary and the Fallopian tube remain in contact, and when the rupture of the Graafian follicle happens, the ovum passes into the proper channel. Ordinarily the ovipont occurs, because of the presence of ripe ova in the ovary; and with this process it is almost generally admitted the phenomena of *menstruation* are associated; but it is probable that the act of congress often determines an ovipont, which without it would be postponed for a time. Here the act of intercourse induces erection of the external generative organs, and doubtless also that erection of the internal organs above alluded to, the result being escape of an ovule. Rouget contends that the uterus is equally with the ovary an erectile organ, that its erection occurs simultaneously with that of the ovary, and that the final result of this erection, during which the uterus is kept gorged with blood, is exudation of that sanguineous fluid from the surface of its lining membrane, forming the menstrual discharge.

The action of the muscular apparatus in bringing the ovary to the open end of the Fallopian tube is probably greatly assisted by the engorgement of the ovary and of its bulb, for when the pelvic vessels are injected artificially after death, the effect is to bring the ovary close to the open mouth of the Fallopian tube; and it has indeed been assumed by some that the injection of the ovarian bulb is a principal agent in effecting the adjustment necessary for the ovipont.

We thus see, in the vascular and muscular structures of the internal generative organs, provision made for the supply of vast quantities of blood to these organs. In the human female the engorgement and full distension of the vessels occurs periodically, the period of engorgement being that of menstruation; while it would appear that it is liable—during the sexual life at least—to occur also during intercourse. We may in the next place consider briefly certain of the other phenomena of menstruation.

The process known under the names "menstruation," the "catamenial discharge," &c., is one for the production of which two

organs are essential—the uterus and the ovary. Menstruation is an indication of the fact that the ovaries are in activity—in other words, that ova are being formed, developed, and maturated in the ovaries. By "menstruation" is meant a periodical discharge of a sanguineous fluid from the uterus, this discharge being attended, as already remarked, with an engorged or congested state of the uterus, ovaries, and adjacent organs, in most cases by hyperæsthesia of the parts in question, and by disturbances, of various kinds and degrees, of other functions of the body. It is, in a certain sense, analogous to the *œstrus* in the lower animals, the presence of menstruation being an indication that the woman is capable of being impregnated; but the woman differs from these animals in this respect, that she is capable of being impregnated, not at the time during which the discharge itself occurs only, but also during the intervals between the periodic discharges. Menstruation is to be regarded as an adjunct of ovulation, resulting probably, as Rouget observes, from that continued congestion of the uterus and vivid injection of its lining membrane with blood which is associated with ovulation. The actual source of the menstrual blood has been a matter of dispute; but there can be no question that a great part of the fluid, under ordinary circum-

Fig. 39.
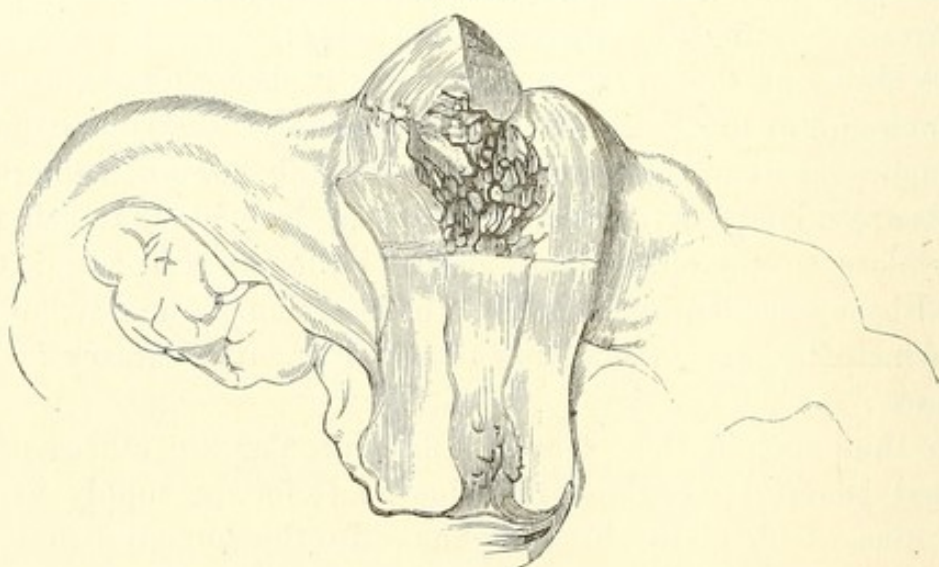
stances probably the whole, comes from the uterus itself; and it appears to be poured out from the open mouths of the uterine glands. The mucous membrane lining the body of the uterus, which is ordinarily $\frac{1}{8}$ of an inch thick, is very vascular; during menstruation it becomes much more so, and moreover increases in thickness. I have had opportunities on four or five occasions of

examining the uterus during menstruation. In the case of a woman who died while menstruating, after an operation for hernia, I saw the uterus lined by a deeply red, velvety soft structure, on the free surface of which were to be seen the open mouths of the uterine glands (see Fig. 39). These glands run from the free to the attached surface in a tortuous manner, and it is uncertain whether they end by fluid terminations, or whether they have more deeply a communication with bloodvessels. Fig. 40 represents the condition observed in a young woman who died, while menstruating, from the effects of a burn, in University College Hospital. In other cases I have found the mucous membrane in actual process of disintegration. The mucous membrane thus thickened appears to be shed at each catamenial period. In some cases a regular cast of the uterine cavity is thrown off every month, but this is abnormal; ordinarily it would appear that the mucous membrane is broken up in such a manner as not to be noticed in the discharges. The cavity of the cervix of the uterus does not pour out blood. It is pretty certain that normally the cavity of the body of the uterus is the main source of the menstrual bleed-

FIG. 40.
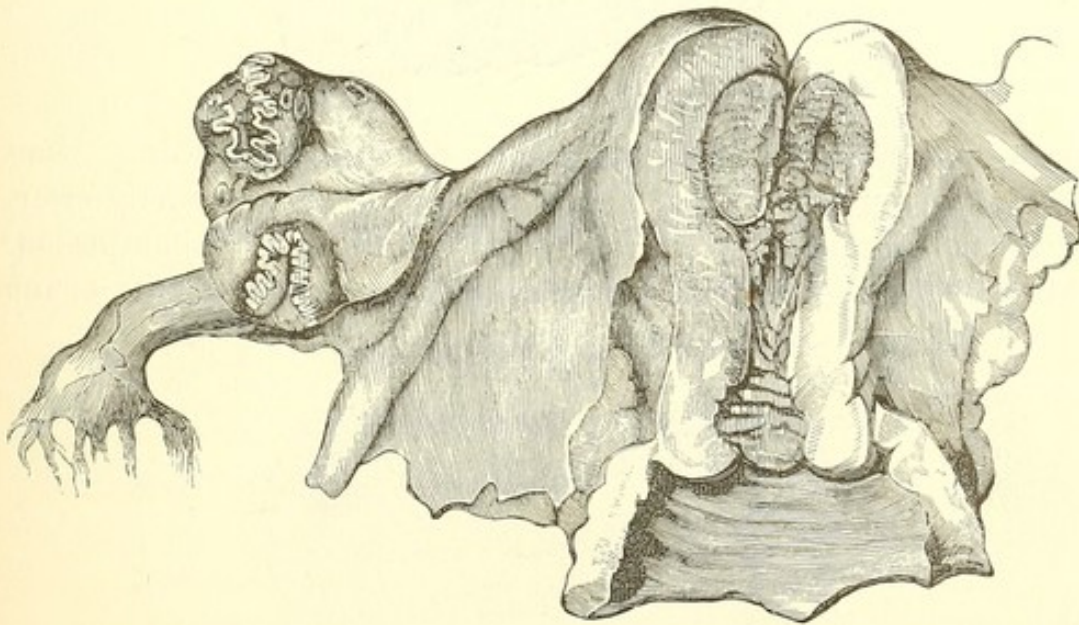
ing, but the Graafian follicles probably contribute not unfrequently to a limited extent, while in some instances of profuse menstruation it is probable that a good deal of blood finds its way from the ovary into the uterus, and so externally.

The changes in the ovary coincident with menstruation may next be alluded to. Supposing matters take their ordinary course,

the ovary produces on its surface, and periodically, matured Graafian follicles one or more at a time, causing the ovary to present an elevation the size of a nut-kernel, and constituted by the follicle distended with blood and containing the ovule. This condition of the follicle is present at the time menstruation occurs. The next event is the rupture of this follicle and passage of its contents into the Fallopian tube—the ovipont—provided for in the manner already described. Fig. 41 (from Dr. Farre) shows a Graafian follicle preparing for rupture; Fig. 42 a section of the

FIG. 41.
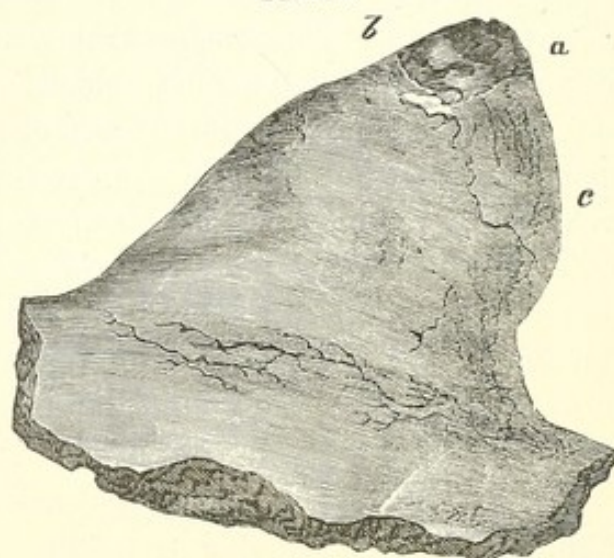
same follicle, exhibiting its cavity and a blood clot within. Rupture of one or more follicles probably occurs at, or shortly after, each menstruation, though not limited absolutely to that period. After the follicles have discharged their contents, the cavity of the

FIG. 42.
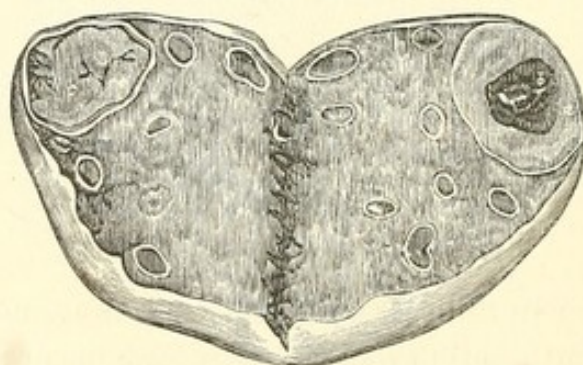
follicle and the interior of the Fallopian tube may or may not remain in connection with each other : if further bleeding from the interior of the follicle occurs, the blood will or will not find its

way into the uterus according to circumstances. It is obvious
that the continuous application of the Fallopian tube to the ovary
is expedient during the whole time follicles are liable to become
ruptured, or there might be escape of the follicular contents into
the peritoneal cavity. Such escape and consequent failure of the
ovipont is not very uncommon, leading to sterility, to extra-uterine
fœtation, to effusion of blood into the peritoneal cavity, and other
disorders. The Graafian follicle, having discharged its contents,
the blood within it ordinarily coagulates, the cavity shrinks up,
and by the successive growth of follicles lying deeper in the ova-
rian stroma, the used up follicle sinks back towards the middle of
the ovary, becomes smaller and smaller, and disappears at the end
of three or four months. The retrogression of the follicle is
marked also by changes of color due chiefly to the transformation
the blood-clot undergoes, and to the changes in the very vascular
lining of the follicle. After bursting, the follicle is known as a
false corpus luteum.

From what has been stated it will be gathered that ovulation
and menstruation are in a peculiar relation to each other. Ovula-
tion does not actually produce menstruation, although the produc-
tion of ova is in another sense of the word the first in the chain of
events: menstruation does not occur in the absence of the ovaries.
Ovulation may occur without menstruation; in some very rare
cases ovulation is always unassociated with menstruation.*

The commencement of the process of menstruation is usually
preceded by certain changes in the outward conformation and ap-
pearance. The general signs of the arrival of puberty in the
woman are thus eloquently enumerated by Brierre de Boismont:
" L'époque de la puberté est enfin arrivée. Une révolution im-
mense s'opère dans l'organisation de la jeune fille. A ses formes
greles et allongées ont succédé des contours pleins et gracieux. Sa
démarche, incertaine et languissante, devient ferme et animée. Le
doux éclat de ses yeux révèle le feu dont elle est pénétrée. Des
changements non moins remarquables ont lieu dans l'économie.
. . . La poitrine, étroite et resserrée, s'agrandit et s'évase. Les
poumons respirent plus à l'aise; le cœur, plus développé, lance
avec force le sang dans les innombrables vaisseaux du système cir-
culatoire. Le tissu cellulaire apparaît à son tour pour former des

* For further information on the subjects here discussed, see Rouget's Essay,
already referred to, the works of Coste, Farre (in Cycl. Anat. and Phys.), Tyler
Smith, and others.

courbes admirables qui constituent la beauté de la femme. De tous les organes qui ressentent l'influence de la puberté, l'utérus et ses annexes sont ceux où elle est le plus prononcée. Reduits à un petit volume, la matrice les ovaires, les trompes, et les seins prennent un accroissement considérable. Les os, les muscles participent à ce développement général. Le moral lui-même offre des différences non moins tranchées. La jeune fille, jusqu'alors véritablement enfant dans ses goûts, ses inclinations, ses penchants, éprouve une complète métamorphose ; inquiète et rêveuse, elle ne sait à quoi attribuer les sentiments nouveaux qui l'agitent ; tous les sens sont en éveil ; une douce chaleur la pénètre ; un prurit inaccoutumé se fixe aux organes de la génération ; le plus important phénomène de la puberté, son complément indispensable, celui qui transforme la jeune fille en femme, la première éruption des règles, se manifeste."*

There are also present in young women who are about to menstruate shortly certain sensations, more or less marked in different cases, and most intense in those cases where the appearance of the menstrual discharge is a little delayed. These symptoms are known by the term *molimina menstruationis*. The chief symptoms of the menstrual molimen—the attempt at menstruation, the evidence of ovarian activity—are as follows: A sensation of weight and fulness in the pelvis and its neighborhood, together with a "bearing down" or dragging sensation ; pains radiating from the loins downwards towards the perineum, and occasionally extending down the thighs ; tenderness over the hypogastric and inguinal regions ; a feeling of heat in these regions so intense as to be described "as burning" by some patients. Irritability of the bladder, frequency of micturition, and inability to evacuate the bladder, are more rarely observed. The digestive system sympathizing, there are diarrhœa, or constipation, sickness, inappetency. Fretfulness, or change of temper and disposition, may also be noticed ; in short, many of these symptoms usually classed under the denomination "hysterical" may be present. The local symptoms are the most constant. When symptoms of the above character are observed at intervals of three or four weeks, persisting in each periodic recurrence for two, three, or four days together, in a young woman who presents outward signs of having arrived at puberty, they are evidence of the existence of ovarian action, and

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* De la Menstruation dans ses Rapports Physiologiques et Pathologiques, 8vo., Paris, 1842, p. 1.

constitute the menstrual molimen. The characteristic point about these symptoms is their periodicity.

This seems to be the proper place to state, that in some cases where menstruation is absent there is witnessed a periodically occurring hemorrhage or exudation of blood from some other mucous surface, as from the lungs, stomach, surface of an ulcer situated on some part of the cutaneous surface, from beneath the toe nails, from the conjunctiva, &c. In such cases there is said to be *vicarious menstruation*.

The *age* during which the catamenial discharge occurs is open to certain variations; but, as a rule, it begins between the ages of 14 and 16, and ceases between the ages of 40 and 50. For about thirty years of the woman's life this discharge is periodically observed. With reference to the age at which it commences, we have observations by Roberton,[*] Whitehead,[†] Brierre de Boismont,[‡] and more recently by Szukits.[§] In 358 cases observed by myself, menstruation occurred for the first time

At the age of 10 in 3 cases				At the age of 18 in 23 cases			
"	"	11 " 12	"	"	"	19 " 10	"
"	"	12 " 29	"	"	"	20 " 6	"
"	"	13 " 43	"	"	"	21 " 2	"
"	"	14 " 73	"	"	"	24 " 1	"
"	"	15 " 62	"				
"	"	16 " 61	"	Total . . 358			
"	"	17 " 33	"				

The greater number of these cases were hospital out-patients.

The mean age in 4000 cases referred to by Whitehead was 15 years 6¾ months. In 2169 cases collected by Roberton, Lee, and Murphy, the mean age was 14 years 11 months. Szukits found the mean age to be, in 665 women born in Vienna, 15 years 8½ months; and in 1610 women born in the country, 16 years 2½ months, which result, as regards the influence of town life in hastening the first appearance of the catamenia, agrees with that arrived at by Brierre de Boismont in Paris. The latter observer states that, amongst women belonging to the upper classes of society, the average age of commencement was as early as 13 years 8 months. Although the age 14–16 is the most common, yet

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[*] Observations and Notes on the Physiology and Diseases of Women, and on Practical Midwifery, 8vo., 1851.

[†] On the Causes and Treatment of Abortion and Sterility, 8vo., 1847.

[‡] Op. cit.

[§] See an abstract of his observations in Schmidt's Jahrb., bd. xcvii, p. 331.

there are numerous exceptions to this rule. In Roberton's 450 cases, ten began to menstruate as early as 11 years old, and nineteen at 12. The youngest of Szukits' cases was, in the town class 11 years and in the country class 10 years old. In three out of 358 cases noted by myself, menstruation began at the age of 10 years, and although the largest number of my own cases—73 out of 358—menstruated first at the age of 14, a very considerable number menstruated first as late as the age of 18.

The mean age of the commencement of the catamenia appears to be about two years earlier in the warmer than in the more temperate climates. Thus in India the mean age in 597 cases collected by Roberton was 13 years. It was formerly supposed, on the assertions of Montesquieu and Haller, that Hindoo women begin to menstruate, as a rule, at 8, 9, and 10 years of age; but the facts collected by Roberton conclusively show the incorrectness of this opinion. It does appear, however, from Roberton's tables, that the "proportion of Hindoos who arrive at puberty at the ages of 12, 13, and 14," is far greater than is observed in the women living in our own temperate country. This early arrival of the catamenia is attributed by Roberton to the influence of race —to the circumstance that for many generations (upwards of three thousand years) it has been the custom of this people to give their daughters in marriage immediately on the arrival of puberty. This custom has, in Roberton's opinion, produced and perpetuated a kind of "family peculiarity." Whether we consider, with the author in question, that the difference in this respect is dependent on "race," or, with Montesquieu and Haller, that "climate" is its determining cause, the fact remains that in India menstruation first appears somewhat earlier than in England. The inquiries of Mr. Roberton seem to show that, with respect to other countries, the age at the first appearance of menstruation is almost identical with that in our own country. Statistics in reference to the inhabitants of colder countries than England do not, on the same authority, afford evidence in proof of the popular opinion that menstruation is with them notably retarded.

The *latest age* at which the catamenia may commence is open to great variations; but, as a rule, it is not postponed beyond the age of 18. Brierre de Boismont found that, out of 359 "femmes de la capitale," twenty began to menstruate at 18 years, six at 19, five at 20, two at 21, four at 22, and two at the age of 23. The latest age given by Roberton is also 23. Szukits gives the age of 22 as the latest at which the first appearance occurred in

the Vienna class; but of those from the country one woman began
to menstruate as late as 25. The latest age in my own series was
24. In a case quoted by Meissner, the catamenia first appeared
at the age of 42.*

The cessation of menstruation occurs in the majority of cases
between the ages of 40 and 50. The number of cases in which
the cessation takes place before 40 is greater than the number of
those in which the final appearance of the catamenia occurs after
the age of 50. (Brierre de Boismont.) There appears, however,
to be a great diversity in the results obtained by various observers
on this point. Thus, in the cases, 181 in number, of the author
just quoted, the age at which the final cessation most frequently
(18 out of 181) occurred, was 40; while in Roberton's cases it was
most frequently observed (in 26 out of 77 cases) at the age of 50;
in the majority of the cases observed by Szukits at 46–50. The
earliest period at which the cessation may take place is shown by
the following recorded facts: Of Brierre de Boismont's 181 cases,
the cessation was noticed in seven before the age of 30, the earliest
being at the age of 21. The earliest cessation in Roberton's 77
cases was at the age of 35. Szukits gives two cases at the age
of 30.

The following table shows the results of my observations in 55
cases:

Menstruation ceased	Menstruation ceased
At age of 30 in 1 case.	At the age of 45 in 6 cases.
" " 33 " 1 "	" " 46 " 2 "
" " 34 " 2 "	" " 47 " 4 "
" " 35 " 1 "	" " 48 " 5 "
" " 37 " 1 "	" " 49 " 4 " and 1 still menstru-
" " 38 " 3 "	ating at that age.
" " 39 " 1 "	" " 50 " 4 "
" " 40 " 2 "	" " 51 " 3 "
" " 41 " 2 "	" " 53 " 1 " and 1 still menstru-
" " 43 " 8 "	— ating at that age.
" " 44 " 2 "	Total, 55

Perhaps the most interesting class of facts in connection with
this subject has reference to the latest age at which menstruation
may occur. There is very little doubt that some of the cases
related as cases of late menstruation are not cases of menstruation
proper at all; but it must be allowed that occasionally a discharge,
sanguineous and periodic, may be present at a very late age.

* Meissner, Frauenzimmerkrankheiten, ii, p. 741.

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Gardien relates the case of a woman said to have been "parfaitement réglée" at the age of 75. Up to the age of 55 there are a sufficiently large number of cases; but after that age true menstruation is exceedingly rare. Brierre de Boismont gives five after the age of 55, out of 181, one being as late as 60. Roberton (*op. cit.*, p. 185) gives four out of 79, as occurring after 55, two of which were at the age of 60, and one as late as 70. Lastly, Szukits gives one case (his latest) at the age of 60.

Some, apparently well-authenticated, cases of menstruation at very advanced ages, viz., at 91, 80, 87, 59, and 70 years of age, are related in the work of the late Dr. D. D. Davis.[*]

In reference to the foregoing statements, it is probable that many of the apparent exceptions to general rules quoted were cases in which pathological elements were more or less intermixed.

Menstruation ceases earlier in India; but everywhere the duration in years is much the same. For about thirty years menstruation continues. Roberton is of opinion that early cessation is chiefly noticed in those cases in which the function has been established at an early period. In most of those cases, however, in which the function continues to be exercised up to the age of 53 or 54, the period of commencement has not been unusually late; in such cases, the menstrual life far exceeds the average of thirty years.

Periodicity.—The usually accepted statement is that the time included between the day of the appearance of the discharge and the corresponding subsequent day is twenty-eight days—a lunar month; but the difference presented by individual cases in this respect is so great as to show that any rule generally applicable must have rather a wide range. Many women menstruate regularly every three weeks; and a less number menstruate every calendar month, or a little over. In another class of women there is great irregularity, the period varying from time to time consistently with health. It is only, then, in the majority of instances that menstruation occurs every lunar month. There is often evidence that peculiarities in respect to the menstrual period are transmitted from one generation to another.

Number of Days during which the Discharge continues.—In 562 cases examined by Brierre de Boismont, the discharge continued 8 days in 172 individuals; the number of days next frequently observed was 3; the next 4. The conclusion arrived at

[*] Principles and Practice of Obstetric Medicine, vol. i, p. 239.

by this author was that the menstrual flow continues longer in towns than in the country; and longer in small, nervous, delicate women, than in those who are tall, robust, and of a sanguine temperament; longer also in those who lead a sedentary, easy, voluptuous life than in those who follow active occupations, whose diet is conducive to health, and whose manners are regular.* In women who are beginning to menstruate, the discharge lasts generally a short time for the first few months, its duration increasing subsequently. The time during which the discharge continues is, in general terms, three to seven or eight days; but the observer must be prepared to meet with great variations in this particular.

Quantity.—Late observers (Magendie excepted) consider the typical quantity of sanguineous fluid which is lost at each period to be three to four ounces, or even less than this.† The older estimates considerably exceed this in amount. The quantity appears to be greatest about the middle of the period in the majority of cases. Sudden cessation for some hours together, followed by copious discharges, whether accompanied by coagula or not, is abnormal; for when there is no impediment the flow continues persistently and uninterruptedly, though it may be more in quantity at one time of the day than another.

Quality of the Fluid discharged.—The researches of Dr. Whitehead, Donné, and others, have conclusively shown that the discharge observed is really composed of blood; and that when obtained immediately from the uterus, and before it has been subjected to the action of the acid mucus of the vagina, it is coagulable just as is ordinary blood. As an illustration of this fact we find that, when the menstrual flow is excessive, clots are not unfrequently discharged. Ordinarily, as it flows from the vulva, it has acquired an acid reaction, and is no longer coagulable. For the first few hours the discharge is paler, it then becomes of a deeper red, and again appears of a lighter color as it is about to disappear. The odor of the menstrual secretion is peculiar; formerly extraordinary effects were attributed to it, which it is unnecessary to enumerate here. The varying qualities of the vaginal and cervical secretions have probably more influence in altering the qualities of the menstrual fluid than any varieties of the fluid itself as it exudes from the uterus.

* Op. cit., p. 142.   † Farre, loc. cit., p. 663.

CHAPTER II.

CHRONIC INFLAMMATION OF THE UTERUS; INCLUDING INFLAMMATION AND ULCERATION OF THE OS UTERI.

CHRONIC INFLAMMATION OF THE UTERUS.

THE subject of inflammation of the uterus is one which requires a full and careful consideration. The uterus is an organ which appears to have an extremely important position in the female economy, and the changes and modifications witnessed in its shape, size, and texture, in its vascular condition, and its relations to the nervous centres, exercise a profound influence on the individual who is the subject of them. They produce discomfort of vari-

ous kinds, they interfere with the natural performance of the functions of the uterus, prevent the procreation of children, and involve many other minor inconveniences; not infrequently they predispose to the occurrence of other disorders capable of shortening life or bringing it to a sudden and abrupt conclusion.

It is usual to speak of *acute* and *chronic* inflammation of the uterus. The remarks now to be made apply exclusively to chronic inflammation of the organ, acute inflammation resulting in abscess, being a phenomenon of extreme rarity, and probably hardly ever arising except in connection with wounds, lacerations, or other like injury to the uterus.

To study the subject of "inflammation" of the uterus is to study the whole of the textural changes to which the uterus is liable. As will be presently shown, the word "inflammation" is used not as the best, but as the most appropriate and convenient one under which to discuss this wide and extensive subject.

First let us take a brief survey of what may be designated the natural history of the uterus, the influences which are under ordinary circumstances brought to bear upon it in such a way as to affect its physical condition.

Life in the woman is made up of three periods: 1. The period preceding that of sexual activity; 2. The period of sexual activity; 3. The period following the cessation of sexual activity. The peculiarities appertaining to these three several periods appear to be almost wholly dependent on, and subordinate to, the condition of the sexual organs at the several periods in question. The sexual organs consist essentially of the uterus and the ovaries, the due exercise of the sexual functions being dependent on the presence of these two organs in their integrity. In the exercise of the sexual functions the ovary is the more essential organ of the two: physiological reasoning conclusively indicates this. It may be that alterations in the ovaries, imperceptible perhaps to us as observers, influence the economy at large in a profound manner; but what we know at present rather justifies the belief that, in cases where the disorder is dependent on the sexual organs, the uterus is the particular organ most frequently at fault.

Before puberty has arrived the uterus is small and undeveloped, and has, functionally, no existence. And it is remarkable that, during this period, and whilst it remains in this dormant condition, it is not liable to disease. Disease of the organ only begins to show itself when it begins functionally to live. After the climacteric age has been passed, and uterine life has ceased, we find that

the condition of the uterus is one very closely analogous with that
which subsists before the arrival of puberty. The uterus becomes
atrophied—physiologically dead—and the liability to disease for
the most part ceases. Thus, during the first and the third stages
of the woman's life, equally, the uterus is an organ lying inactive
and almost powerless in the economy. But this is not all. The
uterus not only enjoys a life of its own, so to speak, but it has a life
or a succession of lives within this. If the woman becomes impreg-
nated, the uterus, previously developed and matured, forthwith
starts on a new road of development, becomes remarkably altered
and changed, and, after the term of gestation has been completed,
relapses into its previous condition; the uterus becomes disinte-
grated, and its substance almost completely removed. The build-
ing up of the gravid uterus is not more wonderful than its subse-
quent destruction. Successive pregnancies involve each the for-
mation and destruction of the organ; for each pregnancy there is
the life and the death of an entire uterus.

The uterus has thus a life of its own, distinct from, and in a
certain degree disconnected with, that of other organs of the body.
And from all these considerations it results that the diseases of
the uterus have also peculiarities separating them from diseases of
other organs.

In diseases of all organs of the body, wherever situate, we wit-
ness for the most part only alterations of natural processes; and
the diseases observed in the uterus, in like manner, bear upon them
the impress of their locality. It is not intended to imply that pa-
thological processes and conditions, such as are met with in other
organs of the body, may not be met with in the uterus. Such
may unquestionably be the case: cancer, for instance, attacks the
pylorus and the uterus, and the disease is in both positions inte-
grally the same, although the tissues among which it makes its in-
roads are not of the same kind in the two cases. But it will be
conceded, after a very slight amount of consideration of the sub-
ject, that the interpretation of the pathological and other changes
in the uterus would be difficult by one unacquainted—if we could
imagine such a thing possible—with the peculiarities of the struc-
ture of the uterus and with the nature of the functions which the
uterus is called upon to perform in the economy. And it results
from what has been now said that the peculiar structure, the pe-
culiar physiological functions of the uterus, impress upon it pa-
thological conditions, phases, and characteristics, with which we

have nothing thoroughly identical, and sometimes not even analogous, in the pathological conditions of the other organs of the body.

There are two great functions in which the uterus is prominently concerned, and which are most powerful disturbing influences in regard to its textural condition; these are, menstruation and gestation. There is a third in which it is also concerned, viz., the sexual congress, which is also capable, though probably in a less degree, of affecting its textural condition. How, and why, the exercise of these functions respectively affects the physical condition of the organ and leads to disease, must now be pointed out.

MENSTRUATION.—During the whole of sexual life, the uterus is each month the seat of an unusual congestion of all its bloodvessels. Its circulation is more active, it enlarges, the sinuses—which are to be seen on making a section of the uterine walls as cavities of considerable size—become filled with blood, and its tissues engorged and expanded. It has already been shown (see "Phenomena of Menstruation") how profusely the organ is supplied with bloodvessels, it is further to be remarked that the veins are unprovided with valves, the result of which is that congestion of the uterine plexuses readily occurs. The menstrual congestion of the uterus lasts for some days even in health, the duration being probably from first to last not less than a week, and where the period is prolonged it may be considerably over a week. Scanzoni estimates the ordinary duration of the menstrual congestion indeed as nearly half of the whole four weeks which usually constitutes the "period." Prolongation of the menstrual period, or unusual intensity of the congestion for a shorter time, will thus lead in the end to a chronic condition of engorgement; for if the heart be weak, or if other circumstances interfere with the quick removal of the excessive quantity of blood from the organ, the vessels do not recover their proper size, they remain permanently larger than they should be, and as a consequence the uterus itself acquires a size which is excessive and unnatural.

Thus, under ordinary circumstances the menstrual process tends to produce uterine congestion and enlargement, but when menstruation is disturbed, this congestion is intensified and perpetuated. Scanzoni—whose classical treatise on chronic metritis* appeared almost simultaneously with the first edition of this work—is right in considering sudden suppression of menstruation as one of the most important causes of chronic inflammation of the uterus; for

* Die Chronische Metritis, 4to., Berlin, 1863.

the engorgement of the uterus natural to menstruation becomes, when unrelieved, a true congestion, the blood stagnating in the widely open vessels, and thus leading to other important textural changes.

PREGNANCY.—The changes in the uterus which are the result of gestation are of a very important character.

The most remarkable change is the increase of the *size* of the organ which is observed under the circumstances, for after the fœtus has been expelled and the uterus has been thoroughly emptied of its contents, its bulk many times exceeds that of the unimpregnated uterus. Under favorable circumstances, as is well known, the size of the uterus rapidly diminishes during the few weeks following parturition, until it finally becomes nearly, but not quite, as small as before the process of gestation commenced. This diminution in the size of the uterus is the result of a peculiar process, by which the very large muscular fibres, whose contractile power has been exercised in expelling the uterine contents, become first affected with fatty degeneration, and then undergo absorption and completely disappear. The vessels of the uterus also become at the same time much reduced in size. The process by virtue of which the uterus returns to its normal condition, is now known as the *process of involution*. The time occupied in involution is probably about two months, the greatest diminution in size occurring during the second week, after which time under ordinary circumstances the enormous muscular fibres characteristic of the pregnant uterus have become disintegrated. Immediately after delivery, the uterus has a thickness of one inch and a length of about eight inches; but by the end of the first month the reduction in size is nearly completely accomplished.
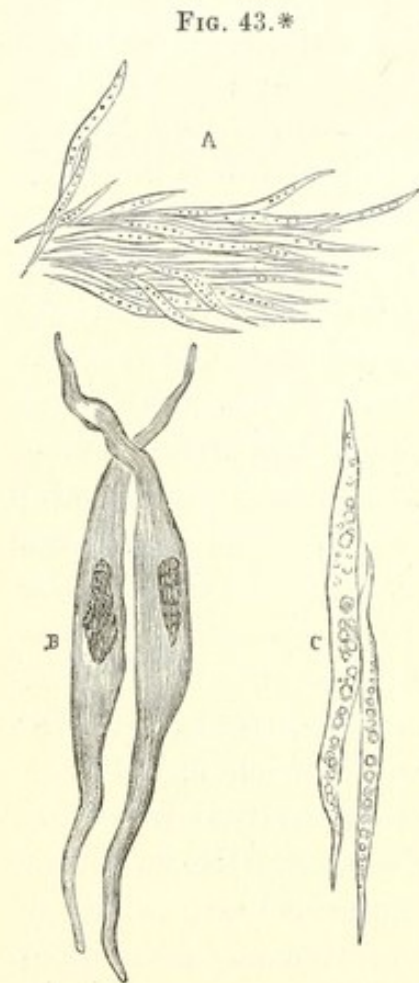
FIG. 43.*

* Fig. 43 represents three conditions of the uterine muscular fibres: A. Fibres from the uterus in the non-gravid state; B. Fibres from the fully developed gravid uterus; and C. Fibres undergoing fatty degeneration after parturition.

The muscular fibres begin to undergo transformation into fatty molecules about four days after labor, and while the metamorphosis is proceeding the uterus is friable and soft. The new tissue of the uterus, which is to replace those which have been absorbed, begins to be evident at the end of four weeks after parturition, and shortly after this we may conclude that the uterus ought to be reconstructed.* During a month and upwards after parturition, the uterus is then unduly large and vascular, and it very frequently happens that circumstances interfere with the efficient and timely completion of its involution. If the placenta be not expelled rapidly, and the uterus remains unduly enlarged for a time, this circumstance gives rise to subsequent difficulties, for coagula form in the sinuses of the uterus, and even after expulsion of the placenta these coagula by their bulk interfere with the due contraction of the uterus. Again, if the expulsion of these coagula be deferred, as is not very uncommon, the return of the uterus to its normal size is proportionately interfered with.

Again, when the nutritive changes of the body generally are in a low state, and when the individual is debilitated from any cause, the normal metamorphosis of the uterine tissue is disturbed, the blood circulates less rapidly, the effete material of the uterus is not removed, and the organ continues large, unwieldy, and congested. Defective involution of the uterus may thus be a consequence of various disturbing causes in operation after childbirth, all of which tend to leave the uterus larger than it should be; the new uterus, constructed by growth of new material, and built up in the existing large framework, is also too large and too full of bloodvessels, and this creates a very strong predisposition to the perpetration of an abnormal nutrition process in the uterus—in other words, to the production of chronic inflammation of the organ. It is almost unnecessary to mention how very important, as postponing the normal involution process, must be the occurrence of puerperal fever, uterine phlebitis, &c., in the etiology of chronic inflammation of the uterus. Abortions are probably more an effect than a cause of defective involution of the uterus, but quickly repeated pregnancy undoubtedly tends to produce it, and thus to predispose to chronic inflammation, the reason being that before the uterus is thoroughly renovated it is called upon again to undergo the gestation process. Quickly following pregnancies, especially

* See Heschl's valuable researches on this subject, Zeits. der Gesells. der Aertze: Wien, 1852. Also Dr. Farre, Cycl. An. and Phys., and Prof. Priestley, On the Development of the Gravid Uterus, London, 1860.

when they occasionally result in abortions, both cause and are a cause of defective involution process.

SEXUAL INTERCOURSE.—The erection of the uterus described by Rouget and others as occurring during ovulation (see "Phenomena of Menstruation") occurs also during the act of intercourse. At least this is highly probable. Sexual excesses predispose to chronic congestion of the uterus, inasmuch as they involve too frequently repeated, or too long continued, engorgement of the uterus and other generative organs. In young women recently married it is by no means uncommon to meet with a condition plainly brought about by excess of the kind here alluded to, and but little is required under such circumstances to produce a chronic engorgement of the organ, and the further train of evils usually following in its wake. It appears to be quite certain also, that unnatural excitation of the generative organs in women leads to uterine mischief of various kinds, and inasmuch as it promotes and maintains a chronic congestion of the organ and of its vessels, tends to give rise to chronic uterine inflammation.

This brief retrospect of the mechanical results of the performance of the natural functions of the uterus will suffice to show the direction in which we are to look for the explanation of its various morbid conditions. The nutrition-process in the uterus is, as a consequence, very liable to derangement, this derangement showing itself for the most part in two ways: first, by increasing the bulk of the organ; secondly, by changes affecting the structures of which the uterus is built up. When these changes are evident in the uterus, the organ is said to be affected with chronic inflammation.

The results of pathological inquiry is to show that the condition described as chronic inflammation of the uterus can only be correctly so termed with certain important reservations.

In Dr. Henry Bennet's well-known work,* inflammation of the uterus has been made the groundwork and basis of the system of uterine pathology there laid down. Andral suggested that the word should be removed from medical nomenclature, on account of the vagueness of the expression and the arbitrariness of the interpretation given to it under different circumstances; and a more recent and equally celebrated pathologist, Dr. J. Hughes Bennett,† ably pursues the same argument. "If the use of the

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* On Inflammation of the Uterus.

† For an exposition of Dr. J. Hughes Bennett's views, see his Lectures, Lancet, 1863.

word inflammation be retained," says Dr. Bennett, "it should be applied only to that perverted alteration of the vascular tissues which produces an exudation of the liquor sanguinis; it is this exudation only which can be held to unequivocally characterize an inflammation."

Tested by this standard, 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.

If we apply the term "inflammatory" to the great majority of cases of uterine disease which come before us, it must be in a sense different from that in which the word is used by Dr. J. Hughes Bennett, and we must be understood to mean by it simply a perversion of the nutritive action in the organ affected, and not necessarily a condition of which exudation of liquor sanguinis forms an essential part. There appears, however, to be no great objection for the present to designate the condition present in these uterine affections as one of "chronic inflammation"—the physical changes most frequently resulting from this chronic inflammation of the uterine tissue being congestion, undue sensibility, and hypertrophy.

The word "inflammation" is also used in describing the changes witnessed in the mucous membrane and secreting structures of the uterus. We speak of bronchitis, of coryza, as inflammations; and if the term be properly applied to these affections, it is difficult to withhold the use of the same term from cases in which there is analogous excessive secretion of the mucous surfaces of the uterus. Copious secretion from the glands of the cervix uteri, for instance, is evidence of excessive activity of these glands—which excessive activity may, under many circumstances, be as justly described as inflammatory as the increased secretion of the nares in coryza.

The pathological view expressed as above in the first edition of this work is quite identical with that taken by Scanzoni in his

late treatise on chronic inflammation of the uterus. The opinion of this distinguished authority on this important subject is, that the term chronic metritis is not a valid one for all the cases so called; that in many instances—indeed in many of the cases of enlargement distinguished as inflammatory—the condition is not inflammatory in the true sense of the word, but that they are constituted by alterations of nutrition (*Nutritionsstörungen*) such as we frequently observe in other organs as the effect of long-continued venous hyperæmia.*

The changes met with in the uterus are not always the same. Thus the increase in bulk may be attended with alteration in texture or not, and there may be change of texture without considerable change in size, but the variations observed are rather due to differences in degree than in kind. The principal variations may be thus enumerated:

1. The uterus as a whole is simply *engorged*. Here the tissue is natural and as yet unchanged, save in the addition of a fluid or semi-fluid material exuded between the natural tissue, the remarkable thing being the fulness of the bloodvessels (perhaps also undue thickness of their walls). The consistence of the tissues of the uterus is unchanged, but the organ is large, and the walls thicker than they should be. This condition is one with which we are familiar clinically, but not otherwise, for death destroys the characteristic appearances. Scanzoni terms this the stage of infiltration.

2. The tissues are indurated. Here the characteristic is undue hardness and firmness of the uterine tissues, the uterus being also, as a rule, larger than customary. The vascular, spongy, dark, livid state has now passed away, leaving the uterine tissue comparatively white on section, very firm—so much so indeed sometimes as to creak under the knife—and unyielding. Regarding the exact nature of the change here present opinions are divided: thus, Virchow believes the condition to be due to excessive growth or deposition of connective tissue, while Scanzoni considers that the increase in quantity of the muscular tissue is the most marked feature. The vessels are diminished in size in the indurated tissue. The induration may affect the body of the uterus—in which case we should expect to find the muscular element to be mainly increased—or the cervix. Hypertrophy and induration of the cervix is, as I have had frequent occasion to observe, associ-

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* Op. cit., Berlin, 1863.

ated with great increase in the quantity of the connective tissue of the part.

We find various modifications of these two stages present in different cases; the induration stage is not arrived at quickly, but only after repeated and long-continued attacks of congestion.

Comparative frequency with which the different parts of the uterus are affected.

The great attention which has been paid to the abnormal conditions of the os and cervix uteri has, up to within a very recent period, led to a comparative neglect of the study of the condition of the body of the uterus. The introduction of the speculum was the means of acquainting observers with facts relating to disorders of the os and cervix with which they were not previously familiar, and the result was that the diseased condition of the body of the uterus, necessarily out of the reach of sight, did not for the moment receive due attention. This is a question which I have before discussed (in the first edition of this work, p. 306), when criticizing the views of Dr. Henry Bennet on the subject of inflammation and ulceration of the os uteri. The question has also been ably treated by Dr. West,* and has been more lately still most ably handled by Scanzoni, with whose views on this important subject my own are for the most part in accordance.

The os and cervix uteri are generally more or less affected when the uterus is the seat of those textural changes to which we give the name chronic inflammation of the uterus; but what we generally find is, that the body of the uterus is at the same time altered. A diseased condition of the os and cervix uteri, as revealed by the speculum, is as a rule associated with disease of the fundus or body of the organ.

It has been argued that the morbid conditions of the os and cervix (inflammation, ulceration, &c.) are more important in their relation to the production of suffering than those of other parts of the uterus. This I do not for a moment believe, and indeed, if any comparison is to be drawn between the two parts of the uterus, the body and the cervix, I should consider the affections of the body as the more important. It is not meant to insinuate that the local changes observed in the cervix have no importance, or that they are to be disregarded, but this is very different from giving them the first place. There are probably few uterine

* Lectures on Diseases of Women.

diseases or affections of any considerable duration which do not, directly or indirectly, produce some alteration in the os and cervix uteri: this is an almost inevitable consequence of the relation of this part of the organ to the uterus generally. On the other hand, there do now and then occur cases in which the affection of the cervix uteri which is present assumes a comparatively great importance; and that disease of the cervix may give rise to confirmed uterine suffering it is impossible to deny; but there do not appear to be sufficient grounds for the belief that disease of the cervix is the thing which is to be regarded as dominant in uterine pathology.

Alterations in the mucous membrane lining the uterus and covering the os and cervix uteri.

The alterations in the texture of the uterus which has been described are generally associated with changes in the mucous membrane of the uterus, the secretions from the surface being increased in quantity, and the surface itself becoming texturally changed in a variety of ways. We are most familiar with the changes as affecting the os and cervix uteri, because the portions of the uterus in question are directly accessible to inspection, but the alterations of the mucous membrane lining the body of the uterus are now beginning to receive what may be termed a due share of attention.

Chronic inflammation of the lining of the uterus has, as results, thickening, undue vascularity of the mucous membrane, and hypersecretion. And other changes are present in most cases where the uterus itself is in a state of chronic inflammation. Excessive activity of the secreting structures of the cervix is the most frequent cause of leucorrhœa. It is very probable that the uterine lining undergoes important modifications in many cases, and we have tangible proof of this in the occasional discharge of membranes from the uterine cavity, these membranes being the hypertrophied and otherwise altered mucous lining of the body of the uterus (see "Dysmenorrhœa").

Chronic inflammation of the uterus predisposes to dislocations of the uterus; the greater bulk and less resistance of the organ present in the congestive state of the affection appears to allow the organ to assume very readily shapes and positions of abnormal character. Retroflexion of the uterus, one of the most troublesome affections to which women are liable, generally arises in this way.

Chronic inflammation of the uterus is very frequently indeed

associated with ovarian mischief. Pain in the ovarian regions, tenderness of the ovaries, and other manifestations of alteration in these organs, are almost invariably observed to accompany it.

The SYMPTOMS produced by chronic inflammation of the uterus are very various in different cases, their intensity depending on— 1. The condition of the patient in other respects, a weakly individual suffering much more than another from the same degree of uterine disease; and 2. On the nature of the complication—if any —present. According to my own experience, the secondary evils give rise to most distress, e. g. flexions of the organ. Very many of the painful sensations present have appeared to me to be associated with the increased bulk of the uterus, and the pressure thereby produced on neighboring nerves, or on the dragging produced by the unusual movements of the organ.

Many of the symptoms produced by chronic inflammation of the uterus cannot be distinguished at first sight from those occasioned by chronic ovaritis, and it is necessary to state this fact in describing the symptoms of the former disease. Pain low down in the pelvis, pain in the back, both increased by walking, a chronic irritability of the bladder, undue discharge from the vagina—these are the symptoms most commonly observed. Pains radiating to the upper and inner part of the thighs, hyperæsthesia of the vulva, obstinate pruritus of the vulva, are also not rarely produced by it. The general symptoms are, of anæmia, a low state of the nutritive function, lassitude, debility, and general want of tone. These general symptoms are usually secondary, and are consequent on want of exercise, fresh air, and the inability to take nourishing food. The digestive organs are usually comparatively inactive. Sterility is a frequent effect; the menstrual functions are almost always disturbed, the periods being painful, and the loss often excessive.

A peculiar class of cases have become associated together since the days of Gooch, under the term "irritable uterus." Gooch's graphic description of these cases is well known: "A young or middle-aged woman, somewhat reduced in flesh and health, almost living on her sofa for months, or even years, from a constant pain in the uterus, which renders her unable to sit up and take exercise—the uterus, on examination, unchanged in structure, but exquisitely tender; even in the recumbent posture always in pain, but subject to great aggravation more or less frequently."

The late Dr. Ferguson* was perhaps right in believing the irri-

* Prefatory Essay to Gooch's Writings. New Syd. Soc.'s edition.

table uterus, to be a disease more particularly observed where there is an hereditary taint of gout or rheumatism, or where the patient is the offspring of very nervous parents. I cannot but believe, however, that some of Gooch's worst cases must have been really cases of flexion of the uterus. The affection as he describes it is certainly not often met with, while the symptoms described are just such as accompany chronic flexion—particularly retroflexion of the uterus.

INFLAMMATION AND ULCERATION OF THE OS UTERI.

It will now be necessary to direct attention particularly to the various abnormal conditions of the os uteri, and the vaginal part of the cervix uteri, which may be termed "inflammations," and to consider also the subject of ulceration of the os uteri.

The question as to the relative importance and frequency of the lesions here witnessed, as compared with those of the body of the uterus, has already been discussed, the conclusion adopted being to the effect, that while the changes in the os and cervix are undoubtedly of great importance, and of unquestionable frequency, they form only a part of the malady from which the patient is usually found to be suffering.

In the first place it will be advisable to premise a few observations on the anatomy and pathology of this particular part of the uterus, directing attention to the *coverings and surface* of the os and cervix uteri, its *substance*, and the extensive *glandular apparatus* which lines the cervix : to each of these must be assigned its due importance in offering an interpretation of the pathological alterations which may be met with.

The "*os uteri*" is the lower opening of the canal of the cervix. It is a round opening, occasionally, however, transverse in shape, bounded by two "lips," an anterior and a posterior ; the lips are smooth, uniform, and regular when the woman has had no children, but the surface is more or less fissured, the os uteri being bounded by less regularly formed lips in women who have had children. The virgin os uteri is uniform, the vaginal portion regular and conical in shape ; that of multiparæ is larger, irregular, and usually softer.

The appearances presented by the surface of the os uteri it is particularly important to bear in mind. The lips of the os uteri— that is to say the surface of these lips—present an appearance very different from that which is observed in the *interior* of the os uteri, and under ordinary circumstances the view obtained by the specu-

lum is not simply that of the labia of the os, but of a portion of the interior of the cervix also. The surface of the interior of the cervix differs greatly in appearance from that presented by the surface of the labia, both in regard to the color and in other essential particulars, and there is an abrupt line of demarcation always evident, and generally remarkably so, between the surface of the interior of the cervix and that of the labia of the os uteri.

The *lining of the cervix uteri*—the minute anatomy of which was first thoroughly described by Dr. Tyler Smith—is not smooth, but furrowed and plicated so as to present numerous depressions and elevations (see Fig. 44), by which the amount of surface is very

FIG. 44.*
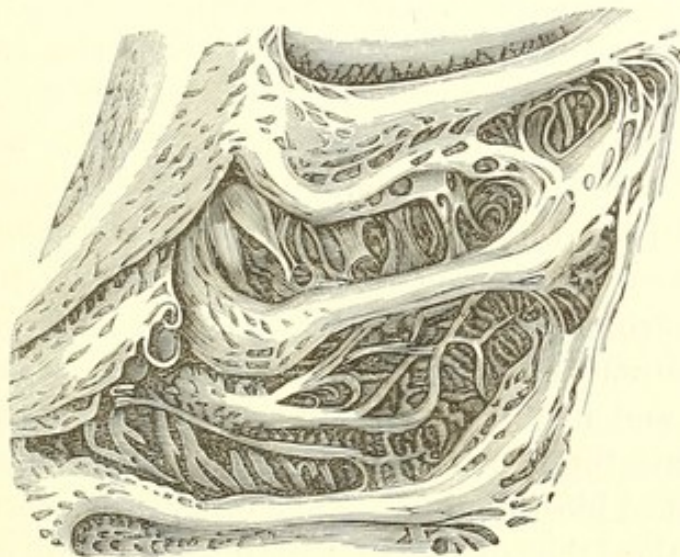
largely increased. The arrangement of two folds or plicæ varies in different cases. There are usually four prominent elevations longitudinally placed, and four columns of rugæ or folds of mucous membrane; and lateral transverse branches are given off from these, the whole thus acquiring a palmated aspect; and between these different elevations are seen others more minute. The whole surface thus presents a cribriform aspect. In the recesses formed are the openings of multitudes of glandular crypts. The observer, under ordinary circumstances, sees the lower and a small portion only of the surface of the interior of the cervix.

Contrasting with the cribriform irregular surface just described, the labia of the os uteri present a smooth uniform mucous surface.

* Fig. 44 is a magnified representation of the interior of the cervix uteri. (From Tyler Smith.)

The labia may themselves be lobulated, and thus irregular, but the surface itself is smooth and uniform. The epithelium covering the labia is of the squamous variety, identical with that lining the vagina, but *within the cervix* the epithelium changes, and the surface is covered by cylindrical epithelium. Higher up within the cervix, and therefore usually beyond observation by means of the speculum, the epithelium becomes ciliated.

Such are the normal characters of the surfaces presented to the view by means of the speculum. It is necessary in the next place to describe the anatomy of the parts immediately beneath these surfaces, the interpretation of certain pathological appearances, by and by to be alluded to, requiring a knowledge of these.

The surface of the labia is covered by a somewhat thick layer of squamous epithelium, as already remarked. Beneath this epithelium is a fine basement membrane, and these two cover certain important structures—the *villi* or *papillæ*. These are described by Dr. Tyler Smith as long, single, or bifurcated, vascular bodies, sometimes so large as to be visible to the naked eye. They are rendered evident by macerating the cervix uteri in water, when, the epithelial covering becoming detached, the villi are seen forming an irregular fringe over the whole surface. *Within the cervix* there are also villi of a somewhat analogous character, but not bound down and hidden by epithelium, as in the other position, and the villi are three or four times larger; they contain in both situations looped bloodvessels. The interior of the cervix further differs from the labia of the os uteri in being provided with an enormous number of mucous crypts capable of pouring out secretion in large quantity, whereas there appears to be an almost entire absence of these glandular organs in the mucous membrane covering the labia.

Thus, if the whole of the epithelial covering were removed from the surface of the labia of the os uteri there would be presented to the eye a bright red, somewhat irregular, surface constituted by the free extremities of the villi in question. An appearance somewhat similar to this is normally presented in the cavity of the cervix, by the villi there situate, but in the latter position the surface is more irregular, due to the large size of the villi, and of a deeper red, owing to their greater vascularity.

The pathological condition of the surface of the os and cervix uteri, to which attention has been very much directed, is "ulceration," as it is termed. Almost every variety of change observed has been termed "ulceration," and it is for this reason necessary

to endeavor to arrive at some clear and definite ideas on this subject.

In the first place it appears that the mistake has often been committed of mistaking for an ulcer a simple *eversion of the lining of the cervix*. Dr. Farre* has pointed out this source of fallacy. His remarks on the subject are as follows: " In the more common degree of hypertrophy with eversion, a crescentic protrusion only of the cervical lining occurs. The unevenness of the surface caused by the slightly swollen and prominent rugæ, and as often by the numerous little depressions consisting of enlarged mucous crypts, according as one or the other of these is the predominant normal structure in the cervix, gives to the part during life the appearance of a raw and granular surface, while the natural boundary between the lower edges of the cervical canal and the lips of the os tincæ being now transferred on to the latter, in consequence of this eversion, an abrupt semicircular line becomes visible, which while it only indicates the natural termination here of the vaginal epithelium is frequently mistaken for the margin of an ulcer" (p. 694). The stretching of the parts, which is sometimes produced by the mere introduction of the speculum, may give rise to this kind of eversion of the lining of the cervix, whenever the os uteri is a little lax and soft and slightly open. The observer only requires to be warned of the error here alluded to, in order not to fall into it; by simply moving the speculum a little it will easily be made evident whether the dark or circumscribed spot be the everted lining of the cervix or not.

The word " ulceration," as applied to certain conditions of the os and cervix uteri, has itself given rise to very much dispute and contention. By some pathologists it is stated that nothing is more common than " ulceration" in this locality; by others this frequent presence of " ulceration" is as strenuously denied. It is not difficult to perceive that those who make these opposing statements as to the presence of ulceration are not even agreed as to the meaning to be attached to the word " ulceration," and this being the case, it is not to be expected that there should be agreement in other particulars.

Conditions of the Lining of the Cervix to which the term "Ulceration" has been applied.—Dr. Arthur Farre remarks on this subject that many of the appearances and conditions of the uterine cervix to which the term ulceration has been applied, when minutely

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* Cycl. Anat. and Phys., article " Uterus."

examined and tested by the aid of the microscope, so little fulfil the conditions of true ulceration as to make it appear that such a term could only have been applied to them under, in some instances perhaps, a misapprehended, and in others a strained view of their real nature."* Dr. Farre proposes, with the view of preventing further misconception on the subject, to adopt Mr. Paget's suggestion of "regarding as abrasions or excoriations those conditions in which the epithelium or epidermis of an inflamed part is alone removed, and those only as ulcerations in which the removal extends further to the vascular or proper tissues beneath the epidermis."†

Dr. Henry Bennet, who contends for the frequency of ulceration, appears to draw his conclusions as to the presence of "ulceration" chiefly from the nature of the secretion of the affected surface. Dr. Bennet admits that the particular physical condition of the surface itself, usually considered as indicative of ulceration —viz., excavation—is wanting, and further that the margin is never abruptly indurated. In fact, "ulceration," taking Dr. Bennet's view of the question, means a condition of the surface of the mucous membrane associated with secretion of what is termed by him "muco-pus."

In weighing the reasons for and against the opposing views on this subject, it must be recollected that the particular surface about which there has been so much dispute, under *ordinary* circumstances secretes a mucous fluid : it is not like the skin. If a portion of the skin of the arm, for instance, were the seat of a purulent secretion, such a purulent secretion would be a sign of ulceration—of breach of surface ; but it is not necessarily so with the surface of the os and interior of the cervix uteri : the difficulty of distinguishing between mucus and pus is well known. Normally a secretion is poured out from the glands lining the cervix, which, mixed with the vaginal mucus, assumes a physical appearance very like that of pus, and it can hardly be admitted that the presence of muco-pus is indicative of ulceration in the ordinary sense of the word. Again, if "purulent" discharge be the indication of the presence of ulceration, it might be expected that a certain degree of ulceration would be attended with a corresponding quantity of purulent discharge. Dr. Bennet states that "the patient may suffer from decided ulceration, and yet have no recognized vaginal discharge."‡ This fact, damaging to the validity of Dr.

* Loc. cit., p. 695.   † Ibid., p. 696.   ‡ Op. cit., 4th ed., p. 85.

Bennet's views, he explains by supposing that the secretion is absorbed in the vagina—an explanation not altogether satisfactory. The condition of the interior of the cervix which Dr. Bennet terms "inflammatory ulceration," Dr. Farre describes as inflammation, thickening and hypertrophy of the papillæ, follicles, and rugæ of the cervical canal. It is evident that the condition described by the latter author is to all intents and purposes the same with that to which Dr. Bennet applies the term "ulceration."

Again, it has been maintained by some observers that ulcerations of the cervix uteri, of the "fungous" variety, occur frequently during the early months of pregnancy, and often give rise to serious consequences. More extended observation has shown, however, that ulceration, or the condition described as such, of the cervix is to be regarded as a normal condition. Cazeaux* describes the appearances during the *latter* half (and his description agrees in essential particulars with that given by others during the *first* half) of pregnancy as follows : " The walls of the cervical cavity are very unequal, and present an irregular series of fungous projections separated by more or less deep depressions. Some of these prominences are transparent, being probably due to hypertrophied follicles, but others resemble true flabby vegetations. Sometimes these are covered by a protective epithelium, but it is not unusual for them to be deprived of this, and then to bleed on the slightest touch. It is especially within the furrows which separate them that more or less deep linear ulcerations are often observed. These ulcerations sometimes so increase in size as to occupy a pretty considerable surface, and then they are easily seen ; but generally they are hidden in the depths of the anfractuosities, and in order to perceive them, after well cleaning the surface, we must put the cervix on the stretch by opening the instrument widely." Cazeaux has observed such ulcerations in seven-eighths of the cases he has examined. In a case of Fallopian pregnancy, fatal at two months of gestation, which came under my own notice, the hypertrophied fungous condition of the villi at the os uteri was very evident ; the symmetrical and indeed beautiful appearance of the villi in question gave the idea of a physiological and not a pathological alteration of the parts in question.

These latter facts are of the greatest possible importance in

* See Mém. de la Société de Chirurgie de Paris, t. iv ; also Brit. and For. Med. Chir. Rev., July, 185⁸, p. 136.

reference to the general question of what constitutes "ulceration" of the os and cervix uteri. It cannot be doubted that the mucous lining of the cervix and of the os is liable on slight provocation, so to speak, to take on changes of the kind which have just been described; if we admit that these are cases of "ulceration," then it is easy to admit also that ulceration is of frequent occurrence. It is not easy to conceive, however, that changes which, by whatever name they be called, may be at all events associated with perfect health on the part of the individual, the subject of them can be *justly* designated by such a term as "ulceration," a term in itself conveying to most minds peculiar ideas as regards the importance and gravity of the changes in question.

Thus far, we have been speaking of the mucous membrane lining the cervix; the alterations which may be witnessed in the mucous membrane covering the *vaginal part of the cervix uteri*, and to which the term "ulcerations" has also been freely applied, require next to be mentioned.

EROSION, EXCORIATION, OR ULCERATION OF THE OS UTERI.

One class of cases is that in which the epithelium covering the os uteri and adjacent part of the cervix is loosened and detached, leaving exposed the villi of the mucous membrane. The surface has a more or less bright red appearance, and is soft and velvety to the touch. When nitrate of silver is applied, the distinction between the abraded and the healthy surface is rendered very evident. It is accompanied generally by an unusual secretion from the glands of the cervix, and by a full, congested, or if the word be preferred, inflammatory condition of the mucous membrane, and frequently of the tissues of the part generally. This abrasion is considered by Dr. Tyler Smith to be dependent on the corrosive properties of the secretion brought into contact with the surface.

Several varieties of erosions have been described by authors; thus an *aphthous* form is alluded to, in which the epithelium is raised in the form of little vesiculæ or bladders; other forms have been spoken of, and distinguished by names according to their fancied resemblance to eruptions on the skin. The various appearances presented would seem to be due rather to accidental circumstances than to fundamental differences.

Cases in which there is simply abrasion may be observed; but in many instances there is something more than loss of epithelium; the surface has in these cases an eaten, corroded appearance, due to the fact of "the loss or partial destruction of the villi" (Tyler

Smith). The destruction of surface may be so trifling that it requires care to discover it, or it may be much more considerable, giving the surface an appearance of real ulceration. When the surface has been abraded for some time, it assumes a more or less *granular* appearance, and this is evident both to the eye and to the touch; and the greater part or the whole of the os uteri may in certain cases present a raw rough surface of a bright red or livid and bluish color. This condition of the surface may not improperly be spoken of as "ulceration."

Further, the exposed surface is apt, in chronic cases for the most part, to assume a *fungous* appearance, that is to say, the papillæ in certain situations become hypertrophied, and form minute elevations distinguished by their brighter red color from the adjacent parts. Such appearances are generally associated with the hypertrophied condition of the villi lining the cervical canal previously described.

True ulcerations of the vaginal portion of the cervix uteri are sometimes met with. They are generally associated with enlargement and hypertrophy of the cervix uteri, whatever may be the cause of that enlargement; or with those affections of the uterus usually classed under the term "prolapsus uteri." They are apparently produced by the mechanical irritation to which the cervix is exposed, and have all the characters of ordinary ulcerations.

Another form of ulceration of the os and cervix uteri, which is rare, is by some authors believed to be of cancerous nature, by others to be of *tuberculous* nature. Dr. West, in whose work* will be found a careful résumé of what has been said by different authorities on the subject, believes that these intractable ulcerations are instances of epithelial carcinoma; and he agrees with Robin in considering that this kind of ulcer is to the uterus what lupus or cancroid ulcers are to the face. There appears to be no reason, however, why both sides should not be right, or for denying that both tuberculous ulcers of chronic nature, and lupoid disease of the cervix uteri may be witnessed, though not of course in the same individual. It can very rarely happen that this question will arise practically for determination, these intractable ulcerations being very uncommon.

* Op. cit., p. 361.

SYPHILITIC AFFECTIONS, ULCERATIONS, ETC., OF THE OS AND CERVIX UTERI.

Concerning true chancre—primary syphilitic ulcer—of this part, there is but little difference of opinion. It is pretty well understood that it is very rare, although it has been observed. Chancre of the os or cervix uteri presents an appearance like that of chancre observed elsewhere; it is said that there is a greater disposition on the part of the ulcers here situated to bleed. The only conclusive evidence of the nature of the ulcer would be its reproduction by inoculation.

Respecting *secondary syphilitic* eruption, or ulceration of the os and cervix, there has been much discussion, nor is it at all settled how frequently ulceration is present in individuals affected with secondary syphilis. It does not appear that there is anything peculiar about the character of the ulcerations present in these cases, or which would enable us to say at once that such and such an appearance was due to syphilis. Dr. Tyler Smith, whose arguments appear to carry very much weight, holds that "in almost all cases in which leucorrhœa and disease of the os and cervix uteri are present in women suffering from constitutional syphilis, the uterine symptoms are a genuine manifestation of the constitutional or secondary disorders."* And this author considers that a large proportion of the cases described by Drs. Bennet and Whitehead as cases of idiopathic inflammation and ulceration of the os and cervix were really cases of this kind.

The diagnosis of secondary syphilitic ulceration of the os and cervix will be materially influenced by the presence or absence of a syphilitic history in the particular case, and before proceeding to form a decision on the point all the antecedents of the patient must be carefully scrutinized. The effects of anti-syphilitic remedies would frequently assist us in coming to a conclusion.

We may in the next place consider the anatomy and pathology of the *substance of the cervix uteri*. In endeavoring to estimate at their true value in relation to the pathology of uterine affections, the appearances presented to the eye by means of the speculum, certain considerations of a purely anatomical nature appear to have been too little insisted upon. The vaginal part of the cervix uteri—the part which is brought into view by means of the speculum—is only a portion of that large segment of the uterus comprised under the term "cervix." The structure of the cervix, in

* On Leucorrhœa, p. 98.

the extended sense of the term, appears to be identical throughout, and the cervix forms a canal, serving as a communication between the vagina and the uterus proper. It is reasonable to suppose that any change affecting the tissue of the vaginal portion of the cervix will be participated in by the supra-vaginal part of the cervix; from which it follows that inflammation, engorgement, swelling, or congestion of the *vaginal* portion, implies for the most part a corresponding condition of the remaining less accessible portion of the cervix. In the next place the canal of the cervix presents glands of the same kind throughout, these glands being exceedingly numerous, and capable, under certain circumstances, of secreting an enormous quantity of mucus. We are unable, under ordinary circumstances, to view more than a small part of this large secreting surface; and when a discharge is seen issuing from the surface of the lower part of the canal, this almost necessarily implies that at the same moment the whole canal is secreting in pretty nearly the same degree. Correspondingly, a certain condition of the villi of the mucous membrane at the os uteri being present, it is not unreasonable to conclude that the villi of the mucous membrane situated higher up are affected in like manner.

The *tissue* of the cervix itself is made up of elements resembling those of the body of the uterus, that is to say, of fusiform fibre cells—involuntary muscular fibres—intermixed with bundles of fibres of white fibrous tissue, together with a copious supply of bloodvessels, &c. The chief structural distinction between the cervix and the body of the uterus lies in the fact that the connective tissue exists in much larger quantity in the cervix than in the body of the uterus, and that it is of a stronger and tougher kind.* Further, there is the peculiarity that a certain and by no means inconsiderable portion of the thickness of the cervix is composed of a layer of glands known as the glands of the cervix. To the existence of these latter considerable importance must be attached in reference to the present inquiry. The fact that the tissue of the cervix is chiefly composed of involuntary muscular fibres has a very important signification in reference to the nature of the conditions spoken of by authors as *inflammatory enlargement, induration, chronic hypertrophy*, &c., of the cervix uteri. It is well known that the anatomical element in question has a remarkable peculiarity; under the action of certain stimuli, also in their absence, very frequently, it grows and enlarges, the result being that

* See Farre, loc. cit., p. 368.

the whole organ, or a part of the organ, becomes larger. Thus it is that the uterus grows during pregnancy, thus it is that its walls become thicker under a variety of other circumstances. Hence, given an irritation, it is easy to see how increase in the size and thickness of the cervix uteri may be produced, simply by the inordinate activity and growth of the part. The term "inflammatory," as applied to the enlargement in question, although perhaps the best which in the present state of knowledge is available, appears imperfectly to represent the condition of things actually present.

The substance of the cervix is well supplied with bloodvessels. It has been shown by Rouget (see "Phenomena of Menstruation," p. 344) that externally to the cervix and the body of the uterus there exists a vast network or plexus of arteries and veins, in virtue of the presence of which the uterus is an erectile organ. That the lower part of the uterus which is within the reach of digital exploration does become temporarily increased in size, the size rapidly diminishing within a very short time, I have been long convinced by observation, and in Rouget's anatomical facts we find the explanation of the circumstance. This is interesting in relation to the question of the nature of enlargements of the cervix.

The *glandular* element in the cervix uteri is one of considerable importance. The glands of the cervix uteri are the source of the discharge in most cases of profuse leucorrhœa, and under certain circumstances they pour out a very considerable secretion. Normally, the secretion in question is a thick, viscid, transparent mucus, and when the generative organs are, so to speak, in a state of rest, the quantity of the secretion is probably not considerable.

In the next place it must be recollected that the secretion of the glands of the cervix may alter in physical characters, that alteration being due to accidental or at all events non-pathological causes. Thus it is reasonable to suppose that, like the mucous secretion from other surfaces of the body, it is liable to fluctuations in regard to the proportion of fluid and solid constituents. Such variation is witnessed in the secretion of the nasal passages, in the case of a "cold in the head," as it is termed. This apt comparison is Dr. Bennet's.

As stated in another place, the cervical secretion becomes altered in its physical characters, by admixture with the mucus secreted by the vagina, the result being the production of a fluid which may be creamy, or puriform, opaque, or more or less trans-

parent, according to varieties in the quantities of the secretions from the two surfaces, both positively and relatively.

A considerable proportion of the abnormal (and not a few of the normal) conditions presented to our view, by means of the speculum, have been set down as due to *ulceration*. The bearings of the question as to " ulceration " have been already considered. We have now to consider the relation which subsists as cause and effect between *inflammation* and the various conditions liable to be presented by the os and cervix uteri. The remarks already made on the subject of inflammation of the body of the uterus equally apply here, this part of the uterus undergoing, rarely alone, but generally in conjunction with other parts of the uterus, changes identical in character. The tissues of the cervix uteri, and more especially the os uteri, present these changes in very many cases, and it is hardly possible to consider them as anything but " inflammatory," although the term may fail frequently to convey an adequate idea of the condition of the parts. There is frequently nothing more than simple congestion present in these cases; added to this, and intensifying it, we may have the sort of erection of the part previously alluded to. But this congestion, when it has lasted for any considerable time, passes into a condition of chronic activity of the secreting structures of the part, of morbid vascularity, &c., conditions for which no other term but " chronic inflammation " seems appropriate. The hypertrophy of the villi (described erroneously as ulceration), and hypertrophy of the tissues generally, which may be witnessed in all degrees and of all kinds, are further results.

In the first stage of " inflammation " of the kind now under consideration, we find the os uteri open, larger than usual, the lips swollen, usually soft, and a copious secretion proceeding from the cervical canal. The congestion present shows itself, as would be expected, most prominently in the mucous membrane itself, hence the large size which the papillæ acquire, the fungiform appearance they are liable to assume, and the increase in the secretion poured out from the entire mucous surface.

The causes which give rise to the abnormal condition of the os and cervix uteri now under consideration are identical with those already described as occasioning chronic inflammmation of the body of the uterus.

In another class of cases, in addition to the characters described, the lips of the os uteri are indurated, as well as enlarged, the enlargement being itself more considerable than in the class of

cases just alluded to. The hypertrophy now under consideration must not be confounded with that condition in which the cervix is *elongated*, and which is of a different nature. The size of the os is here increased, the finger passes in readily, there is a more or less copious secretion, and the lips of the os are very frequently split up, so to speak, into rounded elevations, between which are deep fissures. The elevations themselves are hard, firm, pretty uniform in density, and the vaginal portion of the cervix uteri may thus attain a very considerable size. This condition is met with in women who have had children, and who have been under the same etiological conditions as those included in the last series of cases. The fissures result from slight lacerations occurring during parturition, which, originally perhaps very slight in degree, become magnified, owing to the increase in size of the lips of the os. Respecting the condition of the tissues of the os uteri here present it has already been stated that the bulk of the enlarged labia is composed, not so much of inflammatory products as of actual hypertrophy and increase of the normal tissues of the part. The hardness presented by the lips of the os under such circumstances is often very remarkable (see " Digital Examination of the Os Uteri "), and such as to excite in the mind of the inexperienced observer a suspicion of the affection being cancerous. The body of the uterus is often affected in the same way in these cases. Erosions and ulcerations may be observed in connection with the affection. Slight exudations of blood often take place from the surface of the hypertrophied mucous membrane, and the discharge as it appears at the vaginal outlet is consequently sometimes of a sanious character.

TREATMENT OF ACUTE INFLAMMATION OF THE UTERUS.

ACUTE inflammation of the uterus very rarely comes under the notice of the practitioner, although acute inflammation and formation of abscess in the tissues immediately adjacent to the uterus, are not by any means unfrequently observed. It has been chiefly noticed as an effect of injuries, *e. g.* in the act of intercourse, as a result of sudden suppression of the catamenia, and as a consequence of gonorrhœal infection; and it may occur after parturition.

The treatment required in cases of acute inflammation of the uterus will vary according to circumstances, but certain general rules apply to all cases. The patient must be kept in a state of absolute repose, and in the horizontal position. Depletion, by

means of leeches over the hypogastric region, to the inside of the thighs, or to the os uteri, or by cupping in the lumbar region, will be required, and in some cases venesection may be advisable at the onset of the disease. Warm poultices, warm injections into the vagina, and opiates, would be necessary; the diet should be at first non-stimulating. In cases where inflammation has gone on to the formation of abscess, a different system of treatment is required, and measures of a fortifying character will be imperatively necessary. (See " Treatment of Pelvic Cellulitis and Abscess.")

TREATMENT OF CHRONIC INFLAMMATION OF THE UTERUS.

It has been already stated (p. 363) that the term " chronic inflammation," as applied to affections of the uterus, has a meaning not quite identical with that which it possesses when applied to affections of other organs, and that it must be understood to imply the presence of a condition which gives rise to a great variety of symptoms, and to effects which are not identical in kind or degree in different cases. In the treatment of chronic inflammation of the uterus, the object of primary importance is obviously to remove the morbid condition underlying these symptoms, and how that is best to be effected it is now our object to determine.

There are two classes into which all cases of chronic inflammation of the uterus may, for therapeutical purposes, be divided, viz., 1. Cases in which the affection is of local origin; 2. Those in which it is of constitutional origin. The treatment is preventive and curative.

Defective involution of the uterus after delivery is a condition which frequently leads to troublesome chronic uterine disease, and it is of the utmost importance, in cases where there is a tendency to the affection, to take steps to insure contraction of the uterus after childbirth. The patient should maintain the horizontal posture for some days, and should not be allowed to perform movements calculated to strain the abdominal muscles. And as soon as possible after the lochia have ceased, the use of the hip-bath, or of the vaginal douche (see "Leucorrhœa"), should be commenced. Great care should be taken to prevent constipation of the bowels; the diet should be nourishing, exercise should be taken in moderation, at first; walking is to be prohibited. The treatment should be persisted in for some weeks after the labor. It is usually advisable to apply a moderate support to the abdomen by means of an elastic bandage. Very great benefit will be derived from attending to these simple rules, and it is very certain that a

neglect of them has frequently the result of perpetuating a troublesome and painful disease. It is important, as a further means of securing perfect contraction of the uterus after delivery, to induce the patient to suckle her child, although this course cannot from the debility of the patient always be recommended. In women who are liable to abortions, it is necessary to take double precautions; we frequently find that the uterus becomes diseased from the fact that the pregnancies rapidly succeed each other, the uterus not having recovered its natural size when it becomes again occupied by an ovum. In such cases, unless care be exercised, the liability to abortion is perpetuated. We must insist on the necessity for allowing the uterus a period of rest; this is equally necessary after an abortion, and after an ordinary labor; in many cases, the habit of abortion is only to be broken through by enforcing a separation of the husband and wife for some months, during which time efforts are to be made to reduce the uterus to its normal size and to its natural condition. There can be no doubt that by judiciously watching over and supervising the function of parturition, and regulating the conduct of the patient afterwards, we can effect much good in cases where the uterus is in a state of chronic inflammation.

So, also, with reference to menstruation and its disorders. It has already been pointed out that when the menstrual fulness and enlargement of the uterus are prolonged over the normal period, or when the menstrual periods follow each other too quickly, the uterus falls gradually into a state of disease; the organ never thoroughly recovers its non-menstrual condition, its tissues are habitually in a lax, atonic condition; and, after this state of things has existed for some little time, the whole organ becomes somewhat increased in size. These considerations sufficiently indicate the great importance of regulating the performance of the menstrual function in women who are the subjects of chronic uterine inflammation. (See "Treatment of Dysmenorrhœa.")

The next element in the preventive treatment, as it may be termed, of chronic inflammation of the uterus, is the removal of conditions, partly local and partly constitutional, tending to produce congestion of the abdominal, and especially of the pelvic viscera; there can be no doubt that the uterus is very prejudicially affected by the presence of vascular fulness of the other abdominal viscera. Mechanically, also, an overloaded state of the abdominal viscera, consequent on disorder of the digestive apparatus, tends to give rise to, or at all events to perpetuate, chronic fulness of

the uterine vessels; and thus the removal of abdominal congestion, and the cure of disorders of the digestive organs, are often essential to the cure of chronic inflammation of the uterus.

In the class of cases next to be considered, the *constitutional* element in the causation of the disease is of extreme importance in reference to the question of treatment. In a vast number of patients affected with chronic uterine disease, the starting-point of the mischief is clearly disorder of the general health; and, although the uterine symptoms cannot be neglected, the primary object is to restore the body to a healthy state. The importance of keeping this fact in view cannot be overrated. The constitutional disorder, and its exciting cause, must, in the first place, be removed, after which, or in association with which, attention will be advantageously directed to the local treatment of the uterine disease. In these cases, also, a systematic supervision of the functional actions of the uterus must be carefully carried out.

The next class of cases to be considered are the obstinate and troublesome cases of chronic uterine inflammation described by Gooch under the term " irritable uterus," concerning which some remarks will be found at p. 368. In these cases, the occurrence of which apart from flexion of the uterus I believe to be very rare, we usually find functional disorders of the uterus in association with evident constitutional tendency to rheumatism or neuralgia. The difficulty experienced in the treatment arises from the fact that the system of treatment which suits one part of the disease is frequently prejudicial as regards the other; rest and observance of the horizontal posture relieve the pain, but from want of exercise the general health suffers, and the constitutional element in the affection is unrelieved. Again, the attempt to restrict the functional activity of the uterus—as by prohibiting intercourse and thus preventing impregnation—does not always produce a corresponding amount of benefit, and inconveniences of other kinds then result. The remedies which Dr. Gooch* found most invariably useful were, the horizontal posture, small local bloodlettings, and narcotics. It would appear that bloodletting is rarely likely to be serviceable, and, indeed, Dr. Gooch himself states that when the disease has lasted long, and the body is enfeebled and emaciated, the relief thus afforded is temporary, and the debility occasioned by it so great that it must be relinquished. Rest is undoubtedly absolutely necessary—the *functional* rest previously

* See the New Sydenham Society's edition of Gooch's Writings, p. 160.

alluded to, particularly so — and narcotics are essential. The long-continued administration of opiates in large doses is, perhaps, the worst form of treatment that could be devised; Gooch found that the patients who remained longest uncured were those who had gradually accustomed themselves to a daily enormous allowance of opium. Another remedy Gooch was in the habit of employing, was a mild course of mercury, and this was found advantageous in cases where the health was not much reduced; but it was found necessary to discontinue it in other cases attended with debility and emaciation. The remedy is not, I believe, applicable, except in a very few cases; and in those patients who are of an hysterical tendency, mercury in any form has appeared, in the one or two cases which have come under my own observation, to be quite inadmissible. The element in the case which requires particular though by no means exclusive attention is the constitutional tendency to rheumatism or neuralgia. Having regard to the removal and prevention of rheumatism or neuralgia, it is necessary to take particular care that the skin be well covered, to clothe the patient from head to foot in warm flannel, to avoid damp, and especially damp in association with cold, and to maintain the action of the skin by frictions, by the use of baths, or other suitable means. Of the value of attention to these rules, I can, from personal experience, speak very strongly. In chronic cases we should expect most benefit from the employment of those mineral waters which are found most serviceable in cases of chronic rheumatism of other parts of the body. A course of baths, such as are to be obtained at Wildbad, Schlangenbad, Buxton, and some other watering places, is to be recommended. The ascending hot douche of Ems, the water of which has a temperature of 89°, and which contains carbonic acid, bicarbonate of soda, and chloride of sodium as chief constituents, has a wide reputation in the case of chronic metritis, and would seem particularly suited for chronic obstinate cases of irritable uterus, in which pain is the most troublesome symptom. Guaiacum has been found very useful in these cases, especially where there is an undue quantity of discharge present. Colchicum is, as a rule, not very well borne by patients suffering from this disease. Benefit will frequently be derived from the administration of bark, of quinine, of arsenic, which remedies are, as is well known, very efficacious in the treatment of neuralgia, both periodic and non-periodic in character; but none of these remedies are specifics.

Gooch remarked that patients the subject of this affection are

very liable to relapses; they weary of the constant care and attention necessary in carrying out the treatment, and when apparently on the high road to recovery some indiscretion or unusual exertion brings back the symptoms in their former intensity.

The foregoing observations refer for the most part to what may be termed the *preventive* treatment of chronic uterine inflammation. The *curative* treatment consists in the application of local remedies to that portion of the uterus which is accessible, viz., the os and cervix uteri, and the exhibition of internal remedies.

Internal Remedies.—A mild mercurial course, consisting in the exhibition of minute doses of the bichloride of mercury, has been recommended by Dr. Oldham for the purpose of reducing the size of a uterus enlarged by chronic inflammation; it is a remedy which has been found very useful by several practitioners, and I have myself employed it with advantage. If the patient be of weakly habit, and if there be any "constitutional" debility present, it is not to be recommended, and I have before remarked on the fact that, in "hysterical" cases, mercury does not seem to suit. The dose should be so small as not to affect the gums, and the treatment requires to be persevered in for a considerable time.

Iodine and bromine appear to have an indirect effect, when taken internally for some little time, in reducing the activity and intensity of the uterine functions, and they have been found of great service in long-standing cases of chronic enlargement and congestion of the uterus. The action of these remedies is apparently of an indirect nature, and they have been found of most service when taken internally, at the same time that the patient is using baths or injections containing iodine or bromine in solution.

The treatment of chronic uterine disease, of the kind now under consideration, by means of *mineral waters*, requires a distinct notice. In obstinate cases, the greatest benefit is sometimes derived from the internal and external use of mineral waters of various kinds; the effects produced being dependent partly on the change of scene and occupation, partly on the increased activity of the skin induced by the use of the baths, and partly on some special action of the waters used. The choice of a watering-place is a matter of some moment. In cases of chronic uterine inflammation, complicated with dyspepsia and with defective action of the abdominal circulation, Vichy may be recommended. Where the action of the abdominal viscera is sluggish, and where there is great constipation, the baths of Carlsbad or Marienbad are very useful, especially in the case of patients who have been in the

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habit of indulging too much in the pleasures of the table. Many others might be mentioned, equally efficacious in improving the condition of the abdominal circulation and the state of the digestive organs, such as the waters of Püllna, Seidlitz, Purton, &c., which contain sulphate of magnesia and soda, and are therefore of an aperient character. In cases where we desire to act chiefly on the skin, and to effect a derivation to the surface, the "indifferent" thermal waters offer advantages; the waters of Wildbad, Schlangenbad, Gastein, Clifton, Buxton, &c., deserve mention in this respect. Warm sea-water baths act in like manner. Hysterical cases are most likely to be benefited by the "indifferent" thermal baths, for these patients frequently bear neither the lowering effects produced by waters of an aperient character, nor the action of the chalybeate waters, next to be mentioned. In the very large majority of cases of chronic inflammation of the uterus, the element "debility" has to be dealt with. There are cases in which the uterus and pelvic organs generally appear to be in an atonic relaxed state, and for the relief of this class of patients chalybeates are found most serviceable. The waters of Schwalbach, Pyrmont, Spa, Driburg, Kissingen, Franzensbad, and Fachingen, are the best adapted for patients suffering from the above symptoms, associated as they usually are with anæmia, pallidity of the surface, tendency to headaches, &c. The iodo-bromated waters of Kreuznach, Hall, Durkheim, and Krankenheil, have a special action in cases of inflammation of the uterus of the more chronic kind, as already remarked. For neuralgic or rheumatic cases, Wiesbaden, Baden-Baden, Ems, and Bath enjoy deserved repute (see also p. 384). In cases where it is considered desirable to administer iron in small quantities, together with an aperient, waters such as those of Kissingen or Selters are the best. The baths of Driburg have been found peculiarly efficacious, taken during pregnancy, in cases where there is a tendency to disease of the fœtus; the waters in question are chalybeate, but contain also lime in solution.*

The *local* treatment of chronic uterine inflammation will be fully considered in connection with that of chronic inflammation of the os and cervix uteri. Here it is necessary, however, to say a few words respecting the

Application of Remedies to the Interior of the Uterus.—It is

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* For further information on the subject of baths, see Dr. Althaus's work, The Spas of Europe. London: Trübner, 1862.

believed by some pathologists, that the lining membrane of the uterus is the part to which remedies may be most advantageously applied in cases of uterine inflammation, and that the affection would be more properly termed " endo-metritis." In certain cases of chronic menorrhagia, the os and cervix uteri having been dilated and the cavity of the uterus exposed, there has been observed a fungous condition of the lining membrane ; this fungous condition is considered as an evidence of endo-metritis. The treatment which has been recommended in these cases, and which has been had recourse to by several practitioners, is artificial removal of the fungosities by means of a curette—a spoon-like instrument, with a cutting edge—in addition to which Dr. Routh* applies tincture of iodine or other substances to the lining of the uterus.

With reference to this plan of treatment I must express my belief that the cases of menorrhagia are exceedingly few which are incapable of being treated satisfactorily by other and more simple measures. So far as we know, in the more ordinary cases of menorrhagia, there is no particular alteration of the lining membrane of the uterus ; the fungous condition considered as calling for the scraping operation is probably only the hypertrophy natural to the mucous membrane during menstruation, carried, it may be, to an unusual degree. Distinct polypoidal growths from the interior of the uterus, and which have been found to cause repeated hemorrhages, fall under a totally distinct category. (See " Polypi of the Uterus.")

There are cases already referred to, in which there is observed thickening and hypertrophy of the menstrual decidua, the patient frequently expelling what appears to be a cast of the uterine cavity. These appear to be cases of endo-metritis. Whether topical applications, caustics, &c., may have a good effect in curing this very troublesome affection remains to be seen ; on the whole, I believe that the best treatment of disordered conditions of the mucous membrane of the uterus consists in application of those remedies having an action on the whole organ, and which have been already described, and that when local treatment is necessary, it may be, unless in some very rare and exceptional cases, limited to the application of remedies to the os and cervix uteri—douches, lotions, caustics, &c., as will be more particularly enumerated farther on.

* Obstetrical Transactions, vol. iii.

TREATMENT OF CHRONIC INFLAMMATION, ULCERATIONS, ETC., OF THE OS AND CERVIX UTERI.

Chronic inflammation is a condition often coming before us, and it is generally associated either with long-continued pain and suffering, chronic obstinate leucorrhœal discharges, enlargement of the vaginal portion of the cervix uteri, and hypertrophied condition of the papillæ of the mucous membrane lining the cervix uteri (so-called "ulcerations"), excoriations or ulcerations of the surface of the vaginal portion of the cervix, &c.

In many cases the affection is primary, but in a still larger number of cases it is a secondary evil. In many cases it yields to a treatment conducted on the general principles which have been already laid down; and in *all* cases, even when we adopt local measures and appliances, it is essential that we employ also general measures of the kind alluded to. What these general measures should be, will depend greatly upon the nature of the particular case; in some cases, the relief of pain is the prominent indication, or menstruation is too profuse, or there is leucorrhœa, or the patient is suffering from debility, with indigestion, hysterical symptoms, &c. One important object is to remove the local congestion, an object which will be accomplished by derivation to the surface, that is to say, by the employment of baths, frictions, exercise, and careful hygiene, by rest, both bodily and mental, by attention to the state of the digestive organs, and by remedying anything wrong in the general condition of the patient. The treatment directed to be employed in cases of chronic menorrhagia or leucorrhœa is here applicable, for one or other of these symptoms is rarely absent.

Such are the general principles to be kept in view. But where the patient has been ill for some time, the case having become a chronic one, local treatment may be required, and the cure will be expedited by adoption of such local treatment.

Application of Cold Affusions.—First and most important in the list of local remedies is the frequent application of cold or tepid water, by means of injections, to the cervix uteri. (For the manner of employing such injections, see "Leucorrhœa.") To produce a curative effect, injections must be persevered in for a considerable time, and care taken to insure their efficient administration. The continuous and repeated irrigation of the cervix brings about an improvement in a variety of ways. The bulk of the uterus itself becomes diminished, the congestion is removed, the secretion of

the glands of the cervix is lessened. In cases where the vaginal portion of the cervix has attained a considerable size, owing to a long continuance of the diseased condition, and to a morbid rapidity of growth of the structures of the cervix, the best effects follow from the assiduous application of cold, in the manner here alluded to, although this treatment alone, as might be expected, fails in completely curing the disease in long-standing cases. This degree of improvement will not, of course, be witnessed where the enlargement depends on development of fibrous or other tumors in the cervix uteri.

The next local remedy to be spoken of is depletion by *leeches*, or *scarification*. Where there is any degree of tenderness present, where there is vivid redness of the os cervix, or where it is considered for other reasons desirable to remove a certain quantity of blood, leeches are sometimes found useful. Simple redness and injection of the vessels of the part do not necessarily indicate depletion, nor does profuse discharge; depletion is most likely to be called for in cases where the patient is in a generally plethoric condition. And sometimes, in the absence of such plethoric condition, we find depletion useful in cases where other measures have failed. In chronic cases, where there is considerable hypertrophy associated with a congestive condition, good effects may be obtained by leeching the cervix uteri once or twice a week for three or four weeks; employing at the same time injections or such other local measures as may be deemed advisable.

The decision as to the propriety or not of leeching the cervix uteri will be influenced by the particular view which may be taken of the nature of the affection present.

Respecting the manipulations necessary in applying leeches to the os uteri, a word or two is required. It has been found in practice to produce unpleasant or inconvenient results when the leeches have attached themselves either within the os uteri, or on the walls of the vagina. A moderate-sized speculum is to be first introduced, so that its upper extremity touches the vaginal portion of the cervix at every point, and a small piece of lint is next inserted in the os itself. The leeches (three or four in number) are then pushed up the tube, and allowed to fix themselves on the exposed portion of the cervix. It may be necessary to use an injection of tepid water previously to applying the leeches, and to remove the discharge covering the surface of the cervix by means of a piece of lint. When the leech attaches itself to the interior of the os, or to the vaginal wall, the patient usually experiences,

especially in the former case, sharp pain. To detach the leech under such circumstances, an injection of salt and water is to be used.

Scarifications of the congested uterine cervix, either externally on the surface of the vaginal portion, or internally in the canal of the same, are of great use in some instances, especially in reducing the size in cases of hypertrophy of the part. The remedy is applicable to the same class of cases as those requiring leeches. It may be more advantageous or less advantageous than the employment of leeches, according to the nature of the case. Where scarifications are employed, care must be exercised in the operation ; I have found that a number of slight scarifications are better than two or three deeper ones. In performing scarification of the cervical canal, a small knife of peculiar shape and construction is necessary. Huguier recommends this to be done prior to the use of caustic, in cases where there is obstinate chronic discharge, and in which it is desirable to expose the glandular structures of the cervix more directly to the action of the caustic.

Caustics.—The propriety and the non-propriety of the employment of caustics in the treatment of the affections of the os and cervix uteri now under consideration has been most warmly debated; the employment of the stronger caustics being the point about which there has been most diversity of opinion, in this country at least. The whole turns on the question as to the pathological importance of the lesions of the os and cervix uteri, a subject which has been already considered.

The most common cases are those in which there is considerable congestion of the os and cervix uteri, associated with profuse discharge, generally of a muco-puriform character, also with an hypertrophied, vascular condition of the papillæ of the mucous membrane lining the cervix. The surface exposed by the open os uteri may be considerable, and the congested hypertrophied papillæ bleed easily, and present the "raw"-looking, so-called "ulcerated" surface. Other changes, such as considerable increase in the size of the cervix, &c., may be superadded. Now, having regard to the hypertrophy, &c., of these constituents of the mucous membrane, it is often desirable to apply caustics for the purpose of cure ; the amount of the discharge, and much of the suffering of the patient, being, in a certain number of cases, dependent on the pathological alteration in question. The surface to be operated upon having been well exposed by means of the speculum, the secretions adhering to the surface must be removed by means of a

piece of lint or cotton-wool, held by means of a pair of long speculum forceps, or gently rubbed against the surface of the os uteri, and as much of the interior of the cervix as may be accessible. This preliminary is absolutely essential; it may be further necessary to cleanse the surface by means of a little tepid water.

The surface being made dry and clean, the caustic is to be applied. The solid stick of nitrate of silver, pretty firmly pressed against each portion of the surface in succession, is an effectual means of accomplishing the end in view. If the surface be made previously perfectly clean, one cauterization after this method will be sufficient in the majority of cases to remove, at all events for a time, the hypertrophied condition of the papillæ. The solution of nitrate of silver may be used, in varying strengths, when the solid nitrate is considered too powerful. For cases in which it is considered advisable to apply the solid caustic to the interior of the cervical canal higher up, also, the perforated caustic and holder, invented by Mr. Robert Ellis,* offer a safe means of accomplishing the desired object. In the apparatus in question, a stick of nitrate of silver is used, having a slender perforation in the centre, and through this perforation runs a wire. The use of the wire is to prevent portions of the caustic being broken off and left in the canal.

Stronger Caustics.—Of these the potassa cum calce is the one most strongly recommended by Dr. Henry Bennet. The still stronger caustic potash is occasionally used by Sir J. Y. Simpson. To cure obstinate cases of "inflammation of the cervix, accompanied by ulceration and hypertrophy," Dr. Bennet advises the adoption of a treatment of which the following is a summary:

A large conical speculum is to be used to expose the affected surface, and the cervix is to be well isolated by its means; a cylinder of potassa cum calce, the caustic which Dr. Bennet considers most convenient, is then applied to the surface to be operated upon, this surface having been previously wiped; and after the cauterization a cotton pledget tied to a piece of thread, and dipped in vinegar and water, is to be applied, and allowed to remain as a dressing on the withdrawal of the speculum; this dressing the patient can herself remove after a few hours. The cylinders of caustic are of three sizes, and are composed of two parts of potash to one of lime, fused in iron moulds. The caustic is allowed to remain in contact with the diseased region for a few seconds, if the

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* See Obstetrical Transactions, vol. iv.

object is "to modify the vitality of an ulcerated or inflamed surface," but if the intention is to produce a slough, as when the caustic is employed to reduce hypertrophy, it must be kept in contact longer. The eschar falls off in five to ten days. The cicatrization begins to take place about the twenty-first day. The cauterization is to be performed only when there is a clear fortnight before the next menstrual period. During the time that elapses between the falling off of the eschar and that at which improvement may be expected, the nitrate of silver must be periodically applied, in substance or in solution, in order to insure the full benefit of the severe cauterization; the nitrate of silver being used to check the luxuriance of the ulceration. The caustic in question, when applied to the cavity of the neck of the uterus, is not to be left more than a few seconds in contact with the diseased surface, and not to be introduced more than a half or three quarters of an inch within the cavity. The effect of the severe cauterization is said to be not to produce pain, but great depression. "I occasionally see patients," says Dr. Bennet, "so prostrated by its action, although scarcely in any pain, as to be unable to rise from the bed or sofa for several days." The limitation as to the use of the caustic within the os is made owing to the fact that he has seen many instances, where, in other hands, "the os and cervical canal have become contracted to such an extent as nearly to obliterate them, and to prove a serious obstacle to menstruation," in cases where the caustic was carried into the cavity; this contraction being, as Dr. Bennet states, due to want of attention and care in watching the patient during the healing process. If the healing of the ulceration, the object of the treatment, be not accomplished before the fortieth day, the strong cauterization is to be repeated, or the treatment carried on with milder agents.

The application of the caustic as above, Dr. Bennet particularly recommends for the purpose of removing considerable inflammatory hypertrophy of the uterine cervix; the eschar is in such cases made in the centre of the hypertrophied region; "nature sets up eliminating inflammation in order to throw off the eschar. This inflammation extends, more or less, to the hypertrophied tissues, according to the size of the eschar and to the nature and extent of the hypertrophy; and, as it gradually subsides, these tissues melt and are absorbed." It may be necessary to make the application several times, the application being each time limited to a small space.

Such is an outline of the method of cauterizing recommended

by Dr. Bennet in the latest edition of his work on "Inflammation of the Uterus." The objections which have been advanced to the method of treatment just described, chiefly by Dr. West and Dr. Tyler Smith, have been many and various. It cannot be denied that other methods of treatment are almost always effectual in removing the conditions in which the strong cauterizations are said to be necessary. I have felt it necessary to express my dissent from that particular portion of Dr. Bennet's treatment which has regard to the employment of the stronger caustics. With respect, however, to this author's remarks on general treatment, his observations on the importance of attention to the diet, regimen, &c., I entirely agree. In fact, a very great portion of the success which Dr. Bennet attributes to the local, I should be disposed to set down to his very excellent general treatment, notwithstanding his protest to the contrary. This is the view of the question which has been already strongly expressed by Dr. West. I have been occasionally much struck with the very beneficial influence which *rest* has appeared to exercise in diminishing the bulk of an enlarged and indurated cervix uteri. If the patient can be prevailed upon to remain quiet for a few weeks, to use daily irrigation of the cervix, hip-baths, frictions of the skin, to abstain from excitement of all sorts—these measures alone will effect very much good. In conjunction with these measures, the milder caustics may be employed, and astringent injections ordered, as in cases of leucorrhœa.

It is not meant here to be inferred that it is dangerous to use strong caustics at all, or that cases do not occur in which they may be useful. One caustic is as easily and as safely used as another, and the same effect may be produced by a very slight application of a powerful caustic, as by a more prolonged application of a weaker one. It is the deep and destructive cauterization which is here objected to. And, this being premised, there is no reason why the hypertrophied fungous condition of the papillæ of the interior of the cervix should not be as easily and safely treated by a *very slight* application of the potassa cum calce, or by careful application of the acid nitrate of mercury, as by the solid stick of nitrate of silver. There are other cases, too, in which the stronger caustics now spoken of may be employed—those in which the interior of the os presents those excrescences or developments of the mucous membrane known as *mucous polypi*, and those cases also in which the mucous follicles around the os become swelled out and distended, presenting the little round en-

largements known as the *Nabothian bodies*. In the application of
the stronger caustics, we have an expeditious mode of dealing
with the pathological conditions in question. The rare cases in
which true *chancre* of the os or cervix uteri is present come under
the same category.

Whenever the strong caustics are used, very great care is neces-
sary to prevent the tissues adjoining to the cervix uteri from being
injured. These tissues must be guarded in a suitable manner
during the operation, and precautions used to prevent the caustic
applied to the surface of the cervix from coming into contact with
the opposed surfaces of the vagina, when the operation is over,
and the speculum withdrawn.

The *actual cautery* is a favorite remedy with some practitioners,
especially in France, in the treatment of chronic induration or
inflammation of the vaginal portion of the cervix uteri. The ap-
plication is made through a horn speculum, specially constructed
for the purpose, and is repeated at intervals of a few days, the
treatment extending over a considerable time. The effect pro-
duced by this frequent superficial application of the actual cau-
tery, is contraction of the surface, and consequent diminution in
bulk of the tissues beneath. By carefully covering in succession
each portion of the indurated surface with eschars, much may be
done in reducing the bulk of the hypertrophied part. It is hardly
necessary to remark that the application should be very carefully
made.

With reference to the admissibility of the more severe methods
of treatment last mentioned, it is to be observed that they are
better suited for cases in which there is much increase in the size
and thickness of the vaginal portion, than where there is simply
a morbid condition of the surface present. The cases are certainly
not very common in which, by a persevering use of the other and
less severe methods of treatment, all the desired good may not
be obtained; but it is not always so, and a few cases remain for
which more stringent measures are required.

With respect to the mode of applying the actual cautery, some
remarks are necessary. Women have naturally an objection to any
plan of treatment involving use of an iron which must be heated
in the fire; but in the electric cautery, introduced into English
surgery by Professor Marshall, we have a means of getting over
this difficulty. A convenient and portable apparatus for the em-
ployment of the electric cautery is that of Mr. Ellis. Mr. Alex-
ander Bruce's "gas cautery" is exceedingly good. Mr. Clover

has also a most ingenious instrument for slight cauterizations. The cervix uteri being exposed by means of the speculum, and its surface thoroughly dried by means of lint, the heated wire is applied, and the cauterization effected. It is advisable at first to apply the cautery slightly, to allow of a few days' rest, and to adjust the strength and depth of the subsequent cauterizations, as may appear necessary. It is advisable to touch, by means of the heated wire, a considerable portion of surface, rather than to cauterize a smaller part; for it is obvious that contraction thus produced will be more considerable. The object in view will be attained by applying the wire so as to describe on the surface of the cervix, first a series of parallel lines, and then a second series at right angles to, and over, the first series.

The repeated application of the tincture of iodine to the enlarged and inflamed cervix uteri has been found productive of great benefit in many cases, and may be especially recommended where the patient is of a sluggish habit of body, or where a scrofulous diathesis is suspected. Blistering fluid has been occasionally used as an application to the surface of the cervix uteri in cases of chronic inflammation.

The *excoriations* or abrasions, which are occasionally observed on the vaginal portion of the cervix, and which are to be distinguished from the so-called "ulcerations" of the mucous membrane of the cervical cavity, are generally, as already stated, very secondary in importance. They are only observed in cases where the other morbid conditions present call more directly for attention; and they usually disappear when those other morbid conditions are removed. They are best treated by applying a solution of nitrate of silver, or the solid stick itself, to the surface affected; while the uterus is maintained in a state of rest, and care taken both to remove the congested state of the organ, and to diminish the excessive secretion of the cervical glands therewith usually associated.

TREATMENT FOR THE RELIEF OF PAIN, NAUSEA AND VOMITING, AND HYSTERIA.

In this place it will be well to introduce certain special remarks on the treatment of pain, nausea and vomiting, and hysterical symptoms due to disorder of the internal generative organs, whether connected with the uterus or not.

PAIN.—The treatment of all the varieties of pain, whether attendant on menstruation, inflammation of the uterus or ovaries,

resolves itself, for the most part, into a question of diagnosis. What is the disease or morbid condition giving rise to pain? Knowing this we are in a position to take steps for the removal of that disease. If this course be practicable, it is to be adopted. If it be impracticable, then the temporary palliation of the sufferings of the patient is the primary object. In every case—and this is sometimes lost sight of—it is essential to do what is possible for the temporary relief of the patient's sufferings, whether other and more radical measures be attempted or not. For the permanent relief of pains referable to the generative organs, a very extended course of treatment may be necessary, and, in point of fact, those cases are most difficult to cure, although they are not always the most serious so far as danger to life is concerned, in which the pain experienced by the patient is the prominent feature. Where the pain is connected obviously with presence of a certain tangible and removable condition, the indication is obvious, but the difficult cases alluded to are those where this tangible element is wanting or cannot be detected.

The remedial measures which are to be brought into operation in order to relieve the patient—radically or palliatively, as the case may be—from actual pain, will now be briefly considered, and the circumstances pointed out which render each of them specially applicable.

Leeches and Local Depletion of various kinds.—These are chiefly of service in cases where there are inflammatory symptoms present, where the pain is more or less constant, and the patient is of full habit. In plethoric individuals, who suffer a good deal at the menstrual periods, leeches applied to the inside of the thighs once a month, half-way between the two periods, are often of decided benefit. In cases of acute inflammation of the uterus or its appendages, leeches to the hypogastric region may be required. In cases of pain dependent on long-standing congestion or chronic inflammation of the uterus, leeches to the cervix uteri are very serviceable. In cases where the ovaries are the seat of persistent pain, or tenderness and aching, leeches may be applied over the groin, or inside the thigh, with good effect. In cases of peri-uterine hæmatocele, the early application of leeches is to be recommended; but at a later period, except to check inflammatory action, which may have by that time arisen, they are inadmissible. There are many other circumstances under which local depletion for the relief of pain, and, indeed, with the view of curing the disease, is required, but it is impossible to enumerate them all. The

objects endeavored to be effected by local depletion are often as well attained by other measures, and this holds good particularly in regard to the relief of pain. Nevertheless, there are cases, some of which have been just mentioned, in which local depletion is of essential service, the relief of pain alone being considered.

Counter-irritation is a most important agent for the relief of the various pains now under consideration. It may be employed in a variety of ways, the plan selected being in accordance with the peculiar requirements of the case. A severe, sharp, acute pain is best met by application of a strong mustard poultice over the hypogastric region, or round the loins; this is to be repeated at intervals. Turpentine dropped on a piece of flannel wrung out of boiling water, and applied to the skin, is another counter-irritant, even quicker in its action than the mustard poultice.

In cases where the pain is less acute, but more continuous, the counter-irritant selected must have a more continuous action. Ordinary blisters here serve the purpose very well. Tartar emetic suspended in oil, or in the form of an ointment, is a very convenient application: croton-oil liniment is equally applicable. Issues and setons are sometimes necessary in long-standing cases, and it is probable that they might be used with advantage to a greater extent than is at present the case.

Warmth.—Hot poultices of linseed-meal or bran are most valuable for the relief of the pain present in all kinds of inflammatory affections. They should be large, quite a third of an inch in thickness, and applied very hot. Several layers of flannel wrung out of boiling water, and rolled round the pelvis, offer a ready means of applying warmth. The warm hip-bath may be used for a like purpose. Bottles of hot water, or hot bricks wrapped up in flannel, are household remedies of every-day use. A warm decoction of poppies is often advantageously substituted for simply hot water for fomentations. The application of *cold* is not without its uses; but, as an anodyne, warmth is generally far more serviceable.

Anodynes.—The internal anodyne most ordinarily available is opium. The instances are innumerable in which we employ this most valuable drug, in one form or other, for the relief of pain. In cases of long-standing disease, opium should be given cautiously, and for this reason, that otherwise there is a fear of making the medicine a necessity for the patient, the habit of taking opium being one easily acquired and not readily broken off. The "liquor opii sedativus," of Battley, is one of the best forms in which to

use the medicine in question. Opium is often combined advantageously with some of the ethereal preparations. A draught containing "Battley" and the compound spirit of sulphuric ether is one of the best remedies for the relief of severe non-inflammatory pain referable to the uterus or ovaries which can be employed.

In chloroform we have an agent often of great service. Complete anæsthesia, by means of inhalation of chloroform, is not often required, except in cases where pain is very severe, or in order to facilitate operative manœuvres of various kinds. Taken internally, in the form of chloric ether, it is very useful as an adjunct to opium. The preparation known as "chlorodyne" is one very largely used, combining, as it appears to do, the effects of the two therapeutic agents in question. The cases in which chloroform and its combinations are most valuable, are those in which there is an hysterical element present; the cases in which opium and its preparations are most imperatively required are those in which there is organic disease, e. g. cancer of some one of the generative organs. In cancer of the uterus, the value of opium is quite inestimable. Belladonna, hyoscyamus, and conium are uncertain, and therefore often very unsatisfactory, remedies for the relief of pain, compared with those just mentioned. The Indian hemp, is, however, better entitled to consideration, and in many cases undoubtedly exercises a marked influence in allaying or preventing pain.

Camphor and Indian hemp combined, I have often found of great service. Indian hemp is a medicine which, so far as my experience goes, appears to affect different individuals very unequally.

Local application of anodynes is often attended with good effect. The endermic application of one of the salts of morphia is the most potent of these. Dr. Henry Bennet states that he has found a hypodermic injection of a solution of morphia, about equal in strength to laudanum, over the præcordial region, very useful in relieving uterine pain. Chloroform dropped on a piece of lint, and applied over the uterine or ovarian regions, is a remedy now and then very useful for the relief of temporary pains in these regions. Tincture of aconite may be rubbed in with a like object. Suppositories or enemas, which are in a manner local remedies, offer frequently a ready means of inducing cessation of pain in the pelvic organs. The solid opium may be employed for this purpose, or the tincture of opium suspended in water-gruel, or mixed with tincture of valerian or assafœtida; the latter combination is particularly useful in hysterical cases. Opiates and

sedative remedies may be also used locally, by making them up into the form of pessaries, which are inserted in the vagina.

Other Remedies.—Camphor, alone or combined with opium, is of service when the pain present is of spasmodic character. The various remedies known as "antispasmodic" fulfil a like indication, and, as already observed, the ethereal preparations are most important for the relief of certain kinds of pain. The pain associated with uterine contractions, such as is present in cases of difficult menstruation, is best influenced by the use of antispasmodics. The compound tincture of lavender, chloric ether, and the compound spirit of sulphuric ether, may be often very usefully associated (twenty drops of each for a dose), opium being added or not, as may be judged necessary; this forms a combination adapted for these, and indeed, all cases where there is pain of a spasmodic character, whether at the menstrual period or at other times; this "red" mixture is one which is very highly approved of by patients.

When the pain situated in the pelvis is of neuralgic character, the local application of anodynes to the surface, or their internal administration may be required, but other remedies are more appropriate. Bark or quinine, arsenic, and the various medicines which go under the name of "nervine tonics," are of great value for the treatment of neuralgic pains seated in the ovaries or in the uterus (the "irritable uterus" of Gooch). When the pain is periodic, bark is of sovereign efficacy, but it appears to do good in a multitude of cases where no such periodicity of the pain is observed. These cases of neuralgia are often exceedingly difficult to cure, and permanent benefit is only generally to be obtained by altering the whole mode of life and habits of the sufferer.

NAUSEA AND VOMITING.—We are occasionally called upon to administer relief in a most troublesome class of cases—where the patient is affected with a continuous, uncontrollable vomiting or nausea, or both combined, and appears to be in danger of dying from starvation. At other times, where the symptoms are less severe, they are not less troublesome and difficult to remove, and our utmost skill and patience are taxed in the endeavor to allay the vomiting or the persistent nausea.

The primary object in the treatment of these troublesome cases should be, of course, to remove the cause. Unless the patient be pregnant, and the sickness be connected therewith, the cause, should, if possible, be removed. The congestion or inflammation of the uterus, or the obstruction to the catamenial flow, or the ab-

normal condition of the generative organs, whatever that may be, must be appropriately treated.

The removal of the causes in question is, however, generally a matter of time, and meanwhile the patient requires relief from the present symptoms. In severe cases, where the stomach persistently rejects food, it is best at once to give up the idea of administering solid food of any kind. The patient should be made to suck small pieces of ice from time to time, and a teaspoonful of milk or milk-and-water should be swallowed every half hour, or more frequently, if possible. At the same time, the horizontal position and absolute rest and quiet are to be maintained. Minute quantities of brandy-and-water or champagne may be given every hour. This kind of treatment is adapted for cases of obstinate sickness during pregnancy, or in chronic uterine disease. Drugs given by the mouth, in really severe cases, appear to do more harm than good. An opiate liniment rubbed in over the epigastric region, or morphia applied endermically, has been found of great service. If the milk or other nutritive material, such as beef-tea, which may be tried, are rejected by the stomach, it is best to relinquish for a time the attempt to feed the patient by the mouth at all, and to have recourse to injections. A beef-tea enema with a few drops of laudanum may be given as often as may be judged necessary, the return to a more natural method of feeding being for a time postponed. Sedatives, antispasmodics or medicines of other kinds may or may not be indicated, according to the peculiarities of the case, but they will be best administered in these severe cases by the rectum.

In the less severe cases, where food is capable of being taken by the stomach with more or less facility, and where the vomiting is only occasional, a carefully adjusted diet will still be the best means of giving the patient relief, and it will be a matter of experiment as to what kind of food suits best. Soda-water and milk are very generally borne by the stomach, but more substantial nourishment may be given, such as the case admits of. Pepsine— of which a reliable preparation is kept by Mr. Squire—is often very serviceable in cases where the digestive powers are much weakened.

Dr. Tilt speaks very highly of counter-irritation over the epigastric region by a seton, or by blisters, in chronic troublesome cases. I have found the application of small blisters to the epigastric region a very ready means of introducing morphia, which is sprinkled over the blistered surfaces; I have been frequently

disappointed in the action of the various drugs recommended as specifics in the treatment of obstinate sickness.

Whenever pain in the uterine region is present in cases of sickness—as is most frequently the case—opiates in some form or other are required. If the sickness be incessant, they are to be given in the form of enema.

To allay the thirst present more or less in all cases, effervescing drinks are most useful. In the violent sickness which is apt to follow severe operations, such as ovariotomy, and which must be checked if the patient is to be saved, ice, champagne in considerable quantities, enemas of nourishing materials and opiates, are to be administered. This treatment has been most generally successful.

The ordinary morning sickness of *pregnancy* is often very effectually relieved by directing the patient to take a small quantity of food before rising from bed. In cases of sickness due to this cause, the general principles of treatment above laid down hold good. By carefully regulating the condition of the bowels, giving occasionally gentle aperients, and making suitable alterations in the diet of the patient, much good will be effected, even if we cannot entirely remove the liability to sickness. In a few cases it is necessary to induce premature labor. Some very practical remarks on this subject, as well as on the treatment of other disorders peculiar to pregnancy, will be found in Dr. Tanner's work,* before referred to.

TREATMENT OF HYSTERIA IN CONNECTION WITH THAT OF DISEASE OF THE UTERUS, ETC.—The subject of hysteria occupies a sort of neutral ground, for although it is, as a rule, perhaps, to be looked upon as a general affection, there can be no doubt that between diseases of the generative organs and hysteria there is in many cases a very close connection, and it is impossible, in reference to treatment, practically to separate them.

The *general, i. e.* the preventive and curative treatment of hysteria must be adapted to the special requirements of the patient. There are few cases which come before us in practice in which we do not find some very decided indication for treatment either in the removal of the patient beyond the influence of certain circumstances or conditions which have been previously found to produce the attacks, or in improving a manifestly weakened and diseased condition of the system generally, or lastly, in curing or amelio-

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* The Signs and Diseases of Pregnancy. London, 1860.

rating some conjoined affection of the uterus or generative organs. In many cases we find it necessary to improve the general health, to exercise a rigorous moral rule over the patient, and at the same time to treat specially some troublesome uterine ailment. The degree of attention paid to the various diseased elements in the cases will be guided by our estimation of their respective importance, and of our own peculiar ideas on the subject of the nature and causes of hysteria. On the whole, it appears that the element in cases of hysteria which can with least propriety be neglected is the disordered condition of the system generally.

A complete change of scene or of occupation, both mental and bodily, is the best remedy in cases where the disease is confirmed. It has been found, as a matter of experience, that hysterical patients in easy circumstances become often materially benefited as regards their health by reverses of fortune, these having the effect of directing their thoughts into different channels, creating new anxieties of various kinds, and relieving them of their bodily ailments. Revolutions, sieges, or other public events of absorbing attention and interest to the community, are favorable to the cure of hysteria.

It is a matter of observation and experience that abnormal excitation of the sexual system is very frequently found to be associated with hysteria; it would seem that this circumstance has led many to believe that hysteria is never anything more than a morbidly increased or excited sexual desire, which in its mildest form is simple hysteria, but when more confirmed, and at a later period, may become nymphomania. If this mode of viewing the question be wrong, it is evident that, practically, a great amount of mischief may result from it, for the curative treatment being directed exclusively to the removal of everything leading to sexual excitement, other, perhaps equally, important features in the case are passed over, and comparatively neglected. There are unquestionably a very considerable number of cases in which removal of all sexual exciting influences forms a very essential part of the treatment, but there are others in which precautions on this score would seem to be entirely uncalled for. The precautionary and moral treatment must be, then, adapted to the peculiarities of the case. Respecting the improvement of the condition of the bodily health, little can be said of a special nature, and which would not equally apply to many other disorders to which women are liable. Regular living, plain and simple but nourishing diet, avoidance of mental excitement or effort, free exercise, as soon as the patient can

bear it, in the open air, the use of the sponge or the shower-bath, with assiduous friction of the cutaneous surface, and such other special hygienic measures as may be indicated—these constitute the basis of the treatment. It is often found exceedingly difficult to enforce obedience and attention to medical rules and regulations in these cases, and, unless carefully watched or supervised, they are frequently set at nought. Ferruginous preparations combined with slight laxatives, are the medicines most commonly required. And they are most advantageously administered in the form of mineral waters. Great good is often derived from residence at a watering-place, due not only to the therapeutic action of the water, but to the novel and regular mode of life there pursued. Benefit of a permanent character is not to be expected, in long-standing cases, until after the lapse of some considerable time, for the habit of disease has to be broken through.

It is frequently found that the subjects of hysteria have been exercising the mental faculties at the expense of the physical. In guarding against the occurrence of hysteria, therefore, an extremely important element in the treatment is the careful avoidance of all sources of mental excitement. The great object should be to develop the physical energies, to cultivate the activity of the locomotive apparatus, and to restrain, as much as possible, the exercise of the mental faculties. The sexual tendencies require to be kept in subjugation, and in many cases, though probably not so often as generally supposed, special care is necessary in this particular. It is not easy to say how far, or in what special manner, this part of the treatment should be carried out, for hardly two cases admit of being treated alike, the surrounding circumstances being, perhaps, essentially different, even where the symptoms present may be identical.

Marriage is occasionally recommended as a cure for hysteria in single women. On this point there is a discrepancy of opinion. The fact appears to be, that in those cases where slight hysterical symptoms coexist with strong sexual inclinations on the part of the individual—which are really cases of nymphomania in a mild form—marriage may be a good thing, but that in cases where this abnormal sexual excitement is not present, marriage has very little, if any, curative effect.

In cases of hysteria associated with undue sexual excitement, and in which also the uterus is diseased, it appears undesirable to enforce a plan of treatment of a manipulative character, that is to

say, if the treatment in question is to be pursued for any length of time; the reason for which will be obvious to the reader.

Relief of Hysterical Symptoms.—The most distressing symptoms presented by hysterical patients, and for which relief is most urgently sought, are, flatulence, headache, and pain in the side. The flatulence is best treated by cordials; ginger, sal-volatile, and ether, may be given for this purpose in combination. Relief in this way is of course only temporary, and the dyspepsia, on which the flatulence depends, must be treated by suitable measures. An assafœtida injection has been found to afford temporary relief in some cases. Pain in the side is a symptom to be treated by opiate liniments; counter-irritation is not generally of much service, unless it be counter-irritation of the whole surface of the skin by use of flesh-brushes, &c.; this latter is very serviceable in the general treatment of hysterical patients.

In reference to headache, the same remarks as to the necessity for general treatment hold good. I have found both opiate and chloroform liniments of great service. Bark, in the form of the "liquor cinchonæ," is a valuable remedy in many cases where there is severe headache associated with anæmia. Ether, valerian, and other antispasmodics, are often also necessary in these cases. A draught containing twenty minims each of tincture of lavender, compound spirit of sulphuric ether, and sal-volatile, with camphor mixture, is a very suitable and efficacious one for the temporary relief of these hysterical pains, as well as in the relief of pains of various kinds, as I have already had occasion to remark.

Paroxysms of Hysterical Convulsions must be guarded against by preventing the application of the ordinary exciting cause, whatever that may be. For the relief of the paroxysm itself, a variety of methods may be recommended. Dashing of cold water in the face is one of the most efficacious, though, for a variety of reasons, it cannot always be adopted. Chloroform inhalation is very effective; it has always succeeded in my hands, with a patient in whom the attacks consist of sudden access of lethargy, combined generally with unilateral convulsions, the convulsions ceasing instantaneously under the action of the remedy. Application of burnt feathers or other strongly smelling substances to the nostrils is often efficacious.

Valerian, castoreum, assafœtida, ether, musk, camphor, are the drugs most commonly had recourse to, either in cases where the paroxysm is imminent, or, when it has ceased, with the view of preventing its recurrence. These remedies may be given singly,

or two or more may be combined. Injections of cold water into the stomach were found very efficacious in arresting the paroxysm by Cruveilhier, and also by Dr. Ashwell.* Injection of iced water into the rectum has been also recommended.

CHAPTER III.

LEUCORRHŒA.

LEUCORRHŒA.

PROPERLY speaking leucorrhœa is not a disease but a symptom, and as such will be considered in the part devoted to diagnosis. Certain general facts relating to the causes and nature of the discharges ordinarily termed leucorrhœal will, however, find an appropriate mention in this place.

THE NORMAL CONDITION OF THE SECRETIONS OF THE GENERATIVE PASSAGES.

In a state of health there is poured out from the mucous membrane of the vagina, from the sebaceous and muciparous glands at the orifice of the vagina, from the vulvo-vaginal glands situated one at each side just within the orifice of the vagina, from the cervix uteri, from the whole of the mucous tract extending from the ostium vaginæ to the termination of the Fallopian tubes, a secretion sufficient to lubricate the opposed surfaces of the mucous membrane. This secretion is liable to be physiologically increased in quantity, as during congress, and under other circumstances, and it is liable at any moment also to be increased in quantity pathologically, giving rise in the latter case to fluid or other discharges.

Diseased processes are generally exaggerations of the natural ones; and, to apply this in the present instance, we find that leucorrhœa, which is a term applied generally to discharges of the kind now under consideration, is, for the most part, the natural secre-

tion increased in quantity. Hence, it is necessary in the first place to give a brief statement as to the nature and physical properties of the healthy secretions of the generative passages. Dr. Beigel's account of the nature and variations in the secretions of the generative passages may here be referred to as containing an admirable exposition of this subject,* which has also, from time to time, engaged the attention of several other distinguished observers.

At the orifice of the vagina, we have *sebaceous follicles* scattered over the nymphæ, clitoris, and inner surface of the labia, the secretion of which contains butyric acid, and has a strong and somewhat ammoniacal odor (A. Farre). Around and at the sides of the vaginal aperture there are many *muciparous follicles* which secrete viscid mucus. Further, we have the vulvo-vaginal glands, which secrete a viscid fluid with a neutral reaction (Beigel), resembling somewhat the prostatic fluid, and having a peculiar odor. The secretions of these glands at the vaginal orifice are liable to considerable increase during venereal excitement.

Regarding the *vaginal mucous membrane*, it may be stated that it secretes a fluid, at first transparent, acid, and mixed with large quantities of epithelial *débris*. This secretion usually appears at the outlet as a whitish or milky-looking secretion. Sir C. M. Clarke considered this appearance due to the entanglement of air, just as the saliva forms a whitish accumulation at the corners of the mouth in individuals speaking rapidly. The more decidedly *curdled* aspect of this secretion occasionally observed appears to depend on the albumen being precipitated by the acid of the secretion. In the vaginal mucus Donné found, on examination by the microscope, a number of *trichomonata*, which are oval, shaped like a pear or biscuit, and are from six lines to an inch and four lines long. Respecting these animalcules, however, Scanzoni makes the remark that their presence is connected with a certain alteration of the product of the vaginal secretion, and that they do not develop much except in a mucus incontestably of pathological nature. Beigel has also failed in finding them.

The mucous secretion of the *uterine cervical cavity* is of a very different character altogether. The glands of the uterine cervix, first accurately and thoroughly described by Dr. Tyler Smith,† are

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* " Researches on the Secretions in Fluor Albus." By Dr. Beigel. Deutsche Klin., 1855, p. 205.

† See his elaborate and original work, On the Pathology and Treatment of Leucorrhœa. London: Churchill. 1855.

exceedingly numerous, and the apparatus there situated is, when in a state of activity, capable of producing an enormous amount of secretion. Hence the extreme importance of this part of the generative passages in all considerations having reference to the etiology and nature of leucorrhœa.

The secretion of the glands of the cervix uteri is not acid but alkaline. It is, when seen issuing from the crypts of the mucous membrane, transparent, somewhat resembling the mucous secretions of the nasal passages, or white of egg, in appearance, but very tenacious and viscid; it contains many mucous corpuscles, and epithelium of the columnar variety is mixed up with it. The characters, as here described, are lost in the discharge as usually witnessed, after it has passed down the vaginal canal and become mixed with the secretions of the latter surface. The effect of the admixture of the secretions from the cervix and the vagina is that a white soapy or creamy fluid results. It now and then happens, however, that the cervical secretion escapes from the vagina in the form of masses of coagulated albumen. Ordinarily, and when the parts are in a condition of health, the secretion from the cervix is not probably considerable in quantity. The mucus lubricating the vaginal passages during labor proceeds chiefly from the cervix uteri.

Concerning the natural secretions of the *internal membrane of the body of the uterus* during the inter-menstrual periods, we know very little. With the history of the changes which take place during menstruation itself, we are even imperfectly acquainted. And, as a consequence of this, there is very little certainty as to the amount of secretion which this membrane contributes in cases of leucorrhœa. When the colored discharge of menstruation is absent, it is often replaced by a colorless secretion alone, which appears externally, lasts a few days, and then disappears; and it is rational to suppose that this colorless discharge coincident with the proper menstrual period proceeds from the same source as the ordinary menstrual fluid.

Lastly, respecting these secretions in a state of health, it must be stated that usually they are only sufficient in quantity to lubricate the parts; but that there are not a few instances in which the secretions are much more profuse, and yet without entitling the case to be considered altogether pathological. In some cases, the increase in quantity is purely physiological.

We may next consider

THE CAUSES OF LEUCORRHŒA.

The causes of leucorrhœa may be divided into two classes—*con-stitutional* and *local*—not always easily separable, for the reason that both kinds of causes are often present in the same case. The chief causes of leucorrhœa will be now briefly considered under these two heads.

CONSTITUTIONAL OR GENERAL CAUSES.—The first of these is *climate*. In warm countries, leucorrhœa is more common than elsewhere, and coexists with a great tendency to menorrhagia, which indeed, in common with the leucorrhœa, arises in great measure from deficient tonicity of the uterine vessels, frequently the forerunner of serious uterine disease. Moist and damp sit-uations appear to have a similar effect: thus the inhabitants of Holland, Belgium, and the fenny districts of England, are said to be peculiarly liable to leucorrhœa.

A state of *plethora* is capable of giving rise to leucorrhœa, the discharge being in such a case a kind of relief to the overcharged system. Women who live too well and take but little exercise suffer in this way. When the opposite state of things is present, and the system is reduced by losses of blood or defective nutrition to a condition of *anæmia*, leucorrhœa may be one of the results observed. Whether in the case of a plethoric or an anæmic patient, leucorrhœa may occur irrespectively of childbearing. It very frequently happens, however, that the influence of *childbearing* is very considerable in causing leucorrhœa, particularly in anæmic individuals. The effect of childbearing is twofold. Women of weakly constitution, whose blood is thin and watery, frequently suffer to a very troublesome extent from leucorrhœa during the period of pregnancy ; after pregnancy has ended, the increased action of the various glands connected with the generative organs continues, the effect of which is persistence of the leucorrhœa. The congested condition of the generative organs left behind after pregnancy is the cause of the leucorrhœa in many cases. Many cases of leucorrhœa have their origin in a congested or chronic inflammatory condition of the uterus, the consequence of abortions, as well as following delivery at the full time. In such cases, leucorrhœa is associated with profuse menstruation and other sexual disturbances ; and in the end the patient becomes the sub-ject of a nearly constant discharge from the vagina. In women who have borne children in quick succession, or who have had

abortions, and who have been for some time the subjects of leucor-rhœa, the uterus becomes seriously altered in texture, in size, and in shape; and this may be associated with an anæmic condition generally. Here, as in most cases, we perceive the difficulty of drawing fine distinctions; the constitutional merges into the local cause, and *vice versa*.

In individuals of *phthisical tendency*, leucorrhœa is more apt to arise in connection with childbearing; and in such persons, indeed, very frequently independently of it. In some cases, *overlactation*, by inducing a state of extreme debility, appears to produce leucor-rhœa, often in a very extreme degree of profuseness.

The relations of *menstrual disorder* and leucorrhœa as cause and effect require a word or two. Leucorrhœa is often present in indi-viduals in whom menstruation is absent; and Dr. Tyler Smith considers the leucorrhœa as vicarious of the menstrual secretion in such cases. It is questionable how far this view of the case is correct. It appears more rational to suppose that both the leu-corrhœa and the menstrual deficiency are due to derangement of some one or other of the vital processes. Thus the individual is rendered weak by overlactation or some other debilitating agency; the menstrual secretion becomes less and less healthy, and less sanguineous in character; she becomes affected with leucorrhœa; the leucorrhœa is naturally more profuse at the menstrual period, when the generative organs are in a state of engorgement, than at other times; and the condition of things arises described by Dr. Tyler Smith* as "leucorrhœa vicarious of menstruation."

Chronic disease of the lungs, especially *emphysema* and *valvular affections of the heart*, are often observed in association with chronic leucorrhœa, which is, under such circumstances, difficult to cure.

There are some general observations which apply to all these cases in which leucorrhœal discharge arises from a constitutional or general cause—that, as a rule, symptoms which are usually associated more particularly with actual pathological changes in the uterus, such as pain, tenderness, &c., are, at all events at first, absent. Further, the quantity of the discharge is not very con-siderable, unless there be some local reason for it; and lastly, the discharge itself, when produced by purely constitutional causes, is less liable to become offensive or sanious than in cases where there is some actual lesion of the generative organs present.

* On Leucorrhœa.

When leucorrhœa is present, associated with any general defective condition of the bodily health, it may be taken for granted that, if the leucorrhœa be not absolutely dependent thereon (a relation which is found to subsist in many cases), it is at all events aggravated and rendered persistent thereby; and there could be offered no more striking proof of the truth of this statement than that which is found in the fact that a purely constitutional treatment is capable of effecting so much in the way of cure in those cases where the leucorrhœa is chiefly dependent on local disorder.

LOCAL CAUSES OF LEUCORRHŒA.—These are very numerous. Any irritation and almost any disease of the generative organs may be associated with a leucorrhœal discharge.

Concerning the distinction between the very numerous local conditions causing leucorrhœal discharge, it is to be observed that the diagnosis is generally impossible without a vaginal examination; and when, therefore, the cause of the discharge is not evidently a constitutional one, this examination should be made. The deductions to be drawn from such a vaginal examination have been already described.

It may, however, be well to enumerate the chief of these local causes of leucorrhœa: *chronic congestion of the uterus; chronic inflammation of the cervix uteri;* irritation produced by *excessive sexual intercourse; masturbation; general catarrhal inflammation of the vaginal canal; growths in the generative passages*, or exercising an irritating influence external to them, such as *polypus uteri, fibroid tumors of the uterus, hypertrophy of the cervix or of the uterus itself, cancer of the uterus; dislocations or distortions of the uterus*—as *flexions, retro- and ante-version; prolapsus* (usually associated with *hypertrophy*) and *inversion of the uterus; prolapsus of the bladder or vagina.* Inveterate mucous discharges are sometimes found to be due to presence of *minute vesicular polypi* growing within the cavity of the uterus.

But it is not necessary that the actual irritating cause be situate in the generative canal: we find many cases in which irritation or disease in the neighboring organs is the cause of the leucorrhœa. *Ascarides in the rectum* are frequently found, particularly in young children, to produce leucorrhœa. In such cases, the ascarides may travel from the rectum to the vagina. *Hæmorrhoids* have often a like result. What is true of the rectum is also true of the *urinary bladder*, disease of which (as *calculus, catarrh*, &c.) is usually associated with presence of leucorrhœal discharges. *Vascular tumor of the meatus urinarius* may also produce leucorrhœa.

Lastly must be mentioned that class of cases in which the leucorrhœa is *of specific origin*, syphilis or gonorrhœa being the real cause of the persistent and peculiar discharge then observed. Further remarks will be found on this subject under the head of "Diagnosis."

TREATMENT OF LEUCORRHŒA.

The question as to the best method of treatment to be pursued for the removal or amelioration of discharges of the kind now under consideration is a very wide one. It has been shown that these discharges arise from, or are produced by, an immense variety of causes, and the treatment must differ correspondingly, according to the nature of the case. Perfectly satisfactory results can only be hoped for from a mode of treatment based on a complete knowledge of the case actually before us, and on a just appreciation of the relations which, as causes and effects, subsist between the condition of the patient and the symptoms present. To endeavor to seize upon the true *indication* for treatment, this should always be our object; and to be able to do this, the diagnosis must be a complete one.

The treatment of leucorrhœa (excluding from the consideration discharges of a specific nature) is of two kinds, *general* and *local*. There are few cases of leucorrhœa which may not be benefited by the exclusive adoption of either one of these methods of treatment perseveringly followed up; but, in most cases, a combination of the two is the more suitable, and yields most satisfactory results. Even when there is a tangible alteration of the uterus (presence of tumors, dislocation of uterus, &c.), giving rise to leucorrhœa, general treatment is often of very great service; although, in order to cure the disease giving rise to the discharge, local measures may be indispensable. Correspondingly, local treatment may be found of great service in cases where radical cure can only be expected to follow adoption of judicious general treatment. And this accounts for the apparent paradox, that, on the one hand, the upholders of a general treatment, and on the other, those who attach most importance to local treatment, both find their own particular theories justified by the results of their practice.

To remove the *cause* of the leucorrhœa is the first indication. The treatment must have regard primarily to that. In a case of phthisis, for instance, in which leucorrhœa is present, the treatment must have regard to the phthisis in the first place, although it may be necessary also to employ local or other measures calcu-

lated to arrest or diminish the leucorrhœal discharge. Where the leucorrhœa is due to, or associated with, an anæmic condition, the removal of that condition should be the chief object of our endeavors. If there be any reason to suppose that the patient's residence is unfavorable hygienically, this must be remedied. If the leucorrhœa be associated with exalted activity of the sexual organs, as is sometimes the case when intercourse is indulged in inordinately, the indication is obvious. There are few cases of leucorrhœa in which the uterus is altogether sound. The organ is usually congested, large, its tissues relaxed, and the activity of the glandular apparatus lining the cervix unnaturally increased; under such circumstances, the primary object is to remove the condition of the uterus on which the leucorrhœa depends. (See "Treatment of Chronic Inflammation of the Uterus.") The next element in the treatment is of the utmost importance; in all cases it is absolutely essential to supervise the due action of the digestive organs, and of the great cutaneous surface. Plans of treatment, in other particulars the most judiciously contrived, may prove useless unless these primary points be attended to. The quantity, quality, and mode of taking food, must be carefully adjusted to the requirements of the case. The skin must be kept warm, and its due action insured by employment of friction, baths, and exercise. In patients who have been long the subjects of leucorrhœal discharge, the importance of carefully regulating the "mode of life" cannot be over-estimated; and it is the more necessary to insist on this, as not unfrequently the practitioner on the one hand, and the patient on the other, pay far too little attention to these essentials; the result of this neglect being a temporary, and not a radical, cure of the affection.

Here a caution must be given. There are some cases of long-standing profuse leucorrhœa in which bad results may ensue from a too sudden stoppage of the discharge; due caution should be exercised, therefore, in the application of remedies in these cases.

Resort to Watering-places.—Several watering-places have obtained repute from the efficacy of the mineral waters there to be obtained in removing leucorrhœa, especially that of a chronic form. It is unquestionable that very good effects are frequently obtained under the use of the waters in question; the effect produced results in many such cases from the change of air, the perfect rest and relief from ordinary cares and anxieties, the regular exercise, simple diet, and the change in the mode of life generally, all of which play, unquestionably, a most important part in bring-

ing about the cure, as much as from the specific curative power of the water itself. The improvement in the general health is usually rapidly followed by a cessation or diminution of the leucorrhœa. In a certain number of cases we find great difficulty in persuading patients to follow up systematically the course of treatment enjoined while they are living in their own houses, surrounded by home associations and in a manner tied down to home habits; and for this reason it is sometimes necessary to send patients to watering-places in order that they may be induced to give themselves a fair chance of recovery. In the choice of a watering-place, regard must be had to the special condition and requirements of the patient. ("See Treatment of Chronic Inflammation of the Uterus.")

Baths.—These are very powerful therapeutic agents in the treatment of cases of leucorrhœa dependent on constitutional causes. The use of the bath has the effect of determining the blood to the skin, and thus relieves the congestion of the internal organs usually present in these cases. The condition of the patient must be regarded in reference to the choice of the form of bath. The most simple form of bath is the "sponge bath," the patient being directed to sponge the whole of the body night and morning with water, at first tepid, and then quite cold; the skin being rubbed dry by means of a coarse towel, and the friction continued for some minutes. Then comes the hip-bath. This may be at first used tepid, afterwards cold. The hip-bath may be either of pure, salt, or medicated water. If the hip-bath be medicated with the view of the fluid acting upon the interior of the vagina, means must be taken to insure the passage of the fluid into this canal. The hip-bath is, however, very serviceable when plain water is used. After the bath, the skin should be rubbed as in the case of the sponge-bath. With due care, the hip-bath or sponge-bath, alone or together, may be used in all cases, however debilitated the patient may be. It is necessary that a "reaction," as it is termed, take place after the bath, or it does harm, and the patient suffers from headache or other inconvenience for some hours after. For those who are able to bear it, the "shower-bath" or the cold plunge-bath are to be recommended. There are some cases which are most benefited by the warm-bath, in which the patient is wholly immersed. Thus, in cases of leucorrhœa which, from the severity of the symptoms and suddenness of their invasion, may be termed *acute*, the warm bath is of the greatest utility.

Injections.—Judiciously used, injections are of the greatest value in the treatment of leucorrhœa. In many cases they have a curative effect; in all cases they are of some service; and in certain cases they are almost indispensable. But it is not less true that leucorrhœa may be often cured without recourse to injections at all.

The first point to be attended to in the employment of injections is the form of instruments to be used. It is in most cases mere trifling to employ a small syringe. What is necessary is an apparatus by means of which a considerable quantity of fluid may be thrown up and obtain access to the cervix uteri. A large-sized gum-elastic vaginal pipe rather longer than the speculum, open above by five or six tolerably large perforations, should be first introduced into the vagina so as to reach the os uteri. Having been introduced, the lower end of the pipe is then to be connected with the pipe of the injection apparatus. This is made in a variety of forms. The most convenient of the apparatus hitherto employed is Kennedy's syringe. I have, however, found it exceedingly difficult to induce patients, especially those who are weakly and debilitated, to use any instrument requiring the application of manual force, however slight, for a sufficient length of time to do good; moreover the quantity of fluid capable of being used at each operation is too restricted. One of the most important—as I believe *the* most important—therapeutic actions of injections, is due to the application of cold to the inferior segment of the uterus, by which the contractile power of the bloodvessels is increased, and the chronic congestion or inflammation of the part diminished. In order that this particular action may be best insured, it is evident that a somewhat continuous irrigation of the cervix uteri is necessary, and this is not to be had by the ordinary apparatus— unless, indeed, by taking unusual pains or trouble in the matter. In order to supply the defect in question, I have had constructed a very simple and effective instrument, by which the patient can have the benefit of irrigation of the vaginal part of the uterus of some minutes' duration, and without the necessity for manual effort, such as pumping, of any kind. An India-rubber bag or reservoir, capable of holding nearly a gallon of water, has attached to it a long flexible pipe, which ends in the vaginal exit tube. The bag filled with water is hung up above the patient, or placed on an article of furniture a little above the patient's body. The water descends by the action of gravitation alone; the rapidity of the flow is regulated by simply turning a stop-cock, placed just out-

side the vaginal tube, and the water flows until the reservoir is empty. The douche apparatus in question has the advantage of great portability and simplicity. The douche should, it is hardly necessary to observe, be used with caution in cases where pregnancy is suspected to be present.

Fig. 45.*
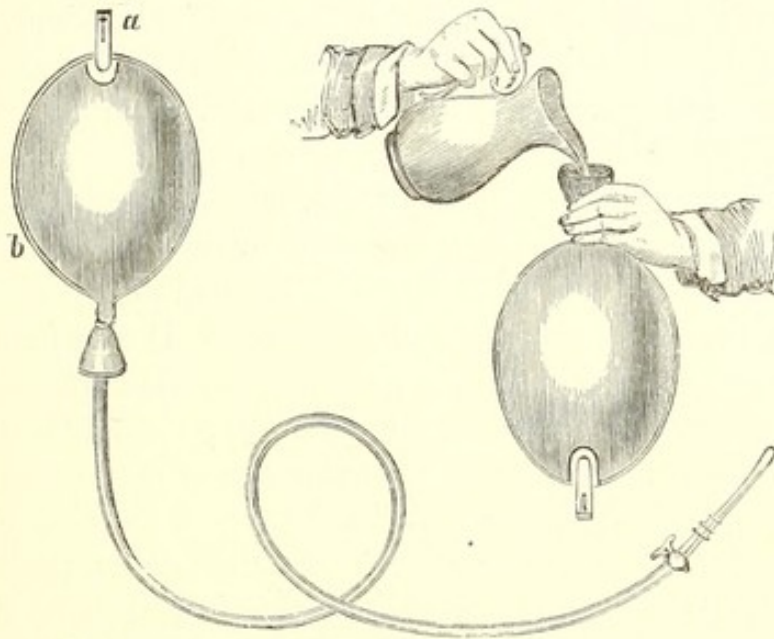
The next question is as to the nature of the fluid to be injected. Very much benefit will be derived from the use of plain cold water, if only a sufficient quantity be used at each injection. And for a variety of reasons, not the least of which is that it is always accessible, and no preparation or forethought is required, it is advantageous to use water alone. The cold water has a powerful effect in diminishing that congestion of the uterus and generative organs generally, which is usually present in the class of cases now contemplated. And it is, as I have just remarked, very questionable whether the effect of injections as ordinarily administered, in diminishing the discharge, be not for the most part due to this circumstance. Medicated injections do not, as a rule, actually come into contact with the surface (the interior of the cervix), which, in obstinate chronic cases, is the chief source of the discharge, and chiefly act on that small part of the cervical cavity which is exposed at the os uteri.

A variety of substances are used mixed with water, and consti-

* The "uterine douche," constructed as described above, is to be procured of Messrs. Savory & Moore, New Bond Street.

tuting *medicated* injections. Most of these are considered beneficial from the astringent properties they possess. Alum, sulphate of zinc, nitrate of silver, decoction of oak bark, or tannin, are those most ordinarily used. A combination of tannin and alum (one or two drachms of tannin with four drachms of alum to two pints of water), recommended by more than one eminent authority, I have found very convenient. In all cases where medicated injections are used, it is desirable to employ, first, a simple injection of water, and to throw up the medicated liquid last. It is frequently found necessary, in obstinate cases, to change the injection from time to time. A particular remedy loses its effect after a few days' use.

Medicated Pessaries.—If we wish to employ medicinal agents, the application of which shall be continued over a long time, medicated pessaries, as prepared by Messrs. Duncan and Flockhart of Edinburgh for Sir J. Y. Simpson, offer great facilities. They are prepared with cacao butter, have the shape of a rifle-bullet, and contain various astringent or caustic substances in suitable quantities. When cold, they are firm and easily adjusted in position at the os uteri. The warmth of the body soon liquefies the pessary, and leaves its active constituents free. Dr. Tanner was, I believe, the first to employ cacao butter as a menstruum.

Blisters to the lumbar or sacral region are occasionally employed with advantage in obstinate cases of leucorrhœa. Counter-irritation of other kinds is serviceable under the same circumstances.

Injections of a medicated nature are sometimes necessary to obviate the offensiveness of the discharge which may be present, as in cases of cancer, cauliflower excrescence of the os uteri, &c. In such cases, antiseptic agents, *e. g.* diluted tincture of iodine, tincture of iron, perchloride of iron suspended in glycerine, &c., and applied by means of cotton-wool or lint is exceedingly useful.

In cases where the discharge is acrid, and gives rise externally to irritation, it is necessary to order frequent ablutions with tepid water. A lotion containing a little carbonate or biborate of soda in solution is occasionally found serviceable in such cases.

Internal Remedies.—The object with which we give internal remedies in leucorrhœa is usually that of remedying the constitutional derangement, whatever that may be, which is present. Purgatives may be necessary to produce regular action of the bowels, especially at first—and of these it is better to give small doses

frequently than large doses at longer intervals. Where the patient is chlorotic, aloes may be given; but in other cases it is, as Dr. Tyler Smith justly remarks, to be avoided. The debility with which in most cases leucorrhœa is associated, necessitates the employment of tonic remedies, of which the best is unquestionably iron. Iron and alum combined have been employed by other practitioners with success. The preparation of iron I have most used has been either the ordinary Pharmacopœia iron mixture, or the tincture: less probably depends on the particular form of the drug than on the fitness of the case for iron in any shape. Certain therapeutic agents, such as cubebs, copaiba, &c., have been recommended in leucorrhœa, as having special effects in diminishing secretions from mucous surfaces. The ergot of rye has a better claim to our notice. I have used it in cases where the uterus was in a lax, congested condition, with the double effect of relieving the profuse menstruation and leucorrhœa sometimes associated. As a rule, we cannot expect much specific effect from internal remedies in cases of leucorrhœa. Stimulants are very frequently necessary in the treatment of chronic cases of leucorrhœa attended with debility and prostration; they are to be looked upon in some instances quite as essential as good food. The stimulant selected should be one which is found to suit the patient. The administration of stimulants is to be reprehended when the patient is plethoric, and when the viscera, pelvic and abdominal, are loaded with blood. The leucorrhœa endemic in fenny districts is treated successfully by bark, wine, gin, and tea and coffee.

Schönbein and Aran have recommended lavements containing aloes, suspended in mucilage or soap and water, in the treatment of chronic leucorrhœa. The lavements are to be used every day, or every other day, the rectum having been first washed out by water alone. The remedy in question must be used with caution. It may here be remarked that aloes formed one of the principal ingredients in the celebrated pills of Stahl—in high repute many years ago for the cure of leucorrhœa.*

The treatment of leucorrhœa dependent on local disorders of various kinds necessarily involves the removal of the special cause. It is to be observed, however, that in many cases where the cause of the leucorrhœa is a purely local one, a constitutional treatment is often highly beneficial.

* See Dr. D. D. Davis's work, vol. i, p. 367.

CHAPTER IV.

AMENORRHŒA.

AMENORRHŒA; Explanation of the Term—Amenorrhœa without Secretion—
  Various Causes—Relation of Chlorosis to this Condition—Imperfect estab-
  lishment of Menstruation—Amenorrhœa with Retention.—SUPPRESSION OF
  MENSTRUATION; Sudden form; Gradual Suppression—Various causes, Gen-
  eral and Local.
TREATMENT OF AMENORRHŒA.—Treatment of AMENORRHŒA from Delay of
  Puberty or Defective Development—Cases in which there is Disorder of
  General Health associated with Amenorrhœa; Efficacy of General Treat-
  ment; Purgatives; Tonic, Ferruginous, &c., Food; Emmenagogues—Chlo-
  rosis and Amenorrhœa—Vicarious Menstruation.
TREATMENT OF SUPPRESSION OF MENSTRUATION.—Acute Form; Means to be
  adopted; various Emmenagogues; Mechanical Stimulation of the Uterus—
  Treatment of cases of Menstrual Retention—Cases of Absence of Vagina—
  Cases of Imperforate Hymen—Cases of Imperforate Os Uteri.

THE various conditions in which "amenorrhœa"—which in the
widest sense of the term must be understood to mean absence or
defective performance of the function of menstruation—is observed
will now be considered.

Menstruation cannot occur if the ovaries be absent or defectively
developed. And if the ovaries be well formed, absence of the
uterus, or an imperfectly developed state of this organ, renders it
equally impossible for menstruation to take place. Further, the
uterus and ovaries being sound, the vaginal canal must be patent
in order that the secretion may find its way out; the menstrual
secretion may be properly formed, but if the canal of exit be
occluded, there will be amenorrhœa from *retention*. The proper
method of distinguishing cases of non-secretion from cases of
retention has been pointed out in the first part of this work.

Amenorrhœa in which there is no Secretion.

The cases in which the uterus or ovaries are defectively formed,
constitute a class by themselves (see p. 149). The next class of
cases are those in which the uterus and other organs are well
formed up to a certain point, but fail in undergoing that farther
degree of change or increase in size which is usually observed at
the age of puberty—the advent of puberty, in other words, is

retarded. This retardation of puberty is, in most cases, the result of disease, of which we very shortly find other evidences present, but in a few cases the puberty is retarded much beyond the usual time, the individual remaining apparently in perfect health. These two classes of cases are widely different, and their discrimination is of great importance (see "Diagnosis," p. 149). Amenorrhœa from non-secretion of the menstrual fluid in women who have arrived at puberty, and in whom the sexual organs present no remarkable deviation from the normal state, is a symptom of very great interest, the cases included under this head being very numerous. It is very frequently the case that this form of amenorrhœa is connected with a defective condition of the general health. Of the *general conditions* which may prevent the occurrence of menstruation, *Chlorosis* is perhaps the most important. Opinions are somewhat conflicting as to the precise relation in which the two things—the chlorosis and the amenorrhœa—stand one to the other. The signs of what is termed the "chlorotic" condition are the following: At the period when the external signs of puberty begin to manifest themselves, the patient usually experiences, at monthly intervals, some of the "molimina menstruationis" before referred to, but, coincidently, she falls into a general state of ill-health. The strength fails, there is extreme lassitude, often great drowsiness and indisposition to exertion of all kinds; there is cephalalgia, often very intense in character; the whole digestive system is deranged; inappetency, or singularly depraved states of the appetite, nausea, obstinate constipation— these are almost constant symptoms. The skin assumes a remarkable and highly characteristic appearance, being, as the name *chlorosis* denotes, of a greenish-yellow color, more or less intense in degree in different cases; a ghostly kind of pallidity is often seen. The lower extremities may become œdematous, and the disturbance of the circulating apparatus is evinced both by this and by the frequent palpitations, noises in the ears, and alterations of the sounds of the heart and of the great vessels detected by auscultation. The chlorosis is to be regarded in these cases as the cause rather than the consequence of the amenorrhœa, or, to speak more correctly still, we should regard them both as due to the disordered condition of the whole nutritive functions of the body, which is the primary etiological element. Chlorosis may be observed not only in cases where there has been no menstrual discharge of any kind, but also in individuals who have formerly

menstruated slightly, but in whom the menstrual phenomena have ceased to evince themselves.

It does not appear that, in any considerable number of cases, the *tuberculous diathesis* exerts a marked influence in preventing the establishment of menstruation, although it may exercise an appreciable disturbing effect on that function at a later period, the reason for which appears to be that menstruation generally commences at an earlier age than that at which the manifestations of the tubercular diathesis most commonly occur. Sometimes, however, the retardation is unmistakably due to the presence of a phthisical tendency, which is itself indeed an evidence of an extremely low state of the nutritive powers.

An attack of severe illness of any kind will delay or prevent the appearance of the menses. Dr. West mentions a case in point, in which a severe attack of scarlet fever at the age of fifteen had had the effect of preventing menstruation up to the age of twenty.* *Cretinism* has a similar effect.

There appear to be a few cases in which permanent amenorrhœa without disorder of any kind is observed, and this condition does not necessarily in such instances prevent the occurrence of pregnancy. Instances of idiosyncrasy in this particular are very rare.

Cases in which there is *imperfect establishment of menstruation* are not uncommon. The period of puberty arrives, and a slight menstrual discharge appears, then ceases, and reappears again slightly at the end of two months or more or less. Or the colored discharge is replaced by a pale fluid, tolerably regular in its monthly appearance. These are cases to which the term amenorrhœa is, strictly speaking, not applicable, but they really belong to the same category as those just considered, for as a rule the deficient menstruation is due to some disorder of the general health. A circumstance sometimes observed in cases where menstruation does not take place is the occurrence of what is termed *vicarious menstruation*—a periodic sanguineous discharge from some other part of the body, one of the mucous surfaces, or the surface of an ulcer.

Amenorrhœa with Retention.

The most common cause of menstrual retention is an imperforate condition of the hymen. Another, less common, is congenital

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* Lectures on Diseases of Women, p. 34.

occlusion of the os uteri, which may or may not be associated with absence of a proper vaginal canal. Cases of *complete* retention from the first are generally marked by the following symptoms: puberty arrives, the patient experiences each month sensations such as ordinarily accompany menstruation, these symptoms increasing in severity each month, until the pain becomes almost intolerable. The menstrual fluid collects in and distends the uterus; if the hymen be the seat of the occlusion, the vagina becomes distended also, and later still the fluid may regurgitate through the Fallopian tubes into the peritoneal cavity (see "Diagnosis of causes of absence of Menstruation").

Retention of menstrual fluid is not always accompanied with amenorrhœa; the outlet may be so small as only to allow of partial and incomplete evacuation of the menstrual fluid (see "Dysmenorrhœa").

Suppression of Menstruation.

Menstruation may be abruptly stopped at any period of its occurrence by the operation of certain external or internal causes. Suppression of menstruation is a common but not universal sign of pregnancy. Menstruation may be stopped abruptly, or more slowly and gradually. We have thus two distinct types of cases.

a. Sudden Form.—Here the circumstances indicate the operation of a disturbing element: the menstrual period having arrived, the discharge has continued for some hours and has then suddenly ceased, there being an apparent connection between the cessation in question and some external or internal disturbing influence known to have been in operation at that particular juncture. Thus the menstrual flow may be suddenly suppressed by the feet getting wet or by a chill received in any other way, by fright or by the reception of distressing or exciting news. These are the most common causes of the kind of suppression here alluded to. Sexual intercourse has been known to produce the same result. The first symptom of the presence of one of the exanthematous diseases may be the sudden stoppage of the catamenial discharge.

Another variety of this form of suppression is that in which there is no cessation of the discharge of the marked character just described; the discharge continues the regular number of days, but fails to recur at the expected time. This form of suppression, as also that which may be called "suspension" of the discharge, may occur from a variety of causes; and it may be a matter of great difficulty to trace it to its real source. The catamenial

function is frequently suspended, according to Sir Ranald Martin, in ladies on the voyage from India by the Cape. Dr. Tyler Smith states that these effects of a marine atmosphere extend in some habits to a residence by the sea-side. He mentions an instance in point, in which a lady who went to reside at one of the islands on the western coast of Scotland, together with her sister and their two maids, all became amenorrhœal.* Montgomery notices the effect of mental depression in producing this suspension in the case of young girls confined in prison. I have had occasion more than once to observe that women are liable to have the menstrual discharge suspended for one or two periods after first going to reside in a house the staircases of which are of stone and un-carpeted, their previous residence having had a wooden staircase only.

β. *Gradual Suppression.*—Under this head may be considered those cases in which the discharge, having diminished in amount for two, three, or more periods, or the interval having become longer and longer, the discharge has finally ceased.

The causes of gradually supervening suppression of the menses may be conveniently classed under three heads,—constitutional, organic, and physiological.

Constitutional.—Any circumstance, or chain of circumstances, calculated to interfere with the nutrition of the body generally and the due performance of the various processes the sum of which con-stitutes life, may give rise to suppression or cessation of the men-strual secretion. It very frequently happens that, at the very time when the vital processes are in a state of great activity— when the girl is changing into the woman, and it is more than ever necessary that the body should be duly exercised, well nourished, exposed to the fresh air, and recruited by sufficient rest—these conditions so necessary to due development and healthy growth are wanting. Young women belonging to the lower and middle classes of society, and who are engaged for many hours daily in sedentary occupations of various kinds, needlewomen especially, more particularly suffer in this way. The health gradually fails, and after a time menstruation ceases. Then, and not till then, in the majority of cases, advice is sought. Suppression not seldom takes place in a more acute manner in young women so engaged; a slight cause, and one which in a robust individual would be in-adequate, being now sufficient to determine it. There can be no

* On Leucorrhœa, p. 182.

doubt that, in a very large proportion of cases of suppression which present themselves in young persons, the cause is purely constitutional, the failure of the general health having preceded the amenorrhœa.

To give an account of the various constitutional conditions, derangements, or diseases, which may lead to or have an effect in the production of gradual suppression of the menses, would be an almost endless task. The principal thing to keep in view is this, that when this gradual suppression is observed it behooves us carefully to scrutinize the bodily condition of the patient generally. The suppression is an important symptom, not in itself, but as indicative of some, perhaps deeply-seated, morbid change, the early detection of which may be of the greatest service to the patient, if a right use be made of the knowledge thus acquired. The more common of the general constitutional conditions leading to the suppression now under consideration are : *long-continued anxiety of mind, plethora, chlorosis, anæmia, severe hemorrhages, or long-continued discharges from the various mucous surfaces, deposition of tubercle in the lungs or other organs.*

Premature termination of the catamenia, which may be considered as a form of amenorrhœa, may be caused by chronic disease, by severe and repeated hemorrhages, &c., or it may occur without any assignable reason. In the case of a woman more than thirty years of age the amenorrhœa may turn out to be permanent, although of course this could not be known at first.

Of the *local causes* of gradual suppression, the following are the chief. *Disease of the ovaries* is often attended from the first with amenorrhœa, but not by any means always. When one ovary alone is affected, the menstrual functions may go on apparently as usual. *Chronic peritonitis*, resulting in the formation of constricting bands over the ovaries—a condition to the frequent occurrence of which Dr. Tilt has, in this country particularly, called attention—may give rise to amenorrhœa of this kind. *Chronic hypertrophy* of the uterus is often associated with amenorrhœa, and may be its sole discoverable cause. This condition of the organ is met with in prostitutes, in cases of undue sexual indulgence, or in women who have had frequent and rapidly succeeding pregnancies. *Fibrous tumor* of this organ also now and then produces amenorrhœa. Absence of menstrual discharge is sometimes noticed previous to the occurrence of *peri-uterine hæmatocele. Stricture of the cervical canal of the uterus*, occurring after pregnancy, or produced by the repeated application of caustics to the os uteri, is an occasional

cause of this form of amenorrhœa. *Premature senile atrophy of the uterus* is another cause.

We generally observe that there is no exact relation between the intensity or extent of the local disease and the amenorrhœa, for the catamenial function may continue both when there is very great disorder of the general health, and where there is a very advanced condition of disease of the generative organs themselves.

TREATMENT OF AMENORRHŒA ARISING FROM DELAY OF PUBERTY OR IMPERFECT DEVELOPMENT OF THE GENERATIVE ORGANS.

In cases where the arrival of puberty is simply delayed, if the patient be apparently strong and healthy, and if there be no appearance of menstrual molimina, no interference is necessary, at first, at all events; and under these circumstances the result is usually satisfactory. The bodily rather than the mental faculties should be called into existence, and every means taken to nourish and invigorate the system at large.

Absence of menstruation, together with absence of menstrual molimina, is hardly ever noticed after the age of nineteen or twenty, unless dependent on defective development of some part of the generative apparatus. In cases of defective development of the uterus or other of the generative organs, the patient may be otherwise in perfect health; only a few of these cases can be greatly benefited by treatment. Those cases are the least encouraging in which the menstrual molimina are entirely absent. Where the absence of menstruation is connected with the presence of an undersized uterus—the "infantile" uterus—Sir J. Y. Simpson recommends the continued wearing of a series of small galvanic pessaries of greater and greater length and thickness. The irritation which the presence of the pessary produces has been found to induce the occurrence of menstruation. Cases in which the uterus is shorter and generally smaller than the normal uterus are those only to which this method of treatment is applicable.*

It need hardly be stated that cases requiring this method of treatment are very exceptional indeed. The circumstances which might justify or necessitate its adoption would be those in which general invigorating measures have been fruitlessly tried for a considerable period (which period would vary according to the age of the patient), a very complete diagnosis made as to the state of

* Med. Times and Gazette, June 15, 1861.

the uterus, and the condition of the health of the individual being such as conclusively to show that the absence of menstruation is not dependent on any defect therein. The employment of Faradization promises good results under such circumstances. In a well-marked instance of infantile uterus in a girl æt. 20 who had never menstruated, this agent was used under my direction in University College Hospital for some weeks. The action of the current had the effect latterly of inducing a copious leucorrhœal discharge. The patient became vastly improved by the treatment adopted, and left the hospital for benefit of change of air; but the final issue of the case yet remains to be seen.

In some cases, where the general health appears to be good but no menstruation occurs, marriage is efficacious in inducing the appearance of the menstrual flow. Marriage should not, however, be recommended with the view of curing amenorrhœa, unless means have been taken to ascertain that the vagina and uterus are well, or reasonably well, developed.

TREATMENT OF AMENORRHŒA ASSOCIATED WITH DISORDER OF THE GENERAL HEALTH.

A large number of cases come before us in which menstruation is imperfectly established: the discharge has appeared once or twice, slight in quantity, and has then ceased; the subjects of these symptoms being usually young women between the ages of twelve and eighteen. We find the individuals in question suffering from general indisposition of some sort, with which the amenorrhœa is associated. In a smaller number of instances there has been no attempt at menstruation, the patient having fallen into a state of ill-health before arriving at the menstrual age.

The relation, as cause and effect, subsisting between the disorder of the general health and the absence of menstruation, it is exceedingly important to recognize from a therapeutical point of view. "The function of menstruation," says Sir Charles M. Clarke, "like the other functions of the body, is best performed when the system is in health. Now, health is not constituted by excess of fulness, or by the performance of violent actions, any more than by debility or enfeebled action; consequently, the exhibition of stimulants will not influence this secretion, unless attention be given to the restoration of the general health of the patient even in cases of debility. Still less will such a mode of treatment be applicable to cases of interrupted menstruation oc-

curring in plethoric habits, where the presence of plethora itself is the cause of the interruption of the due performance of the natural secretions.   Instead, then, of resorting to such measures—to the employment of the whip and of the spur in such cases (when, if they do anything, they do mischief)—let the morbid peculiarities of the constitution and the habits of life of the patient be taken into consideration; let the first be counteracted, the second be improved; let the sanguine have her excess of fulness diminished, let the debilitated have her powers augmented; in short, let the general health be amended, and the functions of health will be restored."*

By Sir Charles Locock, Dr. Marshall Hall, Dr. Rigby, and other equally eminent writers, the same doctrines have been inculcated, and the fruitlessness and absurdity of attempting, by so-called emmenagogues alone, to cure amenorrhœa coexisting with impaired health, have been more or less insisted on.   It must be held to be decidedly improper, by local stimulation of the uterus, to attempt to produce a menstrual flow in a phthisical patient, for instance—certainly, to give a prominent place to such treatment; indeed, to practitioners imbued with the principles laid down by the eminent men above alluded to, such practice must appear something worse than absurd.   It is the experience of all observant practitioners that those remedies act most efficiently as emmenagogues which produce a most decidedly beneficial effect on the defective condition of the general health.   In treating such cases successfully, the production or the re-establishment of the menstrual secretion is the *final* result to be attained.   Improvement in other respects must be effected first; the rest will follow as a matter of course, in the vast majority of cases.

The treatment, then, must be general—to find out what is the weak point, and to attack this.   Either the patient has been living badly, taking too little food or food not sufficiently nutritious; or she has been leading a life too sedentary or too artificial, deprived of pure air—in short, subjecting the body, at a very critical period, to many influences known to be incompatible with sound health. Medicines are quite subordinate in importance to the removal of these defective hygienic conditions.

In the industrial classes of the community, neglect of hygienic law is still productive of an immense amount of mischief in this respect.   In the higher classes of society it is too frequently the

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* Diseases of Females, part ii, p. 38.

case that the solicitude of parents as to the mental culture of their children interferes materially with maintenance of physical health; and this is the chief reason why, in schools especially, there is too little time devoted to vigorous exercise, and too much to sedentary intellectual work. A due provision in female educational establishments for taking strong vigorous exercise is still a desideratum. Horse exercise—not available, of course, for all, or in all cases—is most strongly to be recommended. It should be, but it is not, needless to add, that the observance of early hours, administration of good and nourishing food, thorough ventilation, warm clothing, are all essentially necessary for the preservation of health during the two or three years preceding and following the date of commencement of menstruation. Observance of these rules—necessary to maintain individuals of good constitution in a state of health—is doubly necessary when there is a tendency to " weakness," or when disorder of any kind is actually present.

To return from this digression: in different cases very opposite methods of treatment may have to be insisted upon. We generally do find, however, as an effect of the bad state of health of the patient, partly also as a cause of the same, that there is great sluggishness and inactivity of the digestive organs, evinced by want of appetite and constipation; and hence, before it is possible to administer the amount of nutritious food the patient requires, it is frequently necessary to effect an improvement in the condition of the digestive organs.

" It is advisable," says Sir Charles Locock, " to begin with an active purgative, which will often bring away a large collection of highly offensive motions with manifest relief to the patient. Small doses of blue pill may be afterwards occasionally repeated, and purgatives of a warm and stimulating character taken every morning, combined with a small quantity of some bitter extract or infusion, until the tongue appears cleaner and the secretions from the bowels are more healthy."* A draught containing either Rochelle salt or sulphate of potash, in combination with manna and rhubarb, I have found answer the purpose extremely well. Hygienic measures, exercise in the open air, sponging with cold water, friction of the skin night and morning with a rough towel, these are valuable accessory measures, the importance of which must be thoroughly explained to the patient, or they will not be regularly and efficiently carried out. The patient should be well

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* Cycl. Pract. Med., article " Amenorrhœa."

clothed, and great care taken to keep the surface and extremities warm. "It is," says Sir James Clark, "of the greatest consequence to invalids to maintain an active state of the circulation in the surface and extremities, which cannot be done in this country without the assistance of warm clothing." These remarks apply with great force to the particular cases now under consideration. After a few days, tonics, as iron and quinine, may be given twice or thrice daily, a laxative every morning, and if there be great torpidity of the liver, once or twice a week, according to circumstances, a small dose of blue pill with a little colocynth.

I believe that the same good effects may be often obtained by administering one good purge at the first, and by subsequently giving a small dose (half an ounce) of the compound iron mixture, or ten to fifteen minims of the tincture of iron in water thrice a day; care being taken to procure action of the bowels by giving every other morning confection of senna, castor oil, or an effervescing draught containing Rochelle salt. A small dose of iron often appears to act quite as efficiently as a larger one. A preparation of iron less nauseous than the compound mixture, the syrup of the perphosphate of iron, I have frequently prescribed.

The dyspepsia often present in such cases is a most troublesome complication, and is best treated by administering *frequently and in very small quantities*, for some days together, food of the simplest character; avoiding all solid matters, and giving the patient only such food as it may be found by experiment she is able to digest freely and easily. Milk and water, weak beef tea, yolk of egg beaten up uncooked with milk, these are some of the most nutritious and easily digested foods.

Wine is most essential in many cases, and I have found it of the greatest use. I may here particularly mention the case of a young lady, the daughter of an eminent medical practitioner, who was suffering from amenorrhœa, associated with frequent and severe frontal headache, in whom the addition of two or three glasses of port wine daily to her ordinary diet appeared to have a most beneficial effect. To the administration of meat in good quantity I attach much importance. It should be given two or even three times a day when the patient can take it.

Every means that can be devised to put the body in a sound state of health will be beneficial as regards the end in view,—the induction of menstruation. This point must ever be kept in view: amenorrhœa is only a symptom, not a disease.

After suitable means have been well tried, and the condition of

the health improved, it is occasionally advisable to send the patient to the sea-side for a short time, or at all events to order a change of air. In some cases, when medicines of a ferruginous nature are not borne well, it is found advantageous to send the patient to live in the neighborhood of a chalybeate spring. The small quantity of iron which the water contains enables it to be taken, besides which, the change of air, scene, and occupation, has a most beneficial effect in improving the condition of the health. The waters of Schwalbach, Spa, Pyrmont, Driburg, Kissingen, are some of those most to be recommended for internal administration. The ferruginous waters are not, however, to be exclusively recommended in obstinate cases of ill-health associated with amenorrhœa, for in some cases the continual use of hot-baths, such as those of Vichy, Ems, Carlsbad, Wiesbaden, or Baden-Baden, do great good by increasing the action of the skin and of the secreting apparatus generally. Above all, patience is necessary in the treatment; we must not expect the discharge to appear at once, and, in point of fact, the patient usually improves in all other respects before this evidence of the cure being completed is obtained.

Are emmenagogues, then, never to be given with the view of producing in a more direct and immediate manner the catamenial flow? But rarely. They are more especially applicable in the cases to be presently considered, where there is suppression, and where the menses have been present. The actual and immediate production of the menstrual flow in the class of cases now concerned is, however, advantageous in one way, that it sets at rest any doubt we may have as to the possibility of menstruation. And the more direct action may be sought to be induced in cases where general measures have been fairly tried and found unavailing; also in cases where the general health being good, and no attempt at menstruation observed, it is thought expedient to try this method of treatment as a kind of *dernier ressort*.

The best method to follow in endeavoring to induce directly this action of the uterus will be considered presently.

Chlorosis and Amenorrhœa.—What has been said respecting the management of cases of amenorrhœa, with disorder of health of whatever kind, is here applicable. These cases are now and then obstinate, and in a chronic case time and patience are very requisite. The bowels are generally very costive. Daily, a laxative draught should be given, the medicine selected being that which acts most easily,—rhubarb, Rochelle salt with manna; these are some of the simplest we can select, and by no means the worst;

and once a week or so a stronger draught containing decoction of aloes with some aperient salt may be required. Ferruginous preparations are essential; small doses are generally the best; and they are most efficacious when given as constituents of mineral waters. It is often a matter of experiment as to which form of iron suits the best. The subjects of chlorosis are often so debilitated that great care is at first necessary, and they are unable to take much food or to bear much active exercise. Hence a vigorous treatment is not at first advisable. We must adapt the food and the regimen to the strength of the patient. Wine and good food are most essential in the management of these cases.

Amenorrhœa with Vicarious Menstruation.—The object of the treatment in these cases is first to improve the state of the health, which is generally bad, by tonics, &c., and secondly, to endeavor to induce congestion of the uterus and pelvic viscera at the menstrual periods. The patient should be treated, in fact, as if she were the subject of menstrual suppression (see "Suppression"). Lastly, it will be necessary to alleviate any discomfort, pain, or inconvenience which may be consequent on the presence of the unusual discharge.

TREATMENT OF SUPPRESSION OF MENSTRUATION.

In a case of *acute* suppression of the menses, if seen in time, the proper treatment would be to place the patient immediately in a warm hip-bath, and to administer a stimulant, such as hot gin-and-water, and, especially if a sudden chill be the cause, to endeavor to excite the action of the skin by placing the patient in bed, and giving a dose (ten to fifteen grains) of Dover's powder. A sinapism should be applied to the hypogastric region; hot water bottles or bags to the lumbar region. In strong or plethoric habits, cupping to the loins, or venesection, would be proper; leeches to the vulva might be used in most cases. It is probable that the most powerful means of inducing the return of the discharge under such circumstances would be either the application of electro-galvanism, or the administration of an enema containing aloes by the rectum. It generally happens, however, that when the patient comes under observation the period for such treatment is gone by. We must in such cases wait until a day or two before the next period, and then apply suitable remedies. The remedies consist in keeping the patient quiet, maintaining a comfortable temperature of the body generally, placing her in a hip-bath, with mustard, night and morning, for three or four times if necessary,

administering two or three times a day a warm stimulating draught, and if the case be obstinate, and other circumstances do not forbid, in using galvanism, or some one of the emmenagogues to be presently spoken of. Opium is a most valuable remedy in cases where mental emotions have had to do with the suppression. We now and then meet with cases of sudden suppression in young women of weakly habit, who have been subjected to disturbing emotional influences at the menstrual period. In these cases, opium and a supply of good nourishment should be both freely given, and rest and quietude enjoined.

Many different medicines or remedial measures are set down as efficacious in inducing the flow of the menses, and which are given or directed to be given with a view of exciting, and in a direct manner, the menstrual secretion. It is to be remarked of these, that they are exceedingly uncertain in their effects and action in different individuals, and very frequently have no effect whatever. Moreover, it does not follow because a discharge has been procured that the difficulty is forthwith at an end; the simple production of a sanguineous discharge is not the only object we have in view. It is not so difficult a thing to produce a discharge as it is to re-produce what may be considered to constitute the discharge of menstruation. Most of the so-called emmenagogues act, it must be concluded, by producing congestion and fulness of the vessels of the uterus and surrounding parts. The following are some most recommended: aloes in form of enema, dissolved in soap and water (Aran); the old pill of aloes and myrrh of the Pharmacopœia, which should be given in doses of five grains or upwards, every night and morning, for a few days prior to the expected period; liquor ammoniæ, dissolved in milk (a teaspoonful of the ammonia in a pint of milk injected into the vagina); savin, the oil of which may be given dissolved in mucilage in doses of three or four drops (Sir Charles Clarke, Dr. Tilt, and others); iodine (Dr. Rigby, who preferred it in the form of iodide of iron); Sir Charles Locock states that he has found a combination of myrrh, aloes, sulphate of iron, and the essential oil of savin, frequently of great utility. Ergot of rye, in doses of ten grains three times a day, is also highly spoken of by the same authority.

Mustard is said (Ashwell, Rigby) to have an emmenagogue effect, given in doses of ten or twelve grains. Dr. Ashwell considered mercury the best remedy of the kind, and it has certainly appeared to me to do good in several cases in which I have employed it. On two successive nights, at the time of the next ex-

pected period, a dose may be given, each consisting of five grains of calomel and six grains of aloes, followed by a Seidlitz powder in the morning. The dose must be smaller than this if the patient be very feeble; indeed, presence of feebleness is contraindicative of necessity for this kind of treatment at all.

Sir J. Y. Simpson has employed as a means of cure the application of direct stimulants to the interior of the uterus—nitrate of silver, cantharides, or iodine—by means of a *porte caustique*, the application to be made at the time when menstruation should occur, and repeated at monthly intervals. The same distinguished authority also speaks highly of a kind of dry cupping of the interior of the uterus, and of the employment of galvanic intra-uterine pessaries of peculiar construction, in the form of amenorrhœa now under consideration; and with respect to the efficacy of galvanism, he considers its continued application by the use of pessaries more serviceable than the occasional application by the ordinary methods. Dr. Althaus states that he has in many cases found great benefit from Faradization assiduously and properly applied; Pulvermacher's apparatus is also a most simple and ingenious method of continuously applying this therapeutic agent, and is peculiarly suited for chronic cases of amenorrhœa after the general health has been re-established by suitable means.

Cases of *chronic suppression* require to be treated on the foregoing principle—first, to correct the ill-health generally present, then to encourage month by month, by gentle measures, the return of menstruation.

TREATMENT OF CASES OF MENSTRUAL RETENTION.

The various physical conditions giving rise to menstrual retention, require each a suitable method of treatment.

1. *Absence of Vagina and Menstrual Retention.*—Here menstruation is not possible, there being no communication between the vulva and the uterus. Absence of such a communication is sometimes associated with defective development of the uterus; and in such cases, even if a communication existed, menstruation would not for that reason occur; but in other instances, although the vagina is wanting, the uterus is well developed, and menstrual blood is poured into its cavity at each menstrual period. The distension of the uterus may be very considerable, the sufferings of the patient gradually increasing in intensity, chlorosis and other signs of grave constitutional disorders being present. The only treatment capable of affording relief is a mechanical one.

The difficulties encountered in affording such relief vary in different cases, but are always very much greater than in the case of imperforate hymen with retention. And not only are the difficulties greater, but the danger from an operation is more considerable. The case operated on by Amussat* will probably always be quoted at once to illustrate the difficulties of an attempt to make a vaginal canal, and to point out how these difficulties may best be overcome. The case was that of a girl, aged 15½ years, in whom the vagina was absent, and who had suffered from symptoms of menstrual retention since the age of 13. There was a tumor above the pelvis the size of the uterus at six months' gestation. The tumor was felt from the rectum; the urethra was the only opening at the vulva, and a sound passed into it could be felt from the rectum through a very thin partition ("à travers des parties très minces "). The diagnosis was evident. Thereupon Amussat, after stretching the vulva, pushed the handle of a sound upwards beneath the urethra, and then, using the little finger in a similar manner, sought to make a passage towards the fluctuating pelvic tumor, in the direction of the vagina. By drawing the perineum downwards and at the same time pushing the finger inwards, a sort of separation was effected. Sponge was now inserted to maintain the dilatation, and three days later, this combined tearing and dilatation process was resorted to anew. After two further attempts, on the two following days, respectively, the tumor was finally arrived at. The dilatation was kept up by means of sponge. On the tenth day after the first operative procedure, the tumor was punctured, first by a trocar, and next by a bistoury, and the menstrual fluid, so long retained in the uterus, allowed to escape. The tumor was, at the time of the operation, two inches from the vulva. The opening into the uterus was enlarged, and a canula inserted. Inflammation of the left Fallopian tube resulted, clots were expelled from the rectum. Four times after this the patient suffered from menstrual retention, but a cure was finally obtained, and she was restored to such perfect health that two years later the question of the propriety of marriage was seriously discussed.

Amussat rejected the use of the knife from the obvious difficulty of avoiding the bladder on one side, and the rectum on the other. The chief difficulty of following Amussat's plan is the tediousness of the procedure, and the objection on the part of the patient to

* Gaz. Médicale, 1835, pp. 785 and 817.

its continuance. In a case related by Bernutz* the operative procedure was interrupted for this reason, when, as it appeared from what took place subsequently, the tumor of the uterus was on the point of being reached. In a case very much resembling that of Amussat's, my friend Dr. Braxton Hicks was prevented completing what promised to be a very successful operation for the formation of a vagina, in a similar way.†

Another method of treatment which has been adopted in cases of this kind is to puncture the uterus from the rectum. It is obvious that this procedure is open to the serious objection that the passage made for the escape of the menstrual blood is not in the natural position, while the evacuation of the fluid is also less under the operator's control. It appears that in some cases, however, the septum between the urethra and rectum is so thin as not to admit of the attempt to form a passage to the retained fluid in that position.

If formation of a vagina be really impossible, this tapping of the uterus from the rectum is the only alternative. For the performance of the operation a curved trocar is necessary, and great care must be exercised so as to avoid injuring the bladder. The observations as to the manner in which the fluid should be allowed to escape from the uterus, which have been made in relation to imperforate hymen, here apply with still greater force. The evacuation of the fluid must be made very slowly, the recumbent posture must be maintained, and opiates will be probably required.

An interesting case was related to the Obstetrical Society by Mr. Baker Brown, in which there was vaginal atresia with menstrual retention of two years' duration, the uterus as large as at four months of gestation. The uterus was tapped as above, the trocar left in for a fortnight. A month later the patient menstruated per rectum. In two cases, very similar to the one related by Mr. Brown, Dr. Braxton Hicks performed the same operation, and evacuated the contents of the uterus successfully.

Dr. Hicks considers that the canula should not be left in the opening thus made for longer than ten or twelve hours; to avoid the introduction of air, he recommends that the canula be plugged just before the complete evacuation of the uterine contents.

2. *Imperforate Hymen, with Menstrual Retention.*—In these cases the difficulty is, not in affording relief to the patient and

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* Loc. cit., p. 307.   † Obst. Trans., vol. iv, p. 232.

giving an outlet to the pent-up menstrual fluid, but in preventing the death of the patient from the operation. In a certain number of cases death has taken place after perforation of the membrane, for the relief of menstrual retention, and blood has been found effused into the peritoneal cavity, thus giving rise to peri-uterine hæmatocele. In other cases death has occurred, without effusion of blood in this manner, from peritonitis and pyæmia.

In these cases of menstrual retention, the uterus, the Fallopian tubes, and the vagina are distended with blood, the uterus attaining sometimes a very great size, and reaching as high or higher than the umbilicus in extreme cases; this state of things having persisted for several months, in some instances even for years, before the nature of the case has been recognized, or at all events before effectual relief has been attempted. The cavities containing the blood have their walls greatly thinned and otherwise altered.

It is the opinion of Bernutz[*] that the unfortunate result, when associated with intra-peritoneal hemorrhage, is due to the contraction of the uterus, set up by the evacuation of the fluid, continuing and forcing the blood contained in the Fallopian tubes into the peritoneal cavity. This explanation probably holds good in most cases of this kind. The fatal result, in some instances, may be due to a combination of one or more circumstances. The sudden withdrawal of the distending force in cases where the walls of the Fallopian tubes have been thinned and enlarged, must itself have an injurious effect on the vitality of the tissues of the part in question. A certain number of deaths are to be attributed to purulent absorption, the admission of air producing decomposition of the blood and pyæmia. It is evident that the circumstance pointed out by Bernutz is exceedingly important, in reference to the plan of treatment to be adopted in these cases.

A careful survey of the facts on record would seem to lead to the conclusion that a fatal result is much more likely to occur when the retention has lasted a long time; and the prognosis would consequently be more favorable for an operation performed two months, than in the case of an operation performed six months after the first attempt at menstruation. And this would clearly indicate the great importance of an early and complete diagnosis of the case. With respect to the operation itself, it is evident that in a case of retention due to imperforate hymen, the mechanical is the only treatment possible. A way must be prepared for the

[*] Clin. Méd. sur les Maladies des Femmes, tom. i, p 68.

evacuation of the fluid, and to allow of the occurrence of menstruation. The mode of performing the operation appears open to improvement. In the first place, it would seem to be extremely desirable that the evacuation of the fluid from the generative passages be spread over as long a period as possible, in order to prevent undue and irregular action of the uterine fibres, and to allow time for the parts to return in the most gradual manner to their proper size. In the second place, it is absolutely necessary to avoid all possibility of passage of air into the vagina and uterus during or after the operation. The plan ordinarily adopted has been, by means of a lancet, or bistoury, or trocar, to make an opening in the hymen sufficient to allow of the escape of the chief part of the retained blood at once, and at the time of the operation. I would suggest that an opening just large enough to allow of the escape of a very minute quantity of fluid be made at first, and that this opening should be made obliquely in the obstructing membrane, giving it a valvular character. The fluid should be evacuated *guttatim*. If the opening become closed, a second and similar opening to be made the following day, or two or three days later, and a firm but gentle support given to the abdomen by the aid of a bandage during the whole period of evacuation of the fluid. The patient to be kept in a state of absolute rest. The aperture in the hymen should not be increased in size until the uterus has returned to its proper dimensions, the object being, at first, simply to allow the fluid to escape in the most gradual manner possible. If, by any chance, air enter, and the fluid become decomposed, it would be safer at once to make a free opening. It is questionable whether the practice of injecting water into the uterus after an operation of this kind be safe. Bernutz recommends that in evacuating the fluid a period be chosen for the operation eight or ten days after a menstrual period, and that a small trocar be used. He considers pressure over the abdomen objectionable. In the latter particular the method recommended by myself differs from that of Bernutz. In other respects the principle of the two methods is identical, in both the necessity for slow evacuation of the fluid being recognized.

3. *Retention from Imperforate Os Uteri.*—Cases of *complete* retention due to this cause are rare. The more ordinary cases of *incomplete* retention—in other words, dysmenorrhœa—will be dealt with in the chapter on dysmenorrhœa.

CHAPTER V.

MENORRHAGIA AND METRORRHAGIA.

MENORRHAGIA AND METRORRHAGIA.—Meaning of the Terms—General Causes of Profuse Menstruation—Local Causes.

TREATMENT OF CASES OF PROFUSE MENSTRUATION AND HEMORRHAGES.— Profuse Menstruation; Importance of removing the Cause; General Treatment; Internal Remedies; Treatment in Cases of Flooding—Hemorrhages dependent on Organic Diseases, Tumors, &c., of the Uterus—Hemorrhages connected with Retention of Portion of Ovum.

PROFUSE menstruation, the quantity of blood lost at each period exceeding that which is the healthy standard of the individual, is usually termed *menorrhagia*. All gradations are witnessed between a slightly increased quantity and a violent hemorrhage. To the latter class of cases the term *menorrhagia* is frequently more applicable, and more particularly so when the hemorrhage occurs not only at the catamenial periods, but at other times also.

General Causes.

Profuse menstruation is very frequently witnessed at the period when menstruation is about to cease—*climacteric menorrhagia*—and very frequently also hemorrhages at other times than at the menstrual period are associated with profuse menstruation.

The menstrual discharge may be profuse because the *blood itself is in a vitiated state*, or because the *general abdominal circulation is in a defective condition*, or because there is *some actual disease or alteration of the uterus or adjacent organs present*. It is probable that most cases of profuse menstruation depend on combinations of various degrees of each of these; the one leading to the other surely but imperceptibly.

We may consider the general causes of profuse menstruation more in detail.

When menstruation is chronically, so to speak, profuse, while it is at the same time regular, the cause is mostly a general one. Most of the conditions capable of causing this form of profuse menstruation are such as are known to have a debilitating tendency. *Bright's disease of the kidneys*, indicated by an albumin-

ous condition of the urine, generally accompanied also with œdema of the ankles, eyelids, &c., is one of the most important causes of menorrhagia. *Excessive lactation* is another equally important cause; patients are often excessively debilitated under these circumstances: as a further consequence in these cases of excessive lactation, *mania* is not unfrequently observed. *Long-continued mental depression* is both a cause and an effect of menorrhagia. Then we have a large number of cases due to *chronic disorder of the digestive organs*, leading to congestion of the uterus and pelvic organs generally, *chronic affections of the great viscera, the heart, lungs, and liver*, also giving rise to the congestion of the pelvic organs, and, short of actual disease, general derangement of the system produced by *luxurious living* and *sedentary or unhealthy occupations*. Ovarian irritation and over-excitation are, probably, causes of this form of profuse menstruation more often than is usually admitted; the most frequent cause of this excessive ovarian irritation being *inordinate indulgence in sexual intercourse*. In cases of *purpura and allied affections* profuse menorrhagia is often observed.

Residence in damp or marshy districts where *malarious influences* are rife has been shown to be the cause of profuse menstruation in certain cases, and hence menorrhagia is not unfrequently present together with intermittent fever. *Residence in tropical climates* is, in the case of Europeans, followed, in most cases, by profuse menstruation, dependent, probably, on excessive congestion of the abdominal and pelvic viscera; indeed, in most cases where women return to England from India in a broken-down state of health, menorrhagia is the prominent symptom.

According to my own experience, young women in whom there are signs of a tendency to, or an actual development of, *tubercle*, are very frequently the subjects of profuse menstruation, the cause being the defective and vitiated state of the blood.

Profuse menstruation is now and then a sequel to *fevers*, and it may be observed *after severe inflammatory attacks*, as of the lungs. In such cases, the circumstances preceding the profuse menstruation would explain its occurrence. The profuse menstruation is due in such cases to the condition of the blood itself.

Menorrhagia may be present *in cases of lead-poisoning*. It was first pointed out by Paul* that abortions are very frequently observed in women subjected to the influence of lead, and also that

* Arch. Gén. de Méd. 1860.

in the same class of cases menorrhagia is very common. I have observed cases the facts relating to which are quite confirmative of Paul's statement.

My friend Mr. Benson Baker has recently contributed further facts confirmatory of Paul's statements in an interesting paper now before the Obstetrical Society, and in which also he has given a good summary of Paul's original paper.*

A class of cases requiring a few words by themselves are those in which menorrhagia occurs from what may be termed *functional* causes, the hemorrhage being an accompaniment or accident of exalted activity of the uterus or ovaries—more properly speaking, perhaps, of the ovaries. Sexual excesses, or circumstances calculated to excite and maintain the existence of erotic tendencies for any length of time, produce occasionally such a degree of functional activity of the ovaries as results in the production of profuse menstruation, and of hemorrhage at non-menstrual periods. The amount and character of the menstrual discharge being thus guided and affected by the condition of the ovarian function, it is not to be wondered at that, when the *ovaries are the subject of disease*, the uterine sanguineous discharge should be also deranged. More generally the presence of ovarian disease diminishes, or at all events, does not increase, the menstrual flow ; but the reverse has been pretty frequently observed. Mechanically, also, and in common with other adjacent organs, disturbances of the circulation in the ovaries may tend to hemorrhage from the uterus. The practical deduction is that, in a given case, functional activity of the ovaries, or disease of these organs, may be the cause of uterine hemorrhage, the uterus itself being really in a healthy state.

Local Causes of Menorrhagia.

These are very numerous. They include almost all the diseases to which the uterus is subject, and not a few of these implicating the ovaries and other appendages of the generative organs. And it is to be remarked also that many of these conditions not only give rise to profuse menstruation, but to hemorrhage from the generative organs at other than the menstrual periods. Again, local disease in the uterus may precipitate the occurrence of menstruation in such a manner as to give an incorrect impression that the patient is suffering from a non-menstrual hemorrhage.

* "On the Influence of Lead-poisoning in producing Abortion and Menorrhagia, with cases." Obstet. Trans., vol. viii, p. 41.

Hemorrhage from the uterus (including menstrual as well as non-menstrual discharge of blood) may be produced by abortion, presence of a clot of blood or the remains of an ovum in the uterus, polypus of the uterus, fibroid tumor of the uterus, carcinoma of the uterus and cauliflower excrescence (epithelioma), fungous or granular condition of the uterine mucous membrane, chronic inflammation, and hypertrophy of the uterus or of the cervix uteri, flexions and dislocations of the uterus. Inversion of the uterus is also a condition involving considerable and frequent losses of blood. Emotional disturbances occasionally bring on uterine hemorrhage, which in such cases is usually menstrual; so also the onset of physical disorders, scarlet fever, small-pox or measles, is now and then attended with profuse menstruation or uterine hemorrhage.

Lastly must be mentioned a class of cases in which profuse menstruation or hemorrhage at other than the menstrual period is associated with internal hemorrhage, blood being effused into a cavity of the peritoneum, or beneath the peritoneum investing the uterus or its appendages. The blood effused internally forms what is termed an hæmatocele. (See "Peri-uterine Hæmatocele.")

TREATMENT OF CASES OF PROFUSE MENSTRUATION.

The primary object to be kept in view in the treatment of cases of profuse menstruation is to remove the condition of things giving rise to the excessive loss. If the blood be impoverished, the patient must be strengthened, the general health improved by careful hygienic measures, by good food, pure air, exercise, &c. Any special predisposing cause, the detection of which may require very careful scrutiny of the habits and previous history of the patient, must be removed. If, for instance, the patient be living in a malarious neighborhood, the residence must be changed. In cases where there is great torpidity of the system, congestion of the abdominal viscera, a loaded state of the bowels, and unhealthy state of the secretions generally, what may be termed a derivative plan of treatment, consisting in administration of brisk purgatives and such medicines as are known to excite action of the liver and chylopoietic organs generally, is the most effective. In cases of great debility iron is necessary. A mixture containing very small doses of sulphate of magnesia, with a little dilute sulphuric acid and syrup, is exceedingly useful during the days of the profuse catamenial flow. We frequently meet with the two conditions, great debility, from long-continued but perhaps slight loss, together with a sluggish, overloaded, congested condition of the

digestive organs and apparatus generally. These cases require careful management. Tonics and purgatives must be given together. For such, a colocynth and rhubarb pill twice a week, with iron and sulphate of magnesia in small doses, two or three times a day, may be recommended. To promote the action of the skin, to insure regular action of the bowels, and to improve in every possible way the general health of the patient, is to do pretty nearly all that can be done in the general treatment of ordinary cases of profuse menstruation not dependent on some physical derangement of the uterus. It is satisfactory to know, moreover, that this comparatively simple treatment is a very successful one in ordinary cases.

We now and then meet with instances in which the disorder is a very obstinate one, more especially in women who have resided in tropical climates, such as India. The uterus and pelvic organs generally are found in such cases in a state of chronic congestion; there is profuse menstruation together with leucorrhœa. The only means of successfully dealing with these cases is to carefully supervise the performance of the functions generally, and especially those of menstruation, fecundation, &c., and to remove by appropriate treatment, the diseased condition of the uterus, which is the cause of the symptoms. (See "Treatment of Chronic Inflammation of the Uterus.")

Where the circumstances of the patient admit of it, and the case is an obstinate one, great advantage will be derived from residence at a watering-place, where, for a variety of reasons, hygienic measures are better enforced and more easily carried out than at home. The remedies considered necessary, aperients, tonics, &c., are more efficacious also when administered in the form of mineral water. In selecting the spa, regard must therefore be had to the peculiar condition of the patient, and the cause of the menorrhagia. (See "Treatment of Chronic Inflammation of the Uterus.")

The external employment of baths is of the greatest service. The cold hip bath is frequently the means of keeping patients in health who would otherwise suffer constantly from profuse menstruation; its good effects are especially noticeable at the climacteric period. The daily use of the sponge bath is strongly to be recommended, the skin being rubbed all over by means of a rough towel for some minutes afterwards. The Turkish bath will probably come to be largely used in the treatment of certain cases of menorrhagia in which there is defective activity of the skin, and

in which sufficient bodily exercise cannot, for some reason or other, be taken.

In all cases where the uterus and pelvic organs are in a congested condition, the use of the vaginal douche is of most valuable assistance in the treatment. The best means of applying this remedy has been already described (see p. 415).

It is of extreme importance to regulate the conduct of the patient at the menstrual periods. For two or more days previous to the expected period, and during the time at which the discharge is going on, the patient must be directed to remain as quiet as possible, and chiefly in the recumbent posture. The clothing must be light, the room should be cool. The bowels must be kept regularly open, and stimulant articles of food, as well as excessive eating and drinking, must be avoided. Sexual intercourse is to be prohibited. By adopting these simple precautions, much will be effected in diminishing the amount of the discharge.

But there are cases in which something more than this requires to be done. It may be that the loss of blood has been, or continues to be, so profuse that it is necessary to arrest it in a more summary manner. Sometimes the patient is found to have been the subject of profuse menstruation, of what has been termed the *passive* form, for many months, and has become so reduced in consequence, that a further loss of blood is likely to be attended with grave inconvenience. For the treatment of this form of profuse menstruation, the general preventive means hitherto spoken of are applicable, and their application is most important; but something more is needed. In extreme cases it has been, and may be, found necessary to arrest the further flow of blood in a mechanical manner, *i. e.* by plugging the vagina. This will be best effected by inserting, by means of a speculum or otherwise, a sponge or a piece of lint dipped in infusion of matico or tincture of sesquichloride of iron in the vaginal canal, quite close to the cervix uteri, and retaining it in its place by means of an India-rubber air-pessary, the latter being distended by inflation so as to completely close up the vaginal canal. Dr. Bennet suggests that the os uteri itself should be plugged in order to restrain hemorrhage, and he states that he has practised this operation, which he prefers to that of plugging the vagina, with success. The older plan is, however, all things considered, the most universally applicable. The patient must be directed to remain in the recumbent posture; cloths dipped in cold water should be laid over the pelvic region and removed and reapplied from time to time; or what is perhaps better, a cold wet

napkin may be flapped upon the abdomen, so as to produce a sudden shock. Injection of cold or iced water into the rectum is also a most valuable means of arresting the flow of blood in bad cases of this kind. The object is to produce contraction of the uterus, for that organ is relaxed, congested, and in a condition very much resembling that which is present after labor.

The internal remedies to be made use of are, firstly, those which are known to induce contraction of the uterus; secondly, those which are known to have the power of arresting hemorrhage—styptics, as they are termed. Ergot of rye and ipecacuanha have been found serviceable in cases of *post-partum* hemorrhage ; and they are applicable in the treatment of the severer forms of profuse menstruation also. I have myself had great success with the ergot, when all other remedies had markedly failed. A decoction of the fresh powder should be taken three times a day. Styptics are frequently found very serviceable ; of these matico in combination with tincture of iron, or the latter alone in large doses (thirty to forty minims), are strongly recommended. Gallic acid and diacetate of lead may be also employed. Opium is a remedy which has been highly extolled in cases of profuse menstruation, as also in hemorrhages generally, but it does not appear to be adapted for chronic cases. Of late, attention has been directed to digitalis administered internally as of peculiar efficacy in the treatment of profuse menstruation, but the results obtained in cases where I have tried it have not been altogether encouraging. The tincture of cannabis indica is recommended by Dr. McClintock as a good hæmostatic. In passive menorrhagia, Beau recommends rue and savin, in doses of rather less than one grain each.

In severe cases of profuse hemorrhage, while measures are being taken to arrest the discharge of blood and to prevent further hemorrhage, it is necessary to support the patient by administering stimulants and nourishments internally. The requirements in individual cases vary according to the urgency of the symptoms. Brandy and beef-tea must be given frequently, but in small quantities at a time. It is possible to conceive a case—indeed, such are on record—in which transfusion may be necessary, and where the patient's life may be prolonged, if not saved, by timely recourse to this procedure.

It does not very often happen that a patient perishes from hemorrhage due to simple profuse menstruation, but there are many cases where life, if not abruptly cut short, is materially abbreviated by the weakness and prostration consequent on a long continuance

of the evil. In obstinate cases of menorrhagia, where all other means fail, the injection of tincture of iodine into the uterus has been practised. When this procedure is had recourse to, it is advisable previously to dilate the cervix uteri to such an extent that the fluid readily escapes from the cavity after having been injected (Routh). Dilatation of the os uteri, and scraping of the interior of the uterus, following this up or not by injection of iodine, is a plan of treatment which has been recently practised and recommended by Dr. Routh, Dr. Tilt, and others, in cases of chronic menorrhagia ; the object being to remove certain fungosities of the mucous membrane which, it is stated, have been found to be present. Whether these "fungosities" are really of pathological nature, appears to me, as I have already stated, to be open to question.

TREATMENT OF METRORRHAGIA DEPENDENT ON ORGANIC OR OTHER DISEASE OF THE UTERUS, ETC.

Here there are usually present both excessive menstruation and interperiodic discharges of blood. If the patient has ceased to menstruate, this is, of course, not the case.

The treatment is palliative or curative, one or both, according to circumstances. The case may or may not admit of absolute cure. When not curable, much may often be done to diminish the loss of blood at the menstrual periods by giving the patient directions as to her conduct during the time in question. Thus, in cases of cancer, cases of fibrous tumor, cases of flexion, &c., where it may not be proper, for a variety of reasons, to resort to more radical measures, rest, the horizontal position, careful diet, and the systematic application of this system of treatment at and during each successive menstrual period, will do much to lessen the amount of the loss of blood. It is in these cases, also, that we occasionally find it necessary to apply measures for at once arresting the discharge of blood, and which have been already pointed out. The discharge of blood may, under such circumstances, be such as to amount to a regular hemorrhage, and must be treated as such ; but, whatever be its cause, the amount of the discharge may be always very considerably reduced by the preventive and palliative measures which have been already alluded to.

With reference to the *curative* treatment of these cases of unusual discharge of blood from the uterus, and which are connected with the presence of organic or other disease, it is next to impossible to lay down precise rules. The proper radical treatment of the various pathological conditions of the uterus, &c., will be dis-

cussed hereafter. At present, some general observations will be made in reference to the treatment of these cases, so far as the hemorrhage is concerned.

The loss of blood produced by the presence of organic or other disease of the uterus is often such as to necessitate the absolute removal of the cause of the discharge in order to save the patient's life. This is more particularly the case where polypus of the uterus, a disease which is generally removable without any great amount of difficulty, is present. Here it is to be remarked, that a minute mucous polypus growing just within the os uteri has been known to give rise to severe hemorrhage; a pedunculated growth of this kind may occasion more hemorrhage than a polypus of considerable size; and hence operations are demanded in order to restrain the hemorrhage, with varying degrees of urgency in different cases. Respecting the treatment of diseases of the uterus, giving rise to hemorrhages and to profuse menstruation, one or both, it must be stated that the hemorrhage is not generally the only reason for deciding on operative or other measures for their removal.

Then, again, in many cases, our decision as to treatment will be affected by this consideration. The patient may be fast approaching the end of menstrual life, and it may be expected that the hemorrhage, with the profuse menstruation, will disappear at the end of a short period. Such a view of the case may present itself to us where there are fibrous tumors in the uterine wall, projecting, perhaps, into the cavity of the uterus, and giving rise to the symptoms now under discussion. In many such cases, symptoms which, during menstrual life, are of great severity grow less, and the patient, while retaining her disease, finds the inconveniences for the most part vanish with the arrival of the last menstruation.

In cases where the unusual loss of blood follows the occurrence of abortion, or in cases where there is reason to believe that abortion has, or may have, recently occurred, the first thing to be done is to ascertain whether any portion of the ovum or of its membranes remain in the uterus, and if anything be there found to remove it. Experience has shown that the retention within the uterus of a very small portion of membrane is sufficient to give rise to considerable and continued loss of blood. Where the os uteri is so closed that the finger cannot be easily introduced, it must be slowly and carefully dilated. The best method of dilating the os uteri for this and other purposes will be particularly de-

scribed in the chapter on Dysmenorrhœa. The consideration of the treatment appropriate in such cases, however, falls more properly within the province of midwifery. It is sufficient here to insist on the necessity for completely emptying the uterus to check the hemorrhage proceeding from this cause.

CHAPTER VI.

DYSMENORRHŒA.

Meaning of the Term—The Nature and Cause of the Pain considered—Dysmenorrhœa mechanically from impediment to escape of Secretion—Causes of Mechanical Dysmenorrhœa enumerated—Membranous Dysmenorrhœa —Dysmenorrhœa without impediment to the Discharge; various Causes—Dysmenorrhœa attended with Sickness.

TREATMENT OF DYSMENORRHŒA.—General Treatment; Rest, Opiates, Baths, &c.—Mechanical Treatment; Treatment by Dilatation and Incision compared—Special indications as to treatment required—Operative procedures necessary for Dilatation and Incision respectively—Other Manipulations required for Maintaining the Canal open—Treatment of cases of Imperforate Os Uteri with Menstrual accumulation—Membranous Dysmenorrhœa.

THE term "dysmenorrhœa" has been long employed to denote the presence of pain or difficulty, one or both, attendant on the performance of the function of menstruation.

The subject now to be considered is one which has been much discussed, the chief question really being the cause of the pain experienced. This question will therefore receive attention first. Until lately, hardly any attempt has been made by systematic writers on this subject to give an explanation of the actual and precise nature and seat of the painful sensations experienced by the patient: some of the explanations which have been offered are not so consistent, either with themselves, or with the facts which come before us in practice, as might be wished.

Hardly two patients suffer alike during menstruation; and we see a regular gradation between cases in which there is very slight suffering, and others in which the agony is such as to be almost unendurable. The pain also varies in its position, but it is for the most part referable to the uterus; and, in the cases where there is most pain, the pain is generally identical in position with that of this organ. Pains of various degrees of intensity may be felt at other parts of the body; but they are added, so to speak, to the

other—the essential pain, which is situated in or about the pelvic region.

What is the relation of the pain to the flow of the menstrual fluid? This, being the vital point of the whole question, demands our earnest attention.

We find in practice several variations in respect to the manner in which these two things, the pain and the flow of the fluid, are related one to the other. In some cases it will be found that the menstrual fluid escapes from the uterus from the first; the patient having little, but only a little, to complain of during the whole menstrual period, while in other cases, on the contrary, the appearance of the menstrual fluid is delayed for a certain time, and in the meanwhile the patient suffers more or less severely from pain; the discharge appears, and the pain thereupon quite or almost completely ceases.

We have, then, two classes of cases—1. Those in which there are pain *and* impeded discharge; and 2. Those in which menstruation is simply painful, the discharge being apparently free.

Dysmenorrhœa with Impeded Discharge.

The symptoms of this form of dysmenorrhœa as ordinarily observed, are well described by Dr. Rigby as follows:

"The pain precedes the discharge, and rises to its acme just before the discharge appears. When this has taken place, the congestion diminishes, the pain abates, and perhaps disappears before the discharge has ceased. This, on the whole, is the most common mode of its appearance. In many cases, however, the discharge appears first; and, having lasted for a short time, it stops suddenly or diminishes considerably, and is then followed by an attack of pain, which continues until the discharge returns."*

Dr. West says, speaking of the *congestive* form of dysmenorrhœa :

"During the first twenty-four or thirty-six hours of each menstruation, the discharge in general is but scanty, and the pain is very severe. At the end of this time, however, sometimes even sooner, the hemorrhage often becomes abundant; and as the blood flows, the pain abates, and then ceases altogether. . . . Sometimes in these cases, the menstrual flux at no time becomes abundant, and consequently the relief which nature gives is very partial. When this is so, the womb continues to ache and throb during the

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* On Diseases of Women, p. 30.

whole of the menstrual period, and is left afterwards tender and painful."*   Further: "In some of the cases, the discharge having continued for a few hours, ceases, and then comes on again; while, though *scanty*, it is intermixed with small coagula, owing probably to the blood having been poured out so slowly as to allow of its coagulating within the uterine cavity."

Again, speaking of "*neuralgic*" dysmenorrhœa, as witnessed usually in young women who begin to menstruate later than ordinary, Dr. West states: "The pain in such cases precedes menstruation for a day or two, generally reaches its greatest intensity in the course of the first twenty-four or thirty-six hours of the catamenial flow—being sometimes so intense that the patient rolls on the floor in agony—and then by degrees subsides, though it does not cease entirely till the period is over."

These truthful descriptions suggest an evident connection between the *pain* and the *absence of the discharge*. "The pain rises to its acme just before the discharge," says Dr. Rigby. "As the blood flows, the pain abates, and then ceases altogether," says Dr. West. In fact, it is as clear as anything can well be, that the pain is dependent, in these particular typical cases, on absence of the discharge.

But how dependent? Is the pain caused by *non-secretion* of the fluid? or is it caused by *retention* of the menstrual fluid, there being some impediment to its escape from the uterus? Dr. West explains the matter thus:

"The congested womb ached till nature bled it, just as the head aches, when the brain is congested, till the cupping-glasses or the leeches have relieved the overloaded cerebral vessels" (p. 71).

Sir J. Y. Simpson, a still more recent writer on the subject, says, in reference to the seat and origin of the pain in dysmenorrhœa, that it is "one of those points on which our knowledge is particularly defective;" but he refrains from dwelling on the subject. This distinguished author classifies dysmenorrhœa as follows: ovarian and uterine dysmenorrhœa, neuralgic, congestive, inflammatory, gouty, or rheumatic dysmenorrhœa, dysmenorrhœa caused by organic diseases or displacements, membranous dysmenorrhœa, and, lastly, obstructive dysmenorrhœa.

The explanation given by Sir J. Y. Simpson is the same as that of Dr. West and others, so far as cases of ordinary dysmenorrhœa are concerned; but, in reference to cases of "obstructive" dys-

* On Diseases of Women, p. 71.

menorrhœa, Professor Simpson associates the pain with the *retention* of the menstrual fluid, and with the distension of the uterus thereby produced.

But it will be found, on examination, that the symptoms of ordinary dysmenorrhœa, as described by Drs. Rigby, West, and others, and the symptoms of "obstructive" dysmenorrhœa, are to all intents and purposes identical; and the arguments derivable from an attentive consideration of these symptoms lead to the conclusion—a conclusion which, I think, must be accepted—that the pain suffered by patients in ordinary cases of dysmenorrhœa, *i. e.* where there is delay in the appearance of the discharge, is due to retention of menstrual fluid within the uterus, and to the distension thereon consequent.

Let us consider for a moment the normal condition and presumed physiological action of the parts concerned in menstruation.

The essential part of menstruation, so far as the uterus is concerned, appears to be growth, thickening, and increase of vascularity in the mucous membrane lining the body of the uterus; the tissue of the uterus itself being also congested, and the venous plexuses situated around this organ being at this time filled and gorged with blood. The menstrual blood is poured out, as is generally believed, by the mucous membrane of the body of the uterus. Now, where the cavity of the body of the uterus and the cervical canal join, the canal is narrow; and in cases where there has been no reason to suppose any morbid narrowing to have occurred, it has frequently been found so small as to admit with some degree of difficulty the bulbed termination of the uterine sound. Dr. Henry Bennet, indeed, contends that this latter condition is the normal one. Hence it follows that, in a by no means insignificant proportion of cases, the internal os uteri, as it is termed, is so narrow that very little is needed to close it altogether, or at all events to so close it that the escape of fluid from the uterine cavity is rendered difficult.

It has been said that it is found that "such a contraction of the os and cervix uteri as to impede the discharge of the menses *guttatim* is very unusual." (Dr. West.) But I would remark that a canal which may be a very sufficient outlet in one individual or under one set of circumstances may be inadequate in another individual and under different circumstances. There are many things to be considered in respect to each of which considerable variations are observed: there is the state of vascularity of the uterus itself; there is the state of vascularity or fulness of the

surrounding organs ; there is the quantity of blood poured out into the uterine cavity ; &c.

" In mild cases," says Dr. Rigby,* speaking of cases of "mechanical" dysmenorrhœa, "a moderate amount of distension is sufficient to effect the necessary degree of dilatation of the os uteri, and the accumulated fluid is discharged with complete relief to the patient ; but where the obstruction is greater and produces greater resistance, the accumulation goes on, the pain becomes more severe, and now, as the uterus is roused to contract upon the retained fluid, she experiences exacerbations of intense suffering, similiar to the pain which is sometimes seen in bad cases of abortion or early miscarriage, until, after a long and agonizing struggle, the obstruction is overcome, and the discharge takes place."

Some remarks of Sir J. Y. Simpson on this point may be here quoted :

" When the amount of fluid secreted is too great to allow of its easy escape, it becomes accumulated in the cavity, and causes pain by distending and exciting the uterus. . . . In this way, retention and obstruction may even occur with a comparatively wide os, provided the menstrual fluid be very rapidly secreted, and especially if it be mixed up with solid masses of coagula or fibrine ; and, on the other hand, in cases where the uterus gives out only and always a very small and scanty, or rather a very slow secretion, no pain may be experienced, although the os may be of the smallest calibre."†

These observations, made by the author in question in relation to obstructive dysmenorrhœa only, I would apply more generally to those cases of dysmenorrhœa in which pain and delay in the appearance of the discharge are associated.

Contortions of the Uterine Canal.—The uterus is liable to certain morbid alterations in position and texture which may still more materially affect the patency of the canal of exit. Thus it may be bent on itself like a retort, by which the canal is necessarily somewhat constricted, or the axis of the canal so altered as to affect sensibly its patency. Within the tissue of the uterus, frequently grow fibrous tumors, which may, and do occasionally, encroach on the canal, and thus constrict it. The same result may be produced by polypi growing within the uterine cavity itself ; and occasionally we find the whole cervix uteri congenitally narrow,

* Op. cit., p. 51. † Med Times and Gaz., March 12, 1829.

from an apparently defective development of this part of the generative organs. A very important class of cases are those in which the lower segment of the uterus—the cervix—has become hypertrophied, indurated, and otherwise diseased : here the canal may be contorted and twisted in such a way that the extra amount of congestion which occurs at menstruation so swells out the cervical tissues as to seriously affect the patency of the canal.

All these considerations are sufficient to show that we have not far to go in order to find a number of conditions capable of producing constriction of that canal by which the menstrual fluid is evacuated from the uterus. Conditions of the kind alluded to are known to be associated with severe dysmenorrhœa; and the pain in such cases is completely accounted for by the retention, temporary or partial, which we may suppose to be present under these circumstances.

It is probable that the congestion of the uterus which is present during menstruation, involving as it does " erection " of the organ (see " Phenomena of Menstruation," p. 342), may under certain circumstances impede the escape of the secreted fluid by producing constriction of the excretory canal, and thus lead to menstrual retention. This would be more likely to be observed in cases where the canal itself is of less than the average calibre. The category of cases here alluded to may, in one sense of the word, be considered as cases of " spasmodic " dysmenorrhœa; and they are doubtless those with which we are familiar in practice as particularly amenable to an antispasmodic treatment.

Other arguments for the truth of the explanations now offered may be drawn from the facts, that, in the first place, dysmenorrhœa of the kind now under consideration is generally associated with sterility; that, in the second place, it is not observed in women who have had children, unless in connection with some recognizable and very obvious alteration in the cervix uteri of such a nature as to interfere with the patency of the canal—of which we have one instance in that obliteration of the canal which is sometimes the result of the parturient process ; and, in the third place, from the results obtained by what may be termed the mechanical treatment, consisting in dilatation of the utero-cervical canal or incision of the same. It is incontestable that, in many cases of severe dysmenorrhœa, the pain has been removed by the treatment in question, which would, of course, have the effect of preventing the occurrence of menstrual retention by widening the canal of exit.

A careful study of the symptoms and phenomena observed in

cases where actual obliteration of the os uteri, permanent or temporary, has been known to be present, the menstrual product having been retained within the uterus and unable to escape, throws a considerable degree of light on the question now under discussion. In the work of Bernutz and Goupil[*] we find collected a very large number of accurately observed cases in which the kind of menstrual retention now alluded to was unquestionably and demonstrably present; and means are thereby afforded for studying the subject analogically, so to speak. The difference between the two classes of cases—those in which there is complete menstrual retention, as in the instances just referred to, and those in which there is what may be termed incomplete or partial menstrual retention—is only one of degree.

An observation of Scanzoni's is very important in reference to the subject now under discussion. Speaking of nervous dysmenorrhœa, Scanzoni says:

" The causes of this anomaly are still imperfectly known. . . . . Finally, in an etiological point of view, the following circumstance also deserves consideration, that the abnormal nervous irritation of the uterus may give rise to reflex movements of the organ, and to a convulsive contraction of the cavity of the neck. Hence the escape of the blood which is already effused is impeded by an obstacle which irritates in its turn the motor nerves of the body and fundus of the uterus, and thus provokes painful contractions. This is what to us appears particularly to take place in cases where, after intense expulsive pains, lasting perhaps several hours, the patients suddenly eject a considerable quantity of blood, partly liquid and partly coagulated, and find instantaneous relief."

The tendency in Scanzoni's mind towards an "obstructive" explanation of the pain is hereby made particularly evident.

And lastly, it is known and admitted by standard writers, that, in cases of dysmenorrhœa, the tumor perceived through the abdominal walls increases in size before the discharge appears—a fact which is perfectly consistent with the explanation now offered.

The cases which have passed under my own observation have offered the strongest possible confirmation of the correctness of the foregoing conclusions, and of the truth of the position now maintained, that in ordinary cases of dysmenorrhœa, in which there are, first pain, and after a variable time, appearance of a

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[*] Clin. Méd. sur les Mal. des Femmes, tom. i. Paris, 1860. See also the English edition of this work by Dr. Meadows, which has just been issued by the New Sydenham Society.

discharge, what we have before us is really *partial but temporary menstrual retention.*

Naturally, the cavity of the uterus is very small, and incapable, unless dilated, of containing more than a very small quantity of fluid. It is the result of experience, that different individuals bear dilatation of the uterine cavity very variously; and hence it follows that retention of menstrual fluid within the uterus may produce different degrees of pain and very various degrees of suffering in different individuals.

The foregoing explanation of the pain present in cases of dysmenorrhœa of the kind alluded to was given in the first edition of this work. During the last three years the subject has attracted much attention in this country. Dr. Marion Sims, in his recent work,* advocates views on the subject virtually identical with those above expressed, and some of the most eminent practitioners make this mechanical explanation of the nature of the pain the basis of their treatment, although the treatment they individually adopt differs in some important particulars, to be presently mentioned.

The *causes* of mechanical dysmenorrhœa may now be enumerated. They are:

Congenital narrowness of the cervical canal, in association with *presence of an infantile uterus.*

Congenital narrowness of the os internum—the junction of the cervical canal with the cavity of the body of the uterus.

Congenital narrowness of the os externum uteri; not so commonly a cause of dysmenorrhœa as of sterility. Undue congestion and hypertrophy of the lining membrane of the cervix uteri, the canal being of the ordinary dimensions.

Increased flow of blood from the interior of the uterus, the canal of exit being insufficient for the ready escape of the blood.

Flexion of the uterus (most usually at the situation of the internal os uteri) occasioning a virtual stricture of the canal at its narrowest part. Ante- and retro-flexion are equally capable of giving rise to mechanical difficulty.

Fibroid tumors growing in the thickness of the uterine wall and so placed as to compress or distort the cervical canal. These tumors most commonly produce dysmenorrhœa when situated in the anterior wall, and generally occasion also some degree of flexion of the uterus, whereby the difficulty is aggravated. The most severe forms of dysmenorrhœa are witnessed among this class of cases.

* Clinical Notes on Uterine Surgery. London, 1866.

Chronic inflammation of the uterus itself, associated with slight degrees of flexion, or with other of the conditions above enumerated.

Small intra-uterine polypi hanging down within the cervical canal and acting as a plug, thus preventing the ready escape of the menstrual fluid.

An elongated condition of the vaginal part of the cervix, often associated with flexion of the canal at about its middle, or opposite the point of reflection of the vagina on the cervix.

Contortion of the cervical canal dependent on an irregularly hypertrophied condition of the cervix. This is a condition not very uncommon, as the result of chronic inflammatory action in the part in question.

Membranous Dysmenorrhœa.—Under this term are included a class of cases possessing peculiar interest, in which, at each menstrual period, or very frequently so at all events, a membrane is discharged. Scanzoni believes that exfoliation of the mucous membrane occurs more frequently than is ordinarily supposed. He found portions of the mucous membrane in 14 out of 21 cases of dysmenorrhœa, when careful search was made for them. This is what we should indeed expect, if the partial exfoliation or destruction of this membrane occurs at each period under ordinary circumstances. It is, however, rare to meet with cases of exfoliation of the membrane in an entire piece, or to meet with pieces of any considerable thickness, and to cases of the latter class only does the term membranous dysmenorrhœa apply. There is no doubt whatever that the membrane discharged in these cases is really the uterine mucous membrane, hypertrophied probably in consequence of an excessive nutritive activity in its tissues, to which without impropriety the term endo-metritis may be applied.

The expulsion of the membrane is attended usually with pain, just as happens in cases of abortion, and this pain is of precisely the same character as in cases of abortion, and indeed as in the cases of menstrual retention just described. But in these cases of "membranous" menstruation, there is generally present also another kind of pain, a pain seated in the ovary—a continuous severe pain, of very different character from the expulsive pains of retention. These cases have been termed by previous writers (Oldham, Rigby) cases of ovarian dysmenorrhœa. It is important to separate the two elements in the consideration—the ovarian and the uterine—one from the other. The *formation* of the membrane does certainly appear to be in some way connected with the con-

stant ovarian discomfort; the *expulsion* of the membrane may be, and is usually, attended with pains of the kind previously alluded to.

To illustrate this subject, I would mention the particulars of two cases. The first was that of a lady, æt. 30, who had been married three years, never pregnant; menstruation profuse before marriage. Since marriage, with very few exceptions, a thick membrane had been discharged at each menstrual period. It is probable, or at least quite possible, that this was the case before marriage, and that it was not seen previous to that time, because not looked for. The membrane is discharged usually not later than twenty-four hours from the time of the commencement of the discharge. At this time there is a stoppage of the discharge for an hour or two, the bag of the membrane then comes away, its expulsion being attended with severe pain, and the discharge then continues uninterruptedly for three or more days.

The second was that of a lady æt. 34, who had been married for thirteen years, but never pregnant. For the last eight years certainly, probably for a longer time, a membranous bag, complete or in shreds, has been expelled at almost every menstrual period. The body in question makes its appearance always within the first few hours after the discharge has begun to flow.

In both of these cases the interval between the catamenial periods was long—five weeks. In the first case there was present a copious secretion of mucus from the uterine cervical cavity, in both there was pain in the left ovarian region, but in both cases this ovarian pain was not of old date. The most interesting fact appears to be the time of the menstrual period at which the membrane was expelled. This is interesting in regard to any explanation of its cause and nature. There appears to be no possibility of concluding otherwise than that the membrane actually expelled belonged to, or was the product of, the former menstrual period. If, normally, the menstrual decidua is thrown off from the uterus after the discharge has ceased, or at all events during the latter period of the discharge, it would appear that in these abnormal cases this exfoliation is postponed, the membrane continuing to grow during the inter-menstrual period.

The sterility which is usually present under these circumstances probably results from the uterine mucous membrane being so altered pathologically as to interfere with the due and proper reception of the impregnated ovum when it arrives in the uterine cavity from the Fallopian tube.

We may now consider the next series of cases, those in which there is

Dysmenorrhœa without Impediment to the Discharge.

In many cases where the menstrual period is one of suffering, more or less habitually, to the patient, this suffering is dependent on causes different from those just alluded to, and in which there is evidence of retention of menstrual fluid. Thus, in some cases, the painful sensations present appear to be seated in, or to radiate from, the *ovary* itself, this organ being in a condition which is one of congestion, of irritation, or, as described by many authors, of inflammation. In other cases, the *uterus* seems to be the seat of the painful sensations; a continuous aching pain is experienced, analogous in kind to neuralgia seated in any other part of the body—the face, for instance. This kind of pain seated in the uterus is very different from the spasmodic, contractive, intermittent pain which, as before explained, is suggestive of *retention*. Further, the ovaries and the uterus may both be the seat of pain felt during menstruation.

Disordered ovulation.—The process of ovulation, consisting in the maturation and dehiscence of the ova, the swelling and rupture of the Graafian follicles, is liable to be disordered: the rupture may be impeded by presence of undue thickening of its external tissue, due to inflammation of the ovary generally (see "Pathology of Diseases of the Ovary"), or of the particular follicle itself; or the distension of the follicle prior to rupture may be greater than usual; or the ovary may be unusually sensitive, and the physical phenomena being normal, the extreme sensibility of the patient renders the natural process usually painful.

Dr. Farre's[*] remarks on this subject are specially interesting. After alluding to the difficulty experienced in ascertaing how far pain and tenderness about the ovaries are to be regarded as evidence of inflammation of the organ, he says: "There can be no question that the cause of much of this suffering is to be looked for in the changes which the tissues of the ovary undergo in the act of expelling the ova." The changes in question are closely allied to inflammation. "It is probable," says this author, "that when the follicle or the entire ovary becomes tense from the effusions which have been shown to have taken place ordinarily within it, and this tension is not relieved because rupture does not occur

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[*] Cyc. Anat. and Phys., article "Uterus," p. 576.

at the proper time, so that *ovulation is disappointed, or is aberrant*, the symptoms which might be expected to accompany such an interrupted process would be those which are usually set down as indicating inflammation in a part."

General Abdominal Congestion, Derangements of Digestion, &c.—Women who are the subjects of chronic uterine disease of various kinds, and who habitually experience more or less pain in the pelvic organs, naturally suffer more at the menstrual periods. Those who have a congested, overloaded condition of the abdominal viscera, suffer more at the menstrual periods than others. A sedentary or a too luxurious mode of life rarely fails to give rise to the congestion in question. Derangement of the digestive organs to a marked extent is usually present under such circumstances.

In cases where the patients are of an *hysterical* tendency, "nervous," and excitable, pain during menstruation is generally one of the most troublesome symptoms. So again, in cases where there is a neuralgic habit, the patient appears to have *uterine or ovarian neuralgia*, and it is not unfrequently observed that the same individual suffers at one time from face-ache, at another from uterine pain. In such cases the pain is often greatly increased during menstruation.

It is generally, and as I believe correctly, supposed that the existence of the *rheumatic diathesis* predisposes to menstrual suffering. The patient afflicted with this "rheumatic" form of dysmenorrhœa is liable to migratory pains in different parts of the body, more especially in the joints; there is a loaded condition of the urine from excess of urea, lithic acid, and lithate of ammonia. Flatulence and hæmorrhoidal congestion are also usually present in such cases.

Thus, to sum up these remarks on the nature and causes of dysmenorrhœa:

The pain may be due to retention of menstrual fluid, which may be either partial or complete. That is to say, there may be a slight discharge, but, the aperture of escape being insufficient, there is a partial retention; or, the patient being, for a variable time, without discharge of any kind, the case is one of complete retention.

The pain may be due to congestion of the uterus, to congestion of the ovaries, to inflammation of the Graafian follicles coincident with ovulation, or simply to neuralgia.

These two classes of cases glide insensibly one into the other, it is true. Obstruction, when present, gives rise to congestion, to

inflammation, to suffering of neuralgic character; and, *vice versâ*, the congestion or inflammation of the uterus leads to obstruction in the manner already pointed out; but the cause of the sufferings of the patient appears in the majority of cases to be associated with partial or complete retention of menstrual fluid.

Dysmenorrhœa attended with Sickness.

In some cases the sufferings attending the menstrual period are connected with presence of an extremely painful form of sickness, continuing for some hours or less. In one case this symptom was productive of so much distress, that the patient intensely dreaded its arrival. It was in this instance connected with presence of a small inter-parietal fibroid tumor at the junction of the cervix and body of the uterus on the antero-lateral aspect. In other cases the same form of sickness, though in a less intense degree, has been noticed.

TREATMENT OF DYSMENORRHŒA.

Whatever be the cause of the painful sensations experienced during menstruation, certain general rules are applicable as regards the treatment of the case, that is to say, so far as the palliative treatment is concerned. For the radical cure, other measures appropriate to the case will be required; but whether we adopt such radical measures or not, much good may be effected by attention to the general condition of the patient. Thus in debilitated anæmic patients, the dysmenorrhœa present is often best treated by remedies which remove the anæmia, by a course of iron, and by attention to those general rules for the recovery of health which are the foundation of the successful treatment of all diseases, whatever their nature.

The first element in the treatment is *rest* during, and for a short time previous to, the period of the flow. The patient must be directed to remain more or less constantly in the horizontal posture, during the period in question. Means are to be taken to insure the regular and proper action of the digestive organs. The food should be plain and simple; and aperients are to be administered, if necessary, to produce regular action of the bowels, and prevent congestion and fulness of the pelvic organs.

This congestion and fulness of the pelvic organs will be, especially in plethoric individuals, effectually dealt with by local depletion, leeches to the inside of the thighs or over the groins, in some

cases to the os uteri itself, or cupping to a slight amount over the sacrum, the blood being taken away either a day or two previous to that of the expected menstrual discharge, or on the first day of the discharge.

In choosing the remedies for the relief of the actual pain during menstruation, general principles are to be had regard to, and the observations already made on this subject are applicable. A few remarks on the remedies specially useful during the menstrual period are here required. When the pain is very severe, opiates are necessary; and these are most efficacious in the form of enemata. We are generally able, however, to do without opium; ether, of which the best and most efficacious preparation is unquestionably the compound spirit of sulphuric ether of the Pharmacopœia, combined or not with camphor, henbane, or sal volatile—one or more of these are medicines very satisfactory in their effects, when given for the purpose of alleviating temporarily the pain present in menstrual retention, or for more simple cases. Cannabis indica is a valuable medicine in certain cases. A common domestic remedy—one the frequent use of which it is not, however, for obvious reasons, desirable to encourage—is gin-and-water. Chloroform inhaled, or given internally in the form of chloric ether, is often employed with advantage. Camphor and opium together are frequently serviceable.

When we have reason to believe that the sufferings of the patient are connected with the presence of a tendency to gout or rheumatism, it will be proper to give colchicum internally, which may be advantageously combined with a little blue pill, every night or every other night, and saline laxatives twice or thrice a day. In rheumatic cases, it is important to impress upon the patient the necessity for wearing flannel, and for avoidance of exposure to damp or cold. In cases where the system is atonic, and the circulation feeble, guaiacum was recommended and largely used by the late Dr. Rigby. The guaiacum may be given in a powder with magnesia, ten grains of each, every morning, or in the form of the ammoniated tincture of guaiacum. Guaiacum is a remedy very strongly recommmended in dysmenorrhœa, attended with discharge of membranes or clots, by Dr. Dewees. A remedy very much used, and very highly recommended by Dr. Meigs, in the treatment of dysmenorrhœa, is the black hellebore, given " for a long series of days, weeks, and even months." The warm hip-bath, in which the patient is to remain for half an hour or so, is perhaps the most effectual of all remedies in affording relief from the ex-

treme pain sometimes present, while it is occasionally not less effectual in directly causing the discharge to appear. It is, in fact, both palliative and remedial in its effects.

There are many cases in which the pain during menstruation is referable to the *ovaries*, which organs are, under such circumstances, inflamed or congested, and where, in fact, there is evidence of the existence of ovarian folliculitis (see " Diseases of the Ovaries "). In addition to the employment of the general remedies already directed, rest, evacuants, sedatives, &c., it is necessary in these cases to apply counter-irritation over the inguinal region; a small blister, or embrocation of tartar emetic may be used for this purpose; leeches may be required. Sedatives, opium, chloroform, antispasmodics, and remedies of analogous character are frequently called for.

If the nature of the pain be such as to indicate that menstruation is difficult, something more than general treatment may be required. The urgency and nature of the symptoms and other circumstances must determine whether, in a given case, it is necessary or advisable to adopt other than the general treatment now described. The presence of sterility associated with dysmenorrhœa, may be mentioned, among others, as a circumstance which might show the necessity for having recourse to other measures directed specifically to the removal of the cause. A careful examination of the cervical canal, by means of the sound, will generally give the observer a knowledge of the cause of the disorder, and what is the proper remedial treatment will in most cases forthwith suggest itself.

Mechanical Treatment of Dysmenorrhœa.

The variation in opinion as to the best method of securing a permanent and sufficient enlargement of the canal by which the menstrual fluid escapes, appears to depend for the most part on the circumstance, that the cases actually to be treated differ so very widely and frequently in their nature. One method of treatment is assuredly not applicable to all cases. Nor is one particular physical condition always successfully dealt with in the same manner. We must endeavor in the first place to obtain an accurate idea of the physical condition of the cervix, the size of the canal above, below, and at the middle, its direction, and the position of the body of the uterus in relation to the cervix.

Three methods of treatment are possible. 1. Dilatation of the canal. 2. Enlargement by means of a cutting operation. 3. In

certain cases of contortion or flexion of the canal, by persistent mechanical rectification of the same.

The most simple case for treatment is one in which the direction of the canal is natural, the only abnormal condition being its small size. The most difficult case is that in which there are associated a small fibroid tumor above the internal os, and flexion of the uterus at the internal os. Difficult cases also are those in which the whole cervix is somewhat enlarged and indurated, and the canal tortuous.

Dilatation is not always practicable, for in some cases we cannot succeed in getting any instrument at all into the cavity of the body of the uterus. Again, when practicable it is not always useful, *e. g.* in cases of long narrow conical cervix, with or without flexion and induration (see Fig. 46). In case also of flexion higher up, with small fibroid tumor, the results of dilatation are not satisfactory. Further, dilatation is often temporary in its effects, the parts frequently returning to their original state when left to themselves. On the other hand, it cannot be disputed that much may be effected by it. The plan is an imitation of the process nature adopts in evacuating the contents of the uterus, and its failure in some cases should not lead to its rejection in all. Something has been said as to the danger of dilatation, but there is no reason with which I am acquainted for believing it more dangerous than any other kind of manipulation to which the cervix may be exposed. All manipulations about the uterus are attended with a slight amount of risk.

Next, as to the merits and demerits of the "cutting operation." By means of the knife we can of course enlarge the canal to any required extent. The wound so made has a great tendency, however, to close up again, and in some cases gives rise to formation of a firm cicatricial tissue, the presence of which is objectionable ; for this rea-

Fig. 46.*
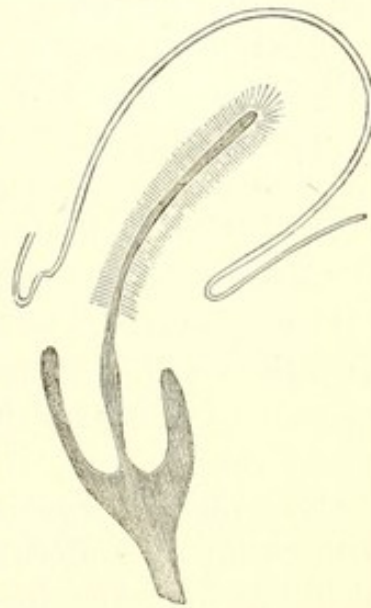
Fig. 47.†

* Fig. 46 represents the long tapering form of the vaginal portion in cases of conical cervix.

† Fig. 47 gives the shape of a hook which is very useful in drawing down the cervix for examination or for operation. (See also Fig. 26.)

son the operation has, perhaps, as a rule, to be repeated once or twice, recourse being had in the intervals to dilatation, in order to procure the necessary patency of the canal. We must, however, draw a distinction between the cases before us; it is as absurd to apply denunciations to all cutting operations for the relief of dys-menorrhœa, as to employ one and the same kind of cutting opera-tion for all cases.

The operation of incision, as it has been frequently practised of late, may be thus described. The tissues of the cervix are cut through bi-laterally, so that the shape of the canal is that of a triangle having a wide base; the exact shape varies, some consid-ering it advisable to cut through the cervical tissues as high as the internal os, others being satisfied with an incision reaching only half or two-thirds of this distance; others, again, start above at the internal os, with a moderate incision, which is continued down on each side, enlarging the canal uniformly through its entire course. The incisions, as will be presently described, are made by scissors, or by narrow-bladed knives of peculiar construction.

How the various forms of cervical stricture—to borrow a term from the urethral nomenclature—may be best dealt with by the operation of dilatation or incision or otherwise, must now be pointed out.

Congenital narrowness of the whole cervical canal associated with an infantile uterus.—This condition is best treated, I believe, by dilatation; and for this purpose the laminaria tents, or the metallic pessaries, as used by Sir J. Y. Simpson, are applicable. Dysmenorrhœa is not often, however, observed in these cases.

Congenital narrowness of the cervical canal, the uterus being normal as regards size and development.—Here dilatation or in-cision may be practised, but incision is most readily performed, and yields most speedily tangible results. If the lower two-thirds of the cervical canal be incised, the upper and remaining third can be more readily reached, and, if necessary, dilated afterwards. If the narrowing be limited to the internal os, the incision of the lower part of the cervix is still often necessary, in order to enable us to reach the seat of stricture more easily. If the os externum be the only narrow part, incision is by far the most satisfactory method of treatment.

Cases of inflammatory hypertrophy of the cervix—are, I believe, best treated by incision; the incision produces good effects also in arresting the abnormal growth of the cervical tissues.

An elongated cervix, with its vaginal portion bent forwards,

and the canal strictured owing to the flexion, is a case for incision. Dr. Marion Sims adopts two procedures in these cases. He first amputates the vaginal portion, so as to reduce the length, and then incises the margins of the aperture. This method is an exceedingly good one, and I have followed it with advantage in some instances. It is to be remarked, however, that in these cases the dysmenorrhœa is generally less prominent as a symptom than sterility. Sterility appears to be frequently associated with it.

Simple flexions of the uterus—causing dysmenorrhœa, are capable of being relieved without cutting or dilatation. Dilatation is sometimes necessary, however, in order to cure the flexion. (See chapter on "Flexions of Uterus.") Dysmenorrhœa is not one of the most marked symptoms of this condition, but the contrary is nevertheless sometimes observed, particularly where the uterus has in addition become affected with chronic inflammation.

Flexion of the uterus producing stricture of the canal high up, and due to a small fibroid tumor in the uterine wall opposite.—This is a cause of dysmenorrhœa very difficult to remove by operation; and the pain and discomfort attending such cases is often very severe. In some cases incision of the whole cervical canal does good, but it sometimes entirely fails in giving relief. The position of the tumor affects the result. Dr. Sims recommends an ingeniously devised form of operation for cases where the uterus is anteflexed with a fibroid tumor in the anterior wall; viz., to incise the cervical canal in the middle line posteriorly, with the idea of thus obviating the effects of the flexion. I have not tried this latter operation, and cannot therefore speak from experience as to its utility. I have myself treated certain of these cases very successfully by the use of pessaries. A most troublesome case of dysmenorrhœa of this kind was treated with great advantage by a pessary adapted to prevent the uterus falling forward. The uterus was bent antero-laterally and to the left. The new anteflexion pessary, described in the chapter on Prolapsus, was modified to suit this case by projecting the left vertical arm considerably more backwards than the right (see Fig. 79), the effect of which was to keep the uterus steady, and its canal tolerably straight. The first period this pessary was worn was the only one for upwards of a year and a half during which the patient had not suffered. Previous to the use of this new anteversion pessary, I had, with considerable benefit, treated such cases by an air-ball worn in the vagina, but the new pessary I consider much superior.

The tumor is not always on the same aspect of the uterus as that

on which it is bent. Thus we may have a fibroid tumor in the anterior wall opposite the internal os, and at the same time retroflexion. Dr. Marion Sims has alluded to this circumstance, and not long since I saw a remarkable instance of it. The patient suffered most intensely and severely from dysmenorrhœa; the uterus was sharply retroflexed, and just opposite the internal os was a stricture caused by a fibroid tumor in the anterior wall, compressing the canal at that point (see Fig. 48). The whole uterus was in this case somewhat hypertrophied, and affected with chronic inflammation. The first thing to be done in this case was to treat the flexion; this was effected by a pessary worn in the vagina. (See chapter on "Flexions.")

FIG. 48.*

Chronic inflammation and induration of the cervical tissues may lead to stricture of the canal. The dysmenorrhœa thereon depending may be summarily treated by incision and subsequent dilatation. Conjointly with this, however, means must be taken

* Fig. 48. Chronic retroflexion of uterus with fibroid tumor in anterior wall.

by rest, astringents, cold, &c., to restore the tissues to a more natural state.

The Operative Procedures necessary for effecting Dilatation or Incision of the Cervix Uteri.

Dilatation.—The simplest method of treatment, and one which very frequently suffices, is that of introducing the uterine sound, or metallic bougies specially constructed for the purpose, into the uterine cavity, once or twice, on the days before the expected period, the instrument first used being adapted to the size of the canal, and a larger one being subsequently employed. This plan of treatment is only practicable when the canal is large enough to admit a sound at all, and when the canal is not excessively flexed. Dr. Priestley's instrument (see Fig. 49) answers the same purpose. It is constructed on the same principle as Sir Henry Thompson's urethral dilator, and is a valuable instrument for dilating the canal in cases where the canal is not very small. Thus it can be employed in suitable cases of dysmenorrhœa or of sterility two or three times for as many successive days previous to the menstrual period. Dr. Marion Sims's cervical dilator is a very good one (see Fig. 50). Other metallic instruments have been devised calculated to effect dilatation of the canal in a somewhat similar manner; the objection to which they are liable is, however, this, that they are liable to slip out in the act of expansion. Further, their action is limited, and when the uterine tissues are indurated they are not satisfactory.

Another method of dilatation is the introduction of a series of metallic bougies, the first being small, and the size gradually increased. The result is good, and sometimes sufficient en-

Fig. 49.

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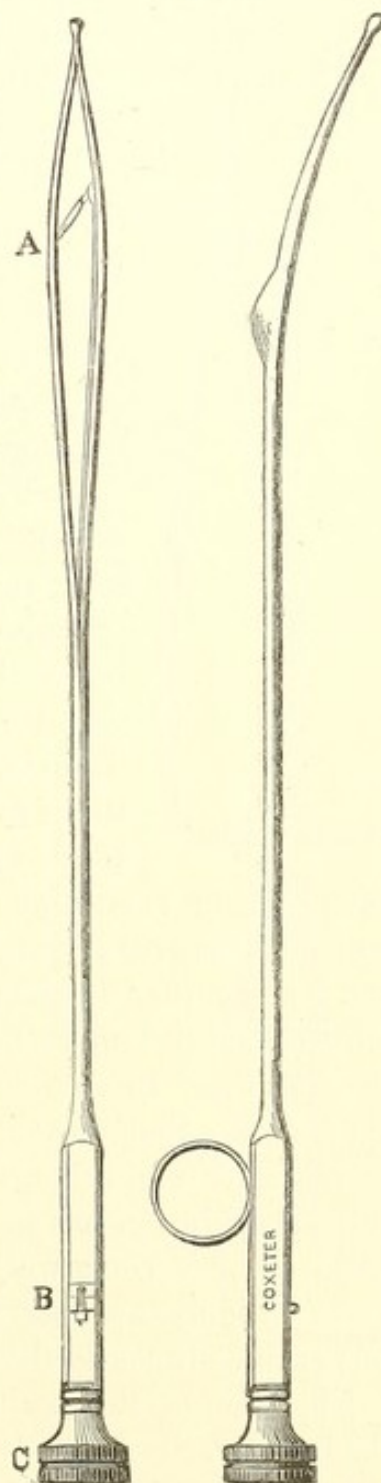
largement can be procured at one or two sittings, but more fre-
quently the time occupied in procuring the necessary result is too

FIG. 50.
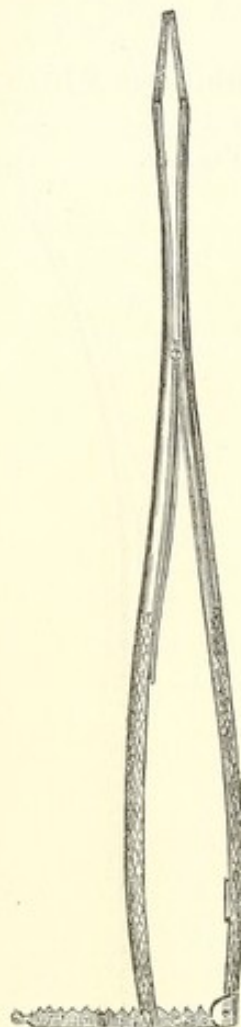
great. These bougies can be introduced by means
of a suitable handle, without the use of the specu-
lum. A conical-shaped metal bougie is sometimes
employed, the cervix uteri being thus expanded,
but the expansion is chiefly below, and hardly
affects the canal higher up.

Sponge tents offer undoubtedly the most relia-
ble means of dilating the cervix uteri. Dr. Sims
offers some valuable remarks on this subject in
his recent work. They must be made of good
sponge, or they are useless; as a rule the sponge
tents procured in shops are worthless. Great
care is necessary in their employment, for other-
wise they are very liable to produce troublesome
consequences. It is by no means easy to intro-
duce a sponge tent into a small cervix uteri,
especially if the canal be a little flexed. When
difficulty is experienced, Dr. Sims's plan is the
best, the patient being placed on the side, the
speculum introduced, and the os uteri drawn
down slightly by means of a hook. It will be
found necessary to hold the tent very firmly.
This is best done by dressing speculum-forceps,
the pivot of which is near the farther end, so as
to give a good leverage. I employ an instrument
having also a rack and catch at the handles (see Fig. 51). The
tent must be rounded at the point, firm and hard, and the length
and size adapted to the requirements of the case. A piece of cot-
ton-wool or lint must be placed in the vagina, so as to retain the
tent *in situ*. In six or eight hours the canal may be thus greatly
expanded. Sponge tents should not be allowed to remain longer
than six or eight hours. They should never be used after any
cutting operation has been performed on the os uteri, except after
an interval of some weeks. The irritative symptoms they some-
times produce are best treated by opium and by application of
turpentine stupes to the abdomen.

The stem of the sea-tangle (*laminaria digitata*), introduced by
the late Dr. Sloan, of Ayr, is now largely used for dilating the cer-
vix uteri. It is hard, firm, swells out on being moistened to twice
its dry diameter, and is very cleanly. One objection to it is that

it is liable to slip out before swelling has taken place. Of late these tents have been made hollow, at the suggestion, I believe, of Dr. Greenhalgh, and this is in some respects an advantage. I have used them frequently, and consider that for producing a limited degree of dilatation they are very valuable. Several sizes should be kept. The introduction is effected in the same way as the sponge tents.

INCISION OPERATION.

Sir J. Y. Simpson first employed a metrotome caché, by means of which he effected an incision extending up to the os internum, first on one side and then on the other. The knife was guarded until the instrument had been introduced sufficiently far. Various modifications of this instrument have been employed. Dr. Greenhalgh's metrotome is double bladed, and by it a bilateral section of the cervical canal is made, rather wider below than above. Dr. Marion Sims employs a pair of strong curved scissors, by which the cervix is cut through on each side up to its junction with the vagina, and the canal above this point is then incised on each side by a small razor-bladed knife (see Fig. 52) with a blunt point, to the extent required, the result being that an incision having a pyramidal shape, and widest below, is produced. Dr. Barnes uses the scissors in like manner as a means of opening up the lower part of the canal. Mr. Coghlan's metrotome is adapted for making an incision of the internal os; it has a probe point, and is then flattened out with a short cutting edge on each side.

FIG. 51.

Having tried the several methods, I prefer the use of the curved scissors and the small knife, believing that the operation is thus more certainly and accurately—and withal safely— performed. The patient is placed on the side, and the uterus held fixed by means of the tenaculum hook. After the incision, if there be much bleeding, the perchloride of iron suspended in glycerine may be applied by means of a small pyramidal-shaped piece of lint, and over this a large piece of wetted lint to maintain
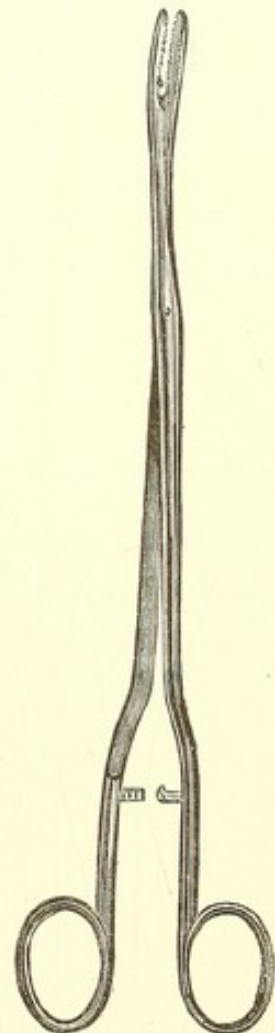
it *in situ*. This dressing remains for the next twenty-four hours. After removal of the dressing, the finger is used daily to keep the wound from uniting, or every other day for a week or so. Troublesome symptoms rarely follow, but pyæmia or pelvic abscess have occurred occasionally, and the operation is certainly not devoid of all risk. The difficulty in maintaining the aperture is great, and has been mentioned by all who have performed it. After a month or six weeks the wound may become greatly contracted, but the canal does not usually return quite to its former dimensions.

Fig. 52.

The annexed plan (Fig. 53) represents the action of the bilateral metrotome, and it exhibits the dangers of it. The size of the uterus, as shown in this drawing, is that we should expect to find in a patient suffering from dysmenorrhœa, and who had not had children. The outline of the uterus is copied from one of Dr. Arthur Farre's figures, and it is accurate. The metrotome is placed in utero as it is represented in the catalogue of obstetrical instruments published by the Obstetrical Society. The dotted line *a a* represents the width of the incision when the blades are set so as to cut little; the dotted lines *b b* show the larger incision. A very slight deviation to one side would be sufficient to cut quite through the cervix in such a uterus as that here represented.
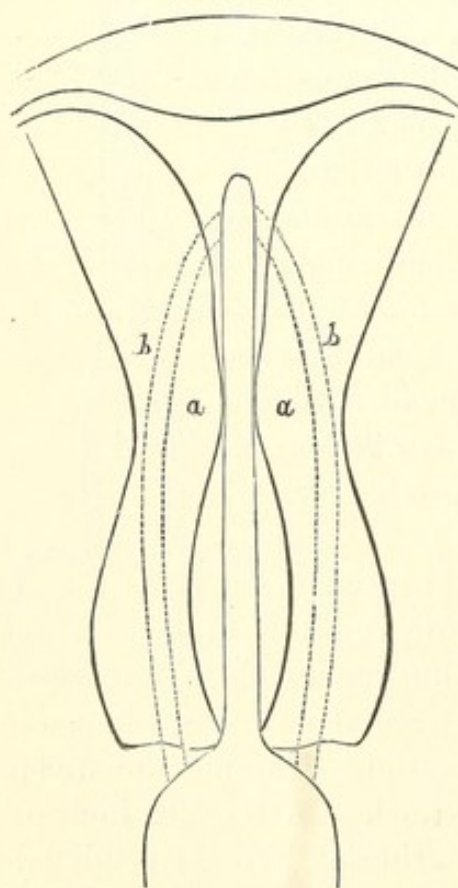
Fig. 53.

I believe that operators do not now incise so deeply as was the case after the first introduction of the operation. My own conviction is, that the objects of the operation are generally secured—as far as is possible—by an incision stopping short of the internal os, and having a pyramidal shape, narrow above, wide below.

The extent to which the cervix may be incised is that represented by the dotted line in the next figure (see Fig. 54). The cervical canal is thus made sufficiently large to

allow the operator to reach the internal os. I agree with Dr. Marion Sims in thus restricting the extent of the incisions practised.

The operation should be carefully performed, and the patient kept in bed for two or three days afterwards. Hemorrhage can be always controlled by the iron, and by carefully plugging the wound.

FIG. 54.

I am far from entertaining a belief that the incision of the cervix uteri is all-powerful in the treatment of dysmenorrhœa, but in a certain class of cases it is of great assistance; sometimes by itself, at other times as a basis for further measures. Metallic or other tents may be subsequently employed, with the restrictions above mentioned.

It is the practice with some operators to introduce and leave a metallic self-expanding spring tent in the uterus immediately after the operation. I prefer to wait two or three days before employing any further means of active treatment, and then to use the uterine sound freely, so as to break up adhesions, every other day or so for a week. More recently, I have with advantage made the patient wear an ebony plug in the cervical canal for some little time after the operation.

Other manipulative procedures required.—To maintain the patency of the canal at the situation where the contraction mostly happens—viz., at the internal os—is often a matter of extreme difficulty; mostly, however, in cases where there is flexion of the uterus. In this class of cases I have found it best to make the patient wear a stem of ebony, which acts in a double capacity, keeping the canal straight as well as open. The plug or stem in question is $1\frac{3}{4}$ inches long, conical in shape, with a bulbed termination. The diameter varies; the smallest has a diameter of $\frac{3}{16}$ of an inch at its bulbed termination. They all end below by a broad basis $\frac{1}{2}$ an inch in diameter, and are perforated for a short distance for facility of introduction, the ordinary uterine sound fitting into the perforation and acting as a handle. Latterly I have had them constructed so as to be readily kept in the canal, for they have a great tendency to slip out. This is done as follows: The stem is lengthened nearly $\frac{1}{2}$ an inch; one of the copper gutta-percha-covered rings described at p. 522 is next taken and bent slightly oval. No. 2 or 3 will generally be found suitable. A piece of gutta percha of a semilunar form, and with a perfora-

tion at about its centre, is next soldered by means of a little boil-
ing water into the ring pessary. It thus forms a support for the
intra-uterine stem. The piece of gutta percha is slightly arched,
and the hole in it is so large that it readily admits the lengthened
part of the stem. This vaginal oval pessary must be well adapted
to the size of the vagina. It then becomes the fixed point: suffi-
cient motion in all directions is allowed the uterus, as the plug fits
loosely into the collar below; but the plug cannot easily slip out.
The length of the plug must not exceed $1\frac{3}{4}$ inches. Its size at
the bulbed end may vary according to circumstances. In order to
introduce the instrument, the sound, as a handle, is passed through
the gutta percha collar, and on it is placed the ebony plug. After
the plug has been placed *in situ*, the ring is made to slide up the
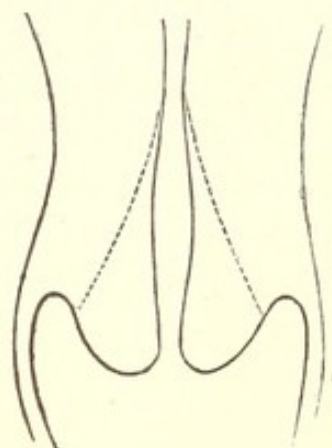
FIG. 55.*
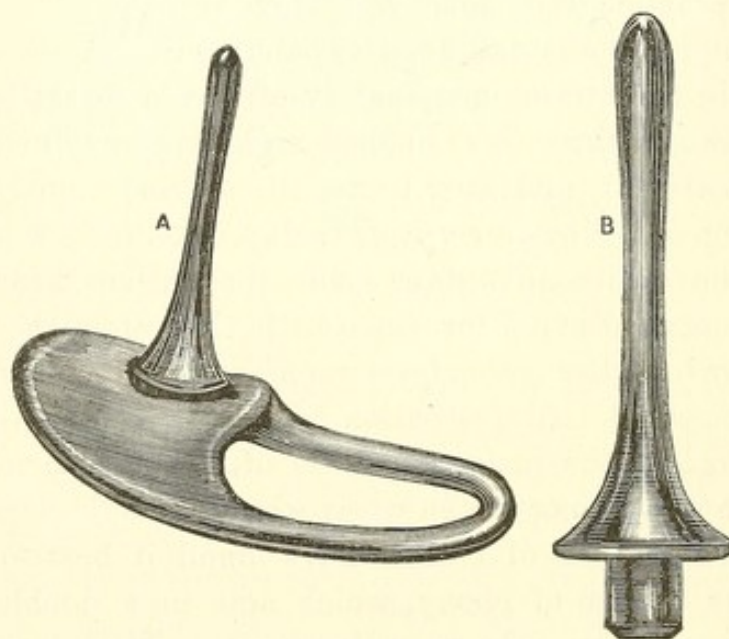
sound until finally the little plug finds its place in the supporting
collar. The sound is then withdrawn, and the work is done.
Only those who have attempted to introduce rigid plugs into a
contorted or contracted canal, and to maintain them there, will
appreciate the necessity or usefulness of this contrivance, which I
have found to answer extremely well. In the drawing (Fig. 55)
are shown the pessary with the plug and its collar complete (A),
and adapted for an ordinary case; also the cervical plug (B) sep-
arate.

* At B the stem is shown the natural size.

TREATMENT OF CASES OF IMPERFORATE OS UTERI.

In some rare cases the os uteri is imperforate congenitally, and there is no outlet for the menstrual fluid. And the os uteri may become occluded after labor, from effects of operations, &c. Under these circumstances, also in cases of physometra, we may be called upon to evacuate the contents of the uterus artificially.

In the congenital cases, we have to make a communication between the uterus and vagina in the best manner the circumstances may admit. We endeavor to find the os uteri, and not succeeding in this, search is made for the cervix. We may fail in discovering any trace of either, the distension of the uterus having obliterated all traces of it. In such a case a point is to be chosen which is nearest the supposed seat of the cervix, and the opening is to be made at that point, taking care that the instrument used be directed towards the centre of the enlargement, so as not to run a risk of wounding the bladder or rectum. In reference to the manner in which the uterine contents are to be allowed to escape, certain precautions are necessary. It is advisable to allow the fluid to escape very slowly ; the reasons for which precaution have been already given (see p. 436). After the first part of the treatment—the evacuation of the fluid—has been gone through, we have to take measures for maintaining the canal of the cervix open. This is not unfrequently found troublesome, there being a tendency to reclosure of the canal, necessitating a new operation. Gradual dilatation by means of metallic bougies is most appropriate under such circumstances.

The puncture of the tumor from the rectum is only admissible in cases where the other operation from the vagina is absolutely impracticable.

In cases of acquired occlusion of the os uteri or cervical canal, the canal is to be opened and made pervious by a carefully performed operation, the nature of which must be determined by the nature of the case. In many of these cases it is possible to find out the track of the old canal by means of probes, and, if this can be done, it renders further procedures more easy. A small canula and trocar, long enough to reach the uterus, is necessary to evacuate the fluid. The canal once opened, the occasional use of the sound, or of graduated metallic bougies, is required to preserve its patency.

TREATMENT OF CASES OF MEMBRANOUS DYSMENORRHŒA.

The treatment of the actual *pain* in these cases will be conducted on the principles already laid down. The object now is to determine how the disease itself is to be removed. The absolute cure of cases coming under this category is, however, a problem which is very frequently found incapable of solution, and the fact that the subjects of it are generally sterile, and not unfrequently extremely desirous of having children, renders this question additionally interesting. Scanzoni avers that he has been most unsuccessful in the treatment of the affection.

One indication present in such cases consists in preventing that congestion and highly vascular condition of the uterus and adjacent organs which prevails at the menstrual period from continuing longer than a certain number of days. In order to accomplish this, it would be advisable to employ either cupping to the extent of a few ounces over the sacral region a day or two before the expected period, or to apply leeches to the cervix uteri, and to keep up this treatment, adapting it, however, to the strength of the patient, or the requirements of the case, for some months. Immediately after the menstrual discharge has ceased, the patient should begin to use twice a day the vaginal douche (see p. 415) of cold water, employing a tolerable quantity of fluid for this purpose. On the view that the formation of the membrane is due to a morbid congestion of the uterus and adjacent organs, this treatment offers the best chance of success. Marriage has an effect in increasing the evil. In many cases the membrane is only observed after marriage; and while it is probable, as has been observed in other instances, that it was not seen before marriage, because not specially looked for, it must be inferred that the thickness of the membrane expelled was increased by the altered sexual relations of the patients. And as a step towards the cure of the affection, it is to be recommended that intercourse should take place at distant intervals only. Further, it may be desirable to widen the internal os uteri in certain cases by mechanical means, and so provide for the free escape of the menstrual products. The necessity for this latter procedure will be judged of by the condition of the canal. Any other abnormal condition of the uterus which may be found present must be rectified.

Dr. Dewees* states that in his practice he has found the tincture

* A Treatise on Diseases of Females, 10th ed., Philadelphia, 1854, p. 133.

of guaiacum of great efficacy in the cure of cases of membranous dysmenorrhœa—"in more than a hundred" instances. This remedy was largely used in this country by the late Dr. Rigby, who employed it, however, for all cases of dysmenorrhœa in which he conceived a rheumatic diathesis to be present; Dewees's recommendation applies for the most part to cases in which a membrane is expelled. The statements of Dr. Dewees as to the value of this remedy, are not confirmed by the experience of practitioners, who, like Dr. Meigs, have given it a fair trial.

What I have seen and heard as to the effects of caustic applications to the interior of the uterus in these cases, has not led me to conclude that much good is to be derived from this method of treatment.

CHAPTER VII.

DEFECTIVE DEVELOPMENT OF THE UTERUS—CONGENITAL MALFORMATIONS.

Absence or Rudimentary Formation of the Uterus—Infantile Uterus—Uterus Unicornis—Double Uterus—Absence of Orifice of Os Uteri.

ABSENCE OR RUDIMENTARY FORMATION OF THE UTERUS.

CASES of entire absence of the uterus are of extreme rarity, and there are good reasons for believing that when apparently absent the organ is yet represented by imperfect yet—to the anatomist —recognizable traces of a structure having the outline and general arrangement of the uterus. The ovaries—the essential portions of the female generative organs—are observed to be present in cases where the uterus is represented by mere traces of muscular fibres and cellular tissue only. A type of the condition here alluded to is a case recorded by Rokitansky,* in which the vagina consisted of a fossa one inch long, the uterus represented by muscular fibres arranged in the form of the uterus, the Fallopian tubes more decidedly pronounced and presenting each a small cavity, the ovaries present. (See Fig. 56.)

The particular part of the uterus formed may be limited chiefly to the cervix, to the upper part, or to one side.

Absence of rudimentary formation of the uterus may be asso-

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* See Kussmaul's valuable work, Von dem Mangel, der Verkümmerung und Verdopplung der Gebärmutter, Würzburg, 1859, p. 20.

ciated with complete absence of the vagina, or with rudimentary
formation of this canal. With respect to the condition of the va-
gina in such cases, the following is an illustrative fact: I had oc-
casion a few years since to examine a lady æt. 20, presenting the
following conditions: pudendum covered with hair, labia majora
well developed, vagina represented by a mere little pit admitting
the uterine sound only half an inch, no uterus or hard body to be

Fig. 56.
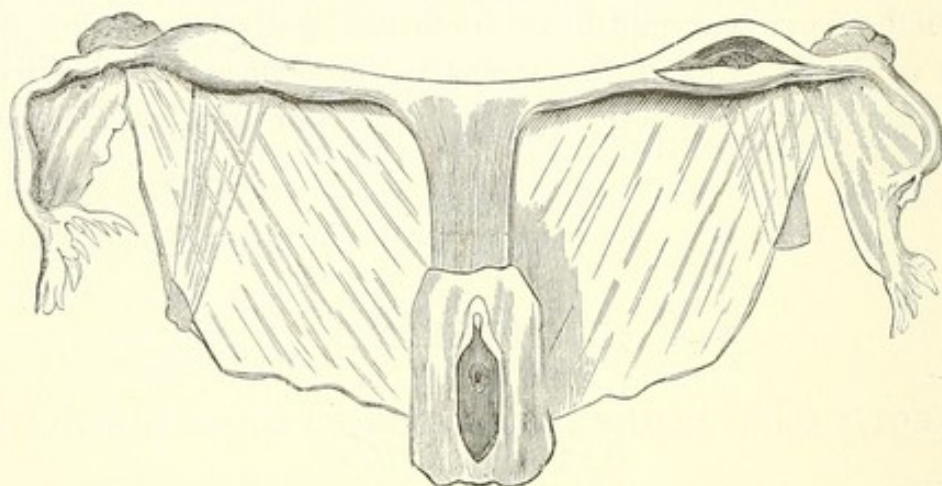
discovered between the bladder and rectum high up. Signs of
ovarian activity had been observed on two or three occasions, giv-
ing reasons for the belief that the ovaries were present. The
breasts were well developed.

INFANTILE UTERUS.

Under this term are included those cases in which the uterus is
regularly formed and, so far, complete in its parts, but where it
retains during adult age the size the uterus ordinarily possesses
during early childhood, or prior to the advent of puberty. At the
age when the arrival of puberty is generally witnessed, the growth
of the uterus proceeds rapidly, the dimensions which it then ac-
quires being those which, with certain exceptions, it retains until
the end of what may be termed sexual life. But in a few instances,
when the age of puberty arrives, the uterus fails to undergo the
proper development, and retains its childlike size far beyond the
customary period. In such cases menstruation does not usually
occur, although the patient may present signs of ovarian functional
activity. Various degrees of this defective development of the
uterus are observed, all, however, associated with one symptom,
viz., amenorrhœa or imperfect menstruation. In some instances

the condition primarily at fault is congenital, while in others it appears to be connected with malnutrition at the critical period of the arrival of puberty.

A sufficiently typical instance of the infantile uterus is that of a young woman lately under my care at University College Hospital. Her age was 22; she had never menstruated, the external generative organs and breasts well developed, the uterus slender, two inches long as measured by the uterine sound, the vaginal portion of the cervix slight, the os uteri exceedingly small. This patient began to suffer from symptoms indicative of ovarian activity at the age of sixteen, but menstruation had never actually occurred. Several cases of infantile uterus will be found recorded in Kussmaul's work. Very numerous variations are met with. Thus the body of the uterus may be imperforate, or the uterus may have two cornua instead of being a single organ, or the imperfect development may only exist as regards the cervical portion.

Further, the history of certain recorded cases renders it evident that the infantile uterus may undergo at a very late period the ordinary development, and also that, although in by far the majority of cases the subjects of this condition are destitute of the power of conception, yet that the contrary may be observed. The breasts are generally small; the external generative organs, the labia, clitoris, and vagina, also smaller than usual; the pudendum is, as a rule, imperfectly covered with hair. The individual, as a rule, is stunted as regards size and development of the body generally, but by no means always so. The ovaries have been found quite absent, but this is generally not the case; the ovaries also contain Graafian follicles, and the menstrual molimina are more or less well marked, although the menstrual discharge is almost always entirely absent. Sexual desire is frequently, but not always, found wanting.*

UTERUS UNICORNIS.

Under this term are included those cases in which the uterus presents a division superiorly into two parts or cornua, one of which is more developed and larger than the other. There are several varieties in reference to the relative size of the two cornua in different cases, and obviously when the two cornua are nearly alike in point of size the term "unicornis" is not applicable. In Kussmaul's celebrated work all these variations will be found described, together with various exceedingly interesting facts relative

* Kussmaul, op. cit., p. 94.

to the history of pregnancy under these unusual circumstances. The second cornu is always present, although it may be exceed-

FIG. 57.
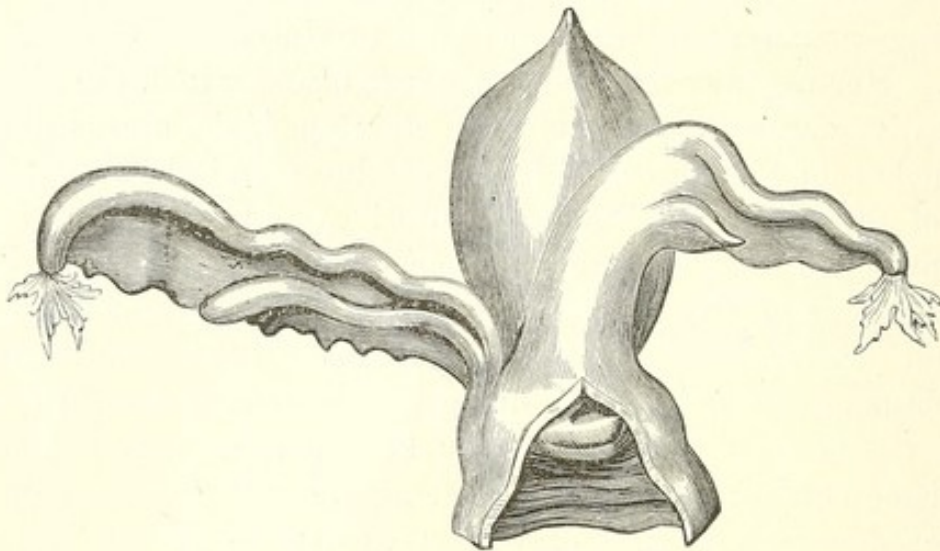
ingly small. A typical case of the uterus unicornis is that recorded by Pole.* (Fig. 57. The uterus is here seen from behind.)

DOUBLE UTERUS.

The several varieties of the double or bipartite uterus are, as is the case in other instances of malformation, traceable to arrest of development in early fœtal life, and with reference to all of them it may be said that they represent what is a normal and persistent condition of the uterus in inferior orders of mammalia.

A most complete separation of the two parts of the uterus is sometimes witnessed, each side presenting a separate cavity opening below by a separate orifice into a distinct and separate vagina, each vagina presenting externally a distinct orifice. This condition is very rare.

The next variety—the uterus duplex bicornis—is well illustrated by a case recorded by Schroeder.† (See Fig. 58.) The two halves of the uterus are here—externally—connected, but the two cavities are completely distinct.

Here it may be stated that the division between the proper cavity of the uterus and the Fallopian tube is always decided by the position of the round ligament. Unless this be attended to, there would be a liability of confounding the uterus bicornis with the more completely and distinctly double uterus.

* Memoirs of Med. Soc. of Lond., 1794, p. 507, and Kussmaul, op. cit., p. 22.
† From Kussmaul, p. 25. In the same work, p. 197, will be found a drawing from a case of Carus, in which one uterus is occupied by a fœtus.

Following Kussmaul's arrangement, another variety is that in which the uterus appears externally of the normal form, the cavity

FIG. 58.
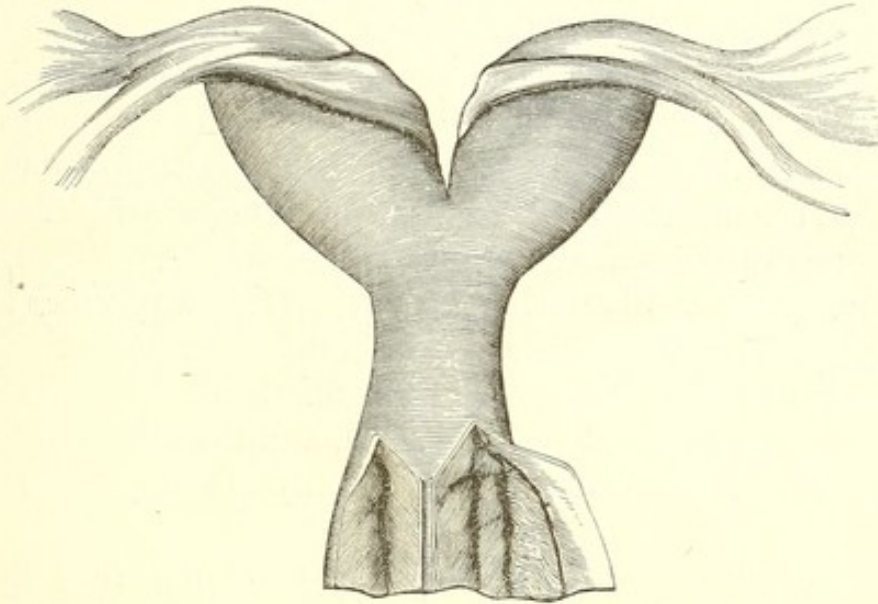
being, however, completely divided into two by a septum running down the middle. This Kussmaul terms the "uterus duplex

FIG. 59.
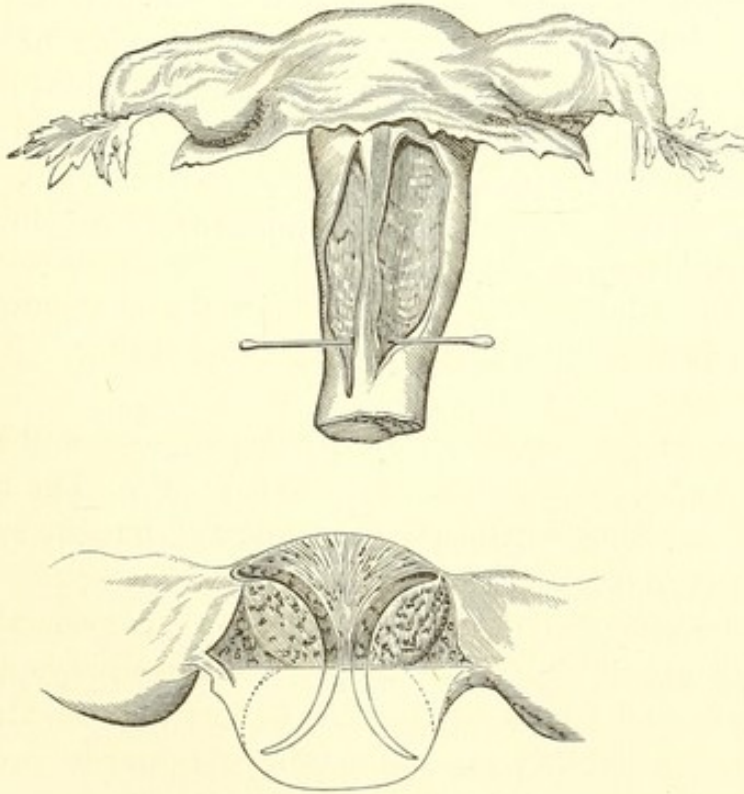
omnino conjunctus vel u. septus." Rokitansky's "uterus bilocularis" (Fig. 59) is from a case of Liepmann's,* and was taken from

* See Kussmaul, op. cit., p. 26.

a girl æt. 19. The vagina was in this case double, as also the uterus, although there is no indication of this externally. The vaginal canals are laid open from behind.

There are yet some further modifications. Thus, the septum between the two sides of the uterus may only extend half-way down the uterus, in which case there is only one os uteri, while the cavity superiorly is double ("uterus subseptus"), or again the uterus may be single at the cervix, and completely double above that point, constituting the "uterus bicornis unicollis." Instances of these two varieties are given by Kussmaul.

Lastly, a case of Eisenmann's may be referred to which stands, as Kussmaul remarks, midway between the uterus bicornis and the uterus septus; here the uterus is distinctly double, as also the vagina, the two uteri are quite parallel, and the two cavities long and narrow. A groove marks externally the division between them.

Some remarks on the *treatment* of cases of imperfect development of the uterus will be found in the chapter on amenorrhœa.

ABSENCE OF ORIFICE OF OS UTERI.

This is another congenital malformation which is met with but very rarely. The aperture at the lower extremity of the cervix uteri (os uteri externum) may be absent, or the canal may be imperforate higher up. In either case there may occur an accumulation of menstrual fluid when puberty arrives. This condition may be associated or not with an imperforate vagina or with absence of the latter canal.

CHAPTER VIII.

ATROPHY, AND HYPERTROPHY OF THE UTERUS.

ATROPHY OF THE UTERUS ; The result of Sexual Involution—Premature Senile
    Atrophy or "Super-involution" of the Uterus—Mechanical Atrophy.
HYPERTROPHY OF THE UTERUS—Result often of Defective Involution after
    Delivery—Hypertrophy, with Elongation of the Cervix.
TREATMENT OF HYPERTROPHY OF THE UTERUS.

ATROPHY OF THE UTERUS.

ATROPHY of the uterus, in the true sense of the word, implies
not a congenital defect as regards size, but an *acquired* smallness.

Atrophy of the uterus occurs at the period of sexual involution ;
the organ ceases then to exercise the ordinary function, menstrua-
tion and the capability of impregnation coming to an end. The
walls of the uterus become under these circumstances thin, and the
whole organ smaller than before. These changes are attended
with the further consequence that the uterus is less vascular and
less sensitive than before. The organ has ceased to play its part,
and its condition functionally very much resembles that present
antecedently to the arrival of puberty. Morbid processes affecting
the tissues of the uterus are not unfrequently arrested by the
occurrence of this, which may be termed its natural atrophy. But
it appears that the uterus may undergo this senile change at an
unnaturally early age, thus constituting a condition which Chiari*
described as " premature senile atrophy." Sir J. Y. Simpson†
ascribes this change to " super-involution" of the uterus (see
" Chronic Inflammation of the Uterus") after delivery.

Premature atrophy of the uterus might be expected to be found
in women who have prematurely ceased to menstruate, but its
occurrence in association with still persisting ovarian activity, is,
as would be expected, extremely rare.

The uterus affected with atrophy of the character alluded to is
universally small, the cervix participates in the change, the vaginal
portion becomes shorter, and the os uteri smaller. The tissues of
the organ become somewhat harder.

* Klinik der Geburtsk., 1855, p. 371.
† " Clinical Lecture on Amenorrhœa." Med. Times and Gaz., 1861.

Atrophy of the uterus of another kind may be produced by the operation of external influences. Thus, when the organ is pressed upon by tumors in the neighborhood, the walls may become very thin. I have found the organ excessively small from this reason in some cases of ovarian tumor and of fibroid tumor.

FIG. 60.*
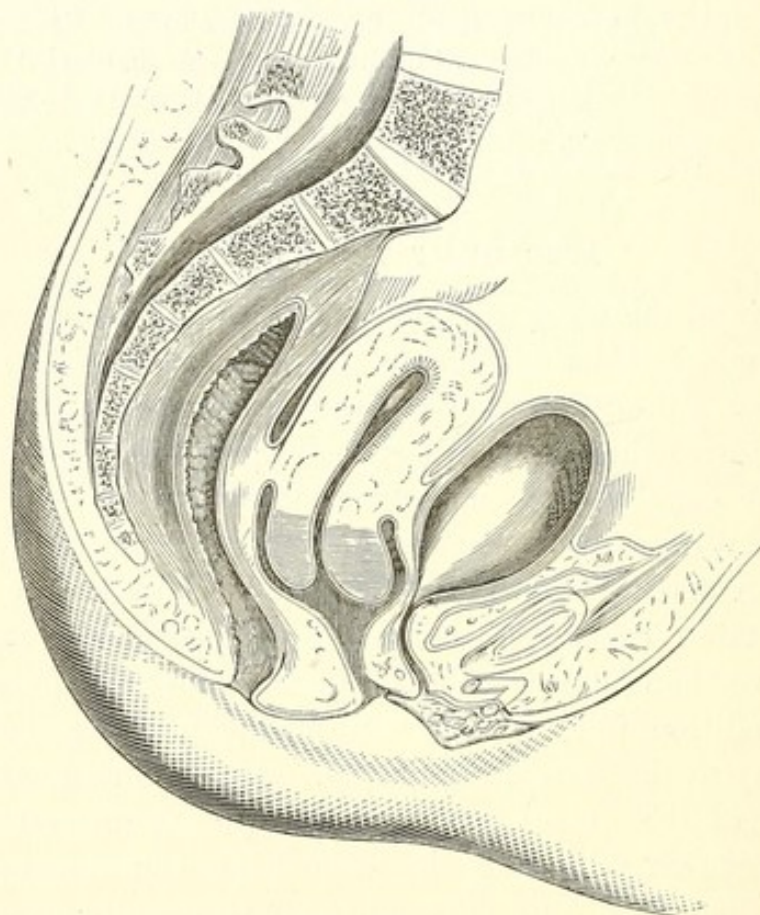
Another kind of atrophy is that accompanied with excessive dilatation of the uterine cavity, such as now and then occurs from fluid or gaseous distension of the organ. The uterine walls may be found in such cases excessively thin. The form of atrophy here alluded to has been described as " excentric atrophy " of the uterus.

HYPERTROPHY OF THE UTERUS.

Like many other organs of the body, the uterus is liable to variations in size. This variation is, however—in individuals in a state of health—limited. During the catamenial period, the organ

* Fig. 60 represents a case of general hypertrophy of the uterus in a patient affected with Menorrhagia.

becomes enlarged, but this enlargement is normally only temporary, and a general and persistent addition to its bulk only occurs under abnormal circumstances. The very considerable growth which the uterus undergoes during the period of gestation is of course an exception to this statement.

The simplest form of hypertrophy of the uterus is that witnessed in cases where the uterus is, and has been, influenced by pregnancy or by the presence of a tumor or tumors within its walls. Hypertrophy of the uterus, in this limited sense of the word, is never considerable; my own experience would lead me to say that the uterus may become under such circumstances perhaps twice as large as usual, but this degree of hypertrophy is rarely witnessed. This subject has been more fully considered in the chapter on chronic inflammation of the uterus, with which condition this simple hypertrophy is generally associated. Here the enlargement affects the body and the cervix of the uterus pretty equally.

The most common, and indeed the most marked form of hypertrophy of the uterus is witnessed in women who have been pregnant. The uterus immediatey after having expelled the fœtus at full term, or at an earlier period of gestation, has a bulk very greatly exceeding that of the unimpregnated organ. Under ordinary circumstances it regains—very nearly at least—its former size. When this "involution" does not occur regularly and promptly, the organ is liable to become affected with hypertrophy of a persistent character. Even in these cases, however, the degree of hypertrophy witnessed, if there be no other cause in operation, is not very great. In hypertrophy of the uterus due simply to "defective involution" after deliveries, abortions, &c., the increased length of the organ does not, I believe, ever exceed one inch. (It is necessary to observe that this does not apply to any measurement taken within the first two or three weeks after the labor or miscarriage.) One inch increased length usually implies, however, considerable addition to the general bulk of the organ, and entails various inconveniences, which have been already particularly described (see "Chronic Inflammation of the Uterus"). Hypertrophy, the result of chronic inflammation and defective involution, one or both, is most palpably evident in the cervical region, as this can be easily reached and inspected, but it is rarely limited to this portion.

Hypertrophy of the uterus is especially liable to occur in association with growth of fibroid tumors within the walls of the organ.

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A fibroid tumor of the uterus, growing in the middle of the thick-
ness of the wall, not unfrequently produces great hypertrophy of
the uterus, for the uterus may expand and grow not merely around
the tumor, but in every other part also. The bulk of the uterus
may, under such circumstances, equal that of a child's head, but
the greater part of the bulk would then be made up of the tumor.
In cases of fibrous polypus of the uterus, the organ grows some-
times to a very large size, but in such cases the uterine walls have

FIG. 61.*
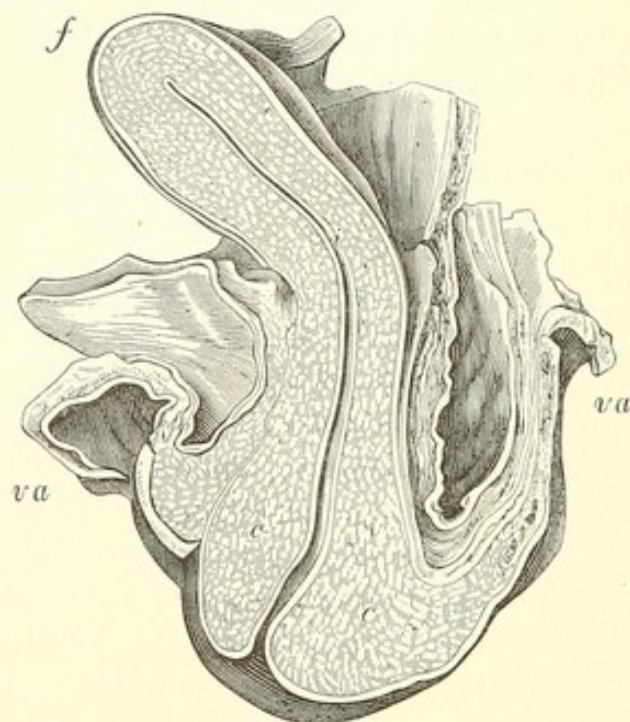
less thickness. Hypertrophy of the uterus to a slighter degree
is witnessed when fibroid tumors grow from its outer surface.
Again, it is not rare to meet with enormous fibroid tumors grow-
ing from the external surface of a uterus, itself even smaller than
usual.

Partial hypertrophy of the vaginal portion is sometimes ob-
served.

Hypertrophy with elongation.—The uterus not unfrequently
undergoes, in consequence of pressure, or in consequence of trac-
tion in a particular direction, an elongation to which the term
hypertrophy has not very correctly been applied (see Fig. 61).
This elongation more particularly affects the cervical portion of

* Fig. 61 (from Farre) represents longitudinal hypertrophy of the cervix,
of a marked character.

the organ, not simply that part which projects into the vagina, but the cervix properly so called. Hyper-

FIG. 62.*

trophic elongation of the cervix con-
stitutes one of the forms of prolapsus of
the uterus (see " Prolapsus "), but it is
also sometimes witnessed when an
ovarian tumor pushes the body of the
uterus upwards, and thus elongates the
cervix. In such cases the walls of the
canal do not usually grow, and the
effect of the traction is thus to render
them actually thinner. The cervix of
the uterus may, under such circum-
stances, become three, four, or five
inches in length. The lower portion
of the cervix—*i. e.* the vaginal portion
—sometimes, however, undergoes a true
hypertrophy, the result of which is that
a conical or snout-like substance of considerable size is then found
occupying the vagina, nay, even projecting beyond the ostium
vaginæ. A more limited hypertrophy is depicted in Fig. 62.

TREATMENT OF HYPERTROPHY OF THE UTERUS.

When associated with chronic inflammation of the organ, the
treatment should be directed to the removal of the chronic inflam-
mation (see p. 381). When the hypertrophy affects the organ
universally, constitutional measures are most indicated. When
the hypertrophy is of secondary character, the treatment should
be directed to the removal of the primary evil. When, however,
the hypertrophy is limited to the cervical region, as is not unfre-
quently the case, surgical interference is not uncommonly very
necessary, *e. g.* in cases where there is elongation of that part of
the cervix which occupies the vagina to such an extent as to occa-
sion sterility or prolapsus. The best means of performing the
operations required in such cases will, in order to avoid repetition,
be considered in the chapter on prolapsus of the uterus.

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* Fig. 62 represents hypertrophy of the posterior lip of the os, of non-malig-
nant character.

CHAPTER IX.

PERI-UTERINE HÆMATOCELE.

Pathology of the Subject—Positions in which the Hemorrhage occurs, and
  Symptoms attending its occurrence—Intra-peritoneal, Extra-peritoneal,
  Causes of Peri-uterine Hæmatocele enumerated—Results.
TREATMENT.—Means of arresting the Menorrhagia—Treatment of Pain, Col-
  lapse, &c.—Question of Puncture.

THE terms "pelvic hæmatocele," "peri-uterine hæmatocele,"
"retro-uterine hæmatocele," "pelvic hæmatoma," have been of
late years used to designate an effusion of blood in the neighbor-
hood of the uterus, giving rise to formation of a tumor.   The oc-
currence of hemorrhage in and amongst the pelvic viscera in women,
although spoken of by several of the older authors, has only within
the last fifteen years received that amount of attention which its
importance deserves.   To Bernutz,* Nélaton, and Voisin of Paris,
the profession is indebted for first indicating and explaining the
nature, course, and symptoms of this affection.   In this country,
Dr. Tilt was the first to draw attention to the matter ; Dr. West
has written an admirable account of it in his work on "Diseases
of Women:" Sir J. Y. Simpson has described it in his ordinary
felicitous manner, in his "Clinical Lectures."   The works of
Voisin† and Bernutz,‡ an admirable essay on the subject by Dr.
McClintock,§ the valuable observations of Dr. Madge,‖ Dr. Mat-
thews Duncan,¶ and a very complete and exhaustive essay by Dr.
Tuckwell,** comprising an analysis of 98 published cases, may be
referred to for information on this interesting subject.   The views
at first entertained and expressed respecting this newly discovered
pathological condition were somewhat opposed to each other, and
there is still much difference of opinion as to the nature, seat, and

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* See Arch. Gén. de Méd., 1848.

† De l'Hématocèle rétro-utérine, et des Epanchements sanguins non-enkystés
de la Cavité Péritonéale du petit Bassin.   Paris, 1860.

‡ Clinique Médicale sur les Maladies des Femmes, vol. i, 1860.

§ Clinical Memoirs on Diseases of Women.   Dublin, 1863.

‖ Obstetrical Trans., vol. iii.

¶ Edin. Medical Journal.   Nov., 1862.

** On Effusions of Blood in the Neighborhood of the Uterus.   Oxford, 1864

mode of origin of the hemorrhage, although the difference is really less than it has been represented to be.

Bernutz, whose claims to be considered as the first modern observer and expounder of this pathological condition stand before all others, rightly insists on the mischief which has arisen from treating the effusion, clot, or tumor, as a sort of entity, and of the confusion which has arisen from speaking of pelvic hæmatocele or uterine hæmatocele as a disease *per se;* whereas it is really but a symptom, a consequence, an effect, or an accident, as the case may be, of exceedingly varying conditions. We find that one kind of hemorrhage in a particular situation is termed "true" hæmatocele by one author, while another author limits the term hæmatocele to an effusion of blood in another locality. The fact is, that if we retain the use of the term "hæmatocele" at all, it must be understood that no particular disease is meant thereby: it is a convenient term, as indicating simply presence of effused blood; and if we use the double term "peri-uterine hæmatocele," which is on the whole a convenient one, it must be understood to imply effusion of blood in the neighborhood of the uterus. It will so be used in this place, and without restriction of any kind as to the precise seat of the effusion.

The circumstances leading to the pouring out of blood in the neighborhood of the uterus will be presently mentioned; but, in the first place, it will be advisable to point out the anatomical positions in which hemorrhage is liable to occur.

INTRA-PERITONEAL HEMORRHAGE.—Hemorrhage may take place into the peritoneal cavity, the blood collecting in the pelvis, and lying on and between the pelvic viscera; and the blood may come from some vessel in the pelvis itself, or from a vessel situated in the abdominal cavity. The blood collects in the pelvic cavity, which it fills more or less completely according to the quantity poured out. If the effusion proceed rapidly, it may kill the patient before coagulation of the blood has taken place. If the effusion take place slowly, the blood effused generally coagulates, and the coagulum becomes limited to a certain situation by the inflammatory products, or by the free border of the coagulum only. In this case it is spoken of as encysted; but, under some circumstances, no such limitation of the blood occurs. It will be obvious that, when the blood has coagulated, the coagulum will form a tumor having certain physical characters, and which, if the coagulum be in the pelvic cavity, may be felt through the vaginal walls on digital examination. If the examination be made early,

fluctuation may be perceivable, but it is often difficult to make out fluctuation satisfactorily. If the examination be made soon after the coagulation has occurred, the tumor will be soft and ill-defined, and the more so as it will be probably at this time surrounded by serum not yet absorbed. If the examination be made later, the tumor will be harder and more resistant. Later still, it will be found either to have become reduced in size, or to have undergone a softening process or liquefaction. The blood drawn off by operation has a syrupy consistence and a peculiar odor, compared by Dr. Matthews Duncan to that of faded and slightly decomposing flowers. It is obvious that the physical aspects of the tumor, as felt through the vaginal wall, will vary according to the amount of blood effused and the quickness with which this occurs. A large and sudden hemorrhage would leave behind it a clot filling the whole pelvic cavity, dipping down behind and at the sides of the uterus, as far as the peritoneum extends. The uterus would in such a case be felt to be imbedded in a mass of semi-solid substance. On the other hand, a small hemorrhage would give rise to a coagulum, which might be felt only in one part of the pelvis—e. g. behind the uterus, in the Douglas fossa ("retro-uterine hæmatocele"). The effect produced on the patient by hemorrhage into the peritoneal cavity appears to vary very considerably. In one case—and this is perhaps the rule—it sets up violent inflammatory action; in another, the presence of the blood is better tolerated. The effect on the patient *quoad* the loss of blood necessarily varies according to the amount lost and the ability of the patient at that particular time to bear losses of blood of any kind. It is almost unnecessary to point out that when a large coagulum occupies the pelvic cavity it gives rise to the "pressure" signs observed in the case of other pelvic tumors, such as difficult defecation, difficult micturition, a sense of fulness, pains in the lower extremities, &c.

It may or may not be the case that very slight hemorrhages into the pelvic peritoneal cavity occur frequently, and are clinically unrecognized. When, however, the hemorrhage is considerable, the symptoms produced are of a peculiar kind, most alarming, most intense in character. The symptoms are those of hemorrhage and of peritonitis combined. Thus the patient becomes deadly faint, and at the same time complains of an agonizing pain in the lower part of the abdomen. The fainting is more or less continuous, but it is greatly more intense at intervals. And so with the pain, this being generally continuous, but liable to exacer-

bation to an extreme degree at times. It is characteristic of the attack that it begins suddenly, and most frequently it happens that the attack is coincident with a menstrual period. There may be, adopting Dr. McClintock's arrangement of the symptomatology, three modes of invasion: 1. The sudden and acute form; 2. A form less severe and overwhelming in its effects, life not being so evidently threatened; 3. A sort of chronic form, the symptoms being developed gradually, or in succession.

EXTRA-PERITONEAL PELVIC HEMORRHAGE.—The term "thrombus" has for some time been used to designate a blood coagulum in the cellular tissue of the labia, or near the external outlet of the organs of generation; and the term is obviously quite as applicable

FIG. 63*.
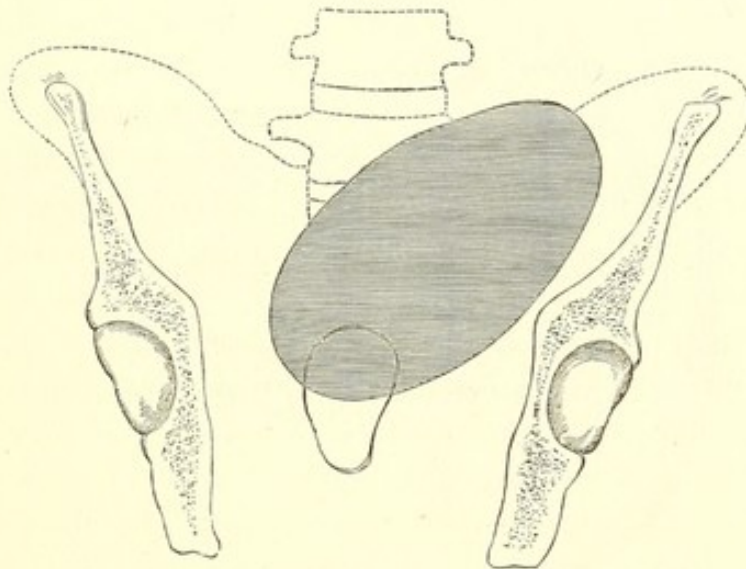
to the coagulum, resulting from hemorrhages taking place higher up, that is to say, in the cellular tissue near the uterus, in the broad ligaments, &c. Whereas, however, the thrombus of the external generative organs has for a long time been well known, it is not so with the thrombi of the internal generative organs. It is now known that an effusion of blood near the uterus in the situations above indicated is not uncommon. By some authors the effusion (or its coagulum) is spoken of as a "thrombus;" by others it is considered as a "peri-uterine hæmatocele." Thus Bernutz only admits intra-peritoneal hemorrhages as causes of hæmatocele, and considers extra-peritoneal hemorrhages as instances of thrombus. This author, it should at the same time be

* Fig. 63 gives an outline of the tumor in a case (P. H.) in University College Hospital, where hemorrhagic effusion was apparently extra-peritoneal.

remarked, believes that the extra-peritoneal form of hemorrhage is comparatively rare. It is more convenient, however, to discard this word thrombus, and, whether we agree with Bernutz or not as to the rarity of extra-peritoneal hemorrhage, to apply the term " peri-uterine hæmatocele" to hemorrhages having this anatomical position. If the nosology of the subject were to be considered *de novo*, there would be much to be said in favor of a different nomenclature.

The seat of the extra-peritoneal hemorrhage now under consideration is the connective tissue around the uterus and ovaries and pelvic viscera generally. The position and shape of the tumor

FIG. 64.*
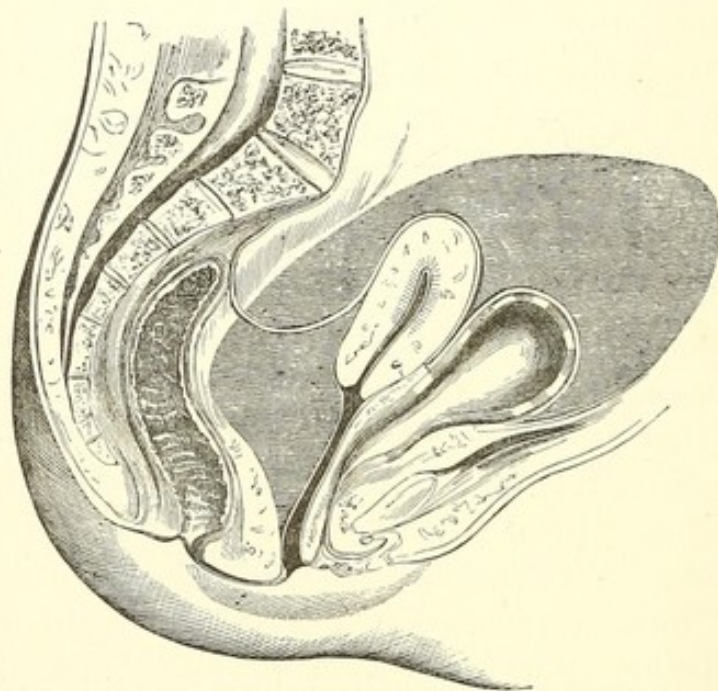
resulting from coagulation of blood so effused necessarily varies according to the precise situation of the bleeding vessel. Thus if the bleeding vessel be in front of the uterus, the tumor will likewise be in front; and if the bleeding continue, the coagulum may extend from this point laterally on each side. If the bleeding vessel be behind the uterus, the coagulum will be there evident. The pelvic viscera become dislocated by the tumor resulting from the coagulation, to a degree necessarily dependent on the extent of the hemorrhage. The tumor may extend from the pelvis high

* Fig. 64 gives a lateral view of the position of the tumor in a case also lately in University College Hospital. The effusion appeared in this case to be extra-peritoneal and was of very considerable extent.

up into the abdomen. The physical character of the tumor, as regards hardness, softness, &c., is subject to variations of the same kind, as detailed in the case of extra-peritoneal hemorhage. In fact, so nearly do the physical characters presented by the tumor in extra- and intra-peritoneal hemorrhage agree, that it is hardly possible to distinguish them. The tumor in both cases may rise high above the pelvis into the abdomen; in the extra-peritoneal form it may be extremely large. The symptoms do not, so far as can be ascertained, differ in the two cases; and that this is true may be judged of by the fact that it is hotly disputed whether in the majority of cases the hemorrhage is intra- or extra-peritoneal. In the extra-peritoneal hæmatocele the tumor may reach lower down in the pelvis; an hæmatocele tumor found extending upwards from the vulva into the pelvis would almost certainly be extra-peritoneal; the reflections of the peritoneum would prevent such a descent of the tumor in the intra-peritoneal form. With this exception, there appears to be hardly anything in the physical characters of the tumors in the two cases to distinguish them. The changes which are observed in the coagulum formed do not materially differ, whether the hemorrhage be intra- or extra-peritoneal. Absorption, softening, abscess—these are effects which may equally result. A tarry, syrupy condition of the contents is generally observed when the blood is not soon absorbed; the blood corpuscles become shrivelled and contorted, mixed up with pus cells, crystals, patches of pigment, &c. It not unfrequently happens that the tumor, at first small, becomes enlarged at the next menstrual period, from a recurrence of hemorrhage. Meanwhile, inflammatory action goes on, and during the progress of the combined and simultaneous effusion and inflammation the tumor increases.

We may now pass on to the consideration of the

CAUSES OF PERI-UTERINE HÆMATOCELE—under which term will be included all cases in which an effusion of blood takes place in the neighborhood of the uterus so as to constitute a tumor perceivable through the vaginal walls.

Rupture of some one of the vessels in the uterine or ovarian plexus.—It has been already (see "Phenomena of Menstruation," p. 342) pointed out that the thick stratum of vessels forming a thick network immediately external to the uterus undergo, under various circumstances, a kind of erection, in process of which they become greatly distended and enlarged, and that this erection occurs, in all probability, during menstruation, during intercourse,

and under other circumstances. Lying beneath the ovary, in the folds of the broad ligament, there is also a rich plexus of vessels—the pampiniform plexus, together with a mass of tortuous vessels now known as the bulb of the ovary; all these vessels are also susceptible of great enlargement. The functional activity of the uterus and ovaries is thus connected with a considerable engorgement and distension of the plexuses of vessels now referred to. The tissues of the uterus and of the ovaries are doubtless congested at the same time; but it is evident that when blood is determined to the internal generative organs, the greater part of it goes to distend the very large and numerous vessels in the uterine and the pampiniform plexuses and the ovarian bulb respectively.

The foregoing facts have a very important bearing on the present question; they afford us the means of explaining satisfactorily why it is that hemorrhage is liable to occur in the connective tissue around the uterus, and in the folds of the broad ligament. The clinical facts amply bear out the conclusions deducible from physiological considerations. Rupture of some one of these vessels may be produced by violent or immoderate sexual intercourse, by undue bodily exertion of any kind during menstruation, and probably under other circumstances also. When a vessel has given way the effusion of blood may be trifling or considerable, according to circumstances. In some cases, the first hemorrhage is slight, but under reapplication of the exciting cause it recurs, and finally a tumor of considerable size is formed. The seat of the ruptured vessel determines the position of the tumor. When the uterine plexus is implicated, the hemorrhage is probably almost always extra-peritoneal; but if the rupture affect a vessel in the pampiniform plexus or in the ovarian bulb, the hemorrhage may readily occur into the peritoneal cavity, although more generally it probably occurs within the folds of the broad ligament, and is extra-peritoneal. The intra-peritoneal cases are most likely to prove fatal, apparently because there is less limit to the amount of hemorrhage. A "varicose" condition of the vessels in the pampiniform plexus has been noted in some cases where rupture into the peritoneal cavity has occurred; and it is rational to infer, in many cases, the existence of a chronic varicose condition of the uterine and ovarian plexus of veins.

It is probable that, in by far the majority of cases, the source of the hemorrhage giving rise to the tumors classed under the term "peri-uterine hæmatocele," is that which has been now indicated. On this point, however, there is difference of opinion. In most

cases of peri-uterine hæmatocele, the patients recover, and the anatomical evidence is wanting. Dr. Matthews Duncan, who has published a valuable paper on this subject,* has well argued the question from this point of view. His experience has convinced him that the extra-peritoneal form of hemorrhage is probably a common form of the disease, the clinical facts which have come under his observation having been opposed to the conclusion that an intra-peritoneal seat of the effusion was possible in certain of the cases related. Dr. Duncan admits, in common with other recent authorities, that the effusion is intra-peritoneal in many cases. From Dr. Tuckwell's analysis of published cases it appears that the effusion was intra-peritoneal in 38 out of 41 cases where a post-mortem examination was made; there can be little doubt, in fact, that in the fatal cases the effusion is far more frequently intra-peritoneal; but this does not of course imply an absolute numerical preponderancy for the intra-peritoneal cases.

Lastly, clinical facts show that a tumor originally seated in the broad ligament or elsewhere may burst into the peritoneum, and secondary hemorrhage of very serious import may thus occur.

Apoplexy and Rupture of the Ovary.—Under this head may be included some few cases of peri-uterine hæmatocele. Collections of blood may be formed in the substance of the ovary, probably seated, as a rule, in an enlarged Graafian follicle, and constituting a sort of hæmatic cyst. This cyst may become ruptured, and blood extravasated into the peritoneal cavity. The formation of these hæmatic cysts in the first instance is involved in obscurity, but the explanatian of their formation is probably the following: A Graafian follicle does not burst, as it should do, into the Fallopian tube: hemorrhage takes place within it: it enlarges from continuance of the bleeding and rupture occurs. I have occasionally found Graafian follicles pathologically increased in size, and containing very large clots. In certain blood diseases, hæmatic cysts of the ovary thus formed may probably attain a considerable size.

Hemorrhage during Menstruation from the Graafian Follicle into the Peritoneal Cavity.—This class of cases is one of great interest. Normally, a certain amount of hemorrhage—the "menstruation of the follicle," as Dr. Tyler Smith has termed it—occurs before the dehiscence takes place. The transfer of the ovule from the cavity of the follicle to the canal of the Fallopian tube is at-

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* "On Uterine Hæmatocele," Ed. Med. Journ., Nov. 1862.

tended probably with discharge also of some of the blood from the follicle into the tube. After dehiscence has occurred we find a coagulum of blood in the ruptured Graafian follicle—a coagulum ordinarily the size of a nut. Now it is evident that a derangement or disturbance of this physiological process may give rise to hemorrhage into the peritoneal cavity. If the tube be not accurately applied to the follicle, the blood and ovule together may escape into the abdominal cavity—when the ovule has been fecundated such an accident may result, as the occurrence of cases of extra-uterine pregnancy proves—and if blood continue to be poured out from the interior of the follicle, the blood must either distend the follicle itself or escape into the peritoneal cavity. We have no means of knowing what is the normal amount of secretion of blood from the interior of the follicle. It has been ordinarily assumed that the quantity is trifling. There is, however, no proof of this; and indeed there are very good reasons for believing, with Gallard, that ordinarily a not inconsiderable portion of the menstrual discharge itself is derived from the follicle,* which latter, as is rendered probable from the researches of Rouget, remains closely grasped by the fimbriæ during the whole period of menstruation. If this latter opinion be correct, it will be evident that, if from any accident the normal path for the follicular hemorrhage—that is, the Fallopian tube—be not available, intra-peritoneal hemorrhage will result. If the condition of the blood be such as to favor hemorrhage—as in fevers, anæmia, chlorosis, purpura, &c.—the effects of such an accident are intensified.

The peri-uterine hæmatocele due to this case would be intra-peritoneal. The formation of an hæmatic ovarian cyst might precede the abdominal hemorrhage.

Hemorrhage from the Uterus and Fallopian Tubes into the Peritoneal Cavity.—When the menstrual product is prevented escaping by the normal outlet, by congenital absence of such outlet, or by acquired stricture or closure of the same, reflux of the blood may occur through the Fallopian tubes into the peritoneal cavity, and formation of a peri-uterine hæmatocele. This is a class of cases in the illustration of which very considerable labor has been bestowed by Bernutz, in the work previously alluded to.

Whatever may lead to menstrual retention may end in pelvic hemorrhage. In the congenital cases of this kind the menstrual retention is associated with atresia of the cervix uteri, with absence

* See a memoir by Gallard, Arch. Gén. de Méd., Oct., Nov., and Dec., 1860.

of the vagina, or with imperforate hymen. In women who have menstruated, menstrual retention may occur from chronic inflammation of the cervix uteri closing the os uteri, or materially narrowing it; from traumatic influences during parturition, or otherwise; from cancer, &c. And there may be menstrual retention in cases where a slight menstrual discharge is apparently going on; the secretion of blood in the uterus may be so great that the os uteri is too small to allow of its escape. Hemorrhage into the peritoneal cavity from the uterus and Fallopian tubes, one or both, may thus arise, either in connection with profuse menstruation or after parturition or after abortion.

More commonly the peri-uterine hæmatocele originates at a menstrual period, the hemorrhage being preceded by suppression or by profuse menstruation; it has almost always been noted that menstruation was previously irregular. There may or there may not be, concurrently with the internal hemorrhage, an external one.

Rupture of the Fœtus-containing Cyst in Extra-uterine Pregnancy.—The symptoms produced by the hemorrhage which occurs under these circumstances are generally very severe. The blood is effused into the peritoneal cavity, often in great quantity.

The physical characters of the tumor produced by the effused blood resemble those observed in other cases. Frequently death occurs before the tumor has become developed and distinct. This rupture is most liable to occur when the fœtus is contained in the Fallopian tubes, and most frequently the accident happens between the second and fourth month under such circumstances.

Rupture of Hæmorrhoidal Veins.—Professor Simpson mentions a case,* in which a considerable tumor situated between the vagina and rectum consisted of a coagulum—the result of hemorrhage from one of the hæmorrhoidal vessels.

Hemorrhage from Vessels of the Peritoneum and other sources.—Bernutz† describes a form of hæmatocele resulting from hemorrhagic pelvi-peritonitis. Ferber‡ has, in reference to the general etiology of hæmatocele, drawn attention to the possibility of hemorrhage occurring from the capillaries formed in the false membranes covering the pelvic viscera, the false membranes being the result of local inflammatory action. This hemorrhage is analogous to that observed by Virchow in hæmatoma of the dura

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* "On Pelvic Hæmatoma," Med. Times and Gaz., vol. ii, 1859.
† Op. cit.
‡ Arch. f. Heilk., 1862, No. 5. p. 431.

mater, in which case the blood is effused between successive layers of inflammatory membrane.

Here also may be mentioned the rare accident, *bursting of an aneurism* into the abdomen, the coagulum from which might be so situated as to give the physical characters of a peri-uterine hæmatocele.

Also, cases of the kind to which Dr. McClintock has drawn attention, and which, so far as at present known, are very rare, viz., the effusion of blood into the tissue of the uterus itself: the cervix uteri is the part affected. These cases occur only during, or immediately after, parturition.

Constitutional Causes of Peri-uterine Hæmatocele.—Any condition of the system at large favoring the production of hemorrhage may alone, or concurrently with some one of the causes already mentioned, give rise to peri-uterine hemorrhage. The presence of fevers, small-pox, &c., has in some recorded cases been associated with peri-uterine hæmatocele, the menstrual function becoming thus disturbed or disarranged in its performance. A watery condition of the blood, such as is present in anæmic individuals, chlorosis, purpura, or other blood disorders which may be considered as predisposing to the occurrence of hemorrhage at a menstrual period, may, in the manner previously pointed out, be the cause of the peri-uterine hemorrhage. Trousseau termed cases of this kind "cachectic" hæmatoceles.

RESULTS.—Some points in the subsequent history of cases of peri-uterine hæmatocele require notice. Absorption of the coagulum is the most common event, and this is the most favorable termination. In some cases the blood tumor bursts into adjacent viscera. The bowel is the outlet most commonly chosen, and the syrupy contents of the cavity then escape by stool, or flesh-like masses are passed in this manner from time to time, the tumor diminishing in size as this goes on. The tumor may burst into the vagina. It may burst also into the peritoneum, having been primarily either entirely extra-peritoneal, or else encysted in the peritoneal cavity. This latter termination is the most unfavorable, and it occurs more particularly in those cases where there is a recurrence of hemorrhage.

TREATMENT OF PERI-UTERINE HÆMATOCELE.

When death occurs, it takes place usually either from hemorrhage and collapse, or from peritoneal inflammation; the indica-

tions are, to arrest the hemorrhage, to prevent inflammation, and in certain cases, to promote external evacuation of the exuded products.

First, as regards the hemorrhage. If the arrest of hemorrhage be the chief indication, which will be judged of by the intensely pallid and faint state of the patient, our object should be to promote coagulation of blood already effused, and to check the flow of blood to the pelvic organs. One of the most important elements in the treatment, then, should be the observance of absolute rest in the horizontal position, not only during the attack itself, but between and during the succeeding menstrual period. Application of cold by means of bladders containing ice, placed over the pubes and the lower part of the abdomen, is of essential service. As a further help, the injection of iced water into the rectum might be suggested. The administration of food and drink requires careful consideration. If the patient were previously anæmic, or if there were reason to believe that the hemorrhage was produced or kept up by the watery or vitiated character of the circulating fluid, a more liberal diet would be necessary; but under other circumstances, and during the acute stage, food and drink should be moderate in amount. For the relief of the great prostration and collapse present in many cases, brandy or other stimulants should be liberally administered. Internal remedies— hæmostatics, as they are termed—would seem to promise little assistance in checking the hemorrhage under these circumstances; those which have been most recommended are iron, rhatany, ergot, sulphuric acid, &c.

The question as to the propriety of puncturing the tumor is one on which some difference of opinion exists; some practitioners advocating it, while others reject it, or limit it to those cases in which the effusion is not intra-peritoneal at all. As a rule, it is better to interfere surgically as little as possible, for, by making a puncture, there is risk of giving rise to inflammation of the interior of the sac, to purulent infection, and the fatal consequences of the same. Trousseau,* in an admirable clinical lecture on this subject, expresses himself as opposed to puncture. Professor Braun, of Vienna, states that in 6 cases where puncture and evacuation of the sac was performed cure followed. In 3 cases he adopted a passive treatment, with like success.

* L'Union Méd., Dec., 1861.

Sir J. Y. Simpson recommends that an opening should be made, if the tumor be enlarging from inflammation or otherwise. Nélaton and Voisin limit surgical interference to cases where there is violent pain with increase in size, and threatened rupture into the peritoneal cavity.

The view taken of this question by Dr. Matthews Duncan is to the following effect: If the blood remain in form of clot, it is likely to be absorbed, and in such a case puncture is not required. When liquefaction occurs, Dr. Duncan believes that the blood becomes mixed with pus and is almost sure to be discharged, and in these cases operative interference may be required. The practitioner has then to determine whether he will leave the case to nature, or interfere; in some cases, it is often good practice to open the sac, in others it is the only good practice. The operation is undertaken to avert a threatened rupture, or with the view of shortening and assuaging the sufferings of the patient. Dr. McClintock, who has had a considerable number of cases under his care, says: "With my present impressions, I would not be inclined to resort to the trocar, unless urgent symptoms were manifested in consequence of the bulk or mechanical pressure of the tumor; and not even then, unless it were in the chronic stage."* Judging from my own experience, puncture is rarely necessary or advisable. I was once on the point of puncturing the tumor, but refrained from doing so, and the patient is now quite well, although the pressure symptoms were in her case very intense.

The difficulties of the operation are often not inconsiderable, and great care is required not to wound the bladder or other viscera. A sound should be passed into the bladder previously, in order to render evident the relation of this viscus to the tumor. In operating, the point which projects most into the vagina, and as nearly in the middle line as the nature of the case admits, should be chosen. The first opening made should be small, but when it is perfectly certain that the cavity is reached it should be enlarged. A large opening is necessary, to allow of escape of clots. Care should be taken to prevent access of air to the cavity, and slight pressure should be afterwards continuously applied over the abdomen. If pyæmic symptoms supervene, they must be treated by copious use of stimulants, by bark, ammonia, &c. Injection of the cyst with water is not to be recommended, unless the discharge has become putrescent.

* Op. cit., p. 271.

With respect to those cases where the effusion extends high up into the abdomen, it may be a question whether to perform an abdominal operation or not. In a case related by Dr. Duncan, paracentesis was performed, and the patient recovered. Such an operation is only admissible in exceptional cases, and where the tumor is very large.

Next, with reference to the peritonitis. The great pain present in these cases is of itself an evil, and it must be treated by exhibition of opium in sufficiently large doses. The most appropriate anti-inflammatory remedies, supposing such to be used, would seem to be local depletion by means of the application of leeches over the hypogastrium; such local depletion will also lessen the internal effusion of blood. Poultices and warmth, so useful in ordinary peritonitis, would seem absolutely contraindicated, inasmuch as the hemorrhage would be probably increased by their use.

The subsequent management of the patient will require caution. Everything calculated to give rise to excitement or congestion of the genital organs must be avoided. The patient must be enjoined not to take excessive exercise, to live moderately, but well. The anæmic condition of the patient generally indicates the employment of tonics, of ferruginous preparations, &c., care being taken, while restoring the strength of the patient, to prevent premature exercise of this strength. Sexual intercourse could not with propriety be allowed until after the lapse of some months at least. A patient who has once been the subject of peri-uterine hæmatocele requires continuous and careful watching for a considerable period; exertion of any kind, however slight in degree, may induce recurrence of the mischief, if undertaken too early.

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CHAPTER X.

PELVIC CELLULITIS AND ABSCESS.

Peri-uterine Inflammation; its Frequency, Nature, and Seat—Progress and
    Route taken by the Effused Products—Symptoms and Effects of Pelvic
    Cellulitis.
TREATMENT.—Great Necessity for Rest—Medicines—Diet—Evacuation of the
    Abscess.

THE affection now to be considered is of great importance and
interest. It is an affection, moreover, which may be said to be
peculiar to the female sex. It is an insidious disease not unfre-
quently masked or unrecognized until an advanced period of its
progress, and its consequences are frequently in the highest sense
of the word serious.

In its essence it consists of effusion of morbid products into the
space surrounding the uterus and ovaries, and the transformations
undergone by these effused matters, one of which transformations
is the conversion of the products in question into a purulent or
puriform fluid. Tumors of varying shapes and consistence are
found in the progress of the affection situated generally not far
from the uterus and interposed between it and one side or other
of the pelvic wall. These tumors appear rapidly, remain gen-
erally for a considerable time, and disappear either owing to
gradual absorption of the material of which they are composed, or
by liquefaction and bursting of the tumor at the surface of the
skin, into the peritoneal cavity, intestines or bladder.

The effusion appears to be the result of the introduction of an
irritant from without. It is frequently witnessed during the puer-
peral state, after delivery at term, or after miscarriages; it may
result from operations on the internal or external generative organs,
from the introduction of a tent into the uterine cervix, or from the
performance of a severe operation, such as ovariotomy, or from a
simple operation, such as the removal of condylomata from the la-
bia. It can hardly be said to be known as an idiopathic affection.

The actual seat of the effusion is, in most cases, the meshes of
the cellular tissue surrounding the uterus, between the folds of
the broad ligament, and extending thence in various directions

towards the pelvic walls; but it is probable that in some cases of pelvic inflammation there is an inflammatory condition of the peritoneum itself.

In Figs. 65 and 66 are represented the general relations of the tumor produced by the effusion. Another instance of the same kind is depicted in Figs. 8 and 9, representing respectively the lateral and anterior view of the outline of the tumor in a case of pelvic cellulitis.

Bernutz and Goupil, who take a somewhat different view of the question of pelvic inflammation from that held in this country, have brought forward many very valuable facts, which prove that inflammation, abscess, &c., of the peritoneum covering the ovarian

FIG. 65.*
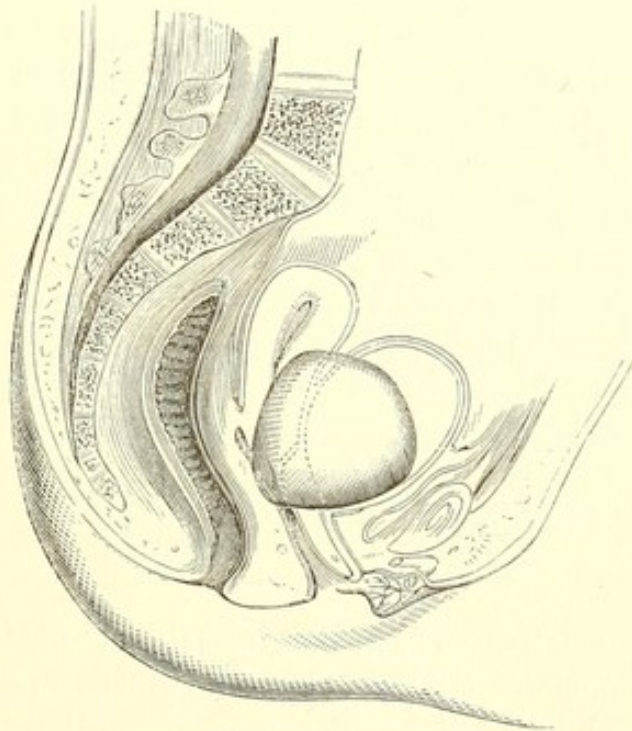
pouch, and the fimbriæ of the Fallopian tubes—termed by them pelvi-peritonitis—is much more common than was believed to be the case; that in addition to puerperal causes, menstrual derangements of various kinds, blennorrhagia, venereal excesses, and traumatic causes, may lead to inflammation and purulent collections in the locality in question; and they endeavor to draw a parallel between the phenomena witnessed in the male—orchitis and hydrocele—and these inflammatory conditions of the peritoneum surrounding the extremities of the Fallopian tubes and ovaries.

* Fig. 65 shows outline of the effusion (to the right of the uterus) in a case lately in University College Hospital.

They argue for an almost exclusively intra-peritoneal seat of the inflammation, the argument pursued being the same as in reference to the seat of the hemorrhage in peri-uterine hæmatocele. With acute peritonitis of the pelvic cavity as the result of injuries of the generative organs during delivery, after operations, &c., we have been long familiar, but these authors endeavor to show that this peritonitis, now acute, now chronic, occurs in connection with diseases of the womb, Fallopian tubes, &c., to a greater extent than was before suspected. It is impossible to disregard the weight of evidence brought forward in favor of these peculiar views; but in many of the cases which are described by Bernutz and Goupil as cases of pelvi-peritonitis there seems to be sufficient

FIG. 66.*
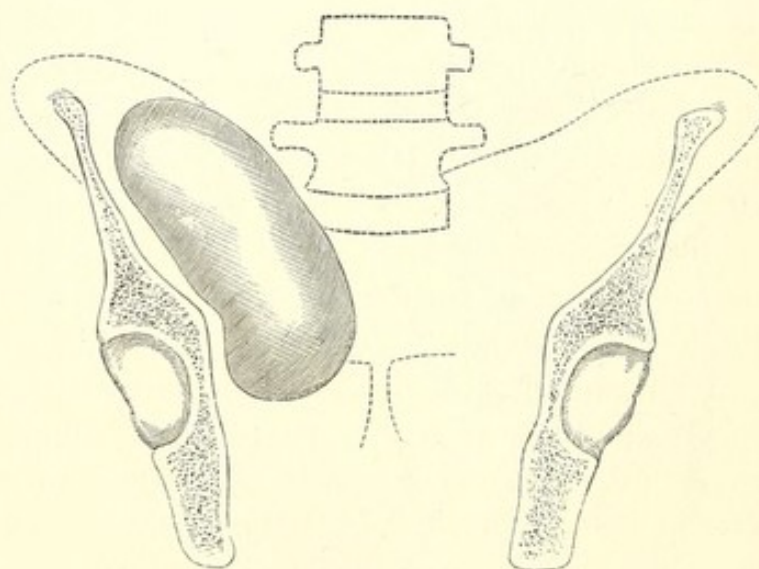
evidence of the existence of effusion into the connective tissue beneath the peritoneum. My own experience has convinced me that the phenomena observed in various cases are only to be reconciled with the theory that the effusion is really sub-peritoneal, although in some instances there has been evidence of the peritoneal surface being also in an abnormal state.

The effusion has been described by Dr. West as an "acute purulent œdema." The term "purulent" is not quite correct in all cases, the effusion sometimes undergoing absorption. Virchow,† who has specially examined the effused products, describes it under the term "diffuse puerperal metritis and parametritis;" the tissues

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* Fig. 66 represents the outline of the effusion as imagined to be seen from the front. From the same case as that of Fig. 65.

† Virchow's Archiv, 1862, p. 415.

become swollen, thickened, hardened, and œdematous, and a fluid, first transparent, then opaque, exudes on section. The cells are enlarged, their contents thicken; they split up, and groups of smaller roundish granular cells are seen. As further consequences, there may occur coagulation and obstruction in the lymphatics there situated, and metamorphosis into purulent fluid.

The effusion is remarkable for its hardness (a physical quality to which sufficient attention has hardly been directed) under ordinary circumstances. The hardness and rounded character of the tumor perceived through the vaginal or abdominal wall is often such as to give the idea of a more permanent growth. This hardness is not perceived at first, probably, but at a later period, and it may be absent when liquefaction of the effused products occurs and the stage of "abscess" has arrived.

Once started, the affection may spread to a considerable distance in the pelvis, and even beyond it. The spread of the effusion follows, however, certain definite paths, the fasciæ of the pelvis being so arranged that extension necessarily occurs in these definite directions. König* gives the result of some interesting experiments on this subject, made on bodies of women dying after labor. Injections of air or water were made into the cellular tissue under the broad ligament. The results were: 1. Exudation into the cellular tissue in the neighborhood of the tubes and ovary travels primarily along the course of the psoas and iliacus muscles, and then travels into the pelvis proper. 2. Exudations starting from the antero-lateral part of the cellular tissue, where the body of the uterus joins the cervix, fill first the cellular tissue of the true pelvis laterally, to uterus and bladder, and pass then with the round ligament towards Poupart's ligament, and thence to the iliac fossa externally and backwards. 3. Starting from the posterior part of the base of the lateral ligament, the parts first filled are the posterior and lateral parts of the pelvis, viz., the Douglas fossa; and the exudation then follows the course of those described under head 1. The effusion may, as I have myself observed, pass also out of the pelvis through the large or small sacro-sciatic notch. It may also pass across the pelvis in front of the bladder from one side to the other, and once above the pelvic brim, it may extend to a very considerable distance upwards, dissecting the peritoneum away from the abdominal fascia, and inserting itself between.

The *history* of cases of pelvic cellulitis, of which those following

* Archiv f. Heilkunde, 1862, No. 6, p. 481.

delivery may be taken as typical ones, is generally charcteristic. Rigors, pain more or less intense, quick pulse, irritative fever, mark the onset of the inflammatory action ; but these initial symptoms may be absent, the patient gradually becoming indisposed, without occurrence of acute symptoms of any kind. Thus it is not uncommon for a patient, who may have got over the period of lying-in tolerably well, to evince three or four weeks later symptoms of general indispostion ; she becomes weaker and weaker ; she is emaciated, complains of pain down the legs, or in the pelvis ; the appetite and digestion fail ; there are occasional chills ; and and after these symptoms have lasted a week or two, the more decided pelvic symptoms—difficulty and pain in defecation and micturition—are evident. If movement be attempted, pain is produced, but this is often taken to be due to mere weakness, the real mischief being overlooked. A quick pulse is, however, always present from the beginning. When we are called to the case at a somewhat later period, we find usually that there has been a good deal of pelvic pain and uneasiness, pain and difficulty in micturition and defecation, high fever, with evening exacerbations, night sweats, hectic, diarrhœa, and all the signs of violent and dangerous constitutional disturbance ; and the presence of the tumor now alluded to is perhaps the last thing which is detected, the patient's condition having previously excited great uneasiness on the part of the attendant. These symptoms, may, however, be absent. The tenderness present may prevent the recognition of a tumor, but when it can be felt, the tumor is generally painful to the touch ; the vaginal wall covering it is thickened, indurated, and conveying a very different impression from that which is present when a tumor of another kind simply presses on the vaginal wall, and is not connected to it by inflammatory exudation, &c. ; the vaginal canal is hot, dry, and tender to the touch, usually at least ; at the latter stage of the affection this tenderness may be absent, or at all events be much diminished. The hardness of the tumor has been already alluded to as a remarkable feature. In a later period it gives place to softness and fluctuation when undergoing liquefaction. Softness does not, according to my experience, precede resolution.

Neuralgic pains are frequently present, due to pressure of the effused products on the nerves passing through the pelvis. These neuralgic symptoms vary ; they are either sensation of coldness, or increased warmth of the surfaces to which the nerve leads, an intense pain, or other altered sensation. König observes truly,

that the external cutaneous nerve of the thigh is the one most frequently affected; at other times the crural nerve chiefly, or the sciatic nerve. One symptom is very frequently present, viz., flexion of the thigh on the trunk; the patient experiences pain when the thigh is extended, owing to the distension present around the psoas muscle, and which is necessarily increased by extension. The sign in question is almost pathognomonic of pelvic cellulitis or abscess. Pelvic cellulitis may, however, be present unaccompanied by this symptom, for when the mischief is in the anterior part of the pelvis, or in such a position as to be out of the way of the psoas and iliacus muscle, it may be found wanting. This distinction I have been able to make in several instances.

Other symptoms attendant on pelvic cellulitis and abscess are —vesical catarrh, indicative of proximity to the bladder; rectal disorders; passage of bloody mucus and tenesmus; anomalies of defecation and micturition, these functions being generally more or less interfered with.

When liquefaction occurs, the abscess resulting becomes evacuated. The most frequent outlet is the rectum, next in order of frequency the vagina, and next the bladder; but the abscess may open above Poupart's ligament, in the groin, or in the genital or in the lumbar region. The opening into the peritoneum is very rare. The evacuation of the abscess is usually attended with immediately favorable effects, unless the opening be of a sinuous character, in which case the duration of the disease is often considerable.

Dr. McClintock found that in 70 cases of pelvic cellulitis, of puerperal origin, the case ended thus: 37 ended in suppuration with discharge of pus; 24 of these burst or were opened externally, viz., 20 in the iliac region, 2 above the pubes, 1 in the inguinal region, and one beside the anus; 6 were discharged per vaginam, 5 by the anus, and 2 burst in the bladder. In not one of these puerperal cases did the abscess burst into the peritoneal cavity, while this result was several times observed in a much smaller number of non-puerperal cases.

Dr. West states that, in 34 out of 52 cases, the broad ligament was the seat of mischief, the cellular tissue between the uterus and rectum in 14 cases, and that between the uterus and bladder in 3 cases. Pus was discharged externally in 27 of these 52 cases.

TREATMENT OF PELVIC CELLULITIS AND ABSCESS.

Pelvic abscess most frequently comes before us as an effect or consequence of parturition, and there can be no doubt that the formation of post-puerperal abscesses in the pelvis is due to the same kind of influence—more limited in its operation—as that which proves fatal in so many cases of puerperal fever. Virchow considers the diffuse peri-metricic inflammation of puerperal women to be a sort of internal erysipelas. Dr. West considers that the analogies of the affection are " to be found among those inflammations of the cellular tissue which, succeeding to operations, advance with great rapidity, and terminate soon in the formation of enormous quantities of matter." This view of Dr. West's is undoubtedly correct, and the whole clinical history of pelvic abscess is corroborative of the fact that we have here to do with a local pyæmic action. In the worst forms of puerperal pelvic abscess the most vigorous stimulant treatment is absolutely necessary to save the patient from death, and the same holds good with abscesses the result of amputations, &c. It is reasonable to infer that, in milder forms of the affection, the same kind of treatment is best; and that this inference is a correct one practical experience has abundantly convinced me.

The general principles which should then guide us in the treatment of pelvic abscess may be deduced from the forgoing considerations. In the first stage of the affection, and before pus has formed, it may be advisable in a very few instances to apply a few leeches over the painful spot, which is generally in one or other of the iliac or inguinal regions. Leeches have in some cases been applied to the uterus itself. Neither leeches, nor indeed depletion of any kind, are indicated when the inflamed part has suppurated, or when the patient is in an anæmic state, or where the abscess follows on puerperal fever. Hot poultices to the lower part of the abdomen are of the greatest value; they should be large, thick, and spread over a large surface.

Mr. Hilton, in his admirable lectures, has forcibly called the attention of the profession to the beneficial influence of *rest* in the treatment of many surgical affections. Dr. McClintock* insists strongly on the great importance of rest in the treatment of pelvic abscess. It may be laid down that in all cases of pelvic abscess it is the best practice to see that the patient be kept in the recumbent posture for some considerable time. The cure of cases of

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* Op. cit.

pelvic abscess is often a very tedious affair; the pus burrows in the pelvic cavity beneath and between the different layers of fascia, and sometimes even, when the cavity of the abscess is very large, it exhibits no tendency to point or to undergo spontaneous evacuation. The termination of the case will be favored by a due observance of rest.

In cases where the thigh is drawn up, I have employed a method of keeping the psoas and iliacus muscles at rest which has been attended with considerable advantage. This is to lay the whole of the lower extremity on a double inclined plane, with the heel elevated, somewhat after the manner in which a case of fracture of the thigh is treated.

The experience I have had of the treatment of pelvic cellulitis by mercury, induces me to express my disapproval of it as a general rule, although its use has been strongly recommended. In bad cases of pelvic abscess, mercury is most certainly inapplicable; the tolerance of mercury in milder cases is no proof of its efficacy as a curative agent, and, notwithstanding the high authority which can be given for the use of mercury in the treatment of pelvic abscess, I do not employ it, still less recommend its continuous administration. An exception in favor of mercury may be made in cases where there is syphilitic disease present. Thus in an hospital patient suffering from syphilis, condylomata, and pelvic abscess, consequent on removal of these condylomata, I employed mercury with advantage. The pain, sleeplessness, and general discomfort experienced by the patient, are best relieved by opium. A ready means of administering it is to throw a small quantity of laudanum into the rectum. The diarrhœa frequently present requires to be controlled by opiates together with astringents, of which latter catechu is perhaps the best.

The patient should be kept in a well-aired, moderately warm room. The pelvis and the body generally should be sponged night and morning with tepid water, care being taken not to chill the surface of the skin. A vaginal injection of tepid water once or twice a day gives great comfort, if carefully done.

The diet of the patient requires the most careful attention. From the first the patient should be fed well. Beef tea, soups, milk, eggs, according to the appetite, may be given in good quantity. Port wine or bottled porter is to be administered judiciously and with due regard to the digestive capabilities of the patient. It is impossible to say what quantity of food or stimulant may be required; this must be a matter of experiment; when the abscess is discharging, large quantities will always be required, and in

many cases, before the opening has occurred, it is necessary to put the patient on a very liberal diet indeed. Medicines which help her to take nourishment, such as cod-liver oil, dilute nitric acid, with bitter infusions, are often of service. Bark is a most valuable medicine in chronic cases. A liberal diet, rest, bark, and occasional small doses of opium—this is, in brief, the best treatment for the majority of cases which come before us. As long as any induration can be felt from the vagina or above the pubes, the patient cannot be pronounced convalescent, nor is it safe to allow her to resume her ordinary course of life.

The question as to the evacuation of the abscess is an important one. The natural evacuation is undoubtedly the best, unless this is procured at the expense of permanent disorganization of the pelvic viscera; but it is certain that in many cases artificial evacuation hastens the cure very materially. The selection of the time and place for puncture—if early puncture be decided on—requires great judgment. If the abscess be opened from the vagina, extreme care is necessary to avoid wounding the pelvic viscera; a soft point may be chosen for the puncture, if there be no actual pointing of the abscess. Dr. McClintock believes that those cases end most favorably which are evacuated externally. Where the abscess points at some part of the abdominal wall, it is better to wait until the skin is thoroughly implicated. If a puncture be made from above, it should be made as near to the pelvic brim as possible, in order to avoid the peritoneum, and if the swelling extend far out towards the iliac region, the puncture should be made close to Poupart's ligament; to avoid the sheath of the crural vessels, the puncture should be made external to the surface of Poupart's ligament. Dr. Tyler Smith adopts a plan of opening the abscess in this situation, which has appeared to me to be successful in preventing introduction of air, viz., the making a valvular incision. The bistoury is the best instrument for the operation. When fluctuation is clearly evident, the operation is devoid of uncertainty, but under other circumstances there is risk of missing the abscess altogether. Unless, therefore, the position of the abscess be otherwise than by fluctuation distinctly indicated, it would be better to wait than to operate early, although by so waiting some time would be lost. When an abscess has been opened, warm linseed poultices form the best application; the escape of the pus should be allowed to occur *very slowly*, otherwise there will be great risk of the introduction of air into the cavity, and

obvious mischievous results therefrom; a compress of cotton-wool should be lightly applied over the whole hypogastric region.

Mercurial inunctions, recommended in chronic cases, appear objectionable. Painting the lower part of the abdomen with iodine appears sometimes of service where induration remains, and it is desirable to remove it. When the abscess burrows in the thigh, strapping of the thigh will prove useful, the foot and leg being previously bandaged.

CHAPTER XI.

FLEXIONS AND VERSIONS OF THE UTERUS.

Importance of the Subject—Mechanism of Flexions and Versions—Causes—Symptoms.

TREATMENT OF RETROFLEXION.—Principal Sources of Difficulty—Treatment of Recent Cases; by use of Sound, Vaginal Douches, &c.—Intra-uterine Stem and Air Pessary — Hodge's Horseshoe Pessary—The Author's Modifications of these—Treatment of Anteversion, Anteflexion, and Lateral Flexion; by Air-ball Pessary; by Author's Wire Pessary—General Treatment in cases of Flexion, &c.

CHANGES in the form of the uterus are described under the term "flexion," and "version," the two being often confounded. Flexion of the uterus is generally associated with some degree of version, but there may be version without flexion. It is best to consider the two together, seeing that they are thus so intimately related.

It is not too much to say that flexions of the uterus—including, as above stated, the various forms of version to which the uterus is liable—constitute lesions of the greatest possible importance. There has been a disposition on the part of some high authorities to underrate their importance, but my experience has more and more convinced me that they play a very considerable part in the production of the sufferings to which women are liable. They do not often produce actually serious results, but they frequently entail years of discomfort, inability to participate in the enjoyments of life being one of the smallest of the effects which may be produced by the alterations in question.

The uterus is, it must be remembered, an organ the shape of which is readily capable of change. It is easily bent backwards or forwards, or laterally, and more easily under some circumstances,

and in some individuals, than in others. The degree of the change in form which is witnessed varies. The uterine canal has a certain normal direction: any change in the form of the uterus necessarily determines a corresponding change in the direction of the canal. A good idea as to the nature of flexion of the uterus can be obtained by taking one of the India-rubber bottles of commerce and bending it in various directions. The fundus of the uterus may be bent backwards so that the uterus assumes the shape of a retort, or forwards in the same manner, or it may be inclined to one side. There is naturally a slight bending of the uterus forwards, the canal of the uterus being gently curved towards the pubic symphysis. The degree to which the uterus may be ab-

FIG. 67.
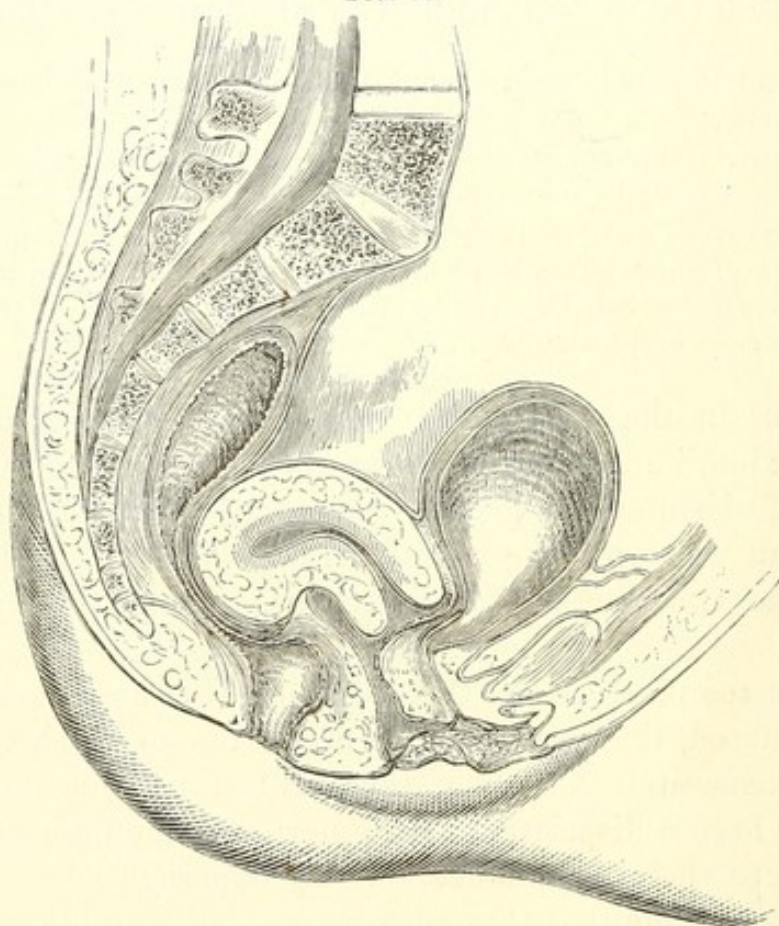
normally bent varies; it is observed most in the direction backwards, so much so that in some cases the uterus is almost bent on itself; but I have not found that in these extreme cases the direction of the canal is altered quite to the corresponding degree. In retroflexion, then, we find the greatest alteration in form; less in anteflexion. In lateral flexion of the uterus, which is more rare, but not so rare as has been supposed, the bending of the uterus is generally not considerable in degree.

Flexion of the uterus may exist pure and simple. It is also, how-
ever, very frequently associated with presence of fibroid growths
in the uterine wall, the kind and degree of the flexion varying
according to the position of the tumor. The fundus of the uterus
is readily bent a little backwards — as in Fig. 67, which is
an example of a rather large uterus affected with retroflexion—
or a little forwards, owing to the circumstance that the more fixed
part of the uterus is at about the junction of the body and cervix,
leaving the fundus comparatively free to move backwards and
forwards, the degree of this anterior or posterior inclination being
limited, first, by the natural resistance the healthy firm tissue of
the uterus offers; and, secondly, but acting much less powerfully,

FIG. 68.*

by the broad ligaments and the Fallopian tubes themselves. How
far the round ligament allows or prevents movement of the fundus
backwards, is a matter of some uncertainty, but supposing it to be
capable of active contraction—and it is provided with some mus-
cular fibres—it should assist in preventing retroflexion and retro-
version. It is obvious, then, that when the body of the uterus is

* Fig. 68 represents anteflexion of the uterus in an unmarried patient.

larger than usual, there will be a greater liability to the deviation forwards or backwards—to anteflexion and version, or retroflexion: as a matter of fact flexion backwards occurs to the most marked degree. I believe it occurs also more frequently, but it is undoubtedly true that slight degrees of anteflexion are common. When the flexion takes place backwards it is, however, that we get the most severe and the most troublesome symptoms, and the flexion is really more complete also. The bladder appears to offer a better resistance to displacement forwards than the rectum does backwards, besides which, the sacral hollow readily allows an enlarged fundus to fall into it.

The condition of the uterine tissue itself, in cases of flexion, merits some attention. It will be at once comprehended that the tissue of the uterus at the part where the fold occurs, viz., in the concavity of the bend, is subjected to undue pressure. It is compressed, and when the flexion has existed for some time, and the flexion is a sharp one, the uterine wall becomes much thinner than it should be at this situation. There is atrophy on the concave side, and there may be also atrophy, but to a less degree, on the convex one. Supposing that there be with the flexion a considerable degree of version, this atrophy is always less considerable. The change just alluded to is a direct *effect* of the flexion; it is quite unreasonable to consider it as a *cause*. Besides this, the uterus may be the seat of other changes, which are to be considered from an etiological point of view.

The causes of *simple* flexion of the uterus arrange themselves under the following heads: *a*. Undue size of the fundus or body of the uterus due to simple hypertrophy, or to chronic inflammation; *b*. Straining or undue exertion of the abdominal muscles; *c*. General relaxation of the uterine supports, or want of tone in the whole vascular apparatus of the pelvis. These several causes are very frequently combined.

What may be termed an *acute* form of flexion may arise in this way. A young woman, unaccustomed to very strong exercise, goes on a walking expedition in a hilly country at or near the catamenial period. The uterus is now large and comparatively unwieldy, she experiences some strains, and a month or so afterwards it is found that the uterus is sharply retroflexed. Or a night's dancing may produce the same result under analogous circumstances. I have seen very troublesome anteflexion arise from similar violent efforts on the part of the patient. One was that of a young lady who, proud of her strength, had unthinkingly carried

a cheese weighing half a hundred weight across a room. Another, a young married lady, who had for several years been in the habit of standing while sewing. She had always been " delicate," and the uterus was probably less resistant than usual, and more readily gave way under the pressure of the abdominal contents.

We more frequently, however, find that the increased size of the uterus consequent on gestation is the forerunner of flexion, especially of retroflexion. It is thus very frequently associated with defective involution of the organ, the patient having also undergone too much exertion within a short time after delivery. Miscarriages are very liable to give occasion to flexion for a like reason. One of the most severe cases I have seen was in a lady

FIG. 69.*
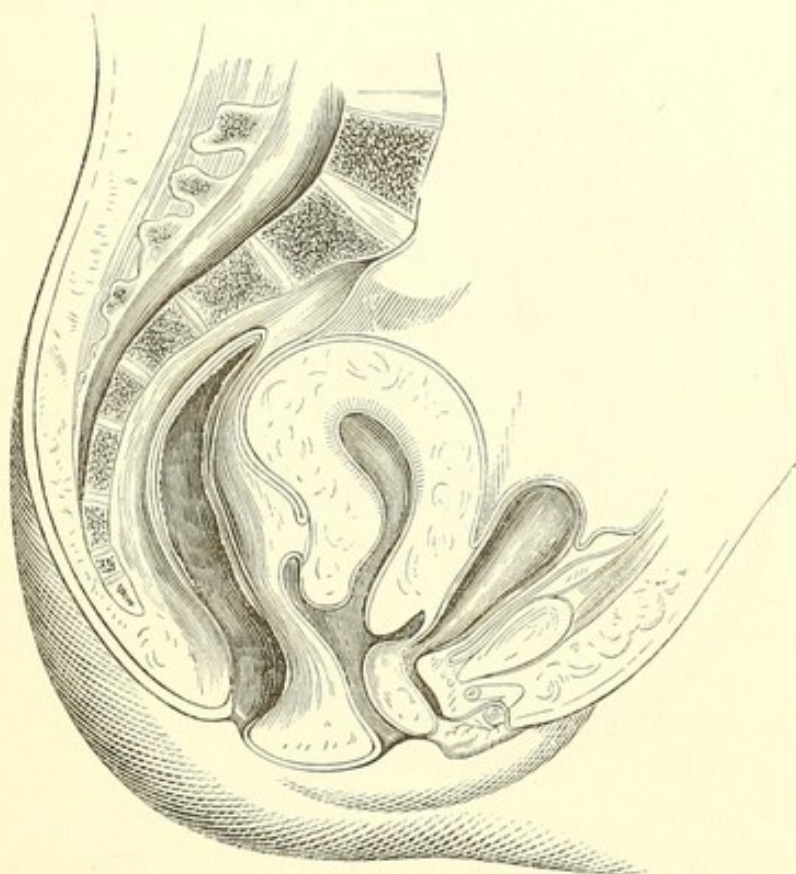
who had ridden several miles at an early period of pregnancy, the result being abortion and a retroflexion of five years' standing. The whole of the fundus is, just after an abortion, large, unduly vascular, unduly soft, and consequently more pliable, the result being that the organ is readily inclined backwards by any undue effort, or simply by the action of gravity. Subsequently the re-

* Fig. 69 represents commencing retroflexion soon after delivery, the uterus being still of considerable size.

duction in the bulk of the uterus goes on, but it retains the shape imparted to it, and as the patient moves about more and more the fundus descends still further in the pelvis. The mischief is generally not detected at first, owing to the slight degree of the deviation. Profuse menstruation, associated as it is with a loose relaxed condition of an unusually large uterus, predisposes to retroflexion, any accidental circumstance being sufficient to throw the fundus out of position.

Flexion of the uterus may be also determined, as already re-marked, by the presence of fibroid growths in the uterine wall, or attached externally to the uterus, the direction of the deviation

FIG. 70.*
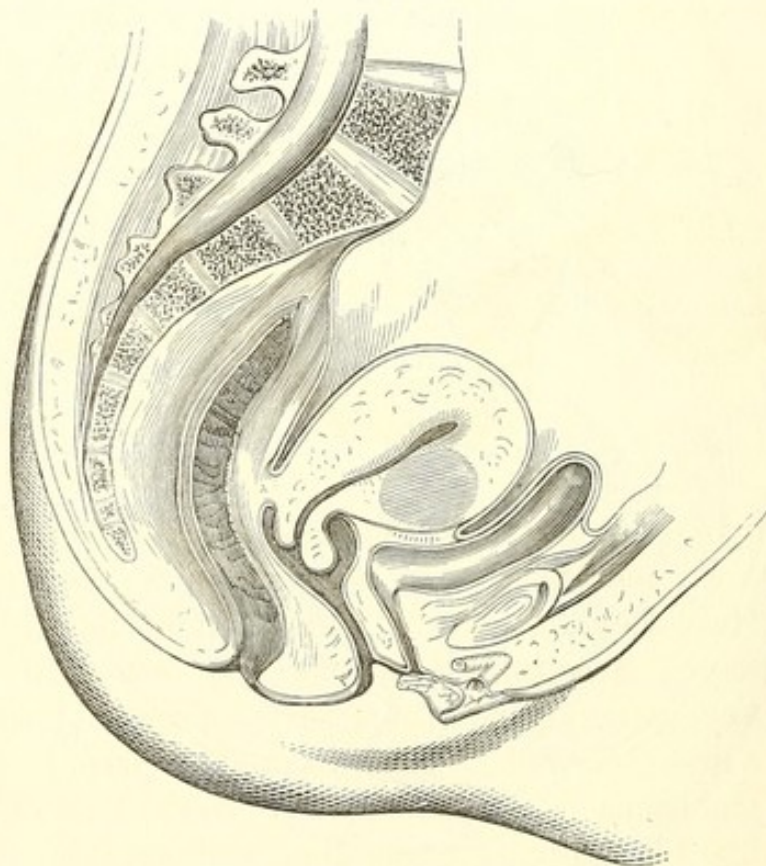
depending on the position of the fibroid tumor. Anteflexion is frequently associated with fibroid tumor in the anterior uterine wall (see Fig. 70). The deviations arising from this cause give rise also to certain very troublesome forms of dysmenorrhœa. One of the most severe cases of the kind I ever saw, was in a lady who had a very small fibroid tumor the size of a nut kernel growing just outside the uterus at the antero-lateral aspect, and

* Fig. 70 shows anteflexion of the uterus with fibroid tumor in the anterior wall. Case in University College Hospital.

opposite the internal os uteri ; there was also lateriflexion in this instance.

In the flexion of the uterus hitherto considered, the seat of the flexion is about the internal os uteri, but the canal may be flexed below this point—in the cervix itself. In this latter deviation we usually find the concavity forwards, and the os uteri has an inclination upwards and forwards. This condition is one not uncommonly associated with sterility. Fig. 71, a drawing of a preparation in University College Museum, well represents the condition here alluded to.

Fig. 71.
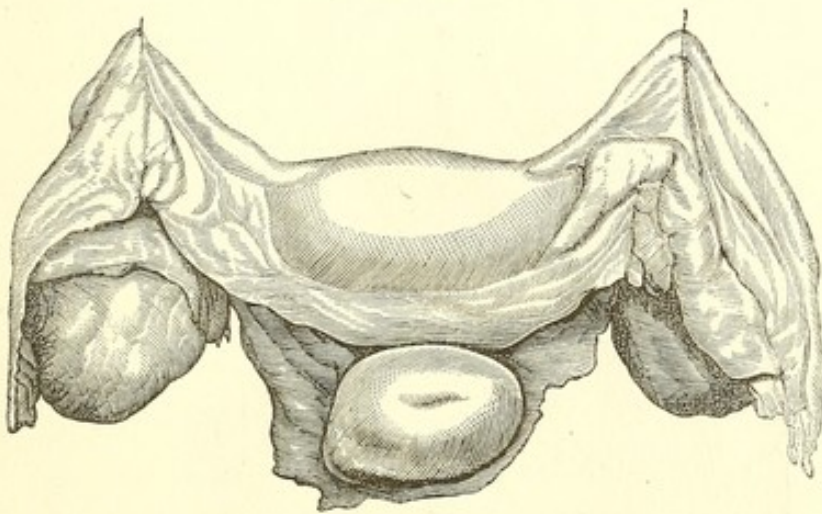
The *symptoms* produced by flexions and versions of the uterus are next to be considered. In retroflexion we find them most marked. Here they are not always present in the same degree. A bearing-down sensation is more or less constantly present. There is very generally present a severe form of backache, so intense and unceasing sometimes as to produce great torture to the patient. The backache is increased by every kind of exertion, but especially by walking or standing, and not seldom even the sitting posture cannot be maintained for more than a few minutes. Aching in the ovarian region or in the groins is often present. Shooting pains in the thighs are often observed, but more frequently a troublesome pain down the back of the leg or thigh is noticed, and generally more to one side than the other, owing to the fact that the displacement is rarely quite in the middle line. The suffering due to this cause, occasioned apparently by the fundus touching the trunks of nerves as they are about to emerge from the pelvis, is often very severe, and in some cases the relief given by treating the flexion has been most striking. A dragging sensation

at the umbilicus is now and then a symptom of retroflexion. There
is very frequently pain in defecation. Micturition is frequent,
sometimes painful, but the bladder functions are less disturbed by
slight degrees of retroflexion than by slight degrees of anteflexion ;
on the other hand, in very severe cases of retroflexion, or when
there are present both retroflexion and fibroid tumor in the pos-
terior wall of the uterus (see Fig. 72) micturition may be abso-
lutely prevented, and great distension of the bladder hence re-
sult. Dysmenorrhœa is a very frequent result of flexion, but is
generally associated with profuse losses of blood at the ordinary

FIG. 72.*
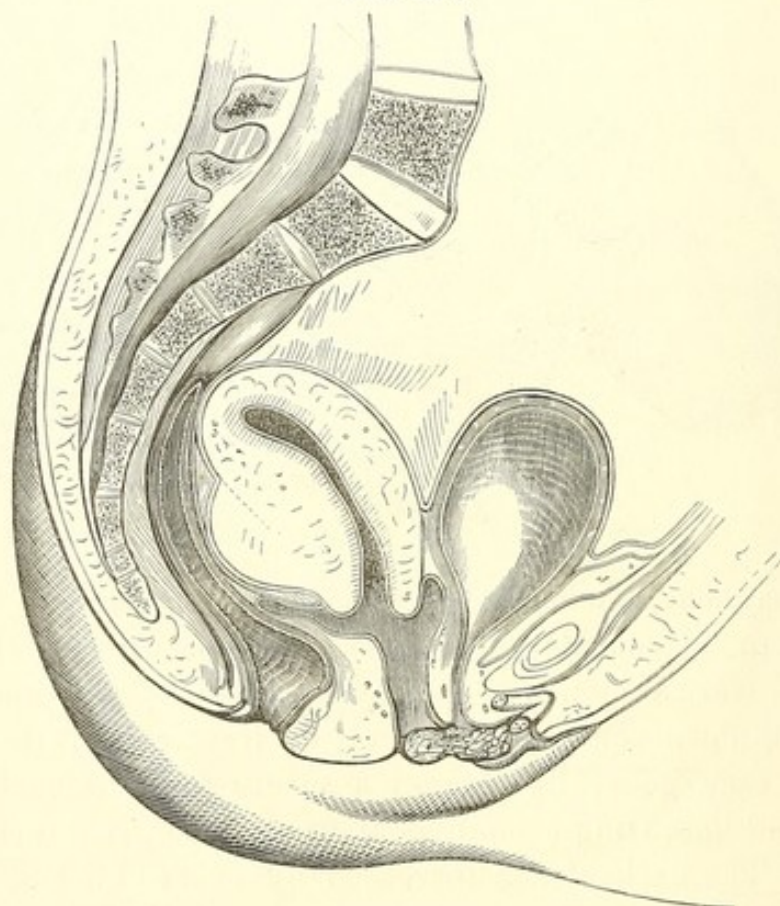
periods, and this effect results from two causes, the undue con-
gestion of the uterus, and the partial closure of the canal by its
bending. The blood does not readily escape, it accumulates in
the uterus, and is discharged from time to time in gushes and in
considerable quantity. Clots are observed very frequently for a
like reason. Menorrhagia is thus a frequent symptom of flexion
—most so in retroflexion. Abortions are very common in cases
of retroflexion, the uterus expelling the ovum at a very early

* Fig. 72 represents a fibroid tumor growing from the back of the uterus.
The walls of the bladder are here made too thick.

period. When the ovum is retained, the fundus is now and then naturally elevated into proper position as pregnancy advances, but more frequently artificial help is needed. Many cases of pregnancy with retroversion of the uterus are doubtless, as Dr. Tyler Smith has shown,* originally cases of flexion; the flexion in other cases occurs suddenly. Sterility is often a result of flexion of the uterus, owing to its interfering with impregnation absolutely, or by leading to the occurrence of abortion at a very early period. Labor-like pains frequently attend the ordinary periods; these are due to the attempt on the part of the uterus to expel its accumulated contents of blood or clots. Leucorrhœa, general, al-

Fig. 73.†
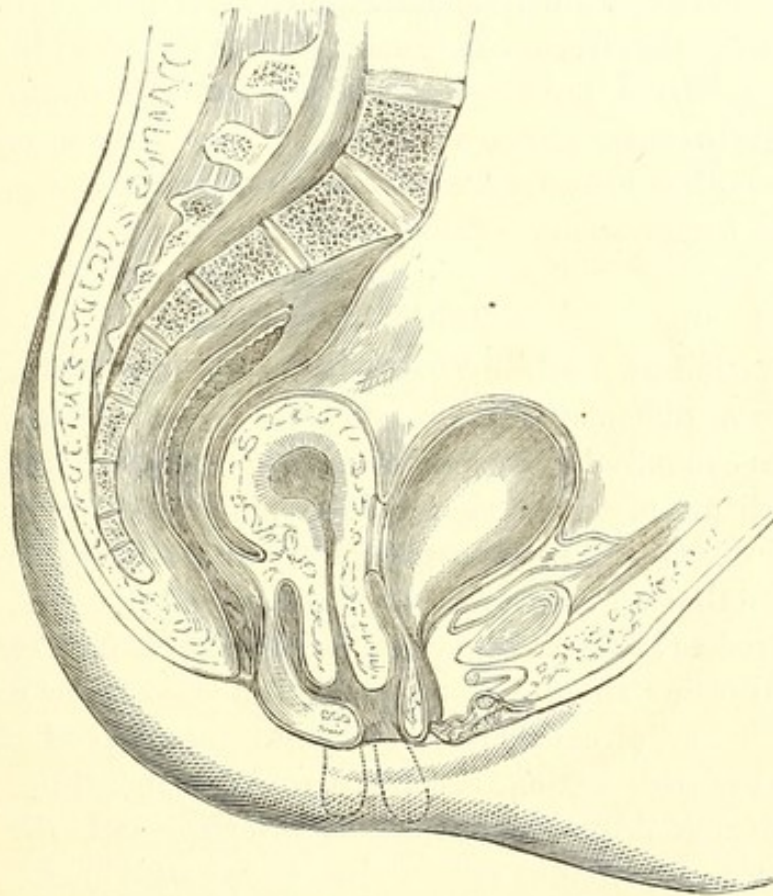
most constant, uneasiness about the uterine region, these are also evils associated very generally with flexions of the uterus. The general condition of the patient may be one giving extreme anxiety when the disease has existed long undetected, for owing to the loss of power of locomotion, the health is often found to have suffered considerably, and a morbid, hysterical hyper-sensitive con-

* Obstetrical Transactions, vol. ii, p. 286.

† Fig. 73 represents the case of a lady subject for several years to prolapsus associated with retroflexion of the uterus.

dition has to be dealt with; the digestion is impaired, and none of the bodily functions are performed healthily and well (see p. 368).

There has been some dispute as to the cause of the pain, &c., in cases of flexion. It has been contended that it is due to neuralgia, to inflammation of the uterus—to anything, in short, but the mechanical condition; and some few years since, in an elaborate report on the treatment of flexion by intra-uterine pessaries presented to the Imperial Academy of Medicine in Paris,* this was used as an argument for the uselessness of these instruments. It was shown, in the report in question, that fatal results had occurred from what we must now term incautious or unskilful mechanical treatment in certain cases, but the theory upheld in the report I believe to be utterly untenable.

Flexions of the uterus are generally associated with prolapsus to some extent. I have occasionally found the uterus very low down indeed in cases of retroflexion, and especially in cases where the perineum has been torn in a previous labor (see Fig. 73). In anteflexion the uterus also falls lower than usual:

TREATMENT.

1. *Of Retroflexion of the Uterus.*—We have to deal with different degrees of difficulty in different cases. Some are easily cured; other cases can only be brought to a satisfactory termination after the expenditure of much time and trouble. The principal difficulty, and one which is most frequently encountered in practice, arises from the fact that the affection has persisted a long time unrecognized as such, or, if recognized, has not been treated. One result of allowing the uterus to remain retroflexed for a considerable time is, as already mentioned, that the walls of the organ, at the seat of the flexion, become atrophied and thin, and it is easy to see that this must materially interfere with the cure, the *stem* on which the fundus rests being so far weakened. Another source of difficulty arises from the fact that the fundus, dislocated and turned backwards into the recto-uterine pouch, sometimes becomes fixed there by adhesion—glued in its unnatural position by false membranes. This difficulty is even greater than the first. A further difficulty is encountered when the fundus uteri is the seat of fibrous growths, dragging it downwards. On the other hand, we have encouragement to persist in our endeavors to cure the patient in the following considerations: The uterus is a plastic

* Bull. de l'Acad. Imp. de Méd., t. xix, 1853–54.

organ; its shape may be altered within certain limits without very much difficulty, if only sufficient time and patience be bestowed upon it; and ordinarily, the organ does not resent manipulations carefully performed.

The two extreme kinds of cases which may be met with in practice are these. In the first case, the patient's malady is detected early. She has been perhaps recently delivered, and we find the uterus retroflexed. On introducing the sound, in such a manner that the concavity is turned backwards, the instrument readily passes into the uterus (see chapter "On Use of the Sound"). After so introducing it, we find that by gently twisting the sound on its axis, so as to turn the concavity forwards, the instrument can be pretty readily brought into the opposite position, and after this has been accomplished, the tumor which was previously felt behind the upper part of the vagina has disappeared. The turning of the instrument forwards is effected with greater or less ease in different cases; and if it be accomplished easily, while it is known that the flexion is not of old date, this affords presumptive evidence that the case is an easy one to treat. The second kind of case is that in which the sound, having been introduced as above, cannot be turned forwards, and in which the attempt to turn it forwards produces great pain, while it is known that the symptoms present date back for some time, perhaps for years. This may result from adhesions, or from chronic inflammation and hypertrophy sometimes associated with retroflexion. Another variety is that in which the turning of the sound forwards is easy, while there is still reason to believe the disorder an old one; the explanation of this would be, that the uterine wall is very thin at the seat of flexion.

Now, it is impossible not to see that if we treat all the cases above alluded to in the same way very different results must be expected in different instances. Each case must be managed as circumstances admit. Cases in which there is adhesion, or in which the fundus is bent down by the presence of fibroid growths in its substance, are less amenable to treatment of any kind. If we meet with an uncomplicated case of flexion sufficiently early, the only treatment required is to keep the patient in the horizontal position for a month or two, or chiefly so at all events, and to introduce the sound at intervals of a day or two, in order to restore the uterus to its proper position. Massmann* rightly insists on

* Monatsschr. f. Geburtsk., June, 1861.

the importance of early treatment in these cases, and there can be no question that very great success would follow this treatment, were it always possible to carry it out. An interesting case, in which I had the opportunity of dealing with retroflexion immediately after a miscarriage, may be mentioned as an illustration. The patient, æt. 23, had been married five years. She had one miscarriage five months after marriage, then a child at full time, and subsequently seven miscarriages, the last being fourteen days previous to her admission into University College Hospital. Catamenia always profuse. The uterus was found one inch longer than in the unimpregnated state, and sharply retroflexed. The flexion was removed by use of the sound, and returned on its withdrawal. Eight days after admission, the sound having been used daily to replace the uterus, it was found that the canal was no longer curved backwards. Occasional use of the sound and of cold vaginal injections soon completed the cure.

More commonly we find that, by means of the sound, we can restore the fundus to its proper place; but the moment the sound is withdrawn the fundus falls back into its old position. The rapidity with which this occurs is a kind of guide to the nature of the case. Thus, having restored the fundus, we let go the handle of the sound, still leaving it in the uterus; the handle will then be seen to turn round of itself while the fundus is falling backwards; if the turning take place rapidly and at once, this indicates that the cure will be difficult. If the sound remain in its new position for some time, this, on the contrary, shows that the cure may be more easily effected; and, as the cure advances, the sound will remain longer and longer in its new position. It is evident that if we could retain the sound in the uterus indefinitely, the uterus would, probably at all events, be in the end restored to its natural shape. Carrying out this principle, instruments termed uterine supporters, or intra-uterine pessaries, have been devised and constructed to maintain the uterus in its proper position. Sir J. Y. Simpson has contrived two instruments—of these, one has its fixed point from without, a stem passing into the uterus; a second has its fixed point within the vagina. These instruments have been largely used. Valleix's instrument has its fixed point external. Detschy's instrument is a stem which rests on, and is fixed below to a Zwank's pessary. Intra-uterine supports having their fixed point external to the vagina appear to me very objectionable, for if the uterus be strongly inclined to bend backwards there will be a constant pressure against the extremity of the

intra-uterine stem, which may lead to perforation of the uterine wall, or, short of this, to violent irritation, inflammation, peritonitis, and death. Again, it is very difficult so to adjust these instruments, where the tendency to flexion is strong, as to prevent their being thrust out of the uterus soon after introduction, and the patient is perhaps for a day or two subjected to pressure of the instrument, which is really in the vagina while it is supposed to be in the uterus.

Dr. Moir* has written a very able paper on the subject of the treatment of retroflexion. He at first used a straight bougie the length of the cavity of the uterus, and bulbed to prevent its expulsion. This was left in the uterus. Subsequently he preferred to dilate the os largely by means of sponge tents gradually increased in size; and, having done this, allowed the uterus to contract on wire bougies covered with gutta percha, these being gradually reduced in size, his object being to allow the uterus to contract very gradually, and to make it contract in such a manner that it at the same time acquired the proper shape.

A method of treatment I have employed in several obstinate cases, and which has been followed by good results, is—after a preparatory and repeated straightening of the canal by means of the sound—to introduce a straight ivory stem into the uterus, and maintain it *in situ* by means of an India-rubber air-ball, to which the stem is fixed. The instrument I devised for this purpose consists of an ivory stem, just the length of the uterine cavity, the length slightly different in different cases. This stem is fixed below on an India-rubber ball capable of being inflated with air by means of a slender tube, at the farther extremity of which is a stop-cock. The instrument is introduced uninflated, and after introduction the ball is inflated and the stop-cock turned. The intra-uterine stem cannot escape from the uterus, because the ball below fills the vagina and prevents it. The size of the ball, or the degree of inflation, must vary in different cases, according to the size or distensibility of the vagina; for if the ball do not fill the vagina it does not accomplish its purpose. This instrument is thus to be worn during a whole day at first, the patient being kept in bed; and, if borne well, it may then be worn for a longer period. Finally, the patient may be allowed to get up and walk about. It is not advisable for the instrument to be worn longer than two or three days at a time; and, after each removal, the

* Ed. Med. Journ., Feb., 1830.

vaginal douche should be freely used. The cold water has a good effect also in inducing the uterus to contract. The length of time necessary to restore the uterus to its proper shape will vary according to the nature of the case; but much may be done in two or three weeks. A case in which the flexion was not very strong I brought to a successful issue in three weeks' actual attendance, the patient being then able to leave for the country, still wearing the instrument.

The difficulty I at first met with in treating these cases with the above instrument was in its actual introduction. This is got over by the preliminary use of the sound alone for some days, and by thus inducing the uterus to remain in its proper position long enough for the instrument to be introduced. The advantage of the instrument is that the uterus is still allowed a great degree of mobility, while it is almost impossible for the stem to escape into the vagina.

A straight ebony stem may also be retained in the uterine canal by the "retaining pessary," described at p. 470, but it is more liable to become displaced than when applied for the cure of anteflexion.

Another method of treatment of cases of retroflexion has next to be described. It is a most useful one, and very frequently is capable of effecting everything that is desired. It consists in supporting the fundus of the uterus by means of an instrument which presses upwards through the vaginal wall and posterior to the cervix uteri. If the finger be pushed upwards in this position, the retroverted fundus gives way before it, and the flexion is more or less relieved. The object is to apply an instrument which shall fulfil the same indication. If the flexion be recent, assiduous pressure in this way will cure it; if it be of long standing, while it may fail to cure, it will prevent the flexion from becoming worse, and will prevent also that descent of the whole uterus in the pelvis which is frequently associated with the retroflexion. It is a method of treatment also which may be advantageously associated with that previously described. Thus a young lady, æt. 19, who had been suffering from retroflexion of very troublesome character, was at first treated by the intra-uterine stem worn at intervals for five or six weeks, and the cure has been completed by means of an instrument so placed in the vagina as to prevent the fundus again descending backwards. I believe that to Dr. Hodge is due the merit of first using an instrument capable of applying pressure as above indicated. His instrument is shaped

like a horseshoe, and is composed of a bar of metal bent into the required shape. Other modifications are described by him in his work, all acting, however, pretty much in the same way. Thus in one form the instrument is a closed ring, almost of a quadrilateral shape; in another it is more like a horse-shoe, the ring being closed. Other modifications of this principle of treatment are employed. Thus Dr. Priestley applies pressure in the same position from without the vagina, the horseshoe shaped instrument being continued below by a

Fig. 74.*

stem to which are fixed externally to the vagina four tapes, by means of which it is maintained *in situ*. Sir J. Y. Simpson em-

Fig. 75.†
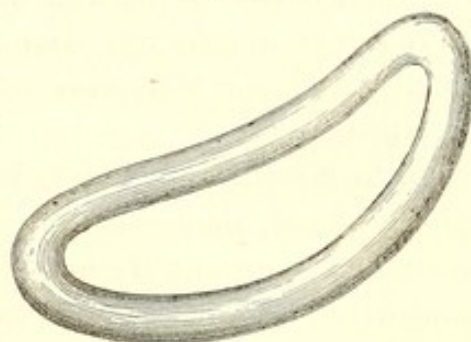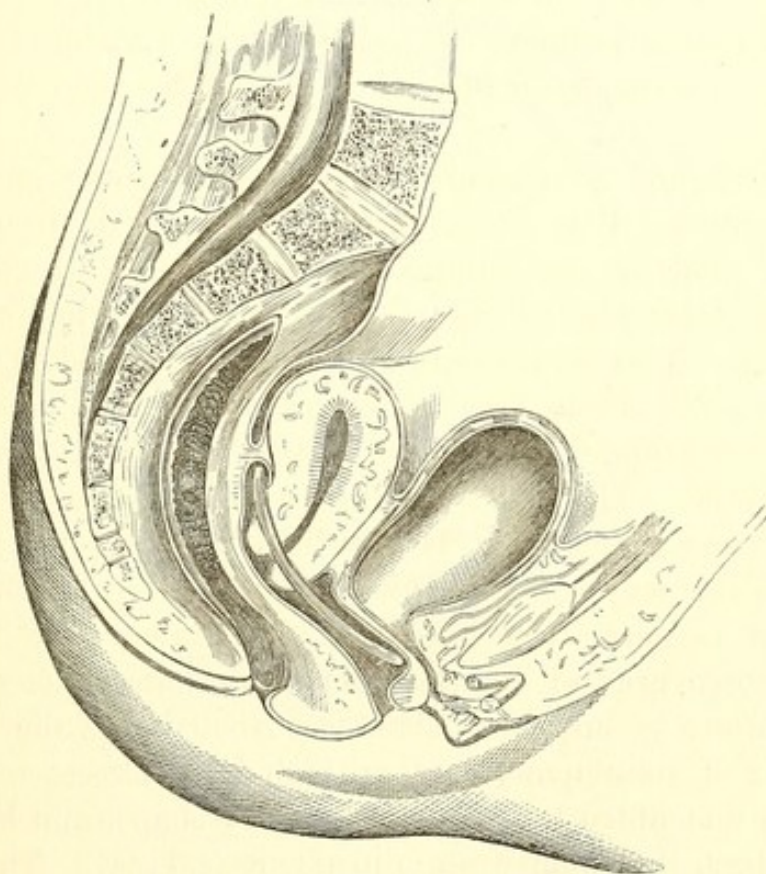
ploys a somewhat similar instrument having the shape of a loop, but contained wholly within the vagina, and depending for its

* Fig. 74 represents the form of pessary I now employ. The drawing does not show the width of the instrument.

† Fig. 75 is a sectional view of the pessary above described (Fig. 74) *in situ*.

maintenance in position on the contraction of the vaginal walls. These various instruments all have their advantages. The great secret is to adjust the instrument to the particular requirements of the case. If the closed quadrilateral shaped instrument be used—and this is the one which I have myself frequently employed—its length must be well adapted to the length of the vagina. Three or four sizes have been usually kept at the shops; they are made of iron, well covered with gutta percha. If made of gutta percha alone, they should be much stouter. When properly adjusted, they may be worn for weeks or even months, without occasioning any inconvenience; they do not interfere with the comfort of the patient in any respect, nor do they prevent the employment of injections.

Mr. Coxeter has made at my request a set of seven rings—

Fig. 76.*
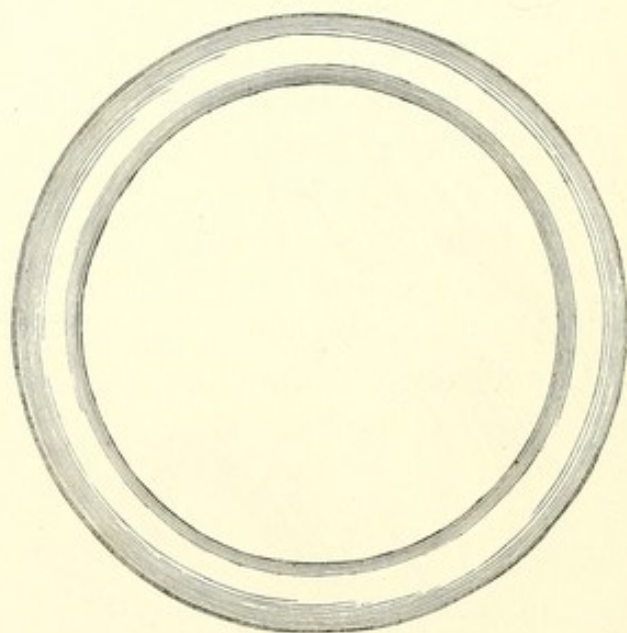
copper wire covered with gutta percha, the shape quite round, the size from $2\frac{1}{4}$ to $4\frac{1}{2}$ inches in diameter, No. 1 being the smallest; the ring is about a quarter of an inch in thickness. They are very readily moulded by the hand into any shape, and having the different sizes, the facility for adjustment is great. Those I had formerly used were difficult to bend and to adjust, but those I now employ are most excellent in this respect. The large sizes are intended for making a pessary of novel shape for the treatment of

* Fig. 76. Number 1 of the rings is here depicted. The measurement of the outside diameter is $2\frac{1}{4}$ inches.

'anteversion, to be presently described. Ordinarily Nos. 2 and 3 answer the purpose in cases of retroflexion.

There is one caution to be given in respect of these pessaries. Usually they are borne well, and may be allowed to remain often for several weeks. If, however, the pessary fit pretty tightly, the patient must not use any great exertion while wearing it, or the upper convex border will work its way into the mucous membrane behind the cervix uteri. Hence the necessity in such cases for occasional change. From time to time the pessary may be a little lengthened as the fundus retreats; it is thus kept up.

Treatment of Anteversion, Anteflexion, and Lateral Flexion.

For some time I have been in the habit of treating these cases by the round air-pessary, which supports the anterior wall of the vagina, the bladder, and through it the uterus; and the results obtained in this way were very good and satisfactory. One very marked instance was that of a lady who had been unable to walk any distance for three years. She became quite able to walk on wearing the air-pessary, and after a sterility of four years is now a mother.

Latterly I have contrived an instrument which, judging from the effects of its employment in many cases, will prove a most valuable one in the treatment of cases of anteflexion, or in any case where the uterus has an inclination to one side. I endeavored first to adjust Hodge's horseshoe pessary so that pressure was made upwards in front of the cervix instead of behind it, but this was found to slip out of place.

I next added to one of Hodge's pessaries a bridge-shaped piece about its middle which projected upwards. This was unwieldy, and distended the vagina too much. At last the pessary of the form now to be described occurred to me. It consists of a largish ring bent first into a long oval, and then bent again and again until it assumes a sinuous outline, and presents on one side two nipple-shaped eminences (see Fig. 77). These pro-

FIG. 77.*
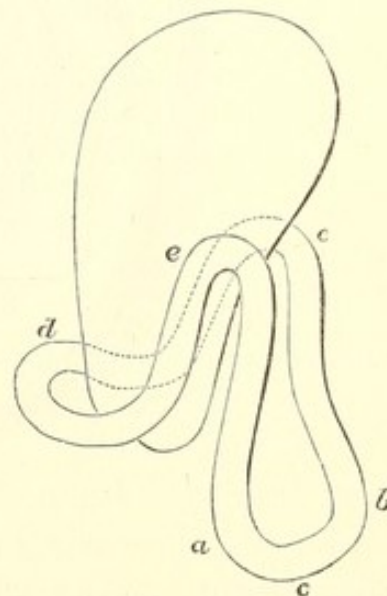
* Fig. 77 is a representation in outline of the anteflexion pessary. The distance between the arms *e* to *e*, as also the distance from *a* to *b*, must be regulated according to the case.

ject upwards, one on each side of the cervix, and between it and
the bladder. The upper extremity of the pessary (*d*) which is
round, fits behind the os uteri; the lower end corresponds with the
ostium vaginæ within which it lies. The effect of the instrument
when in position is to give the vagina a wavy outline. It main-
tains the canal its proper length, but does not unduly distend it,
while it affords support to the roof. The uterus cannot fall for-
ward, the instrument forming a kind of cage, and supporting it
most effectually. The copper wire rings covered with gutta percha
described already as having been made for me by Mr. Coxeter,

FIG. 78.*
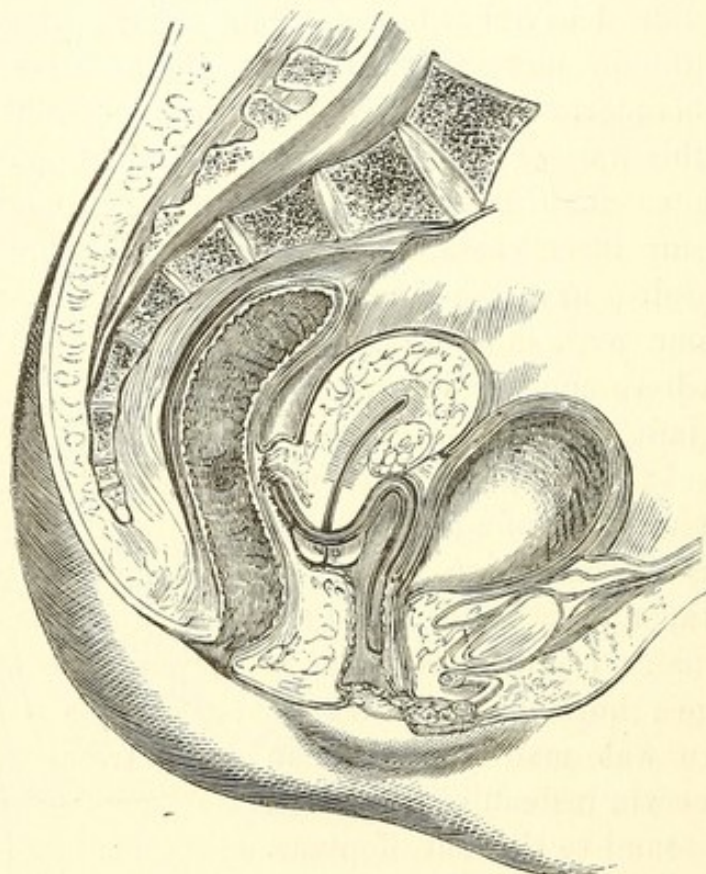
allow by their great flexibility of any degree of adjustment. It is
necessary to adapt the length and the width below and the eleva-
tion of the supporting corners of the instrument to the exigencies
of the case. The bending must be done in hot water, or the gutta
percha is apt to crack when sharply bent.

For facility of introduction these pessaries are unrivalled. They
are most comfortable and most efficient. The slightest considera-

* Fig. 78 is a sectional view of the uterus, with the anteflexion pessary *in
situ.*

tion will render it evident that support to be efficacious in cases of anteflexion must be in front of the cervix. This has been attempted before, but by instruments having a stem and a perineal bandage with straps, tapes, &c., from the outside; but the method now recommended is much more simple and more certain.

The intra-uterine stem and apparatus described at p. 470 I have frequently employed in treating cases of anteflexion. In troublesome cases it is a good plan to employ, first the intra-uterine stem, and subsequently the new anteversion pessary just described.

The treatment of *lateriflexion* is now by aid of a slight modification of the above instruments rendered easy. All that is necessary is to make one of the mammillary shaped eminences project more backwards than the other (see Fig. 79). Thus if the flexion is forwards, and to the left side, the corresponding arm is made to project so as to support it. A lady whom I had attended for some time for dysmenorrhœa produced by antero-lateral flexion of the uterus to the left side, caused by a small fibroid tumor in the left wall anteriorly, was finally relieved, and passed a menstrual period with comparative ease for the first time for years, while wearing an instrument contrived as just described.

FIG. 79.
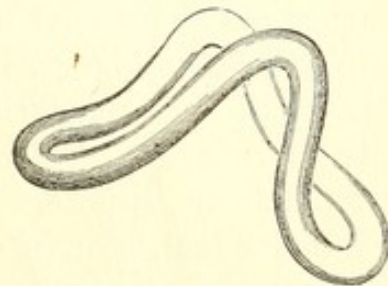
The general treatment in cases of flexion of the uterus is of some importance. The uterus is, it must be recollected, almost always in a state of irritability, if not of chronic inflammation. Rest, sedatives, injections of water, at first warm, afterwards cold, by means of the douche, are adjuncts in the treatment rarely to be dispensed with. The digestive organs frequently require careful attention, the bowels must be regularly unloaded, and the diet adapted to the less active life the patient must for a time lead. At the catamenial periods, particular observance of rest is essential. Lastly it is to be remarked that pregnancy is one means of cure of flexion; if the condition of the uterus can be so far improved as to admit of impregnation, and abortion can be prevented, this will materially assist in the cure. After delivery, in a case of retroflexion especially, great care would be required to prevent the uterus resuming its old faulty shape.

* Fig. 79. Anteflexion pessary modified for the treatment of lateriflexion (size reduced considerably).

CHAPTER XII.

INVERSION OF THE UTERUS.

INVERSION OF THE UTERUS.—Causes, Effects, and Varieties.
TREATMENT.—Reduction by systematic and continuous Pressure aided by Anæsthesia—Treatment by Excision.

INVERSION of the uterus may occur during, or soon after, parturition, and this is its most frequent cause ; but it may occur also in connection with the presence of fibroid growths—polypi—attached to the internal surface of the organ, and thereby distending it. It may be partial or complete. In its complete form it may arise after parturition ; polypi generally occasion an incomplete form of the displacement. When there is complete inversion, the whole organ is turned inside out ; the uterus lies wholly in the vaginal canal, and in recent cases projects considerably outside the vulva. When occurring in connection with parturition, the uterus gradually diminishes in size, though less quickly than under ordinary circumstances, and at the end of a few months the uterus may be wholly within the vagina, but the inversion still present in its complete form. The various physical conditions of the inverted uterus which may be encountered in practice have been described in considering the diagnosis of these cases (p. 216). The diagnosis between a chronic inversion of the uterus and polypus is not always, it may be here remarked, by any means easy.

The symptoms and effects of inversion of the uterus are generally of a striking character, but not invariably so. Hemorrhages (see p. 69), and almost incessant loss of blood in smaller quantity, are usually observed. Pains of a dragging character, and a sense of great discomfort more or less continuous, are experienced by the patient, these effects being not seldom of a very aggravated character.

The patient frequently becomes very anæmic, and there may be great general prostration, breathlessness, and loss of power of locomotion. Œdema of the lower extremities may be associated with it. Inversion of the uterus may exist for many years : cases of twenty-five or thirty years' duration are well authenticated.

TREATMENT.

There has been usually found but little difficulty in replacing an inverted uterus when the condition has been detected at once, as in the process of labor. When, however, the disease is a chronic one, the difficulties to be encountered are great. We must first speak of the treatment of cases of chronic inversion of the uterus of the simple and uncomplicated kind.

Formerly these cases were only treated by excision; the patient was relieved of the tumor and of her troubles by means of the knife, at the expense necessarily of loss of all power of bearing children subsequently, and not unfrequently at the expense of loss of life altogether. Happily art has stepped in to the rescue of these cases. During the last few years, a method has obtained general adoption in the profession, by means of which the normal shape of the uterus is restored, even in long-standing cases. M. Valentin,* in 1847, reduced an inverted uterus after the lapse of upwards of a year from the date of its occurrence. The reduction was performed by aid of the two hands, the left placed over the hypogastric region, the right in the vagina, the tumor being grasped by the finger and thumb of the right hand. These manipulations were performed while the patient was under the influence of ether; and after application of continuous pressure in this way for about ten minutes, the reduction was accomplished, and the patient completely cured. The etherization in this case enabled the patient to bear the operation, it having been relinquished previously owing to the great pain produced. Mr. Canney,† of Bishops Auckland, reduced a chronic case of inverted uterus of five months' duration, in 1852, under the influence of chloroform, and by manipulations pretty much the same as those described above. M. Barrier's‡ case, also in 1852, is the next reported, the duration having been considerable. These three cases had escaped my notice in preparing the first edition of this work. Dr. Tyler Smith,§ in 1856, successfully reduced an inverted uterus of twelve years' duration after several days' treatment, the uterus being pressed and moulded by the fingers for about ten minutes night and morning. After repeated trials, the cervix uteri, which was firmly contracted round the neck of the

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* Quoted from Gaz. Medicale, in Ranking's Abstract, vol. vii.
† See Ranking, vol. xvi.
‡ Ranking, vol. xvi.
§ Medico-Chir. Trans., vol. xlii, p. 183.

projecting tumor, began to yield a little, and the tumor could be slightly sunk in the os. After each operation, a large India-rubber air-pessary was placed in the vagina, and inflated to as great an extent as the patient could bear. The air-pessary was worn, with few exceptions, day and night. "After more than a week of these proceedings," says Dr. Tyler Smith, the patient felt a good deal of pain through the whole of one night; and in the morning, when an examination was made, it was discovered that complete reinversion had taken place. A small air-pessary was afterwards worn for a few days, and the recumbent position maintained. Subsequently the patient became pregnant.

Mr. White of Buffalo,* has reported a case of cure (1858) after fifteen years had elapsed. Dr. West has reported an interesting case of cure after a duration of the inversion of nearly a year. Noeggerath, Dr. McClintock, and Dr. Marion Sims have also reported cases of cure.

The principle on which the attempt at reduction should be made in obstinate cases is to maintain a persistent pressure on the inverted part, or rather a combination of moulding and pressure by means of the fingers and thumb introduced into the vagina, counter-pressure being applied externally, and when this does not succeed to apply a more continuous but less forcible pressure by means of an India-rubber air-pessary. The part which has been inverted last should be pushed upwards first, as Dr. McClintock has very properly remarked. The uterus is capable of being readily moulded, and on this property of the uterus our attempts are to be based: sudden, too forcible, and too abrupt manipulations must be avoided. Chloroform or ether, as the reports show, are invaluable adjuncts in the treatment.

Excision.—Dr. McClintock states that in his hands the plan above mentioned has occasionally failed, and in such cases he has excised the inverted fundus, and in the two cases so excised recovery followed; but the operation of excision has not had so favorable a result when performed by others. Excision is an operation which, in face of all that has been effected by persevering and repeated attempts at reinversion could only be justifiable in very extreme cases. Dr. McClintock's mode of performing excision is to place a ligature firmly round the pedicle for two or three days, and then to complete the removal by means of the ecraseur.

* "Report on Inversion of the Uterus," by Dr. Quackenbush, Trans. of Med. Soc. of State of New York, 1859, p. 170.

Dr. Marion Sims proposes in difficult cases to make a vertical incision through the uterine tissue on each side, at the part corresponding to the os uteri, so as to allow more easily of the reduction of the tumor. This suggestion is worthy of attention.

The treatment of cases of inversion of the uterus associated with polypus of the uterus requires a few words. When the polypus has a large basis of attachment, the fundus may be so drawn

FIG. 80.*
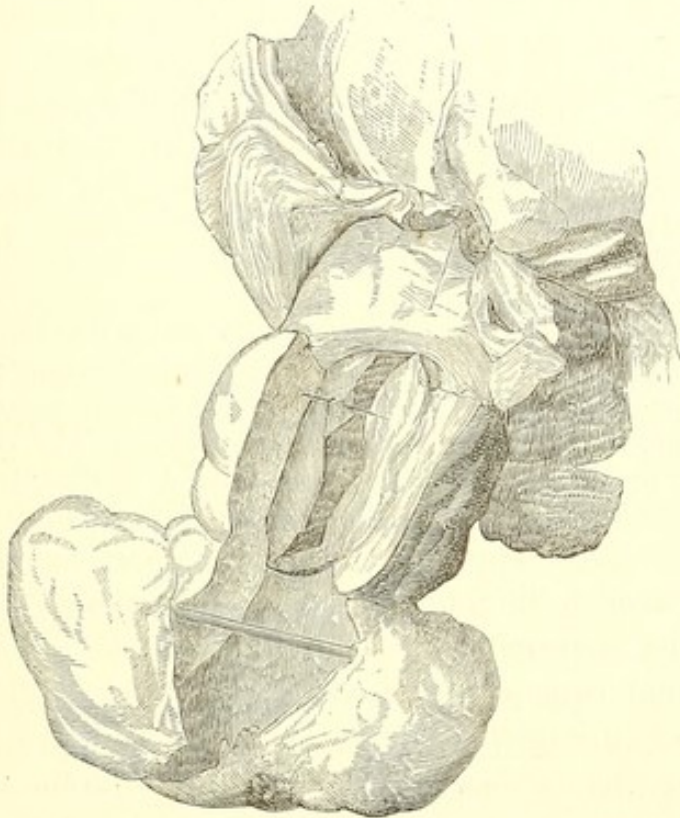
downwards that what appears to us the pedicle of the polypus is really the uterus itself. A specimen was not long ago exhibited at the Pathological Society, and referred to Dr. Marion Sims, Dr. John Ogle, and myself for examination, in which such a tumor had been excised, and a circular piece comprising the fundus uteri had been removed with it.† The case shows the necessity for great caution in excising tumors projecting through the os uteri. In most cases where a polypus projects into the vagina from the uterus, it draws down the wall of the uterus a little, and when the

* Fig. 80, from a preparation in University College Museum, represents inversion associated with a large polypoid tumor. The tumor has produced complete inversion of the uterus and of the vagina.

† Trans. of Pathological Society, vol. xvi, p. 210.

pedicle is broad this partial inversion of the uterus is more likely to be extensive. The use of the sound would in such cases give valuable information.

CHAPTER XIII.

PROLAPSUS OF THE UTERUS.

GENERAL REMARKS on the Pathology of the Subject—Mechanism by which the Uterus is kept in its place—The various Conditions present in cases of Prolapsus—Distinction between Prolapsus of the whole Uterus and Prolapsus with Hypertrophic Elongation of the Cervix—The two varieties of the latter—Symptoms and Progress of Prolapsus.

TREATMENT.—Must be adapted to the Peculiarities of the Case—Treatment of Prolapsus from Hypertrophy of the Cervix—Excision of the part—Other forms of Prolapsus—Measures directed, 1. To the condition of the Uterus; 2. To increasing the Support from Below by constricting the Vaginal Aperture, by constricting the Vagina itself, by restoring lost Tone to the Vaginal Supports, by External Supports, by Pessaries of various forms—Manipulations required—Treatment of Prolapsus of Bladder, Vagina, and Rectum.

PROLAPSUS, or falling of the womb, is an affection to which women are in one form or other exceedingly liable, and it is one which is not unfrequently productive of very much inconvenience and distress. Intimately connected as the uterus is with the adjacent organs, its displacement downwards is almost necessarily attended with more or less displacement of these organs also. Prolapsus of the uterus, then, is rarely a simple affection; and, for this reason, it will be convenient to consider together the various displacements associated more or less frequently with it. The present chapter will thus be devoted to the consideration of prolapsus of the uterus, prolapsus of the bladder (cystocele), prolapsus of the vagina, and prolapsus of the rectum through the vagina (rectocele).

The term "prolapsus" is in this country generally used to designate all grades of the displacement. In America it appears that "prolapsus" means falling of the womb within the vagina, while "procidentia" is used to designate its appearance externally to the vaginal aperture. In this place one term—prolapsus —will be applied to both these conditions.

The anatomical relations and connections of the uterus are of

the utmost importance in all that concerns a right understanding of the subject of prolapsus. The uterus is supported by a complex mechanism, the various parts of which are mutually dependent, and a failure or weakening of one leads to derangement of the others. It frequently requires no little attention to ascertain where the "breakdown" literally as well as figuratively, first happened; but unless the investigation be successful, we can have no true basis for our curative efforts. First, then, let us consider what these uterine supports are. The *peritoneum* serves little purpose in restraining the downward movement of the uterus. The *round ligament* has more effect, but its influence is probably exerted for the most part in restraining the movement of the fundus backwards. Still in a case where the uterus had descended a little, it would aid in preventing further descent. The *utero-sacral ligaments* are so placed as directly to prevent falling of the uterus. They are firm, fibrous bands, passing one on each side straight between the cervix uteri and the sacrum. Dr. Farre, very justly as I believe, considers that the importance of these ligaments has not been sufficiently appreciated. The *broad ligaments*—not, properly speaking, ligaments, being simply the mesentery of the Fallopian tubes—have, in the early stage of prolapsus, probably little restraining effect as regards descent of the uterus, but they would necessarily assist in checking its further progress downwards. The *utero-vesical ligaments* connect the uterus very closely with the bladder, and supposing the distended bladder to be fixed, it would be almost impossible for the uterus to descend below its proper level in the pelvis. The bladder, however, is not so fixed. A movement of the whole bladder downwards necessarily carries with it the uterus, and correspondingly the uterus cannot descend without carrying with it that portion of the bladder with which it is connected, viz., the posterior part. Lastly, the *general connections* of the uterus with the adjacent parts, and constituted by a very considerable quantity of blood-vessels and connective tissue, form, as Dr. Savage* remarks, a very important additional apparatus for restraining undue mobility of the uterus. Dr. West considers that the canal of the vagina contributes very much to supporting the uterus in proper position; it is manifest that a relaxed, loose state of this canal must favor the occurrence of prolapsus.

* Illustrations of the Surgery of the Female Generative Organs, 1863. Plate IX.

The following considerations must have their due attention in the right estimation of the pathology and etiology of prolapsus:

Prolapsus of the uterus occurs because—

1. The uterus itself is heavier than usual; or, 2. Because the supports of the uterus are too weak; or, 3. In consequence of sudden or undue pressure upon the uterus from above.

As a general rule, we find that more than one of these causes have been in operation. This may be illustrated by such a case as the following: The perineum is torn during a labor, the vaginal aperture is too large; by and by a portion of the bladder protrudes slightly through the ostium vaginæ; after a few months the traction of the protruded portion of the bladder produces descent of the cervix uteri. Later still, the whole uterus is felt occupying a position too low in the pelvis, and if unchecked, the final effect which may not be observed, however, for some years— is protrusion of the uterus externally. But let us suppose that in this case the uterus remains larger than it should be for a considerable period after the labor, we shall then have two causes in operation, and the prolapsus may then occur more quickly. Finally, let such a patient engage too soon after her labor in any household or other occupation requiring violent effort, the prolapsus may occur to a very full degree and very quickly.

Another illustration. A young woman, unmarried, is the subject of chronic enlargement of the uterus, and her occupation necessitates much standing. After a few years it is found that she has prolapsus. Here the uterus is mainly at fault, but the prolapsus would not have occurred had it not been for the standing.

Another. A woman has a large family, the uterine supports have become generally lax and loose, and the uterus itself a little too large, never properly recovering itself from the effects of pregnancy. The uterus comes to repose almost wholly on the perineum. As the patient advances in life, the adipose tissue around the vulva becomes less; the uterus finally passes through the vulvar aperture.

These illustrations, which might be easily multiplied, will suffice to show the complex character of the etiology of prolapsus.

The condition present in different cases is exceedingly variable also.

It is a mistake to suppose that the whole uterus always descends in the pelvis in cases of prolapsus. Huguier* has attracted wide

* Mém. de l'Acad. Imp. de Médecine, tom. xxiii, 1859.

attention to a fact, which was, however, well known to several eminent previous observers, Sir J. Y. Simpson,* Kiwisch,† A. Farre,‡ amongst the number. The fact in question is this, that in a very large proportion of cases—the majority, according to Huguier—the body of the uterus remains at or about its proper position in the pelvis, the prolapsus being constituted by a growth downwards, an elongation and protrusion of the lower part of the uterus. In some cases, the part of the uterus which grows is that

FIG. 81.§
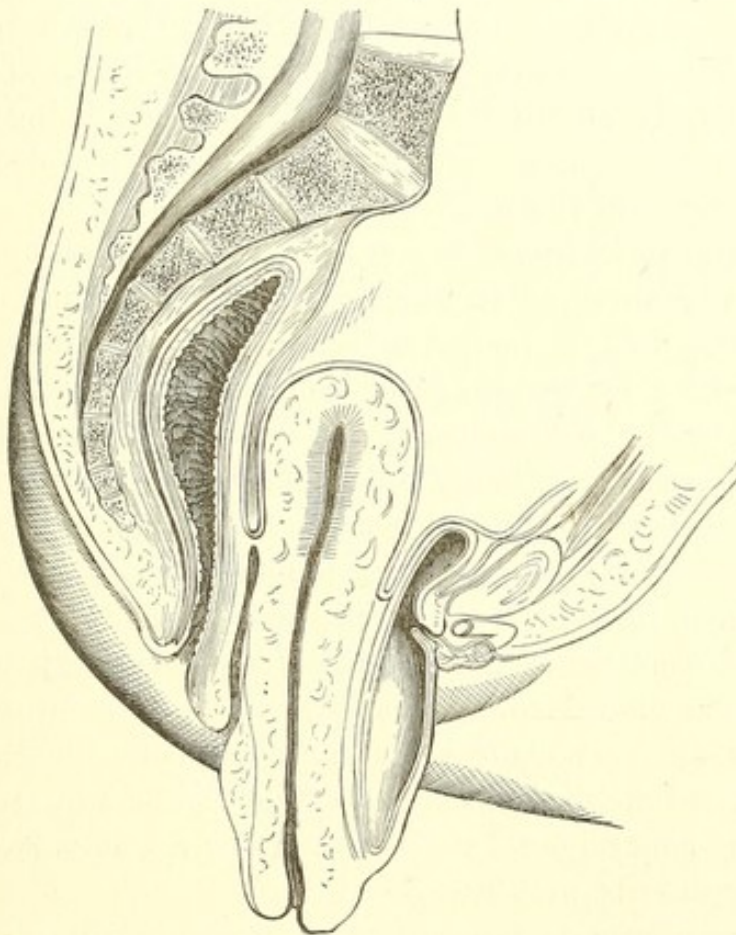
situated entirely within the vagina, in others it is that part of the cervix which is above the vagina. Thus we have (a) supra-vaginal elongation of the cervix uteri, and (b) infra-vaginal hypertro-

* Obstetric Works, vol. i, p. 63.
† Klin. Vorter., bd. i, and ii.
‡ Cycl. An. and Phys., loc. cit., p. 687.
§ Fig. 81 represents a case of supra-vaginal hypertrophy of the cervix, the subject of which was a married woman æt. 47. She had suffered from prolapsus for two years, and had been obliged to wear a boxwood pessary 3¾ inches in diameter to keep the uterus up. In Huguier's memoir similar cases will be found delineated. See also Fig. 61.

phy. The latter condition is easily distinguishable; the importance and frequency of the former was not widely known previous to Huguier's observations. One important difference in the two cases is, that in the first the vagina and bladder are not commonly much dislocated, but when the supra-vaginal part of the cervix is elongated and prolapsus associated with it, the bladder is almost always largely displaced downwards, and we may have to deal with a tumor the size of the two fists external to the vulva, the anterior part of which is the prolapsed bladder; in the centre is the thick and elongated cervix, and behind is the rectum, and even some of the intestines partly protruded through the vagina. The os uteri in such a case is widely stretched open. The vaginal canal is entirely absent in front, its inversion being complete. Behind, the finger passes into a pouch more or less deep, according to the degree of the prolapsus.

These cases of extreme degrees of supra-vaginal hypertrophic elongation are observed in women whose occupations necessitate much standing; cooks and laundresses offer, in London at least, the most marked specimens of this condition. I believe the descent of the bladder is the first event; the uterine cervix is thus drawn upon, and increases in length until the result above described is observed. The uterine cavity measured from the os to the fundus may be enormously increased in length, the fundus remaining pretty much in its usual position in the pelvis.

The lower segment of the uterus is frequently very much *thickened* as well as elongated. Thus it is not uncommon to meet with cases where the cervix uteri forms a mass three inches or so in length, and two inches in transverse diameter. At other times the cervix uteri is very long, but the transverse diameter does not exceed that ordinarily present.

The whole uterus does occasionally descend, but to a very limited extent. When the prolapsus occurs to such a degree that there is an external tumor, I have always found hypertrophic elongation present. The sound affords conclusive testimony on this point. In ascites, and sometimes in cases of ovarian tumor, the whole uterus may be forced unnaturally low.

Prolapsus due to elongation and hypertrophy of the lower or vaginal part of the cervix is characterized by presence of a conical hard tumor, which is protruded occasionally from the vulva. With it may be associated hypertrophy of other parts of the cervix.

A peculiar form of prolapsus is that associated with version or flexion of the uterus backwards. In very bad cases of retroflex-

ion, prolapsus is often observed, and adds much to the suffering of the patient (see Fig. 73 for an illustration of this complication). Prolapsus does not occur in anteflexion, for an obvious reason.

Prolapsus of the uterus is a condition which is ordinarily slow in progress, but severe degrees of prolapsus may be produced by sudden exertion, especially after childbirth.

The symptoms of prolapsus uteri are many, and vary in different cases. Bearing-down is commonly felt; there is generally leu-

FIG. 82.*
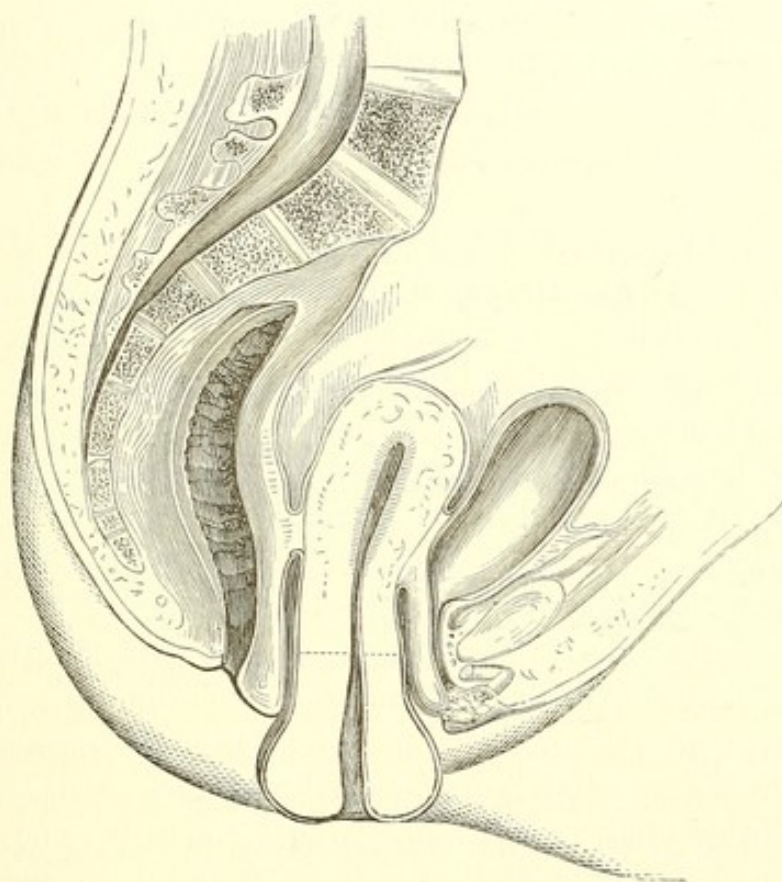
corrhœa; menorrhagia is not uncommon. The bladder cannot in bad cases be emptied readily, sometimes not at all without reducing the tumor first; one result of this is chronic vesical inflammation. Various other mechanical effects are witnessed, the nature of which will be readily inferred—difficulty in defecation, interference with sexual intercourse, &c. When there is an external tumor, the inconvenience is necessarily great, locomotion is impeded, and the condition of the patient is truly pitiable.

* Fig. 82, from a case operated on in University College Hospital, exhibits this form of hypertrophy of the cervix. The dotted line indicates the situation at which the incision was made in removing the cervix. See also Fig. 18.

TREATMENT OF THE VARIOUS FORMS OF PROLAPSUS OF THE UTERUS.

In endeavoring to decide on a plan of treatment which shall be adapted to the requirements of the particular case before us, a very exact examination of the physical condition of the parts involved must be first made; the connection between the effect present—the prolapsus—and the cause or causes which may have led to it must next be traced. The various forms of prolapsus of the uterus, vagina, &c., have a different mechanism in different cases, and this mechanism we must endeavor to appreciate, if success is to attend our efforts to cure or relieve the patient. Much mischief has resulted from the not very uncommon practice of regarding prolapsus as a condition to be treated in all cases on one and the same plan.

We may consider, in the first place, the treatment of those cases in which there is *hypertrophy of the cervix*—the prolapsus being for the most part due to, or constituted by, this hypertrophy.

These cases resolve themselves into two subdivisions. In the first, we have cases in which the hypertrophy affects (*a*) the vaginal portion of the cervix alone, a conical or rounded body projecting downwards, at or beyond the os externum (see Figs. 17 and 73). In the second, we have (*b*) those cases where the hypertrophy mainly affects the supra-vaginal portion of the cervix. In the first, the vagina has pretty nearly the normal length; in the second, the length of this canal may be much diminished.

(*a*) *Cases of Hypertrophy of the Vaginal Portion alone.*— These form a very small portion of the cases actually observed. In cases of this kind, the only efficient treatment is removal of the hypertrophied cervix. The mass to be removed has occasionally a length of several inches; and at its superior extremity it may be of considerable girth. The removal may be effected by the knife or curved scissors, by the wire or chain ecraseur, or by the galvano-caustic apparatus. The knife of course is the more expeditious and manageable; but the hemorrhage from the cut surface is often very troublesome. An objection to the ecraseur is that, unless the chain fits very closely into the apex of the instrument, there is a liability of drawing into the instrument tissues which ought to be left uninjured. Hence, if the chain ecraseur be used, the chain should be applied, not close to the summit of the vagina, but a little below this. The galvano-caustic apparatus has, like the ecraseur, the advantage of preventing hemorrhage. On

the whole, the course to be recommended is the use of the knife, or curved scissors if the neck of the growth be very thick—the actual cautery being ready for use to arrest hemorrhage, and the use of the chain or wire-rope écraseur (see Fig. 83), or the galvano-caustic, when the neck of the tumor is smaller. The actual cautery is of great value in such cases; and its use in operations about the internal genital organs is far too limited in this country. If, however, there be any objection to the use of the actual cautery, the bleeding may be placed effectually under control by applying a pledget of lint soaked in tincture of sesquichloride of iron on the cut surface, and carefully plugging the vagina by means of the speculum, as in ordinary cases of uterine hemorrhage. In any case, prior to performing the operation, the tumor should be gently pulled down as far as possible, to facilitate the necessary manipulations.

Dr. Marion Sims has practised a modification of this operation. This consists in covering the stump, as it may be termed, of the amputated part, by mucous membrane; the anterior half being covered with mucous membrane previously dissected off, and being made to lap over, as in the flap operation in ordinary amputation; and the posterior half being covered by a flap similarly made from the under surface of the cervix. When the bleeding is trifling and readily checked, this procedure renders the operation more neat and perfect. If styptics have to be used, the covering of the stump with mucous membrane will be useless, as no union can occur.

(b) *Cases of Hypertrophy of the Supra-Vaginal Portion of the Cervix Uteri.*—Cases of hypertrophic elongation of the cervix are treated by Huguier by excision, on a plan to be presently described. Kiwisch, writing on the subject previously to the publication of Huguier's memoir, states that he has seen great contraction and diminution in the length of the canal produced in these cases by simply lying in bed. In two or three days he has frequently observed a diminution, to the extent of 2 to 4 inches, occur after reposition of the prolapsed parts, and rest.* The lengthening again occurred in these cases after the patient got about as usual. I have myself seen the same thing, and these facts show that much good may be done in such cases by simply preventing the lower part of the uterus, with the vagina, from escaping from the vulva, by means presently to be alluded to; they show also that

* Klin. Vortr., Bd. ii. Dritte Aufl. Von Scanzoni, p. 418.

there is a limit to the benefit to be derived from such palliative measures.

In the cases in which the affection is observed to the most marked extent—viz., in individuals of the poorer classes—we cannot effect much permanent good by simply resting the patient in bed; the time for this can rarely be spared. The two plans of a palliative nature which are open to us to adopt are—(1) the use of pessaries, and (2) the closure of the vaginal orifice to such an extent as to prevent the escape of the cervix uteri, after a plan to be presently described. Each of these methods of treatment has peculiar advantages, according to the nature of the case. In many instances they prove sufficient; but in some few cases, as might be surmised, they are either inapplicable, or, in the long run, unsatisfactory.

The operation devised and practised by Huguier for the relief of cases of longitudinal hypertrophy of the cervix uteri, is intended to cure the patient at once. The object of the operation is to remove the hypertrophied tissue by the knife. It is accomplished as follows: An incision is made behind the os uteri through the vaginal wall, of a semicircular form, and directed towards the centre of the cervix. Dissection is now made upwards, in order to expose the hypertrophied cervix, and separate it from its connections posteriorly—great care being necessary to avoid the reflection of peritoneum there situated. A corresponding incision and dissection is made now in front; here, however, great care is necessary to avoid injuring the bladder. As much of the cervix having been exposed as is considered advisable, it is removed by the knife. Huguier at first employed the knife in removing the cervix, but subsequently the ecraseur, finding the hemorrhage troublesome when the knife is used. Such is an outline of the operation in question. The result is that a conical piece of tissue is removed, including the os uteri, the vaginal, and a portion of the supra-vaginal part of the cervix. In the original memoir before referred to, Huguier states that he had performed the operation in 14 cases. In only one of such cases a fatal result—not due, however, to the operation—followed. The operation should be undertaken after a menstrual period; Huguier believes much of his success is owing to his practice of producing, before the operation, a copious eruption on the inner surface of the thighs, by rubbing in croton oil. He gives opium after the operation.

The operation thus recommended by Huguier has not been practised to any considerable extent by others; one reason for

this seems to be, that other observers do not meet with cases such as those of Huguier's or do not recognize them in their true light. I have myself met with a certain number of very well-marked instances of the kind; in some I have performed the operation of Huguier. The operation is, judging from my own experience, a sound one, and in some instances offers the shortest road to the cure of the patient. The dissection and exposure of the cervix is the part attended with most difficulty, and it must be done with care. The bladder may extend to within half an inch of the os uteri, in which case it is evident that great caution must be required to avoid wounding it; again, the peritoneal reflection behind must be sedulously preserved intact. By keeping close to the cervical hard tissue these objects are secured. A sound in the bladder shows the position of that viscus, and acts as a good guide during the operation. For the dissection itself, scissors should be used; the knife occasions troublesome bleeding. I believe that a deep dissection—beyond an inch and a half, or at most two inches—is rarely required, for if the hypertrophied and, usually, thickened cervix be excised to this extent, the rest, which necessarily follows the operation, will suffice to complete the cure. The edges of the mucous membrane may be brought over the stump, and the opposite sides secured by sutures so as to cover it, after Dr. Sims's plan, if it be preferred.

FIG. 83.*

Of the various forms of the ecraseur, the steel wire-rope ecraseur is more useful in amputating the cervix in such cases. In Messrs. Meyer and Meltzer's instrument (see Fig. 83), the wire and the slit fit accurately, and there is less liability to draw in extraneous tissues, while the power of the instrument is exceedingly great.

Prolapsus without Elongation of the Cervix.—In a very large number of cases of prolapsus the uterus is not materially elongated as regards the cervix, and does not descend beyond the ostium
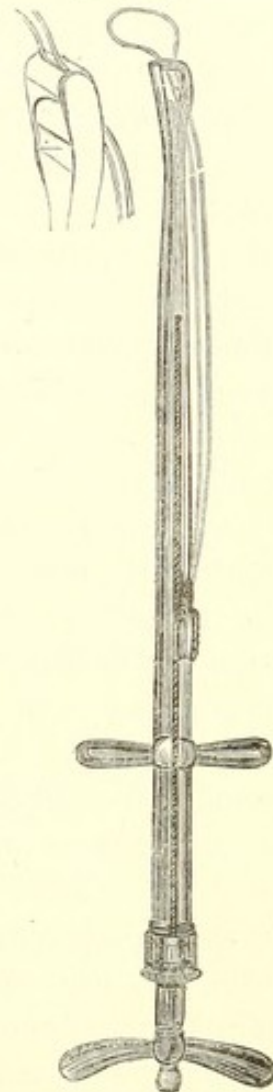
* Fig. 83. Ecraseur to be used with annealed steel wire. (Meyer and Meltzer.)

vaginæ. The uterus may be too large, as after childbirth, or from other causes, or the supports of the uterus are weakened, and the organ falls lower in the pelvis than it should do. In dealing with this class of cases, the indications are often complex, but they resolve themselves under two heads: 1. To diminish the pressure downwards; 2. To give greater and more efficient support.

1. In fulfilling the first indication, we have to regard primarily *the condition of the uterus*, a part of the treatment of prolapsus which is too frequently quite overlooked. It is, however, extremely important that this element of the case be always kept in view, for in most cases of prolapsus the starting-point has been a defective or altered condition of the uterus, which would have proved perfectly and completely amenable to treatment. Apart from those special cases of hypertrophic elongation of the cervix which have been already dealt with, the condition of the uterus which most frequently calls for therapeutic measures in cases of prolapsus, is undue size and fulness of the organ. When the uterus is very large, it usually rises into the abdominal cavity, but it is a degree of largeness short of this which is present in cases of prolapsus. The peculiar alteration of the uterus which has already been alluded to, and to which the researches of Huguier have especially called attention, is an hypertrophy of the cervix. We have now, however, to do with an hypertrophy of the uterus proper, that is to say, of the portion above the cervix. The indications in cases of prolapsus associated with enlargement of the uterus, or this combined with flexion of the organ, are, to promote by all possible means the contraction of the organ, to relieve the fulness of the vessels in and about the uterus. The measures which are most appropriate to this end consist in the observance, for as long a time during the day as is compatible with the maintenance of the general bodily health, of the horizontal posture—during the period of menstrual discharge this is exceedingly important; attention to the state of the bowels, never allowing constipation to occur; derivation to the skin by means of frictions, baths, &c. (See "Treatment of Leucorrhœa.") It is extremely important that the digestive organs be in a healthy state of activity. Our object is to hasten change of the tissues of the body, for in their changes the uterus necessarily participates. Ferruginous preparations are frequently very serviceable in cases where the congestion of the uterus is dependent on a weakened or debilitated condition of the body.

The cold vaginal douche is of very great service in diminishing congestion of the uterus, as already repeatedly observed. It is of

the greatest assistance in the treatment of prolapsus, not only on account of its action on the uterus itself, but from its effects in inducing contraction of the vaginal canal.

2. *Measures for affording Support from below.*—The expedients for preventing the descent of the uterus are many : *e.g.*, external supports by means of a pad, internal supports by means of pessaries, closure or narrowing of the vaginal aperture, constriction of the vagina, &c.

Operations for Constricting the Vaginal Aperture.—The most obviously proper case for an operation of this kind is that in which the perineum has been ruptured—prolapsus having thereupon followed. In this country Mr. Baker Brown has introduced an operation which is now largely had recourse to in such cases. This operation has the effect of constricting the lower part of the vaginal canal, thus restoring the perineum to its proper condition. The operation consists in removing from within the vagina, close to the posterior commissure, a piece of the mucous membrane of the vagina of a horseshoe shape; a surface is thus denuded at the situation in question, of a crescentic shape, tolerably broad, deepest in the centre, and tapering upwards on each side.* The opposite and corresponding surfaces are then brought together first by deep quill sutures, and secondly by superficial interrupted sutures. When the sutures are tightened and fixed, the aperture of the ostium vaginæ is considerably diminished, as is also the capacity of the vaginal canal itself close to the orifice. The deep sutures are removed on the third day (see "Rupture of the Perineum"). This operation is certainly indicated in the kind of cases above specified, but it is also not uncommonly practised in cases where the injury to the perineum is less marked, and where the vaginal aperture has become gradually larger and larger, owing to continued pressure from above. In some of these cases also the operation is of considerable service. The operation will not and cannot do everything ; and if the operation forms the only treatment, the treatment will probably be found, as it has been found, to fail of its effect in some instances. Even in very bad cases, where, the evil returning, the large uterus bursts anew through the bounds set up by the operation, the evil is mitigated ; the relief, temporary though it be, is a gain, and time is afforded for treating the case in other ways, the patient being preserved meanwhile from the annoyance of the external appearance of the tumor. It is probable

* Op. cit., 2d ed., p. 99.

that in many of the cases where the operation has failed in curing the patient, the explanation is to be found in the fact that longitudinal hypertrophy of the cervix, and not prolapsus of the whole organ, was the condition actually present. In properly selected cases, then, a plastic operation on the vaginal orifice and lower part of the canal is a valuable constituent in the treatment.

Operations for Constricting the Vaginal Canal itself.—Dr. Marshall Hall originally suggested the idea of narrowing the vaginal canal by means of an operation, and thus preventing descent of the uterus. That restoration of the torn or injured perineum which has been just described, has the effect of constricting the lower part of the vaginal canal as well as its aperture; and this operation would naturally suggest itself first in a case where the perineum is obviously deficient; but the operations now to be spoken of apply to the canal above the orifice, and might be had recourse to when the narrowing of the vaginal aperture had failed.

One procedure which has been adopted consists in diminishing the calibre of the vaginal canal through the greater part of its course by pinching up successively folds of the mucous membrane by means of small forceps specially constructed for the purpose, termed "serre-fines," and left in the vagina until the mucous membrane included is separated. The forceps used are Desgrange's —each 2¾ to 3 inches long, the blade a little curved, the arms crossed, and a fold of mucous membrane about an inch long is included. They are applied by means of the valved speculum, two or three of the forceps in the space between the valves of the speculum. The forceps fall off from the fifth to the tenth day, and are withdrawn by a thread previously attached. The result thus obtainable is that the whole vaginal canal can be narrowed to any extent; the operative procedures are, however, necessarily spread over a space of several days.

Dr. Marion Sims[*] describes an ingenious operation for the purpose of constricting the vaginal canal. The operation consists in removing a V-shaped piece of the mucous membrane forming the roof of the vagina, and therefore covering the bladder. The apex of the V is near the urethra, and the two arms reach to the side of the cervix uteri. More recently he has modified the operation by removing an additional piece of mucous membrane. Finally, the shape of the excised surface is that represented in Fig. 84. The opposite denuded surfaces are next brought together

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* Op. cit., p. 310.

by means of sutures, *a* to *b*, and *c* to *d*. The effect is, that the vagina has its canal much contracted; a little pouch is left opening above at *e* (into which the uterine cervix might slip if the

Fig. 84.
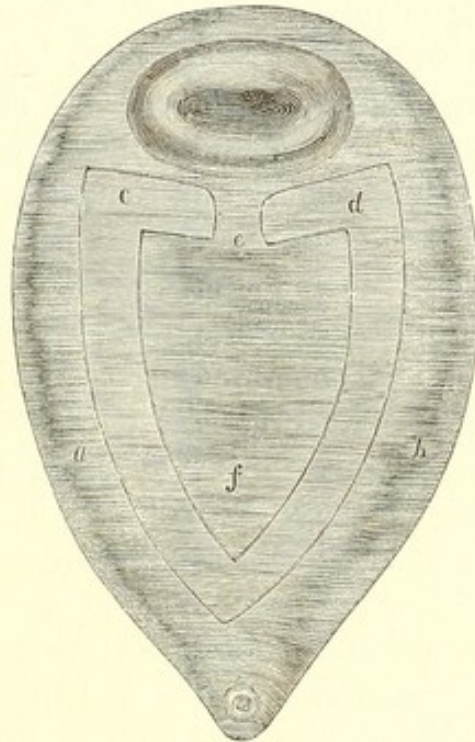
opening be left too large, as in cases reported by Dr. Emmet) for escape of the secretions of the part. This operation is especially adapted for cases of very long standing, where the vaginal canal has undergone very great dilatation and expansion. Dr. Sims advises that, subsequently to the operation, the patient be kept in bed, or in the recumbent position, for two or three weeks, the bowels to be confined for a week, the catheter to be used. The lower sutures are removed in eight or ten days, the upper ones in a fortnight. Dr. Emmet has in some cases found the narrowing of the vagina superiorly—a part of the above operation—sufficient to retain the uterus *in situ*. The actual cautery has been used for the purpose of narrowing the vaginal canal, so also various cauterizing agents, but these expedients cannot be recommended.

Measures for Restoring the Lost Tonicity of the Vaginal and Adjacent Structures.—Remedies of this kind are especially valuable in the cases of prolapsus not considerable in degree or of long standing. Frequent injections of cold water; the use of the cold hip-bath; injections into the vagina of astringent fluids, decoction of oak bark, or tannin, or alum. Persistence in this treat-

ment for a few weeks often affords very great relief, even in bad cases; the good derived is in part dependent on the action of these applications on the uterus itself.

External Supports.—These are frequently of service; some eminent practitioners employ them exclusively. A cushion composed of an air-bag adapted to the width of the perineum, and having straps or tapes passing forwards and backwards from it, offers an exceedingly good support. The cushion should be covered with a piece of oil-skin or linen, which can be changed occasionally. It is fixed in its place by attaching the tapes either to an abdominal belt or to an elastic abdominal bandage. Broad pieces of webbing passed over the shoulders act exceedingly well as additional means of support to the perineal cushion.

Pessaries.—These instruments are frequently of great service when properly adapted to the requirements of the case and nicely adjusted; otherwise they are capable of doing much mischief, and perpetuate the evil we desire to terminate. The globular pessary has been most used, but it is objectionable by reason of its dilating the whole vagina too much. The best form of the globular pessary is the India-rubber air-ball pessary of Gariel, which may be distended more or less by means of a small tube and air syringe. This instrument is very convenient and cleanly. It should be frequently removed. Another form of air-pessary, of a round flattened disc shape, is a very good one. The old globular-shaped boxwood pessary is very objectionable. The disc-shaped or oval flat pessaries made of gutta percha or ebonite are the best form of solid pessaries. The ring-pessary, known in America by the name of its inventor, Dr. Meigs, is a good instrument. It is, as originally constructed, a piece of watch spring covered with thread, and dipped in a solution of gutta percha in chloroform until of sufficient substance. This ring readily admits of introduction. This pessary has the great advantage of preventing the descent of the uterus, while it does not touch the os or cervix uteri. Modifications of this pessary may be used: the ring may be composed of stouter material, gold or silver gilt, or iron or copper covered with gutta percha. The size must be carefully adjusted. The ring-pessaries I employ are described at p. 522; they are very convenient, and readily adjusted to the particular case. Hodge's quadrangular pessaries answer the same purpose as the ring-pessaries.

Zwank's pessary consists of two oval, flat, rounded, ear-shaped

pieces of ebony or other hard substance connected by a hinge (see Fig. 85). The two wings are separated after introduction, and kept apart by a simple mechanism. The stem of the pessary is external to the vulva. I consider it very inferior to the ring-pessary.

FIG. 85.

Other pessaries are contrived on the principle of transmitting support by means of a stem, the fixed point of which is outside; others by means of a perineal pad; others again by a wire framework attached in front of the pubes. A good form of this pessary was shown at the Obstetrical Society's conversazione in 1866, as used in Denmark.*

Lastly, it may be mentioned that small pieces of sponge act exceedingly well as pessaries, but they require to be frequently changed and cleansed.

Manipulations necessary in Cases of Prolapsus.—We are sometimes called upon to return the uterus within the vagina, the patient being unable to accomplish it; and in some cases the difficulty is almost insurmountable. In bad cases, as remarked by Dr. West, we sometimes meet with a hard hypertrophied condition of the vagina, resulting from frequent exposure, friction, and morbid growth; this may not only interfere with facility of reduction, but with the possibility of treating the case successfully subsequently. Another condition, also capable of interfering with reduction, is adhesion of the intestines to the pouch, and to one another, in cases where they have become prolapsed together with the uterus. The patient should be laid on the back, with the hip raised; the tumor should then be grasped by one or both hands, previously well oiled, and a gradual steady pressure exercised in the direction upwards. If difficulty be encountered, cold is to be applied (iced water may be necessary), and the recumbent position maintained. Dr. McClintock has found strapping the tumor of great assistance in effecting its reduction in cases of this kind. Before introducing pessaries, they should be always, the India-rubber pessaries except, well oiled. When the prolapsed organs are ulcerated, as is not unfrequently the case, a slightly astrin-
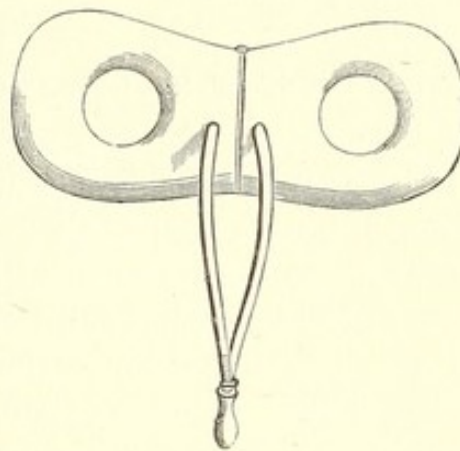
* See Catalogue of Instruments, &c. Longmans, 1866.

gent lotion should be applied, and great cleanliness observed. These ulcerations readily heal when the parts are restored to their normal position.

TREATMENT OF PROLAPSUS OF THE BLADDER, VAGINAL WALL, OR RECTUM.

Prolapsus of the bladder, or of the rectum, through the vaginal aperture, most frequently occurs in connection with descent of the uterus, or of its hypertrophied cervix; and consequently the treatment of "cystocele" and "rectocele" is generally involved in that of uterine prolapsus of various forms. The most marked examples of cystocele occur in those cases where the uterine cervix (its supra-vaginal portion) is greatly hypertrophied and lengthened. But we occasionally meet with prolapsus of the bladder or of the rectum through the vaginal aperture, in cases where there is no decided alteration in the position of the uterus or any part of the organ, and where the only explanation of the occurrence is absence of efficient support at the ostium vaginæ.

In many cases, therefore, the treatment of the displacements in question consists in remedying the uterine displacement, which is the cause of the evil; the secondary inconvenience disappearing on removal of the primary one. In other cases, however, the prolapsus of the bladder or rectum requires special treatment. The treatment which is most effectual consists in diminishing the size of the vaginal outlet by performing operations analogous to those which have been described as sometimes applicable in the treatment of prolapsus uteri; but measures of a more simple nature should be tried first—such as assiduous employment of the cold douche, astringent lotions, attention to the state of the bowels, &c. Pessaries should at the same time be employed, or external support be applied by means of the pad and abdominal bandage. When these measures fail, operative procedures are sometimes required. Cystocele is often best treated by performing an operation which will constrict the lower part of the vaginal canal—as previously described. If the perineum be defective, this operation is almost imperatively called for.

CHAPTER XIV.

FIBROID TUMORS OF THE UTERUS, POLYPI OF THE UTERUS, AND FIBRO-CYSTIC TUMORS OF THE UTERUS.

Fibroid Growths of the Uterus—General Remarks—Four varieties: 1. Sub-peritoneal or Peri-uterine; 2. Interstitial or Parietal; 3. Submucous Fibroid Tumors; 4. Fibrous Polypi—Progress of these Growths as a whole—Growth—Cystic Transformation (Fibro-cystic Tumors)—Illustrative Cases—Recurrent Fibroid Tumors—Symptoms produced by presence of Fibroid Uterine Growths—Glandular and Mucous Polypi.

TREATMENT.—Preventive—Removal by Surgical Procedures—Operations for Polypus; by Scissors, Knife, Ecraseur, &c.—Operations when the Growth is Intra-uterine—Polypoidal Tumors—Removal by Enucleation—Destruction by Partial Removal—Treatment of the Hemorrhage they produce by Incision of the Cervix—Treatment of Interstitial and Sub-peritoneal Growths—Removal of Fibroid Tumors by Gastrotomy—Statistics of the Operation and of Extirpation of the entire Uterus—General and Palliative Treatment in cases of Fibrous Tumor of the Uterus—Internal Remedies.

IT is necessary, from a pathological point of view, to consider together the fibroid tumors of the uterus and fibrous polypus of the uterus. Otherwise these different names express important practical differences between them. Every tumor of the uterus is not a fibroid tumor, nor is every polypus a fibroid polypus.

These fibroid growths are very important in the pathology of the female sexual organs. They often interfere mechanically with the uterine functions, cause difficulties in menstruation, pain, prevent impregnation, lead to miscarriages, and give rise to various minor inconveniences. They sometimes destroy the subjects of them.

Any part of the uterus may be the original seat of the affection. In their essence these fibroid growths have a structure like that of the uterus. They are, for the most part, rounded, well-defined masses, more or less isolated from the adjacent parts, but still preserving, when in an active state, a regular vascular connection with those parts. They are subject to decay, absorption, and various curious changes, and their period of activity is usually limited to the period of sexual vigor. They are found equally in the single and the married, are rarely observed before the age of 25, but often remain up to an advanced age. Sometimes they

occur singly; more often we meet with two or more in the same uterus.

The size of these growths varies from a pea to a mass large enough to occupy the whole abdominal cavity. In a case which I have related in the " Obstetrical Transactions,"* the tumor, which grew from the uterus near the cervix, measured, when removed from the abdomen, 16 inches in diameter and 44 inches in circumference, and its weight was 42 lbs. The patient, who had been under the care of my friend, Dr. Uvedale West, of Alford,

FIG. 86.†
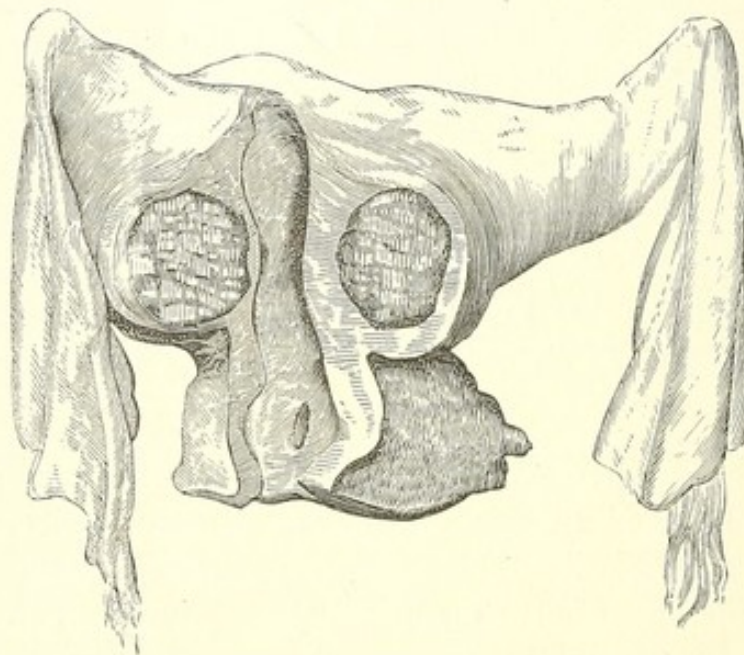
died almost suddenly, from an attack of hemorrhage, at the age of 53, and the tumor had been growing for ten years.

In Walter's celebrated case the tumor weighed 71 lbs., and others still larger have been described.

Fibroid growths of the uterus are now divided, according to the accident of their position, into the following classes:

a. Those growing from the exterior of the uterus by a pedicle, or sessile, as the case may be—*sub-peritoneal.*

b. Those growing in the thickness of the uterine wall, covered on both sides by uterine tissue—*parietal* or *interstitial.*

c. Those growing from the internal wall, projecting more or less into the cavity—*sub-mucous.*

* Vol. ii, p. 240.

† Fig. 86 represents a small fibroid tumor growing in the uterine wall. From a preparation in University College Museum.

d. Those attached to and growing from the interior of the uterus, and connected to it by a narrower portion—the pedicle—*fibrous polypus.* Many of these cases have been at one time of their career sub-mucous fibroid tumors.

Each of these must be considered separately.

a. The Sub-peritoneal Fibroid Growths may originate at any part of the surface of the uterus, mostly from the upper part of the organ. Sometimes they originate quite low down on the part of the uterus designated as the cervix. These tumors attain a

FIG. 87.*
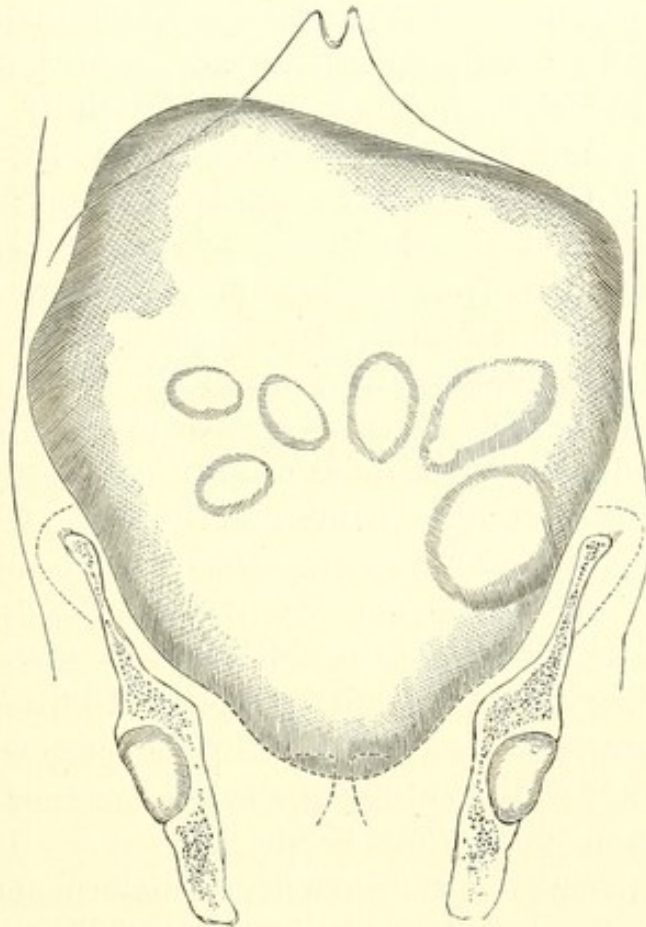
larger size than those situated in the wall of the uterus or within it; the very large specimens belong to it; they are attached by a broad or narrow portion. The pedicle is often of considerable length, and corresponding tenuity, and the tumor then hangs freely in the abdominal or pelvic cavity. If the tumor is broadly attached to the uterus, this organ generally increases much in size,

* By way of contrast to Fig. 86, Fig. 87 shows a fibroid mass of enormous size, from a patient at University College Hospital, who has been the subject of this growth for upwards of ten years.

but if the pedicle is narrow such is not the case. In the very large tumor (41 lbs.) previously alluded to, the uterus was quite atrophied. We often see more than one sub-peritoneal tumor in the same patient.

A very curious feature in the history of these sub-peritoneal tumors is that the pedicle is sometimes torn across, and the mass entirely separated from the uterus, while the tumor itself becomes fixed to and grows on some other part of the peritoneal surface. This transplantation of fibroid tumors has been observed in several cases: it appears to be produced by the tumor becoming adherent elsewhere; the pedicle becomes stretched in consequence of the motions of the uterus and intestines, and finally gives way.

Here it must be mentioned that fibroid growths are sometimes found connected with the peritoneum in the vicinity of the uterus which have an origin independent of the uterus altogether. These must not be confounded with transported fibroid tumors of the uterus. It appears that growths in no way distinguishable by their microscopic characters from uterine fibroid tumors may originate in the position above indicated. Mr. Paget observes that they are probably limited to those parts in which fibrous and smooth muscular tissue, like that of the uterus, extends—that is to say, the utero-rectal and utero-vesical folds of the broad ligament.* Muscular fibres lying under the peritoneum covering the uterus, broad ligaments, and ovaries, and serving certain important purposes in the process of ovulation (see p. 344), exist in the positions mentioned by Mr. Paget as those in which fibroid tumors may originate. It is likely that the fibroid tumors of the ovaries—which are extremely rare—belong really to the category uow under consideration, and that they originate in the muscular layer under the peritoneum in the neighborhood of the ovary. I believe it will serve a useful purpose if we denominate these tumors as *peri-uterine fibroid tumors*, in order to distinguish them from those actually and primarily connected with the uterus.

b. Interstitial or Parietal Fibroid Tumors.—These do not attain usually so large a size. The uterus always grows as a whole, enlarging often to a very great size. These tumors have usually a loose connection with the organ, being inclosed in a capsule, out of which they may be generally shelled on cutting through the uterine wall covering them (see Fig. 86). They have vascular

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* Surgical Pathology, p. 140, 1st ed.

relations with the uterus at one or more points only. They
are found in the wall of the body of the
uterus; they distort and alter the shape of the
cavity of the uterus; if the whole organ be-
come very large, the uterus generally rises
as a whole out of the pelvis. In some in-
stances its shape prevents this escape from
the cavity of the pelvis, and distressing re-
sults may then ensue.

FIG. 88.*

c. The Sub-mucous Fibroid Tumors re-
semble those last described, but they project
more into the uterine cavity. Thus we may
find the uterine cavity of great length, but
having a crescentic outline owing to one of these tumors, which
may be of great size, occupying one side of the uterus. The op-
posite side is expanded and stretched over it. All sorts of varieties
in regard to position are observed. These sub-mucous tumors are
generally encapsuled. After the lapse of some time, many of
them become fibrous polypi.

d. Fibrous Polypi of the Uterus.—These generally originate as
sub-mucous fibroid tumors. They are attached to the inner sur-
face of the uterus by a pedicle of very varying thickness. Some-
times the attachment is very wide, curving the whole fundus or
the whole of one side. Their size varies from a pea to the size of
a child's head, or even larger. When not larger than an egg,
they usually escape from the uterus or partially so, and hang down
into the vagina; but when larger than this, they may be retained
wholly in the uterus for some years. Much depends on the size
of the pedicle; when narrow, they may be pushed down into the
os uteri early. They present a smooth exterior, and are usually
quite hard and firm. They excite much irritation, bleeding, and
frequent contraction of the uterus.

We may now consider the nature, history, and progress of these
fibroid growths of the uterus as a whole.

Their *growth* is always slow. Thus a tumor may be ten or
twelve years attaining the size of a melon, and it would hardly
attain such a size as this in less than three or four years. This
will convey some idea as to the rate of progress.

* Fig. 88 represents the outline of a uterus affected with fibroid tumors, in-
terstitial and sub-peritoneal, from a patient in University College Hospital.

As to their *structure*, it is pretty uniform. Vogel named them "muscular" tumors. They contain many muscular fibres of the unstriped variety, precisely like those found in the substance of the uterine walls (see Fig. 92). There are also many delicate filaments presenting an undulating or waved arrangement. These two elements constitute the bulk of the tumor, but there are to be seen also many fusiform nucleated cells with granules and molecu-

Fig. 89.*
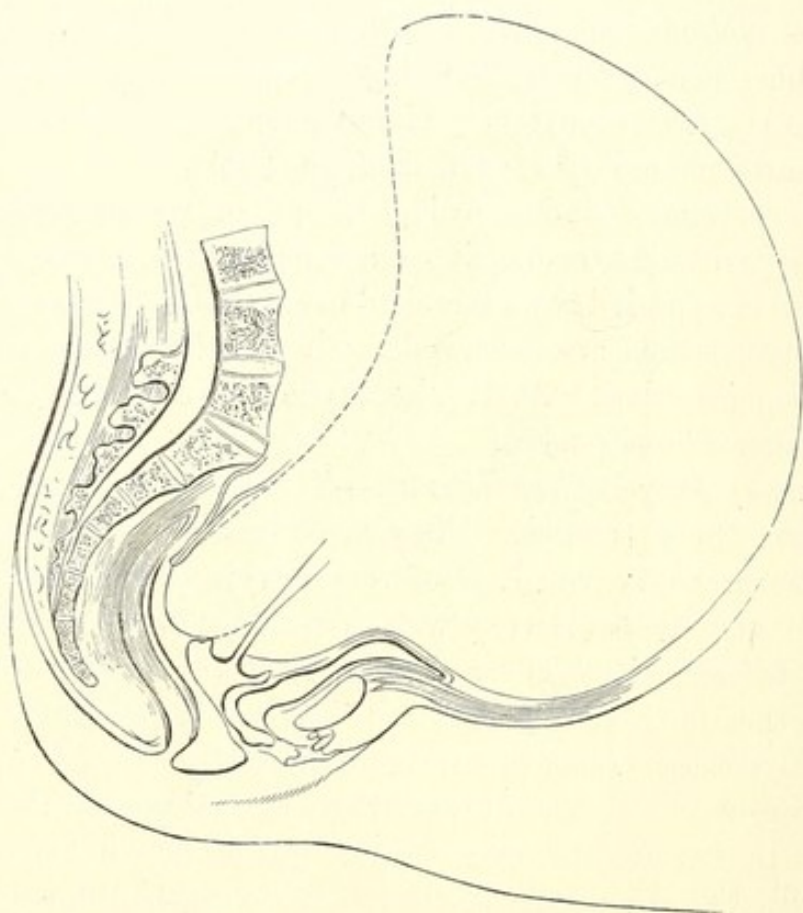
lar matter. They have on section a dense whitish structure, in which can be recognized the rounded nest-like portions of which they are made up. The appearance of the section much resembles that of the uterine wall. Harder or softer, now vascular, now paler; such are the variations observed.

They sometimes remain stationary as regards growth. More generally they tend outwards, growing towards the exterior or interior of the uterus, according to their primary position. They

* Fig. 89 gives a lateral view of an enormous fibroid growth, from a patient lately in University College Hospital. The sound could be introduced within the uterine cavity as far as the point to which the lines in the drawing extend.

undergo absorption occasionally; sometimes they become transformed in a very curious manner into cyst-like bodies; they become the seat of a cretaceous hard deposit.

The *cystic transformation* is the most interesting. Thus a fibrous polypus may become changed, after remaining in utero some time, into a cyst-like body, each cyst containing fatty *débris*. Here the "cysts" probably represent the centres of development of the original fibroid tumor. Of this I have related a case in the "Trans-

FIG. 90.*
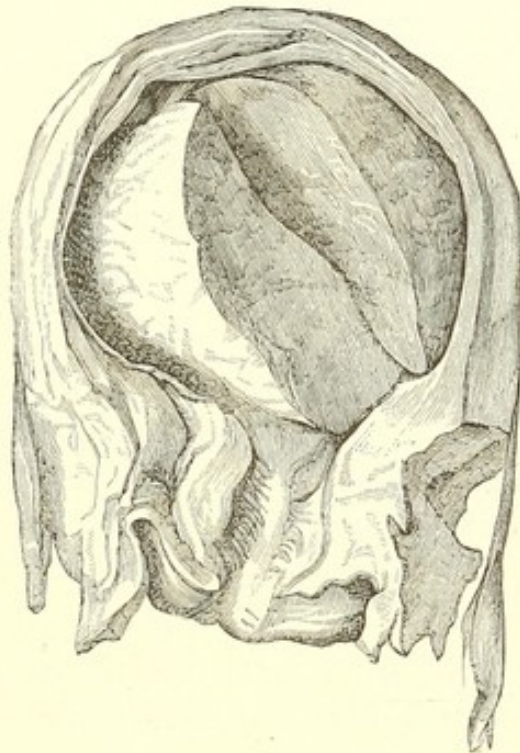
actions of the Pathological Society."† The so-called "fatty polypi" of the uterus are instances of the same kind. The cystic transformation does not appear to affect parietal fibroid tumors, but we have some very important instances of it in that tumor which is now and then found external to the uterus,—the fibrocystic tumor of the uterus. A careful examination of the facts recorded leads to the conclusion that these fibro-cystic tumors, which in many particulars so much resemble ovarian cystic tumors, are primarily fibroid tumors, either sub-peritoneal uterine fibroids, or sub-peritoneal peri-uterine fibroids (see *ante*, p. 541). The

* Fig. 90, from a preparation in University College Museum. A submucous fibroid tumor, polypoidal in character.

† Vol. xi, p. 173.

importance of these rare tumors is great, inasmuch as they have been mistaken for ovarian tumors. Hence the interest of this

FIG. 91.*
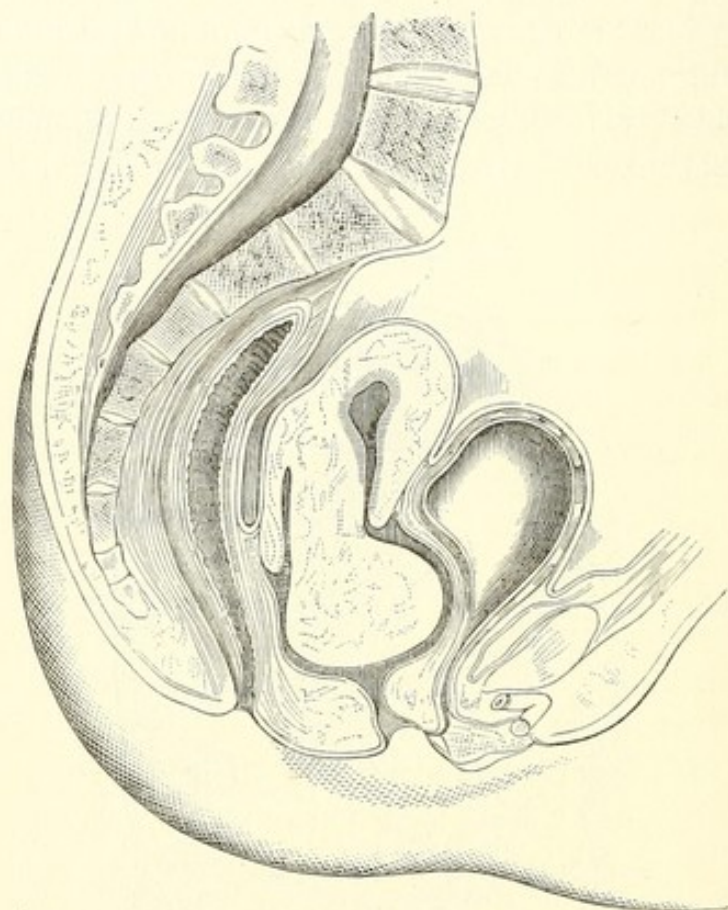
cystic transformation. Mr. Paget† remarks on this subject, that the formation of cysts in fibrous tumors is not rare, especially if

FIG. 92.‡
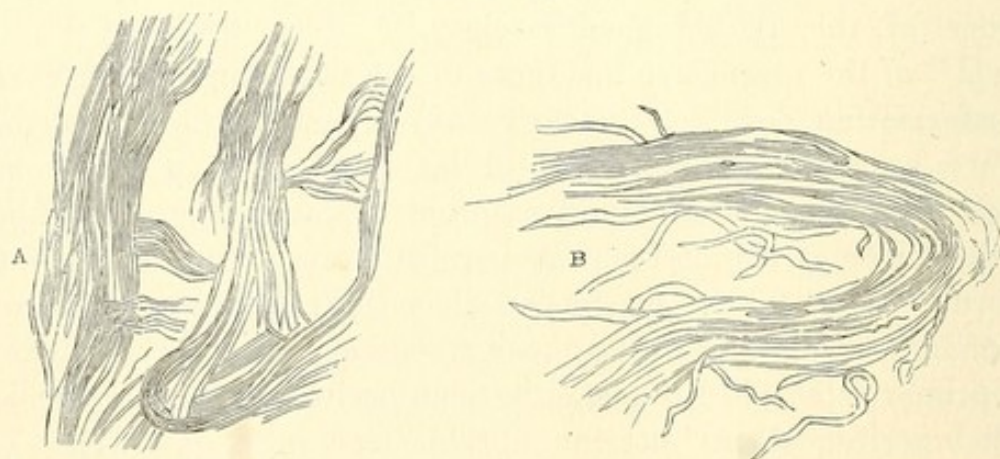
* Fig. 91 represents a fibrous polypus projecting from the uterus into the vagina: operated on in University College Hospital.

† Surgical Pathology, vol. ii, p. 137, 1st ed.

‡ Fig. 92 represents the microscopical structure of an ordinary fibrous polypus: A the harder central, and B the softer external layers.

they be more than usually loose-textured; that the cyst formation may be due to a local softening and liquefaction of part of the tumor, with effusion of fluid in the affected part, or to an accumulation of fluid in the interspaces of the intersecting bands; and he accounts thus for the formation of the roughly bounded cavities which may be found in uterine tumors.

The following case of fibro-cystic tumor of the uterus is related by Mr. Spencer Wells.*   The patient was single, æt. 53; there was an irregular, obscurely-fluctuating tumor in the abdomen, menstruation latterly scanty, abdomen increased in size from 1853 to 1863, when an operation was undertaken. The tumor was closely adherent to the right iliac fossa, connected with the uterus by a thick band; it was a fibro-cystic growth from the right side of the fundus; its solid portion weighed 16 lbs., and from a large cyst within it 26 pints of fluid and 4 lbs. of lumpy masses of decomposed fibrin were removed. The uterus was twice its natural size, the os was situated high up, and behind the tumor.

A second very interesting case is also recorded by Mr. Spencer Wells.†   The lady, æt. 45, was operated on as for ovariotomy. Ten years before, two tumors the size of a goose egg had been detected by Dr. Stokes, one central, a little above the umbilicus, the other under the anterior superior spinous process of the ilium. At the time of the operation, there was above much ascitic fluid, below what appeared to be a multilocular cyst. The tumor was found to consist of two parts; the left, which was removed, was attached to the uterus, and to the other part, which was not removed. The removed portion measured 18 inches by 12, and was 7 inches thick, weighed 20 lbs., in addition to 12 pints of bloody serum removed during operation. It was made up of fibrous tissues split up by little cavities containing serum. In some parts were little masses like fibroid tumors—these in process of fatty and calcareous transformation. In other cysts with blood contents, one of which was the size of an adult head, divided into several compartments. The second tumor, removed after death, measured 18 inches by 16, and 7 inches thick, attached by a pedicle 3½ inches long and 2 broad, which pedicle was itself hollowed into cysts. In it was one large cyst 12 inches in diameter. The uterus was a narrow tube 7 inches long.

In a case operated on by Mr. Baker Brown in 1862, the age

* On Diseases of the Ovaries, vol. i, p. 354.
† Op. cit., p. 356.

of the patient was 36. Enlargement of the abdomen for six years. The tumor could not be removed. The specimen, removed after death, was exhibited at the Pathological Society, and reported on by Mr. Holmes and Mr. Nunn.* The fundus of the uterus was directly continuous with the substance of the tumor, the solid part of the tumor separated into two parts near the uterus by interposition of large cysts. The mass of the tumor was situated in the sub-peritoneal tissue, and adhered above to the omentum, in the tissue of which some fibrous nodules were to be seen. . . . "The great tumor was made up of a mass of nodules or rounded tumors of a fibrous appearance and consistence, separated from each other by large cysts, in many of which a purulent fluid was still contained. The tissue of the tumors resembled under the microscope the ordinary fibroid tumor of the uterus, but many of them contained cysts of various sizes, and in almost all some very small spaces, which seemed the commencement of such cysts, could be seen." The reporters considered it to be a specimen of fibro-cystic tumor attached to and incorporated with the fundus uteri, but probably originating in the sub-peritoneal tissue in its neighborhood.

A review of the facts relating to these fibro-cystic tumors renders it probable that the cavities in them are hardly cystic in the true sense of the word at all. They appear to be often formed by the breaking up or softening of the parts of the tumor, by hemorrhage within it, by formation of puriform material, and other changes of a destructive character. Further, these tumors appear always to have a very chronic course, a fact which should be of great service in their diagnosis.

Recurrent Fibroid Tumors.—This designation is applied to a very rare affection. It is a growth proceeding from the inner wall of the uterus, and projecting downwards through the os in the manner of ordinary fibrous polypus, but differing from ordinary polypus in that a new tumor is liable to grow soon after the old one is removed. Thus a case is related by Dr. West,† who terms it "recurrent fibroid tumor," in which a polypus the size of a pigeon's egg was found protruding from the os uteri. Portions of it were torn away by repeated operations, nine of which were performed in the course of a year and a half, but the growth

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* Trans. of Path. Soc., vol. xiv, p. 199.

† Diseases of Women, 2d ed., p. 333. For a particular account of the postmortem appearances in this case, drawn up by Mr. Callender, see Trans. of the Path. Soc., vol. ix, p. 327.

always recurred, and, after having been six years under observation, the patient died. Her age was 22 when first seen; after death a large tumor was found in the abdomen, like that in the uterus, and continuous through the uterine wall with it. Similar tumors were found in the lungs, in the pericardium, and in the body of the sixth cervical vertebra. The tumors were all alike, composed of oat-shaped cells, mingled with others of a flattened fibroid form. The tumors were lobulated, divided by septa; they were soft and elastic. The tumor within the uterus grew from a broad base.

In another very interesting case, related by Mr. Hutchinson,* there was a recurrent fibroid tumor of the uterus, assuming a polypoid shape, in a woman æt. 39, the history of which extended over a period of three years, at the end of which time the case ended fatally. The growth was polypoid in shape, soft, and lacerable, and attempts to remove it entirely failed from this circumstance. It was three times partially removed, growing again after each operation. The growth was attached by a broad base to the whole of the fundus and posterior uterine wall. It was soft, lobulated, of a gray-white color, and readily tore up into fibrils, all of which had a parallel arrangement. Nuclei and numerous small cells were seen. The tumor, very distinct from ordinary fibrous tumors of the uterus, presented no resemblance to epithelial or scirrhous cancer. There were no secondary deposits in this case.

The tumors in both these cases appear to have been identical with those found in other parts and known as recurring fibrous tumors. In both instances there were severe floodings, offensive discharges, and other symptoms present in bad cases of polypus uteri.

It is evident, from what has been stated, that the uterus is liable to become the seat of a growth which is unlike cancer in everything but its malignity. The cases are, so far as we know at present, very rare; but it is possible that, now attention has been directed to the possibility of their occurrence, they may be oftener detected.

The *symptoms* produced by the presence of fibroid growths of the uterus vary excessively. Hemorrhage is frequent when fibrous polypus is present, less so in the parietal form, least so in the sub-peritoneal tumor. Watery discharges, sanious, or even offensive

* Trans. of the Path. Soc., vol. viii, p. 287.

discharges attend polypi, but not in other cases as a rule. Pain is usually observed in all varieties of cases, but very large tumors may give comparatively little uneasiness. Menstruation is generally disturbed. In some cases very severe dysmenorrhœa results. The mechanical results are difficulties in micturition, in defecation, prolapsus of the uterus, pressure on the veins in the pelvis, and consequent œdema, pressure on the nerves, giving rise to pain or numbness extending usually down one of the thighs, &c. These mechanical disturbances vary in kind and degree as the tumor is large or small, and according to its shape and position. It may be so placed and so large as to actually break up the pelvis, the functions of the rectum and bladder being then very seriously interfered with.

CERTAIN OTHER VARIETIES OF UTERINE POLYPUS.

Certain growths from the interior of the uterus which now and then assume the characters of polypi, must here be mentioned. One of these is the *glandular polypus*. It is an hypertrophy of the mucous lining of the uterus, containing canals or channels, which appear to be the uterine glands enlarged. Dr. Oldham's " channel polypi " seem to belong to this category. Mr. Wood* exhibited a specimen at the Pathological Society having the size of a small walnut, a broad base growing from the fundus. It was soft, very vascular, and there were seen numerous tubes or canals travelling through the substance and connected by strong processes of fibrous tissue. This specimen will serve as a type of the class. They are not common.

Next we have *mucous polypi*, as they have been termed, consisting of enlarged mucous follicles from the cervical cavity of the uterus, attached generally by a long pedicle, and hanging down in the vaginal canal. Their size varies from a barleycorn to that of a walnut.

These smaller polypi may occasion hemorrhages and other inconveniences apparently disproportionate to their size.

TREATMENT.

Respecting the circumstances which call these fibroid growths into existence, we know but little. I do not share a belief entertained by some, that the formation of these growths is in any way

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* Trans. Path. Soc., vol. x, p. 206.

connected with certain pernicious habits. We know of no means whereby the formation of these growths can be actually prevented. A particular portion of the uterine substance seems to become unaccountably affected with a morbid tendency to grow and to become hypertrophied. This particular portion—owing to some, perhaps accidental, circumstance—remains forthwith subject only in a certain degree to the laws which guide the growth, the increase or diminution in size, of the other portions of uterine tissue.

The danger to life consequent on the presence of fibroid growths in or about the uterus varies very much in different cases, and is connected almost entirely with the severity and intensity of the secondary symptoms. The most considerable source of danger lies in the oft-repeated hemorrhages, the chronic menorrhagia, leucorrhœa, &c., present in bad cases, and in the exhausting effects of these on the constitution of the patient. In themselves these tumors are almost innocuous, but they may, when large, mechanically interfere with important functions of the body, and in that way bring about a fatal result. Hence the indications for treatment vary in different cases.

The removal of the tumor should be effected whenever the circumstances are such as to render the removal safe for the patient. Very frequently the tumor can only be extirpated at great risk, and in other cases the connections of the growth with the uterus are such, that nothing less than the removal of the entire uterus will accomplish its complete eradication.

The most simple case is that in which there is a fibrous polypus pendulous in the vagina or projecting at the vulva, attached by a pedicle to the interior of the uterus. The only proper treatment in cases of this kind is removal of the polypus. A whipcord ligature was formerly employed for the purpose of cutting through the pedicle of the polypus, the loop being passed round the pedicle and tightened by means of the well-known apparatus of Dr. Gooch. The pressure of the ligature caused the separation of the tumor in a few days, or longer when the pedicle was of considerable thickness. This method of procedure is now almost fallen into disuse. The knife, the scissors, or the ecraseur armed with the chain, the wire rope, or a strong wire, are now most largely employed. It has been found that when the knife or scissors are used the hemorrhage is either very trifling or very easily controllable; and by the use of the ecraseur the liability to hemorrhage is reduced almost to *nil*. The old plan is vastly inferior to the knife, scissors, or ecraseur; for, unless the pedicle be very small, the whipcord liga-

ture does not cut it through in less than two or three days, during which time the patient is subjected to the great inconvenience of having a semi-putrid mass lying in the vagina, and to the great danger of putrid absorption and consequent pyæmia. It is undoubtedly a matter of great importance to complete the removal of the polypus at once in all cases where it is found feasible.

In the choice of the particular instrument we must be guided by the circumstances of the case. In the case of a polypus with a pedicle the size of the shaft of a feather, it is quite immaterial whether we use the curved scissors, the polyptome (a long hook, the concave side of which has a cutting edge), or the ecraseur armed with chain, or wire, or wire rope. Each operator will choose the instrument with the manipulation of which he is best acquainted. There is necessarily more danger of injuring the vagina when the scissors or the knife are used, but even this depends rather on the operator than the instrument. When the pedicle is larger than that above stated, the ecraseur armed with chain, or wire rope, is the best instrument, inasmuch as thus the operation is more easily effected, and there is less liability to bleeding. This latter method of cutting across the pedicle is applicable also in cases where the scissors or knife could not possibly be used owing to the position of the pedicle. The chain ecraseur is applied with difficulty when the pedicle is thick, and here the wire, or wire rope (as used in Dr. Braxton Hicks's instrument), is most valuable. The size of the rope must be increased in proportion to the thickness of the pedicle. A modification of Gooch's apparatus, made extremely strong, and capable of being used with any size of the wire, or wire rope, is made by Messrs. Weiss, and has proved very useful in cases of polypus with a very thick pedicle. Dr. Braxton Hicks's instrument has been found an effective instrument in many such cases. Meyer's instrument (see Fig. 83) is the latest, and a very good one. I have employed the ecraseur with chain, and also with strands of wire, and the scissors for the removal of fibrous polypi. If the pedicle is small, the scissors answer every purpose, but if it is thick the ecraseur is to be preferred. In the case of a large polypus projecting through the os uteri into the vagina, we may, it must be recollected, have to deal with a partially inverted uterus as well as the polypus. The following case illustrates this point: A tumor was exhibited by Dr. J. Ogle at the Pathological Society, sent to him by Dr. Slater of Halifax, Nova Scotia. Dr. Slater had removed it by means of the ecraseur, and the patient is said to have made a very good recovery. The tumor was referred

to Dr. Ogle, Dr. Marion Sims, and myself for a report, the substance of which was as follows:* The tumor has the shape of a melon; it is $4\frac{1}{2}$ inches in diameter, $2\frac{1}{2}$ in thickness. On one aspect is a surface 1 inch long, ovoid in shape, slightly depressed, and perfectly smooth. This surface was evidently a part of the peritoneal surface of the uterus. The tumor consists of a polypus growing centrally from the interior of the uterus. In separating the tumor the ecraseur had cut away the portion of the uterus with which the polypus was connected, which portion formed, in fact, the pedicle of the tumor. The case is a very unusual one, and indicates the propriety of measuring the cavity of the uterus before cutting through what may appear to be the pedicle. A somewhat similar case is depicted in Fig. 80.

In rare instances uterine fibrous polypi attain an enormous size before they are expelled from the uterine cavity into the vagina, and in such cases the mere size of the tumor creates a difficulty in reaching the neck of the polypus. Under these circumstances it has been found necessary to remove the tumor piecemeal; to cut away or remove as much of the tumor as can be reached at one operation, and to wait until the remainder is expelled lower down before again operating. When the mass is very large, it may be necessary to dilate the vagina by means of a caoutchouc bag filled with water or sponge in order to reach the tumor more readily.

When the polypus has been removed, the patient should be kept quiet for a few days, and in most cases it is advisable to give an opiate after the operation. Should hemorrhage occur after the operation, it will be easily controllable by carefully plugging the vagina.

The next cases we have to consider are those in which the fibrous growth is attached to the interior of the uterus by a pedicle, the growth itself, however, remaining still within the uterus. The os uteri may be found small or tolerably widely open. To Sir J. Y. Simpson is due the merit not only of first pointing out how the diagnosis is to be made where the os is found closed, viz., by artificial dilatation of the os uteri, but also of first practising the operation of removal of polypi from the interior of the uterus under these circumstances.† The thickness of the pedicle of the polypus may vary; the size of the growth itself also may vary; but as a rule

* Trans. of Path. Soc., vol. xvi, p. 211.
† Obst. Works, vol. i, p. 128.

we do not find that very large polypi attached by a narrow pedicle remain long within the uterine cavity; the more usual circumstance being that the os gradually expands and allows the tumor to fall wholly or in part beyond the os uteri. Where the pedicle is narrow, the operation for the removal of such polypi is not difficult, but it is more difficult than when the polypus is lying in the vagina. The removal of a polypus from within the uterus is quite feasible, and it is, in most cases, a proper operation. We may judge roughly of the thickness of the pedicle by endeavoring to twist the growth on its axis. Torsion has been employed in a very few of these cases, but the pedicle is rarely so small as to allow of its being attempted successfully. Knives of various forms have been contrived to cut across the pedicle; such is the polyptome of Professor Simpson—a hook with a knife in the concavity—or the polyptrite of Dr. Aveling (Fig. 93), which is a modification of Simpson's. The instrument is introduced through the os, the pedicle embraced, and thus cut through. Curved scissors may be also employed, but the manipulations necessary are not very easy to perform if the os be narrow or unyielding. The wire or the wire rope is best adapted for cutting across the pedicle, the only difficulty being the placing of the rope on the neck of the tumor. In order to enable us to perform the necessary manipulations, the os frequently requires to be artificially dilated.

Another class of cases are those in which there is a fibrous growth developed in the substance of the cervix uteri, or one lip of the os uteri. These cases are not very common, but the tumor here situate may attain a great size. The treatment of such cases is identical with that applicable in cases of hypertrophy of the cervix uteri (see p. 536).

We next come to the series of cases, respecting the proper treatment of which there is some difference of opinion—viz., those fibrous tumors attached to the uterus by a very broad base, there being a complete absence of anything that can be termed a pedicle. The most manageable of such cases are those in which, although the basis of attachment is broad, yet the tumor itself is of a polypoidal shape. Such a tumor may project partially through

* Fig. 93 represents Dr. Aveling's polyptrite.

the os uteri. The wire-rope ecraseur, or the wire-ligature, may be used to cut across such a tumor, even when tolerably high up. Various methods of treatment have been practised in cases where there has been no such polypoidal character of the tumor. Amussat incised the os and cervix, and then separated the tumor from the inside of the uterus by a kind of enucleation, or shelling out. This operation, variously modified, has been carried out more recently by others also. Thus Mr. Baker Brown adopted in several cases a procedure* for the removal of such tumors based on the supposition that, when these tumors are partially broken up or disintegrated, as by cutting a piece out of the centre, they have a tendency to perish and separate spontaneously. The principle of removing one portion of a tumor in order to destroy the remainder, is undoubtedly a sound one. Dr. Gooch was the first to allude to this, for he held that when a ligature was applied round the neck of a polypus, the part above as well as the part below the ligature perished. In some cases, however, the attachment and connection of the tumor with the uterus being considerable, little or no effect would be produced on the remainder by the removal of a part of the tumor.

Many of these intra-uterine operations have been done more or less successfully. Dr. Hall Davis operated, in one case where the attachment was very considerable, by a combined process of tearing, the use of the ligature, and cutting.† My friend Dr. Sarell, of Constantinople, also overcame successfully the difficulties encountered in removing, by successive operations, a large fibrous growth coming under the foregoing category,‡ Dr. Tanner has contributed a valuable paper on the treatment of intra-uterine polypi, and has related cases in which operations were performed.§ The tumors were more or less polypoidal in character.

All operations on fibrous tumors of the non-polypoidal form and shape are somewhat hazardous, pyæmia, inflammation of the uterus, &c., being always liable to occur. On this question it is impossible to lay down a law; it cannot be said that it is impossible a case could arise in which the dangers of the operation would not be counterbalanced by the advantages derivable from its performance. These dangers are often very considerable; the risk of

* Obst. Trans., vols. i and iii.
† Obst. Trans., vol. ii.
‡ Gaz. Méd. d'Orient, 1860, vol. iv, p. 2.
§ Lond. Med. Rev., July, 1861.

perforating the uterus, the inflammation of the uterus which may be set up, the pyæmic condition liable to arise from the cutting, the tearing, and prolonged manipulations which may be required to carry the operation to a termination—all these evils are not to be lightly encountered; but still cases may arise in which these dangers may appear to be lessened by the peculiar circumstances of the case, and in which, consequently, surgical interference with intra-uterine fibroid tumors, non-pedunculate and of considerable size, may be not improperly decided on.

My own opinion is, that if manipulations are to be performed within the uterus, any extensive cutting of the os or cervix uteri should be avoided. Dilatation is far preferable, the risk of cutting quite through into the peritoneal cavity being avoided. In dealing with the tumor after such dilatation, the use of sharply cutting instruments should, I think, be avoided; the scissors appears the best instrument to cut into the tumor, after which gentle tearing will succeed in many cases in removing great part of the tumor.

The deep incision of the os and cervix alone is practised by some operators with the view of lessening or arresting the severe and exhausting hemorrhages sometimes present. The procedure appears to have been first employed simultaneously by M. Nélaton, Mr. Brown, and Dr. McClintock. The *rationale* of the efficacy of the operation, which really does appear to be of service in some cases, has been variously given. My explanation is, that the hemorrhage is arrested because no further accumulation of blood in the uterus occurs. When the os is very small, blood may collect, form a clot which distends the uterus, and by and by induces contraction, and then expulsion. Just as is the case in abortion in the early months, the uterus is thus alternately full of blood and empty. The dilatation of the uterus becoming greater, the blood or clot is got rid of, but again accumulates. When the os is incised, the blood oozes away readily, there is no accumulation, no stretching of the uterine wall, and hemorrhage is lessened. The operation does not succeed in arresting the bleeding in all cases; this is not to be expected. An aperture sufficient to admit the forefinger will be found in my judgment sufficient; but the incision or dilatation must affect the whole of the cervical canal, including the internal os uteri.

The enucleation of interstitial or parietal fibroid tumors is not generally practicable from the internal passages, unless the tumor be situated very low down, or in the substance of the cervix. Still less is their enucleation practicable from the abdominal sur-

face. These interstitial tumors occasion less serious disturbance than polypi or sub-mucous fibroids, but they may be so situated as to occasion grave inconveniences (see "Dysmenorrhœa," p. 463), when of trifling dimension. And again, when the uterus is so enlarged by their presence that the organ becomes strangulated, as it were, in the pelvis, and the functions of the pelvic organs are interfered with, life itself may become imperilled. Under such circumstances relief has sometimes been obtained by pushing up the whole organ above the pelvic brim. This operation is of course preferable to another, of which mention will be made presently—the extirpation of the entire uterus by gastrotomy.

The sub-peritoneal fibrous growths, pendulous or not in the abdominal cavity, are very rarely proper objects for surgical interference. Occasionally they produce great inconvenience, as when, for instance, a large fibrous pendulous tumor falls down by the side of the os behind the uterus in the pelvis, and in such a manner as to impede delivery in the event of pregnancy. When this occurs, the proper treatment is to push the tumor above the brim of the pelvis, by careful manipulation in the vaginal canal. I successfully performed this operation in the case of a poor woman, a patient of the St. Mary's Hospital Maternity. Puncture of such tumors from the vagina has been practised under such circumstances, with fatal results. Again, a mass of fibroid tumors growing from the outside of the uterus may cause retroversion of this organ, and remarkable distension of the bladder with urine (as in a case related at p. 276); in this case, the tumors, together with the uterus, were pushed up out of the pelvis, and the patient thus relieved.

Removal of Fibroid Tumors by Gastrotomy.—This operation has been done, sometimes with the previous knowledge that the tumor was of fibroid character; at other times when the diagnosis was at fault, the tumor being supposed to be ovarian and turning out to be fibro-cystic. Very few of the cases so operated on have done well. The hemorrhage appears to have been very difficult to check in many instances, in some others the operation could not be completed, in a few the patient has survived. Dr. Routh* has collected particulars of 15 cases where gastrotomy was performed with the intention of removing the tumor, but could not be completed. The same author has collected particulars of 33 cases, in which, after cutting into the abdomen, the whole uterus,

* On Fibrous Tumors of the Womb, 1864, p. 121.

tumor, or part of either were removed. Of these 33 operations, 23 patients died, 10 recovered. There were 15 cases in which the tumor was for the most part external to the uterus, but not completely so; in 3 enucleation was performed. Here 5 only out of the 15 recovered. The 33 operations include also 9 extirpations when the tumor was parietal, in some cases fibro-cystic: 8 of the patients died. Lastly are included 9 cases where the whole of the uterus and ovaries, together with the tumor, were removed; 4 out of the 9 recovered.

Dr. H. R. Storer has collected statistics of the operation of removal of the whole uterus with the tumor, relating to 29 cases, including 2 of his own. The second of Dr. Storer's very interesting papers* on the subject gives the following results: Of the 29 cases, 22 died. The first operation included in the series was Dr. Clay's, in the year 1843, the last by Dr. Storer in 1866. The deaths were due in 6 cases to hemorrhage, in 8 to shock, in 7 to peritonitis or inflammation; 1 (on thirteenth day after operation) was the result of accident. The operators were thirteen in number.

The only operation yet performed successfully in this country was that by Dr. Clay of Manchester (included in Dr. Storer's series). The case was that of a single lady: the tumor had been growing for some years, and for the last three or four years it had been growing in such a way as to fill up the pelvic cavity. Finally, the patient had become much emaciated, the tumor filled the pelvis so entirely that the finger could not be passed behind it, and there was not even room for the introduction of a bougie in front; and it being evident that life must be brought to an end by the impediment offered to defecation and micturition, it was determined to remove the tumor. The entire mass, including the uterus and one of the ovaries, was removed, the uterine cervix being cut across just above the os. Two months subsequently the patient was alive and well.

The results of the operation of gastrotomy as applied to the removal of fibroid tumors of the uterus, may be gathered from the foregoing statistics. It appears that the results were most serious when the tumor was found extensively attached to the uterus, its removal necessitating section of large vessels and much hemorrhage. In some of the cases the hemorrhage was immediately

* Amer. Jour. of Med. Sc., Jan., 1866, and Trans. of Amer. Med. As., vol. xvii, 1866.

fatal, in others it broke out anew afterwards. To arrest the hemorrhage in such cases is evidently most difficult. The removal of the entire uterus with the ovaries appears to be a less fatal operation than the removal of the tumor alone. Here the chief difficulty is also the arrest of the hemorrhage. It is probable that the mortality from this cause may hereafter be diminished; the actual cautery, which has been extensively employed in dealing with the pedicle by Mr. Baker Brown, may prove available in some instances for this purpose. Every case has difficulties of its own, and the removal of the entire uterus can never be other than a most formidable operation. The operation is most likely to be successful in those cases where it is least necessary, viz., when the tumor has by its size drawn the uterus with it above the brim of the pelvis. In a case where the tumor fills the pelvis, and threatens life by stoppage of the functions of the rectum and bladder, and where such a tumor cannot be pushed up out of the pelvis, the operation may be indicated. It would appear from the records of the cases, that the operation has been performed in several cases when the symptoms hardly indicated so much danger to life as that here supposed. The mere size of the tumor is no guide as to the necessity for extirpation. In cases of fibro-cystic tumor in which the process of softening and breaking up of the tumor is giving rise to dangerous symptoms, extirpation may also be indicated—extirpation of the whole uterus, that is to say. It is plain, from the facts recorded, that the partial removal of a fibro-cystic tumor connected with the exterior of the uterus is almost certainly fatal, and experience has shown that it would be safer to proceed to remove the whole uterus than thus to leave a part.

Very large fibroid growths sometimes produce comparatively little inconvenience. I have a patient under my care whose abdomen is filled by a tumor of ten years' growth, extending up under the false ribs, but she is able to walk about with ease. On the other hand, the increase in weakness, the dyspnœa, and general discomfort may be such as to render it evident that the vital organs are seriously embarrassed in their action, and if the patient be at the same time debilitated by profuse hemorrhages, the risk of an operation would by comparison be diminished.

Respecting the operation itself, the precautions and general management are such as in the operation of ovariotomy; the dangers are the same as those of ovariotomy *plus* the greater risk of hemorrhage. The loss of the entire uterus is scarcely a loss, seeing that the organ is useless under such circumstances.

Dr. Storer has recently published* an account of a new instrument, the "clamp shield" (Fig. 94), which is intended to assist in

FIG. 94.
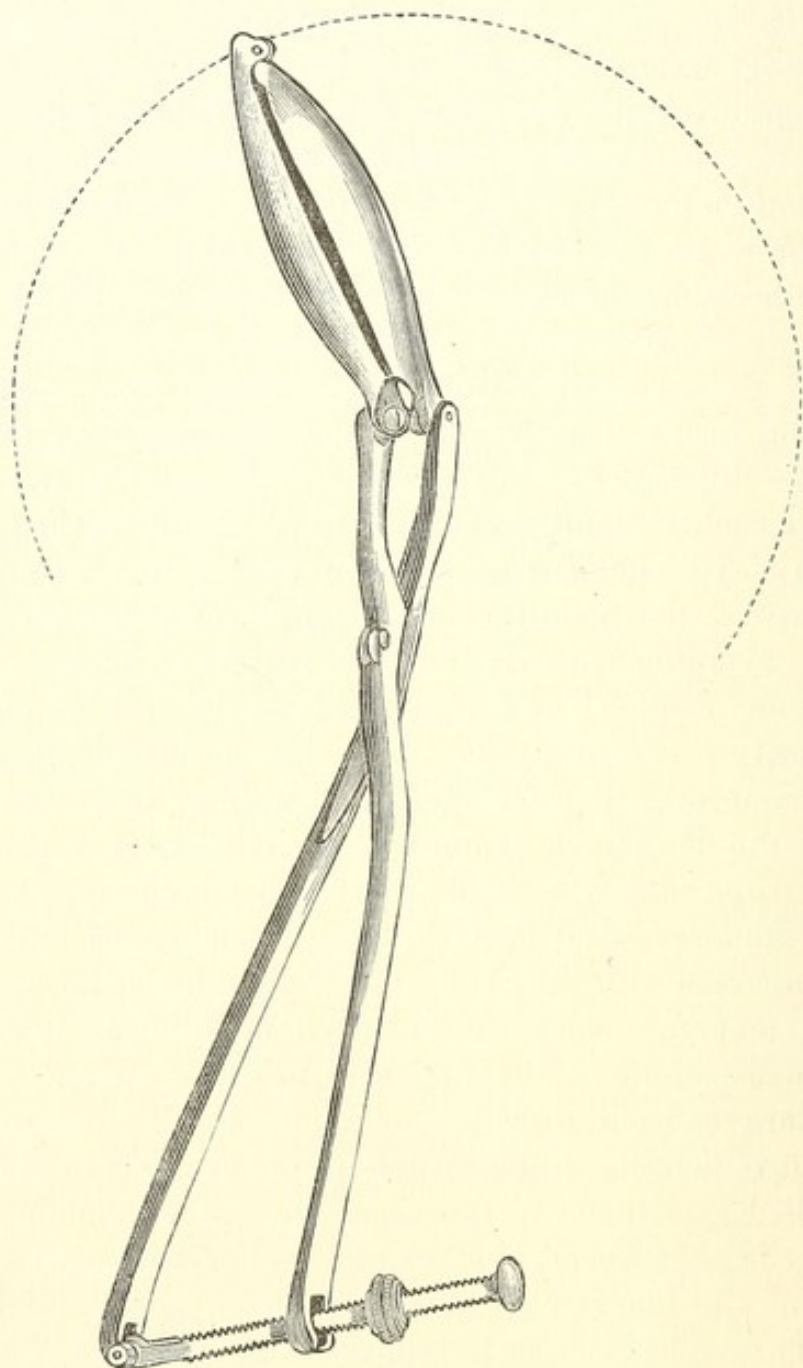
severe operations on the pelvic organs, such as removal of the entire uterus, by lessening the liability to hemorrhage, and by rendering the action of the ecraseur in sundering the tissues more certain and definite. The blades of the clamp are 4 inches long,

* See the second of the two papers just quoted, copies of which were kindly forwarded to me by Dr. Storer.

the edges are serrated, and the blades are closed by a pair of forceps very strong, and fixed to the blades by a ball-and-socket joint. The arms of the forceps are long, and great compression by this means is possible. The pedicle to be divided can thus be securely held and compressed in a position in which it would be difficult to accomplish the end by any other instrument. It appears probable that Dr. Storer's clamp shield will prove very useful.

General and Palliative Treatment in Cases of Fibrous Tumors of the Uterus.—We know of no means whereby the formation of these tumors can be prevented, and when they are of large size we know of no means—no reliable means, certainly—whereby they can be made to disappear, short of a surgical operation. But much can be done occasionally to diminish the rapidity of the growth of the tumor. The means on which most reliance can be placed are such as tend to diminish the supply of blood to the generative organs. Chronic congestion of the uterus is a condition favorable to the development and growth of fibrous tumors, and by effectually treating this condition, good may thus be done. The use of baths and cold vaginal injections are therapeutic measures of exceeding importance in this respect. Rest in the horizontal posture during the menstrual period, due attention to the state of the bowels—all these are capable of effecting much, and it is probable that if we could only persuade our patients to systematically attend to the directions given, the effects produced might be considerable. The course of the disease is, however, chronic, and any one system of treatment is rarely carried out long enough to give its efficacy a sufficient trial. In many cases, even where we have succeeded in giving the patient a great amount of relief, it is difficult to satisfy ourselves that we have effected any considerable or even appreciable diminution in the size of the tumor. It is, however, encouraging to know that, by persevering attention, the progress of the growth of the tumor may be often checked.

The remedies which have obtained the greatest reputation as promoting the disappearance or preventing the growth of fibrous tumors of the uterus are, mercury, iodine, and bromine. The bichloride is usually the preparation of mercury employed; and it is given in small doses, extending over a considerable time. The remedy is undoubtedly useful in many cases. With reference to iodine, bromine, and the various preparations containing these ingredients, there is perhaps more to be said. Thus, the waters of

Kreuznach have been largely employed in treating the affections now under consideration ; they have been employed both internally and externally. The results obtained in many cases are decidedly encouraging, although the good effects have often been considerably overrated. The good effected in very many cases appears to be rather the removal of the morbid congestion of the uterus, and the improvement of the health generally, than any great diminution in the size of the fibrous tumor. And, indeed, it is probable, as has been already remarked, that if we can so far improve the patient, we do all that lies in our power—short, at least, of actual surgical interference. It is therefore no real disparagement of the Kreuznach water treatment, or other therapeutic measures of the same kind, to say that they may be expected to fail in actually removing fibrous tumors of the uterus. By administering the waters internally, by employing daily hip-baths and injections of the same, we obtain all the good effects. The conjoined use of bromine and iodine in the following manner may be recommended : The patient is to take, twice or thrice daily, bromide of potassium, beginning with ten grains for a dose, while over the lower part of the abdomen an ointment containing iodide of potassium is rubbed in once or twice a day. At the same time, the other measures, baths, &c., must not be omitted. In one case, where a very large fibroid growth was present, I kept the patient continuously in a state of slight mercurialism, at the same time that she was taking bromide of potassium, and rubbing in the iodide of potassium for nearly a year with very slight intermission. The measurements of the abdomen, carefully taken, had in a few months undergone marked diminution. The case was accurately observed, and the reduction in size was certain. Following Dr. Rigby's recommendation, Dr. McClintock has given an extended trial to chloride of calcium (thirty to forty drops of the "liquor calcii chloridi" of the Dublin Pharmacopœia three times a day in a bitter infusion), and in one instance its prolonged use was followed by a complete cure.*

The hemorrhages dependent on the presence of fibrous tumors constitute a very important class of symptoms. The most severe forms of hemorrhage attend the presence of polypus or polypoid growths. The effect of the operation of incising the os uteri has been already alluded to. With reference to the palliative treatment of hemorrhage due to this cause, tincture of cannabis indica

* Op. cit., p. 141.

is spoken highly of by Dr. McClintock as a remedy; in a case related by Dr. Tanner, mercury was the only remedy which had an effect in restraining the hemorrhage, and the patient was more than once saved from death by its use.* The preparation given was the bichloride ($\frac{1}{16}$ of a grain every six hours). Further observations on the subject of the treatment of hemorrhage, and which are applicable to these cases of fibroid tumor or polypus, will be found at pp. 440 *et seq.*

Various other symptoms produced by the presence of fibrous growths in the uterus require attention. Pains very much resembling those of labor are frequently observed, and require mitigation by means of opiates. Such pains are often of good augury in the case of polypus, inasmuch as they have occasionally the effect of expelling the polypus from the uterus into the vagina, whereby the removal is facilitated. Micturition and defecation are frequently very much disturbed by the presence of fibroid growths in the uterus, and it is often necessary to devise means for enabling the patient to obtain proper and regular action of the bowels. The bladder is less constantly affected by the presence of the enlarged uterus in such a degree as to render aid in the evacuation of its contents necessary.

CHAPTER XV.

CANCER OF THE UTERUS, VAGINA, ETC.

Cancer a frequent Disease of the Generative Organs in Women—Etiology considered—its Hereditary Character—Mr. Moore's Opinions on Varieties of Cancer of the Uterus—Medullary—Cauliflower Excrescence—Part of Uterus usually affected—Extension to other parts—Symptoms—Duration and Fatality of the Disease.

TREATMENT.—Excision of the Cervix in Cauliflower Excrescence—Mode of Operating—Treatment of other Forms of Cancer of the Cervix—Excision—Injection of Acetic Acid—Bromine—Palliative Measures: To check Hemorrhage and Discharges; to relieve Pain; to support the Patient—The Prognosis—Treatment of Cancer of the Vagina or Bladder.

CANCER of the generative organs is undoubtedly the most formidable affection to which women are liable. Cancer, which experience has led us to regard justly with fear and apprehension,

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* Obst. Trans., vol. iii, p. 13.

appears to attack women more than men, but in women the generative organs—the breast or the uterus—are a very favorite seat. In about 23 per cent. of all cases of cancer, the location is the uterus or the breast (uterus 18.5 per cent., breast 4.3 per cent., Virchow; uterus 15 per cent., breast 8.5 per cent., Marc d'Espine).

The most interesting question at present before the profession concerns the *etiology* of cancer. It is to be remarked that it attacks most commonly that part of the generative apparatus which is the seat of most frequent nutritive change, viz., the uterus, agreeing with which is the fact that excessive fecundity apparently predisposes to its occurrence.*

Mr. C. H. Moore,† in his philosophical essay on "The Antecedent Conditions of Cancer," adduces very important facts and considerations tending to show, in his opinion, that cancer has no dependence on any malady existing anteriorly to the appearance of the first tumor, but that it originates in persons otherwise healthy and strong. The existence of an antecedent general malady is, he considers, pure conjecture. Further, the evidence, in Mr. Moore's opinion, shows that "the very large majority of cancers spring up without traceable hereditary influence, and the very large majority of such instances of the disease which are thus independent of the ancestry of the person affected, are also not transmitted to any of the offspring. For 3 patients affected with cancer, 97 parents (who yet have a cancerous relative) and 97 children go free." The disease is primarily a local one. Mr. Moore does not deny altogether that the disease is hereditary, but he believes that it is only rarely so. That there is a previous diathetic condition, or a disposition in the economy which may determine the first formation of the tumor, Mr. Moore also admits, in accounting for those cases where cancer has appeared to originate from a blow. He quotes Broca, who says, in reference to such cases, that "here we must admit the existence of a previous disposition in the economy before the local accident which deter-

* The result of some valuable observations by Mr. Sibley at the Middlesex Hospital was, that the average number of children borne by patients suffering from uterine cancer (5.2) is 30 per cent. in excess of the average fruitfulness of all marriages. (Med. Chir. Trans., vol. xlii, p. 122.) It may also be mentioned that Dr. Tanner found that 79 women affected with cancer uteri had had, on an average, 2½ children more than usual. On Cancer of the Female Sexual Organs, 8vo., 1863.

† Brit. Med. Journ., Aug. 20, 1865, and a letter in Brit. Med. Journ., April 21, 1866.

mined the formation of the tumor; the diathesis hovered as it were over the organism,'' and expresses his concurrence in these views.

Mr. Moore argues, further, that the disease can always be traced to a period when but one tumor existed; that the spread of the disease is a mechanical one, its apparent reappearance in the same place after removal being probably due to an imperfect operation; that its appearance in internal organs after complete removal of the primary tumor does not prove that it originated of itself in such internal organs *after* the operation; that while in a few instances the hereditary character of the disease is well marked, in the great proportion of cases it is a personal disease, and not capable of transmission.

The arguments used by Mr. Moore are worthy of attentive consideration. It appears evident that the hereditary character of the disease is not so commonly substantiated as has been supposed, while in a few instances (3 per cent. of the cases) this hereditariness was extremely well marked. When hereditary, the disease

Fig. 95.*
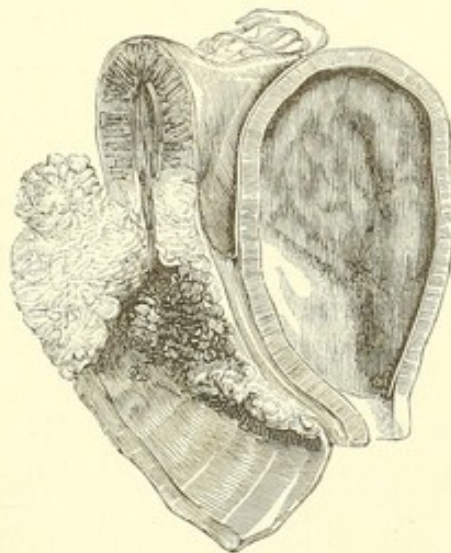
appears to gather intensity as it descends, for it appears earlier in the daughter than it did in the mother, earlier still in the grandchild. Mr. Moore's belief that cancer for the most part originates in strong rather than in tainted constitutions may be true in one sense of the word. The individual may be *apparently* strong and healthy, but not strong and healthy *quoad* the liability to this

* Fig. 95 (from Martin's Atlas) represents the uterus and vagina affected with cancer.

disease. It is quite true that at present we are unable to point out what it is that distinguishes an individual about to develop cancer, from another who is to be free from it; but the advance of medical science will, it is to be hoped, clear up this important point. One thing is evident, the great necessity for the early detection of the disease, facts being in favor of the idea that if we could more frequently be made aware of its existence, there might be a fair chance of doing the patient much good in a considerable proportion of cases.*

As regards the etiology of uterine cancer, the antecedent condition of system which has been present in the cases which have fallen under my own notice has been various. In some, the individual was in apparently good health, but in many the state of things was the reverse. Prolonged anxiety, depression of the general health, and an evidently low state of vital power, I have certainly been induced to regard as rather frequent antecedent conditions. Prolonged and excessive lactation is, I believe, a common antecedent of uterine cancer; the great debility and bodily prostration thereby produced has been evidently connected with the occurrence of uterine cancer in several instances under my own observation.

Varieties of Cancer.—The form of cancer usually witnessed in the uterus is the medullary cancer. The "epithelial" comes next in order of frequency. The medullary form of cancer attacks, in common with other forms of cancer, the lower part of the uterus first, in by far the majority of cases. The epithelial form is witnessed in the superficial and exposed portion of the cervix uteri,

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* With respect to the effect of removal of a cancerous tumor on the duration of life, Mr. Birkett's facts are of great interest. The seat of the cancer was the breast. Of 150 patients who had it removed there survived

Under 1 year,	. . . .	8		Above 10 years,	. . .	2
Over 1 "	. . . .	24		" 11 "	. . .	2
" 2 "	. . . .	38		" 12 "	. . .	1
" 3 "	. . . .	17		" 13 "	. . .	1
" 4 "	. . . .	21		" 14 "	. . .	2
" 5 "	. . . .	7		" 15 "	. . .	1
" 6 "	. . . .	5		About 23 "	. . .	1
" 7 "	. . . .	10		" 29 "	. . .	1
" 8 "	. . . .	4		" 32 "	. . .	1
" 9 "	. . . .	4				

Whereas of 100 patients not operated on, there died within the first year, 14; survived 10 years, 3; of these, 2 about 26 years. The average duration of life being about 3½ years.—*Brit. Med. Journ.*, Sept. 29, 1866.

and it has been known, ever since the name was given to it by Dr. John Clarke, as the "cauliflower excrescence of the os uteri." It does not appear that, so far as the anatomical part of the question is concerned, the two diseases differ essentially; we find in both, on microscopic examination, cells and formations, which equally indicate the presence of cancer. The difference in the physical characters, evident to the touch and the unassisted eye, in the two varieties of the disease, appears to depend on the different anatomical arrangement of the tissues affected in the two cases. So that a case of cauliflower excrescence is one in which the cancer attacks simply the surface of the cervix uteri; but a case of cancer of the medullary form is one in which the disease attacks the tissues of the cervix more deeply, extending simultaneously or subsequently to the surface (see Fig. 95). The two diseases frequently exist together; it being a matter of common observation, that in patients with the cauliflower excrescence, although the disease may appear limited to the os for a time, the medullary form of the disease generally afterwards attacks the uterus, and thus causes death. In the cauliflower excrescence (see Fig. 96), the villi covering the cervix become hypertrophied,

FIG. 96.
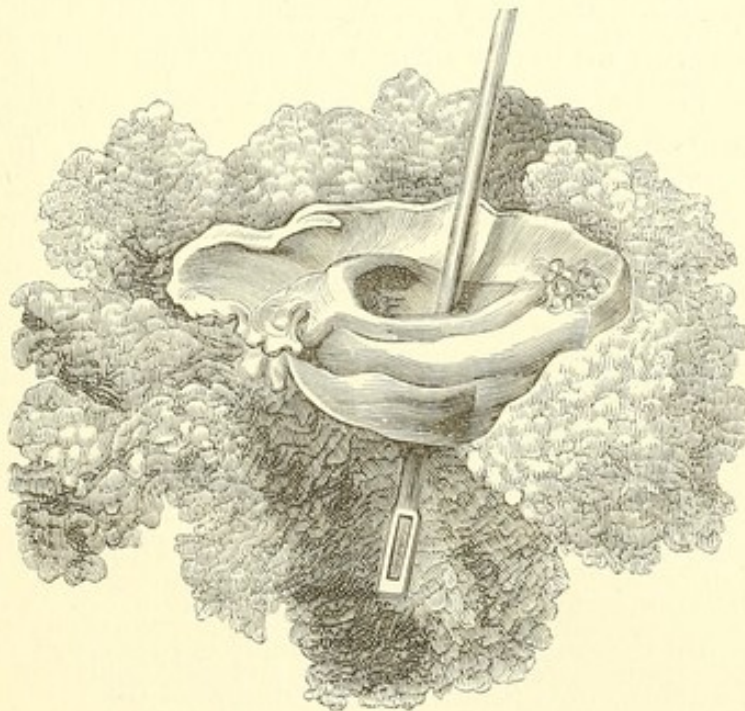
the vessels with which they are supplied exceedingly enlarged, and forming loops; each villus is found to contain cells of every form; nuclear, formative, caudate, mother-cells, spindle-shaped or nu-

cleated fibres, and binucleated cells, also cells in a state of fatty degeneration. A thick layer of epithelium covers the whole. The cauliflower excrescence thus owes its shape, texture, &c., to the original configuration and relations of the villi covering the cervix uteri. The microscopic appearances in the other class of cases it is unnecessary to allude to.

When cancer attacks the surface *alone*, it appears that it may be for a very considerable time restricted to that part, though this is rare. The most common event is that the disease attacks simultaneously the superficial and the deep parts of the cervix uteri, with the result that there is cauliflower excrescence of the os and infiltration with medullary cancer of the cervix itself. In some rather rare instances, however, while the cervix remains apparently sound and healthy, an insidious invasion of the upper part of the uterus, by carcinomatous deposit, occurs. Dr. West met with this affection in 2 out of 120 cases of uterine cancer. Sir J. Y. Simpson considers that about 2 cases out of 30 of cancer of the uterus are of this kind. The deposit may be observed in the outer layer of the middle coat of the uterus, or in the sub-peritoneal or peritoneal coat; or attacking the whole thickness of the uterine walls; or in the mucous or sub-mucous coat of the body or fundus uteri. In both of Dr. West's cases " the enlargement of the uterus was very considerable; in one it measured six inches in length, and in the other was nearly as large as the adult head." From the uterus the disease spreads to the adjoining tissues at the upper part of the vagina; the glands in the pelvis become affected. The bladder is not seldom involved (see Fig. 97), one result being vesico-vaginal fistula. Not long since I saw a lady in whom the uterus had apparently become blocked up by extension of the disease to the fundus of the bladder, death resulting apparently from rupture of the dilated tubes into the abdomen. The disease may extend into the rectum; all these organs—the vagina, bladder, and rectum—may be found in communication with each other in consequence of the ulceration of the cancerous infiltration. Indeed, the condition to which the unfortunate patient may be reduced by this dread disease is often as deplorable as it is possible to conceive. Death itself is preferred to the continuance of such unmitigated and unrelievable distress.

A particular account of the various physical conditions revealed by the touch or sight in cases of uterine cancer will be found in the part devoted to " Diagnosis."

The *general symptoms* present in cases of uterine cancer vary

according to the stage of the disease. Ordinarily there is pain, seated in the uterus or near it, and more or less constant (see "Diagnosis"), but by no means invariably. It is yet a question whether such pain actually precedes the development of the tumor;

Fig. 97.*
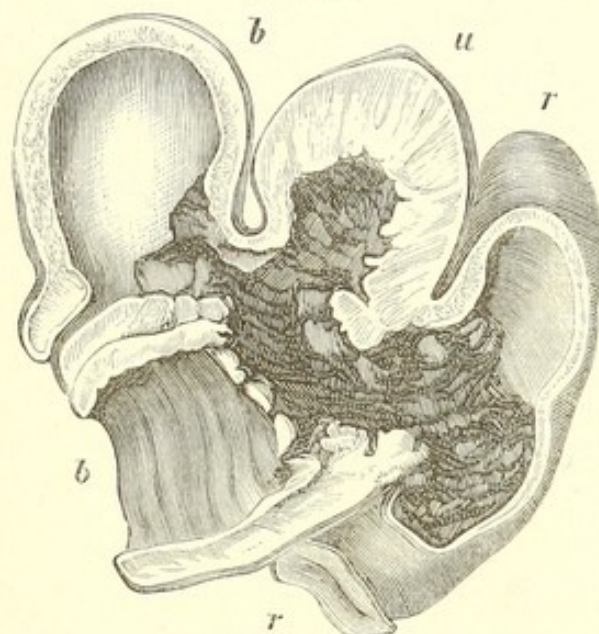
probably it does in the majority of cases. The disease progressing, the patient becomes evidently ill; she has a peculiar worn expression in many cases, but not always; the tint of the skin is often sallow,† but chiefly when there have been frequent losses of blood. Later on the patient suffers from indigestion often exceedingly intractable in form: vomiting or nausea is not rarely witnessed. Hemorrhage is common; its value as a sign of cancer will be discussed in the part devoted to "Diagnosis." Sanious, watery, puriform, or offensive discharges, almost invariably present at some stage or other of the disease, are signs also of great importance (see "Diagnosis").

Duration of Cancer of the Uterus.—Lebert gives an average of sixteen months; Dr. West found the average duration to be fifteen months. Hence in a given case, if we are informed that the patient has been subject to irregular (*i.e.* non-periodical) hemorrhages for upwards of two years, this fact would be against the probability of the hemorrhage being due to cancer uteri. It is right here to mention that Sir J. Y. Simpson's experience appears

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* Fig. 97 (from Dr. Arthur Farre) shows the bladder, uterus, and rectum simultaneously affected with cancer.

† See "Examination of Os Uteri."

to have led him to fix a longer period as the ordinary duration of cancer uteri. "Patients usually die in from two to two years and a half after the detection of the disease," says this author.* According to the same authority, where the disease occurs in aged persons, and has taken on a slow and senile character, its course may be very protracted.

The fatality of cancer of the uterus is not the same in all cases. When the body of the uterus or the tissues of the cervix are affected, and have begun to ulcerate, the disease usually progresses rapidly. How long the stage previous to this may last, we have no direct evidence. When the surface of the os only is affected (cancroid or cauliflower excrescence), the disease is by no means so quickly fatal. One of the most valuable facts in reference to this question 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. We know as yet nothing of the effect of removal of the cancerous tumor when affecting the substance of the cervix ; it is evident that the life of the patients has been prolonged by removal of cancroids limited to the os uteri, and it is probable that this beneficial influence is due chiefly to the actual removal of the tumor the seat of the disease, and to the contamination of the system at large being thus, for the time at least, prevented.

TREATMENT.

In the way of prevention there is not much to be said of a certain and decisive character. Looking at the whole facts of the case, it would appear that in a given patient suspected to be liable to cancer a preventive treatment would be most likely to be successful, which had for its object the placing the patient in the very best condition of health, mentally and bodily, in raising the vital powers and the vital activity to the highest pitch. It is very possible that some individuals, who would otherwise fall victims to the disease, might thus be saved, if we were only able to see far enough forward. A patient supposed to be liable to uterine cancer should not have a large family.

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* Med. Times and Gaz., Jan. 15, 1859.
† Med. Times and Gaz., 1859.

Respecting the treatment of cancroid of the uterus (cauliflower excrescence), most authorities are agreed as to the propriety of removing the diseased structure when the disease is limited to the os uteri, and the uterine tissue above is not affected. Those cases are most favorable for operation where the vaginal portion—at its junction with the vagina—is not thicker than usual, and where consequently the tumor alone constitutes the disease. The operation may be done also where the cervix is a little enlarged: here the prospect of arresting the disease would be a small one, and the benefit of the operation would be temporary. That the disease is sometimes arrested by amputating the cervix, has already been stated. In other cases, while the patient derives advantage from the operation for a time, the disease attacks the body of the uterus a little later. In many cases cancroid of the os is not recognized until the disease has already spread to the body of the uterus; in some of these cases even temporary alleviation of symptoms follows removal of the decomposing and discharge-secreting mass which is filling up the vagina.

As a palliative measure frequently, as a curative measure occasionally, amputation of the cervix uteri in cases of cancroid of the os uteri is a valuable operation; it may possibly prevent a fatal result altogether, it will almost certainly postpone that fatal result, even when inevitable. The bleeding and the copious exhaustive discharge are at once arrested. The patient would die, or might die, from continuance of these; and, for a time at all events, this source of danger is removed, and comfort and ease are secured to the sufferer.

The ecraseur is the best instrument for the operation. The chain or the wire rope may be used; the latter is best when the pedicle is a short one, or when the uterus is fixed. The scissors are preferable to the knife if the ecraseur cannot be employed. There is an objection to drawing down the uterus more than can be avoided. Sir J. Y. Simpson believes, probably with reason, that the dragging down of the uterus has been the cause of that fatal shock which has followed the operation in one or two instances. Otherwise the operation is perfectly free from danger. (Other particulars concerning amputation of the cervix will be found at p. 537.)

Perchloride of iron suspended in glycerine should be applied on a piece of lint to the cut surface, and the vagina carefully plugged with wetted cotton-wool or other material, if there be any tendency to hemorrhage.

There are other cases of cancer of the uterus where extirpation of the disease is undoubtedly the best treatment, viz., where the vaginal portion or parts thereof are infiltrated with medullary cancer, the cervix itself at the point of reflexion of the vagina appearing sound. Hitherto the operation has been done but little, owing to the fact that the disease is rarely diagnosed at this early stage. I have amputated the cervix in a few cases of this kind, and the operation will doubtless be practised by others under similar circumstances more frequently than heretofore. When the disease has attacked the uterus above the vaginal reflection, actual removal of the diseased tissue is not practicable unless we extirpate the entire uterus. Could this extirpation be practised easily, the operation would be useless, for the disease has always by this time under such circumstances invaded the neighboring tissues. The extirpation itself is practically not an admissible operation.
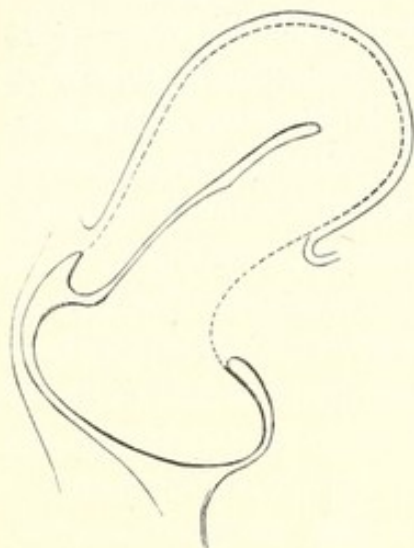
FIG. 98.*

A method of treatment of cancer quite recently introduced may possibly be found serviceable in some cases of uterine cancer—the destruction of the diseased mass by the injection of dilute acetic acid. That acetic acid dissolves the cell walls of cancerous masses under the microscope has been long known.† Dr. Barclay of Banff, acting under the guidance of this fact, has applied acetic acid to the *surface* of cancerous tumors. Dr. Broadbent has suggested and carried into practice a still further application of the same fact, viz., by injecting the tumor with diluted acetic acid. In one case which appeared a favorable one for observing its effects, I injected a carcinomatous enlargement of one lip of the os uteri (see Fig. 99) with the dilute acetic acid, using for that purpose a syringe specially constructed, but the patient was soon after lost sight of. Bromine in solution has been lately used by Dr. Routh and Dr. Wynn Williams, and they speak highly of its effects as a local application in cancer of the uterus.

We now come to the question of the palliative treatment of cases

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* Fig. 98. Carcinomatous tumors of the os uteri. (See also p. 224.)
† Brit. Med. Journ., April 21, 1866.

of uterine cancer, where surgical measures are inapplicable. There
are three conditions to the relief of which our attention is neces-
sarily more particularly directed—the pain, the hemorrhage, and
the discharge ; and, besides relieving these, we have to devise means
for maintaining the functions of the body generally in a state of
activity, and for dealing with the many secondary evils likely to
present themselves in the course of this disease.

FIG. 99.*
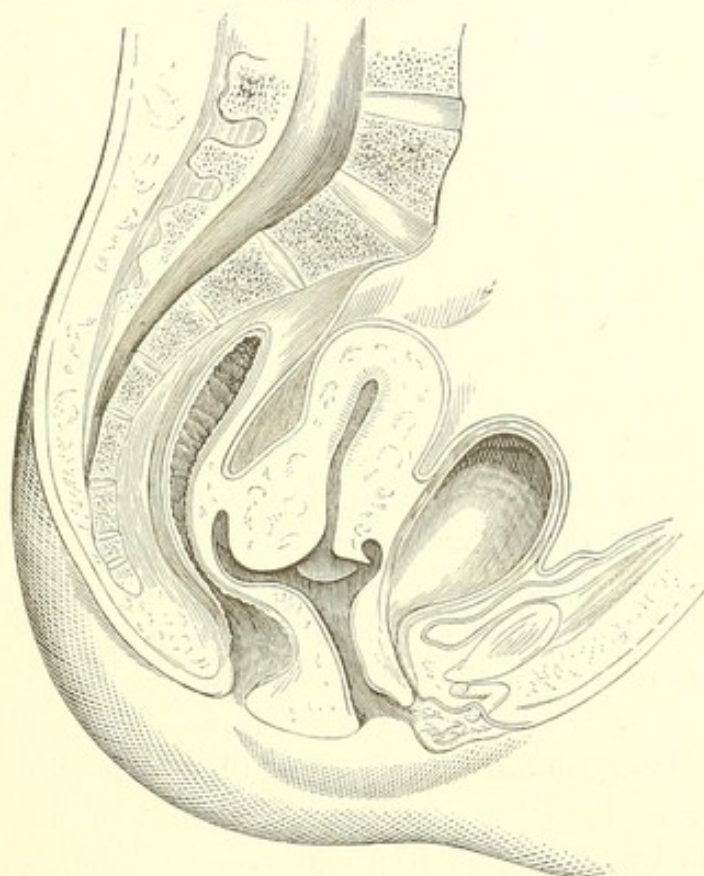
The *hemorrhage* is to be checked, if slight, by injections of
iced water into the vagina and into the rectum ; if more severe,
by application of perchloride of iron or tannin, and by the actual
cautery, or, in very severe cases, by plugging the vagina. Sir J.
Y. Simpson speaks very highly of the employment of a saturated
solution of perchloride of iron in glycerine, the solution being
applied by means of a sponge to the bleeding surface, and with-
drawn subsequently by means of a string attached to the sponge ;
it is most valuable. Tannin in fine powder, or tannic acid, may
be applied through a small tube, or, better still, in form of a
pessary. Tincture of matico is highly spoken of by some authors.

* Fig. 99. Carcinoma of os and cervix uteri.

If fluids are injected to check the hemorrhage, care must be taken that they actually come into contact with the bleeding surface. In cases of cauliflower excrescence not admitting of amputation of the cervix, the soft bleeding masses have been sometimes broken up with the fingers, and tincture of iron injected into the centre, and with the effect of checking hemorrhage and discharge. Dr. Hicks states that he has found a saturated solution of alum holding in suspension tannic acid, applied every day, very effectual in reducing the more tender parts of the tumor in cases of cauliflower excrescence. In some cases which have fallen under my own notice, I was able to effect the same object by applying daily a sponge dipped in strong solution of lunar caustic. To *prevent* hemorrhage, the patient should, whatever be the nature of the disease, be kept quiet, and especially before and during the catamenial period. Brandy or other stimulants must be given to sustain the patient's strength; and very considerable quantities may be necessary to avert instant dissolution when the hemorrhage is very profuse. Opium may be very advantageously given at the same time.

The *discharges* present in cases of uterine cancer are often very offensive, owing to the decomposition of the detritus from the ulcerated surface. The frequent use of the douche, by means of which a stream of water is made to pass gently over the affected surface, is the best means which can be adopted for obviating the unpleasantness of the discharge in ordinary cases. Care is very necessary not to push the extremity of the tube against the ulcerated surface, or bleeding may occur. The washing out of the vagina should be performed frequently. The temperature of the water used should be that which is most grateful to the patient. It is often necessary to use a disinfecting fluid as an injection in order to get rid of the offensive fetor. For this purpose a mixture of one or two teaspoonfuls of the solution of chloride of lime in a pint of water, or one grain of chloride of zinc in an ounce of water, are most ordinarily used. Sir J. Y. Simpson's pessaries containing chloride of zinc, or McDougall's disinfecting powder, I have found very useful. Powdered willow-bark charcoal is recommended by Scanzoni. Creasote may also be mentioned as a powerful deodorizer. To render the discharge less offensive, frequent ablutions with or without the use of disinfectants is very necessary; other indications are thus at the same time fulfilled.

The *pain* present in cancer of the uterus is very severe, often exceedingly so, and it must be relieved. For this purpose opium,

in that form which is found by experience to be most suited to the patient, must be given, the dose being regulated and the form varied according to circumstances. It is not uncommonly found necessary to give opium in very large doses, the patient having become so habituated to its use that a small dose has no effect whatever. Opium is often conveniently given in form of suppository or pessary. Mr. Weeden Cooke informs me that at the Cancer Hospital opium is found most effective when administered in a lavement. Opium, in some form or other, is generally necessary, but other medicines are frequently of great service as accessories. Ether, chloroform, or the two latter combined, cannabis indica, conium, hyoscyamus, &c., are all and each of them of use in certain cases. The application of carbonic acid to the ulcerated surface has been suggested by Sir J. Y. Simpson. The apparatus required is an ordinary quart bottle with an elastic tube fitted to the cork. Eight drachms of carbonate of soda and six of tartaric acid are dissolved in water contained in the bottle, and the gas is thus generated. The vapor of chloroform may be mixed with the carbonic acid.

The *general nutrition* of the patient demands careful attention. The digestive organs are frequently in a very disordered state, the patient having little or no appetite, and the bowels being extremely constipated. The first and most important part of the treatment consists in feeding the patient frequently and with easily digested food. And we can only find by experience what is best. Milk is often a valuable article of diet in such cases; wine or other alcoholic beverages are generally required. For the relief of sickness and thirst, ice placed in the mouth frequently is most beneficial. The bowels require careful attention; small doses of castor oil, frequently given, are the best means of inducing regularity in this respect, but occasionally copious enemata are often necessary to unload the distended rectum. Two or three drachms of Rochelle salt, with a little tincture of senna, form a useful occasional aperient draught. The act of defecation is often exceedingly painful, and patients postpone it as long as possible; the evil may proceed to a very extreme extent if the patient be not watched.

The state of the urinary organs frequently calls for relief. In those distressing cases where towards the end of the disease fistulæ form between the vagina and the bladder, or between the uterus and rectum, or vagina and rectum, but little can be done except to observe great cleanliness. For the relief of the irritability of

bladder often present, Dr. West thinks highly of the use of Vichy water. Uva ursi or pareira, with a little liquor potassæ, are medicines of established utility in such cases. The triticum repens, highly recommended by Sir Henry Thompson in the treatment of cases of irritable bladder in the male sex, will be found useful.

The question as to the propriety of giving, to the patient herself, expression of our opinion as to the prognosis in a case of uterine cancer, is a matter of great delicacy and importance. Knowing as we do that in well-marked cases there is literally no hope of saving life beyond a limited time, it is yet occasionally difficult and even improper to say so to the patient. There are few individuals possessed of sufficient fortitude to be told, at once, that they must necessarily die; and it is very certain that, in many cases, to deprive the patient of all hope is to still further shorten her brief existence. It is wrong to positively assure a woman with cancer of the uterus that she will recover, but it is assuredly not the best thing to summarily dispose of her life by a strong expression to that effect. These remarks apply of course only to cases where cancer is well marked. It is hardly necessary to urge the importance of abstaining from giving, *in any degree*, an unfavorable prognosis in cases where the diagnosis of cancer is not very well established. Experience has shown that the best observers have been deceived in their prognosis, the case not always turning out so unfavorably as they had expected. It is easy to decide too soon; by waiting a little, doubts are gradually dispelled.

The question of the treatment of *cancer of the vagina* and *cancer of the bladder* requires no extended notice. The treatment required in cases of cancer of the vagina is identical with that of cancer of the uterus, the symptoms being essentially the same. Little benefit can be expected from surgical treatment. In *cancer of the bladder*, generally secondary to cancer of the uterus or vagina, the treatment, beyond what is necessary in all cases of cancer, consists in relieving the patient as much as possible from the sufferings attendant on the irritable condition of the bladder usually present, and in providing means for remedying, as far as possible, the inconvenience arising from fistulous openings in the vesico-vaginal septum. Occasionally it has been found necessary to perforate the bladder when the orifice is occluded by cancerous growths.

CHAPTER XVI.

TUBERCLE OF THE UTERUS; DISTENSION OF THE UTERUS BY FLUID (HYDROMETRA AND HÆMATOMETRA) OR BY GAS (PHYSOMETRA).

TUBERCLE OF THE UTERUS.—Pathology and Treatment.

DISTENSION OF THE UTERUS WITH FLUID (Hydrometra and Hæmatometra).— Pathology and Treatment.

DISTENSION OF THE UTERUS WITH GAS (Physometra).

TUBERCLE OF THE UTERUS.

THIS is a rare disease. When tubercle is found in the uterus, it is generally present in other organs. There appears to be a particular and unusual tendency to the formation of tubercle in the uterus after parturition, and during the time the uterus is undergoing that reduction in bulk and change of texture peculiar to this period.

The part of the uterus which is usually the seat of tubercle is the inner surface—when occurring after childbirth, at the seat of the placental insertion—and from the mucous lining it spreads into the thickness of the uterine wall. The final effect may be a considerable increase in the bulk of the uterus. The tubercular matter appears in the form of small grayish or grayish-yellow granulations; the mucous lining is also much thicker and looser in texture than usual. There is a discharge from the uterus of a dirty yellow or brown color. The disease does not appear to be attended with much pain.

Rokitansky relates an important case where acute tuberculosis of the uterus set in in a patient æt. 34, immediately after delivery of an eight months' fœtus,* death occurring at the end of nineteen days. H. Cooper† also details an interesting case in which rupture of the uterus occurred in the third month of pregnancy, due to considerable tuberculosis of the uterus. Mr. Tomlinson‡ relates a case of tuberculosis of the uterus of three years' duration, the patient æt. 55, and the uterus considerably enlarged.

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* Alg. Wien. Zeit., 1860, No. 21.   † Un. Méd., 1859, No. 54.
‡ Obst. Trans., vol. v.

TREATMENT.

Tubercle of the uterus would be treated, in cases where it is detected, on general principles. Careful and good feeding should form an important part of the treatment. Young women recently delivered, and of a phthisical tendency, should be carefully looked after, and great care taken to restore any lost power by suitable diet and regimen. Of the local treatment we can scarcely speak, experience being wanting, but the injection of weak solutions of iodine or bromine into the uterine cavity would probably constitute the best application. It would be requisite to have the os well dilated prior to such a procedure.

DISTENSION OF THE UTERUS WITH FLUID (HYDROMETRA AND HÆMATOMETRA).

Apart from pregnancy, an essential part of which is the presence of a considerable quantity of fluid—the liquor amnii—in the uterus, we have cases in which the organ is found to contain fluids in considerable amount. The old terms *hydrometra* and *hæmatometra* implied presence respectively of watery fluid and blood in the uterine cavity.

Accumulation of fluids in the uterus is associated with closure of the outlet, narrowing and stricture of the cervix, agglutination of the os uteri, flexion of the uterus, presence of a tumor in the cervix or lower part of the uterus. The importance of retroflexion as leading to slight accumulations of fluid in the uterus, is not sufficiently recognized.

The most considerable instance of hæmatometra is that met with sometimes in young women soon after the arrival of puberty, and due to retention of menstrual fluid in the uterus, the hymen being imperforate, or the os uteri itself congenitally occluded. Here the uterus may attain such a size as to reach to the umbilicus; the Fallopian tubes are not seldom also distended, and one occasional result is passage of some of the blood into the peritoneal cavity; a more rare event is rupture of the uterus itself into the peritoneum or into the bladder or rectum. Bernutz and Goupil* have devoted much attention to the study of the accidents arising out of these and other effects of menstrual retention.

* Clinique Méd. sur les Maladies des Femmes, English translation by Dr. Meadows. (New Syd. Soc.)

It is remarkable that the uterus tolerates the presence of a fluid in its interior very differently in different persons. More explainable is the fact that, when the distension is not considerable, it excites more pain and irritation than when the organ is very greatly distended; the presence of a small quantity of blood may in cases of dysmenorrhœa give rise to great pain, the uterus acting vigorously in seeking to expel it. When, however, the distension is very great, it is usually accompanied by such a degree of thinning of the walls of the uterus, that the organ has little power of contraction left.

As an instance of distension of the uterus from menstrual retention, the following interesting case, recorded by Prall, of Hamburg, may here be quoted. The patient, æt. 43, previously regular, ceased to be so, and simultaneously symptoms of pregnancy set in. At the end of three months the uterus was enlarged, the os occluded, and the uterus contained a quantity of bloody fluid. It was imagined that the case was one of pregnancy with retroversion of the uterus; attempts were made to reduce this, but the force used had the effect at once of relieving the patient and showing the nature of the condition present. The pressure employed forced the blood through the occluded os uteri.*

Amputation of the cervix uteri has been followed by hæmatometra. Considerable distension of the uterus with serous fluid is met with chiefly in women advanced in years. An instance of this kind was recorded by Dr. A. T. Thomson, in which the uterus contained eight quarts of a dark-colored brown fluid.†

Purulent or puriform collections sometimes occur when the uterus is retroflexed. Thus, a lady whom I have occasionally seen presents the following conditions: A large hypertrophied retroflexed uterus, in which a collection of puriform fluid occurs every two or three weeks, and then is ejected all at once and with temporary relief.

TREATMENT.

The great object is to evacuate the contents of the uterus. This is not always easily done. When the lips of the os uteri are agglutinated, a careful examination is required to find out the precise situation at which to make a puncture. In such instances the cervical cavity is more or less obliterated, so that the uterine

* Schmidt's Jahrb., vol. cxvi, p. 65.
† Med.-Chir. Trans.

cavity is soon reached. When there is stricture higher up in the cervical cavity, dilatation by means of tents, aided by slight incisions, may be advantageously had recourse to. When the case is one of retroflexion, the restoration of the organ to its normal shape, by pressure on the fundus from below, or by use of the sound, usually suffices to allow the fluid to escape.

After evacuation of the fluid, pressure and administration of ergot should be employed to aid the uterus in contracting.

Further remarks on the management of cases of occlusion of the os or cervix uteri will be found in the chapter on "Dysmenorrhœa."

DISTENSION OF THE UTERUS WITH GAS.

Well-authenticated cases of this affection are not many in number, but there can be no question that gaseous accumulations do occasionally take place in the interior of the uterus. The most common condition under which such accumulation has been noticed, is the presence within the uterus of a dead fœtus, or portions of the membranes which have been abnormally retained in the uterus after labors or miscarriages. The gas formed in the uterus under these circumstances is the result of the decomposition of the retained matters, it is fetid, and the uterus at the same time may contain purulent detritus. Further, it appears necessary that, to produce this gaseous distension of the uterus, the orifice of the organ should, having been recently open, have become closed. It seems on the whole probable that, first, air must have obtained admission into the uterus; that, secondly, the os must have become plugged up or closed; and that decomposition must have then occurred, and thus given rise to the gaseous distension now alluded to. That air does frequently pass into the uterus immediately after the expulsion of the fœtus is a fact. It is evident, further, that irrespective of labor or miscarriage, coagula undergoing decomposition in the uterus may generate gas, which may be retained and accumulate in the uterus, though the number of cases coming under this head are very few compared with those previously described. It has been supposed by some that the lining membrane of the uterus may secrete gas, but there is no proof of this. In many of the cases recorded as cases of gaseous accumulation in the uterus, the only proof of such accumulation has been the passage of flatus from the vagina, which has been erroneously supposed to come from the uterus. In an interesting communication to the Obstet-

rical Society of London, Dr. Harley* related the particulars of a
case where flatus was occasionally expelled from the vagina. He
ascertained by experiment that the gas so expelled had been the
moment before drawn into the vagina, as he believed, by a spas-
modic alternate contraction and relaxation of the recti abdominis
muscles. Dr. Gooch mentions a case in which the patient only
expelled flatus while not pregnant, the expulsion ceasing when she
became impregnated, and he cited this to prove that the flatus must
have come from the uterus. This fact, however, affords no abso-
lute proof of the truth of the explanation for which Dr. Gooch
contends. It was more probably a case, such as that observed by
Dr. Harley, of alternate admission and expulsion of air from the
vagina.

TREATMENT.

The obvious cure for this condition would be the evacuation of
the gas by means of a long gum elastic or other rigid tube, which
would have to be introduced carefully through the cervix uteri.
A tight bandage and cold affusions externally would be useful sub-
sequently.

* Obst. Trans., vol. iv.

CHAPTER XVII.

DISEASES OF THE OVARIES AND BROAD LIGAMENTS.

INFLAMMATION.—Acute Inflammation and Abscess of the Ovary—Chronic Inflammation, Ovarian Folliculitis, and Pelvi-peritonitis—TREATMENT.

CYSTIC AFFECTIONS OF THE OVARY AND BROAD LIGAMENTS.—Hydatid Cysts—Cysts of the Broad Ligaments (Wolffian Cysts).—OVARIAN CYSTS PROPER.—General Characters—Origin—Varieties of Arrangement: Simple, Secondary, Tertiary, Multiple, Composite—Cysto-sarcoma, Alveolar, Adenoid, or Glandular Tumor—Cysto-carcinoma, Dermoid—Shape and Consistence of Cysts—Their Lining and Contents—Dermoid Cysts: Nature and Structure—Compound and Composite Ovarian Tumors: Structure and Contents—Solid Tumors of the Ovary enumerated—Natural History of Ovarian Tumors and Ovarian Dropsy as Data for Prognosis and Treatment—Mode in which Life is destroyed—Complications with Pregnancy—Special Consideration of the Prognosis of Ovarian Dropsy—Examination of Dr. Robert Lee's and Mr. Safford Lee's Cases.

TREATMENT OF OVARIAN TUMORS AND DROPSY.—General Treatment—Ovariotomy; Statistics of Ovariotomy; Objections to the Operation considered—Indications and Contraindications for the Operation—Description of the Operation—Tapping; Indications; Mode of performing the Operation—Tapping followed by Pressure—Tapping followed by Iodine Injections—Tapping from the Vagina.

ACUTE INFLAMMATION AND ABSCESS OF THE OVARY.

THIS is a condition rarely met with in practice. Sudden suppression of the menses, from chilled or wetted feet, has appeared to lead to it, but such an occurrence is extremely rare. In connection with the puerperal state it is more common; we then generally find it associated with a pyæmic condition, with inflammation of the uterus, and marked changes in the large uterine veins. Pelvic abscess, which may follow parturition, or any operative procedure on the generative organs, generally begins in the neighborhood of the ovary, and may involve this organ. Acute inflammation and abscess of a previously healthy ovary is a condition hardly known. But when the ovary is affected with cystic disease the cysts may inflame and suppurate.

CHRONIC INFLAMMATION OF THE OVARY.

Chronic inflammation of the ovary is a very interesting and important condition. Every derangement of the process of ovula-

tion is probably attended with some pathological change, which, however, we have no opportunity usually of actually observing; such morbid condition must be classed under the above heading. The surface of the ovary is the part where this morbid change is mostly seated; thus chronic inflammation of the surface of the ovary may produce derangement of ovulation, or *vice versâ*. Bernutz and Goupil deserve credit for attracting attention to the frequent occurrence of what they term "pelvi-peritonitis," meaning thereby inflammatory action in the peritoneum covering the ovary,* and in the immediate neighborhood; the relation of this pelvi-peritonitis to chronic inflammation of the ovary is apparent enough. Whether it more frequently happens that the inflammatory action pervades the whole ovary, or the surface of it, is not certain, but it is reasonable to expect that it should be most apparent where most change is going on, viz., on the surface. Various considerations thus lead to the conclusion that to ovarian folliculitis and ovarian peritonitis, one or both, must be assigned an important place in gynæcology.†

Chronic inflammation of the ovary, in the sense here understood, does not necessarily leave behind it permanent alterations. The changes occurring during normal ovulation are rapid; the nutrition-changes are quick in their occurrence; and the thickenings and turgescence accompanying these changes, *when irregular* in their character, probably disappear in a proportionately quick time. Hence at the end of sexual life, ovaries which have been the seat of ovaritis for many years may present nothing remarkable.

The pathological changes attending chronic ovaritis are—increased vascularity of the follicles about to be ruptured, undue thickening of the peritoneum covering them, and formation of false membranes on the peritoneum in the immediate neighborhood. To these must be added slight effusions of blood on the surface of the ovary. Indeed it is very probable that the so-called pelvi-peritonitis is frequently nothing more than inflammatory action consequent on slight quantities of blood escaping from the Graafian follicle at the moment of rupture or subsequently. When the nutritive changes of the body generally are not proceeding regularly, ovulation is frequently disturbed, and inflammatory

* See also Dr. Tilt on Uterine and Ovarian Inflammation.

† Negrier applies the term "Vesiculitis" to the morbid changes observed in the follicles or vesicles. In his work (Recueil des Faits pour servir à l'histoire des Ovaires et des Affections Hystériques de la Femme, Angers, 1858) will be found some interesting cases illustrative of this subject.

changes probably accompany or form a part of such disorder. It is not rare to meet with abnormal adhesions in the region of the ovary, the result of such inflammatory mischief. Pleuritis and ovaritis occurring in a tubercular subject thus resemble each other in regard to their results.

Pain in the region of the ovaries is very common. This pain, a more minute analysis of which will be found in the latter part of this work, is indicative in very many cases of ovarian folliculitis and local peritonitis associated and related as above described. Sexual excesses frequently occasion it; the condition known as the " hysterical " is probably often intimately connected with it. Thus, a lady, æt. 20, had been married nearly a year, the ovaries were the seat of great pain, walking was almost impossible, from the pain attendant thereon, the abdomen was swollen, no pregnancy. Sexual excess was the cause, and pregnancy quickly followed attention to the advice tendered. To give an instance of another kind: A single lady has almost constant ovarian pain, now and then occurring in paroxysms accompanied with hysterical symptoms. In both of these cases the existence of ovarian folliculitis must be admitted.

Various terms have been applied to the conditions here under consideration. By some authors such pain would be spoken of as " neuralgia " of the ovary ; by others as " chronic irritation ;" by others again it would be regarded as indicative of inflammation of the uterus. Careful clinical observation has convinced me that these terms do not convey a true idea of the ailment of the patient.

A symptom which I believe almost always attends ovaritis, is swelling in that part of the abdomen just above Poupart's ligament. Here the abdomen is large and tympanitic, the tenderness is often so great that the pressure of the dress cannot be borne. Local peritonitis in the region of the ovary produces precisely the same symptoms. Another symptom is sickness or nausea; a blow on the testicle may occasion sickness, and undue congestion of the ovary may give rise to the same symptoms.

The causes of chronic ovarian folliculitis and peritonitis are frequently functional, as in the instance just mentioned. Unnatural exercise of the generative organs gives rise to it probably more frequently than excesses of a more regular kind. With reference to this somewhat difficult question, it must be remarked that exalted functional activity of the ovary itself is sometimes the cause of the evils here alluded to. This exalted functional

activity may be induced by defective moral training, or early ad-diction to bad habits. The ovaries, like other organs of the body, fall by inordinate use into a state which closely borders on disease.

Diseases of the uterus react on the ovaries, sometimes in a very direct manner, as when there is obstruction of the outlet from the ovary through the uterus. Blood requiring to pass from the Graafian follicle into the uterus will then be effused elsewhere. Chronic inflammation of the uterus also is probably accompanied by some degree of ovaritis.

The effects of chronic ovaritis are general enlargement of the organ, greater size of the Graafian follicles, thickening of their coats. The most marked symptoms are, pain in the ovarian re-gion, pain on standing, pain on defecation and during intercourse. Not infrequently on digital examination the ovary is felt enlarged, exceedingly tender to the touch. It is not common for the ovary to attain any considerable size as the result of inflammation alone. When chronic ovaritis has existed over a long period, the surface of the ovary may be found adherent abnormally to the adjacent structures. In some such cases sterility is a necessary result. The cystic affections of the ovary will be considered further on, though it is probable that some of them originate in chronic ovaritis.

TREATMENT OF INFLAMMATION OF THE OVARY.

In cases of *acute* inflammation of the ovary, entire rest is es-sential. Leeches should be used in cases where the attack de-pends on a sudden chill, followed by warm and moist applications. In cases where gonorrhœal infection is believed to be the source of the mischief, leeches might still be useful at first, specific rem-edies being given later. When a puerperal cause is present, de-pletion is not indicated; the case is one of, or tending towards, pyæmia, and the indication is to support the strength of the pa-tient rather than to remove blood. Rest, warmth by means of hot turpentine stupes, and a stimulating and nourishing diet, would be advantageously had recourse to.

Cases of *chronic ovaritis* must be treated with a view to the special requirements of the patient. In some cases immoderate sexual excitement has to be checked, and a moral treatment en-forced. The tendency to congestion of the ovaries may be dimin-ished also under these circumstances by employment of cold affu-sions over the hips and lower part of the abdomen, by remedies and a regimen calculated to call the other functions of the body

into active exercise. The gymnasium, or equestrian exercise, or some active mental employment, necessitating also a tolerable amount of walking, may be recommended. Exercise is, under these circumstances, almost always attended with some degree of pain, and it is frequently necessary to keep the patient at rest for a time, before commencing exercise to any great extent.

Functional rest is required in all cases more or less. At the menstrual periods the patient should be ordered to remain on the couch or in bed, the apartment kept cool, and stimulating nourishment avoided.

Counter-irritation and sedatives constitute on the whole the best treatment for the ordinary run of cases. The tartar emetic ointment, or a liniment containing croton oil, may be rubbed in night and morning over the ovarian regions, and opiates sufficiently strong to relieve pain ordered. One pill containing half a grain of opium, one of extract of Indian hemp, and one grain of camphor may be given night and morning (see " Treatment of Chronic Inflammation of the Uterus "). Care should be taken that the bowels are relieved each day.

In cases complicated with hysteria, there is great difficulty frequently experienced in knowing how far to treat the physical and how far the psychical element in the case (see p. 401). Active occupation is essential in the management of patients so affected.

CYSTIC AFFECTIONS OF THE OVARIES AND BROAD LIGAMENTS.

These are of great interest and importance. They are frequently most serious in their results, their diagnosis is often a matter of great difficulty, and it is only within a quite recent period that medical science has been able to grapple with them in any degree satisfactorily. For clinical reasons the cyst affections of the ovaries and of the broad ligaments will be considered side by side, but they are of course essentially different both in nature and origin.

We have to consider *seriatim*—

Hydatid cysts.

Cysts of the broad ligament, sometimes termed Wolffian cysts.

Proper ovarian cysts, of which there are several varieties, including the cysts met with in what is termed " ovarian dropsy," "dermoid cysts," &c.

Hydatid Cysts

Are sometimes met with on the outer surface of the ovary, or

attached to the peritoneum in the neighborhood.   They have the ordinary character of hydatid cysts, such as are found in other localities.   They—probably almost constantly—originate in the liver, escaping from an hydatid tumor of the liver containing them, into the peritoneal cavity.

Cysts of the Broad Ligament (Wolffian Cysts).

The formation of large cysts on the surface of the broad ligament, and quite unconnected with the ovary, is well substantiated. These cysts are usually single and quite simple.   They originate in the little tubules or terminal cyst-like bodies (see *f, b, i*, in Fig. 100, from Kobelt) found near the fimbriæ of the Fallopian tubes and close to the ovary.   The structures in which they originate

FIG. 100.*
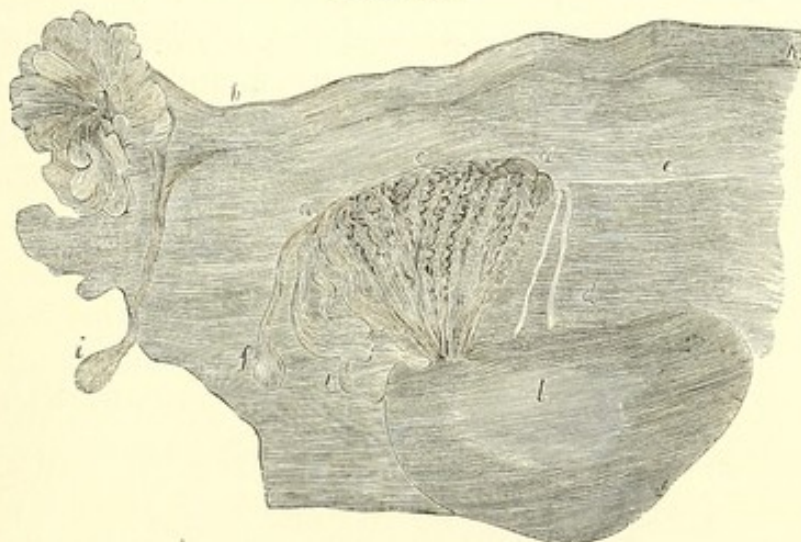
are the remains of the tubules of the Wolffian body.   The cysts of the broad ligaments rarely attain a size exceeding that of an orange, their course is ordinarily very slow, and the inconvenience they occasion is consequently not great.   Now and then, however, they attain a large size.   Thus Mr. Spencer Wells† mentions a case in which the cyst was twice the size of the adult head.   It was removed from a patient æt. 20.   Dr. Wynn Williams recently exhibited at the Obstetrical Society‡ a very large single cyst, partly removed during life from the abdomen, which was referred to me for examination.   It was a single large simple cyst 24 inches in

* Fig. 100 (from Kobelt) represents the parovarium with its terminal cysts.
† On Diseases of the Ovaries, vol. i, p. 239.
‡ See Obstetrical Transactions, vol. iii, for 1866.

circumference, and the conclusion arrived at was, that it had originated in the broad ligament. The walls of the cyst were $\frac{3}{16}$ of an inch thick; it had undergone inflammatory changes within, and consequent thickening, and had become adherent superiorly to the diaphragm. The abdomen had been enlarged in this latter case for several years.

OVARIAN CYSTS (PROPER).

Ovarian cysts occur of all sizes, from one of microscopic minuteness to one of sufficient size to distend the abdomen to the utmost.

One ovary alone may be diseased; sometimes both are affected.

They occur sometimes singly; in most cases, however, when the ovary takes on cystic disease, more than one, generally many, cystic growths are found associated.

They contain fluid, or a semi-fluid or jelly-like material, or together with this a growth more or less firm and solid. They may undergo, like other structures, inflammatory changes, resulting in formation of pus, false membranes, &c.

FIG. 101.*
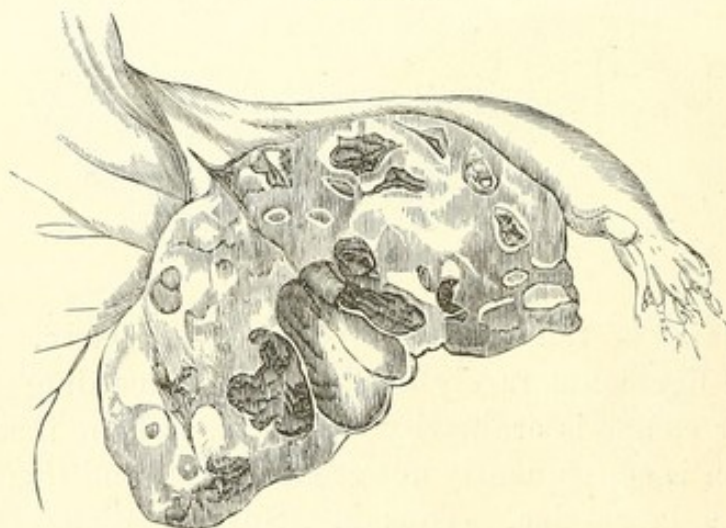
In many cases, ovarian cysts are evidently nothing more than enlarged and hypertrophied and dropsical Graafian follicles, such as that represented in Fig. 101.

Rokitansky and some subsequent observers have even succeeded in finding ova in some of the cysts in question, thus affording a

* Fig. 101. Section of an ovary, showing enlarged Graafian follicles with sero-sanguineous contents. (Half the actual size.)

demonstrative proof of their nature. The follicle does not for
some reason or other burst, or if bursting occurs its lining takes
on certain morbid changes subsequently, the result being contin-
ued growth of the cyst, and filling of its cavity with fluid. Sim-
ple ovarian cysts and multiple cysts originate in this way accord-
ing as one or more follicles take on morbid action. We can imagine
this hypertrophy affecting the Graafian follicles at any period of
their growth, with proportionate differences in the results. The
Graafian theory of the origin of ovarian cystic disease being ad-
mitted, it is easy to see how all sorts and varieties may present
themselves in the relations of cysts. A cyst grows, and in its
growth carries over it, or within it, portions of the ovarian stroma,
in which lie the elements of future Graafian follicles. These un-
dergo the pathological cystic transformation, and hence we get
cysts developed one within the other almost *ad infinitum*.

The variations in the growth of the cysts occasion also great
differences in the aspect and relations of the tumor at different
periods. Thus, a "simple" cyst may preserve its integrity for
many years, the remainder of the ovary not partaking, or partak-
ing reluctantly, so to speak, in the cystic transformation; or the

FIG. 102.
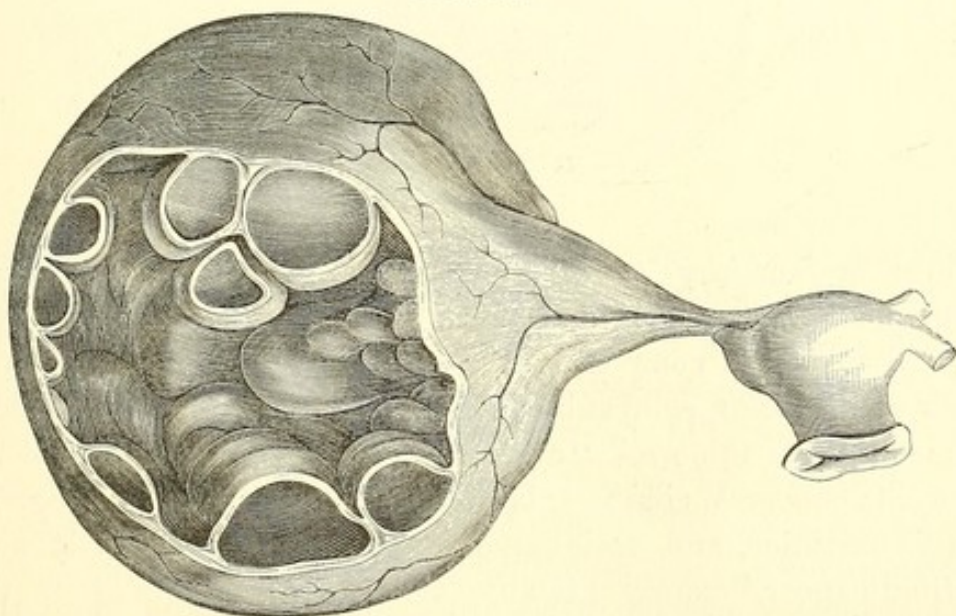
primary cysts may be rapidly encroached upon, and filled up with
secondary growths of cysts. And what may happen in reference
to the first and second growths may take place also between the
secondary and tertiary cysts.

The principal *varieties of arrangement* are as follows:

One large cyst (simple).

One large cyst in the interior of which are found several smaller ones ("secondary"), and within these again others still smaller ("tertiary"); these are also termed "compound" cystic tumors, "proliferous" (see Figs. 102, 103, from drawings by Dr. A. Farre).

Fig. 103.
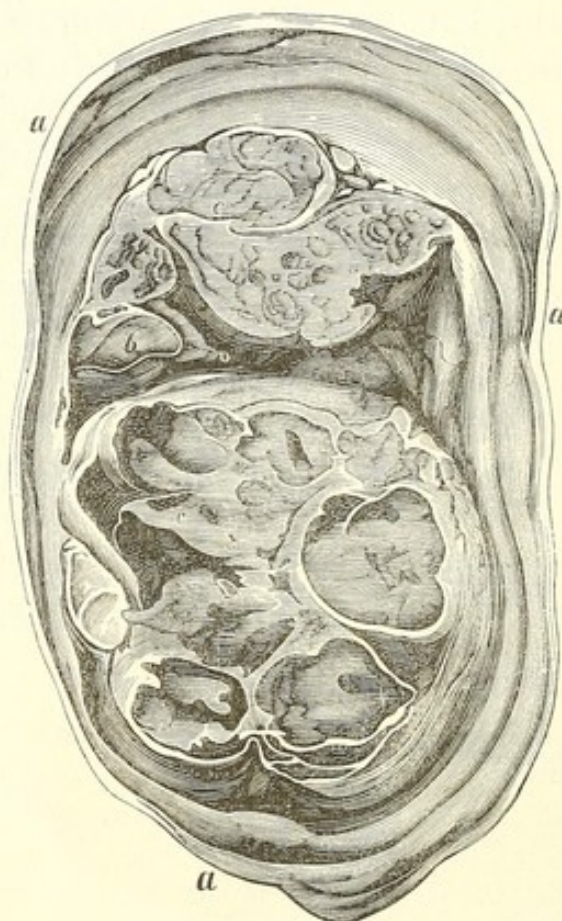
Three or four large cysts ("multiple," Farre), quite or nearly contemporary in growth, and which may contain secondary cysts.

A cystic tumor composed of one or more large cysts, and together with these a solid substance, itself containing cysts—"composite ovarian tumors," "cysto-sarcoma," or "alveolar adenoid tumor" (Spencer Wells); "glandular" (Wilson Fox). Fig. 104, from Cruveilhier, and designated by him and former pathologists "colloid cancer," represents an ovarian tumor of this kind. Cancer may be present together with cystic structures ("cysto-carcinoma").

One or more cysts containing hair, fat, &c. ("dermoid").

In "ovarian dropsy" we have one or more large cysts containing fluid.

The *shape* of ovarian cysts is ordinarily rounded where they are single. Where also the tumor contains two or more large

cysts, the outline of the whole tumor is rounded.   When so large as to occupy the greater part of the abdomen, the shape of the cyst or cysts is determined necessarily by that of the abdominal walls.

The *consistence and thickness of the walls of the cysts* are various.   The wall is sometimes very thin, especially in the case of single cysts, or where the tumor is mainly made up of one large cyst: the free surface of most cysts is thin.   But the cyst walls have often very considerable thickness, and they are liable to be

FIG. 104.*
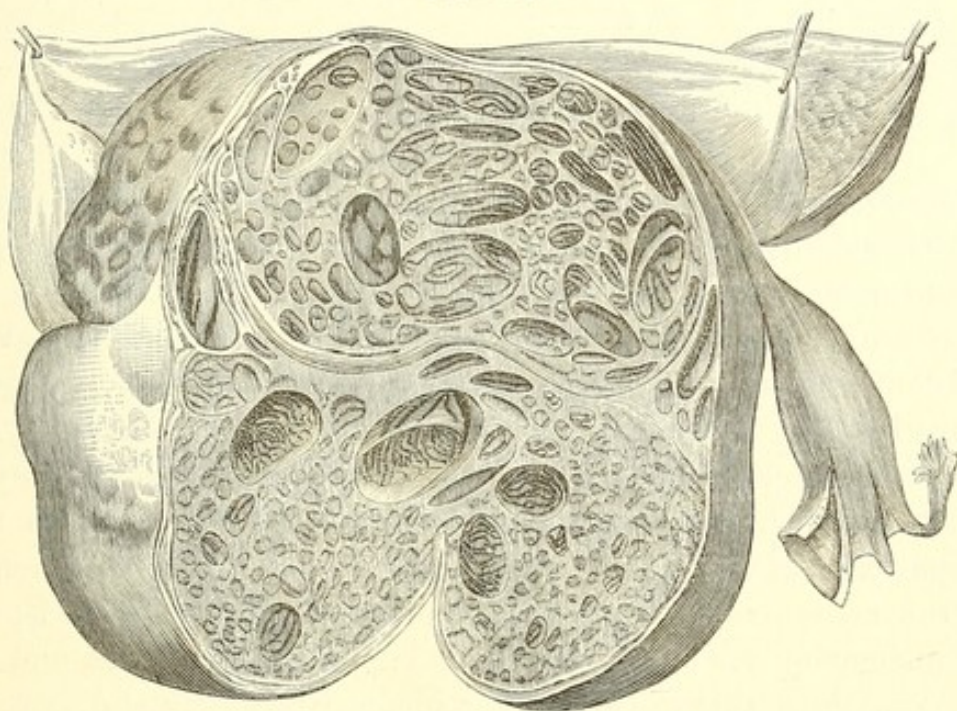
thickened by deposit from within, this deposit being the result of inflammation or coagulation of effused blood, or deposition of fatty matter in the shape of cholesterine, or from presence of growths to be presently described.   In the case of simple cysts, the walls are generally divisible into three layers.   The outer is the peritoneal covering, which is thin and translucent.   The middle coat is of varying thickness, according to the age of the cyst, and other circumstances; it is generally a firm, fibrous layer, giving strength and consistence to the cyst.   The middle coat contains the bloodvessels of the cyst, which are often very numerous, and may be as large as a small quill.   Fatal hemorrhage may occur in the operation of paracentesis, from wounding these vessels.   The internal coat is a layer of cells, generally spheroidal, sometimes

* Fig 104, from Cruveilhier and Farre, is a good representation of the alveolar or glandular tumor; formerly termed colloid cancer.

columnar (see Fig. 105); the epithelium may be a simple layer, but is very often in several layers. The character of the internal lining varies in different places, and according as other changes—inflammatory, &c.—have affected it.

The *contents of ovarian cysts* is open to great variation. Some, containing hair, fat, teeth, &c., form a class by themselves, presently to be described (dermoid cysts). The contents of the more ordinary cysts are mostly fluid, but very frequently they have a consistence more nearly that of treacle, and we may have all gradations between a limpid fluid and a thick mucus-like mass. The color varies excessively. In the majority of cases the large cysts contain a fluid simply serous in character, light yellowish and transparent; where there are many cysts, it is not uncommon to find the contents of no two cysts precisely alike. Blood is, not very uncommonly, effused into the cavity of ovarian cysts, and the transformations through which the blood passes give rise to peculiar appearances, the contents then assuming various dark shades of color. There may be flakes of fibrinous matter together with fluid, or the contents of the cyst may be distinctly puriform. In some cases there is an admixture of fattily degenerated structures. The consistence of the contents is peculiar. In almost all cases there is a remarkable viscidity, and the contents of ovarian cysts are sometimes so extremely tenacious that the whole mass when pulled out holds almost inseparably together. The chemical constitution of the fluids of ovarian cysts is as follows:

Solid matters,	.	.	.	58 per 1000 (average of 31 analyses)					
Pure albumen,	.	.	.	43	" 1000	"	" 26	"	
Salts,	.	.	.	.	7	" 1000	"	" 15	"
Fatty matters and fibrin in small quantities.									

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* Fig. 105 represents epithelial cells from the interior of an ordinary ovarian cyst: A from a very small cyst; * the same, after addition of acetic acid; B from the surface of a contained cyst.

The foregoing figures embody the results of analyses made by Becquerel of the contents of ovarian cysts taken from ten individuals. The average only is stated above, but there was a very wide range in the proportions of the different constituents in different cases. Thus the figures representing the highest and lowest proportion of solid matters were 101 and 21; the highest and lowest for albumen 90 and 17; for salts 10 and 1½. These results are calculated from a table which will be found in Mr. Clay's translation of Kiwisch (p. 108), and which was supplied to Mr. Clay by Becquerel.

In an elaborate paper by Dr. Wilson Fox* will be found the most recent qualitative analyses of the contents of ovarian cysts. "The results tend to show," Dr. Fox believes, "that in these fluids there is a considerable difference between the contents of the different cysts. In all, the reactions obtained are more akin to those modifications of albumen discovered by Professor Scherer, and termed by him metalbumin and paralbumin, than to any of the hitherto isolated members of the series." The reaction was always alkaline; there was no precipitation with acetic acid, a point distinguishing these fluids from mucus.

An important fact here to be noted is, not only that the same cysts have not at all times like contents, but that the same cyst tapped at different periods may give issue to fluids of varying degrees of consistency.

DERMOID CYSTS OF THE OVARY, CONTAINING FAT, HAIR, TEETH, BONES, ETC.

These form a well-marked and distinct class, not in reference to their outward form, but to the nature of their contents. They are not very commonly met with. The term "dermoid" has been applied to them from the nature of their contents, which are epidermic in character. They vary in size from a millet-seed to that of several inches in diameter. Usually there is found in the cysts a lining composed of a substance like the cutis vera, in which may be traced structures identical with those of the true skin, viz., papillæ, sebaceous follicles, and hair-bulbs, together with sweat-glands. Masses of fat intermixed with hair, the latter rolled up in balls, and teeth, with plates of bone—some or all of these form the contents of the cyst. But together with these products, which have given the name "dermoid" to this variety of cysts, they

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* Med.-Chir. Trans., vol. xlvii, p. 272.

frequently contain fluid, gelatinous material, and glandular growths such as are met with in other kinds of ovarian cysts. When the cyst has been the seat of inflammatory changes, pus may also be found within it.

They are found at all ages, in the child, in the woman, and after the period of sexual vigor is passed. Compared with other ovarian cysts they are rare; they seem to have been observed prior to puberty more frequently in proportion than other ovarian cystic tumors.

The precise nature of these curious growths has been a matter of controversy. It appears certain that they originate in the

FIG. 106.*

Graafian follicles. The presence of hair, teeth, and bones, was naturally suggestive of the idea that the cyst was a product of generation, until it was known that they are formed quite independently of sexual intercourse. By some they have been considered as monstrosities by inclusion, a theory which fails also to account for the facts. The accurate account of the anatomy of these cysts put forward by Steinlin,† showing the presence of a

* Fig. 106, from Cruveilhier, exhibits a dermoid cyst with its contents, consisting of hair, hair follicles, adipose tissue, &c.
† Zeitsch. f. Nat. Med., band ix.

skin-like structure in the cyst, explained why the cyst was found to contain skin secretions, viz., hair, sebaceous matter, and teeth. Dr. Ritchie,* a recent writer on the subject, expressed his belief that every dermoid cyst of the ovary is really an ovum which has undergone a certain amount of development; that it is a perverted attempt at parthenogenesis. The arguments which he has adduced to give support to this view are, the presence of true bone in the cyst, the presence of true striated muscular fibre, the occasional presence of dermoid cysts in the uterus and in the Fallopian tube. Steinlin pointed out the dermic structure and the analogy with dermic cysts found elsewhere. This analogy Dr. Ritchie denies, and with apparently good reason. The point at issue, viz., whether the Graafian follicle itself or the ovum which it contains originates these dermoid cysts, is one of great physiological interest, but cannot be further discussed in this place.†

Dermoid cysts of the ovary run generally a slow course. They may inflame, suppurate, and ulcerate, and death may be the result of such alterations. In some cases the cysts have ruptured into the peritoneum, in some they have ulcerated into the bladder, with the result that the patient evacuates hair, &c., with the urine.

COMPOUND OR COMPOSITE OVARIAN TUMORS.

The *partly solid, partly cystic* structures found in many ovarian tumors, and for which the appropriate designation is "compound" or "composite," will next engage our attention.

Of late years the occurrence of a substance containing and surrounded by cysts, and having itself a great resemblance to mammary glandular tissue, has attracted attention. It was termed by former writers "cystic sarcoma." Mr. Spencer Wells‡ proposed to designate it "adenoid tumor," or "adenoma" of the ovary. He described it as "identical in structure with the adenoid growths first described in connection with the mammary gland," and consisting of "a delicate fibrous stroma, forming round or oval alveoli, the latter lined by densely grouped epithelial cells forming a zone inclosing an area loosely packed with cellular elements of a similar form."

Another variety of the partly solid and partly cystic tumors of the ovary is that hitherto known as "alveolar" or "pseudo-col-

* Ovarian Physiology and Pathology. London, 1865, p. 175.

† See Dr. Ritchie's work, jam cit.

‡ Report of Pathological Society in Med. Times and Gaz., Oct., 1862. See also On Diseases of the Ovaries, vol. i, p. 122.

loid" disease of the ovary. It was for some time considered to be carcinoma of the colloid variety, but this idea is now entirely abandoned. The surface of the section of such a tumor resembles, as Dr. Farre,* who has well described it, remarks, "a fine sponge, the alveolar spaces being condensed and somewhat flattened, in consequence of the profusion with which the alveoli have been developed" (see Fig. 104). "These cysts are filled with a viscid mucus-like material, resembling half-liquid jelly." The mass on section sometimes resembles a honeycomb. Respecting the nature of these adenomatous and alveolar growths more will be said presently.

Cystoid cancer constitutes another composite tumor. Here the more ordinary cysts are present, together with medullary cancer, the cancerous growths pervading the stroma of the ovary, and pervading, as is the manner of cancerous growths in other parts of the body, in succession, the adjacent structures. As is the case in the two preceding groups, the proportion of solid matter to cystic growth varies in different cases and at different periods in the same case. In cases of cystoid cancer the tumor—semi-solid, or nearly solid to the feel at one part, more or less fluid at another, presenting often rounded eminences on its surface—may grow with great rapidity, and the whole tumor may be of considerable size.

The nature of *adenomatous* or *glandular* and alveolar structures, and their relations to cystic and cystoid growths of the ovary, have undergone a most careful and complete investigation at the hands of Professor Wilson Fox, the results of whose researches are contained in a paper in the "Medico-Chirurgical Transactions"† for the year 1864, and whose conclusions, demonstrative in themselves, have been verified by subsequent observers.‡

It appears necessary (following Dr. Fox) to go back to the primary developments of the ovary, and of its contents, in order to arrive at an explanation of the structure of these cystic growths. Pflüger's§ observations on the development of the ovary in the calf and the kitten show that the Graafian follicles begin in these animals as *tubes*, these tubes becoming constricted at various points, in order to form the separate follicles. Dr. Wilson Fox

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* Loc. cit., p. 592.
† "On the Origin, Structure, and Mode of Development of the Cystic Tumors of the Ovary," vol. xlvii, p. 227.
‡ Dr. Braxton Hicks, Mr. Hulke.
§ Ueber die Eierstöcke der Säugethiere und des Menschen, 1863.

has found the human ovary in early embryonic life to contain tubules, or quasi-tubular structures intimately concerned in the production of the Graafian follicle. Now, Dr. Fox has made out that in many cystic growths of the ovary there is met with a structure of tubular character, wherein occur changes analogous to those observed by Pflüger in the development of the Graafian follicles of some other animals, viz., formation of tubes, or glands, and constriction of these tubes at certain points, one result of which is formation of cavities or cysts within this glandular tissue. It appears that Billroth, from observations in the thyroid gland, had come to the induction—"brilliant," as Dr. Fox terms it— that similar tubular structures would be found in ovarian cystic tumors. Dr. Fox has furnished the experimental proof that this is the case. It is his belief that "these tumors of the ovary (containing glandular structures) should be classed with those which originate in other glandular organs, by an abnormal repetition of the processes of development observed in the fœtal condition, recurring with aberration in the adult."[*]

Dr. Fox's results are based on an examination of 15 cases of ovarian tumor, in 9 of which he was able to trace the formation of secondary cysts from tubular or glandular structure within cavities which appeared to have been Graafian follicles.

A brief abstract of Dr. Fox's account will now be given:

The *lining* of the parent cysts presents usually a spheroidal epithelium in one or several layers. The growths which proceed from the internal walls Dr. Fox describes as "papillary," "villous," or "glandular," these terms indicating the physical characters of the growths.

The papillary growths, as represented by Dr. Fox (see Fig. 107) are composed of processes of delicate hyaline stroma, covered with epithelium, spheroidal or columnar, and tending to form large composite masses from repetition of the same process of growth from the sides of those already formed. The surface of the growths is finely villous, they are very vascular, and may attain considerable size. They are solid, but adjacent ones often grow together, and hence are formed between them narrow crypt-like spaces. Thus originate "secondary" cysts, and *in the secondary cysts* further growths occur. Concurrently also, the original cyst necessarily increases in size, and secretions form in the interior. Dr. Fox

* Med.-Chir. Trans., vol. xlvii, p. 275.

considers that the formation of secondary cysts, as *thus* described, does not occur to a great extent.

FIG. 107.
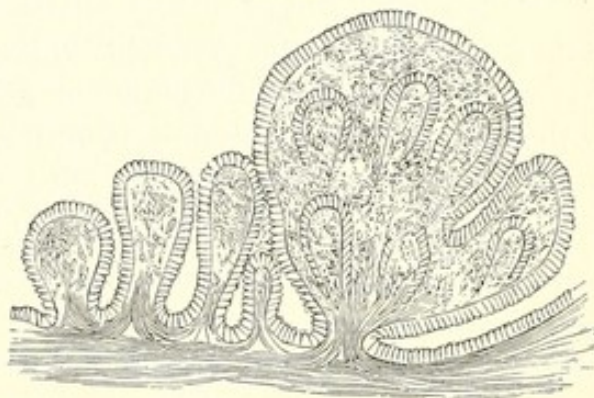
The " villous and glandular" growths.—Fine " villous" processes are the first stage in the formation of the " glandular" growth. The villi contain very little stroma, thus differing from

FIG. 109.

FIG. 108.
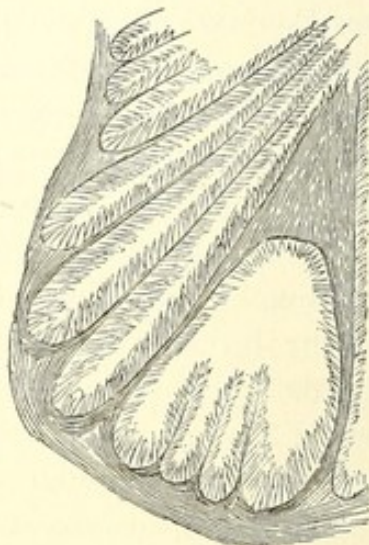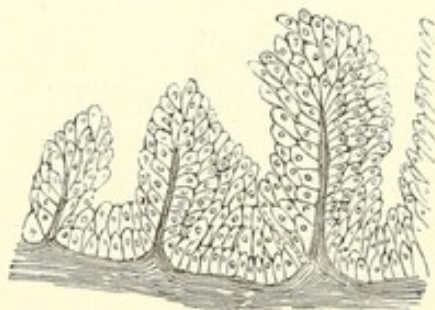
the papillary growths just described; they are little more than a loop of vessels supported by a little connective tissue, and are covered by several layers of epithelium of columnar form. When closely clustered, they lead to formation of glandular structures; the elevation and lengthening of the villi result in the formation of corresponding depressions between them, the stroma growing upwards and surrounding these pits or hollows; the result being a series of tubular spaces. The first stage is represented in Fig. 108 (from Fox), and the latter one in Fig. 109. The glands thus formed are from $\frac{1}{100}$ to $\frac{1}{400}$ of an inch in diameter: they are lined by several layers of epithelium. Further growths of villi may

occur in the base of each tube. *Cysts* are formed in the resulting glandular tissue thus : The orifice may be occluded by growing of the opposite walls together, as shown in Fig. 109, or by septa growing across the tube, or by the stroma actually growing over and surrounding a cyst already formed within the parent cyst, one result of which is formation of a compound growth, and the glands and glandular masses may be found protruding through or still imbedded within the stroma. The process of cyst formation in these glandular structures may be repeated *ad infinitum.*

A gland shut off and divided by septa becomes thus changed into a cavity with highly marked alveo-lar structures. Some of the alveolar spaces in the ovary originate in a kind of failure in the development as here described, but generally these alveolar spaces contain the same lining as that of the glands from which they spring, and the same tendency to further and fresh formations of glands. Dr. Fox's anatomical description accords with Rokitansky's, Virchow's, and Forster's, but his view as to the origin of these alveolar structures is new and different.

FIG. 110.*

When the stroma grows in excess, we get a dense tissue permeated with alveoli—the condition described by Mr. Spencer Wells as "adenoma."

From the formations described by Dr. Fox, the secondary cysts and all the consequent varieties of structures of these diseases, originated in 9 out of the 15 ovarian tumors examined.

Another mode of cyst development within Graafian follicles was observed in a few instances, viz., a growth of glands superimposed one on the other by a process equivalent to budding. This process was found occurring simultaneously with the other mode just alluded to. Alveoli may arise from the close packing of a number of these thin-walled cysts.

Dr. Fox's conclusions imply the origin of these varieties of ovarian disease in the interior of Graafian follicles—well or imperfectly developed—and he would account for the origin of the

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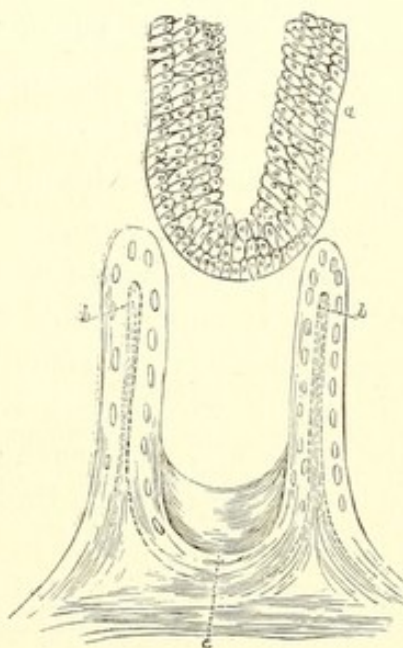
* Fig. 110 (from Fox) shows epithelium separated from papillæ.

dermoid cysts in the same way, although he has not actually had an opportunity of examining these latter structures.

Dr. Ritchie* has endeavored to prove that the ovum itself becomes developed in an irregular way, and gives rise to some of the forms of ovarian disease. Dr. Fox does not participate in these views.

Diseased processes are liable to occur in these compound or composite tumors. The external or parent cyst may give way on the surface, the contents escaping, and the growth within protruding again, the septa within undergo fatty degeneration, bleeding may occur within the cysts, and inflammation, formation of pus, &c.

SOLID TUMORS OF THE OVARY.

Following the classification of Kiwisch, these tumors may be arranged as follows: 1. Hypertrophy; 2. Adipose (dermoid) cysts; 3. Apoplexies of the ovary; 4. Fibrous tumors; 5. Enchondroma; 6. Cancer. To these may be added, 7. Tubercle.

The tumor constituted by simple hypertrophy of the ovary never attains any considerable size, probably not above that of a pigeon's egg. There is a remarkable case, however, recorded by Dr. Bright, in which both ovaries were found after death enlarged pretty equally, and each constituted a firm fleshy tumor nearly six inches in the longest diameter, and having the shape of a kidney. They were taken from a patient who had borne children and who had passed the menstrual period of life. She had experienced pain referable to the uterus, a hard substance had been perceptible over the pubic region, and there had been considerable difficulty in micturition. She died, greatly emaciated and having had jaundice and ascites. The tumors were not malignant in character.†

The *dermoid cysts* have been already considered (p. 601).

The *apoplexies of the ovary* are constituted by inordinate effusion of blood, and coagulation of the same, in Graafian follicles, or by hemorrhage into pathological structures of various kinds, such as cysts, or in the interstices of growths of cancerous or colloid matters. In the former case the tumors produced by the hemorrhagic effusion are very limited in extent; in the latter they may be very considerable.

Fibrous tumors are met with in the ovary, in many respects resembling those found growing so frequently in the walls of the

* Op. cit., p. 197.
† Clinical Memoirs on Abdominal Tumors. New Syd. Soc.'s edition, p. 146.

uterus; but a distinct independent pedunculated fibroid tumor of the ovary is a very rare pathological product, many cases recorded as such having really a true uterine origin. The fibrous growths met with in combination with cystic disease of the ovary belong to a different category, and are not so uncommon. The solid independent fibroid tumors of the ovary have been found sometimes to undergo osseous transformation, and the same may probably hold good with reference to other fibrous tumors.

Enchondroma of the ovary is very rarely observed.

Cancer of the ovaries constitutes one of the most important varieties of solid tumor. It occurs in two forms, scirrhous and medullary, the latter being the more common. Cancer occurring primarily is more frequently than not associated, as has been already stated, with cystic disease of the organ, or it may be found affecting the cystic growths secondarily. The hard form of cancer of the ovary does not attain a large size; it does not exceed the size of a child's head, and is usually very much smaller. Cancer of the ovaries may be found in association with cancer of the adjoining parts—that is, it may spread into the ovaries from the uterus or other organs, and may involve, more or less, the whole contents of the pelvis; and it may, when so found, originate in the ovary or in the adjacent organs. True cancerous disease of the ovary of large size is rare, unaccompanied by similar disease in adjacent parts; and it is also rare to find carcinomatous diseases of the ovary uncomplicated with cystic disease of the same organ. Ascites is very frequently associated with cancerous disease of the ovaries.

Tubercular disease of the ovary has been occasionally met with in conjunction with cystic ovarian disease, not forming a definite tumor, but occurring in the form of granulations scattered over the peritoneal aspect of the cysts.

THE NATURAL HISTORY OF OVARIAN TUMORS AND OVARIAN DROPSY —THE DATA FOR PROGNOSIS AND TREATMENT.

It is necessary, before discussing the treatment of ovarian tumors and ovarian dropsy, to devote a short space to some remarks concerning the natural history of these affections, including their mode of growth, and duration, also the danger to life, and the mode in which life is destroyed by them.

The rare *fibrous tumor of the ovary* is of slow growth, and comparatively harmless. It may give rise mechanically to a fatal

result, by impeding in some way the due exercise of the functions of neighboring organs, but this is uncommon.

The affections of the ovary to which most interest attaches are those of a *cystic* nature, and in which the disease is constituted by the presence in the ovary of cysts, or of cysts associated with solid matters of various kinds.

The *cysts* of the broad ligament grow slowly, but may after some years acquire great size. The *dermoid or fat cysts* present peculiarities, rendering a separate consideration of them necessary. Their course is usually slow; they may exist for some years without increasing remarkably in size, but they appear liable at any moment to undergo changes of a character fatal to the patient, viz., inflammation, formation of pus, perforation, and rupture. The contents of these cysts, viz., fat, hair, teeth, or other matters, become evacuated into the intestines, into the peritoneum, or into the bladder, and the patient may perish from the effects of the mischief thus set up. The result of injecting iodine into the interior of a cyst of this kind, in a patient under the care of Dr. Alex. R. Simpson, does not offer encouragement to the pursuance of a similar treatment in future.

The other varieties of cystic affection of the ovary (for an enumeration of which see p. 598) require a longer notice. It has been pointed out how great are the variations in respect to the number of cysts which may be affected with disease in a particular case, how variable also are the contents of these cysts. In another circumstance also there is very great variability, viz., in respect to the progress made by what appears to be the same disease under different circumstances. And it is this great variability which infuses to so great an extent the element of uncertainty into our speculations as to the future of particular cases.

In cases where there is *one large simple cyst* of the ovary, with contents fluid or semi-fluid, the course of the case will probably be as follows: The cyst itself goes on increasing in size until it occupies the greater part of the abdomen, pushing the viscera of the abdomen upwards and backwards: the rate of increase may be fast or slow. It may remain in the pelvis, or it may leave this cavity altogether. The further history of this cyst will vary according as more cysts become developed below, or within, or upon it, or according as it remains single or the reverse. If no further development of cysts takes place, this primary large cyst may go on slowly increasing in size, or, having arrived at a certain state of fulness, may remain quiescent, and the patient may live several

years, suffering chiefly from the mechanical inconvenience and distress produced by the great enlargement of the abdomen. The walls of the cyst may become accidentally ruptured, and the contents effused into the abdomen, or into some of the adjacent viscera; and under these circumstances the patient may be killed thereby; and, such rupture having taken place, the cyst may go on secreting anew, or no such further secretion may take place, and a cure may be witnessed. The distress and distension may, at a comparatively early period of the history of the case, be so great as to call for surgical relief, *e. g.*, tapping, and if tapping be performed, the cyst may refill again and again with great rapidity, the patient soon sinking from the effects of so great and continuous a loss. In some rare cases the disease has disappeared after one tapping.

The aspect of the case will also vary according to the relations of the tumor. Thus, if the cyst become fixed by adhesions in the

FIG. 111.
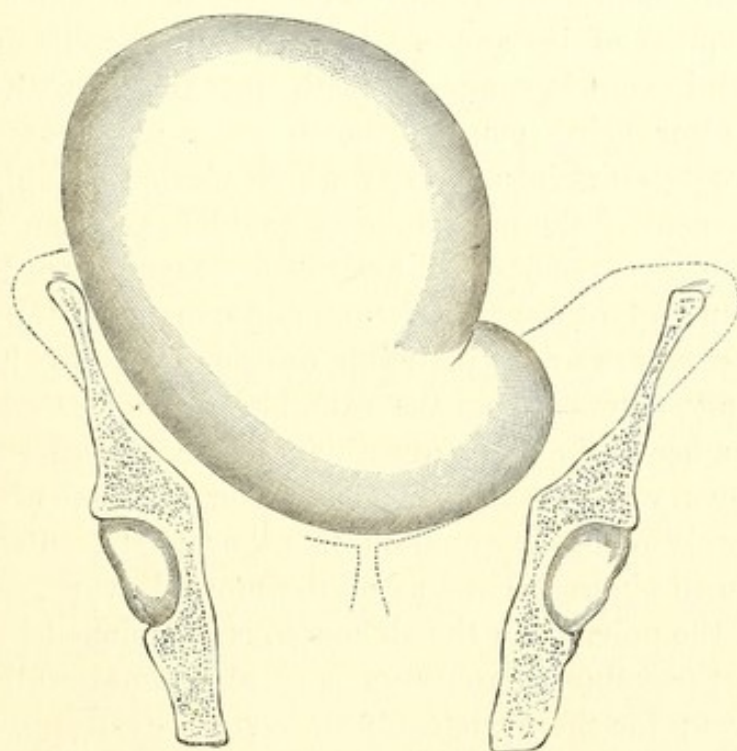
pelvis at an early period, the mechanical difficulties thereby produced will be greater than where no such adhesions exist. And this circumstance has an important relation to the prognosis of the case, for the existence of the patient may, under such circumstances, be prematurely cut short by the disturbance of the renal secretion due to pressure on the ureter; such pressure giving rise to distension of the ureter and of the pelvis of the kidney. The functional disturbances of the other abdominal viscera are pretty

much the same in cases of large cyst, whether the cyst extend into the pelvis or not.

The foregoing summary includes the principal features of one class of cases as they occur in practice, and it will at once be remarked how very variable is the course observed. It is impossible to ascertain positively what the future course of a particular case will be, although the previous history frequently affords valuable hints on the matter. There is one circumstance in connection with these cases which appears to have received less attention than might have been expected, viz., the possible influence exercised by a large cyst already in existence in preventing the development of fresh cysts. Some apparent anomalies in connection with the results of the operation of tapping in cases of this kind, are in part explainable by admitting that an influence of this kind may be exercised. The operation of tapping has in many cases appeared to accelerate the fatal event; it is certain that the disease has advanced much more rapidly after its performance in a considerable number of instances. In a certain proportion of these cases the fatal event is connected with the rapidity with which the cyst refills after being emptied, but in not a few it would appear that other cysts start into activity which would probably have remained quiescent if the primary cyst could have been left undisturbed. The good results obtained in some cases, recorded by Mr. Baker Brown and others, from the employment of tapping combined with pressure are explainable on the foregoing hypothesis. The following sentence from the valuable work of Dr. Farre may be quoted as bearing on this question: "The structure and situation of the ovary permit this organ to suffer a degree of distension which is rarely or never equalled in other parts. Probably the only limit to the increase in size of the morbid ovary, after it has risen out of the pelvis into the abdomen, is occasioned by the pressure which the spine, diaphragm, and abdominal walls exercise upon the cyst; for the parietes of an ovarian cyst appear in most cases to possess an unlimited capability of multiplying the fibrous element of which they are principally composed, whilst the power of rapidly replacing the fluid after their contents have been drawn off proves both the unrestricted capability of secretion inherent in the cyst walls, and at the same time the influence which pressure exerts in keeping that secretion for a time within certain limits."[*]

An element of an unfavorable kind in the prognosis of a case

* Op. cit., p. 582.

where there is only one large cyst of the ovary, is the rapidity with which that cyst fills or refills after being tapped; danger from this tendency to refill is one less in degree than another which is to be feared at some future time, viz., the starting into activity and growth of other cysts; and there can be no question that, short of a radical cure, the restriction of the disease to one large cyst is one of the best results to be looked for. A careful survey of recorded facts appears to warrant the conclusion that the tendency to cyst formation in the ovary is often temporary, apparently exhausting itself in the production of one large cyst. Thus, supposing that the tendency to new cyst formation has in a particular case been arrested, the patient is less likely to succumb to this disease. The patient may still die from the perpetual drain on her system, caused by repeated refilling and evacuation of this cyst, or in some one of the other ways pointed out. But at first, and indeed for a very considerable time, it is always difficult to say whether the arrest alluded to has occurred.

Compound Cystic Tumors.—Here the tendency to cyst formation is, it may be from the first, not limited as above, but there is a successive production of cysts within, or upon, or below, those first formed. The cysts may grow with excessive rapidity, and the whole abdomen may very quickly become filled. This may occur either primarily, so to speak, or one or two large cysts only having for some time existed, the abdomen becomes suddenly and alarmingly invaded by a multitude of new growths. The prognosis of cases of the kind now mentioned is very unfavorable. It is so bad, indeed, that Dr. Bright was accustomed to use the term "malignant" in describing such cases. The use of the word "malignant," so applied, is liable to lead to misconception, this term being now more generally limited to cases where there is actual cancerous substance present. In the cases now under consideration there is not, except in very rare cases, any cancerous formation at all, the fatality depending on the mechanical interference of the ovarian tumor with the functions of life. When we find an ovarian tumor suddenly take on rapidity of growth, and are able to satisfy ourselves that this increase in size is not due to simple enlargement and distension of one or two previously existing cysts with fluid, the case is assuming a very threatening aspect. If the tumor become more irregular to the feel, if the fluctuation become indistinct while the tumor is evidently growing fast, these are facts confirmatory of the supposition that the tumor is the seat of rapid and extensive cyst formation.

Composite Tumors.—Another class of cases have now to be spoken of, in which there is formation of a considerable amount of solid matter, together with cystic disease of the ovary, there being simultaneously production of cysts and of the solid matter in question. Such cases often proceed with exceeding rapidity, and their prognosis is bad, the patient being generally killed with a rapidity commensurate with that of the increase in size of the tumor. Cases are sometimes met with where, at a very advanced stage of the disease, no further increase in size appears to take place.

Lastly come those cases where the ovary, either previously the seat of cystic disease or not, becomes affected with *cancerous disease*. The prognosis in such cases is almost identical with that of cancer in other parts of the body. It is, however, more difficult to diagnosticate their nature. Perhaps it would be more correct to say that the difficulty lies rather in diagnosticating the absence of cancer; and this is important, as the prognosis will be widely different in the two cases. The disease termed "alveolar cancer," or pseudo-colloid disease, is not really cancer. In ordinary cancer of the ovaries, the prognosis is necessarily of a gloomy character, the disease spreading from or to the adjacent organs, and soon destroying the patient.

The *manner in which ovarian dropsy kills* varies excessively in different cases. It is in many instances a slow production of death by exhaustion consequent on repeated drains from tapping. It is due often to intercurrent, slight affections, which would have produced little effect in a healthy individual. Thus when the breathing is mechanically restricted, a slight inflammation of the lungs may rapidly prove fatal. In ordinary advanced cases of the disease, the mechanical disturbance of the functions of the great viscera—the heart, the liver, the kidneys (as by pressure on the ureters), the stomach, &c.—gives rise to various alterations which directly and indirectly impair the vitality of the individual. Restricted as to her food, restricted as to her capability of moving about, suffering from frequent nausea, sickness, prevented from sleeping, tormented by pains and inconveniences too numerous to mention, the sufferer from advanced ovarian disease presents a most lamentable spectacle. The condition of the patient is often the more painful, as it is quite evident that the other organs of the body are sound, and that, apart from the ovarian disease, there is nothing materially wrong.

The patient may be killed by rupture of the cyst, by inflamma-

tion of the same; in compound cysts, by inflammation and pyæmia consequent on softening and breaking down of the septa between the different cysts. Hemorrhage into the cyst cavity is another accident which may occur. Each and any of these events may lead to a fatal result, but they may also, and do occasionally, bring about the cure of the disease. The rupture of the cyst is an event which is not very rare; the cyst may burst into the peritoneal cavity, or into any of the adjoining viscera, or it may perforate the abdominal wall. Such rupture is often the result of a blow, a fall, or an accident of some kind. When the fluid escapes into the peritoneal cavity, excessive diuresis generally occurs, and the size of the abdomen lessens. This rupture may kill the patient, as before remarked, but it has in a few recorded instances resulted in cure.

The *relation of ovarian tumors to pregnancy* requires a word or two in this place, the more especially as this is a matter which has scarcely received the attention it deserves. It appears from the cases which are on record, that it is highly dangerous to a woman affected with an ovarian tumor to become pregnant, not only on account of the difficulties likely to attend the process of gestation and parturition, and which are of a mechanical nature, but also from the fact that ovarian tumors are liable to undergo, during pregnancy or immediately after delivery, a softening or inflammatory process, which is attended with great danger to the life of the patient. The existence of ovarian dropsy should therefore be held as an almost absolute bar to marriage. Correspondingly, where it is very desirable that marriage should take place, the arguments in favor of radical treatment will assume a greater importance. I am, however, acquainted with the particulars of a case in which a woman has borne well and easily five children, having had a large cystic tumor of the ovary during the whole period—a tumor which is now so large as to reach nearly to the knees.

From the foregoing account of the natural history of ovarian disease, it will have been made evident that in different cases of ovarian tumor very different terminations are to be expected; and further, that it is possible, in some instances but not in all, by careful attention to the facts and peculiarities of the case before us, to form an opinion as to what the future of the case will be. The question which it behooves us most seriously to consider is, what result may be expected to occur in particular cases; what probability there is that the patient will survive the disease for a

given time—what, in fact, are the chances for or against the patient's life. The interest felt attaches for the most part to the prognosis of cases of ovarian dropsy or tumor in which the tumor is as large or larger than the head of a child, because these are the cases concerning which our advice and opinion are most frequently requested.

What, then, is the natural termination of these cases, if left to themselves?

It is exceedingly difficult to get facts to throw a light on this subject. We know well enough that there are cases in which women live almost or quite the natural term afflicted with ovarian dropsy; we know also that many are killed by the disease, its duration being very short indeed. But how many live with ovarian dropsy, how many die from its effects—these are the questions to which we desire an answer. It is obvious that the desired information can only be obtained by examining the records kept of all cases, indiscriminately, of ovarian disease. We do not require simply the "extraordinary" cases, but the ordinary ones. In the work of Dr. Robert Lee, entitled "Clinical Reports on Ovarian and Uterine Diseases,"* will be found some materials of this kind. Dr. Lee's facts possess this value—that they are the experience of one individual, a well-known and accurate observer, and extending over a considerable number of years. Dr. Lee gives clinical reports of 180 cases of "ovarian" disease, which I have analyzed for the purpose above mentioned, and with the following results:

Of these 180 cases there are 44 only which are available for the present purpose. The others cannot be used, for one of the following reasons: the facts related concerning them do not conclusively indicate the *ovarian* nature of the tumor; or the case is defective, inasmuch as no result is given, and it is impossible to say whether the patient died or recovered; or the ovarian tumor found to be present was so small that the case does not come within the category now under consideration.

These 44 cases ended as follows:

In 32 of the cases a positively fatal termination is recorded as having occurred, these cases having been either allowed to pursue their course unchecked, or tapping having been performed; in 22 of these cases only are data furnished as to the time the patients lived. The average duration was 1.9 year, that is to say, on the

* Churchill: London, 1853.

supposition that "rapidly fatal" means fatal within one year. In 1 the inference is that the patient died; in 1 the inference is doubtful, but the probability is that it ended fatally; in 3 the patients were apparently in a dying state, or the disease was proceeding rapidly to a fatal termination.

On the other hand, we find that in 1 case the disease did not reappear for twenty-six years; in 1 but little progress had occurred in three years; 2 patients were alive after a period of two and three years respectively; 2 patients died from ovariotomy; 1 died from the effects of an exploratory puncture.

We may thus range the 44 cases into two series, in the first of which will be placed the cases absolutely fatal, in the second those in which a fatal result did not occur, or where, if it did occur, it was due to non-natural cause.

On the most favorable interpretation of individual cases, it thus appears that 84 per cent. of these cases died, and, so far as the majority of these are concerned, the death occurred within two years.

On the other hand, in 16 per cent. of the cases an opposite result ensued, or there is at all events no proof that such an opposite result might not have ensued. It is natural to conclude, however, from an examination of the above list, that 16 is a very high figure, and that, had all these cases been allowed to pursue their natural course, the actual percentage of favorable results would have been nearer 10 than 16.

The general conclusion deducible from Dr. Lee's cases is that, taking the case of a woman, the subject of "progressive" ovarian tumor or dropsy, to the extent contemplated in the above-mentioned category of cases, the chances are as ten to one that the case will end fatally in less than two years, the disease being left to itself, or palliative measures only, such as tapping, being employed.

Mr. Safford Lee, who was the first to examine the question now at issue statistically, collected 131 cases with the view of ascertaining the duration of ovarian dropsy under *ordinary* treatment.   In 123 of these cases the duration was mentioned.*

In 38 the duration was 1 year	In 5 the duration was 6 years
" 25 " " 2 years	" 4 " " 7 "
" 17 " " 3 "	" 3 " " 8 "
" 10 " " 4 "	" 17 " " from 9 to 50
" 4 " " 5 "	

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* On Tumors of the Uterus, p. 117.

It thus appears that in 76 per cent. (94 out of 123) the duration was under five years. But it is necessary to analyze more fully the data in question, in order to compare them properly with those afforded in Dr. Robert Lee's cases. It is more satisfactory, as before remarked, to have the whole experience of *one* individual. In Safford's Lee's table we find 20 cases of Dr. Kilgour's; of these 20 cases 17 died in three years and under, viz., 85 per cent., a figure very closely approximating to that obtained from Dr. Lee's cases. In 12 cases reported by Dr. Ashwell, 9, *i. e.*, 75 per cent., died in the same period—three years and under. In 10 cases reported by Mr. Safford Lee himself, 9, *i. e.*, 90 per cent., died within three years. The experience of one reporter, Dr. Macfarlane, was more favorable, for of 14 cases reported by him the duration was four years or under in 4 cases, and of the other 10, 4 survived twelve years, and 4 as long as sixteen years. Dr. Macfarlane's experience would seem to have included a larger number than usual of exceptional cases.

As a guide to actual results, which may be expected in practice, the cases of Dr. Robert Lee, and the particular cases just referred to as contained in Mr. Safford Lee's tables, are worth more than those collected from various sources, for reasons already stated. Such cases as those in which it is recorded that the disease lasted twenty, thirty, or even fifty years, do undoubtedly occur; much mischief has resulted, however, 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.

Taking everything into consideration, we shall not be probably far wrong in drawing from Dr. Lee's and from Mr. Safford Lee's cases the conclusion that the probable duration of a case of ovarian disease of progressive character is, in 85 to 90 per cent. of the cases, two or at the most three years; of the apparently "stationary" or chronic cases, the prognosis is more favorable, but in such cases the disease is liable at any moment to start into fresh activity.

The foregoing observations give some idea—an idea which cannot be very wide of the truth—as to the nature of the evil we have before us when a patient presents herself with ovarian dropsy. The first question we naturally put to ourselves with a case of the kind to decide upon, is, does this case belong to the fortunate series, the 10 or 15 in the 100, or is she one of the 90 who must die in the course of two or three years, if unrelieved?

It must be confessed that at present we have, as a rule, no means of enabling us to decide—at an early period of the growth of the tumor, and when the tumor does not exceed six or seven inches in diameter—what the future of the case will be. In some few cases the cancerous nature of the tumor is obvious at an early period; in some few cases also, the great unevenness and irregularity of the surface point to the presence of several cysts—a circumstance indicative for the most part of rapid growth—and these cases lay open their future before us more quickly; but in the large bulk of cases it is not so. We generally have to wait until the tumor has grown to a larger size before we are able to say much as to the prognosis, and it is the rapidity of growth, taken together with the nature of the growth itself, which then guides us to an opinion.

So long as a tumor, which is smooth externally, and apparently composed of a single cyst, continues tolerably quiescent, increasing but slowly, and without evidence of formation of fresh cysts (for the determination of which examinations must be made from time to time), so long our prognosis will be tolerably favorable, and we may expect that the case will prove to be one of the fortunate "10 per cent." series. Rapid increase, new formation of cysts, addition of solid matter to the tumor, addition of ascites, increased pressure signs in the pelvis, rapid refilling after tapping, —all these are signs of bad augury, and should induce us to place the patient in the unfavorable series, and to act accordingly.

THE TREATMENT OF OVARIAN TUMORS AND DROPSY.

Of late years much attention has been given to the extension and improvement of surgical procedures for the treatment of ovarian tumors of various kinds, and certain conclusions may now be drawn which the state of our knowledge on the subject some few years since could not have warranted. It must be admitted, however, that while much has been done in the way of improving and perfecting the surgical procedures in question, but little advance has been made in the other direction. We seem to be almost absolutely powerless in the matter of prevention. Admitting to the full the great benefits which have been conferred on individuals by the successful performance of operations for radical cure, the necessity for having recourse to them, admitting this necessity, must still be deplored. Meanwhile, however, we cannot but congratulate ourselves on the progress which has been effected,

and on the increased safety and facility with which these serious operations have been of late performed.

On the whole, the best method of dealing with the subject now before us will be to consider the several methods of treatment one by one, pointing out the advantages and disadvantages attaching to each respectively.

THE GENERAL TREATMENT.—Past experience does not give encouragement for the belief that much benefit is derived in cases of *ovarian dropsy* from any particular remedies. Iodine, bromine, and their compounds, are agents which have been most often exhibited of late years. Iodine has been applied externally also. It has not been shown that any great amount of benefit has been derived from their use, but in the early stage of the affection it would be desirable to give them a trial. It is extremely doubtful whether we have any one drug from which much can be expected; but it does seem reasonable to suppose, and it is in accordance with experience, that by attending to the general health of the patient, enforcing observance of rules as regards diet, exercise, and regimen generally, a favorable influence may be exerted, and possibly the onward progress of the case stayed. Under any circumstance, it would be proper to lay particular stress on this element in the consideration, and the more so if we found, on inquiry, that the general health had been, for some time previous to the appearance of the disease, in a defective state. There would, in such a case, be a possibility that by correcting what was wrong a double good might result. It is a legitimate ground to go upon, at all events, and it may therefore be laid down as a general rule, that, whether operative measures be adopted ultimately or not, we should in the meanwhile inquire minutely into the particulars of the life of the patient, her habits, food, &c. Such remedies should be administered as will assist in restoring the impaired health. Iron, quinine, or other suitable tonics, will frequently be required. The condition of the bowels must be regulated, and mild laxatives administered if necessary; injections are often required in cases where there is a pelvic ovarian tumor present, the tumor sometimes pressing on the rectum and preventing defecation. In cases where the disease is far advanced, where operative measures are, from whatever cause, inadmissible, the palliative treatment must be adapted to the circumstances of the case. The great difficulty is generally to carry on the digestive process, there being often great irritability of the stomach and

inability to take food. The food administered must be of the most nutritious and easily digestible kind.

OVARIOTOMY.—It is unnecessary here to enter into any historical detail of the operation beyond stating that, first suggested by William Hunter, it was first performed in America, and has proved of late years largely successful. It consists in excising the whole of the diseased ovary, an incision for this purpose being made in the abdominal parietes: the operation itself will be more minutely described presently. At first the operation was received with disfavor, though some few operators were tolerably successful. Dr. Clay of Manchester first performed the operation on an extensive scale, and his success attracted further attention to the subject. In the metropolis the operation next obtained a firm footing, mainly through the success of Mr. Spencer Wells, and during the last eight years the number of successful operators, not only in London but elsewhere, has become so considerable that it is invidious to mention names. The results obtained by operators of late years have been very much more favorable than was the case a few years since. From 70 to 75 per cent. of the cases operated on have been saved.

This result may be compared with that of cases of ovarian dropsy left to themselves, from which comparison it will be seen that of 100 individuals coming before us affected with progressive ovarian cystic disease, 90 may be expected to be dead within two years, if nothing beyond palliative measures be adopted; out of the same number, from 60 to 70 may by ovariotomy be saved, and saved permanently, from death. The operation of ovariotomy has this peculiarity, that it almost absolutely cures the patient, the only possible drawback being—what is shown to be an exceedingly rare occurence—the possibility of the other ovary becoming affected subsequently, and thus necessitating a second operation. When the ovary is affected with cancerous disease also, ovariotomy will not be of permanent benefit.

There is probably scarcely any subject on which there has been more discussion than that as to the propriety and admissibility of ovariotomy; and, unfortunately, the question has not always been temperately argued. After all, it is one which must be mainly decided by facts. The valuable statistical account of ovariotomy published by Mr. John Clay of Birmingham, including all cases of which he had been able to obtain particulars up to the year 1860, gives the following results:

In 212 cases of completed ovariotomy the operation was successful.

In 183 "   "   "   "   "   " unsuccessful.

In 24 cases partial excision was performed: 10 recoveries and 14 deaths.

In 13 cases an operation was performed, but extra-ovarian tumors only were removed: 3 recoveries and 10 deaths.

In 82 the operation was begun, and abandoned on account of adhesions; of these 58 recovered from the operation, and 24 died.

In 23 cases ovariotomy was attempted, but abandoned in consequence of the disease being extra-ovarian.

These statistics of Mr. Clay's include a number of operations undertaken at various times and in various places, and with very numerous drawbacks, want of knowledge as to diagnosis and treatment, &c., and they do not in any way represent the state of the operation as it now stands; but, taking those 395 cases of ovariotomy, it will be seen that 53 per cent. were saved, and cured of a disease which would have left alive only about 10 or 15 per cent. at the end of two or three years; that is to say, assuming the correctness of the calculation as to duration of life under these circumstances previously made (see p. 618). On the other hand, we have, it is true, 47 per cent. killed by the operation itself, concerning which it is to be said that nine-tenths of them lost a chance of living about two years longer by submitting to the operation; and one-tenth lost a chance of surviving a longer period than two years. So far as is possible, this is putting the case fairly.

The results of operations performed in England and Scotland during the last six or seven years are even more favorable. On the whole, the present aspect of the operation warrants us in taking 65 or even 75 as the percentage of cures which may be expected when the operation is undertaken by experienced operators; and, substituting this figure for 53, which expresses the results of Mr. Clay's statistics, the case stands thus: In a case of ovarian cystic disease, the chances of recovery after ovariotomy are as 65 to 75 against 35, taking one case with another.

There are some other circumstances to be considered in reference to the operation. It is not always possible to complete it—adhesions interfering with the removal of the tumor. In the 537 cases tabulated by Mr. Clay, of operations of all kinds, in 82, or 15 per cent. this difficulty occurred. This percentage will probably be considerably lessened with advancing knowledge; and the failures to complete the operation have not, I believe, exceeded 10 per cent. in the experience of recent operators. We may therefore accept 10 per cent. for the present. The risk of immediate

death which the patient runs from an attempt thus frustrated, amounts, taking Mr. Clay's statistics, to this—that in 29 per cent. of these failures death results. And it may be expected, therefore, that in about one-third of the cases where an operation is begun but abandoned, a fatal result will ensue within a short time after the operation.

We have also to consider the operation of ovariotomy in connection with possible mistakes in diagnosis, for if it be not always possible to make a correct diagnosis, this must be considered in recommending an operation which may fail, and which so failing may nevertheless kill the patient. If we turn to Mr. Clay's statistics, we find that the number of mistakes in diagnosis is very considerable. Thus, in 36 cases out of the total 537 operations, the tumor was extra-ovarian. A careful scrutiny of the facts as to these cases shows, however, that in most of these the mistake was such as would, with our present knowledge as to diagnosis, be avoided. It may not be always possible to be absolutely certain that the tumor is what we believe it to be—a cystic growth from the ovary—but by exercising the necessary care in arriving at a diagnosis, it is possible that the importance of this element in the consideration will be very greatly diminished.

Next, it will be proper here to consider briefly and dispassionately the arguments which have been brought forward against the operation of ovariotomy.

It is urged that women may live a long time with palliative treatment. The value of this argument is tested by reference to the natural history of ovarian disease. The argument only holds good in respect of cases where the disease is evidently not of progressive character, and such cases would not be considered cases for ovariotomy. Although in individual instances life is prolonged even under apparently unfavorable circumstances, yet what we have to consider first is the fate of the bulk of the cases which present themselves for treatment (see the analysis of Dr. Lee's cases at p. 616), and how that fate is to be averted.

It is urged, also, that the diagnosis is difficult, and that it is at times impossible to say whether a tumor be ovarian or uterine. This is only an argument for increased attention to the subject of diagnosis. Serious mistakes need occur but very rarely.

In the next place it is urged that ovariotomy is really a more dangerous operation than the published statistics prove. This statement is met by the statistics of several well-known and well-credited operators, showing that the operation is really a very

successful one in good hands. To what extent it is a successful operation, as now practised, has been already mentioned. Further, there is every reason for believing that the mortality will yearly become less, and that *dernier ressort* operations will become fewer and fewer in number.

As showing the present aspect of the question, it may be mentioned that, since the first edition of this work was published, the successful results obtained by various operators has induced Dr. West, who had previously strongly disapproved of the operation, to withdraw his objection.

The argument used by Mr. Erichsen, at a meeting of the Royal Medical and Chirurgical Society some time since, may be adduced on this important question. "It is old and trodden ground," says Mr. Erichsen, " to compare ovariotomy with the result of the operations for hernia, ligature of arteries, &c., and in these cases also the comparison is scarcely fair, as these are operations of necessity, whilst ovariotomy is an operation of expediency, and not of immediate and imperative necessity. But compare it with ' amputations of expediency' of the lower extremity. He would take for this purpose the statistics of a most able paper published two years ago in the ' Transactions' of this Society, giving the results of amputations performed in one of the largest hospitals in London—Guy's. In that paper Mr. Bryant stated that the mortality after amputation of the lower extremity for tumors was 36 per cent., and the mortality after 'amputations of expediency' of the leg was 68 per cent. Compare this result of amputations performed under the most favorable circumstances, by men of the greatest skill and judgment, with those of ovariotomy, and the advantageous position of the latter operation is at once seen."*

With the aid of the facts and conclusions just stated, we may next consider the *indications for ovariotomy*. The average opinion among those in favor of this operation may be stated as being to the effect that when the ovarian tumor is growing fast, and when by reason of this, or in some other manner, life is threatened at no distant period, the operation is to be recommended. But it is necessary to be more explicit. If our examination convinces us that the tumor is of cystic nature, that it is growing fast, that it is made up of three or more cysts, and the general health is threatened, this seems a case for ovariotomy. Equally so if the tumor be partly cystic, partly solid, this solid matter not being cancerous.

* Lancet, vol. ii, 1862, p. 688.

The alveolar tumor of the ovary falls under the same category, and also cases of dermoid or fat cysts "progressive" in nature. But if the ovarian tumor be simply fibrous, this is scarcely a case for ovariotomy. An operation may possibly be justifiable in such a case, but scarcely on the ground that life is threatened by the presence of the tumor in question.

Upon the next class of cases it is more difficult to pronounce an opinion. They are cases in which there is only one cyst in the ovary, or possibly two, and the disease is not strictly a progressive one; or, at all events, this quality of it has not yet declared itself. It is quite clear that, in very many such cases, ovariotomy is not called for, but there are cases in which good reasons might be given for preferring to recommend ovariotomy; viz., where there is rapid formation of fluid requiring frequent tapping, and threatening life in this manner. A tendency of this kind is hardly less destructive to the patient than the tendency to the rapid formation of other cysts. The arguments for ovariotomy in cases where the "badness" of the case falls short of that just spoken of, are, that the earlier the operation is performed the safer it is, and the less risk also that the operation will be interfered with by the presence of adhesions. The difficulty experienced in deciding as to what is the best thing to be done in individual cases is one which cannot be got over by any amount of generalization on the subject, and in a doubtful case small things turn the balance.

Another class of cases in which ovariotomy might be performed are those in which, although the case is not a "favorable" one for operation, the disease is so far advanced that the patient must otherwise certainly die soon, and where the operation might possibly save life.

It will be observed that the indications for ovariotomy chiefly resolve themselves into two—the necessarily progressive nature of the disease, pathologically considered, and the presence of such marked failing of the general health as to show that from radical measures only good can be expected. There is a special class of cases, as pointed out by Dr. Tyler Smith, in which patients insist on the performance of the operation, the idea of a possible operation looming in the distance being, to them, more intolerable than the present risk.

The Contraindications.—The first contraindication is "difficulty of performance," a difficulty which it is often, but not always, possible to foresee. This difficulty arises from *adhesions.* The diagnosis of the presence of adhesions is sometimes quite impos-

sible to make, but, on the other hand, it is to be borne in mind that, in some cases, the presence of very extensive adhesions has not been found an insuperable difficulty in the way of the performance and completion of the operation. When a portion of the tumor is in the pelvis, we may often ascertain whether adhesions are present or not, by pressing the tumor upwards from the vagina, and by the mobility or otherwise of the tumor thus found to exist. Mr. Wells suggests that the tumor should first be tapped, and pressure then made from below, in order to ascertain the presence or absence of this mobility. But it is to be remarked that the shape of the lower part of the tumor might prevent its being thus moved from below, adhesions being quite absent. A careful examination through the abdominal walls may show that there is mobility of the tumor; this indicates absence of adhesions. Again, as pointed out by Mr. Baker Brown, the skin can be grasped and separated from the tumor if adhesions be absent. These signs, however, for the most part affect the diagnosis of presence of adhesions *anteriorly*. The intestines are liable to contract very close adhesions with the tumor in long-standing cases, and these adhesions are posterior. Respecting existence of posterior adhesions, the results of examination are not conclusive. Practically, I believe the question as to the presence or absence of adhesions is one which must frequently remain unanswered until the operation is begun. Adhesions may be expected in cases where the patient has been repeatedly tapped. *Anasarca* of the lower extremities is justly regarded by Mr. Spencer Wells as not necessarily a bar to the operation, for, as he observes, it may depend solely on mechanical pressure of the tumor. I have myself seen very marked œdema of the lower extremities, from the presence of retroversion of the uterus, together with extreme distension of the bladder. When it is dependent on associated disease of the kidneys or other viscera, or on cancerous disease, œdema is undoubtedly a contraindication. And the remarks of Mr. Wells in reference to *ascites* are equally to the point. If the ascites be an ascites mechanically produced, it is of less consequence. In the case of a small, *recent* ovarian tumor, where there is a good deal of ascites, the operation is contraindicated, because there is a greater probability of the disease being of cancerous nature. It not unfrequently happens that there is much ascites and a very large tumor. In such cases, as a rule, the ascites is no obstacle whatever to the operation; in some respects it is an advantage, as adhesions are less likely to interfere.

Mr. Baker Brown says, on this subject: "My experience teaches me to be more discriminating in the selection of cases for this operation, and to reject those where the health is very much broken down, when the drain of albuminous matter by repeated tapping has been great, when the disease is of a colloid nature, or otherwise materially departs from the true cystic character, and when, from the habits of the patient, other organs have suffered, organically, to the serious detriment of their functions.   Indeed, in cases of the description indicated, operative interference appears entirely contraindicated."*   It is to be remarked, in reference to these restrictions laid down by Mr. Brown, that they are undoubtedly very much to the purpose if the success of the operation alone be considered, and they offer an important addition to the arguments in favor of "early" operation.   To act implicitly on these recommendations would be, however, to shut out from some patients, who might be cured, the possibility of such cure, and, as before remarked, there is a class of cases in which the operation is justifiable as a *dernier ressort*.   This is a point on which, however, it seems hardly possible to lay down laws.   Each case has a law of its own, which law it is the business of the practitioner to discover. Dr. Keith, of Edinburgh, has recorded a case in which he performed the operation when the cyst was actually in a state of gangrene, and with success, the patient being snatched literally from the jaws of death.

There are some other circumstances to be taken into consideration in determining for or against ovariotomy in particular cases. It has been the impression that ovariotomy is more fatal in very young women : this impression seems still to maintain its ground. It was also the impression that operations on women past the climacteric period were attended with more risk than those performed earlier.   The latter does not appear to be a well-founded idea looking at the results of more recent experience.   The nature of the tumor itself appears from statistics to affect the result. From Mr. Clay's tables we learn that in 44 cases where the cyst was *single*, the recoveries were 43 per cent.; while in 172 cases of *polycystic* tumor, the recoveries were 38 per cent. only; in 21 cases of *solid* tumor, the recoveries were 38 per cent.   These figures must be taken for what they are worth only ; they show that ovariotomy has proved more fatal in the case of composite tumors and solid tumors, but in many cases the greater mortality

* On Ovarian Dropsy, p. 265. London : Davies, 1862.

in the cases of polycystic tumor arose probably quite as much
from the adhesions as from the nature of the tumor itself. Thus,
in 99 cases where no adhesions were present, the recoveries were
68 per cent.; of 286 cases where adhesions were present, and the
operations completed, the recoveries were 51 per cent., and the
more extensive the adhesions the less was the number of recoveries.
It appears probable that, in future, presence of adhesions will have
a less unfavorable effect on the results than is indicated by Mr.
Clay's tables. I have seen two or three cases recover well in which
the adhesions encountered were very extensive.

The decision for or against ovariotomy should be left to the
patient or her friends; it is for them to take the responsibility.
It is our duty, firstly, to make a diagnosis as accurate as possible,
taking the whole circumstances, past and present, into considera-
tion; secondly, to make to the best of our ability a prognosis of
the case, and to lay before the patient and her friends the results
arrived at; and if it be possible to state the chances for or against
her, numerically, it is better to do so. For reasons which have
been already sufficiently alluded to, it is occasionally most difficult
to put our prognosis into a numerical shape, but until we can do
so, a decision for or against ovariotomy cannot be come to satis-
factorily. And the patient must be informed what are the prob-
abilities of her life being saved by the different methods of treat-
ment, ovariotomy, tapping, &c., respectively.

THE OPERATION OF OVARIOTOMY.

The success of the operation of ovariotomy most unquestionably
depends very much on the method of its performance, and the
care taken of the patient before, during, and after the operation.

The *preliminary* treatment consists in elevating by every pos-
sible means the patient's vital power. For town patients a short
sojourn in the country is often useful; for country patients who
have to be operated on in town, a short preliminary residence in
the latter may be recommended. The food given must be easily
digestible, hours regular, the bowels kept moderately open, but not
loose. The moral treatment is not less important: it certainly adds
very much to the patient's chances of recovery when she is herself
hopeful on the subject; and means should be taken, appropriate
to the case, for inspiring her with courage and resolution. It is
essential to possess the services of a good nurse. To provide a
room in a well drained house, well-lighted, quiet, well-ventilated,
and capable of being heated, is, it is hardly necessary to remark,

also essential. Hospital patients cannot be satisfactorily treated in wards containing other patients. Absolutely essential it is also that the patient be not subjected to the influence of emanations arising from wounds or from decomposing animal matters. The room selected should be one having no communication with other rooms from which such emanations may possibly arise.

The operation itself should be performed under chloroform. It is very important that the patient should have had no solid food of any kind on the day of the operation, in order to prevent chloroform sickness. Respecting the mode of administration of chloroform certain precautions are necessary. When large quantities of chloroform are given, the operation being a long one, as is not unusually the case, the result is that the patient is liable to suffer from very troublesome and uncontrollable vomiting for some hours afterwards—a circumstance very likely to affect injuriously the result. The evil in question is one which can be dealt with only by giving as little chloroform as possible. Possibly Dr. Richardson's newly-discovered anæsthetic—the bichloride of methylene—may be found devoid of this drawback. The really painful part of the operation occupies usually but little time. The air of the room should have a temperature of 60° during and for a short time after the operation; a kettle of water should, especially in dry states of the atmosphere, be kept boiling in the room so as to maintain the necessary moisture of the air. Hot and cold water, in clean vessels, must be provided in sufficient quantity. The operator and his assistants must be thoroughly free from all suspicion of post-mortem taint, and before the operation the hands of each should be well washed, a strong brush being used for the nails. There are very good reasons for believing these precautions to be very essential ones. If sponges are used they should be large ones, and it is necessary to count them before and after the operation to see that none are missing.

The legs having been well covered up by flannel, the patient is placed on the back, at the end of the operating couch, the legs hanging down or slightly supported. Dr. Tyler Smith prefers the semi-recumbent position, this giving facilities for the tapping part of the operation. The catheter should be used to empty the bladder before proceeding to operate. By means of a strong knife an incision is made from the umbilicus to just above the pubic symphysis, this incision being in the middle line. The several layers of the abdominal walls are successively cut through until the peritoneum is arrived at, and any vessels cut through secured

by ligature before proceeding further. Care is now required not to mistake the peritoneum for the cyst wall, a mistake which may be committed. A director should be used as the peritoneum is approached. The first part of the operation is completed when by this incision the ovarian tumor is opened. Ordinarily this, the *short* incision, as it is termed, is sufficient : later on, it is some-times found necessary to extend the incision a variable distance above the umbilicus. After the peritoneal cavity is opened, it is necessary to guard against the protrusion of the intestines at the wound. This is effected by the assist-ants, one on each side, who are directed to carefully maintain the edge of the inci-sion in apposition with the surface of the cyst. If the intestines escape, they are covered by drawing the abdominal wall forwards over them, and if necessary pressed back by means of flannel wrung out of warm clean water. The incision first made may be sufficient to allow of the extraction of the tumor without lessening the size of the tumor, but generally this lessening is necessary ; and the operator having ascertained that the completion of the operation is possible, and having broken down any adhesions met with in the manner to be presently described, a large trocar is thrust into the presenting cyst and its contents evacuated. The best apparatus to use for this purpose is the siphon-trocar invented by Mr. Spencer
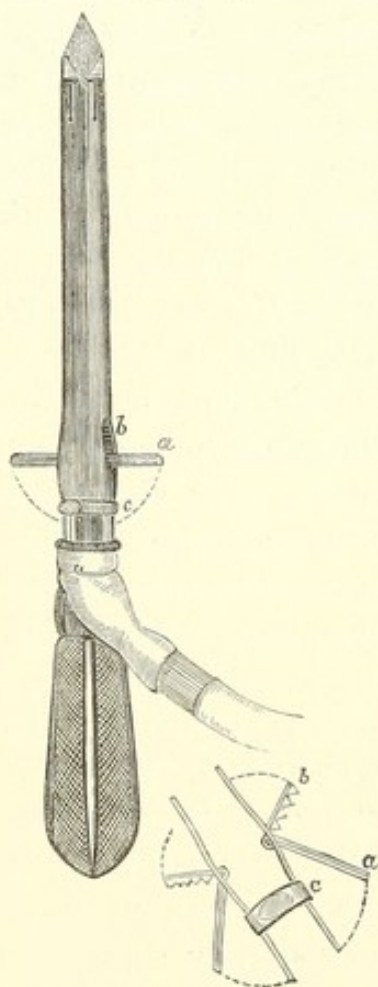
FIG. 112.

Wells, and since improved upon by Dr. Murray. The tube is about the size of the finger, and, by an ingenious mechanism supplied by Dr. Murray, after being plunged into the cyst the canula is firmly fixed to the cyst wall (see Fig. 112). It can be easily detached again from the cyst. The trocar is withdrawn through a slit in the India-rubber tube, which slit then closes and allows the fluid to pass away through it. The advantage of a large tube for rapid removal of the fluid is great ; it is also important to prevent the fluid running into the peritoneal cavity. These objects are well secured by use of the above instru-ment. If the cyst contents be semi-solid or very gelatinous, this

instrument cannot be employed, but ordinarily it is very useful at this stage of the operation. It may be necessary to empty more than one cyst; in this case the second may generally be perforated from the aperture in the first. If the cysts are very small and numerous, it may be necessary to break them up by passing the hand into the centre of the tumor; but before doing so it will be well to be absolutely certain that adhesions such as to prevent completion of the operation are not present. Having thus lessened the bulk of the tumor, it is drawn out at the aperture and supported by the hands of assistants, care being taken that no dragging is allowed. It is evident that unless great care be exercised much mischief may be done at this moment. The tumor having been drawn out, the pedicle is to be secured. Before alluding to this part of the operation we must consider the question of adhesions. On exposing the tumor we may find that it is adherent; and it may be adherent to the bladder in front or laterally, to the intestines, or everywhere. The most difficult adhesions to surmount are those between the tumor and the bladder, or the intestines or omentum, but adhesions in other situations are generally not real obstacles. These adhesions are not to be separated by the knife: they are to be carefully broken down by the fingers or by the handle of the scalpel. An "adhesion clam" has been invented by Mr. John Clay for this particular.* The bleeding from vessels in these adhesions requires to be carefully looked to: it should be arrested by torsion of the vessels or by ligature, for which latter purpose fine silver wire is the best, or by the actual cautery in a manner to be presently described; a slight continuous drain going on from one of these vessels after completion of the operation may destroy the patient. Great care is necessary, when the intestines are adherent, to avoid perforating them; in very long-standing cases the difficulty of avoiding such perforation is or may be very great, and this is in fact an argument against operations in such cases. When the cyst cannot be separated from the intestines, Mr. Spencer Wells advises that a piece of the cyst be cut off and left attached, the lining membrane of the cyst being also removed.

When the tumor is quite clear of all adhesions, and the necessary diminution of its bulk effected, the pedicle is to be secured. In order to perform this part of the operation satisfactorily, the tumor must be properly sustained by assistants. In some cases

* See Medical Times and Gazette, vol. ii, 1862.

it is better to apply a temporary ligature and cut away the bulk of the tumor, in order that the pedicle may be more conveniently dealt with. The best means of dealing with the pedicle is still an anxious subject of discussion among operators, and various methods have been had recourse to.

The Ligature.—A needle armed with stout thread of whipcord or Indian hemp, is passed through the pedicle, and the pedicle is thus secured in such a way that each half has a separate ligature; another ligature, for safety's sake, being applied round the whole. If the pedicle be thick, the separate vessels possibly might be baken and tied separately. When the pedicle is very short and troad, the application of the ligature as above is not easy, and more especially when there are adhesions round the pedicle.

After thus securing the pedicle, the tumor is cut away as near the ligature as possible. The ends of the ligature were formerly brought out at the inner margin of the wound and there left, until the process of separation enabled the whole to be removed after some days had elapsed. Pus usually formed and escaped by the side of the ligature, and the patient was subjected to the effects of an open wound of the peritoneal cavity during that period. An improvement on this plan is to cut the ends of a ligature off close to the stump, to drop the whole into the pelvis, and close the external wound entirely. This latter method has been largely employed by Dr. Tyler Smith, and other operators have followed it, though less frequently. Very many successful operations show that this plan is a very good one. Wire or thread may be used; wire has the disadvantage of being less easily tightened and regulated than silk or thread, but is probably less irritating when left on the stump. Dr. Marion Sims, who uses a wire ligature for the pedicle, and claims the merit of the origination of the plan of dropping the pedicle thus secured into the pelvis, states that his plan has this advantage, that the superficial parts of the pedicle cut through by the wire unite together subsequently, thus imbedding the wire within it. This he considers an advantage.

The *Clamp.*—Mr. Hutchinson introduced the use of the clamp (see Fig. 113), by which the pedicle is constricted, brought out to the level of the abdominal wound, and the wound then closed. This was an improvement on the old method of using the ligature. When the pedicle is long, this method is exceedingly good, there being great security from subsequent hemorrhage, and perfect closure of the wound, the healing of the wound and separation of

the pedicle proceeding concurrently.   When the patient is attacked with vomiting after the operation, the clamp may, however, be found troublesome, and when the pedicle is short it is inapplicable for obvious reasons.   To prevent the noxious effects of the presence of a slough of the stump outside the abdominal wall, Mr. Wells saturates the stump with perchloride of iron after closing the abdominal wound.

Fig. 113.
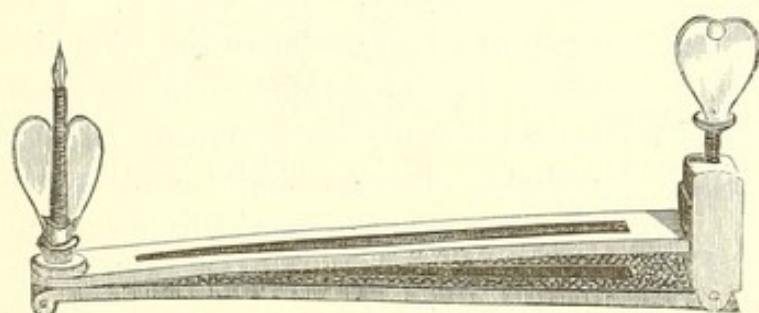
The *Ecraseur* has been little used as a means of severing the pedicle.   The varying size of the vessels cut through renders it necessarily uncertain as regards the prevention of secondary hemorrhage, an uncertainty in such a case of great moment.

Mr. Baker Brown has practised largely the method of securing the pedicle by *application of the actual cautery*.   The pedicle is inclosed between the two blades of a clamp of peculiar shape, these are then screwed very tightly together, and a wedge-shaped cautery iron at a moderate red heat applied so as to cut through the pedicle.   The parts are cut through slowly and deliberately, the clamp is then unscrewed, and the stump allowed to drop into the pelvis.   The blades of the clamp were at first connected with a hinge at one end, but an improved cautery clamp has been suggested by Mr. Chambers (see Fig. 114), in which the blades come together in a parallel manner, and a uniform compression is thus better secured.

To Mr. John Clay, of Birmingham, is due the merit of first applying the actual cautery in cases of ovariotomy, but he used it for the purpose of destroying adhesions only.   Mr. Brown first employed it for cutting and closing the pedicle.   While thought highly of by many, the actual cautery has been used by other operators less frequently than the ordinary clamp.   In a few cases the vessels are not completely closed, and after taking off the clamp it is found that there is some escape, necessitating the application of

ligatures. The cautery-clamp has a twofold action; it compresses and crushes the pedicle for a thickness of a quarter or a third of an

FIG. 114.

inch, and it sears the surface. And it must be employed in such a manner that these objects are well attained. One thing at least is evident, that care must be exercised in inspecting the stump after unscrewing the clamp. If the bloodvessels are large, a ligature may be also necessary.

Acupressure.—That ingenious invention of Sir J. Y. Simpson has not yet been much used in ovariotomy as a means of securing the pedicle. Dr. Aveling records a case in which the pedicle was secured by a contrivance of a peculiar kind. The pedicle was tied by two separate pieces of ligature, these were then brought out through a tube composed of a coil of wire, which he terms a coil clamp, and secured to the extremity of the tube. At the end of forty-eight hours the ligatures were withdrawn.*

As to the comparative merits of the different methods of securing the pedicle, something must be now said. The clamp, the cautery-clamp, and the ligature cut off short and dropped into the pelvis, are the latest favorite methods. With each of these great success has been attained. The older method of ligature with the ends brought out, although followed by very good results in the hands of Dr. Clay, does not commend itself to others. Mr. Brown has done exceedingly well with the cautery-clamp, Mr. Wells and Dr. Keith with the clamp, Dr. Tyler Smith with the ligature cut off short; and which of the three is really the best it is impossible to say. The clamp cannot be used in a few cases, and the cautery-clamp alone does not stop bleeding in every instance, so that these seem nearly balanced. The dragging in a case of short pedicle with the clamp is certainly an inconvenience; if vomiting arise, this may become still greater, and the action of the intestines may become seriously interfered with. After all, however, it does not appear that any objections have been adduced to either one of these three methods which are sufficiently weighty
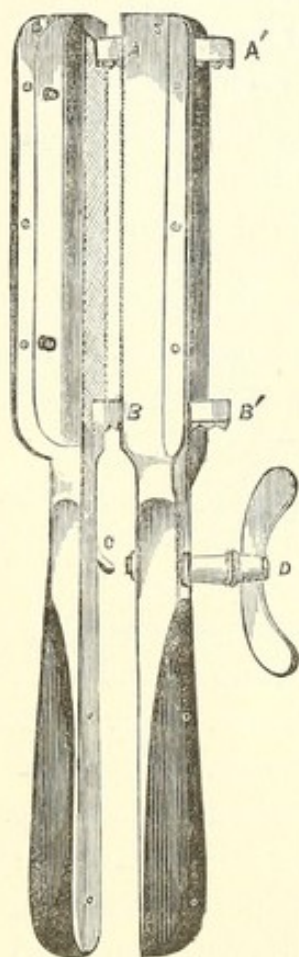
* Obst. Trans., vol. vii, p. 229.

to induce the exclusive adoption of either of the other two. The simple wire ligature may prove the best.

Before closing the wound it is necessary to examine the other ovary and to ascertain whether it be sound. If there be a cystic tumor of the other ovary as large or larger than the fist, and of such a character as to render it probable that it would, if left, grow and necessitate a further operation, it should be removed; but it may be questioned whether it is advisable to meddle with it under any other circumstances. The removal of the second ovary would be effected in precisely the same manner as the first, but more easily and expeditiously.

The next step in the operation is the closure of the external wound. But before finally doing so the operator must be sure that all hemorrhage from adhesions or elsewhere has ceased, and all blood-coagula must be removed. Very clean sponges must be finally used to remove any fluids which may have escaped into the pelvic cavity, and no sponges must be left behind. The edges of the wound are then brought together by hare-lip pins or by simple sutures (for which purpose wire is the best material), as may seem most expedient. But all agree in the advisability of passing the sutures through the peritoneal membrane itself, in order that when the edges of the wound are brought together the cut edges of the peritoneum may touch. Union of the peritoneum it is most important to secure, in order that, if suppuration take place outside, the pus may not pass inwards. The deep sutures having been applied, superficial ones are necessary to maintain the apposition of the cut edges of the skin. If the pedicle be brought outside, it is kept at the lower margin of the wound, and there held by the clamp. A piece of lint dipped in water is next laid on the wound, cotton-wool applied, and over that a roller of flannel.

The *after-treatment* requires great attention. The patient must be watched assiduously day and night by a very competent nurse or by a medical attendant, one important part of the nurse's duty being to prevent the patient getting out of bed. It seems now agreed by most operators that each case must be treated according to its special indications. The room should be well ventilated, dry, and only comfortably warm. The catheter should be used night and morning, or oftener should it appear necessary. Unless there be an indication for it, opium appears on the whole more likely to do harm than good just after the operation. If the patient bears the operation well, no medicine is necessary at first; she must be kept exceedingly quiet. As regards nourishment, no

solid food should be given for forty-eight hours; fluid nourishment of various kinds, cold, or iced, is given by the mouth; some operators prefer to give nourishment at first only by the rectum, in order to avoid risk of sickness. If matters go on favorably, solid food may be given on the third or fourth day, but care must be taken not to overload the stomach. The object should be to keep up the strength of the patient; and the general symptoms, the condition of the pulse, &c., must determine the particular course to be pursued with this end in view.

It not unfrequently happens that the state of the patient just after the operation is one of great exhaustion; or shortly afterwards vomiting, very difficult to control, may set in. As regards the exhaustion, it is to be overcome by giving a sufficient quantity of brandy-and-water, which, if it appear necessary, may be repeated at frequent intervals subsequently. Iced champagne appears to have been the means of saving several women from dying of exhaustion, prostration, or sickness, consequent on the operation. Creasote is a valuable remedy for the sickness. When pyæmic symptoms set in, the only chance for the patient consists in the administration of large quantities of liquid food by mouth or by the rectum, brandy or champagne, and, as medicine, bark and ammonia. No other treatment affords a chance of success. Opium must be given when pain is present and when the patient is unable to sleep. It is best given in the form of suppository.

Pain in the abdomen, whether of inflammatory character or not, is best relieved by hot poultices, or by flannels wrung out of hot water sprinkled with spirits of turpentine. In two cases related by Mr. Spencer Wells a peculiar result was noticed, viz., formation of pus in the broad ligament close to the uterus—a peri-uterine abscess in fact—and these abscesses had to be opened from the vagina. The abscesses appear to have formed, because in tying the pedicle the plexus of veins surrounding the uterus was implicated. This is likely to occur in cases where the pedicle is very short. The treatment to be pursued when such abscesses form, is to find out, by vaginal digital examination, the spot where the abscess presents, and to puncture it from the vagina. I have seen a patient saved by reopening of the abdominal wound and escape of pus therefrom, in a case where a low form of peritonitis had set in.

Diarrhœa, whether alone or associated with pyæmic symptoms, must be treated by administration of opium combined with astringents.

Dr. Tyler Smith has well and ably urged the great importance of guarding against poisonous external influences, and the observance, in short, of all those precautions which are so essential in ordinary obstetric practice, and by which alone we are able to prevent puerperal fever. The causes of the mortality from ovariotomy are chiefly two, hemorrhage and peritonitis in its various forms. In some few cases, but a very few, collapse follows the operation. The hemorrhage is generally preventible by adopting proper precautions of various kinds. The chief mortality—48 per cent. according to Mr. Clay—arises from peritonitis. This probably means blood-poisoning, and its effects in various degrees of intensity. It is very certain, at any rate, that, the peritonitis liable to occur after ovariotomy is best treated by giving stimulants and remedies of a sustaining and not a lowering character. Dr. Tyler Smith in speaking of this peritonitis, states that he should treat it "by small prompt bleedings, and calomel and opium."* Mr. Baker Brown regards "prompt bleeding as the best and most certain remedy." Looking, however, at the peritonitis from the point of view just referred to, it must be stated that depletion in any form is unadvisable. Small doses of opium, the use of hot fomentations, as before directed, and a supporting diet, constitute a plan of treatment more in accordance with what is probably a true theory of the condition of the patient under these circumstances.

TAPPING.—The operation of tapping, alone, must first be considered. This operation is a palliative measure, but in some very rare cases it has proved curative. The operation itself though apparently simple, is really—looking at recorded facts—a somewhat dangerous operation. In about 17 per cent. of the cases, death follows the first performance of the operation, within a few hours or days.† Subsequent operations do not appear to be attended with so much actual and present risk. The operation of tapping is of course only adapted for cases where there is one large cyst filled with fluid, or where, the number of cysts being more considerable, there are one, or possibly two or three, large cysts, the distension produced by which necessitates the adoption of this or some other method of giving relief.

The advantages of tapping are that it affords a ready method of giving, at all events, a temporary relief to the patient, and the (very remote) possibility of cure when the cyst is single.

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* "On Ovariotomy," Obstetrical Transactions, vol. iii, p. 59.
† Result of 130 cases analyzed by Kiwisch, op. cit.

The disadvantages are the following : The immediate risk of death—a risk which it is impossible to foresee and impossible wholly to guard against, and which is not apparently associated with any one particular condition of the cyst or cysts; and the fact that as a rule the fluid rapidly accumulates, and the fatal event is apparently, in many cases, somewhat hastened thereby : of this later fact there seems no doubt.

In some cases patients are tapped, and no refilling of the cyst takes place for some time, for months or for even longer—to a distressing extent at least; but as a rule the cyst refills with rapidity, and to relieve the patient tappings are necessary again and again, the interval becoming progressively shorter and shorter after each operation.

A further disadvantage of tapping is, that, by setting up adhesions, any subsequent attempt to perform ovariotomy is rendered more difficult; and it will be seen, on analyzing Mr. Clay's statistics, that a case of ovarian disease, of which " repeated previous tapping" forms an element in the history, is less likely to prove a favorable case for ovariotomy.

It seems probable that the greater danger of a first operation of tapping, as compared with second or subsequent ones, depends on the fact that adhesions are not usually present at the time of the first operation; and consequently the peritoneum itself is subjected to influences in cases of first operation which are, or may be, inoperative subsequently. The escape of fluids from ovarian cysts into the peritoneal cavity is attended often with no apparent prejudicial effect whatever, but occasionally it is not so, and peritonitis of fatal character may be thus set up. The danger connected with tapping does not depend on this circumstance alone; another cause of death is hemorrhage from puncture of a large vessel in the abdominal parietes; another is hemorrhage into the ovarian cyst itself from puncture of a vessel belonging to the cyst. These are accidents all more or less unavoidable and difficult to guard against with absolute certainty. Another cause of death after tapping is inflammation of the cyst itself, for severe inflammation is sometimes set up within the cyst by the operation.

The operation of tapping is usually performed through the abdominal parietes, when the object is palliative. The operation of tapping from the vagina is generally performed with other views, to be spoken of presently. In some cases ovarian cysts have been evacuated by tapping from the rectum.

Tapping was for a long time, and still is to a great extent, and

with some practitioners, the only operation attempted in cases of ovarian dropsy. The indications for tapping will necessarily vary according as we adopt the opinion that in certain cases ovariotomy is justifiable and proper, or the reverse. In some cases tapping is impossible, as when the tumor consists of many cysts, or when it is wholly solid: these cases do not require to be discussed. But when we have before us a case in which no operative procedures have been yet attempted, then it is that we feel the full weight of the difficulty with which the forming of a right decision is attended. If the distension of the abdomen for which the relief is necessary has been slowly advancing, there appears no reason why tapping should be postponed; but if it be recent, it is advisable to wait longer before operating—that is to say, when the cyst is single, and no indication for ovariotomy is present. Such appears to be the most judicious course to follow in cases *where tapping is the selected treatment*. If we resolve to apply pressure afterwards in the manner to be presently described, then early tapping is the best in all cases. And the same would seem to hold good when iodine injection is to follow the tapping. On the whole, it seems that if we begin with the determination *never* to do more than tap the patient, the tapping had better be postponed to the last moment; but if we discard this—the ancient mode of viewing the question—and do not contemplate leaving the patient to her fate whatever that may be, then early tapping is the best.

In some instances the result of examination is, that we find it difficult to say whether the whole of the tumor be due to the presence of a single large cyst or not, and in which the presence of *other* cysts in a state of growth at the base of the tumor would determine us on advising ovariotomy in preference to tapping. In such cases it may be deemed better to pursue the following course: to tap the cyst and ascertain, in the manner previously pointed out (see p. 329), whether such secondary cysts be present or not, and, in the event of such being found, to proceed at once with the more radical operation of ovariotomy.

In some cases, as where the tumor is made up of two or three large cysts, it has been found possible to evacuate the contents of all through the original opening; but unless under very exceptional circumstances, this procedure does not appear to be entitled to commendation. If the distension present demands relief by operation, the best operation under these circumstances is that of ovariotomy.

Mode of performing the Operation of Tapping.—The readiest,

and on the whole, the safest, method of performing the simple operation of tapping is to place the patient on the back, and to allow the fluid to escape through a flexible tube into a vessel placed by the side of the bed or couch. The best situation at which to make the perforation in the abdominal walls is the median line; there being thus less risk of wounding vessels. It is best to make a small incision in the skin first, in order to allow more easily the trocar to pass through the abdominal wall. A large canula and trocar are best, and if the canula have attached to it, as in Mr. Spencer Wells's instrument, a long India-rubber tube, the contents of the cyst escape on withdrawal of the trocar. It is hardly necessary to observe that the bladder should be very carefully emptied by the catheter before proceeding to the operation. If during the operation the canula become choked up, a long probe should be used to remove the obstruction. During the escape of the fluid gentle pressure may be exercised on the abdomen. After completion of the operation a wide flannel bandage should be carefully applied, the wound being previously covered over by a piece of lint folded in the form of a compress. Should fainting occur during the operation, brandy or other stimulants must be given, and the cyst evacuated more slowly. Quiet after the operation is very essential, and the body should be kept as nearly as possible immovable for at least twenty-four hours after the operation, the catheter being used to evacuate the bladder.

The cyst inflammation liable to arise after tapping is accompanied with great pain, great tendency to nausea, or actual vomiting, and general symptoms of peritonitis. Warm poultices, iced drinks to allay the vomiting, are the best remedies in such cases. It has been customary to recommend application of leeches and administration of calomel, but I should be disposed to trust more to remedies of a less lowering character. Small quantities of stimulants—brandy or champagne—very frequently administered, are more likely to sustain the patient in resisting the " pyæmic" tendency of the affection than mercury and depletion.

TAPPING FOLLOWED BY PRESSURE.—This is a method of treating cases in which the disease is limited to one or two large cysts, which has been practised and advocated by Mr. Baker Brown, and with results which, in his hands and in those of some other practitioners, have appeared to be satisfactory in a certain proportion of cases.

The method of treatment in question consists in first emptying the cyst, and then applying compresses of lint or linen, so arranged as to present a convex surface adapted accurately to the concavity

of the pelvis. Over these compresses straps of adhesive plaster are applied, so as to embrace the spine, meeting and crossing in front, and extending from the eighth dorsal vertebra to the sacrum. Over all a broad bandage is placed. The crest of the ilium is protected by buffalo skin or amadou plaster.* The pressure is to be steadily kept up, and regulated according to circumstances, and " medicines to stimulate the functions of the various abdominal organs, to correct faulty secretions, and generally to improve the health and strength, should also be administered."

The number of cases hitherto published is hardly sufficient to afford a just appreciation of the merits or demerits of the plan in question; they are enough to induce the expectation that some cases may be very materially benefited by it, and reasons have already been given (see p. 612) for the belief that, by means of pressure so applied, the development of further cysts may possibly be prevented. This would be an additional argument for making trial of this method in favorable cases—that is to say, where the cyst is single, where no adhesions are present, where the contents of the cyst are clear and not albuminous, and where time and the condition of the patient admit of its persevering application.

TAPPING FOLLOWED BY IODINE INJECTION.—This method of treatment consists in first tapping and evacuating the cyst, and then throwing into its cavity a fluid consisting of equal parts of tincture or watery solution of iodine, to which a little iodide of potassium is added, and water. This fluid is left in for a few minutes, the cyst being slightly kneaded from without, and it is then usually allowed to escape by the tube through which it was injected. The effect of this procedure, when attended with success, is to excite inflammation of the interior of the cyst, or so to alter the condition of the interior that there is no further accumulation of fluid.

This operation is only adapted for cases where there is but one cyst, or possibly two large ones, and where there is no other disease of the ovary. In cases where the cysts are numerous, it is quite inapplicable; very little benefit could be expected from it in cases where further cyst development is in progress.

Boinet treated 45 cases in this manner: of these 68 per cent. were cured after one or more operations, 20 per cent. died from the effects of the operation, and in 11 per cent. it failed. Dr. West employed it in eight cases. No death occurred. In one the

* On Ovarian Dropsy.

patient was cured, in one there was marked retardation; in two, cure of the first cyst, and retardation; in one slight improvement, in one possible retardation; in one operation not completed, and in one there was no benefit derived. Sir J. Y. Simpson states that he has employed the operation, and with advantage, in a considerable number of cases. Dr. Tyler Smith states that of ten cases treated by this method, two died from the effects of the operation, and in only two were the results satisfactory.

The drawbacks to the operation seem to be, the uncertainty that it will cure, and the necessity, in many cases, for repetition of the operation, two, three, or more times, before a cure can be obtained. It is difficult at present to say whether or not the operation is materially more dangerous to the patient than simple tapping, but this further experience will doubtless show.

TAPPING FROM THE VAGINA.—A method of treatment of ovarian cysts which has not as yet attracted much attention in this country, but which appears to have been practised in a certain number of cases with advantage in Germany, first by Kiwisch, consists in tapping the cyst through the vagina, maintaining the opening thus made in a fistulous state, and obliterating the cyst by the inflammatory process set up. It is applicable chiefly to moderately large simple cysts, not exceeding the size of a large pregnant uterus. The opening made into the cyst is the size of the finger; a tube is left in this opening for several weeks, and warm water is daily injected through the tube. Dr. West recommends, in place of the heavy tube used by Kiwisch, that a long elastic tube the size of a No. 12 catheter be used; this is retained by means of framework placed in the vagina, and having a collar into which the tube is fixed. A careful attention to the diet and regimen of the patient is necessary while these operative measures are in progress. The cyst inflammation set up requires to be treated, according to Dr. West, by vigorus antiphlogistic measures. The operation is necessarily difficult when the ovarian cyst does not project well into the vagina, or when the vagina itself is narrow.

The results claimed for the operation by Kiwisch are of the best kind, viz., the radical cure. Scanzoni, following Kiwisch's steps, has operated in this manner 14 times, and, as he asserts, 8 of the cases were completely cured. The results obtained by Dr. West in 3 cases were encouraging. Mr. Clay,* in a note on this

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* Op. jam cit., p. 146.

subject, expresses an opinion favorable to the extension of the operation in this country, and there appear to be very good grounds for the expectation that in many cases great benefit would be derived from it. There are advantages belonging to the operation which have not been as yet alluded to, but which deserve mention in this place. They are as follows: In the operation of tapping from the vagina, and making a perforation in the cyst wall in this situation, we operate on that part of the cyst wall in immediate contiguity with the other parts of the ovary. In cases where new cysts are being formed, it is likely therefore that the puncture and inflammatory action set up thereby may have a good effect in destroying these new cysts. It may be found possible hereafter to devise some modifications of this operation, by which the ovary itself may be so destroyed or broken up that no further development of cysts can occur. It is rational to presume that, in some of the cases recorded by Kiwisch and Scanzoni, the cure has been radical, because something of the kind here alluded to has occurred.

As a simply palliative operation, tapping from the vagina is less generally applicable than tapping from the abdomen, from the fact that the tumor is more often abdominal than pelvic. In view of the possibility of obtaining a radical cure when performed after the method of Kiwisch, it appears chiefly deserving of increased attention, but the number of cases in which it is likely to be applicable is by no means considerable.

Analogous to the operation just described is the *puncture of the cyst from the rectum*, a mode of procedure which requires no particular comment.

There are some other surgical procedures which have been advocated and practised at various times, but which have not been found very successful; generally for very obvious reasons; and the great success of the radical operation of ovariotomy really renders the consideration of such minor tentative procedures in a degree superfluous.

CHAPTER XVIII.

DISEASES OF THE FALLOPIAN TUBES.

Tumors of the Fallopian Tubes, Fibroid, Tuberculous—Cyst Formations—Distension of the Tube with Fluid—Distension of the Tube with Blood—Puriform Accumulations in the Tubes—Fallopian Pregnancy—TREATMENT.

THE diseases of the Fallopian tubes do not very frequently present themselves before us during life, although various alterations are often observed after death in reference to the shape, position, permeability, &c., of these ducts. It is not intended in this place to present a complete account of the diseases of the Fallopian tubes, but to call attention to some of the conditions which the present state of knowledge now and then enables us to recognize during life.

TUMORS OF THE FALLOPIAN TUBES.

Fibroid Growths may be found in such a position as to block up the passage, and occlusion of the tube sometimes thus results. *Tubercle* of the tubes has been met with, so also *cancer*. *Cyst formations* are more doubtful; they might readily be confounded with distension of the tubes themselves.

DISTENSION OF THE TUBE WITH FLUID (FALLOPIAN DROPSY).

Tumors constituted by distension of one or both tubes with fluid are not so very uncommon. They are met with chiefly in old people, and are accompanied with closure of one or both extremities of the tube. The quantity of fluid may be so great as to distend the tube to the size of the fœtal head or even larger (see Fig. 115 from Hopper). The fluid itself is usually of a watery character mingled with flaky substances of varying consistence. It is a curious circumstance that both tubes have been found simultaneously and about equally affected. One point of interest in connection with the subject is the physical resemblance between such tumors and cystic tumors of the ovary.

BLOOD ACCUMULATIONS IN THE FALLOPIAN TUBES.

There are reasons for the belief that the Fallopian tubes are not very unfrequently distended with blood to a slight extent in women during menstrual life. In some such cases the blood so accumulated finds its way into the peritoneal cavity (see "Peri-uterine Hæmatocele"). The blood may have three sources, viz., the uterus itself, the lining of the tube, or the Graafian follicle. It may be produced by imperforate hymen, or by imperforate os uteri, and may occur in all cases when the outlet of the uterus below is occluded in any way. Thus it is not rarely associated with menstrual retention; the blood secreted in the uterus, or in the tube itself, or possibly blood arising from the ovary, distending the

Fig. 115.*
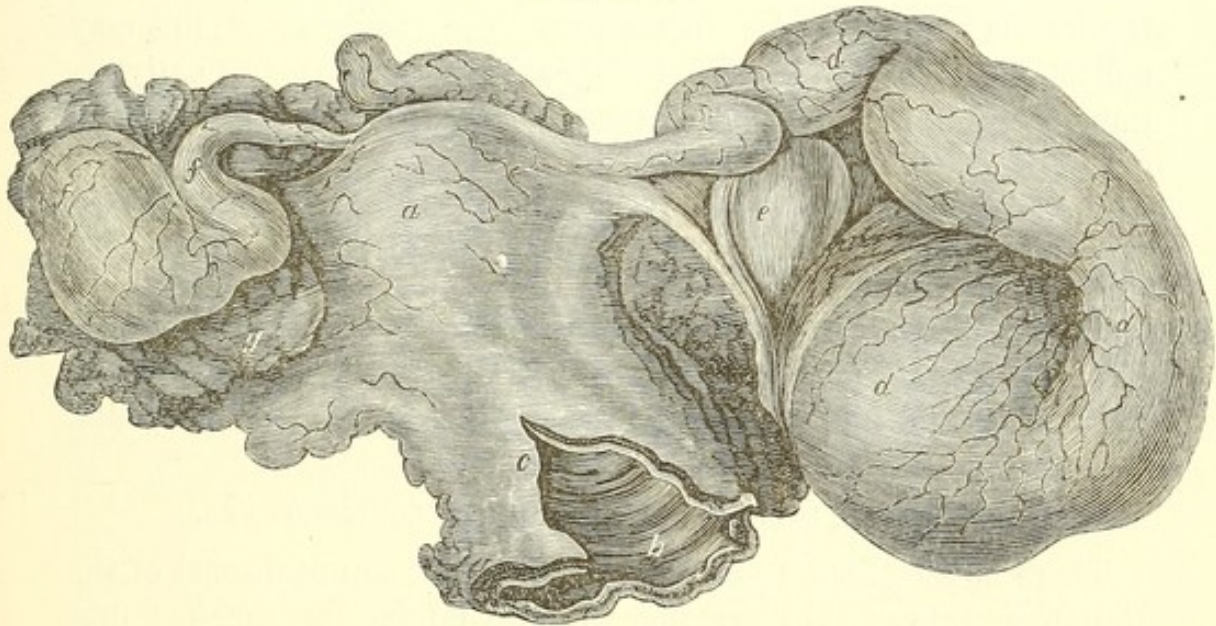
tube in common with the uterus. In a case of menstrual retention with distension of the uterus, the presence of a tumor in the pelvis by the side of the uterus, and having the shape of the enlarged Fallopian tube, would suggest the presence of distension of the tube with blood. But the Fallopian tube may be distended with blood in cases where there is no distension of the uterus of a like character. A fibroid tumor situated at the junction of the tube and the uterus, and blocking up the canal, was the cause of the distension in a case related by Favel, and quoted by Bernutz and Goupil.† Occlusion of the tube at this situation from other causes

* Fig. 115 (after Hopper), Fallopian dropsy.
† Op. cit., tom. i, p. 168.

may doubtless produce the same result. Dr. Farre states that he has found accumulations of blood in tubes closed at both ends, and in cases where death has occurred during a menstrual period; conclusively showing, as he remarks, that the menstrual fluid is supplied in part by the wall of the Fallopian tube.*

PURIFORM ACCUMULATIONS IN THE FALLOPIAN TUBES.

These are the result of inflammatory action in the tubes or the uterus; the period of childbed is the one during which such formations are most liable to occur, but they may follow inflammation of the uterus, or result from operations on the generative organs; they may occur idiopathically, and in connection with chronic inflammation of the interior of the uterus; they may also result from stricture of the os uteri, whereby escape of fluid formed in the uterus is prevented. In the puerperal class of cases, pus may collect in, and distend, the Fallopian tubes, and may finally regurgitate into the peritoneal cavity. This is one of the modes of origin of puerperal peritonitis.†

FALLOPIAN PREGNANCY.

This is to be considered a disease—and generally a fatal one. But the subject is one which falls out of our province. Rupture of the tube and fatal abdominal hemorrhage are the usual results.

TREATMENT OF DISEASES OF THE FALLOPIAN TUBES.

There is very little to be said on the treatment of disease of the Fallopian tubes; they are inaccessible, safely, for surgical procedures. In some cases serous collections within them have been evacuated by means of a fine trocar and canula from the vagina.

In cases where the tubes are distended with pus, as in a case of puerperal metritis, great care would be required to maintain rest, lest the contents of the tube be poured out into the abdominal cavity.

In cases of *Fallopian pregnancy*, if it were possible to make an exact diagnosis of these cases of rupture and hemorrhage during life, it would undoubtedly be better to open the abdomen and endeavor to secure the bleeding vessels than to allow the patient

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* Op. cit., p. 618.

† See an interesting paper on this subject by Dr. Barnes, Obst. Trans., vol. iii, p. 419.

to die from hemorrhage. No operation of the kind has ever been attempted, but the subject formed matter of discussion not long since at a meeting of the Obstetrical Society. The chief difficulty lies in the diagnosis, for, until the patient is dead, the real nature of the case is not generally detected; such, at least, has been the experience of most practitioners. Increased accuracy of diagnosis of the diseases of the female generative organs may, perhaps, result in the more frequent recognition of this formidable accident sufficiently early for measures to be devised and carried out by which life may be saved.

CHAPTER XIX.

DISEASES OF THE PERINEUM AND VULVA.

Rupture of the Perineum: Treatment of Recent and of Old Cases; Operation described — Adhesion of Labia; Treatment — Elephantiasis of Vulva — Hypertrophy of Labia and Nymphæ — Anasarca of Labia or Nymphæ — Hypertrophy of the Clitoris — Condylomata, Warty Excrescences of the Vulva; Removal — Lupus of the Vulva — Cancer of External Generative Organs; Treatment — Abscess of Labia and Boils — Blood-Tumor of the Vulva — Fibrous, Fatty, and Encysted Tumors of the Vulva; Treatment — Hernia of the Labia and Ovary — Various forms of Inflammation of the Vulva; Treatment — Vulvitis in Children — Pruritus of the Vulva — Treatment.

RUPTURE OF THE PERINEUM.

THE perineum varies in depth in different individuals. It is liable to be torn during labor, and in some cases the fissure which results obliterates the perineum altogether, the septum between the vagina and rectum being destroyed, and the sphincter ani being involved in the rent there is involuntary defecation. When the rent just reaches the anus, the patient has some, but an imperfect, control over the process of defecation. When recent, a slight rent of the perineum is readily recognized. When old, the commissure may present nothing unusual, and it is only by the diminished distance of the vaginal from the rectal aperture, that we recognize a former laceration. The perineum is undoubtedly a structure of importance in regard to the prevention of prolapsus, and in cases of prolapsus uteri, &c., we generally find the perineum deficient (see "Prolapsus," p. 532). It is so far important that a woman with a perineum deficient in depth may be considered as

more liable to suffer from prolapsus by and by than another in a sound condition. The laceration produced during labor frequently heals up entirely. In other cases it is not so.

The perineum is sometimes found deficient in cases where there has been no pregnancy, but when fibroid or other growths of the uterus have brought the organ so low as to press on the perineum and to enlarge the vaginal aperture.

A very unusual form of lacerated perineum is that in which the perineum is actually perforated, and a false vaginal opening thus made.

TREATMENT.—The best treatment in a case of ruptured perineum is to deal with the rent immediately (that is within an hour) after its occurrence. By means of a curved needle and some fine silver wire, two or three or more interrupted sutures are applied, taking care that they pass across quite at the bottom of the wound, and the torn parts are thus brought together. In three days they are removed. Complete quiescence, and constipation of the bowels are requisite for a week. The parts will occasionally heal without the sutures, but this cannot be depended upon. There is little or no pain attending this little operation if it be done directly, and the result is, as I can say from an experience of several cases, most satisfactory. Every hour after the labor diminishes the chance of union by the first intention.

If the case be not seen until the end of a week or so, it is better to keep the patient at rest, attending particularly to cleanliness, and to wait until the lochial discharge has ceased before proceeding to an operation. Even in cases which do not apparently heal at first, there often occurs considerable contraction and adjustment during the next week or two, when the rent is not a deep one. I have found great advantage under any circumstances in keeping the patient on her side and a little over on the stomach, so as to allow the discharges to run forwards away from the raw surfaces.

At a later period a different operation is required. The surfaces have healed over, and require to be denuded and brought together, and so maintained by well-adjusted contrivances. The operation introduced into this country by Mr. Baker Brown, and with slight modifications employed by other operators, is as follows: The patient should be in good health otherwise. The bowels having been well cleared out, she is placed on the edge of a table in the lithotomy position. Chloroform having been given, the hair is removed by a razor from around the posterior vaginal commissure.

A symmetrical incision is next made by a sharp scalpel in the mucous membrane of the vagina, about an inch, or less, according to circumstances, within the vagina, and another parallel to it just at the junction of the mucous membrane and skin. The length of the incisions and the distance between them vary according to the extent of the reparation necessary. When the rent is a very deep one, it is sometimes best to deal with the deep part by a first, and the remainder by a second operation. After carefully, completely, and symmetrically denuding the surfaces on each side, as represented in Fig. 116, they are brought together by deep

FIG. 116.
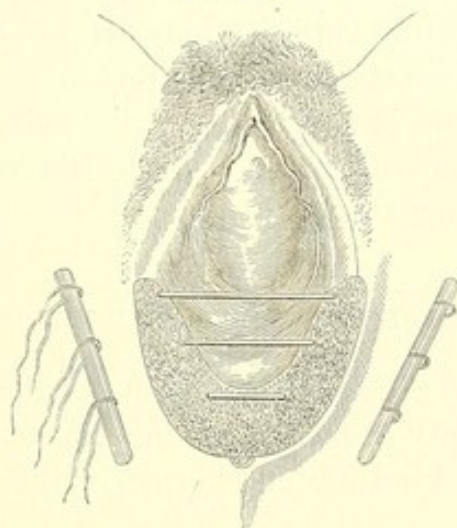
quill sutures and by superficial sutures. The deep sutures, also shown in Fig. 116, are of strong twine or wire; they are generally three in number, and must be inserted about an inch from the edge of the outer incision—if the fissure be very deep, more than one inch—and they pass across the fissure quite at the bottom of it. Stoutly made curved needles, with the shaft of the needle set at right angles to a firm handle, are best. The needle is perforated for the ligature near its point. When all the deep sutures are inserted, they should be drawn tight, and the finger inserted in the vagina to ascertain whether the deep parts are really brought together. After securing the deep sutures, three or four superficial ones of fine wire are required.

Mr. Brown insists on the necessity for dividing the sphincter ani as a part of the operation. The cases I have operated on have done very well without it, but it is probably safer to divide the sphincter in cases where the fissure involves the rectum itself. The division should be on each side a quarter of an inch in front

of the attachment of the sphincter to the os coccygis, by an incision carried outwards and backwards.

So far for the operation itself. The subsequent treatment consists in maintaining a lateral position, the knees being kept closed, and one grain of opium being given at once, and repeated every six hours for the first twenty-four hours, but afterwards twice a day. Diet good, but quantity limited. The catheter to be used every four or six hours for three or more days, care being taken to prevent the escape of urine into the vagina. The deep sutures are removed in from 48 to 60 hours, the smaller ones in about a week, but the thighs to be kept in apposition for some time. No action of the bowels is to be allowed for two or three weeks, after firm union, when warm injections are to be employed. Such are the principal precautions to be enforced.

When the perineum is perforated, it is advisable to cut through the remaining portion of perineum into the vagina, and then to pare the surfaces from the bottom.

ADHESION OF THE LABIA MAJORA.

The labia majora are sometimes found adherent in the middle line, there being only a small opening above—the urethral orifice. Cases of this kind are chiefly met with in infants or young children.

Such adhesion is sometimes met with, but in a partial degree only, after adult age has been reached. The closure here alluded to is very different from that situated higher up within the vagina, where the hymen is in question; in the latter case, the obstructive membrane is not visible until the labia have been separated. Here the labial obstruction is quite on the surface, the perineal raphé extending forwards much further than usual, and all that is seen of the vagina is a little recess just beneath the urethral aperture.

The *treatment* required is as follows: The ivory handle of a scalpel is dipped in oil, the extremity of the handle inserted just below the urethral orifice, and the separation effected by pressing the edge of the handle outwards against the obstruction, which usually readily gives way. A piece of oiled lint may be introduced between the separated labia, and there left for a day or two. This operation should be performed during the first year of life. Incision may possibly be necessary in those rare instances in which the agglutination persists until after puberty.

ELEPHANTIASIS OF THE VULVA

Is a peculiar hypertrophy of the skin of the part. The disease is very rare; the size of the tumor thus formed may be very considerable, as in the case depicted in the French edition of Scanzoni's work on "Diseases of Women," where the labia, enormously increased in size, extended down as far as the knees. The disease is said to be epidemic in Barbadoes. It is not often witnessed in temperate zones. (Scanzoni.)

HYPERTROPHY OF THE LABIA AND NYMPHÆ

Is not so rarely witnessed. The increase in size is generally due, when the labia majora are affected, to the presence of large quantities of fat. Whether due to fat or to fibro-cellular tissue, the enlargement is smooth and uniform, thus differing from elephantiasis and from other forms of enlargement of the labia. The hypertrophy may affect the labia majora or the labia minora exclusively. A remarkable case of hypertrophy of the nymphæ has been described by Breslau, in which the presence of the tumor and the dragging of the enlarged organs on the lips of the urethral orifice produced incontinence of urine. This case has been already alluded to (see p. 109).

In a few cases, when the bulk of the organ interferes with locomotion, or gives rise to other discomforts, the hypertrophied parts have to be excised.

ANASARCA OF THE LABIA MAJORA OR NYMPHÆ.

In these cases there is an effusion of fluid into the cellular tissue of the labia majora, or nymphæ, or both, and it usually affects both sides; the distension is uniform, not painful; it is consequent on obstruction to the abdominal circulation, as in the course of pregnancy, general organic disease of the heart, liver, kidneys, &c.

The distinguishing characteristics of the swelling due to this cause are that the swelling is uniform, smooth, pitting on pressure, and painless, at all events at first. Subsequently there is often much pain, due to excoriation of the surface.

The *treatment* consists in observance of rest in the horizontal position, and emollient applications, such as poppy fomentations, or an evaporating lotion, composed of a mixture of spirit and water. Such applications afford great relief, and are usually sufficient. When the swelling is extreme, troublesome excoriations,

produced by the opposed surfaces rubbing one against the other, may be witnessed. In such cases, lint dipped in the lotion must be applied between the parts affected, so as to prevent friction.

HYPERTROPHY OF THE CLITORIS

Is now and then met with as a consequence of eczema of the skin in the neighborhood, or of a chronic inflammatory condition of the surrounding parts, or of syphilis, or without evident cause. It is occasionally congenital. The clitoris is also liable to become the seat of cancerous growth.

Cases are on record in which the clitoris has attained an enormous size, so much so as to render walking and moving about inconvenient. The identity of the tumor with the clitoris will be ascertained by carefully examining its attachment superiorly.*

In cases of self-abuse the clitoris may become, but not necessarily so, hardened and hypertrophied.

TREATMENT.—When the clitoris is hypertrophied, its removal may be necessary on account of the mechanical inconveniences the presence of a large tumor in this situation produces.

The removal of the clitoris for the purpose of curing epilepsy is an operation which has met with little favor. The evidence which has been hitherto adduced has failed to satisfy the profession that the operation succeeds in its object.

CONDYLOMATA, WARTY EXCRESCENCES, ETC.

Various forms of excrescences of the external generative organs are noticed. *Condylomata* are warty growths, often of considerable size—flat, smooth elevations, growing irregularly round the orifice of the vulva, and occasionally in such profusion as to almost block up the entrance. They are observed in cases of syphilis of the female generative organs. There is generally in such cases a profuse offensive discharge; and, on inquiry, the syphilitic source of the growths in question is made evident. Warts of non-syphilitic character, and resembling those seen in other parts of the body, may be found growing on some part of the vulvar surface. The diagnosis of the syphilitic from the non-syphilitic cases is not usually a matter of any difficulty. The further consideration of this subject falls scarcely within the province of this work.

* Several cases of enlargement of the clitoris will be found described in Dr. Churchill's valuable treatise on Diseases of Women.

TREATMENT.—Where the condylomata are large and numerous, the preferable treatment is to use the knife for their removal, the patient being previously placed under the influence of chloroform. Strong nitric acid or lunar caustic may be used in other cases. The black wash, or a strong solution of iodide of potassium, should be subsequently applied freely; anti-syphilitic remedies are to be given internally.   The smaller warts may be dealt with by scissors.

LUPUS OF THE VULVA.

The chief characteristics of this disease—not a very common one—are, thinning of the skin, hypertrophy and knotty condition of the cellular tissue beneath, formation of indurations and enlargements, ulcerations and contractions. The disease is chronic, and is not usually painful. The ulcers form slowly, and the surface heals in one place while it is ulcerating in another. The contractions left on healing of the ulcers are very considerable. The disease differs from cancer, but exhibits a very close resemblance to lupus of the face. It may prove fatal by exhaustion, or by peritonitis consequent on formation of fistulæ. The disease was first accurately described by Huguier, who divides the cases of this disease into three categories—the superficial, the perforating, and the hypertrophic forms.* Dr. West, whose description of lupus is most complete, has himself observed five cases.†

The disease was observed in only one of these cases before the age of twenty; it was observed most frequently between the ages of twenty and thirty-five. Its duration may be gathered from Dr. West's statement, that in the 14 cases observed by Huguier and himself, some cases admitted of a cure after more than three years, and of great relief even after eight years. One case had lasted between ten and eleven years. The disease kills, when fatal, by producing peritonitis, fistulæ, contraction of the bowel, and not, as cancer does, by attacking some distant organ, or by involving all the tissues in one common morbid change. (West.) Two cases of this rare affection are recorded and delineated in Dr. McClintock's work.

TREATMENT.—It appears that complete recovery from lupus of the vulva is rare, though the disease is susceptible of much alleviation by treatment. Long courses of small doses of mercury

* Huguier's important memoir will be found in the Mémoires de l'Acad. de Méd., 1849.
† Op. cit., p. 653.

and iodide of potassium would seem, from Dr. West's experience, to be most efficacious. Scanzoni recommends the local and internal use of iodine. Huguier and West both insist on the extreme advisability of removing the nymphæ or any of the adjacent parts readily admitting of extirpation, when the ulcerations upon them appear disposed to heal. Dr. West also urges the removal of the excrescence apt to form in such cases as preparatory to other measures; and he considers the actual cautery preferable to any kind of chemical escharotic, as a means of healing the ulcerations produced by the disease. Professor E. Martin* of Berlin records a case in which he applied fuming nitric acid to the affected parts, the patient being under the influence of chloroform, and subsequently a milder caustic, in the shape of nitrate of silver. The case, that of a patient æt. 25, terminated satisfactorily. The destruction of the surface affected by means of potassa fusa, as successfully practised by Professor Humphry in cases of lupus of the face, would appear to be a means of treatment likely to be applicable in cases of this rare disease.

CANCER OF THE EXTERNAL GENERATIVE ORGANS.

Usually occurs in the form of epithelial cancer, scirrhus and the medullary form of the disease being much more rare. Any part of the external generative organs may be the starting-point of the affection—the clitoris, the labia, are more commonly first affected. In its first stage, epithelial cancer exhibits itself as a "little hard tubercle on the outer surface, but near the edge, of the labium." (West.) The tubercle in question is not usually painful, but gives rise to itching and smarting. The diagnosis of the indurations due to commencing cancer of the labia is often a little obscure at first. In a case which fell under my notice, the occasional presence of a peculiar sharp pain darting across the groin led me to suspect cancer; the result proved this suspicion to be well founded. After some months' duration the surface becomes ulcerated, and the ulceration then spreads. The edges of cancerous ulcers are indurated, and this induration is perhaps the most distinctive feature of the ulcer; there is occasionally a bloody discharge; subsequently the inguinal glands swell, and the patient's constitution becomes affected in the characteristic manner. The disease may begin in the groin, as in a case of Dr. McClintock's, and travel to the generative organs.

* Mon. f. Geb., Nov. 1861, p. 348.

Mr. Jonathan Hutchinson has collected the particulars of 14 cases of epithelial cancer of the female genitals.* The labium was the part affected, the disease affecting the clitoris and nymphæ also in one or two of the cases. The longest time the disease had existed was five years. The disease is stated to have returned after operation in three of the cases. Operation is said to have been finally followed by recovery in the other cases, save one, where the result is not given.

TREATMENT.—When, as is ordinarily the case, the disease belongs to the epithelial variety, early excision should be practised, the position and relations of the tumor being such as to render the removal practicable. When the disease has so far advanced that deep ulcerations are present, such operations are not admissible. Applications, such as bromine in solution, are then more suitable.

ABSCESS OF THE LABIA; BOILS.

Abscess of the vulva is characterized by the presence of a rounded circumscribed swelling, of variable size, on one side only, usually on the inner aspect of the labium, and which is painful and very tender to the touch. It may be produced by blows or injury of any kind, by excess in coitus, by scratching, as in cases of pruritus, by masturbation, &c. The most frequent *seat* of the affection is the gland situated on either side, known as the vulvovaginal or Duvernoy's gland. This gland becomes inflamed, or the orifice of the duct of the gland becomes obstructed, and the abscess is thus produced. Most cases of circumscribed abscess of the labia originate in the gland in question. Abscess of the vulva of a more diffuse form may be observed as the result of puerperal affections, or it may occur in connection with œdema during pregnancy, or under other circumstances.

Boils are liable to form in the labia as well as other parts of the body. They occasion much irritation, and inconveniences of various kinds. When one boil is in process of healing, another often forms, and the affection may thus last a considerable time.

TREATMENT.—The ordinary circumscribed abscess of the labium which arises out of inflammation, or obstruction of the duct of the gland here situated, is best treated by early incision. After the opening has been made into it (which should never be done until the question of the swelling being possibly due to a hernia has been considered and dismissed), warm poultices should be applied,

* Med. Times and Gaz., Oct. 1860, p. 379.

and perfect rest enjoined; opiates are necessary to relieve the pain.

Boils are often tiresome and troublesome to manage. Great cleanliness is essential, and generally tonic medicines are requisite. The solid nitrate of silver has been found a good application.

BLOOD-TUMOR OF THE VULVA.

This is not by any means a common affection. The tumor, composed of blood effused into the tissue of the part, and doubtless derived from the vessels of the erectile structure described as the bulb of the vestibule by Kobelt, is generally confined to one side. The tumor may be of considerable size; it is painless, unless when the effusion is considerable and the surface inflamed. Women are most liable to this "thrombus" of the vulva, as it is termed, during pregnancy, and the swelling has been sometimes so great as to impede delivery. After parturition, also, effusions are frequently found to have taken place into the cellular tissue in this situation. It sometimes happens that the tumor or the enlarged veins near it bursts externally, and serious hemorrhage results.

Dr. McClintock* describes the affection under the term "Pudendal hæmatocele." The author, who has placed on record some most interesting cases of this affection, believes that a varicose state of the vessels of the vagina or vulva is not, as usually supposed, a precursor of the rupture which permits the effusion of blood; for out of 38 cases, tabulated for him by Dr. Halahan, there were only 2 in which such varicose condition of the veins was noted as being present. The affection was observed in primiparæ in 13 out of 25 cases where the number of the pregnancy was noted. Dr. McClintock has never observed a case of thrombus of the vulva in the non-gravid state, except as a result of direct violence; and even during pregnancy its spontaneous occurrence is very rare, the more usual cause of the affection being a traumatic one. Mauriceau mentions a case in which a blood-tumor in the left labium had existed for twenty-five years, and which, on being opened, gave issue to a matter like the contents of an aneurismal sac.† This was, however, a very exceptional case; ordinarily, the thrombus of the vulva is a recent affection, of rather

* Clinical Memoirs on Diseases of Women. Dublin, 1863.
† Mal. des Femmes, tom. ii, p. 29.

sudden formation, and in the majority of cases it is an accident attendant on labor.

TREATMENT.—These tumors are best treated by rest and the continued use of an evaporating lotion. They are not to be meddled with surgically, unless the coagulum—which is rare—undergoes liquefaction, and a sort of abscess results; in which case puncture may be required.

The hemorrhage which is liable to occur from bursting of these tumors is to be treated by very careful and continuous application of pressure combined with cold: it has occasionally proved fatal.

FIBROUS TUMORS OF THE VULVA; FATTY AND FIBRO-CELLULAR GROWTHS; ENCYSTED TUMORS.

Fibrous growths are not very frequently met with in the external genitals. They are characterized by slow formation, are painless and circumscribed; they may become pendulous, attached by a long pedicle. There is a peculiar form of fibrous tumor—the *recurrent*—of which an interesting instance is recorded by G. Simon.* In this case, after repeated removals, the disease always returned, and finally proved fatal. To the ordinary forms of fibrous tumor there attaches no such tendency to reappear.

Fatty and Fibro-cellular Tumors of the Vulva.—Dr. Churchill† relates cases in which tumors answering this description have been present. Sir Henry Thompson has related an instance in which a firm lobulated tumor, weighing when removed nearly four pounds, grew from the external generative organs, hanging down to within two inches of the knees. Its surface was fissured and nodulated, and it was made up of hypertrophied cellular tissue, with fat in the interstices. It had been growing for nine years. The patient's age was 46. The tumor was chiefly inconvenient from its size.‡

The *encysted tumor* of the vulva is rare. It grows to the size of an egg or less, and is found just within the vulvar aperture on one side. I have seen two instances of it.

Capelle records the case of a woman, æt. 30, who had an enormous enlargement, termed by him a *lipomatous tumor*, the size of the head of an adult, originating in the right labium and extending as far as the knee. It was removed by the knife.§ The growth of the tumor dated from ten years previously.

* Schmidt's Jahrb., vol. cv, p. 53.
† On the Diseases of Women, 4th edit.
‡ Trans. of the Patholog. Soc., vol. vi, p. 269.
§ Journ. de Méd. de Bruxelles, Jan. 1860, p. 41.

Oozing Tumor of Labia.—A solid œdematous condition of the labia, with great secretion from the muciparous follicles, is sometimes met with. It is generally confined to one side; the enlargement is smooth, but firm; the surface is somewhat lobulated; and there is a profuse watery secretion. This condition was first described by Sir C. M. Clarke.

TREATMENT OF TUMORS OF THE LABIA.

The various forms of tumor of the labia are usually only to be treated by one method, viz., excision. The risk attendant on this operation is not usually considerable, but when the tumor is very large, or attached by a broad base, the hemorrhage may be difficult to restrain, and it may be necessary to secure the vessels one by one as the operation is being performed; in some cases, it is advisable to transfix the pedicle thrice or more, in order to secure control over the hemorrhage preparatory to commencing the incision.

The *encysted tumor of the vulva* is best treated by dissecting it completely out; if preferred, it may be simply punctured, but the cyst is then liable to refill.

In cases of oozing tumor of the labia, extirpation of the labium has been performed. Our present knowledge of the disease is somewhat vague and unsatisfactory; few opportunities are afforded for observing it, or for ascertaining whether it be a peculiar disease, or a modified form of the affection known as eczema of the vulva. Dr. Churchill recommends great attention to the state of the general health in such cases, and administration of a good generous diet. Rest, the use of astringent applications, as starch, decoctions of oak bark, or lotions, constitute the palliative treatment.

HERNIA OF THE LABIA.

An enlargement situated at the upper part of the labia on one side may be due to a hernia in this position. The hernia follows in such case the course of the round ligament. It is characterized by the position, which is in the course of the ligament in question, by its painlessness (unless inflamed), by the impulse communicated on coughing.

HERNIA OF THE OVARY.

In some very rare cases, a tumor is observed at the upper part of the labium on one side (in the celebrated case related by Mr.

Pott, on both sides), and constituted by the ovary, a pouch of the peritoneum in such cases being prolonged into the situation in question. Dr. Meadows has recorded a very interesting case,* in which there appears to have been primarily an ordinary irreducible inguinal hernia, but secondarily an ovarian hernia. The tumor in this case gave rise to so much inconvenience that it was removed by a surgical operation.

VARIOUS FORMS OF INFLAMMATION OF THE VULVA.

Vulvitis.—Acute inflammation of the vulva may be produced by blows, by undue exertion in walking, by intemperate sexual intercourse, by menstruation, by gonorrhœal infection, by syphilis; and it may occur in conjunction with affections of the vulva or vagina of a chronic character, such as lupus, follicular inflammation, cancer, &c. Erysipelatous inflammation is found to occur here, as on other parts of the surface. Abscess of the vulva, in which a circumscribed enlargement of one part of the vulva only is present, is not included in the present series of cases, though vulvitis may lead to abscess.

The inflammation of the vulva produced by any of the foregoing causes may be more or less intense in degree, and the appearances observed will vary according to the time at which the observation is made. Swelling of the labia, pain on movement of any kind, tenderness, pain in micturition, redness of the mucous membrane, with more or less irritative fever—these are usually present at the commencement of the disease. A discharge more or less copious, and generally of a purulent or muco-purulent character, is found issuing from between the labia; the skin at the upper and inner parts of the thighs is excoriated. The swelling may be very considerable. If the case be not seen until a later period, the swelling may have subsided; but the tenderness, together with a constant discharge, and a troublesome irritation and excoriation of all the mucous surface, are usually still found to be present.

In some cases we find the mucous surface of the vulva covered by diphtheritic patches of exudation, there being at the same time a subacute inflammatory condition of the vulva generally. The patient is, under such circumstances, weak and prostrated, and these cases may occur epidemically.

An aphthous form of inflammation may attack the vulva—an affection more especially observed, however, in children.

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* Obst. Trans., vol. iii.

With vulvitis may be conjoined inflammation of, or discharge from, the vaginal canal higher up; and in fact chronic vulvitis is usually associated with vaginitis. But the inflammation is very frequently almost entirely limited to the surfaces of the vulva; and hence the necessity for considering such cases apart.

Chronic inflammatory Affections of the Vulva.—In *eczema* of the vulva, we find redness of the skin of the folds between the labia and the thighs and their neighborhood, producing very constant and troublesome itching. Undue walking exercise is sometimes sufficient to produce this affection in a mild form. There is, however, a more chronic and obstinate form of the affection not uncommon. When the disease has become thus chronic, the skin is often found thickened, hypertrophied, and the hairs have in great part disappeared. *Prurigo* of the external genitals is not common; pruritus, where noticed, being due to other conditions of the parts.

Vulvar folliculitis, a condition for our knowledge of which we are indebted to Dr. Oldham and Huguier of Paris, is constituted by the presence of little rounded prominences irregularly scattered over the surface of the vulva. These prominences are painful and irritable, and after a time break and discharge a little puriform fluid; and the surface of the vulva generally becomes inflamed and red, and in places ulcerated. The inflammation is seated in the mucous follicles of the surface. This condition is met with more especially in pregnant women, and during the heat of summer, and appears to be caused by want of cleanliness, by excessive indulgence in sexual intercourse, &c. The sphincter of the vagina is frequently, according to Dr. Oldham, contracted; and a painful hyperæsthetic condition of the vulvar orifice is sometimes associated with this follicular inflammation. The little ulcerated surfaces left after the escape of the pus are distinguished from ulcers due to syphilis by the fact that in syphilis the ulceration is more generally on the inner surface of the labia minora, by the larger surface of the ulcer, and by the peculiar history of its appearance; whereas, in vulvar folliculitis, the whole vulva is more or less affected, the surface ulcerated is very small, and not inclined to spread.

The affection is a very painful one; the patient finds a difficulty in sitting comfortably; pain on intercourse, troublesome pruritus, occasional bleeding from the surface, slight discharge—these symptoms are, one or more of them, generally observed.

TREATMENT OF INFLAMMATORY AFFECTIONS OF VULVA.

Rest, frequent ablutions, and attention to the general health, are of great importance, more especially in chronic cases.

In the treatment of cases of eczema of the vulva, in addition to rest, ablutions, &c., the use of lotions of glycerine or of solution of carbonate of soda will be found efficacious; when the disease is chronic, caustics are often the only effectual remedies.

In cases of follicular inflammation of the vulva the use of a weak lead lotion, rest, and attention to the general health, will do much to remove the disease. Dr. Oldham's favorite remedy is an ointment containing hydrocyanic acid (2 drachms), diacetate of lead (a scruple), and cocoanut oil (2 ounces), the parts being bathed with cool water before applying the ointment. In some cases of this affection which have come under my own notice, I have used nitrate of silver, in the form of a strong solution, with satisfactory results.

VULVITIS, AND DISCHARGES FROM THE GENITALS, IN CHILDREN.

These cases require to be considered apart. A good deal of misconception, and consequent injustice to individuals, have arisen in connection with this subject, and it is only now beginning to be extensively recognized as a fact that vaginal discharges from the generative passages in young children may occur quite independently of contagion.

The discharges from the genitals observed in children have, for the most part, their origin in the glands just within the vulva, the vaginal canal within the hymen being generally unaffected.

The following are the chief causes of vulvitis in children:

1. These discharges are often witnessed in children of scrofulous or debilitated constitutions. 2. They may frequently be traced to the presence of ascarides in the rectum, directly or indirectly producing such an amount of irritation as to cause leucorrhœa. 3. Simple want of attention to cleanliness may be the only assignable cause. 4. A form of leucorrhœa is sometimes prevalent in children simultaneously with diphtheric affections of other mucous passages. 5. Gonorrhœa communicated by the male. 6. The irritation of dentition. The fact that the child is weakly, or showing other signs of a constitutional tendency to scrofula, would lead us to connect the presence of a vaginal discharge therewith. If the leucorrhœa proceed from vermicular irritation, there is generally extreme irritability and itching in

the neighborhood of the rectal orifice, and other well-known signs of the presence of these parasites are observed. A circumstance which I have noticed more than once in connection with the presence of ascarides in the rectum, is the objection children affected with them have to sitting on soft cushions: anything hard or angular is preferred.

Cases of rape on children sometimes result in the production of discharge of a gonorrhœal nature. The moral evidence is, in the case of very young children, often open to great suspicion: the medical evidence must be given with great circumspection, for it is in the case of very young children that discharges from other causes are, as has just been pointed out, by no means unfrequently observed.

In cases where "violation" is suspected, the condition of the vaginal outlet is an important subject for consideration. A complete discussion of this interesting subject cannot be entered into here. The chief points to which attention should be directed, however, are the following: In *children* examined soon after violation has been effected, there are marks of violence on the external genitals, which may be bruised and lacerated, the laceration generally affecting the perineum, and together with this the hymen is found torn. These are the more usual results observed. The presence of a *discharge* from the genitals of a child, which the friends of children among the lower classes are often disposed to attribute to the effects of intercourse, is a circumstance which by itself is worth nothing as a sign of violation. The evidence of injury to the perineum, and of laceration of the perineum, is much more to be relied on than the mere presence of a discharge. For further information the reader is referred to the standard works on "Medical Jurisprudence." In children the signs of violation persist for a much longer period than in adults, and, in the case of the former, signs may still be present from eight to fourteen days after the occurrence. In adults the marks of violence observable are often very trifling, especially in the case of married women, and, unless extreme in degree, these evidences disappear very rapidly. In cases of suspected violation, both in adults and children, the microscope might be very usefully employed in rendering the diagnosis more certain. The spermatozoa are capable of being recognized for a very considerable time after being deposited in the vagina, and there is reason for believing that, under favorable circumstances, they might be found in the

mucus of the upper part of the vagina, even as late as twenty-
four or thirty-six hours after intercourse has been effected.

PRURITUS OF THE VULVA.

The terms "pruritus vulvæ," "pruritus of the vagina," &c.,
have been used to designate a class of symptoms referable to the
generative organs, in themselves very distinctive and character-
istic, and which are also exceedingly troublesome and inconve-
nient to the patient.

Varying exceedingly in form and degree, the essential charac-
teristic of the class of symptoms now to be considered is an itching
sensation, impelling the patient to relieve herself by rubbing or
scratching the part affected. The sensation is now and then a
kind of formication only—a creeping, uncomfortable feeling on the
surface of the external generative organs. More commonly, how-
ever, the sensations complained of are more intense in degree and
somewhat different in kind. The irritation was accurately de-
scribed by Dr. Rigby as "like that of urticaria; viz., a sensation
of intolerable pricking and tingling, combined with burning heat
and intense itching."* It is worse at some times than at others;
it is not seldom quite intolerable to the patient. Scratching
affords hardly a temporary relief, and shortly itself gives rise to
further inconveniences. Combined with the itching there is more
or less constantly a feeling of heat in the parts affected quite as
distressing as the other sensation.

Even in the worst cases there are usually remissions, during
which the patient is more free from discomfort; and, as a general
rule, it is stated that at certain times of the day, or under certain
peculiar circumstances, the sensation is experienced much more
intensely: the affection is, indeed, more or less paroxysmal.
Warmth particularly is liable to bring on a paroxysm; the heat
of the bed is especially unbearable, the patient being obliged to
leave her bed almost every quarter of an hour to obtain relief.
After eating or drinking, too, the distress is usually greater. The
congestion of the genital organs, associated with approach of the
menstrual period, aggravates the affection.

The actual *seat* of the sensation is open to some variation. In
most cases the irritation is not confined to one spot, but is felt
equally over the pudendum, over the labia, and, in fact, all round
the vaginal aperture. In some cases, the nymphæ, the surface of

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* On Diseases of Women, p. 247.

the clitoris, and the adjacent surface of the vaginal canal, especially the anterior commissure above the clitoris, are the parts more particularly affected. Lastly there are a certain number of cases in which the sensation has its seat, not at the external generative organs, but more internally.

The affection may be observed in women of all ages. It is most frequently observed at the climacteric period, when the menses are about to cease, although it is by no means limited to this period. It is more often observed in women advanced in life than in young women. The unmarried and married are almost equally liable to it.

As regards the duration of the affection, it varies. Women sometimes remain subject to it for several months, or even longer. The pruritus is in many instances so persistent that the patient becomes worn out, exhausted, and prostrated in the extreme, owing to the want of rest, the annoyance, and the pain so long continued. The necessity of applying the fingers to obtain a slight temporary relief by scratching excludes her from society. Altogether, a bad attack of pruritus is about as troublesome and inconvenient an affection as any to which a woman can be subject.

What is the nature, and what are the causes of the affection? The affection varies very much as regards its nature and causes in different cases. It is possible that at the beginning the affection may be in the majority of cases identical; but in practice we find that most cases, when they come under observation, are of a mixed character. Scanzoni regards the affection as hyperæsthesia of the sensitive nerves of the vagina, in some cases idiopathic, in others secondary, and in the latter depending on various affections of the ovaries, vagina, uterus, &c.; and the various alterations of the external generative organs witnessed in conjunction with it are considered by this author secondary in their nature. Congestion of the uterus associated with slight anteflexion, appeared to be the cause in one of the most troublesome cases I ever met with.

Any circumstance favoring *congestion of the generative organs* may give rise to it. Thus, in the earlier months of *pregnancy* it is not rarely observed. Where a sluggish, inactive condition of the abdominal viscera is present, associated with digestive derangements, as in individuals taking but little active exercise and living well, there exists a liability to the affection: in cases of the latter description, hæmorrhoids are frequently present, and constipation is very generally observed. It is in cases coming under this category that the pruritus is found most often associated with a good deal of hyperæmia of the external generative organs; and in

this class of cases, also, the scratching and rubbing most frequently have the effect of producing inflammatory changes of the vulva and parts adjacent. The conditions which have been mentioned are probably, for the most part, only predisposing causes of the affection.

Chronic diseases of the uterus are frequently connected with pruritus of the genital organs; in *carcinomatous* disease of the uterus, the affection in question is certainly very frequently witnessed. Possibly the frequent association of uterine cancer and pruritus is connected with the acrid character of the fluid discharges then passing over the vulva. Cases in which it was due to *superficial granular erosion of the os uteri* are mentioned by Drs. West and Churchill. Alterations in the position of the uterus, as *flexions*, displacements, &c., are considered by Scanzoni causes of pruritus; so also *tumors* of the uterus.

Radical disorder of the general health, quite independent of disease of the generative organs, has been found to be the cause of pruritus in some cases. Thus Dr. West alludes to an instance in which a young lady suffered severely from pruritus, which turned out to be due to diabetes.

An *acrid condition of the secretions of the sebaceous glands of the vulva* appears to be sometimes the cause of the pruritus. *Ascarides* in the rectum have been known to produce it.

In individuals of uncleanly habits, pruritus of the vulva is sometimes produced by the presence of *pediculi*.

An *aphthous* form of inflammation of the vulva was first alluded to by Dr. Dewees as now and then giving rise to pruritus of the vulva; the inner surface of the vulvar commissure being covered with little aphthous patches, and more or less congestion of the parts generally being conjoined. How far this condition is primary or secondary cannot be considered as determined.

Inflammation of the mucous follicles of the vulva—*vulvar folliculitis* (Oldham)—is a disease of the vulva in which troublesome pruritus may be present.

In a case which came under my own notice, very intense and obstinate pruritus was found to be dependent on the presence of *warty growths from the under or vaginal surface of the urethra*, the whole forming a tumor the size of a walnut. In this case the removal of these growths was necessary, and a cure soon afterwards resulted. The *vascular tumor of the urethra*, which, as is well known, grows within or at the urethral orifice, gives rise to great disturbance of the function of micturition; less frequently, it is a cause of pruritus.

Lastly, it may be stated generally that there are few alterations in the mucous surface at or near the vaginal aperture which may not be associated with pruritus.

TREATMENT.—The *general* treatment of pruritus of the vulva consists in correcting whatever may be found wrong or prejudicial to health in the habits, mode of life, diet, and regimen of the patient. The digestive organs should be duly watched, constipation prevented. The food given must be light and simple. In that form of the affection observed in women past the climacteric age, where there is debility, defective digestion, and want of appetite, without any, or, at all events, any considerable alteration of the skin covering the pudendum, mineral acids combined with bitter infusions are of the greatest service. Small alterative doses of blue pill are occasionally useful.

The *local* treatment consists in the removal of any condition which may be found to be associated with the pruritus, whether it be the cause or the effect of the same. And this local treatment will be, according to the nature of the case, palliative or curative. The local treatment will necessarily vary according to the actual condition of the parts discovered on examination. It is generally the case, indeed, that some abnormal condition of the surface of the labia and adjacent parts is present, which, as before remarked, may be primary or secondary as regards the pruritus. In some cases the local treatment is all that is necessary for the cure. Cleanliness is the first essential. The external genitals must be frequently and thoroughly washed with tepid or quite cold water. The hip-bath should be frequently used, for the application of water is almost always grateful to the patient. If there be much fulness of the bloodvessels of the vulva, leeches are sometimes necessary. A rather strong cauterization of the os uteri with solid nitrate of silver will sometimes succeed when other measures fail.

Respecting special topical remedies, Scanzoni speaks most highly of a mixture consisting of chloroform two parts, and almond oil thirty parts, to be applied to the surfaces of the labia and of the ostium vaginæ. I have found this remedy of the greatest service, but the quantity of chloroform is too small. One part of chloroform in six of oil is the proportion I have used. Dr. West finds Goulard water and hydrocyanic acid a very valuable application. When aphthæ are present, borax in solution with a little morphia (borax ʒiv, morph. hydroch. gr. viij, rose-water ʒx—West) has been found very efficacious. The late Dr. Rigby found an ointment composed of equal parts of ung. hyd. nit. ox. and cod-liver

oil very successful when other measures had failed. Alum and powdered sugar sprinkled over a tampon of cotton, and inserted in the vagina twice a day for a week, is a remedy used by Scanzoni. The latter author states that Scholz's remedy, the calladium sequinum, has in his hands given satisfactory results. Cauterization by means of nitrate of silver has been employed by several, with advantage in some cases. When pediculi are present, Dr. Churchill advises the use of turpentine, tobacco, or calomel in powder.

When, owing to constant scratching and rubbing, the labia, nymphæ, &c., are swollen, inflamed, and painful, it is essential that the patient be made to rest in the horizontal position for a few days; the parts may then be kept wet with the Goulard and hydrocyanic acid lotion, and a piece of lint or soft rag, wetted with it, laid between the labia.

CHAPTER XX.

DISEASES OF THE VAGINA.

Congenital Defects; Absence of the Vagina; Double Vagina; Vagina Imperfect—Stricture of the Vagina—Extreme narrowness—Various unusual conditions of the Hymen—Menstrual Retention associated with Imperforate Hymen—Treatment of Defects and Occlusions of the Vagina.
Vaginitis: Treatment—Spasm and Hyperæsthesia of the Vulva—Treatment.
Fistulæ: Vesico-vaginal and Recto-vaginal Fistula—Treatment.
Tumors of Vaginal Walls—Treatment.

CONGENITAL DEFECTS.

In some rare instances, certain of the external generative organs are wanting, or exhibit only a rudimentary formation. The whole of the external sexual organs may be found absent, or there may be present what is termed "cloacal formation," the rectum, the vaginal canal, and the urethra opening into one common external orifice. And irregularities of other kinds may be observed, giving rise to conditions which have been described as due to hermaphroditism. A full consideration of these various kinds of defective formation of the external generative organs cannot be entered upon in this work. Particulars concerning these rare cases will

be found in several systematic treatises.* The defects which are the most practically interesting are those which relate to the condition of the orifice of the vagina, and the canal of the vagina itself.

Absence of the Vagina.—The vagina may be altogether absent. This is a condition not frequently met with. There may be in such cases, but by no means constantly, as will be presently more fully explained, an imperfectly developed condition of the labia and other external generative organs; the patient, if arrived at the usual age of puberty, has never menstruated, although there may be the usual amount of mammary development and of sexual instinct. It is found, on inspecting the parts, that beneath the clitoris is situated the urethral orifice, but below this there is no vaginal canal.

Vagina Imperfect.—We sometimes find that the vagina is imperfect, consisting of a small sac or recess only, and in such a case the finger only passes inwards for a short distance and with difficulty. Here, as in the case of complete absence of the vagina, the catamenia are usually absent.

Double Vagina.—There are a few cases on record in which the canal of the vagina has been found double, each of the canals being respectively in communication above with a separate uterus. These are cases in which there is a complete separation of the uterus into two. The most common of the abnormal conditions of the uterus is that in which the cavity is partly divided into two, the next common is that in which the uterus is completely double; and the least common cases of all are those in which there is a double uterus and a double vagina also (see p. 473).

STRICTURE OF THE VAGINA.

There are two classes of cases coming under this denomination. First we have those *congenital* instances in which the vagina is normal below, the hymen in its usual position, but a short distance above the hymen the finger meets with an obstruction—the canal of the vagina, in fact, appears far too short. Here the apparent shortness may prove to be due to presence of a fibrous or membranous septum dividing the vagina above the hymen into two parts. The usual seat of this septum is the junction of the upper

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* A good account of the subject will be found in Kiwisch's Klinische Vorträge, band ii (third edition, by Scanzoni. Prague: 1857). On the subject of hermaphroditism, the reader is referred to the admirable essay by Sir J. Y. Simpson, published in vol. ii of his Obstetric Works.

with the middle third of the vagina. In the second place we have cases of real stricture of the vagina, due to adhesions of the opposite walls, following after lacerations or wounds of the vagina, the primary cause of such lacerations being accidents connected with the process of parturition, lacerations of the vaginal walls with subsequent cicatrization and contraction.

Regarding the congenital class of cases, we may have complete absence of an opening in the septum, there being then usually found to be present an accumulation of menstrual blood above the obstructing membrane or partition; or, on the other hand, there may be an opening sufficient to allow of the escape of menstrual blood. It is obvious that in the former case there is no possibility of menstruation occurring, and impregnation is equally impossible. Such instances are not common. Complete congenital closure of the vagina might be confounded with imperfect hymen, or with imperforate condition of the os uteri. Incomplete (*i. e.*, permeable) congenital stricture of the vagina might be confounded with obstruction from resistant hymen. The diagnosis in these several instances would be made out by careful combined examination by the vagina and rectum. The finger being introduced into the rectum, the observer is enabled to determine whether the obstruction felt be really the extremity of the vagina or not; the position of the uterus would indicate this clearly enough.

The cases of acquired complete stricture of the vagina are very easily distinguished from those of the congenital variety by the circumstance that in the latter cases the patient has never menstruated. In acquired stricture of the vagina the canal at the seat of the stricture is generally irregular in form and shape, contorted or knotty, and firm fibrous bands are to be felt under the finger. The seat of the stricture may be high up in the vagina, or low down; any part of the canal may be affected. Menstruation more often still persists, but the stricture, if complete, causes complete suppression; and, moreover, the patient in the latter case remains afterwards sterile. The history very generally points conclusively to the diagnosis in these instances of acquired stricture of the vagina.

Extreme narrowness of the vagina, hardly amounting to stricture, may be met with, the canal being quite patent, although exceedingly small; the condition simply interfering with due performance of sexual intercourse, though not necessarily with impregnation. It has importance, for this reason, in the first place, and in the second from the circumstance that when the vagina is

very narrow it is also often short, and the uterus is found imperfectly developed. All *degrees* of this narrowness may be met with in different cases.

It may be worth while in this place to mention the fact that, in cases of vaginal stricture or narrowness, sexual intercourse has been known to have been effected by the urethra; the latter canal has in such cases been found to have undergone great dilatation.

The treatment of these various conditions will be considered presently (see p. 682).

VARIOUS MORBID OR UNUSUAL CONDITIONS OF THE HYMEN.

The hymen is a membrane varying exceedingly in its form, structure, and dimensions. On making a digital examination, the point of the finger, in passing backwards, downwards, and inwards from the point where the urethral orifice is situated, encounters the hymen, if this membrane be present; the membrane itself being situated within a short distance of the posterior labial commissure. The finger passes into a recess for a short distance before it comes in contact with the obstructing body. This it is important to bear in mind in distinguishing these cases from cases of absence of the vagina : in cases of the latter kind, the obstruction is on the surface. The most usual form of the hymen, where still intact, is crescentic, the concavity being directed forwards and upwards: the canal of the vagina is thus closed posteriorly, but not anteriorly. This is the most common form, but occasionally the hymen is circular, and the opening into the vagina is in its centre. In the first case the tip of the finger would meet with the opening a little nearer to the urethral orifice than in the second. The presence of the hymen was at one time considered evidence of virginity, and its absence proof to the contrary; but neither of these positions is sustained by known facts. Instances are recorded of the presence of the hymen in prostitutes who were at the same time the subjects of syphilis; on the other hand, in women of known virtue and propriety of conduct the hymen is often indistinct or wanting. If we are called upon to make a digital examination of a reputed virgin, we should expect to find a difficulty in introducing the finger into the vagina, owing to the presence of the hymen; but we should not be justified in forming a conclusion unfavorable to the character of the individual from the fact, alone, that no such impediment to the passage of the finger was experienced. And with reference to the *degree* of resistance, we should expect to find,

in cases where the hymen is tolerably perfect, considerable differences in different cases. Thus, the membrane may be, and indeed it usually is, thin and non-resistant enough to allow of the ready distension and stretching of the orifice in its centre or at its side by the pressure of the finger; it may be so dense and tough as to resist this distension altogether, or the membrane may be so loose and lax that the pressure of the finger, instead of opening it, carries the membrane before it, as in the case of the finger of a glove pushed within itself. Lastly, there may be only such slight perforation in the membrane as to be hardly recognizable, and not at all by the point of the finger alone: the obstruction is apparently complete. These variations in the physical condition of the hymen are of importance in reference to the diagnosis of the cause of sterility.

When we are called upon to investigate a case of obstruction of the vaginal entrance, and in which the hymen is the part involved, we generally find that there is difficulty in sexual intercourse, or, that there is sterility, without any allusion being made by the patient to difficulty in intercourse, or that menstruation has never occurred. In the latter case, there is possibly menstrual retention due to imperforate hymen. And the case has to be considered from these different points of view.

Menstrual Retention due to Imperforate Hymen.—The relation of abnormal conditions of the hymen to possible menstrual retention, as being a very important subject, demands special mention.

The form of menstrual retention associated with imperforate hymen is observed in young women who have never menstruated, who have arrived at puberty, and who have at that time experienced, monthly, and month after month, severe pain in the hypogastric region without any fluid escaping from the vagina, and who present all the symptoms before described (see p. 54) as indicative of distension of the uterus with fluid for which there is no natural outlet. In most of such cases, the hymen is found to be imperforate, and the finger, when introduced into the vulva, comes upon a very tense elastic swelling, constituted by the thickened hymen pressed downwards and put on the utmost stretch by the fluid incarcerated above it. The menstrual blood distends the vagina and the uterus under such circumstances, and we should expect to find evidence of such distension of the uterus in the presence of a round firm tumor above the pubes (see "Examination of the Abdomen"), or on examination from the rectum. But in some cases, although the patient has never menstruated, and although there are all the

signs of menstrual retention present to an extreme degree, we do not find, on examination, any tense elastic swelling at the situation of the hymen; for the menstrual retention may be due to congenital closure of the os uteri, or to an obstruction of the vagina higher up than the situation of the hymen. The latter description of cases will be presently considered.

TREATMENT OF VARIOUS FORMS OF OCCLUSION OF THE VAGINA.

Absence of the Vagina.—There are two classes of cases to be dealt with: 1. Those in which the absence of the vagina is accompanied with signs of menstrual retention; and 2. Those in which no signs of menstrual retention are present. This division is a practical one, for in the first class of cases operative measures are generally called for, while in the second this is not usually, or at all events necessarily, the case. The cases of retention have been already dealt with (see p. 432).

The point has hardly been raised as to whether in cases of absence of vagina without menstrual retention operative measures are called for. If the uterus be present, if the patient be healthy and well-formed, and, further, if menstrual molimina have been present—even although there may be no evidence of menstrual retention—under these circumstances, the attempt to make an artificial vagina could not be said to be absolutely unjustifiable. Until the uterus has been reached, it could not be said that menstruation, and consequently pregnancy, was quite out of the question. In making these remarks, I have in my mind a case respecting which I was consulted some time since, and in which I have reason to think that the formation of a vagina would be attended with advantage.

Stricture or Occlusion of the Vagina.—The stricture of the vagina, resulting from the contraction following mechanical injuries received during parturition, is often very difficult to remedy. The two methods of cure are by incision and subsequent dilatation, or by dilatation alone; and which of the two courses is preferable will be determined by a consideration of the nature of the case. Where the stricture is very firm, and at the same time limited in extent, an incision by a blunt-pointed bistoury at once restores the canal to its natural size, the opening being maintained by careful plugging of the vagina with oiled lint. The plugging must be persisted in for some days. In other cases, where the stricture affects a greater extent of surface, cutting

may be less necessary, and the gradual dilatation by bougies may be preferable. Any tight bands encountered as the process of dilatation is being effected should be just touched with the edge of the knife to facilitate the dilatation.* In cases where labor supervenes in these cases of stricture of the vagina, the fœtal head forms a very efficient dilating body, but the dilatation often requires to be assisted by the careful use of the knife. Much time and patience will be necessary in some cases to restore the canal to its proper condition, owing to the great tendency of the cicatricial tissue to contract after being divided. Where cutting operations are performed, great attention to cleanliness is essential.

In cases where the stricture is congenital, there being, however, a minute opening, allowing of menstruation, but rendering intercourse difficult, the existing opening is to be sought for by means of the speculum, and enlarged by the knife, the canal being subsequently plugged with lint, to prevent adhesion of the cut surfaces.

Simple narrowness of the Vagina will be best treated by careful employment of bougies, gradually increased in size until the canal is sufficiently large to admit of intercourse. Parturition is the great cure for this condition, and it is remarkable how easily an apparently very narrow vagina gives way, so as to allow of the passage of the large head of the fœtus. Once fully dilated in this manner, the cure is complete.

The treatment for the relief of cases of *obstruction due to the hymen* must be adapted to the peculiarities and requirements of the case. In patients who have menstruated, the obstruction usually requires to be removed on account of its interference with the performance of sexual intercourse: in some cases obstruction to sexual intercourse thus caused accounts for the presence of sterility. The treatment of such cases is simple. The operator having carefully made out by examination the shape, size, and relations of the hymen, which, under these circumstances, may be found exceedingly dense, firm, and thick, introduces a blunt-pointed bistoury through the aperture in the hymen, which is usually situated immediately beneath the urethral orifice, and a crucial incision is then made in the obstructing membrane, care being taken not to involve the vaginal wall itself in the incision;

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* Dr. Braxton Hicks has related some interesting cases of acquired stricture of the vagina. The plan pursued in treating these cases, and which proved very successful, was a combination of cutting and dilatation. Obst. Trans., vol. iv.

or, as recommended by some authorities, a circular piece may be actually cut out, the whole hymen being thus removed. The one procedure may be superior to another in a particular case. After the operation a piece of lint rolled up in a cylindrical form and dipped in oil, should be carefully introduced. The tampon of lint should be so large as to slightly distend the canal and prevent the healing by the first intention. The lint will have to be removed, and a fresh piece inserted twice a day, for the next two days.

The treatment of cases of imperforate hymen, causing menstrual retention, has been already discussed (see p. 434).

VAGINITIS.

Inflammation of the vaginal canal, in an acute form at least, is not a very common affection, although in cases of chronic inflammation of the uterus there is generally an increased vascularity of, and secretion from the vaginal mucous membrane. Again, vaginitis is sometimes present in cases of gonorrhœa, but in the latter affection it is ordinarily the vulva or entrance of the vagina rather than the vagina itself which is the seat of the inflammatory action.

TREATMENT.—In cases where there is much heat, tenderness, and congestion of the vagina, leeches may be advantageously applied round the lips of the vulva; fomentations, by means of flannels wrung out of hot water or decoction of poppies, may be usefully employed after the bleeding, as a substitute for it in some instances. Hip-baths and injections of tepid or of quite cold water will be necessary, a stream of water being applied by the self-acting douche apparatus, described at p. 415. Other local applications may be required where the disease has assumed a chronic obstinate form. Scanzoni speaks highly of the employment of a cotton tampon, the surface of which is sprinkled with powdered alum, this being inserted in the vagina for a few hours every two or three days: the alum to be diluted with powdered sugar if the sensibility be considerable. Solution of nitrate of silver of varying strengths, according to circumstances, or the solid stick of caustic, may be also necessary. The general treatment is quite as important in the management of such cases as the local one. Rest, abstinence from intercourse, the horizontal posture, gentle aperients, food in moderate quantity, absence of excitement —all these are essential to the cure of the affection. When the patient has recovered, the principal cause which brought about the attack must be for the future avoided (see " General Treat-

ment of Leucorrhœa," p. 412). The vaginitis associated with gonorrhœa requires a peculiar treatment. In the treatment of all cases of vaginitis, whatever be the cause, very great importance is to be attached to the observance of cleanliness: frequent ablutions should be employed.

ALTERATIONS OF SENSIBILITY OF THE VAGINAL CANAL, OR OSTIUM VAGINÆ.

Spasm and Hyperæsthesia.—In making an examination by means of the finger, it may be found that the entrance of the vagina is extraordinarily sensitive, the slightest touch giving rise to great discomfort; and in some cases this is so extreme that an examination is hardly practicable. The condition in question is really a hyperæsthesia of the part, dependent not always on the same cause. It has been described by various names. Drs. Marion Sims, Debout, and others, have of late years redirected attention to it, especially as a cause of sterility, and as interfering with sexual intercourse. It appears that in many of the cases recorded, the parts are more sensitive to a slight touch than to more rough handling. The extreme sensitiveness is mostly accompanied by a painful contraction of the vaginal sphincter—hence the terms " vaginal spasm," " vaginismus," which has been applied to it. The difficulty experienced in introducing the finger is dependent on the spasmodic contraction of the muscles. It has been described as most commonly present in individuals whose nervous system is generally in an easily excitable state. In some cases, this hyperæsthetic spasmodic condition may be the sole discoverable morbid symptom or state, the individual being, in other respects, apparently in perfect health. Dr. Ferguson believed, that in cases of " irritable uterus," one of the seats of this neuralgic malady was the vagina itself, this latter being so exquisitely tender as to render intercourse intolerable. In Scanzoni's opinion, the disorder especially accompanies anteversions, retroversions, flexions, or actual changes of the uterus itself, and that it is not rare in connection with spasmodic affections of the urethra, bladder, or rectum. Various local alterations may give rise to it. Sir J. Y. Simpson has in some instances found true small nodular neuromata under the mucous membrane. The following case, lately under my own observation, is somewhat analogous. The patient was a lady who had had two children : for some months there had been extreme sensibility of the ostium vaginæ, intercourse being

impossible. On careful examination I found that the sensibility was actually limited to one little spot near the posterior commissure, over an area of less than one quarter of an inch. The case was cured by paring away the mucous membrane over the spot, and bringing the edges together by fine silver sutures. Here it seemed probable that the hyperæsthesia was dependent on laceration and inflammation of some of the nerve fibres during labor. In some cases it seems impossible to detect a local cause, and the disorder then seems due to a morbid exaltation of the nervous sensibility, dependent on defective bodily nutrition or too great cultivation and use of the psychical faculties. Women of cultivated intellect, of high mental endowment, appear more liable to it, and it is rare in women whose bodily powers are called into more frequent and active exercise.

TREATMENT.—In the treatment of this affection, the first object in view should be to remove its cause. The affection is sometimes of local origin, and at other times probably of a constitutional nature; these two classes of cases necessarily require each a different kind of treatment. The condition of the vulva, of the vagina, and of the uterus, must be severally explored, and any disorder discovered rectified.

It is probable that if the cases were carefully examined, many would be found susceptible of the treatment mentioned above, namely, removal of the affected portion of mucous membrane by the knife, and obliteration of the sensitive part.

The treatment which has been recommended, on the view that there is excessive sensibility all round the ostium vaginæ, would of course be superfluous when the disorder is limited to a small spot. It has been recommended to dilate the vaginal canal gradually by instruments, and so to accustom the parts to the contact of a foreign body, or to incise the muscles of the sphincter on each side, and afterwards to use bougies to keep up the dilatation, or to cut across the pudic nerve. The course recommended to be pursued by Marion Sims,* Debout,† and Michon,‡ does not essentially differ. It consists in cutting through the vaginal sphincter on each side, near the commissure of the vulva, the incision going deeply enough to pass through the muscular fibres. After the incisions have been made, a glass (Marion Sims) or caoutchouc (Debout) dilator is to be used, to prevent the opposed edges of the incisions from uniting. It may be expected that rather copi-

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* Obstetrical Transactions, vol. iii.   † Bull. de Thér., 1861, vol. ii.   ‡ Ibid.

ous bleeding will occasionally follow the incisions in question, in checking which pressure and cold applications would be the means relied on. Subsequently, the glass or caoutchouc dilator, gradually increased in size, to be worn for a time, until the parts are sufficiently dilated. When the incision treatment is dispensed with, the use of bougies, gradually increased in size, may be had recourse to. Sir J. Y. Simpson has treated the affection by subcutaneous incision of the pudic nerve by means of a tenotomy knife.

The cases in which the affection actually interferes with sexual intercourse are undoubtedly extreme cases. There are others in which the spasmodic element is less marked, there being extreme sensitiveness. These cases are best treated by the use of opiate enemata: Scanzoni speaks favorably of opium and belladonna so used. In cases where no limited local derangement can be detected the general treatment is a matter of great moment. Regular, temperate living, exercise in the open air — especially horse exercise—use of the sponge-bath, friction of the skin, cultivation of the bodily rather than of the mental powers, these measures are not subsidiary, but of primary importance in the treatment, and the patient cannot be fully restored to health if these simple precautions be neglected. In some cases it is probable that the best treatment will be to regulate carefully some disordered mental condition.

FISTULÆ.

There may be an abnormal communication between the bladder and the vagina, *vesico-vaginal fistula*, the aperture varying much in size. The perforation is generally an effect of the long pressure of the head during labor. In some rare cases, a communication has been found between the bladder and the cervix of the uterus (*utero-vesical fistula*). Lastly, we have cases in which there is a perforation of the vagino-rectal septum. These are cases of *recto-vaginal fistula*.

Great misery and distress are produced by the presence of these unnatural openings, and although in themselves not grave, they are most troublesome and annoying to the patient.

TREATMENT OF VESICO-VAGINAL FISTULA.—There is no department of surgery in which such marked improvement has been made of late years as in the treatment of this, which is the most common of the fistulæ connected with the generative organs. Cases of vesico-vaginal fistula are now, almost without exception, capable

of cure. To Dr. Marion Sims is due the credit of introducing a method of operating which hardly ever fails, viz., the use of metallic sutures instead of sutures of thread or silk, which were formerly used, for the purpose of bringing the edges of the wound together, and of an improved speculum, by which latter instrument access is better obtained to the part involved, and the manipulations thus greatly facilitated. The fact that Mr. Gossett, of London, in 1834, published a case illustrative of the advantages of metallic sutures, does not invalidate this statement, as the latter author's practice never attracted attention, or led to its adoption by other individuals. Since Dr. Marion Sims introduced the use of the "silver suture," other modifications of the operation, the use of clamps, buttons, bars, &c, as assisting in holding the edges of the wound together, have been adopted, but latterly they have been found superfluous, and it appears that the really important part of the improved operation is the greater nicety with which the edges of the fistulous opening can now be pared, and the newly-cut surfaces kept in close apposition.

The operation, as now practised by several distinguished physicians and surgeons, is essentially the same, particular points being more insisted on by some than by others. Dr. Marion Sims, Mr. Baker Brown,* Mr. Spencer Wells,† Mr. James Lane,‡ and Dr. Matthews Duncan,§ each recommend an operation essentially the same. The patient is to be prepared for the operation by suitable diet and regimen, for a day or two, or longer, as may be deemed necessary, and before the operation the bowels must be thoroughly evacuated. For the operation itself, the patient is placed on the back, as in the operation of lithotomy (Brown, Wells), on the side, with the body partially pronated (Sims), or on the hands and knees. The two former methods allow of chloroform being easily given; the latter method is the best in difficult cases. The fistula is exposed by simply separating the labia by the fingers, and retracting the perineum by Sims's duck-bill speculum. The edges of the fistula are next pared by knives adapted for the purpose. Mr. Brown uses two—one for the right, one for the left hand. Further, the knives used are generally bent, the blade joining the handle at an angle. Importance is attached by Mr. Wells and others to the manner in which the paring is effected, it being recommended that the edges be bevelled, the operator removing

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* Lancet, 1861, vol. ii, p. 494. † Brit. Med. Journ., Aug. and Sept., 1861.
‡ Lancet, Jan. 12, 1861, p. 37. § Ed. Med. Journ., Dec., 1861.

thus the mucous coat of the vagina and the muscular tissue of the bladder, but not the mucous lining of the bladder. The effect of this is that the amount of raw surface offered for adhesion when the lips are brought together is increased. Every part of the border of the fistula must be pared. The paring effected, a series of silk interrupted sutures are introduced; they pass from a quarter of an inch outside the edge of the wound, through the thickness of the muscular coat of the bladder, close to the edge of the cut surface, stopping just short of the mucous membrane; the same on each side. Avoidance of the mucous coat of the bladder is a point insisted on by all. The number of the sutures varies according to the size of the opening, but it is a point much insisted on by Dr. Marion Sims, that they should be numerous and close together. After the silk sutures have been all introduced, the ends, which are hanging free, are used to draw through the silver wire permanent sutures, or the wire sutures are sometimes inserted at first, the needle employed in the latter case being a perforated one, through which the wire travels. The edges of the wound are then carefully brought together by tightening the sutures one after the other; the ends of the wire sutures are then twisted up close to the edge by the fingers or by forceps, and the wire is then cut off close to the edge of the wound.

In the performance of the operation, care is required to avoid the ureters. I have heard of more than one case in which unfortunate results have happened from the tubes in question being implicated in the operation; and when the fistula is situated high up, great care and an intimate acquaintance on the part of the operator with the anatomy of the parts are essential.

The after-treatment requires special attention. The patient is placed on the side in bed, where she must remain for some days. Every effort is to be made to prevent accumulation of urine in the bladder, and this is effected by keeping a catheter in the bladder, through which the urine escapes, as fast as it enters this cavity, into an India-rubber bag placed outside; or, still better, by an India-rubber pipe, to a suitable receptacle beneath. The catheter used is of a sigmoid form, and of flexible metal, which is self-retaining, or a male elastic catheter may be employed. Mr. Wells urges the necessity of the apparatus being examined every quarter of an hour, to see that no obstruction arises. The catheter should be changed night and morning, and cleaned carefully before reintroduction. The bowels are prevented from acting for a period of ten days or a fortnight, small doses of opium being given periodi-

cally for this purpose. The sutures are removed about the tenth day. In removing the sutures, each separate stitch is slightly retracted by the forceps, and then cut across on one side by means of sharp scissors.

The instruments necessary for the operation are of a special kind. Mr. Hilliard, of Glasgow, has made important improvements in some of these.* The needles used in introducing the sutures require to be made with different curves, to be used in different positions of the fistula.

If the fistulous communication between the bladder and vagina be due to cancerous ulceration or to syphilitic ulceration still progressing, operative measures are quite inapplicable.

TREATMENT OF RECTO-VAGINAL FISTULA.

These cases do not, as a rule, present the same difficulty in regard to treatment as cases of vesico-vaginal fistula: they are capable of being treated on precisely identical principles. The application of caustic is frequently sufficient to produce closure of the aperture. Mr. Brown recommends in some cases the laying open of the bowel from the fistula to the anus, with the view of healing it from the bottom. Careful paring of the edges, and use of metallic sutures, can be had recourse to, if other more simple measures fail. The treatment after the operation chiefly consists in keeping the bowels confined, by means of opium, for some days. Fistulas due to cancerous ulcerations are not remediable by operation.

For the relief of vesico-uterine fistula, the operation of closing the os uteri and allowing the patient to menstruate through the bladder has been practised. It is perhaps the least of the two evils to leave the patient thus. Mr. James Lane records a most curious case, in which, notwithstanding closure of the os by operation, the patient became pregnant. Probably the closure was not complete.

TUMORS GROWING IN OR FROM THE WALLS OF THE VAGINA.

Fibroid Tumors are sometimes met with in the wall of the vagina. Thus Mr. Paget † removed by enucleation a hard fibrous tumor, the size of a hen's egg, from the wall of the vagina in front

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* Med. Times and Gaz., Nov., 1860, p. 498.
† Ib., Aug. 17, 1861.

of the os uteri, which had been the cause of profuse losses of blood: and occasionally small growths of a similar nature are found more external to the vagina near the uterus. Again, we have the *fibroid polypus* of the vagina, attached by a pedicle, and hanging freely in the vaginal canal, and the *mucous polypus* of the vagina. These cases are rare.

Fatty tumors growing between the rectum and vagina have been met with.*

Cancer of the vagina presents itself in two forms. We find in some cases cauliflower-like growths on the free surface, generally in association with like growths on the cervix uteri. In others the vaginal wall is found in a thickened, hard, irregular, nodular condition. Any part of the vaginal wall may be affected. Vesico-vaginal fistula is often a result of ulceration of a cancerous deposit in the roof of the vagina.

TREATMENT OF TUMORS GROWING IN OR FROM THE VAGINAL WALLS.—The fibrous tumors growing in the vaginal wall, or hanging by a pedicle from any part of the same, are only amenable to surgical treatment. They interfere with coition, and require removal: The polypoid tumors are best removed by the ecraseur. If near the bladder, care should be taken not to wound this viscus in removing the tumor. A more careful operation by the knife is required when it is decided to remove a tumor which is larger, and has a wider basis of attachment.

The cystic tumors of the vagina, if pedunculated, are treated by excision. When this is not the case, the cyst may be tapped and injected, or the cyst may be dissected from its attachments, if not of considerable size. The latter plan is, on the whole, the best, as the cyst will refill subsequently, when simply tapped.

In the treatment of cancerous tumors of the vagina, the same rules are applicable as in cases of cancer of the uterus.

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* See Dr. D. D. Davis's work, vol. i, p. 137. In the works of Dr. West and Dr. McClintock also will be found related cases of the somewhat rare affections above described.

CHAPTER XXI.

DISEASES OF THE URETHRA AND BLADDER.

Chronic Inflammation of the Urethra, specific and otherwise; Treatment—
    Stricture of the Urethra; Treatment—Vascular Tumor of the Meatus;
    Treatment—Eversion of the Urethra and Bladder; Treatment—Retention
    of Urine; Relief by Catheter.
Chronic Cystitis; Treatment—Polypus of the Bladder.

CHRONIC INFLAMMATION OF THE URETHRA.

OCCASIONALLY we meet with a very troublesome inflammatory
condition of the female urethra. The canal itself is in an ab-
normal condition: it presents to the finger a hard thickened cord,
which may or may not be tender to the touch; the introduction
of the catheter may be attended with much pain. In many cases
we have urethritis as a consequence of *gonorrhœal* infection; there
is in such cases redness and tenderness, and there is a puriform
discharge from the urethra, scalding pain during micturition, and
bloody urine. The gonorrhœal inflammation of the urethra, con-
tinuing a long time, we find occasionally further effects—viz., pro-
duction of a hard thick condition of the urethra, such as that
above described; and apart from a careful scrutiny of the history
of the case, there may be nothing to indicate whether the chronic
urethritis present be of gonorrhœal origin or not. Frequency and
pain in micturition, slight discharge, pain during sexual intercourse
—these are the symptoms usually present in these cases.

TREATMENT.—The treatment of chronic urethritis consists in
rest, the use of the tepid hip-bath, avoidance of all sources of
irritation, observance of cleanliness, use of astringent lotions, or
injection of weak solutions of alum or sulphate of zinc into the
urethra itself. Such treatment will be sufficient in simple cases.
Of internal remedies copaiba is undoubtedly the most effectual,
and it may be recommended to be given in conjunction with ap-
plication of the other remedial measures mentioned, in all cases,
and whether suspected to be of gonorrhœal nature or not. The
disease is undoubtedly a difficult one to cure; especially is this the
case where a thickened condition of the urethra is present: great
patience is generally required in order to bring the case to a suc-

cessful issue.   The application of nitrate of silver, powdered and diluted with sugar, or in solution, is sometimes necessary, especially in cases where the mucous membrane of the urethra is ulcerated.

STRICTURE OF THE URETHRA.

This is a condition very rarely met with in women.   It necessarily occasions difficulty in micturition.   By introducing a probe into the canal, the presence of an obstruction is readily recognized. It is generally traceable to the effects of mechanical injury, as from the pressure of the fœtal head, contusions from instruments during labor, accidental injuries from without, contraction following syphilitic ulceration, or to chronic inflammation associated with gonorrhœa.   In the elaborate work on stricture of the urethra, by Sir Henry Thompson,* will be found an account of the few cases of stricture of the female urethra which have been placed on record by others or observed by himself.   This surgeon confirms the observations of previous authors that the obstruction is usually met with close to the external orifice of the urethral canal. It may affect the canal for a variable distance.

TREATMENT.—"In the management of the organic contractions of the urethra," says Sir Henry Thompson, "the use of dilatation, assisted, when necessary, by a division of the opposing part . . . will generally be sufficient for their removal."   The shortness of the canal, and its great accessibility, should render operative measures easy of application.

VASCULAR TUMOR OF THE URETHRA.

This is an exceedingly important infection.   The tumor is an excrescence, bright red in color, which grows just within the external orifice of the urethra, varying in size from a pin's head to a hazel-nut.   The tumor is usually more or less pediculated, and the pedicle may have a length, as I have myself seen, of a quarter of an inch.   It consists of an hypertrophy of the mucous papillæ of the part, and the shape and appearance give one the idea of a vegetation growing on the mucous membrane.   The tumor may be single or partially divided.   The best account of the intimate structure of the tumor was given by Mr. Burford Norman, in the London Journal of Medicine, Feb., 1852.   The

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* The Pathology and Treatment of Stricture of the Urethra.   The Jacksonian Prize for the year 1852.   London: Churchill.   2d ed., pp. 379 *et sequent.*

growth is usually possessed of an extreme degree of sensitiveness. The symptoms produced are occasionally very severe, their intensity being out of all proportion to the size of the tumor. The chief symptoms are, difficulty, pain, and frequency of micturition, pain in intercourse, pain on walking, &c. The most constant sign is pain immediately after passing water, whilst the last few drops are escaping from the bladder. These tumors may give rise secondarily to several other symptoms, and in some cases the symptoms are so indefinite that the diagnosis remains for a long time obscure, more especially in cases where modesty induces the patient to refrain from giving such an explicit account of her symptoms to the medical attendant as to lead him to make an examination.

TREATMENT.—The tumor is best treated by carefully dissecting it off from the surface to which it is attached by means of a small scalpel, or scissors, and applying strong nitric acid lightly to the cut surface. If a difficulty be experienced in seizing it with the forceps, Dr. McClintock's plan of catching it in a loop of thread forming a kind of snare may be adopted. Other methods of treatment, such as cauterization with nitrate of silver, require a longer time, and are less satisfactory. There is hardly any affection to which women are liable which causes more uneasiness and discomfort, or which is removed more easily. Warty vegetations are sometimes observed growing just outside the meatus. In some cases of this kind which came under my own notice the affection gave rise to very painful pruritus; in others a large crop of warty growths situated in this position had given rise to considerable difficulty and pain on intercourse, and it was found that, in this latter case, the growths were of syphilitic origin. In these cases removal by means of the knife was the treatment adopted.

EVERSION OF THE MUCOUS MEMBRANE OF THE URETHRA

Has been noticed by Lisfranc, McClintock,* and others. In such cases, a tumor of variable size, of a reddish, a dark red, or pale red color, may occupy the position of the urethral aperture. It is easily distinguished from vascular tumor on attentive examination of the relations of the growth, and by the use of the catheter; and unless inflamed and very painful, it is capable of being pushed back and reduced.

Eversion of the Bladder is sometimes observed in very young

* Loc. cit., p. 236.

children.   It occurs in infants, probably in the same class of cases as those in which eversion of the rectum is noticed, and from a like cause—viz., violent straining during coughing, or possibly in the dysuria due to presence of ascarides.   Dr. McClintock refers to a case observed by Dr. Beatty, of Dublin, in a child nearly two years old.   The tumor was scarlet, the size of a chestnut, very painful.   It was replaced by pressure, and the urethra found to be very large.   Mr. Crosse, of Norwich, has related a precisely similar case in a child about the same age, and which was at first considered to be a vascular tumor of the meatus.   An operation was about to be undertaken for its removal, when Mr. Crosse discovered the true nature of the tumor.   In adults, eversion of the bladder only occurs where fistulous openings are present.

TREATMENT.—These cases of eversion of the urethra, &c., should be treated by reduction, by rest, and the careful application of lint dipped in cold water as a compress.   The retention of a catheter in the bladder has been recommended, but it would seem calculated to increase the irritability of the parts.

RETENTION OF URINE

May result from a multitude of causes (see " Diagnosis ").   Here it is only necessary to point out the method of relieving the patient under such circumstances.

Warm fomentations frequently enable the patient to empty the bladder, but in many cases the use of the catheter is required.

Mode of Introducing the Female Catheter.—Ease in the use of the instrument is only to be attained by practice, but the operation is usually effected without much difficulty, by one conversant with the anatomy of the parts.   The plan to be adopted is the following: The patient to be laid on her back; the operator is to stand on her right side; the right leg is to be flexed, the sole resting on the bed or couch.   The operator then by means of one finger of the left hand, carried from the abdomen over the pubes, ascertains the position of the clitoris, and of the urethral orifice just beneath it, and, having done this, the right hand, holding the gum-elastic or silver catheter, is passed under the right leg, and the point of the instrument guided into the urethral canal.   The principal thing is to make certain, in the first instance, of the position of the clitoris and urethral orifice; the latter is known by the fact that the vaginal canal is immediately below it.   If the finger be introduced into the vagina, the urethral canal must therefore be in the median line immediately above it.

It is convenient to have a slender India-rubber tube, five feet long, attached to the catheter. The urine then flows directly into the receptacle placed on the floor.

In cases where the retention of urine is due to dragging upwards of the bladder by tumors of various kinds, and pressure on the urethra, the direction of the urethral canal is much altered. In such cases a gum-elastic catheter should be always used, and care is required in order to avoid injuring the walls of the canal.

AFFECTIONS OF THE BLADDER.

Chronic Inflammation of the bladder is an affection which in some shape or other comes before us rather frequently. After parturition, after operations about the genital organs, it is not unusual for the mucous membrane of the bladder to take on an inflammatory action, which at one time results in the exfoliation of the lining membrane, at another leads to chronic cystitis, with constant secretion of a ropy mucus, an ammoniacal state of the urine, occasional passage of blood, great distress and frequency in micturition, pain in the region of the bladder, and other troublesome symptoms. It is important to bear in mind, that the symptoms referable to the bladder are frequently really due to morbid conditions of the kidneys or ureters, or both. Information respecting the diseases of these organs will be found in standard works on medicine and surgery. Incontinence of urine is an affection liable to supervene on labor, when the urethra has been subject to long-continued pressure.

The timely use of the catheter after labor will prevent that destructive *cystitis* which may be produced by inability of the patient to evacuate spontaneously the contents of the bladder. If cystitis be actually present, with fever, pain and tenderness, leeches may be required. Demulcent liquids should be given, such as barley water, and all irritant articles of food avoided. Rest is exceedingly important.

In the *chronic* form of the disease, cystitis is best treated by the administration of the diluted mineral acids; uva ursi and pareira brava are medicines very generally found serviceable in combination with diluted nitro-muriatic acid. Sir Henry Thompson has introduced the use of a decoction of the underground stem of the *triticum repens,* in cases of chronic cystitis in the male sex, and has found it of very great service in relieving the various distressing symptoms present in such cases. I have found it

equally efficacious in the chronic inflammatory affections of the bladder in women. This distinguished surgeon states in reference to the use of demulcent decoctions, infusions, &c., in affections of the bladder, that large quantities are necessary in order that they may prove beneficial. Dr. West speaks highly of the employment of a seton introduced just above the symphysis in cases of chronic cystitis, and I have seen great benefit from counter-irritation in this locality. The general treatment of the patient in these cases is a matter of great importance; some patients require a liberal diet and regimen, while with others the indication is quite the opposite. The pain and suffering present in cases of cystitis must be relieved by opiates, and these require frequently to be given in considerable doses.

For the relief of incontinence of urine after labor, which may be more or less complete in degree, time is the great remedial agent. Repeated ablutions of the external genitals have a good effect in restoring the lost tonicity of the sphincter of the bladder. As a general rule, tonics are indicated, and the patient is to be encouraged by the hope—generally a well-founded one—that in the end the lost control over the evacuation of the bladder will be regained.

POLYPUS OF THE BLADDER

Is a condition which rarely comes under our notice. An instance, recorded by Mr. Birkett, is alluded to by Dr. McClintock, of *polypus* arising from the interior of the *bladder* and projecting through the urethra. The case occurred in a child five years old: the polypus grew from the upper boundary of the neck of the bladder, and formed a red mass projecting through the meatus and between the labia. Excision was performed. The child—greatly exhausted at the time—died. Dr. McClintock is probably right in thinking that the ecraseur would suit such cases best. Dr. McClintock states that only eleven instances of this disease have been placed on record.

SUPPLEMENTARY CHAPTER.

STERILITY.

General Remarks—Signs of Virility in the Man.
CAUSES OF STERILITY IN THE WOMAN.—1. Mechanical Causes; Condition of
 Hymen, of Ostium Vaginæ, of Vagina, Presence of Tumors, &c., interfering
 with Sexual Intercourse; Spasm of Vagina; Conditions of the Uterus,
 imperfect Development, Polypi, Flexions, Narrowness of the Uterine Canal,
 Chronic Inflammation; Diseases of the Ovaries; Altered Conditions of the
 Fallopian Tubes; Ill-timed Intercourse; Masturbation, Follicular Disease of
 Vulva; Disease of Rectum—2. Abnormal Condition of the Secretions;
 Leucorrhœa, &c.—3. Constitutional or General Causes; Sexual Frigidity;
 Over-feeding and Luxurious Habits; Obesity; Syphilis.
TREATMENT.

THERE is hardly any pathological condition of the generative
organs of the female which may not, directly or indirectly, have to
do with sterility; and it is very certain that no individual will be
able to form a sufficient diagnosis of the causes of sterility in a
given case, who is not familiar with the whole range of knowledge
in this department of medicine, and who is not further intimately
conversant with the anatomy and physiology of the generative
organs. It would appear that in reference to the diagnosis of the
causes of sterility, practitioners have not uncommonly failed in
detecting the cause, simply because they have not taken a suffi-
ciently wide and comprehensive view of the subject; and it has not
unfrequently happened, in consequence, that in cases of sterility
where the cause was very readily removable, the cause has been
overlooked because it has not been sought for. Individuals, for
instance, have been long and fruitlessly subjected to courses of
hygienic and general treatment for the cure of sterility in cases
where a very simple exploration of the generative organs would
have shown the futility of such treatment. But while the causes
of sterility are such as in many cases we can detect, explain, and
remove, there are not a few cases in which our attempts are baffled,
and for the solution of which we must be content to await the
further advance of knowledge.

It need not be stated how important it is in many cases that
are likely to come before us that we should be able to resolve the

question—What is the cause of the sterility? The reproach of childlessness is one which is often a very grievous one to bear, and one which the patient would often give her all to remove. There is then a double inducement to the careful study of the subject—its inherent difficulty, and the importance of overcoming that difficulty.

The only practical method of treating the subject of the diagnosis of the causes of sterility is to state definitely and systematically what are the possible causes. The following list of these possible causes has been made out chiefly on the basis of facts actually observed and recorded.

The question which naturally first occurs to us in ascertaining the cause of the sterility is—To whom is the infertility to be attributed, the woman or the man?

If the male organs be intact, and questions with reference to power of erection and penetration be answered satisfactorily, the question, What is the cause of the sterility? may generally be dismissed as far as the husband is concerned. The cases are few in which, if the testes be apparently sound, the secretion itself is deficient in fertilizing power.* If the husband be in good health, and have lived temperately, the power of impregnating often exists up to a very advanced period of life; but in those who have, from an early period of life, been addicted to excesses, the sexual power may fail prematurely. In cases of the latter kind, inquiries will readily show the nature of the deficiency.

CAUSES OF STERILITY IN WOMEN.

The first point to which our inquiries tend is as to the patency of the canals through which the spermatic fluid and the ovule must pass in order to come into contact. The vagina, the uterus, the Fallopian tubes, must offer no impediment, or sterility is inevitable.

We may consider the causes of sterility in the woman under the following heads: 1. Mechanical causes; Abnormal condition of some part of the generative passages, such as to interfere with the

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* Mr. Curling contends that in the man an inaptitude to impregnate may coexist with the capacity for sexual intercourse—that, in fact, the man is subject to *sterility* independently of virility. The microscope has been occasionally employed with the view of ascertaining the presence or absence of spermatozoa in the seminal secretion, and it is asserted that they have been found absent in some cases of sterility. See Dr. Marion Sims's work on Sterility.

proper transit of the spermatic fluid or of the ovules; 2. Abnormal conditions of the secretions of the generative passages; 3. Constitutional and general causes.

1. MECHANICAL CAUSES OF STERILITY.

a. Abnormal Conditions of the Hymen.—This membrane is sometimes dense and firm, and effectual intercourse is prevented. Cases in which this condition is met with usually come under our notice owing to a complaint on the part of the husband that intercourse cannot be effected satisfactorily. In some such cases we find on inquiry that the menstrual flow proceeds regularly and without much apparent disturbance; the hymen is not quite complete, but is perforated at one or more points sufficiently to allow of the passing of the menstrual fluid, but not sufficiently so to allow of perfect intercourse. In such cases, sterility generally, but *not always*, exists; for it has been found in cases very well authenticated, some of which may indeed be found in Mauriceau,* not to cite authorities much more recent, that a nearly perfect hymen does not necessarily prevent fecundation. In some of these cases the hymen has been found so dense and firm at the final termination of pregnancy, as actually to impede parturition. Thus the menstrual phenomena may be present, and yet the hymen may be imperforate in a certain degree. In another class of cases the woman has never menstruated, and the hymen is found complete, absolutely preventing the escape of the menstrual secretion. In some rare cases the hymen is imperforate, but is at the same time yielding, so much so, indeed, as to allow of ordinary intercourse. A case in which the hymen is absolutely imperforate generally arrests attention from the fact that the menstrual flow has never been observed, and, in the case of married women, the aid of the practitioner is more frequently called in for this reason than because of the sterility with which it is also associated. The physical examination will always and readily demonstrate the nature of the impediment to fecundation which exists in both of these important classes of cases.

b. Narrowness or partial Closure of Ostium Vaginæ or Vaginal Canal.—The vagina is in rare instances *partially closed* at different parts of its course by bands, constituting partial strictures of the canal, and rendering intercourse difficult or incomplete, and

* Maladies des Femmes.

so leading to sterility. Such a condition of the canal may be congenital, or it may be brought about in consequence of previous difficult parturition, laceration and cicatrization of the torn part leading to contraction, and to partial, or even complete, closure of the canal. The strictures thus resulting may be low down, at the position of the hymen, or higher up nearer the os uteri.

c. Or the vagina may be *altogether absent*, or constituted by a small cul-de-sac, barely admitting the point of the finger. This condition may be congenital, or may be produced by difficult labor, laceration of the walls of the canal having been followed by cicatrization and contraction of the same. In the congenital variety, menstruation is absent because of the usually associated absence or defective development of the uterus; in the acquired variety, menstruation may or may not be absent according as the canal is completely closed or not. The canal may be large enough to allow of menstruation occurring, but too small to admit of sexual intercourse, and consequently of impregnation.

d. Tumors, &c., interfering with Sexual Intercourse. — The aperture of the ostium vaginæ being natural in point of size, sterility may exist because of the presence of a tumor or growth filling up the canal, or so situated as to interfere with efficient sexual intercourse. The presence of an *enlarged clitoris* has been known to have this result.

The canal of the vagina may be occupied by a growth interfering in like manner with intercourse. *Hypertrophy of the cervix uteri* forming a conical tumor sometimes of considerable size, *polypus of the uterus* hanging down into the vagina, or *prolapsus* of the uterus itself, may in particular cases give rise to sterility.

e. Spasmodic Affection of the Ostium Vaginæ — Vaginal Spasm — Vaginismus. — This condition has until recently had hardly a sufficiently prominent place assigned to it in the list of causes of sterility. Its relation to sterility is a very important one. Recently it has excited the attention of more than one observer— Debout, Michon, Marion Sims. The affection has been described in some of the older established text-books. The spasmodic contraction is induced or aggravated by attempts at sexual intercourse. Owing to the extreme sensibility of the parts in the first, and to the mechanical closure of the canal in the second, place, sexual intercourse is almost or quite impossible, and there is consequently sterility. The nature of the affection has been discussed in a previous chapter (see p. 675).

f. Condition of the Uterus. — *Absence or imperfect development*

of the uterus is a cause of sterility the existence of which is only to be substantiated by an internal examination (see "Examination of the Vagina"). There is a class of cases which come under the present category, and which are very interesting from a practical point of view, viz., those in which the cervix uteri, or rather the vaginal portion of the cervix, is small and somewhat infantile in character, the opening being also small. In many such cases infertility has been observed, and has been remedied by simply incising the os uteri and thus enlarging the aperture.

Infertility is by no means a necessary consequence of absence of the catamenia. It has been repeatedly proved that women may conceive who have never menstruated; and if it became a question whether marriage was allowable in a particular case, the simple absence of this function could not be considered as *definitively* against the propriety of such a procedure, unless that absence were accompanied by other and more essential sexual deficiencies.

The other conditions on the part of the uterus which may cause sterility will next be enumerated. First are to be considered those cases in which the cavity of the uterus is occupied by tumors—*polypi* of the uterus. They produce sterility in two ways: first by closing the canal of the uterus and preventing the contact of the spermatic fluid with the ovule; and secondly by determining the speedy ejection of the young ovum in cases where impregnation has actually occurred—in other words, by producing abortion at a very early period.

The presence of a polypus, even of a somewhat considerable size, in the uterus, does not necessarily produce sterility. *Fibroid tumors of the uterus* are effectual both in the production of abortion and in the actual prevention of impregnation; when the tumor is situated between the uterine mucous membrane, and encroaching gradually on the uterine cavity producing a narrowing or partial occlusion of the cavity of that situation, impregnation is prevented. Out of 69 cases of fibroid tumor recorded by Scanzoni, 35 had never conceived. According to my own experience, fibroid tumors generally altogether prevent conception.

Chronic hypertrophy of the uterus, variously termed, also, chronic inflammation of the uterus, "chronic infarctus," is a condition unfavorable to fecundity. Scanzoni attributes the sterility of prostitutes to the existence of this alteration. This condition is generally accompanied with congestion and undue fulness of

the neighboring bloodvessels, alike unfavorable to healthy ovulation and to the normal development of the ovum within the uterus.

That form of atresia produced by *flexion of the uterus* is, I believe, by far the most common cause of sterility. The flexion produces sterility because it prevents the passage of the seminal fluid into the interior of the uterus. The causes of dysmenorrhœa and of sterility are often the same. Hence a close study of the causes of dysmenorrhœa (see p. 450) is essential to the understanding of this subject. The frequency with which anteflexion of the uterus is associated with sterility is very great.

The *uterine cervical canal* may be *comparatively very narrow*, the seat of the constriction being either at the upper extremity of the cervical canal, where it joins the body of the uterus, or lower down at the os uteri. And there may be *congenital closure* of the canal at the positions indicated. In cases in which there is actual closure of the canal, the os uteri being imperforate, menstruation is of course absent, and there may be menstrual retention. In cases where there is an opening, but a small one, the symptoms present are, speaking in general terms, those of dysmenorrhœa. The opening is often small, owing to flexion and consequent valvular closure, but when the os is drawn down, and the canal straightened, the sound enters readily enough.

Conical, or flexed, or elongated condition of the vaginal portion.—Dr. Marion Sims insists, and I believe correctly, on the influence exerted by an abnormal condition of the canal at its lower portion in the production of sterility. The vaginal portion is sometimes too long, and when this is the case it has a tendency to become curved. This curvature (of the portion of the canal within the vagina, be it understood) is sometimes so great that the long tapering cervix is almost doubled on itself. The patency of the canal is thus seriously interfered with, and it is important to bear in mind that dysmenorrhœa is not necessarily associated with flexion of the canal at this point. The vaginal portion should have a certain length, shape, and direction, and a deviation in either of these particulars may lead to sterility.

Valvular closure of the os.—This condition arises when one of the lips of the os uteri is considerably larger than the other. The os has then a crescentic shape, and the orifice is virtually less than it should be. Sterility may be associated with it.

The os uteri sometimes *becomes closed*, and sterility arises in consequence of the opposite sides of the canal becoming adherent after being torn. This is now and then a consequence of labor.

In some cases it has been produced by the incautious or improper use of caustics.

Chronic inflammation and induration of the cervix of the uterus are causes of sterility: the opposite sides of the os are hard, firm, and the opening actually very small, although it may appear to be large. The canal is frequently distorted, and the opposite sides actually touching each other. The sound enters readily, but there is nevertheless less patency of the canal than there should be.

In cases of *dysmenorrhœa* attended with expulsion of a membranous structure at each menstrual period, sterility is very generally observed. (See "Dysmenorrhœa.")

g. Diseases of Ovaries.—*Cystic or other tumors of the ovary* prevent conception in many cases where menstruation is still present; but the existence of disease in one ovary, or removal of one ovary by operation, is not incompatible with the occurrence of pregnancy. Disease of the ovaries interferes with the fecundity of the woman in two ways: directly, when the due secretion of ovules does not occur, and consequently either no ovules, or ovules in a morbid condition, are conveyed into the Fallopian tubes, in which case, however, menstruation would be expected to be absent, or at all events much disturbed; and indirectly, when the pressure of large tumors of the ovaries dislocates the uterus, and so disarranges the natural relations of this organ as to prevent both the passage of the ovule downwards and the entrance of the spermatozoa into the uterus; or when the dislocation in question leads to the ejection of the latter from the uterus at a very early period of its development. Careful physical examination of the abdomen and of the pelvic cavity through the vagina is necessary to exclude ovarian disease from the consideration.

h. Altered conditions of the Fallopian tubes may prevent the passage of the ovule into the uterus. Peritonitis occasionally produces such *adhesions of the peritoneum covering the pelvic organs* as to render it physically impossible for the ovaries to be grasped by the fimbriated extremities of the Fallopian tubes; thus the " ovipont" cannot take place. *Atresia* or closure of the canal is a condition sometimes met with; a condition of course fatal to impregnation of the ovules from the corresponding ovary. This condition may be combined with *dropsy of the Fallopian tubes.* Fibroid tumors of the uterus occasionally produce occlusion of the Fallopian tubes.

i. Here may be mentioned a possible cause of sterility, important to bear in mind—*ill-timed sexual intercourse.* It is the

fact that women have a much greater aptitude to conceive immediately after the cessation of the menstrual flow, and this, therefore, is the most favorable time for sexual intercourse. It is related that Catharine de' Medicis, wife of Henry II of France, became pregnant after having been sterile for many years, apparently in consequence of following the advice of the physician Fernel, that sexual intercourse should only take place at the time in question.* It may turn out on inquiry, in particular cases of sterility, that it has been the custom to act in ignorance of this fact.

k. Under the next head may be included a number of causes occasionally, but by no means necessarily, leading to abortion. Thus cases in which *masturbation* is practised, cases in which sexual intercourse is allowed to take place *too frequently*, cases in which the vulvar aperture is the seat of disease, as in *follicular inflammation of the vulva*, are those coming under this category most deserving of mention. *Diseases of the rectum* have been known to be associated with sterility.

2. ABNORMAL CONDITIONS OF THE SECRETIONS OF THE GENERATIVE PASSAGES.

Leucorrhœa.—Under ordinary healthy conditions, contact with the secretions of the mucous membrane lining the cervix, the uterus, and the vagina, does not at all impair the vigor and activity of the spermatozoa, in which the power of fertilization resides; but these secretions may be so altered as to materially affect the activity of the spermatozoa, or so as to prevent mechanically, by their viscidity and tenacity (Dr. Tyler Smith) the passage of these bodies into the cavity of the uterus. The vaginal secretion is naturally acid, the cervical mucus is naturally alkaline; the healthy degree of acidity and alkalinity respectively is not hurtful to the spermatozoa; but it has been shown experimentally that if the vaginal mucus be too acid, or the cervical mucus be too alkaline, the spermatozoa subjected to the direct influence of these secretions quickly lose their power of motion. The relations of leucorrhœa to sterility have been fully discussed by some late observers, by Dr. Whitehead,† Dr. Tyler Smith,‡ and Dr. Marion

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* Montgomery, op. cit., p. 479.
† On Abortion and Sterility.
‡ On Leucorrhœa.

Sims* in particular; and each of these authors cites numerous cases of sterility associated with leucorrhœa, and in which there would seem to be little doubt that the influence of the leucorrhœa in producing the sterility was due in great part to the existence of this morbid condition of the secretions.

Coste† refers to an anecdote related by Dubois bearing on the questions now under consideration. A lady who had been for many years sterile, informed Dubois that having been in the habit of always using an injection of cold water after sexual intercourse, she one day accidentally used warm water instead. The result was that, having been sterile for many years, she at last conceived. Coste ascertained by experiment that the spermatozoa of mammalia are prejudicially affected by the application of quite cold water, whereas the admixture of warm water with the seminal fluid rather promoted than not their activity. These facts have their importance. It is quite possible that mere increase in the quantity of the secretion poured out by the cervix uteri may interfere with impregnation; and as the presence of a certain amount of fluid on the surface of the mucous membrane would appear to be necessary for the proper conveyance of the fertilizing fluid, it is not unreasonable to suppose that, where the mucous secretions of the generative passages are deficient in quality, sterility may be observed.

3. CONSTITUTIONAL AND GENERAL CAUSES OF STERILITY.

One of the conditions here to be mentioned is, *sexual frigidity* —a want of inclination for sexual intercourse. There can be no question that the connection of this frigidity of temperament with sterility has been very much overrated. Women conceive and bear children who evince little or no sexual inclination. This condition is only *necessarily* associated with sterility when the generative apparatus is deficient and imperfectly developed; and no positive deduction can be drawn from such disinclination as to the incompetency of the woman to conceive.

When great *general debility* and *anæmia* are present, it is often the case that conception does not occur. The ovarian function suffers in common with the functions of the body generally, and

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* On Sterility.

† Histoire générale et particulière du Développement des Corps Organisés, tom. i, p. 55.

the woman is not apt to the procreation of children. With anæmia disorder of the menstrual functions frequently, as is well known, coexists; the cases are few in which, menstruation being present, the sterility is dependent on the anæmia.

Another condition, the opposite of that present in anæmia, is more often the cause of sterility—that, namely, produced by *over-feeding* and *luxurious habits*. It is matter of common observation, that the laboring classes, amongst whom destitution frequently prevails, are prolific in a degree not witnessed in the higher ranks of society. "It is," said the late Dr. Marshall Hall, "incontrovertibly proved by Mr. Sadler, in his work on the Law of Population, that the fecundity of the human race is diminished by the indolent and luxurious mode of life prevalent among the rich, whilst it is augmented by the laboring habits and spare diet of the poor . . . the proportionate infecundity of the two being, in general terms, as 6 to 1."*

In women who are *unusually fat* an inaptitude to conceive is often observed.

Syphilis.—It is well known that the presence of syphilitic disease in either parent is frequently the cause of abortion or of premature birth. It may be questioned, however, whether the presence of syphilis is not occasionally the cause of sterility by destroying the product of conception at so early a period of the pregnancy that the very existence of pregnancy is for that reason unrecognized—the woman being really capable of conceiving, but the product of conception quickly perishing. The effect of syphilitic disease in disturbing the normal growth of the decidua at the commencement of pregnancy has hardly been, as yet, the subject of attention; but it is quite possible that disease of the decidua of a syphilitic character may come hereafter to be a recognized pathological condition. Facts which have come under my own observation have led me to suspect that syphilis may give rise to the effect here alluded to.

Conclusion.—In endeavoring to ascertain the cause of the sterility, it will be necessary for the observer carefully to examine into the history and antecedents of the patient, the manner in which menstruation is performed, and the general condition of the bodily health. Further, it will generally be necessary to examine the vagina and the external generative organs, and, if no cause for the sterility be there found, to examine the uterus. In

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* On Constitutional Diseases of Females, 1830, p. 7.

carrying out the examination of the parts in question, the eye and
the touch are both to be employed.   In investigating the condition
of the uterus, the speculum and the uterine sound, one or both,
are required.

TREATMENT OF STERILITY.

The cure of sterility is dependent upon removal of the cause,
whatever that may be, and the means of cure are necessarily
almost as numerous as the causes.   It is unnecessary here to con-
sider these *seriatim:* the more so as the conditions leading to
sterility frequently occasion other difficulties, dysmenorrhœa, &c.,
the treatment of which has been already discussed.   In many
cases the cure is impossible, in some instances a very slight me-
chanical treatment is all that is required, in a few, more elabo-
rate surgical procedures are necessary, in order that the organs
may be placed in conditions favorable to the occurrence of con-
ception.

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