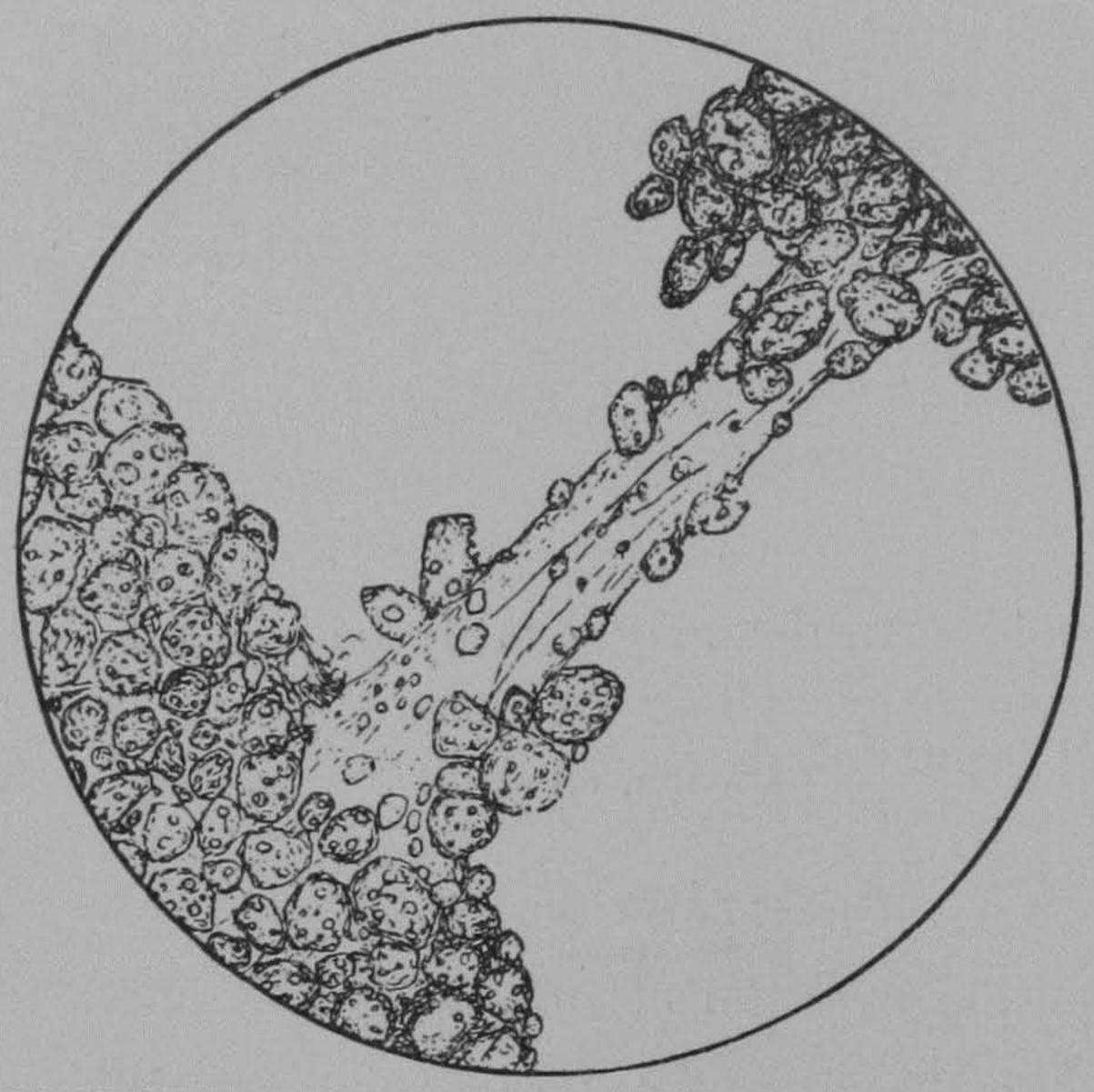
Pyrus Pondr (a very efficient disinfectant for mild cases.

The body of the uterus is a lymphatic structure.

INFLAMMATORY DISEASES OF THE UTERUS.

Anatomy.—It is essential to a proper understanding of the various forms of endometritis that a short description of the anatomy of the endometrium be given. The internal os fairly well divides the lining membrane of the uterus into two very different and dissimilar portions. The corporal endometrium begins here, lines the whole inside of the body of the organ, and extends, modified, into the openings of the Fallopian tubes. Its characteristic features are these: it is firmly attached to the muscular tissue by a stroma of connective tissue. From this latter radiates in no certain arrangement a fibrillar tissue, which is found in lymphoid structures only. Attached to these delicate bands and between them are innumerable lymphoid cells of various sizes. This arrangement persists throughout the membrane up to the epithelial covering. This covering is of cylindrical cells, ciliated, but one layer in thick-

Fig. 74.

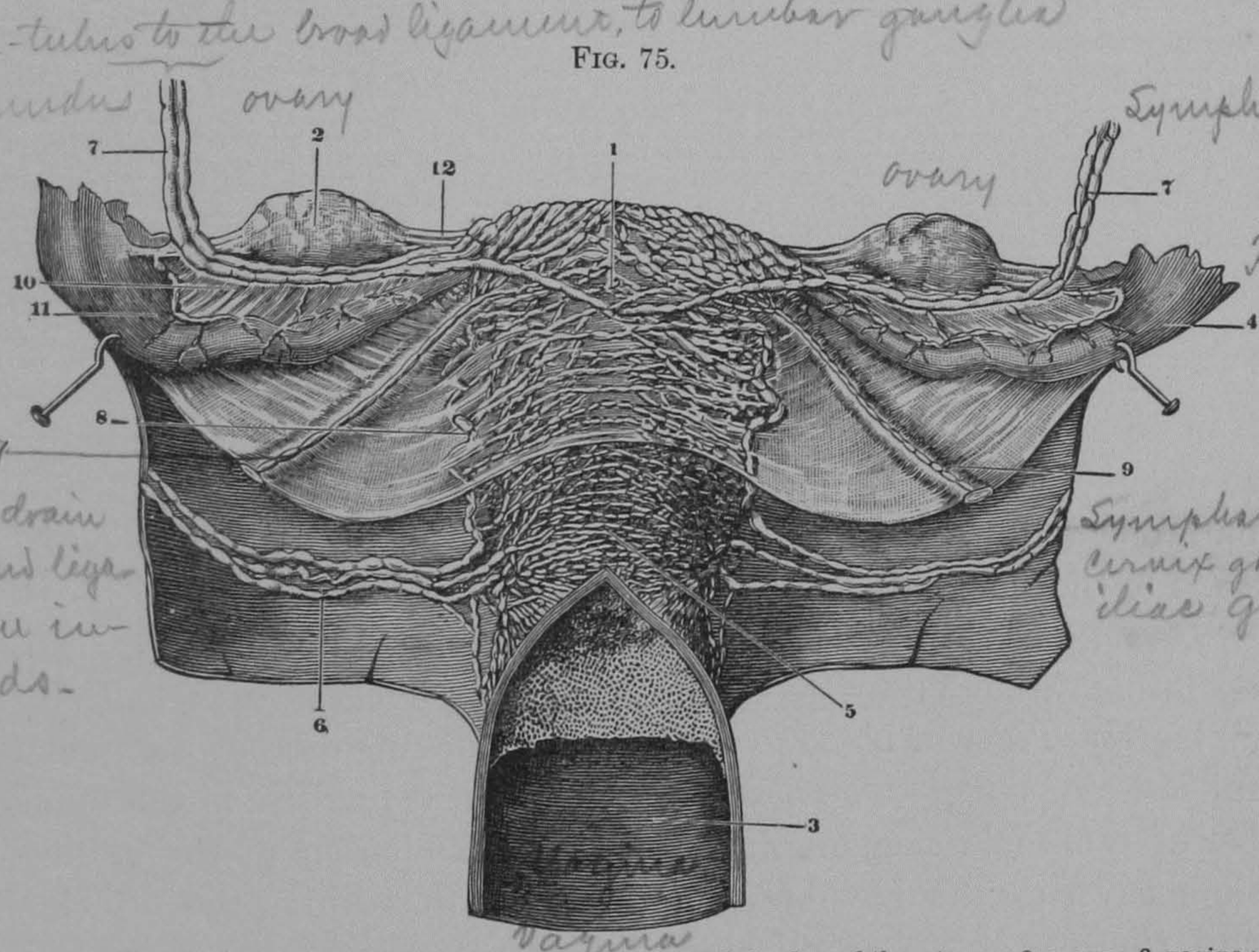


Fibre of the Endometrium, showing different grades of corpuscular development.

Epithelium

ness, and lines the utricular glands. These latter are merely deep depressions, with perhaps branches dipping down into the lymphoid tissue. (See Fig. 28.) There are also lymph-spaces in the mucosa. They extend from the mucosa to the spaces between the bundles of muscular fibres. The lymph-vessels are most abundant in the external muscular layer, are connected with the lymph-vessels of the mucosa and serosa, and run into large canals at the side of the uterus. The serosa has lymph-vessels only, arranged in a network, and, while less numerous than those in the subserous tissue, they are much larger. Thus the lymph passes from the mucous membrane lymph-spaces into the spaces and vessels of the muscularis, surrounds all the muscular bundles here, up to the serous coat, *and then passes into large tubes in the broad ligaments.* The uterine mucosa is, then, either an open lymphatic gland or a lymphatic surface intersected by blood-vessels, the lymphatics being not mere vessels, but spaces between the bundles of connective tissue.

FIG. 75.

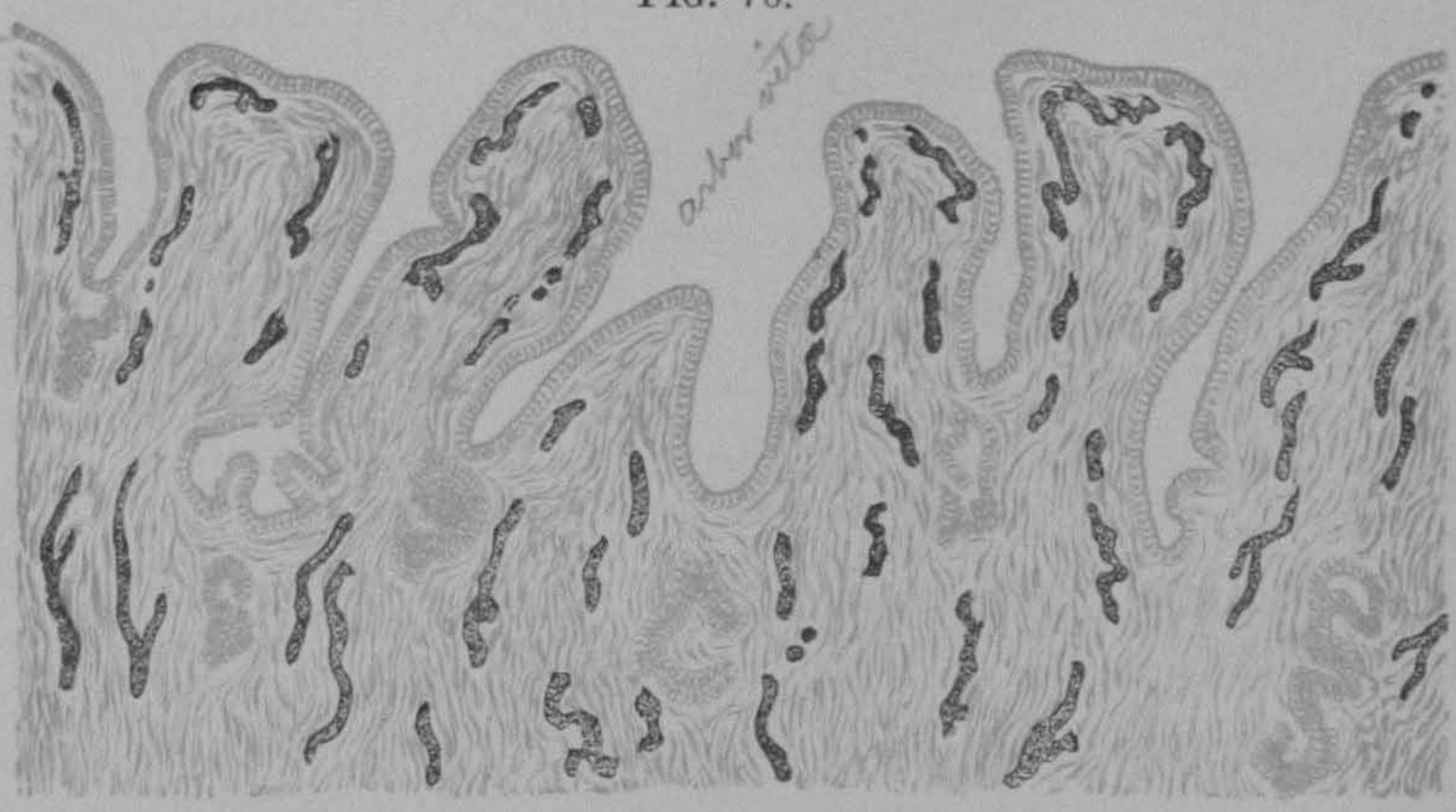


Lymphatics of the Uterus: 1, lymphatics from the body and fundus of the uterus; 2, ovary; 3, vagina; 4, Fallopian tube; 5, lymphatics from the cervix; 6, lymphatic vessels from the cervix going to the iliac gangiia; 7, lymphatic vessels from the body and fundus going to the lumbar ganglia; 8, anastomosis of cervical and uterine vessels; 9, small lymphatic vessel in the round ligament going to the inguinal glands; 10, 11, lymphatic vessels of the tubes which empty into the large lymphatic vessels from the body of the uterus; 12, ovarian ligament.

The mucous membrane of the cervix is dense, hard, free from lymphoid elements, and is a true mucous membrane. It rests on a

submucous structure of connective tissue. The glands are numerous and of the compound racemose type. The membrane is thrown into interlacing folds (*arbor vitæ*), and is covered by a columnar epithelium, in places ciliated, but on its vaginal aspect the covering

FIG. 76.



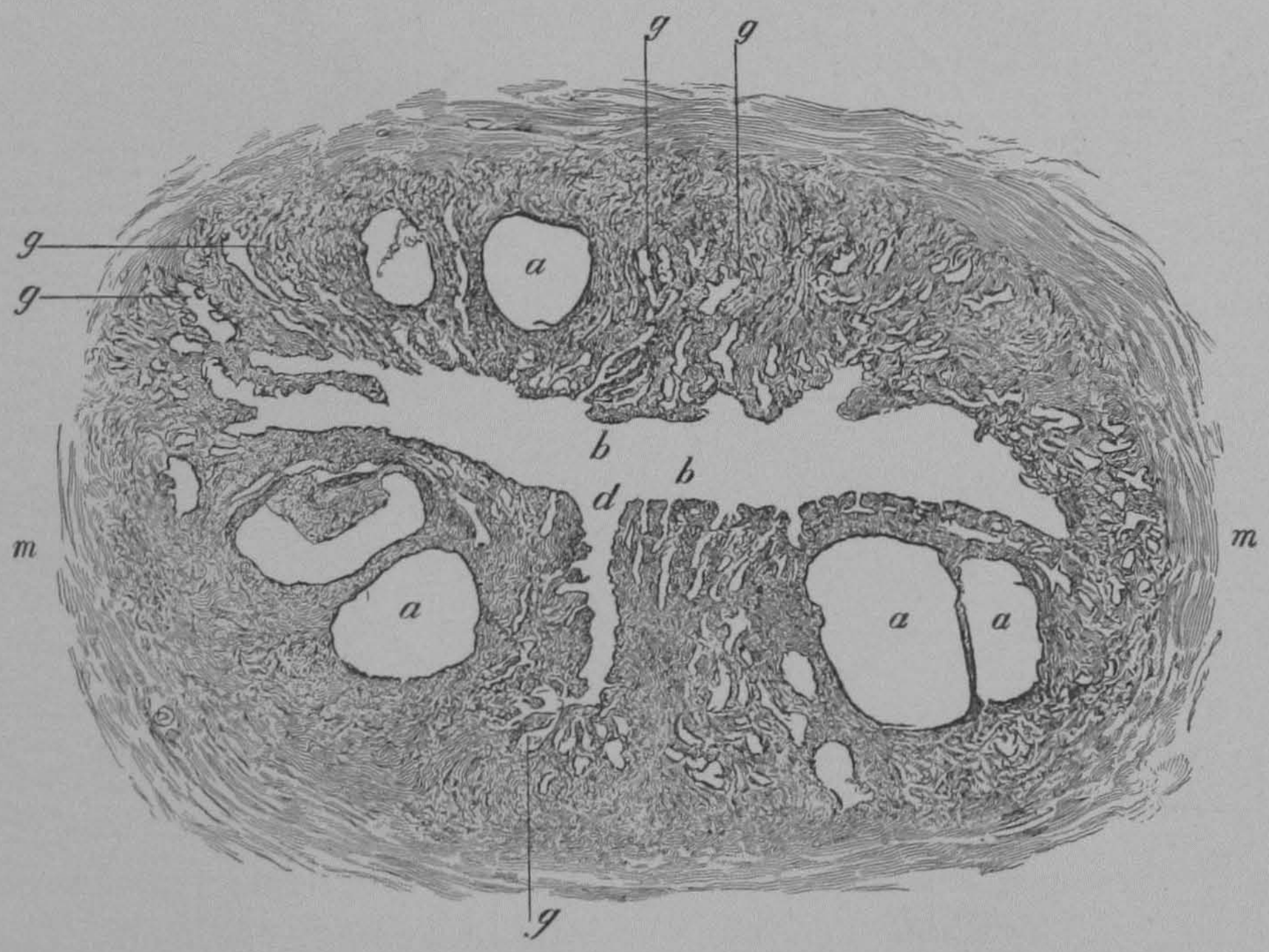
Normal Mucous Membrane of the Cervix. The mucous membrane of the Cervix is very firm and presents a number of branching folds (arbor vitæ). The interglandular tissue, which has, in the body of the organ, the nature of granulation tissue, is here of a connective-tissue type, the fusiform and stellate cells predominating. There is not the same clear limit between membrane and muscular coat; one can follow the glands deeply inward, among the connective-tissue bands, which separate the muscular bundles. Consequently the mucous membrane in section has a partly reticulated, partly fasciculated appearance. The cervical membrane possesses, moreover, many vascular papillæ. Cylindrical ciliated epithelium invests the glands in the adult, and in the child extends to the external os. In the adult, especially after pregnancy, the flat vaginal epithelium rises higher and lies more or less within the cervix. Between the superficial cylindrical epithelium and the glands, cup-shaped and colloid cells are here and there present. The vessels pass into the mucous membrane perpendicularly and have very thick walls, dividing progressively into a capillary plexus, which is less developed than in the body. Sometimes the capillaries lie very superficially under the epithelium, reuniting to form veins, which at once leave the mucous membrane. The glands and ovula Nabothi are surrounded by the vessels.

is of squamous epithelium. The lymphatics of the cervix are not so numerous as in the body, and do not enter the broad ligaments, but, joined by those from the upper part of the vagina, pass backward to the iliac glands and those in the obturator space.

PHYSIOLOGY.—A certain force, the origin of which is not known, operating through the vaso-motor nervous system, causes periodically an increased flow of blood to the uterus, producing thereby a wonderful series of changes. These consist of a great increase in the number of lymphoid elements in the mucosa, exfoliation of the epithelium covering the membrane and part of that lining the follicles, and rupture of the capillaries. Thus is produced the menstrual flow. The circulatory pressure subsides, the capillaries heal, a new epithelial covering to the surface and glands is produced, and the excess of lymphoid cells is absorbed, this repair and waste occurring once in the month. There is no exfoliation of the mucosa, and the above changes are limited to the corporeal endometrium. The follicles of

the uterus secrete a more or less milky fluid, somewhat viscid, alkaline in reaction, and free from pathogenic germs. Normally this secretion from the utricular follicles is so slight as not to be noticeable. The uterine secretion contains germs of no kind. It is similar in this respect to the gastric secretions. The glands of the cervix secrete in abundance a tenacious mucus. Germs are constantly present in the cervix. The cervix is solely for the purpose of acting as a sphincter to the uterine muscle, and its membrane is not involved in the menstrual act. Its secretion is clear, like white of egg, very tenacious, and abundant.

FIG. 77.



Transverse Section through the Upper Part of the Cervix, showing the Entire Mucous Membrane. The Central Cavity is the cervical canal: *b*, *b*, Internal Surface of mucous membrane, presenting small folds, superficial glandular depressions, and large incisions of the arbor vitæ (*d*); *g*, *g*, deep glands; *a*, *a*, ovules of Naboth; *m*, *m*, muscular tissue of the uterine wall.

The endometrium is solely for the purpose of forming the decidua.

Menstruation is merely that, periodically, the uterus gets into a condition more propitious for conception than at other times. The menstrual blood escapes, as it does in apes, because the uterine mucosa is of such dense character, compared to that of other animals, that its lymph-streams are not of sufficient size to carry off all the products of the monthly engorgement.

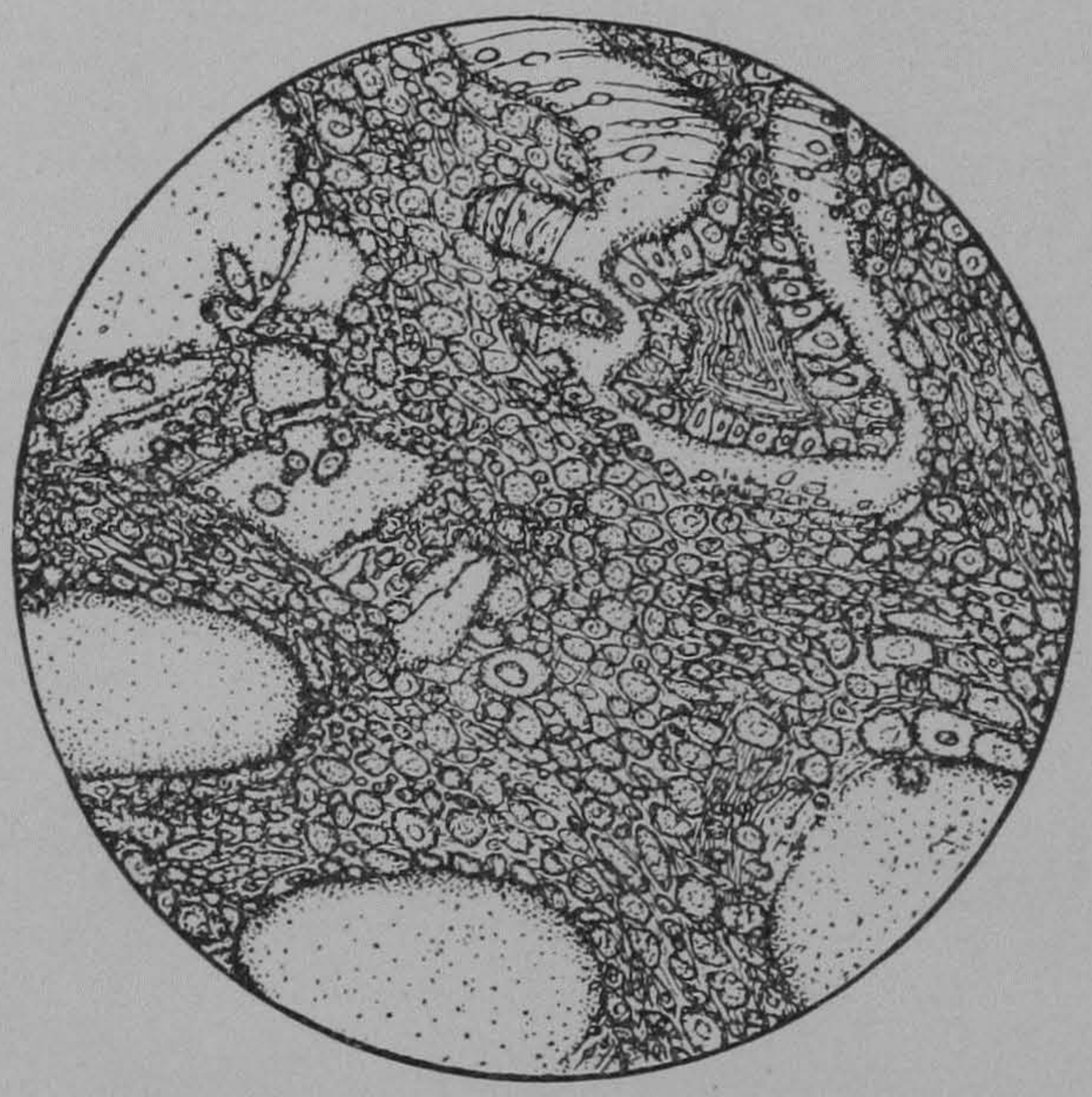
The escape of an ovule, exfoliation of the epithelium from the surface of the endometrium, engorgement of the endometrium with

blood, and multiplication of lymphoid cells, are the factors which invariably are necessary on the part of the woman, that conception may take place.

The lymphoid cells produce the decidual cells, and, by them, reproduction of the mucosa is brought about, after its removal; lymphoid cells form also the new epithelial layer.

In the endometrium of the child there are few corpuscles, abundant fibrillar tissue, and the follicles are mere dimples. In the

FIG. 78.



Menstruating Endometrium of a Woman aged 20, showing Utricular Follicles denuded of Epithelium, with one still containing an Epithelial Cast.

fully-developed woman the corpuscles crowd the tissue and are of all sizes. The whole membrane appears to be made of them. The glands branch, dip deep into the lymphoid tissue, and are lined with cylindrical ciliated epithelium. In old women there is nothing left save fibrillar tissue, a few corpuscles, and wasted utricular follicles. Between these extremes may be found all gradations, and in the same uterus at different times the arrangement and condition of vessels, epithelium, glands, and corpuscles so vary as to constitute essentially a different organ, under the influence of the controlling factors, menstruation and gestation. Inflammatory processes, then, imposed upon these widely dissimilar states, furnish a great variety of pathological appearances, and will culminate in some one of a great variety of microscopic changes. There-

fore, we must not expect every inflamed uterine mucosa examined to exhibit characteristics identical with some known standard. As

FIG. 79.

Endometrium of a Woman aged 60, showing Exhaustion of the Whole Structure.

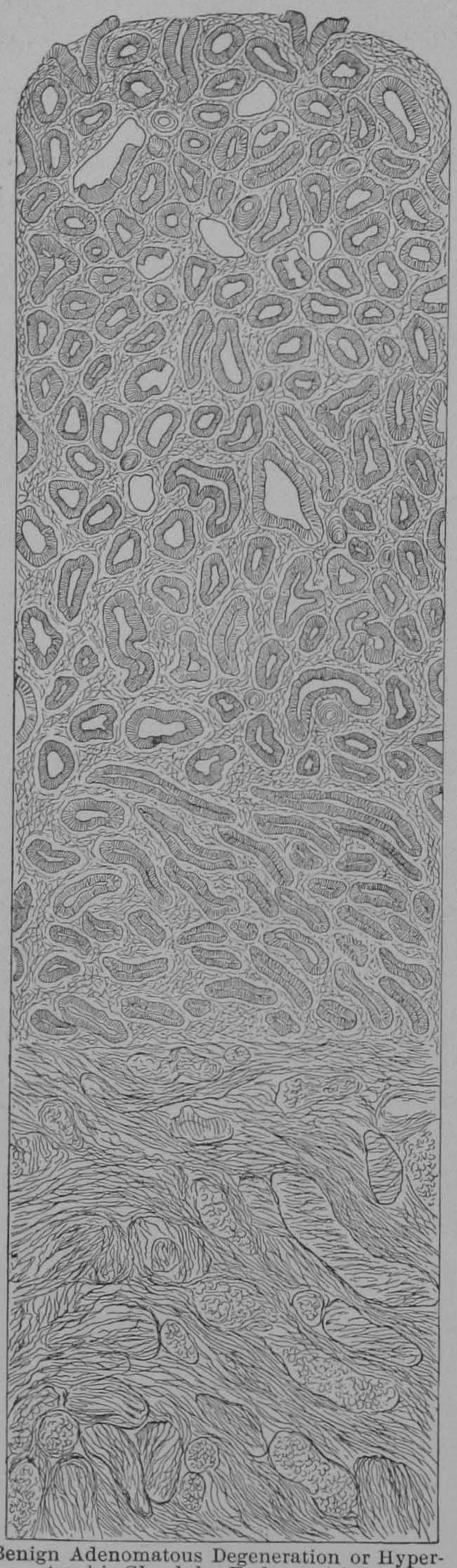
the conditions under which inflammation may occur are many, so must be the pathological changes.

ENDOMETRITIS.

Inflammation of the endometrium should be considered from the standpoint of its etiology, and, inasmuch as the treatment is largely governed by the causation, classification according to the latter is eminently proper. Therefore endometritis may be described as simple, septic, or specific. Descriptions of endometritis based upon the symptomatology and classed by authors as hemorrhagic, hyperplastic, etc., are confusing, and are merely different phases of the same pathological condition.

SIMPLE ENDOMETRITIS.—This is usually symptomatic and never acute. The membrane may be hypertrophied or atrophied. In the *first condition* the follicles are many-branched and tortuous with thickened epithelium, which is still deposited in one regular layer. The vessels are enlarged and increased in number; the lymph-spaces are increased in size, and the muscular walls thickened. The epithelium is easily brushed off, causing bleeding; the spaces about the follicles are filled with lymphoid cells, and the

Fig. 80.



Benign Adenomatous Degeneration or Hypertrophic Glandular Endometritis.

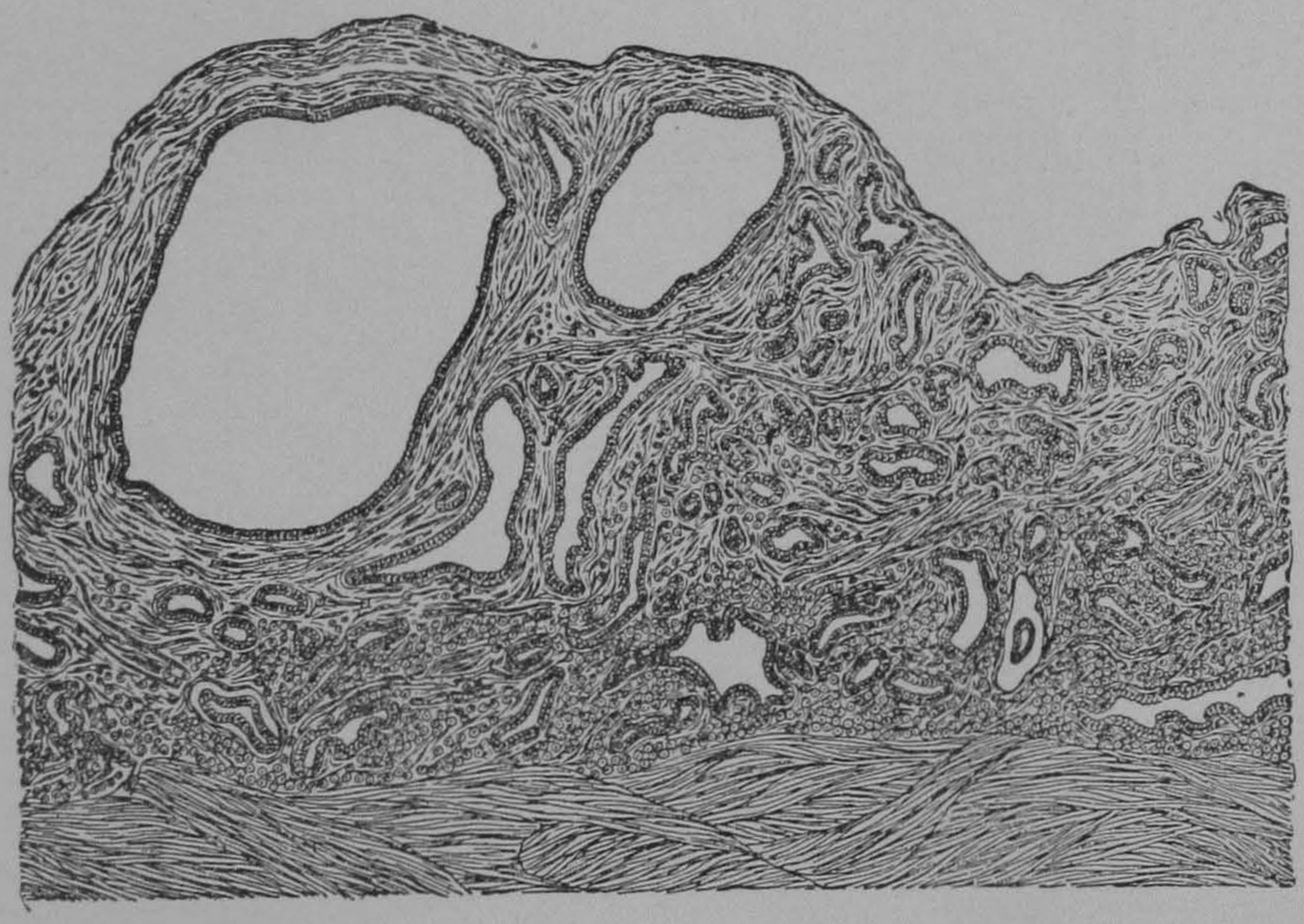
whole general aspect is one of increased growth and excess of nutrient fluid. Should there be an increase of connective tissue and accompanying glandular hypertrophy, the condition known as "fungoid" is produced. Here the fungoid elevations are cystic and lined by cuboidal epithelium. After abortions portions of decidua may remain adherent; this is not a true product of inflammation, but rather the growth of a tissue which has partly retrograded. Hypertrophic simple endometritis is usually found associated with those lesions which are pre-eminently characterized by a general enlargement of the uterus, as in retroposition, fibroid, subinvolution, etc.; or, glandular hypertrophy may occur, producing mucus polypi.

These polypi hang by a longer or shorter pedicle, and may even project from the cervix, although attached above the os internum. When they touch the os internum the cervix will be dilated and patulous, or even gaping open.

If the membrane be *atrophied*, the follicles with their epithelial linings are decreased in size, the lymphoid tissue is not so rich in cells, and the whole membrane is below the normal in thickness. There is an abrupt demarcation between the mucosa and the muscularis, and no intermingling of these structures. There may, in very chronic cases, be so great an increase in the connective tissue

as to destroy every vestige of gland-tissues, or, constricting certain glands, cysts may be formed. This form of interstitial change is rare except in old women, but is very similar to alterations produced by zinc-chloride and nitric-acid applications. Simple anteflexion and non-development are the chief causative factors in the condition of atrophic endometritis. The blood escaping at the menses readily coagulates, owing to the scarcity of lymphoid elements; the epithelium, instead of melting off gradually, separates in shreds or even as a whole cast. No micro-organisms are found, save, occasionally, secondary tubercle bacilli. Altered circu-

FIG. 81.



Glandular Endometritis; Polypoid Form.

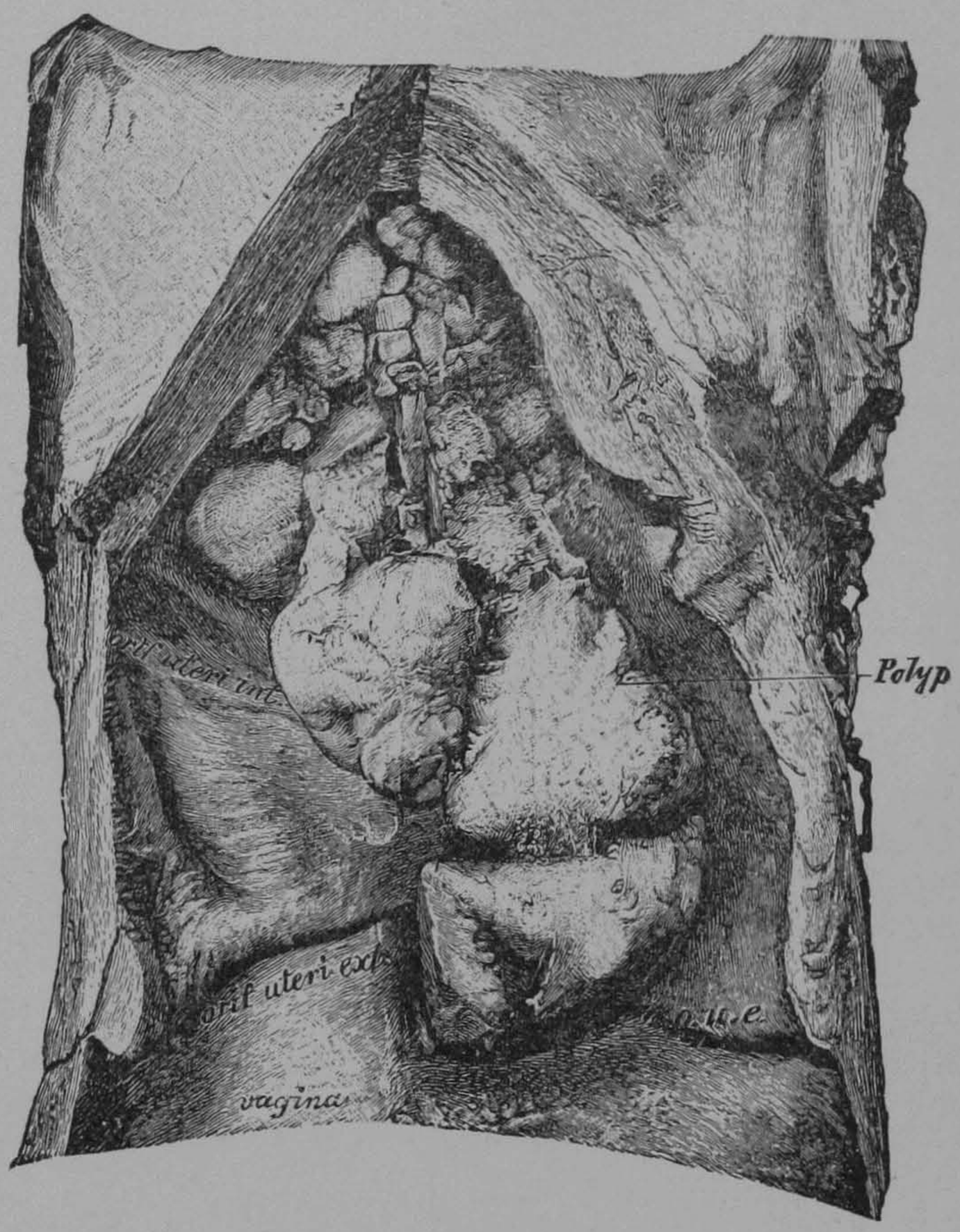
lation by position or flexure, and consequently perverted local nerve-function, are the chief elements entering into the causation of these two very common conditions of the endometrium. They can scarcely be considered as truly inflammatory, but may at any time become actively so.

This glandular endometritis when forming distinct elevations or fungosities constitutes the condition known as "benign adenoma." The only adenoma from the uterine mucosa is adeno-carcinoma, or, in plain words, cancer.

In all forms of inflammation of the endometrium the epithelial cells are deposited in but one regular row of single cells—never in layers. Beginning cancer may be differentiated by

three things: the glands are not only increased in number, but are many times larger than the normal; the epithelium lies in layers; and the epithelial elements invade the subjacent tissues later on.

FIG. 82.



Diffuse Papillary Adenoma of the Body of the Uterus with Polypi.

Therefore, when examining curette scrapings, unless they present but one thickness of epithelium arranged about the glands as one regular layer, the case must be looked upon with suspicion.

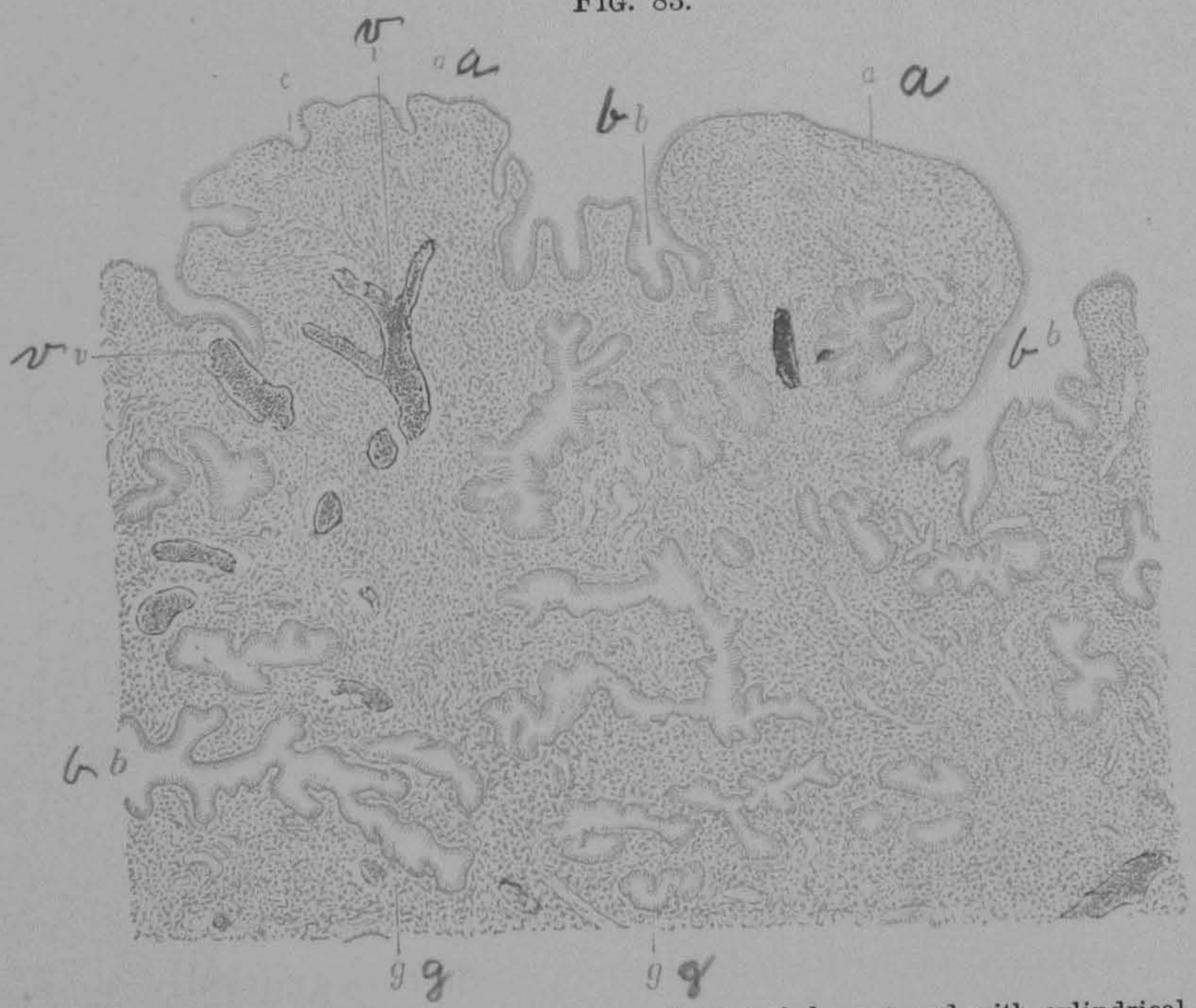
SYMPTOMS.—When the membrane is *hypertrophied*, in addition to the symptoms of the causative lesion, we have certain definite ones due to the hypertrophy alone. The menses are increased in amount, sometimes painful; the flow dark, clotted, or clear. There may also be intermenstrual bleedings. Bimanual examination reveals the gross lesion causing the condition. The sound readily produces bleeding, and frequently develops at the internal os a point of exquisite sensitiveness. The depth of the organ is increased.

The cervical flow of mucus is tenacious and usually milky in character, owing to the excessive admixture of epithelium and lymphoid cells. There is no erosion of the cervix, and the cervical membrane is not often coincidently inflamed. Menstruation is followed by a more or less persistent leucorrhea.

When the hypertrophy has gone on to the production of fungosities, increased menses, intermenstrual bleedings, and a profuse leucorrhea, often purulent, are the characteristic symptoms. The same is true when portions of decidual tissue have been retained and grown to the endometrium, thus forming buds and excrescences.

With a less degree of hypertrophy the chyle-like fluid (leucor-

FIG. 83.



Section of a Glandular Uterine Polypus: *a*, *a*, superficial nodules covered with cylindrical epithelium: *b*, mouth of glands opening into a depression between; *g*, deeper portions of the same glands; *v*. *v*, blood-vessel.

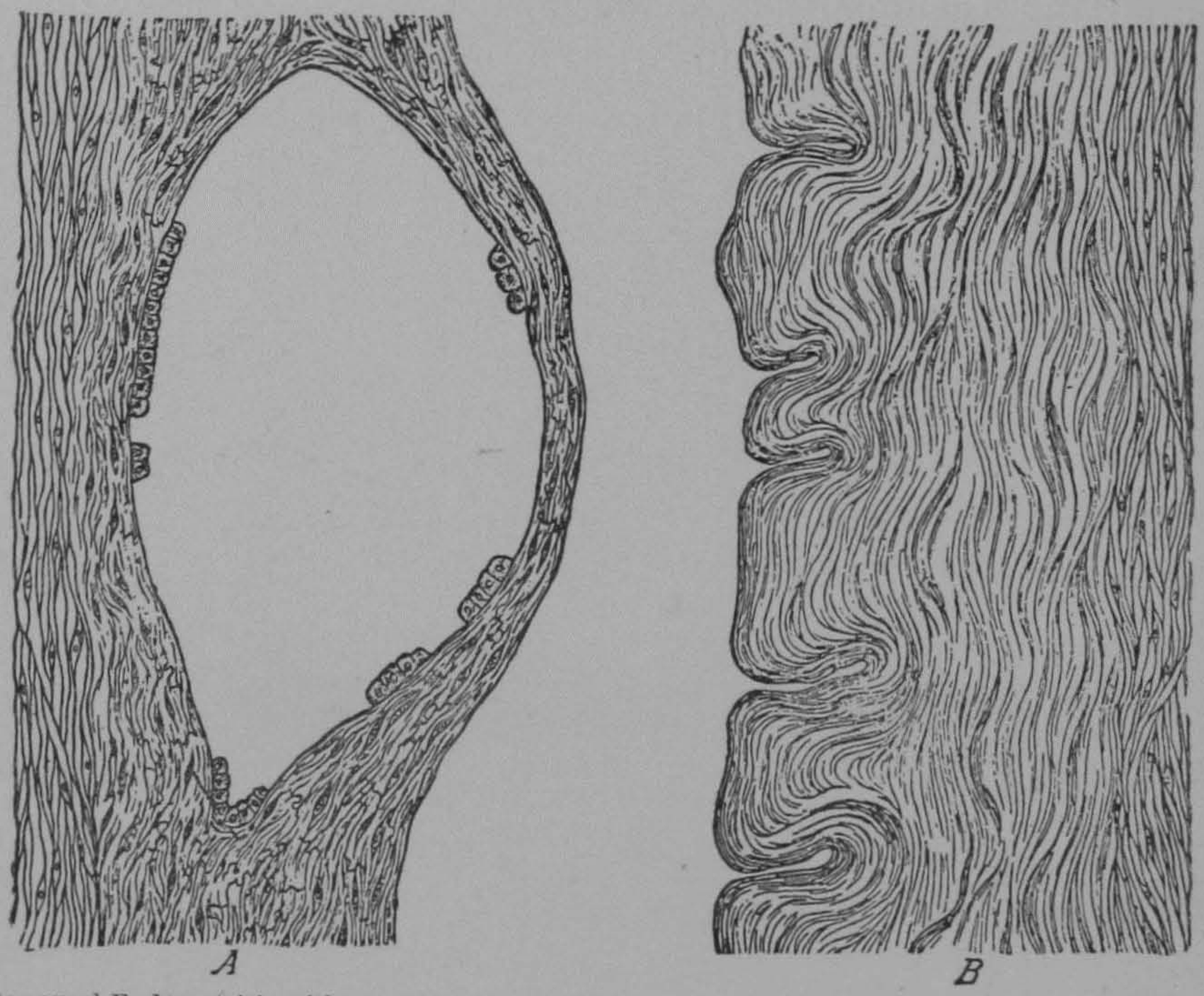
rhea) is non-irritating and devoid of germ-life. It is composed of increased secretion, fat-globules, lymphoid cells and epithelium, and has no odor.

With polypi the amount of hemorrhage produced is often so great as to suggest fibroid; and even a very small polypus may give rise to alarming floodings. The uterus always treats these growths as foreign bodies, the cervix remaining patulous and soft, and the uterine muscle making ineffectual spasmodic, attempts at expulsion of the growth, especially at the menses. Besides the

intermenstrual bleedings, there may be a more or less continuous discharge of dark, coffee-colored fluid suggestive of malignant disease. There can be no question that these polypoid granules, although in the beginning perfectly innocent, will, if allowed to remain for years, take on the characteristics of malignancy, in that their epithelial elements will invade the surrounding tissues.

Always there is more or less of a purulent leucorrhea, due to

FIG. 84.



Interstitial Endometritis with complete Atrophy of the Glands; *A*, cystic formation, last trace of the glands; *B*, all vestige of gland-tissue disappeared.

colonies of cocci becoming established upon the generally abraded surface of the polypi. The rest of the endometrium may remain free from the pathogenic germs.

Often it is impossible, without intra-uterine touch, to distinguish polypoid endometritis from corporal cancer. The character of the growth determined by the microscope will enable us to differentiate absolutely.

Where the membrane is *atrophied* the dysmenorrhea is often excessive. This pain precedes the flow by a few hours, is located just behind the symphysis, and is intermittent, alternating with the escape of clots. The flow is scanty or watery. There is also a slight leucorrhea. In both conditions there are digestive disturb-

ances and reflex nervous phenomena entirely disproportionate to the changes in the endometrium. Backache opposite the last lumbar vertebra, "*bearing-down*," and a sense of weight more often accompany the hypertrophic form. Sterility results from the atrophic variety more frequently, and is directly dependent upon the altered state of the endometrium.

TREATMENT.—In no form of uterine disease is general treatment of so much benefit. It may even cure certain cases. Thus, a change of climate, the "rest-cure," and an out-door life, may determine such alterations in the general nutritive functions, as to relieve these patients of most symptoms. It is in these cases of chronic simple endometritis that the various springs and watering-places are of benefit, the general surroundings and change in mode of life accomplishing the improvement, by acting through the general absorptive system. The small quantity of arsenic and iron in the waters has but little effect. The dysmenorrhea and excessive flow are lessened by cannabis indica, gelsemium and hydrastis. When the mucosa is much hypertrophied, producing fungosities or polypi, with hemorrhages, the proper treatment is always to remove the entire endometrium, and, if possible, correct the lesion upon which the endometritis depends. This should be done surgically, and not by the use of powerful chemical agents. If the gynecic surgeon will keep clearly before him the fact, that there is but a little tissue between the endometrium and peritoneum, rich in connecting blood-vessels and lymph-streams, if he will view endometritis from the peritoneal rather than the vaginal aspect, he can make no error in choosing the proper method of treatment. Although the inside of the uterus, in these cases, is free from micro-organisms, yet they are in the vagina. To treat patients by zinc chloride, carbolic acid, electricity or other escharotics, is to produce a more or less extensive slough, retained to become putrid, and is to create a surface deprived of that protecting epithelial covering which is the organ's sole defence against the inroads of pathogenic germs: and they do this in an unclean way, with no provision for drainage. The hypertrophied membrane should be removed with the sharp curette, as will be described. Atrophic simple endometritis, and the hypertrophic variety when slight, can be relieved by removing the causative lesion and treating the endometrium by gauze packing. Drainage with stem pessaries, whether perforated or grooved, is a delusion. They do not drain, but are mischievous affairs, hard to keep open and clean. The

application of mild antiseptics and astringents to the endometrium thus inflamed is a perfectly proper procedure, but care must be exercised that with the application pyogenic cocci are not introduced. If the change in the endometrium does not warrant operative procedure, the vagina and cervix should be thoroughly cleansed, the cervix should be pulled down by bullet-forceps, a narrow strip of iodoformized gauze introduced into the uterus, and the vagina packed lightly with the same material. In two days this is changed and a larger piece of gauze introduced, the canal then being more patulous. When this gradual dilatation has gone so far as to ensure good drainage through an open canal, and there is hypertrophy of the uterus, intra-uterine astringents are used before introducing the gauze; tincture of iodine is the preferable drug for this purpose, applied by means of a cotton-wrapped applicator. It is not only astringent, but germicidal, and is moreover not deep in its effects; its action is limited to the superficial structures only, and therefore produces no slough. The patient is not kept in bed, but confined to her room. The treatment is not painful after the first few sittings, and the endometritis is often relieved in two weeks, though it will recur if the causative disease be not removed. The treatment should be begun a week after menstruation.

The treatment of endometritis by chloride-of-zinc pencils is still practised by a number of physicians in America and abroad. This procedure causes the exfoliation of the endometrium. It does this by destroying the membrane, which is cast off by suppuration, and a simple hypertrophic endometritis is converted into a septic process by its use; at the same time a septic metritis is set up, and salpingitis and peritonitis may follow the treatment. The pain it produces is severe. Nothing could be more unscientific than this practice. Even though curettage were a dangerous procedure, and the curette often thrust through the uterus, it could not produce the destructive lesions which zinc does. The same objections attach to the use of nitric acid. Not only is the treatment itself most painful, and prone to produce serious lesions, but it also leaves the uterus in a crippled condition. The new endometrium produced is atrophic, the uterus the seat of connective-tissue changes, and menstruation incomplete, attended by great pain due to tension, and hysterical manifestations. Even the chief advocates of the chloride-of-zinc treatment admit its dangers. It is certain that those

Creolin is a coal-tar product deprived of carbolic acid it is non-toxic and an excellent germicide. Used as a douche, ½-1% in aqueous solution. Also a good deodorizer.

dangers are not to be avoided by any effort on the physician's part, but are inevitably inherent in the method.

Before making an application to the uterus the entire field of operation should be cleansed by a solution of lysol, 1 per cent., or of creolin, 2 per cent., scrubbing the vagina and cervix carefully with cotton pledgets held by forceps. An applicator is then wrapped with cotton and the cervical canal wiped with either of these two solutions or a carbolic-acid solution, 5 per cent., care being taken not to invade the inside of the uterus. If a probe is to be used, it should be heated in an alcohol flame to sterilize. The direction of the cervical canal having been determined by the probe, a very fine fillet of iodoform gauze, 20 per cent., is laid over the applicator, which has been curved to the shape of the canal and is pushed up to the fundus of the uterus. The applicator used for this purpose should be so rigid as not to bend when used. The uterus should always be drawn down gently and steadied by means of a bullet-forceps to straighten its canal. The ordinary tenacula prick the membrane, cause pain, and are followed by the discharge of a few drops of blood. To avoid this, a very coarse double tenaculum, made like the American bullet-forceps, the points being so dull that they do not penetrate the mucous membrane, may be used. A wad of iodoform gauze, the size of a silver dollar or larger, is then carefully adjusted over the cervix, and another of borated cotton is placed over this to retain it in place. Treated this way, no odor of iodoform is noticeable about the patient, and the field of operation is kept aseptic from one treatment to the other. It is useless to do this if the patients are allowed to have intercourse or douches, or if the vagina is in any way invaded. After the treatment they may go about their rooms, and should be perfectly comfortable. It is not to be forgotten that the condition which causes this change in the endometrium must be cured. Polypi, fungosities, and retained decidual tufts are to be removed by the curette; they are not amenable to palliative treatment. Iodine is not of much benefit in the atrophic form. These latter cases often prove intractable. If they be subjected to the gauze packing for the three weeks preceding the period, and the last dressing removed three days before the menses come on, it will be found that the flow is increased in quantity, is more nearly normal in character, and the pain less severe. The same treatment may be repeated the next, and if necessary the succeeding months. After the cervix has become so dilated that it

will receive a filament of gauze half the size of a lead pencil, one may rest content with the result. The uterus is not to be packed, but the gauze is gently introduced to the fundus. The cervix has the property of dilating around any foreign substance in its canal, and gauze packing of this size is amply sufficient to ensure good drainage. The results of the treatment are very satisfactory.

Septic Endometritis.

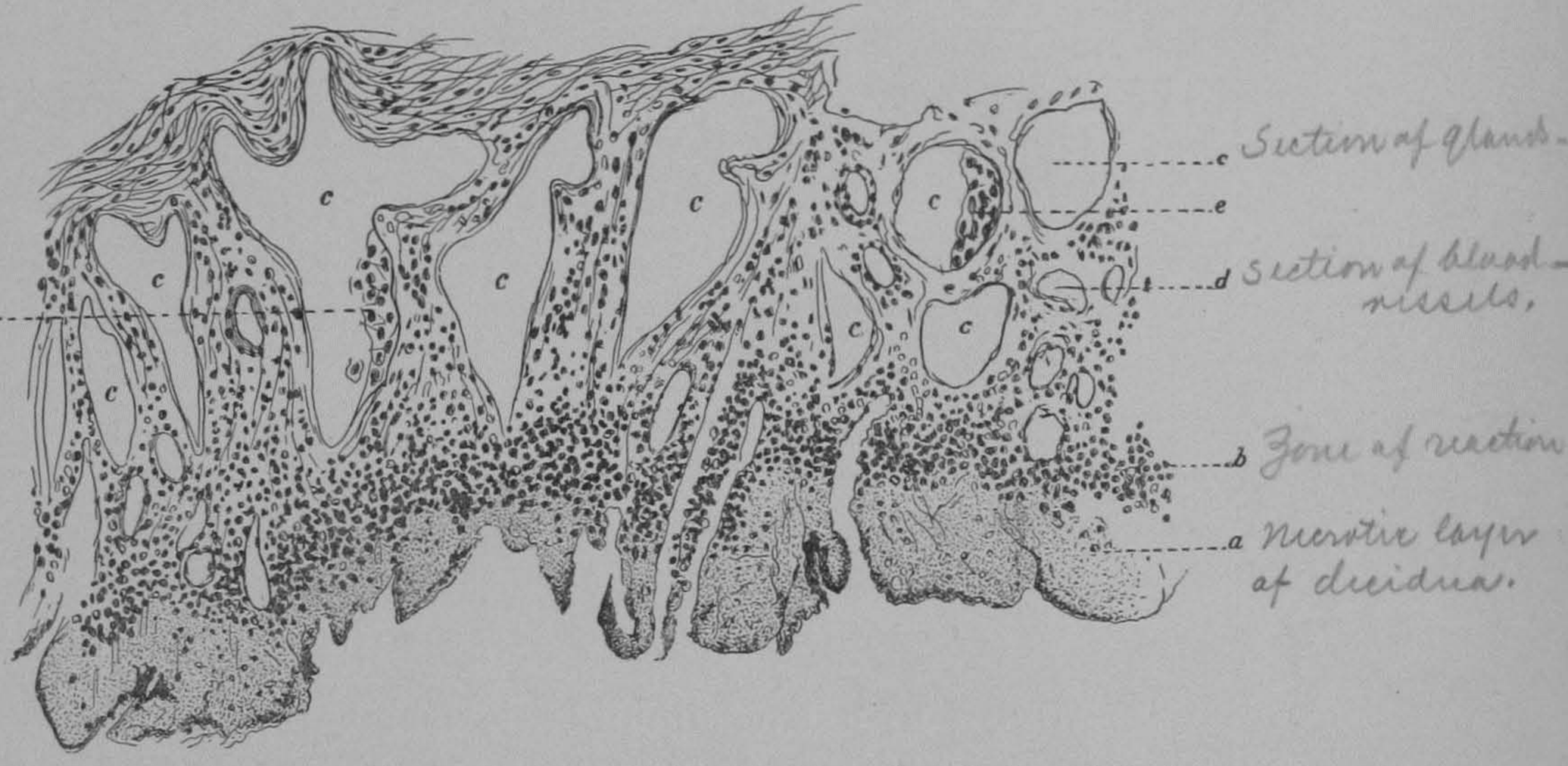
Septic endometritis is an infectious inflammation of the endometrium, usually caused by staphylococci, occasionally by streptococci. It may occur at any time of life and in any condition of the uterus, but it is most frequently seen during the menstrual life of the woman, being favored by that function and pregnancy. It may be chronic, but is most often seen as an acute affection. The pathology and symptoms will be modified by the condition of the uterus at the time of the attack. Infection of the post-partum uterus belongs more properly to the province of the obstetrician.

Acute Septic Endometritis.—Acute septic endometritis is caused in the greater number of cases by infection after abortion; cases, however, are caused by foul manipulations of the uterus, and operations upon that organ. Inasmuch as pyogenic germs are constant in the vagina auto-infection is possible under certain conditions but it must be exceedingly rare. Any factor which induces exfoliation of the epithelium, such as menstruation, abortion, rough treatment, sudden congestion, exposure to cold, and the introduction of infected instruments into the uterus, puts that organ into a condition propitious to the development of infection.

Pathology.—In the acute form the uterus is enlarged and engorged with blood. The mucosa is swollen, of a deep color, and the number of vessels actually increased. In spots it may be necrotic or the whole membrane may slough. The epithelium covering the membrane and lining the follicles is exfoliated to a greater or lesser extent, and the vessels present on the surface rupture, giving rise to capillary bleedings. Pus-cells cover the surface and fill the follicles; in aggravated cases they are found also in the lymphatics and lymphoid tissue. The muscularis is of a very deep color, softened and much thickened, even in a few hours. Its lymphatics are gorged with cocci, in advanced cases, and its blood-vessels with blood. True septic metritis is present. Staphylococci

are everywhere in the membrane, sometimes even penetrating the muscular walls. Rarely are streptococci found except in puerperal cases.

FIG. 85.



Puerperal Endometrium removed by Curettement on the Seventh Day: *a*, Necrotic layer of the decidua; *b*, zone of reaction; *c*, Sections of the glands; *d*, Sections of the blood-vessels; *e*, Remains of the glandular epithelium.

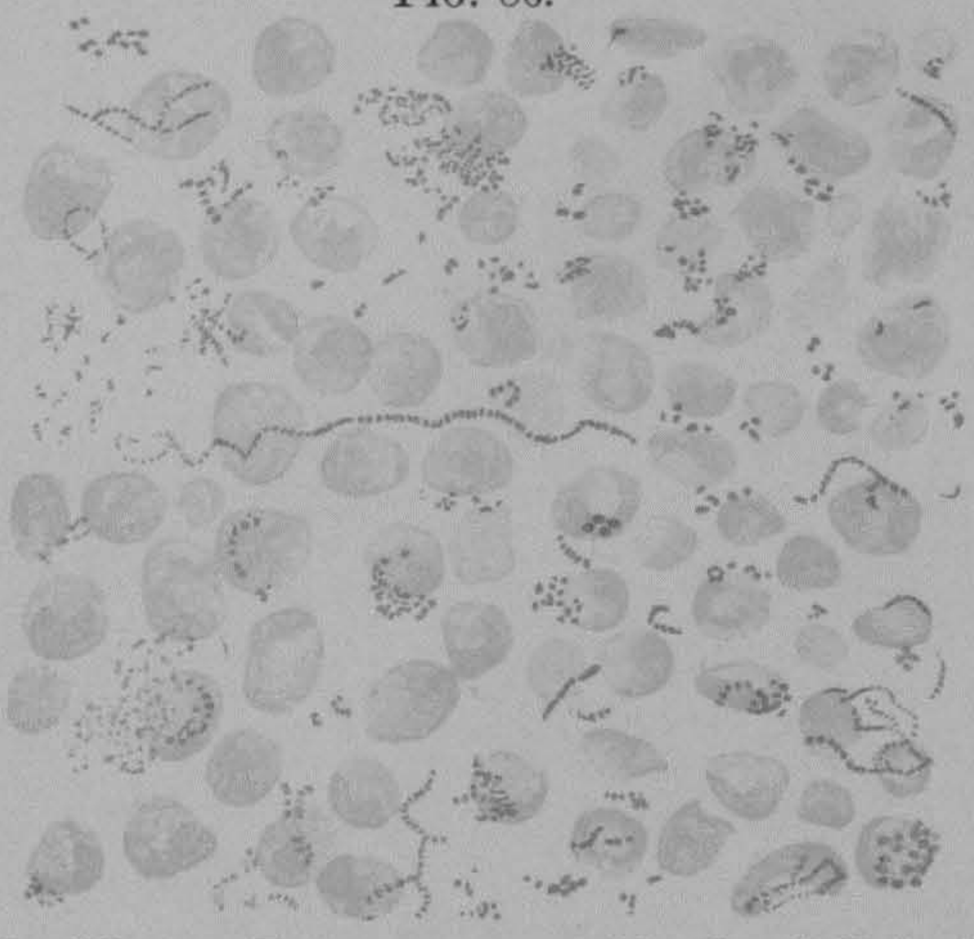
In *chronic septic endometritis* the same lesions occur, only to a less degree. There is a general reproduction of epithelium, and the more acute symptom, necrosis, is absent. Pus is produced in quantity in the glands and on the surface of the membrane. The cocci may have penetrated the muscular wall, and there formed a pus-focus even amounting to abscess. In doing this they follow the lymph-streams. Complications are most likely to accompany these conditions, and the changes due to pelvic lymphangitis, ovaritis, salpingitis, and peritonitis may be found.

Those cocci which are found present and arranged in groups are staphylococci, the germs always found in septic endometritis; those in chains are streptococci, which cause many cases of, and are found in, puerperal infection.

SYMPTOMS.—The acute stage is often ushered in by a chill, especially after abortion. This is followed by severe uterine colic, which soon becomes a continuous pain. The temperature rises to a variable degree, with rapid pulse. In a few hours the uterus discharges a greenish pus or one tinged with blood. The uterine pain is severe, and the patient keeps the bed. Examination reveals the uterus enlarged and very sensitive. The parts have increased heat.

From the cervix projects a rope of muco-pus, possibly bloody. If the disease has lasted a few days, the cervix is eroded, and may

FIG. 86.



Cocci from an Empyema; prepared by Gram's Method.

even be covered by a true diphtheritic membrane, the result of infection by streptococci. Some of the complications which follow this condition may be present and add to the symptoms. The acute symptoms may subside in a few days, provided the very common complications of peritonitis and salpingitis do not overshadow the symptoms of the endometritis. Thus the acute form may gradually become chronic, with few symptoms other than a little pain, "bearing-down," and a purulent leucorrhea. It is not always easy to discriminate a chronic simple endometritis from a chronic septic one, but in the latter there is the invariable clinical feature of purulent discharge from the uterus, which is not present in the former. This pus does not always appear in the cervical mucus, but it can often be obtained with the suction syringe, and it usually follows the withdrawal of the sound. The symptoms of gonorrheal endometritis are very similar to those of the septic variety. In some cases the microscope alone will differentiate the two forms, which are frequently blended. Whenever pus escapes from the uterus, it is an absolute indication that pyogenic cocci are in that organ, and clinically the case is either in a septic or specific state.

TREATMENT.—The radical treatment is the best: thorough and complete removal of the septic focus. Curettage, irrigation and gauze-packing are recommended, as these uterine inflammations must be considered in the light of their complications. Prompt interfer-

ence may cut short the disease, and save the patient those gross changes in the tubes and peritoneum which so often result from a neglected septic endometritis. If destructive disease of the adnexa has already taken place, the curettage is none the less indicated. The more acute the symptoms, the greater the indication for the operation. Some cases of chronic septic endometritis without complications *may* be cured without the use of the curette by the introduction of drains of iodoformized gauze, but this method must be pursued with the strictest attention to asepsis. The presence of a purulent uterine discharge positively contraindicates the use of applications and stem pessaries, unless the applications be accompanied by the use of the gauze drain. The best treatment, then, applicable to acute and chronic septic endometritis, when complicated by disease of the adnexa or peritoneum, is curettage. Whether the septic condition follows treatment, operation, or abortion, whether it accompanies cancer, polypi, fibroids, or other neoplasms, yet must the septic uterus be cleaned out before any other treatment is instituted. If infection follows plastic work on the cervix, the sutures should be removed, the uterus curetted and packed.

There are so many important minor details in the after-treatment of septic endometritis that they require separate attention. When a uterus not enlarged is curetted for an uncomplicated chronic inflammation, the gauze need not be removed for four days, and renewal is not necessary. In renewing the dressings infection is easier than at their first application, for the reason that the uterus is now divested of its protecting lining. Care should therefore be taken not to reinfect the case. The second vaginal dressing may remain from three to four days and then be removed. All interference with the vagina, in the shape of douching, coition, and examination, should be prohibited for the remainder of the month, and the patient must take to her bed on the appearance of menstruation.

When the curetting has been done on an enlarged uterus acutely infected, as after abortion—say at the third month—the dressing should first be changed on the third day; sooner if the temperature rises or other acute symptoms appear. Subsequent dressings are made whenever this one becomes saturated. After the uterus has become entirely clean, with non-purulent discharges, the use of ichthyol tampons is indicated, to overcome the existing subinvolution. This latter condition occasionally produces a simple hypertrophy of the

mucosa, which will, at the subsequent one or two periods, give rise to menorrhagia. The larger the uterus the longer the treatment must be continued. After the first dressing the packing is loosely placed. The treatment is not painful. The uterus is always to be steadied by using the blunt bullet-forceps, hooked into the anterior lip. After abortion at the third month, irrigation with boiled 1 per cent. salt-solution or 4 per cent. boric-acid solution is also employed at the dressings. Strong antiseptics should never be used. The larger the cavity the more elaborate the treatment. In other words, these infected uteri are treated exactly as other discharging septic cavities, only here drainage is more difficult to obtain.

Gonnorheal Endometritis.—Of all forms of virulent endometritis, this is one of the most common.

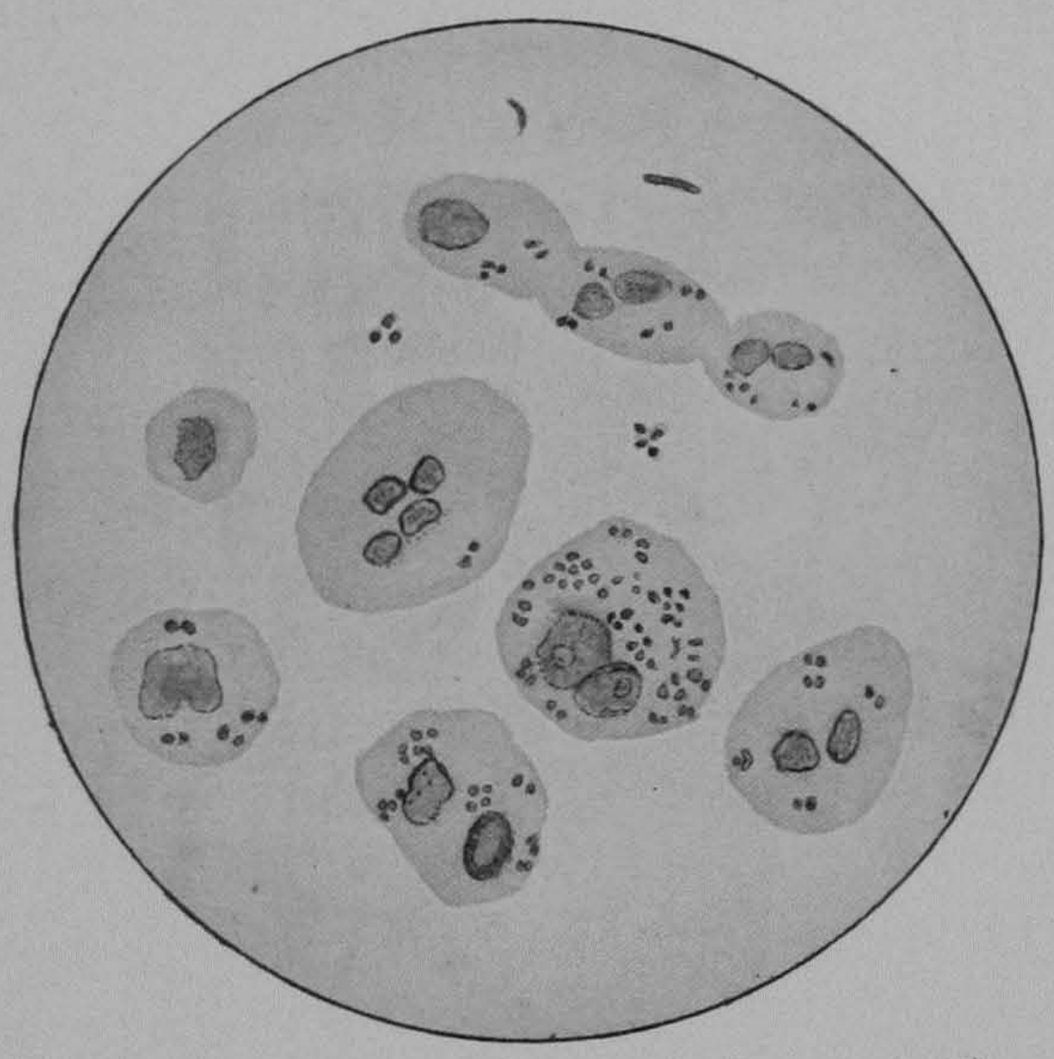
PATHOLOGY.—Acute gonorrheal endometritis presents the same gross lesions as the septic form. Microscopically, we find that the gonococci penetrate but little below the surface, and are chiefly found in and under the epithelium. They follow the lymph-streams to a less extent than the staphylococci. Again, there is pus produced in true gonorrheal endometritis, but sloughing never follows this form of infection. No case has yet been reported of fatal primary gonorrheal endometritis. Systemic infection is not as severe as in the septic form. The great complication is salpingitis, by direct tissue extension from the uterus to the tubes. Chronic gonorrheal endometritis is very frequent, resulting from a subsidence of the acute form. Here the gonococci occupy the follicles and lie beneath the epithelium. They do not penetrate deeply into the mucosa, and do not extend along the lymph-spaces. Therefore they do not cause peritonitis and systemic infection except by extension through the tubes. Each menstrual period sees a greater or lesser increase in the invasion, and recurrent attacks of tubal disease are frequent.

SYMPTOMS.—Possibly some one or all the symptoms of gonorrhoeal vaginitis or vulvitis are present, but they may all be absent, and the first and sole indication of infection may be the sudden onset of a virulent endometritis. There may be occasional rigors, fever, and great pain in the uterus. The temperature does not at first range high, and the initiative chill is not prominent. The pain in the uterus is of long continuance, with exacerbations. In a few hours the discharge of muco-pus appears, often tinged with blood. If there be no extension of the infection, the symptoms

of profuse discharge, slight fever, and pain gradually subside in ten days or less, leaving behind merely the symptoms of chronic purulent endometritis.

The local symptoms are indentical with those of septic endometritis, but gonococci are found in the discharges.

FIG. 87.



Gonococci in cells and between cells (from specimen).

Although these appear irregularly grouped in the pus-cells, yet on close inspection they may almost always be seen arranged in pairs (diplococci), the opposite surfaces of each pair being flattened like two Ds (ꟻD) back to back. They may be in groups only, and not show this diplococcus arrangement. Their manner of staining will then prove their character.

TREATMENT.—If seen early and before the advent of any complication, local bloodletting should be obtained by puncturing the cervix in several places with a sharp bistoury, and then the uterus should be irrigated thoroughly with a saturated solution of boracic acid or a bichloride-of-mercury solution, 1 : 5000; after which a drain of iodoform gauze should be introduced and the vagina filled with the same material. In twelve hours both dressings may be removed, the uterus again irrigated, and more gauze inserted. This should be repeated several times daily. It is easier to subdue gonorrheal than septic endometritis. If the first attempts to control the disease fail, we may be sure that the infection is a mixed one,

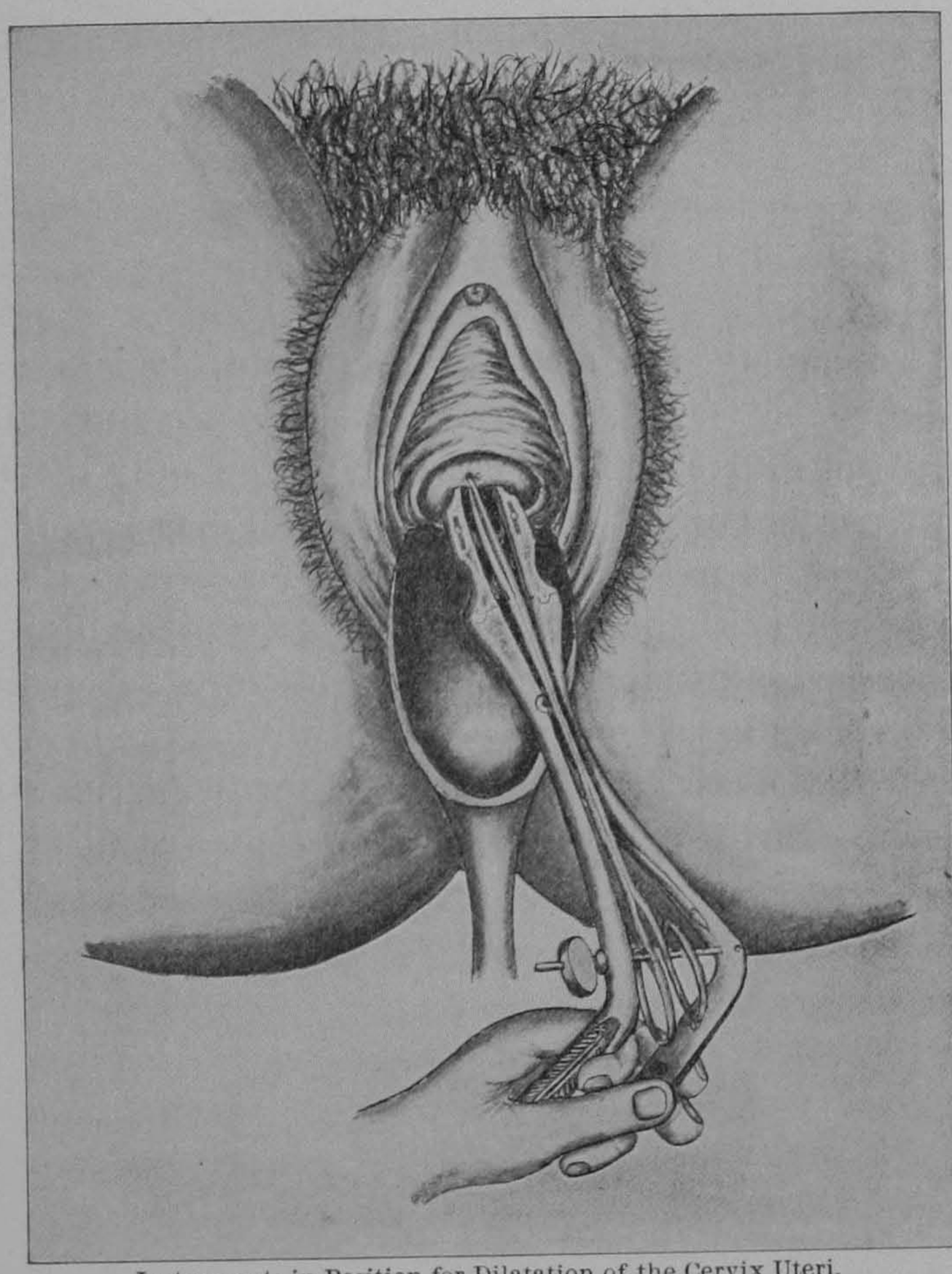
and the treatment should be that for septic endometritis. If there be the complication of salpingitis or peritonitis, the operation of curettage is necessary. The body of the uterus is not the natural habitat of the gonococci, as the endometrium has a pronounced resistant power against them; their home is in the cervix, the urethra, and vulvo-vaginal glands; therefore they invade the corpus uteri in but a small number of cases, otherwise infected.

Curettage.

Curettage of the Uterus.—Admitting that in most cases pathogenic germs exist in the vagina and the cervical canal, the right does not lie with the surgeon to suppose the endometrium exempt in any given case of inflammation of the uterus. Therefore a method must be adopted which presumes they are present in all cases. The instruments necessary for performing a curettage are—a speculum, double tenaculum, heavy applicator, curettes, uterine dilator, fountain or bulb syringe, and an intra-uterine packer. The operation is best done with the patient in the lithotomy position and with Kelly's pad placed under the hips. The lithotomy position is preferable to Sims', as irrigation is easier, and at any stage of the operation a bimanual examination may be made. The solution for irrigation is preferably a saturated solution of boracic acid, but bichloride of mercury 1 : 4000, or even boiled salt-solution (7 : 1000), will answer. The vaginal canal and instruments should be sterilized (see Technique). Instead of sponges, swabs of cotton wet in bichloride-of-mercury solution are used. Any stiff dilator will answer the purpose, but those with screws should be employed carefully, for the blades are apt to tear the tissues, as the screw renders it impossible to relieve the pressure until too late. Goodell's instrument is a proper one. The vulva having been shaved, the patient cleansed and in position, the speculum is introduced and held by the assistant on the patient's right. The anterior lip of the cervix is seized with the double tenaculum, pulled down as far as desired, and given in charge of the same assistant, whose left hand rests on the pubic bones. In this way the uterus is held immovable. By bimanual palpation the size and position of the uterus are determined. The cervix should cautiously be dilated bilaterally, the grip relaxed, the dilator turned a little, and dilatation made in the new position of the instrument; in this way by alternately dilating around the entire circumference of the cervix the canal will readily

and safely be dilated to an inch or more. It must not be forgotten that we are working in undeveloped unstriped muscular fibre, to overcome the force of which too sudden pressure must not be used. Dilatation by graduated sounds is not advisable, inasmuch as the pressure is made against the hold of the tenaculum, and either insufficient dilatation is made or the tenaculum tears the tissues. Under any circumstances the traumatism induced is much greater

FIG. 88.

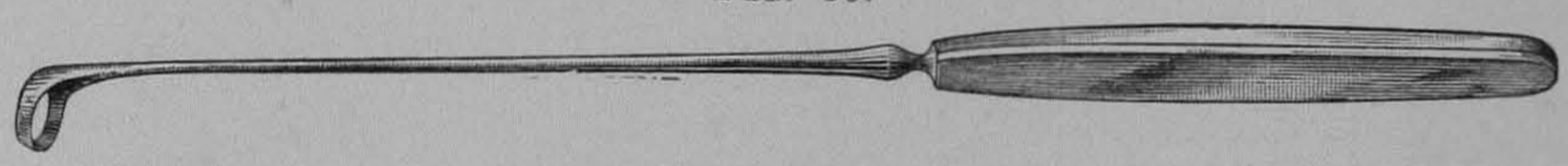


Instruments in Position for Dilatation of the Cervix Uteri.

than when the steel instrument is used as described. Besides, the dilatation obtained is not sufficient to destroy the action of the local sympathetics, upon which depends the uterine colic and the expulsion of the dressing, as observed and complained of by those who use the graduated sounds. After dilatation the uterus should be washed out by means of the small nozzle of the syringe, followed by the use of the curette. As large an instrument as can be

introduced should be used. Gently introducing the curette, it is withdrawn, its cutting face downward, and by reintroductions and withdrawals the whole organ is systematically scraped. The small size is then used if the uterus be firm, and the openings of the tubes and lateral angles scraped. The instrument is then turned so as to curette the fundus by a sweep from side to side. The danger from curettage lies not in the proper use of the instrument, but in introduciug it roughly and with force. The instrument should be held as is a pencil, and used with a delicate touch. Blunt curettes are useless for this work. If a surgeon must use such because of the supposed

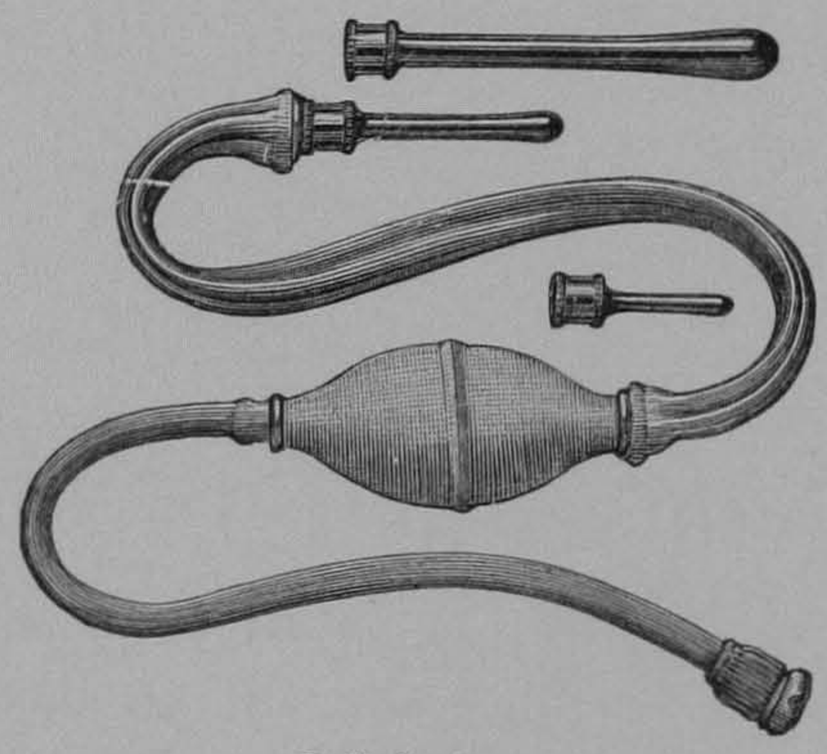
FIG. 89.



Sharp Curette.

danger attaching to the sharper instrument, it is questionable whether he should do the operation at all. Again—and this is important—the dull curette at best scrapes off only the epithelial and softer external portions of the mucosa and opens up the lymph-channels. Thus its use may be harmful; for if a septic infection be local, and the epithelium of the rest of the organ has sufficient resistant power against the cocci, the procedure but removes this sole protection against a general infection without going sufficiently deep to remove the cocci, and thus creates for the germs a new field for extension. So it is manifest that in septic cases, at least, the

FIG. 90.

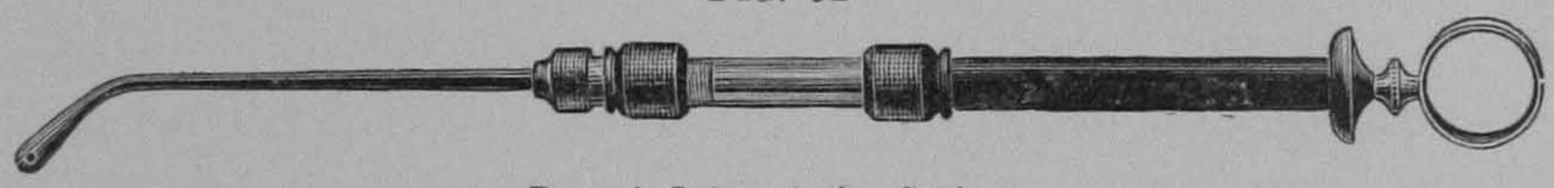


Bulb Syringe.

fancied safety of the dull curette, apart from its inefficiency, is a delusion. The object of the operation is to remove the entire endometrium, so that the cytogenic embryonic uterus may produce a new one under propitious circumstances. Following the curet-

tage, the uterus is to be irrigated again thoroughly. If the organ is much hypertrophied, the entire cavity should be swabbed out with tincture of iodine on an applicator, or the application made by means of the intra-uterine syringe.

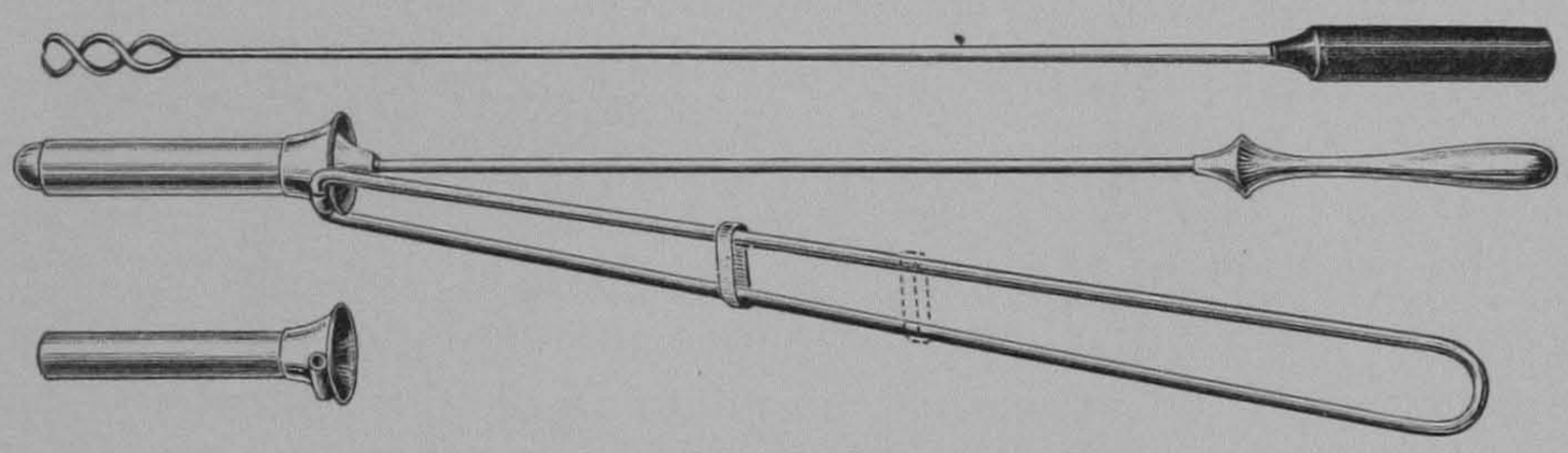
FIG. 91.



Braun's Intra-uterine Syringe.

UTERINE TAMPONADE.—The gauze is introduced in one long strip. If the cervix be thoroughly well open, the gauze may be

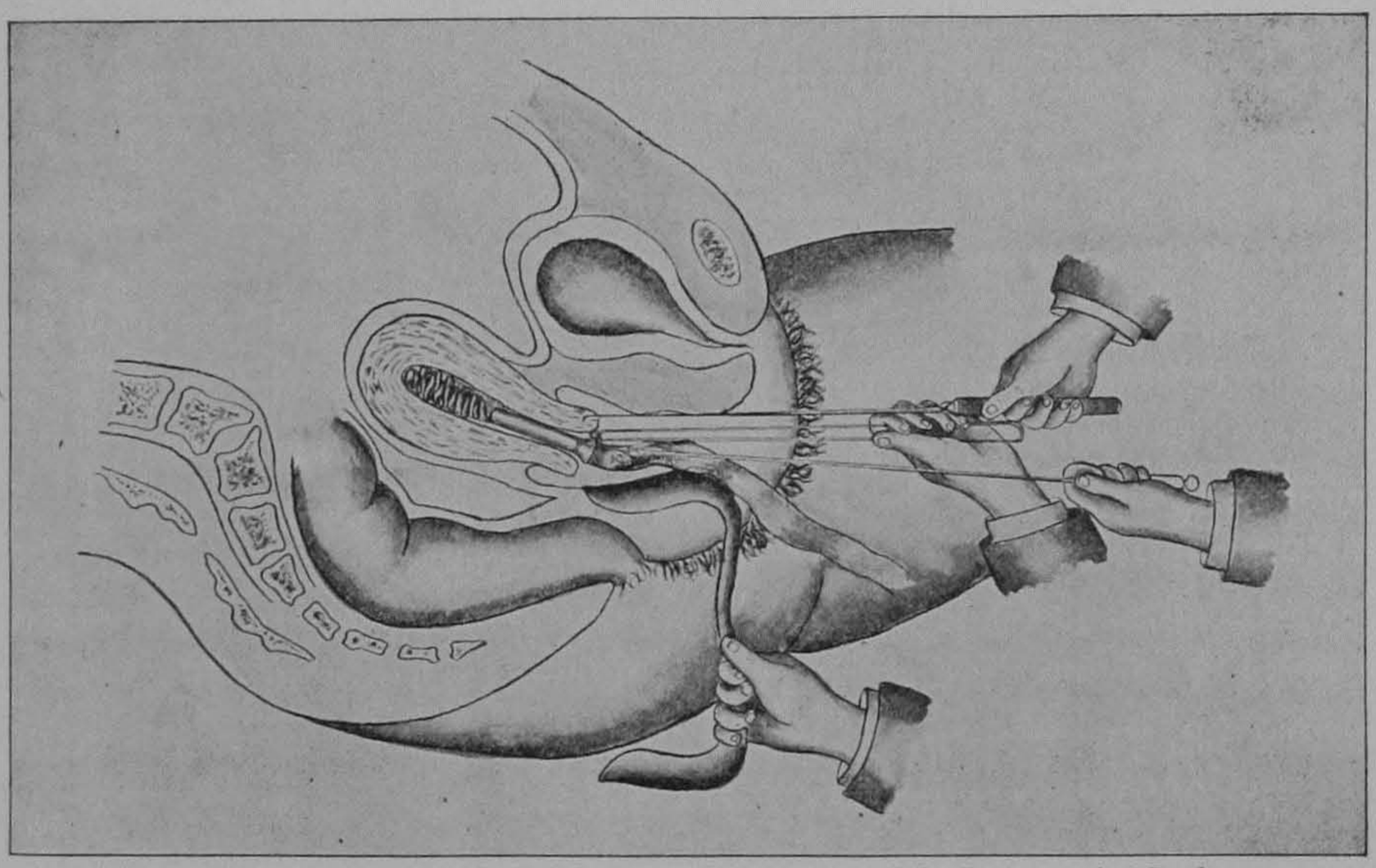
FIG. 92.



Instruments for Applying the Intra-uterine Tampon.

gotten in with the packing forceps. It is usually, however, difficult on account of friction to tampon the uterine cavity except through

FIG. 93.



Tamponing the Uterus with Iodoform Gauze by means of the Intra-uterine Packer.

an intra-uterine speculum, in which case it is first necessary to dilate the cervix. The uterus should be packed as tightly as possible, and

the end of the gauze left projecting from the cervical canal. The canal itself should be only loosely packed, else the gauze will not drain the cavity. A light dressing of gauze is then applied to the vagina. The patient should not be allowed to soil the dressings with urine if it can be avoided. After each urination or movement of the bowels the vulva and perineum must be cleansed by a free use of a saturated solution of boric acid or other cleansing solution.

When repair begins, the uterus being relieved of the septic process, the new leucocytes and plasma-cells are not forced to exercise their phagocytic property by battling with pathogenic germs, but the plasma-cells have a healthy pabulum, and devote their entire energy to the work of regeneration. It is not merely non-suppurating repair; it is histiological growth.

Curettage in Acute Pelvic Inflammations.

The question of the propriety of curetting the uterus in the presence of acute tubal and peritoneal manifestations may be dealt with here. If the article on the anatomy of the endometrium be consulted, and one reflects that pelvic peritonitis is very rare in men, he will be forced to believe that the pyogenic germs reach the woman's pelvis through the uterus. That granted, it will become apparent at once that the sequence of pathological changes must either be endometritis, salpingitis, and peritonitis; or endometritis, metritis, pelvic lymphangitis, and peritonitis. The question then is proper: Does this causative endometritis cease the moment the pelvic complication arises? Surely it does not. The peritonitis is not a disease *per se*, but merely an effort on the part of nature to check a disease. One of its first acts is to shut off the tubal inflammation from the peritoneum, by closing with adhesions the fimbriated opening of the Fallopian tube, thus cutting off further extension through that channel or, in case the sepsis travels through the lymphatics between the folds of the broad ligaments, by effusion of lymph to isolate the infected area. So rapid is absorption in this direction, in some few cases, that the general peritoneum may appear normal, and yet evidences of the infection present themselves on the diaphragmatic peritoneum as the first point above the pelvic lesion. It is irrational, then, to consider these septic conditions in the light of their results only, ignoring the original source of the trouble, which still remains septic and continues to feed the fire. So long as the infectious focus remains, just so long will the peritoneum throw

out lymph. When once the septic focus is removed, the lymph-effusion will cease, and the possibility of further extension from the original source is out of the question. The patient, relieved from the ptomaïne-poisoning, ceases to vomit, the emunctories work properly, and the digestive functions are well performed. From a state of acute poisoning, the case has, by this removal of the causative disease, been converted into one having only the results of the infection, though these are grave. It is eminently proper, therefore, in theory, to curette the uterus before dealing with the sequelæ, in all cases of acute septic endometritis with salpingitis or peritonitis. In practice this theory has been proven correct and the results positive. Too many successful operations in cases of both septic and gonorrheal origin have been reported to admit of question as to the propriety of the method. Since attention was first drawn to the subject it has been adopted by many surgeons as the first operation indicated in these cases of acute septic endometritis with tubal and peritonitic inflammations before the complications are dealt with. If, as is at times the case, it be deemed necessary to deal first with the complications, the diseased endometrium should subsequently be treated if the uterine symptoms persist.

The other methods of treating these cases are by the "expectant" plan of opiates and poultices, or immediate celiotomy—a procedure extremely irrational in view of what we now know of the pathogeny of pelvic inflammations. In no other part of the body is the unsurgical rule applied of removing the result of acute septic infection and ignoring the cause. Still more is the abdominal section contraindicated, as under these conditions it is made at the worst possible instant. Tubal abscess must ultimately be removed and adhesions severed. But if the primary celiotomy be made, it is in a mass of effused lymph and distended and adherent guts, and oftentimes in the presence of acute infectious pus—pus which in several weeks or months will be comparatively innocuous.

When the curettage is properly performed the improvement in the local condition is at times marvellous. Irrespective of its effect upon the result and technique of a future celiotomy, curettage is positively indicated in every case of acute tubal and peritoneal disease, when there is even a suspicion that the infection originated in the endometrium; that is, in the majority of cases. Some of the acute symptoms, as fever, arise not from the pus-focus in the tube

or ovary, for such is more or less isolated from the general absorptive system, but from the septic endometrium pouring into the lymph-streams an endless supply of septic material. If there is a distinct pus-accumulation in the pelvis, this will have to be separately treated, for curettage has no influence upon such conditions. It is in cases of acute purulent salpingitis—cases presenting tubes deeply injected, swollen, friable, and occluded, but which upon section reveal little or no dilatation of their lumen—that curettage secures its greatest results. Furthermore, if by any possibility there is no tubal disease, the curettage will remove every trace of the infection. In these tender women positive and precise statements of the pelvic changes are often difficult, and masses of lymph-effusion are frequently interpreted as tubal abscess. The method is no longer new and experimental, but is the one accepted by many American gynecologists. Brought to a case of acute salpingitis and peritonitis, the indications are, not for a brilliant removal of the adnexa, but rather to adopt that method which will preserve the woman from those gross changes in the peritoneum or adnexa, for which so many cœliotomies are done, and to save her, if possible from an abdominal section. So wonderful is the ability of the peritoneum to absorb and repair, that it should in all acute cases be given an opportunity. In the light of its causation, of its pathology, even of its results, acute tubal and peritoneal inflammations of uterine origin, are to be treated by curettage and gauze packing as the primary operative procedure. One of three methods must be adopted with these cases: either poultices and hot douches, curettage, and treatment of the uterus as any septic cavity, or a primary celiotomy. The first is the method of the midwife, and merely allows the infection to work its will in the pelvis. The second is surgical in every sense of the word; while to adopt the third in every case, stamps a man as blind to reason and to the work of other men, and as willing to open a fellow-being's abdomen rashly and unnecessarily.

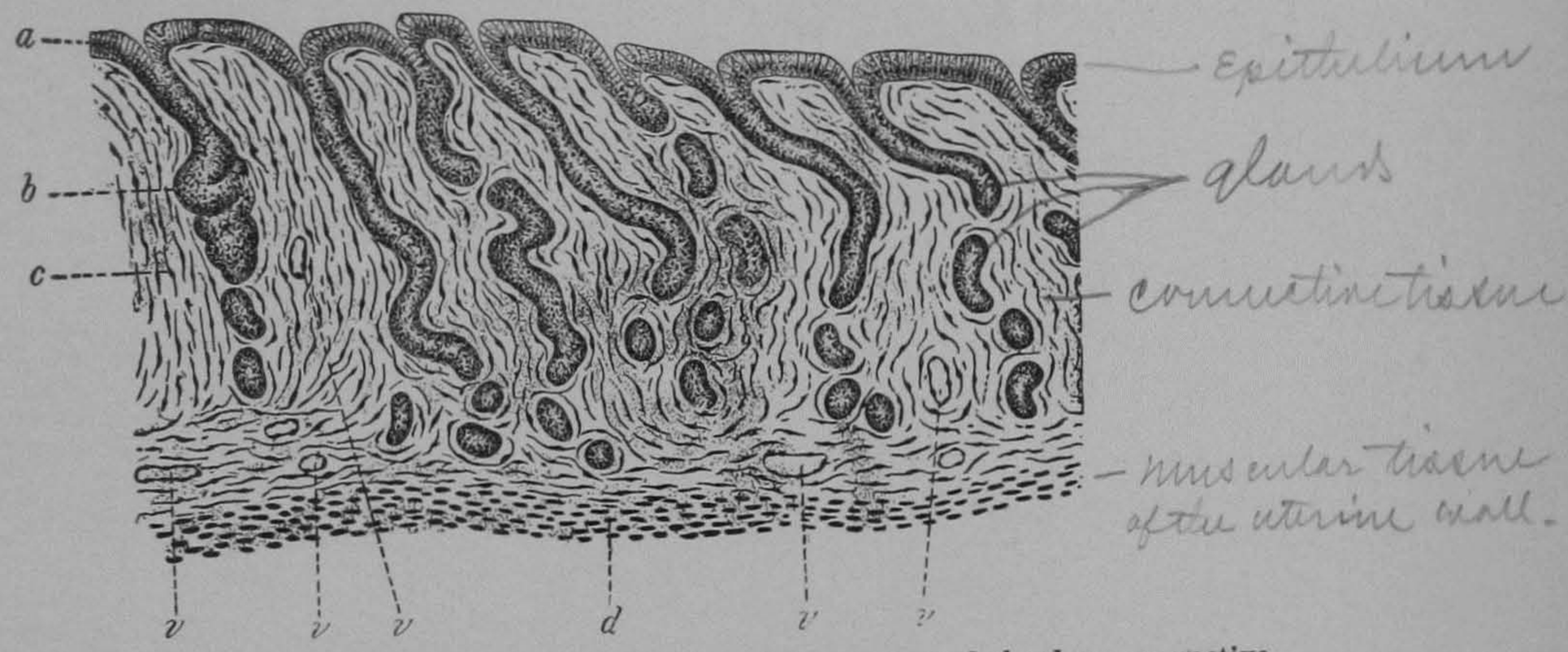
We know that septic endometritis has but a small percentage of mortality, but what frightful ravages it makes in the peritoneum and adnexa! We know that many men apply the curette improperly, and that possibly women are oftentimes worse after it than they would be were they let alone. But should faulty technique and ignorance deter us from laying down the proper treatment? Therefore the rules—and golden ones they are too—may be enun-

ciated: 1, treat all cases of endometritis in the light of its possible results; 2, treat all cases of septic and specific endometritis, with complications, in the light of their causes. If a sloughing polypus causes acute peritonitis, shall it not be first removed? If a sloughing endometrium causes the same complication, shall not the uterus be cleansed?

Method of Reproduction of the Endometrium.

Repair and reproduction, after removal of the endometrium, is accomplished by means of the lymphoid cells and multiplication of the epithelium and plasma cells. If these are met by pathogenic germs

Fig. 94.



Vertical Section Three Months after Curettement; *a*, *a*, epithelium; *b*, *b*, new-formed glands; *c*, connective tissue; *d*, muscular tissue of the uterine walls; *v*, *v*, blood-vessels.

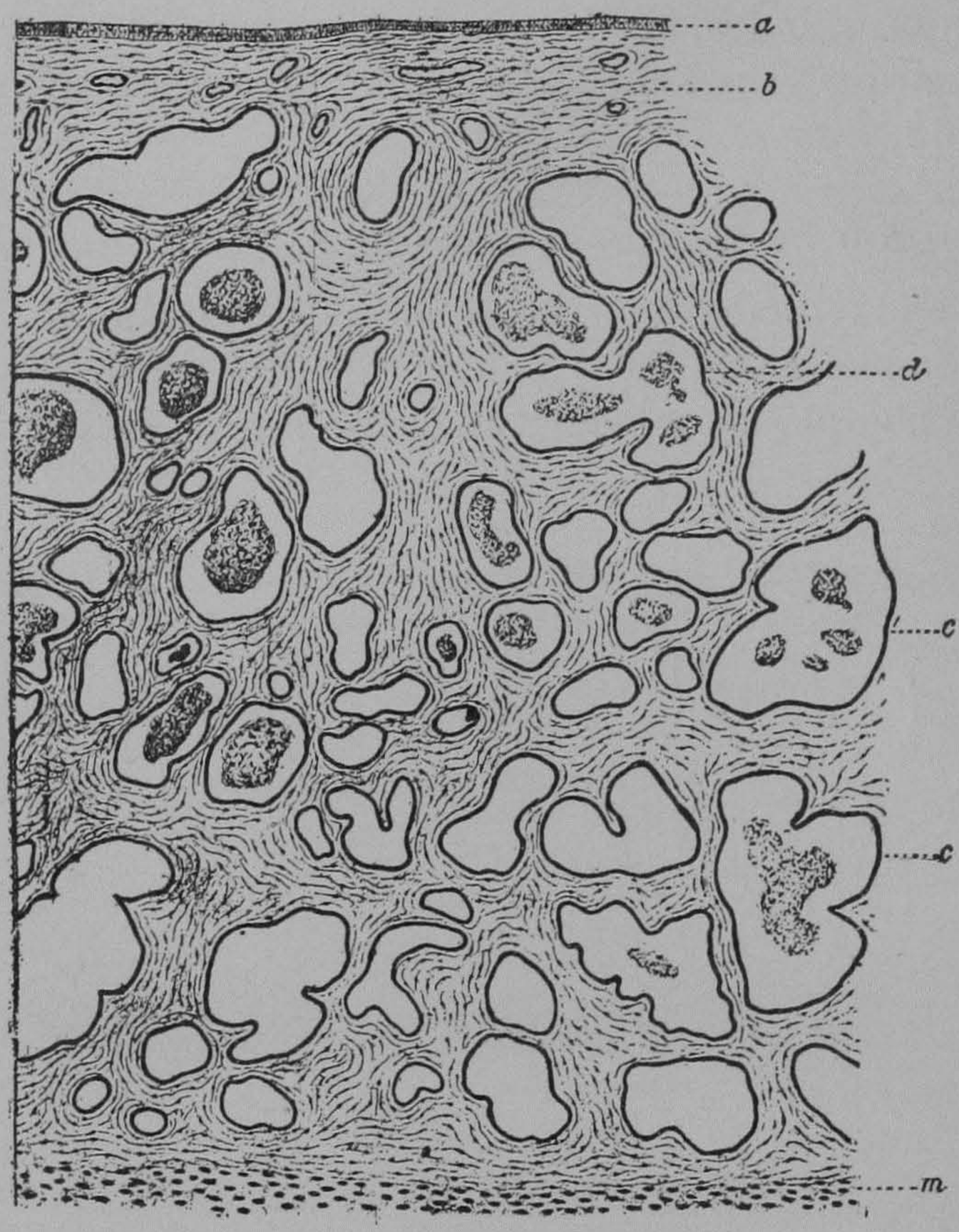
in numbers, their whole effort is concentrated upon the conquest of the germs. Consequently the leucocytes die in large numbers and form pus, while the plasma-cells, deprived of their normal pabulum (leucocytes), are limited in the function of tissue-formation, and result largely in the production of connective tissue.

Hence it is that after an aseptic curettage the endometrium is reproduced in a normal condition in about two months. Conversely, after the membrane has been removed by means which result in suppuration, the endometrium is reproduced but imperfectly.

Fig. 94 is taken from a uterus three months after curettage, and it will be noticed that in almost every particular it is a normal structure. It resembles the endometrium of a young girl soon after the menstrual function has become established.

This specimen (Fig. 95) was removed from a woman to whose uterus chloride of zinc had been applied fifty-three days previously.

FIG. 95.



Vertical Section of the Uterine Mucous Membrane Fifty-three Days after the Application of a Caustic: *a, a,* epithelium; *b,* connective tissue; *c, c, c, c,* section of the glands which have undergone cystic degeneration; *d, d,* tubular glands enormously dilated; *m,* muscular tissue of the uterine wall.

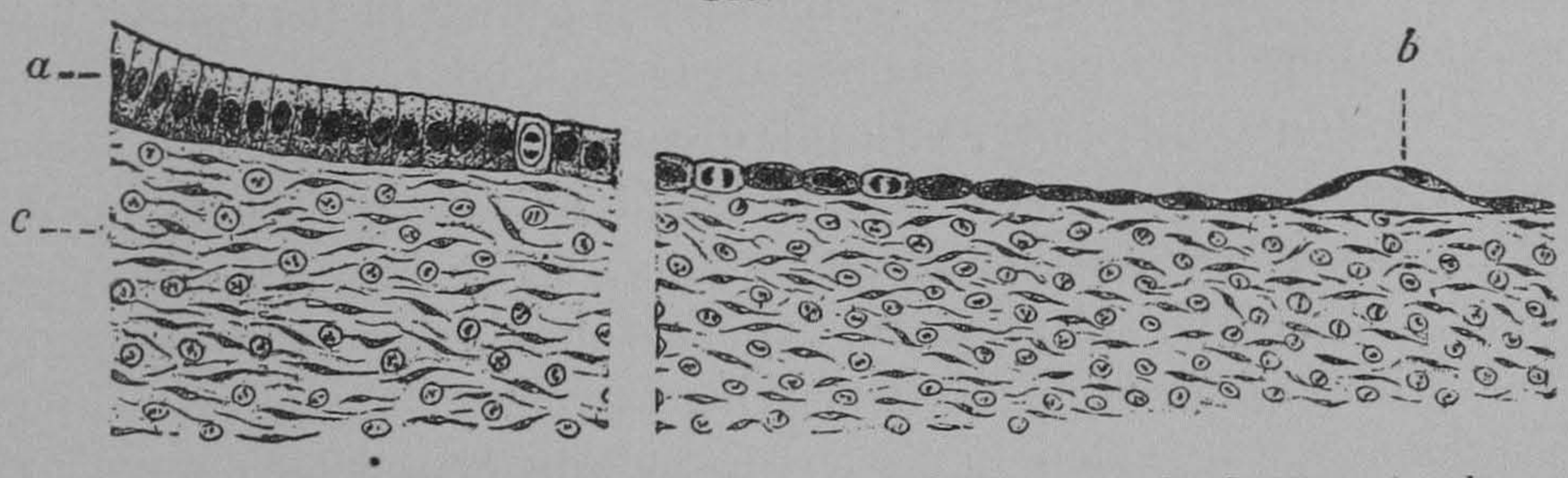
It will be noticed that the condition here is one of atrophic endometritis of a pronounced degree, with marked interstitial hypertrophy—exactly similar to chronic interstitial endometritis. The gland-follicles are caught in the new connective tissue and form cysts, while the surface of the membrane is covered by epithelium; the glands are scarcely to be found.

These plates prove very conclusively, the facts which have been amply substantiated by clinical experience. It is fair to assume that any caustic agent, which can penetrate as deeply as chloride of zinc, will have the same effects. Such agents are nitric acid, caustic soda, and very strong electrical currents. Similar but less marked changes are induced by the use of strong antiseptics, such

as carbolic acid and bichloride-of-mercury solution, and too free applications of tincture of iodine when these are used after curettage.

The manner in which reproduction of the mucosa ensues is well shown in the accompanying illustrations.

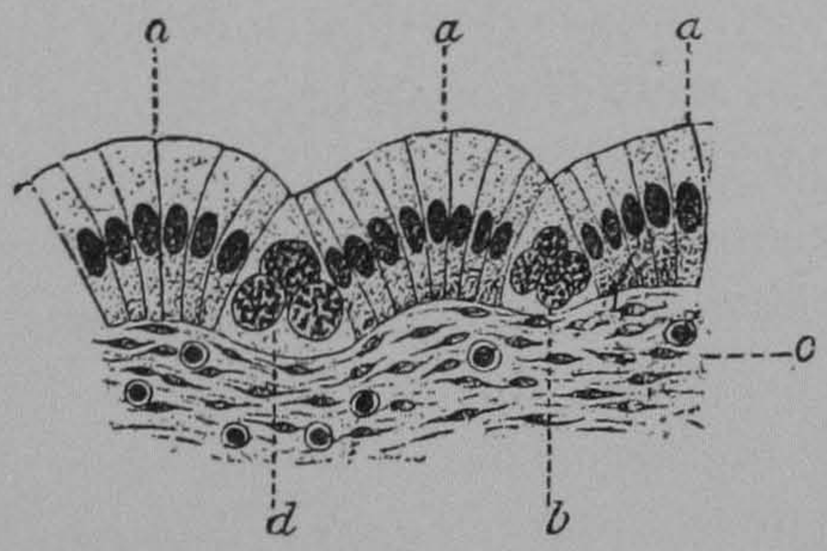
FIG. 96.



Perpendicular Section of the Uterine Mucous Membrane Thirteen Days after Curettement: *a*, *b*, epithelium, newly-formed; *c*, newly-formed connective tissue.

The exact method of reproduction of the endometrium is not definitely known. The first step is the extrusion of lymphoid and plasma cells upon the raw surface produced by the curettage. These rapidly form a layer covering the entire inside of the uterus with flat cells which ultimately become ciliated cylindrical epithelium. The subjacent tissue grows so rapidly and the epithelial cells mul-

FIG. 97.



Perpendicular Section of the Uterine Mucous Membrane Thirty-one Days after Curettement: *a*, *a*, *a*, cylindrical epithelium; *b*, *d*, proliferating cells in the deeper part of the epithelium; *c*, new-formed connective tissue.

tiply so fast that the surface of the membrane is thrown into a wavy line, which, as the process continues, takes on the characteristics of a plane surface studded with innumerable crypts. Thus is the new, perfect endometrium evolved from the basement membrane, after curettage.

The AFTER-TREATMENT of cases of curettage for acute tubal or peritoneal disease is as important as the operation. In all cases of curetting after conception, irrigation should be practised on chang-

ing the dressing. The details of the treatment are governed entirely by the two great principles: cleanliness and drainage. It would be folly to remove the primary packing from a large uterine cavity and not keep the cervix open; this would merely result in a reinfection, as curettage and irrigation do not remove every particle of sepsis: the cocci are in the lymphatics and often in the venous sinuses. After curettage, the septic uterus must be treated as any other septic granulating cavity, with this distinction: packing should cease when the uterus is reduced in size and its secretions become free from pus-cells. Further treatment may be necessary if the organ remains enlarged. Curettage does not absolutely prevent those symptoms which follow subinvolution, as hemorrhages. Therefore, a curettage done for infection in a puerperal uterus may, later on, have to be repeated for the hypertrophic membrane which gives rise to the bleeding, and which forms upon the enlarged uterus. Hence the use of tampons wet in ichthyol (10 per cent.) and boroglyceride (90 per cent.), applied twice a week to the cul-de-sac, is to be recommended in all cases of enlargement of the uterus. It will be found that the ichthyol tampons will very much lessen the pain which accompanies salpingitic and peritonitic effusions. It is wise in cases of retroposition to tampon the vagina with gauze, so applying it that it will act somewhat as a pessary in supporting the fundus. As a final caution the most scrupulous attention to every detail of aseptic work must be employed at each dressing, lest the case be reinfected. This point cannot be too strongly insisted upon. Opium should not be used. The bowels should be kept open. After curettage the menses are apt to occur a few days earlier than the usual date. All treatment should be suspended during this period, except where the uterus is septic. Menstruation has no effect upon the routine methods other than to require more frequent changing of the dressings.

Electrical Treatment of Endometritis.

The advocates of electricity in the treatment of endometritis have not, as yet, established any substantial principles, applicable equally well to all parts of the body. They do not tell us the effect of electricity upon the various cocci, or its influence upon the living cell. Does it cause unstriped muscular fibre to contract or to become flaccid? What is its influence upon the white blood-corpuscles and plasma-cells? Take its application in

cases of simple endometritis. The application of even slight currents causes the epithelium to exfoliate. The negative pole with from 50 to 70 milliampères for ten minutes, the strength some authorities advise, does more than cause exfoliation of the epithelium —it destroys tissue for a slight distance. In septic endometritis it is said that the current destroys the cocci. Staphylococci will survive being dried upon a cover-glass for ten days, and are then destroyed by exposure of not less than ten minutes to boiling water. Will even 100 milliampères do that? But granted that the currents used *will* destroy cocci, what effects have they other than this? A very mild electrical current stops the ameboid movements and checks the processes of cell activity, while it lasts. Currents of moderate intensity destroy the vitality of all protoplasm within reach of the currents. The interpretation of this is very simple. It means that currents much too light to prove germicidal, cause exfoliation of the protecting epithelium, destroy the property of diapedesis of the white blood-corpuscles, and destroy the karyokinetic property of the cells or their ability to multiply. These currents rob the locality to which they are applied of nature's sole defenses against pathogenic germs—epithelium, white blood-corpuscles, multiplication of cells.

By curettage, dead tissue and useless cells are removed. Useful living tissue is not destroyed, but the plasma-cells of the various tissues are given an environment propitious to their development and growth. Can electricity remove the entire septic endometrium in a few minutes, and in a month produce a new healthy one capable of forming a placenta and nourishing a fetus? The surgical methods here laid down can. Conception has taken place five weeks after a curettage for purulent endometritis.

The great scientific truths upon which, deductively, the method by curettage with its positive results, has been produced, cannot be ignored for another, based upon empiricism, and unsuccessful empiricism at that. The established surgical rules which, the world over, are accepted for inflammations in other parts of the body, are applied to the treatment of endometritis; and until gynecologists who practise the electrical treatment, can lay down for our guidance the positive indications to be filled, and *reasons* for their propositions, indications which are scientific and facts which are not mere personal statements, the use of this measure cannot be recommended. Glittering generalizations will not suffice. What they propose to

accomplish within the hidden organs must have been successfully tried on those within view. If fibrous tissue may be removed within, so may it without. If suppuration may be checked within, ample opportunity presents for testing it without. If glandular hypertrophy is corrected in the uterus, so may it be elsewhere. A few years back, when gynecology consisted merely of the dictum of one or two world-famed men, the electrical treatment might have become established. To-day, in the critical light of modern research and the generous distribution of knowledge, it exists, not because of true merit, but through the timidity of suffering womankind, who grasp at the hand offering relief "without an operation."

Inflammation of the Cervix.

The cervical mucous membrane, because of its anatomical characteristics, is less often the seat of destructive inflammatory changes than the endometrium. Classification of changes in the cervix is usually made according to the clinical appearances. This is too confusing and elaborate. Every case of cervical disease which is neither malignant nor tubercular may be placed in one of the following classes:

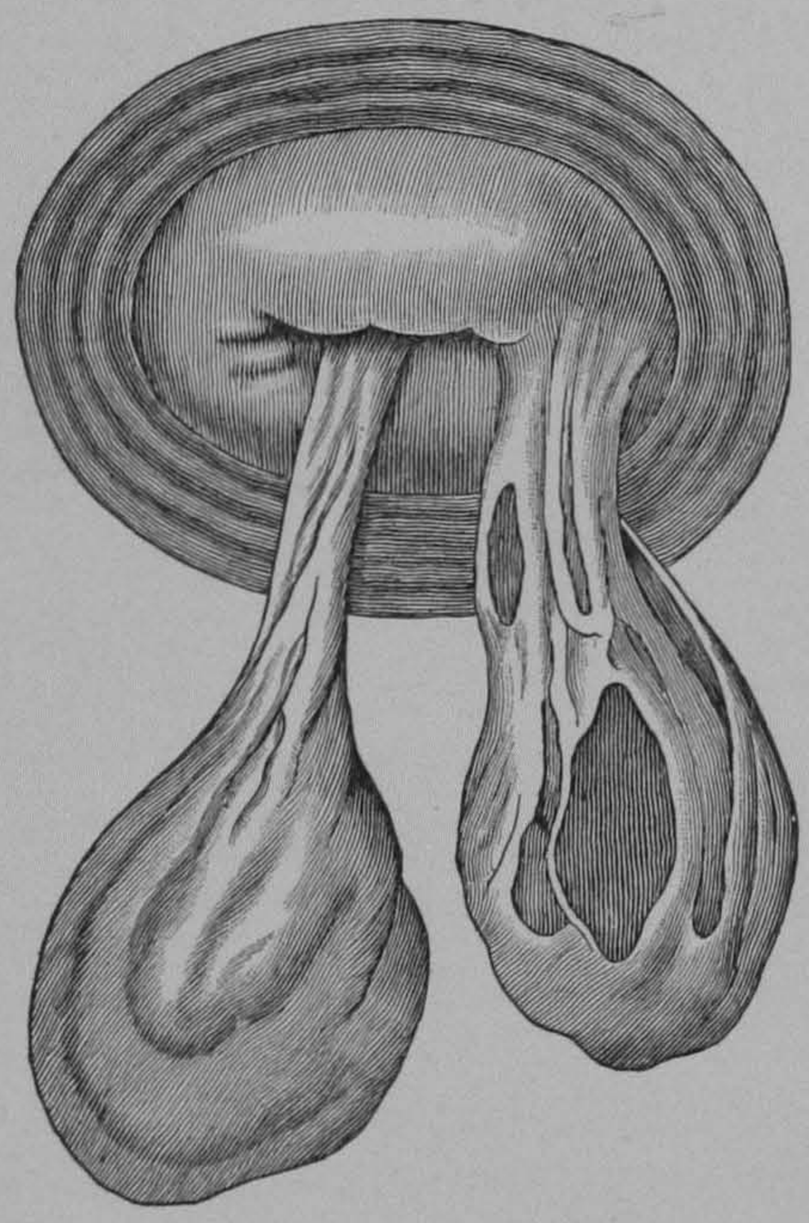
Septic and Gonorrheal Endocervicitis.
Glandular Endocervicitis.
Cervical Hypertrophy.
Cicatricial Stenosis.

Septic and Gonorrheal Endocervicitis.—Acute gonorrheal and septic processes here are not important, except in view of the possibility of extension to the endometrium. The cervical mucous membrane is dense, with few lymphatics, and drainage is so readily obtained, that pelvic lesions from cervicitis are rare if they ever occur. Acute specific infection of the cervix seldom remains local, but soon becomes general in the uterus. It is as a chronic inflammation that we most often see cervical lesions existing alone. Its compound racemose glands do not readily shed their epithelium, and cocci rest for great lengths of time, attenuated and quiet, in their secretion, even without producing purulent discharges. This fact being known, we are able to explain the development of latent gonorrheal endometritis and accept the possibility of auto-infection. We can also account for those apparently inexplicable cases of uterine and pelvic inflammation which sometimes follow the pas-

sage of an instrument through a cervical canal not previously cleansed.

Glandular Endocervicitis.—This takes the form of enlargement of certain portions of the normal folds. There is a projection or budding of the membrane, and as this increases the mouths of the glands become obliterated. The imprisoned glands continue to secrete, and the enlargement thus becomes pedunculated, forming

FIG. 98.



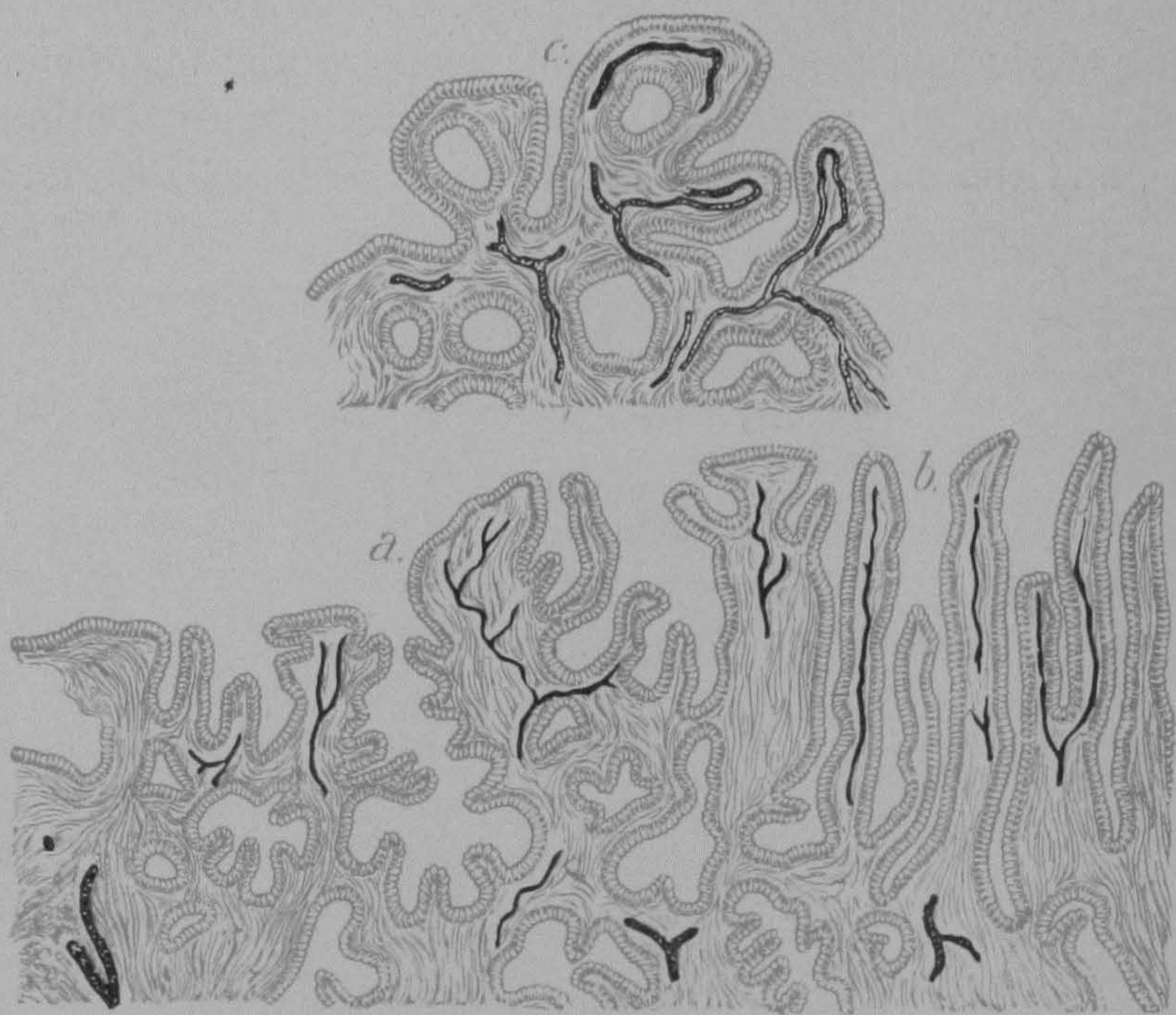
Mucous Polypi from the Interior of the Cervix and upon the Surface.

a true polypus. Again, the epithelium of the cervix may be exfoliated as the result of a vicious discharge from above; or injuries from below, such as lacerations, may cause the production of granulations and erosions. But, contrary to the general opinion, instead of there being a loss of tissue with this condition, the eroded surface projects beyond the line of healthy membrane. As a result of long-continued irritation to its glands the connective tissue of the cervix may become moderately increased, thereby occluding the glandular canals, and in this way the entire cervix may become riddled with cysts, constituting *cystic degeneration.* Some of these cysts contain clear fluid and some pus. (ovules of Nabothi)

SYMPTOMS.—As all forms of cervicitis entail an enlargement of the cervix, there is the constant symptom of weight and heaviness in the pelvis. Acute septic and gonorrheal cervicitis is usually asso-

ciated with some other symptoms of these infections, but, if occurring alone, the special symptoms are, that the cervix is engorged,

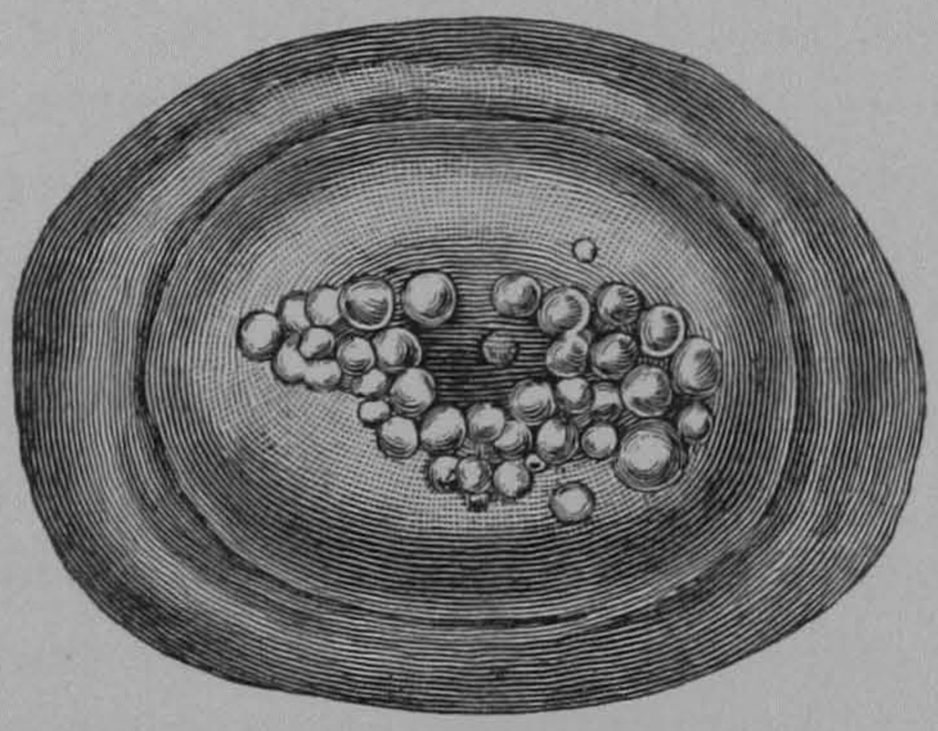
FIG. 99.



a, *b*, Simple Papillary Erosion; *c*, Follicular, slightly enlarged.

often eroded, and secreting its peculiar mucus, tinged with blood perhaps, but always very purulent. The cervical canal is often

FIG. 100.



Simple Follicular Cysts of the Cervix.

gaping. Removal of this mucus is not followed by pus from above, showing the endometrium to be uninvaded. The several cocci are found by the microscope. The symptoms of chill and fever are

wanting. Upon the subsidence of the more acute phenomena there will remain but the purulent discharge and some erosion. As has been said, acute septic and gonorrheal cervicitis tend to travel upward, and rarely will a case be seen before it has done so, owing to the absence of general symptoms due to the cervicitis alone. Glandular cervicitis, especially when it has gone on to the formation of polypi, produces a purulent (often profuse) discharge, in addition to the subjective symptoms of bearing-down and weight. The most prominent reflex phenomena accompany cystic degeneration and interstitial cervicitis. Headache is constant and the patient is very nervous. She is very emotional and prone to hysteria, the nervous symptoms being fairly well proportionate to the amount of interstitial change and follicular degeneration. The cysts project from the vaginal aspect of the cervix as rounded nodules, like blisters. If one be pricked, nothing escapes, but gentle pressure forces out a pearl of tenacious mucus. They occur not only on the surface, but in the deeper parts of the cervix also. In glandular cervicitis the canal is usually open, and by separating the lips the enlarged glands may be seen.

TREATMENT.—Acute gonorrheal and septic endocervicitis are to be most vigorously treated. The plug of mucus must be removed, and the application of powerful antiseptics made, as pure carbolic acid, care being taken not to invade the inside of the uterus. The condition is very hard to check, and is extremely liable to become chronic; but even then there is no better application than carbolic acid. Erosions due to purely local causes, as pessaries, can readily be cured by removing the cause and keeping the parts clean. Tyrrell's powder
Erosions are almost always dependent upon some form of glandular inflammation, either in the cervix or above, and are to be relieved by curing that cause. The association between cystic degeneration and beginning epithelioma is very close, while polypoid cervicitis is simple adenoma. Therefore the operative procedures directed to the cure of the latter need not be so radical as for the former. Inasmuch as polypoid cervicitis is seldom general, excision of the polypi is all that is necessary for isolated growths. This can be done under cocaine appplication. Should, however, it be associated with much interstitial hypertrophy, or the polypoid growths be general over the cervix, the excision of a portion from each lip will be of benefit in producing contraction.

A general cystic degeneration is amenable to the wedge-shaped

amputation of the cervix, an illustration and description of which will be found in the chapter on Malignancy. It is a good operation, giving most excellent results, and many cases now subjected to Emmet's operation of trachelorrhaphy would be better operated upon by this method.

Cervical Hypertrophy.—Cervical hypertrophy may be so great as to simulate prolapsus, and, indeed, it may produce a certain amount of descent, but the fundus is always found higher than in prolapsus. The total length of the uterine canal is greater, the increase being chiefly in the cervix; there is no rectocele, but a spurious cystocele accompanies the condition, as the urethra and base of the bladder follow the increased growth of the cervix. Still, the caution is necessary, that in amputating these hypertrophied cervices great care be exercised lest the bladder be opened, as the hypertrophy may spring from near the os internum, in which case the vesical organ will be dragged down with it. The sound in the bladder, however, will show the relations of that organ to the hypertrophy. The cervix may be so generally inflamed and, at the same time dilated, that the membrane will be rolled out, forming a true ectropion, and presenting the evidences of glandular hypertrophy, even amounting to glandular polypi. Excision is here necessary by the method already indicated.

Cicatricial Stenosis.—As a result of operations, inflammations, and application of caustics—rarely as a congenital lesion—we may have a cervical canal so contracted as to form a true stenosis or an atresia; the condition may even give rise to hematometra, and require treatment as for congenital atresia. It is amenable to the operation of bilateral incision (splitting the cervix bilaterally by means of knife or scissors to the internal os), followed by forcible dilatation. The after-treatment is long and tedious, and the patients are forced to remain under observation for a great length of time. This is necessary because the operation is usually done in a field of cicatricial tissue, which tissue possesses an inherent tendeney to contract, repeated or continuous dilatation being necessary for its prevention. Stem pessaries are here worn with advantage for a space of some months.

In the milder cases the bilateral incision is to be followed by gauze packing for three weeks, the packing being limited to the cervix alone.

These incisions, followed by dilatation, are covered over by a

modified form of mucous membrane in a remarkably short time. Stem pessaries are not necessary, unless the tissue be newly-formed cicatricial tissue; in other cases the cervix will remain dilated around even a very fine filament of gauze, and while the latter is in place the formation of the new membrane goes on speedily.

In considering all these questions involved in the treatment of diseases of the uterus it must not be forgotten that the organ is embryonic and capable of reproducing its tissues to a certain extent, but reproduction does not take place from scar-tissue or in the presence of suppuration. The faculty of reproduction from the basement membrane, when once the mucosa is entirely removed, is not inherent in the cervical mucous membrane. This, once removed, is never re-formed.

Metritis.

This condition is of very minor importance, because it is merely a name for certain changes in the muscular walls, secondary to more important conditions. An idiopathic metritis does not exist: it is always secondary to, and an extension of the inflammation of the endometrium. Inflammation of the muscularis uteri follows all acute and many chronic infections of the mucosa. The treatment of the two conditions is identical, and has already been fully considered under Endometritis. A low form of tissue change also accompanies the various neoplasms, flexions, and versions. These will be described in the proper places.

Subinvolution.

The condition known as subinvolution which follows labor is not, *per se*, a disease, but merely an association of conditions resulting from a common cause. The uterus has not yet fully undergone those retrograde changes which normally follow labor. It is enlarged in all its diameters and the mucosa is thickened. The organ being heavy and its walls softened, it shows a tendency to sink low in the pelvis or take a retroposition.

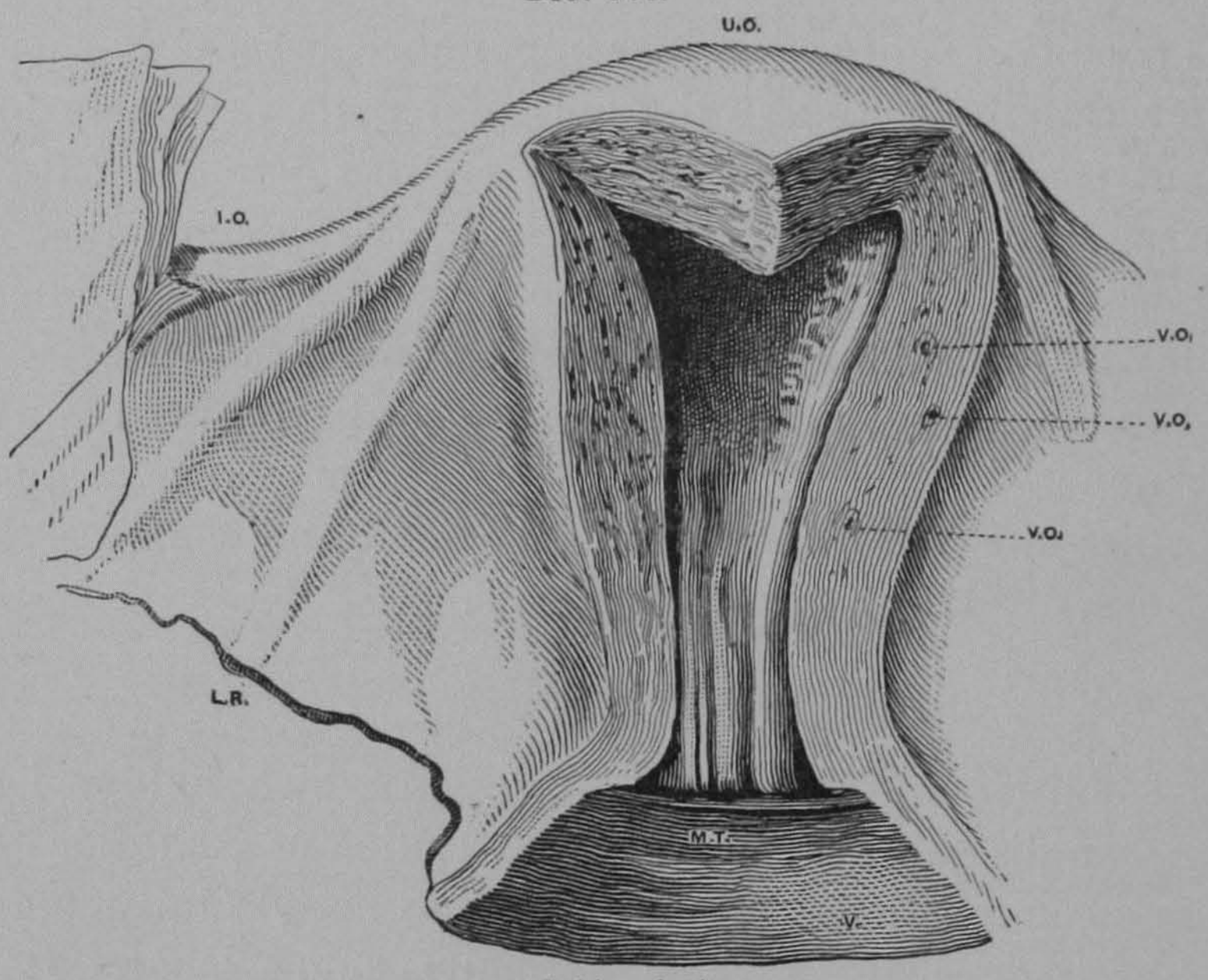
The intimate histological condition is one merely of fatty, enlarged, unstriped muscular fibres, enlarged vessels and lymph-spaces, and glandular hypertrophy of the mucosa. It can scarcely be termed strictly a pathological condition, rather is it an incomplete physiological one. When it has persisted for some time, fibrous

tissue hyperplasia does take place in the muscular walls, and the change in the mucosa becomes a permanent hypertrophy.

SYMPTOMS.—If the menses have returned, they are increased in amount, but are not painful. If the engorged organ is low down, retroverted or retroflexed, the symptoms present are of constant and severe backache, together with bearing-down pains.

Usually all patients complain of a sense of weight and heaviness in the pelvis. There are present the general symptoms of anorexia, costiveness, anemia, and general malaise. Women with subinvolution are at times subject to melancholia, which may even amount to a temporary insanity, not acute. Mania following labor and due to infection by streptococci is not to be confounded with this mild aberration of intellect. This condition is not a frequent one, and, when found, is generally in stout, plethoric women.

FIG. 101.



Subinvolution.

Examination shows the enlarged, soft uterus, possibly low down or retroposed. It is not tender in uncomplicated cases, but is extremely so in the presence of an accompanying endometritis.

TREATMENT.—The general conditions predisposing to this malady must be met; therefore strychnia and cinchona before meals, and wine and iron, are indicated. The combination of ergotin and quinia is exceedingly efficacious.

Douaage - curettement, osphropathy

Locally, intra-uterine applications of tincture of iodine, with the supporting and depleting tampon of ichthyol 5 or 10 per cent. in 50 per cent. boroglyceride, twice a week, are all the requisites for effecting a cure, in the absence of any acute symptoms. Hot vaginal douching should be employed twice each day between treatments. If the hemorrhages are of serious moment, curettage not only removes that factor, but materially hastens the involution. General treatment is of great importance.

If subinvolution be neglected, the organ is prone to take on almost any form of inflammatory change, and is especially liable to septic infection. The condition materially reduces the organ's resistant power against pathogenic germs. Many cases of grave pelvic lesions and uterine displacements may be traced to neglect in guarding against this condition after confinement or abortion. Subinvolution is very frequently caused by a septic or specific infection of the uterine cavity in the puerperal woman, resulting in an endometritis. Such cases resolve themselves eventually into a true condition of metritis and endometritis, and are to be dealt with as such.

Hyperinvolution.

The condition known as hyper- or super-involution follows labor, and is due to causes unknown. The natural involution of the uterus following labor reduces the size of the organ slightly below its normal condition, but subsequently, within the course of a few weeks, this loss is regained. Occasionally involution does not cease at this point, but continues beyond the physiological condition, until the womb becomes, at times, even as small as an inch or an inch and a half in depth. The causes which change the physiological process into a pathological one are obscure, and can rarely be detected. Fortunately, the occurrence is rare, as the condition is extremely difficult to treat successfully, most commonly baffling all the efforts of the physician.

Painful and scanty menstruation are common attendants, and are, in fact, the principal symptoms. The dysmenorrhea is of a severe and persistent type, usually appearing prior to the flow and lasting throughout its whole course, and is undoubtedly due to the atrophic condition of the endometrium. The ovaries may or may not be involved in the process: should they become involved, it would be

one more causative factor added to the dysmenorrhea, and would exaggerate that condition.

The physical examination, together with the history, renders the diagnosis clear. The uterus is found small and its walls of firm consistency, at times almost fibroid in character. The depth of the uterine cavity is reduced from two and a half inches, the normal, to one or one and a half inches.

The medical treatment of the disease is not productive of any assured success. It consists in rendering the patient's general health as nearly normal as possible, at the same time stimulating the uterine muscle. Probably electricity, both general and intra-uterine, gives as much promise of success as anything. Should the physician's efforts be attended with good results in accomplishing a return of the uterus to its normal size, the menstrual flow will become more natural in quantity and the dysmenorrhea will gradually disappear. Most often the treatment consists in simply controlling the pain. Efforts in this direction will be accomplished by much the same means as given in the chapter on Dysmenorrhea. As a rule, the patients will have to be content to bear their sufferings as best they may, with what amelioration drugs will give, until the change of life ends their period of probation. Should the pain become so great as to render life miserable, a resort may be had to ovariotomy with the view of bringing on an immediate menopause. The justification of this procedure must rest entirely with the individual case, the event being determined by the amount of suffering and the failure either to cure the condition or to relieve the symptoms. It is far better to perform the operation of removal of the ovaries than to have continuous resort to opium, with all its attending dangers. The question of childbearing need hardly be considered, if for no other reason than that these women are rendered sterile by their condition. Pregnancy, if it could be brought about, would probably produce a cure, or rather it might be nearer the truth to say that this condition would be proof that a cure had been accomplished, as pregnancy is most improbable until there is a return to the normal condition of the endometrium.