Notes on diseases of women / by James Oliver.

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JAMES OL

M.D. (EDIN.), F.R.S.

Member of the Royal College of Physicians; Ass
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JAMES OLIVER,

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Member of the Royal College of Physicians; Assistant Physician to the Hospital for Women, London; Honorary Physician to the Farringdon General Dispensary; Member of the Neurological Society, &c., &c.

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HIRSCHFELD BROTHERS,

BREAMS BUILDINGS, FETTER LANE, E.C.

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1888.

TO

SIR JAMES SAW

M.D., F.R.C.P.,

WHOSE ZEAL FOR FACTS OF CL

HAS INFLUENCED ME IN

AND FOR WHOSE FRIENDSHIP

OPPORTUNELY AND FREE

NOT ONLY DURING TH

BUT SINCE I WAS ATTACH

QUEEN'S HOSPITA

I AM DEEPLY GRAT

TO

SIR JAMES SAWYER,

M.D., F.R.C.P.,

WHOSE ZEAL FOR FACTS OF CLINICAL WORTH

HAS INFLUENCED ME IN MY WORK,

AND FOR WHOSE FRIENDSHIP AND KIND HELP

OPPORTUNELY AND FREELY GIVEN—

NOT ONLY DURING THE TIME

BUT SINCE I WAS ATTACHED TO THE

QUEEN'S HOSPITAL—

I AM DEEPLY GRATEFUL.

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London,

Feb. 8th, 1838.

PREFACE.

In presenting this little work to the profession, I do so with a full knowledge of its many imperfections. To the philosophic reader I most humbly submit it, without apology, as a scientific exercise, expressive of a hope that it may lend in the establishment of gynæcology, on a more sure and scientific basis: this establishment we all anxiously await.

London,

Feb. 8th, 1888.

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I.

Anatomical Notes on the Female Organs of Generation.

In order that we may have something like a comprehensive and intelligible appreciation of the diseases and disturbances to which the female organs of generation are liable, and at the same time be able to interpret aright the worth of symptoms associated with, and dependent upon, changes in these structures, it is needful to review, although superficially, the anatomy and physiology of the various tissues, and the manner in which the different organs act and re-act upon each other.

In the human chick, be it remembered, the reproductive and urinary organs are by a process of gradual evolution developed from the middle of the three so called germinal layers from the temporary organs named Wolffian bodies. When fully formed these bodies occupy nearly the whole extent of the abdominal

cavity, and constitute a pair of symmetrical organs in structure closely analogous with that of the permanent kidneys. This is a point worthy of attention, for wherever in the animal economy we find organs developed from a common primordial structure, we can invariably prove the perpetuation of a direct nerve communication, whereby impressions originating in one may be forthwith transmitted to the others of a like structural evolution. By acute irritation of the renal and uterine nerves we are able to produce experimentally through an existing nerve anastomosis, a temporary paralysis in the lower limbs, a so called reflex paraplegia. The liver, as I shall describe later on, is developed from the gut; here the existence of a free nerve intercommunication is evidenced by the fact that the passage of a slightly acid fluid into the duodenum determines forthwith a copious secretion of bile. I have elsewhere shown that menorrhagia is a frequent association of pyonephrosis. This symptom is doubtless the manifestation of a mere augmented and prolonged functional activity of the uterus and fallopian tubes determined in some occult but reflex manner by the condition of the renal organ, the periodicity of the flow however being undisturbed.

The external sexual organs, on the other hand, are essentially dermal in character, being developed from the epiblast or external germinal layer. In many of the lower organisms where structural differentiation is ill-defined, vicarious function is readily fulfilled. The animal may be turned inside out with impunity, and the vital state of the organism be nevertheless maintained unimpaired. The endoderm as yet but feebly specialized, although set apart for assimilation, will assume with ease the function of the ectoderm, that of elimination; whilst the ectoderm on the other hand will with equal readiness discharge the function of the endoderm, that of absorption. This is a fact not sufficiently appreciated as far as direct medication—in gynæcology at least—is concerned.

When the mucous membrane of the vagina, as happens in complete prolapse of its walls with descent of the uterus, is exposed to those multifarious influences acting constantly on the general surface of the body, it tends to lose its softness and become hardened, and will eventually assume an appearance characteristic of cutaneous tissue. The mucous membrane of the vagina is but little removed structurally from that of the skin, the change therefore which ensues from prolapse of the vaginal walls, cor-

roborates the tenet already expressed, that tissues closely related to and but little distinct from each other structurally, readily assume the characters of, and perform functions hitherto discharged by structures apparently very dissimilar. The uterus even may because of some apparently neurotic freak excrete in a manner analogous with that of the kidney. Some time ago I drew attention to the fact that the normal uterus, and this even in a virgin state, poured out, so to speak, a thin slightly opalescent fluid of a low specific gravity. The discharge amounting even to one or two ounces, recurring more or less frequently and in varying quantity. That the mucous membrane of the uterus, with its convoluted glands should become and probably is an eliminative structure, and perform a function apparently foreign to it, is quite intelligible when we recall the fact that this organ is in common with the kidney developed from the Wolffian body. In the patella vulgata or common limpet, the reproductive glands are single, and pour their contents when ripe into the cavity of the right kidney, from which the generative cells escape along with the urinary secretion by the right renal papilla.

In birds we find the female provided with one ovary and oviduct—the left. Occasionally

the right exists, it is then however always rudimentary. It has always been a source of wonder that symptoms associated with disturbance of the female organs of generation, functional, or otherwise, should so frequently be referred to the left side of the body. The explanation is difficult to find; still it is feasible to suppose judging from the total absence or existence in a state of inertia of the right ovary in birds that the left is the more functionally active, and being so, therefore the more vulnerable.

In all mammals there are two ovaries and the oviducts or channels which serve to convey the elements of reproduction from the gland are known as fallopian tubes. Each oviduct on its way to the surface dilates into a cavity the so-called uterus which in turn opens into the vagina. In man and the monkey only do we find the complete coalescence of the expanded lower portions of the fallopian tubes, or two uteri so as to form one cavity or uterus into the fundus of which the oviducts pass. In marsupials the fallopian tubes remain distinct, and do not in any part of their course unite. The vaginal tubes even continue in them free in greater part and open ultimately into a common urogenital canal. Arrest in evolutional deve-

lopment, accounts feasibly for the production of a complete or incomplete bi-partite uterus which we occasionally find extant in the human female as well as the still more rare anomaly that of double vagina. Sometimes we fail to detect in females otherwise perfectly developed and in robust health, the existence of any genital tract at all; or, again we discover an imperfect coalescence of the external and internal sexual structures and the detention of menstrual fluid as a consequence. The development of the uterus from the fallopian tubes, is a fact worthy of being borne in mind, for patients who suffer from pyosalpinx invariably complain at some time or other in the progress of the disease, not only of disturbance during, but of interference with the manifestations of the recurring physiological changes in the uterus.

The ovary is essentially a glandular structure. It is developed quite independently of the uterus and fallopian tubes from a distinct part of the Wolffian body. It cannot therefore strictly speaking be viewed as a uterine appendage, no more than the kidney itself nor than the uterus in turn can be considered a renal appendage. It is a structure gradually evolved from the cells of the Wolffian body, and although as a rule

present in the human female, some deviation in development may nevertheless result in a failure to produce a distinct organ. Under such circumstances the uterus and other structures of the reproductive tract may be present, and be at the same time perfectly intact. The ovaries are however merely essential for the perpetuation of the species. In cases of total absence of the sexual glands, the sexual activity never having existed, the well-being of the organism is unaffected by the malformation, and the imperfection is free from any constitutional deterioration. The ovary appears to me to be developed from the Wolffian body very much in the same way as the liver is developed from the gut. The primordial liver as we find it in the Planaria consists of nothing more than simple cells scattered along a tract of the intestinal surface, but which, nevertheless secrete efficiently bile for the requirements of the organism. As we ascend the scale of animal life, we find these cells by agglomeration forming a small but distinctly projecting nodule from the perivisceral wall of the bowel into the perivisceral cavity, and eventually culminating in the production of that large and somewhat independent organ the liver.

The reproductive gland is composed of con-

nective tissue, and a few muscular fibres which together form the so-called stroma of the organ. It has an external epithelial covering and contains imbedded in its stroma graafian follicles with ova. The manner in which the germinal elements are produced is still a question of controversy. At first it is impossible to distinguish the germinal cells which will become ova from those which will become spermatozoa.

The hypothesis that each gland separately has some influence on the sex of the progeny is one which has received some credence even at the hands of breeders. Many (Henke, Millot and others) believed that the sexuality of the offspring depended on whether the ovum impregnated had come from the left or the right ovary, the right it was alleged had been set apart for the production of a male and the left for that of a female progeny. No scientist would entertain for a moment such a hypothesis now.

In the human female the ovaries lie at the back of the broad ligaments of the uterus, the posterior membranous fold of which envelops each gland, except at the hilus or attached border, which serves to transmit the vessels and nerves. The position of the gland in the pelvis is variable. Normally, however, I hold it is

quite impossible to reach it by simple pressure on the abdominal walls, for being free in the pelvis, and there being no fixed point against which it can be pressed it escapes the exploring hand. By a bi-manual examination the ovaries may be detected and the size of each approximately gauged. Unless, however, the abdominal walls be somewhat lax to allow of the external hand and examining finger approaching each other closely, they cannot usually be defined except under abnormal circumstances, congenital or pathological.

The abdominal cavity, including the pelvic, may virtually be described as a closed sac, the peritoneum covering each organ more or less completely. The serous membrane is reflected from one organ to another, to the walls of the abdomen and pelvis, forming thereby distinct folds or ligaments. In the case of the uterus a double fold of the peritoneal covering of this organ passing from the anterior and posterior walls, respectively, to the pelvic wall laterally, form the so-called broad ligaments. Between these two folds of serous membrane, extending from the uterus to the pelvis, are found certain structures worthy of passing note, because of pathological changes which may appear in them. Running along the upper margins

are found the fallopian tubes, whilst the round ligament of the uterus is detected somewhat lower in the structure and rather to the front. The ovary, with its ligament, occupies a position posteriorly as I have already remarked.

The broad ligament contains a few muscular fibres spreading from and continuous with those of the uterus, together with nerves, blood-vessels, lymphatics, and a certain amount of connective tissue. Inflammatory and insidious changes arising in the connective tissue of the broad ligament may, according to their location in such, determine a more or less marked deviation of the uterus to one or other side of the pelvis, in some cases even a version or flexion. The existence of an obsolete structure, the parovarium or body of Rosenmuller can, as a rule, be detected between the layers of the broad ligament. It is the remnant of the Wolffian body, and, therefore a fœtal structure. Composed of tubes it is one source of origin of the unilocular cysts occurring in the broad ligaments. It is, however, probable that monocystic growths may develop in the cellular tissue of the broad ligament and independently of the parovarium. The fallopian tubes, the structures from which by specialization the uterus is developed, are towards the fundus of this organ

somewhat thickened and narrowed; whilst the free extremity of each, expanded and of a trumpet shape, is attached by one of the fimbriæ to the ovary of the same side. The oviduct at its fimbriated and free extremity opens into the peritoneal sac, which cannot, therefore, strictly speaking, be viewed as a closed cavity. The fallopian tube receives in some mysterious and wholly inexplicable manner, as a rule, the reproductive elements liberated from the organs of generation. Occasionally, however, the impregnated ovum finds its way into the peritoneal sac, and forming here a placental attachment, may develop without interruption even to the full time, although such is rare. The oviduct is like the uterus itself, essentially muscular in structure, the fibres like those of the intestinal canal being arranged in a circular and longitudinal manner, the internal being circular and the external longitudinal. The mucous membrane is continuous with that lining the uterus, as well as with the serous membrane forming the peritoneal sac. The epithelium covering this mucous membrane is columnar and ciliated, the inner surface of the fimbriæ are especially provided with cilia, which, by their vibratile property determine and direct by their motion a continuous current for the easy transit

of the extruded ova, towards the fallopian tubes, and thence into the cavity of the uterus.

Normally the location of the uterus is as nearly as possible in the mid-line of the pelvis with the bladder in front and the rectum behind. It is a hollow muscular organ with extremely thick walls, and serves to retain and nourish the impregnated ovum. This viscus is pyriform in shape. Its anterior wall will invariably be found to project somewhat more markedly and appreciably than the posterior. In the early days of utero gestation, the initial enlargement which the uterus is undergoing is, as a rule, detected anteriorly. A careful examination revealing a slight bulging of the anterior wall of the uterus, will often lead one to suspect pregnancy when other usual associations are absent. The peritoneal covering of the uterus is in front, continuous with that reflected from the bladder behind with that covering but partially the rectum, and laterally with that entering into the formation of the broad ligaments. The cervix uteri dipping into the pelvic floor or diaphragm receives its covering from the mucous membrane of the vagina. On examination it should be felt in the middle of the vaginal roof. Any deviation detected is determined by some abnormal state of the uterus itself, by some disten-

sion of a neighbouring viscus, or is the result of some pathological state of the attached structures. The uterus, as a whole or partially, may be either pushed or drawn to one side of the pelvis. I may here remind you that not infrequently the sigmoid flexure of the colon is so long and so free that it may pass over to the right side of the pelvis, and when loaded with fæcal matter may be felt as a distinct and spurious growth, occupying the right lateral fornix of the vagina, pushing at the same time the uterus to the left side of the pelvis. If the mesentery of the sigmoid be short and this part of the gut be occupied by hardened fæces, it may so completely fill the left side of the pelvis as to cause the uterus to lie in apposition with the right wall of the pelvis. The mucous membrane lining the interior of the cervix is different from that lining the uterus, a distinct line of demarcation being discernible at the internal os. It is firmer. It evinces rugæ and is studded with follicular glands. The epithelial lining is cylindrical and ciliated, towards the external os however it becomes flattened and dermal in character. It is covered towards the external opening with vascular papillæ.

The uterine artery is a large tortuous vessel, and is so far as operations about the cervix are

concerned, a vessel demanding especial note. It is a branch of the anterior division of the internal iliac, and directed towards the neck of the uterus is transmitted along the side of the organ between the folds of the broad ligament. Regarding the nerve supply to the uterus, little or nothing definite is known, although clinical and pathological facts point to the functional activity of the organ being governed directly or indirectly, by nerves transmitted along, or in close apposition with the fallopian tubes.

Much has been written regarding the disposition of the pelvic fasciæ. A description of this however would only prove tedious, and of no real clinical value. Little light has as yet been thrown on the probable cause or causes of prolapse of the vaginal walls, with its associated or consequent descent of the uterus—a question of great scientific and therapeutic interest.

The vagina is a membranous, and very dilatable tube extending from the vulva to the uterus, the neck of which latter structure is embraced by it. The posterior wall of the vagina is intimately connected with the rectum by loose areolar tissue. The upper part of the rectum where partially covered by peritoneum, is attached by a duplicature of this serous membrane to the sacrum. The peritoneal re-

flection from the uterus to the rectum extends but a little way down the vaginal wall proper, and may, strictly speaking, be considered as covering only the vaginal roof intra-abdominally. The lower part of the rectum, where the peritoneum ceases to cover it, is attached to surrounding parts by areolar tissue, containing a large amount of fat. The anterior wall of the vagina supports the bladder and the urethra, hence the reason that whenever there is manifested a disposition to prolapse consequent upon structural enfeeblement, this pillar is the first as a rule to evince the tendency, depending as it does upon its own integrity for the maintenance of its position, and its efficiency as a prop to the bladder. This is a point worthy of passing note, for in cases of aggravated prolapse with complete extrusion and incarceration of the uterus, reposition is rendered more easy if this fact be borne in mind, for the structure which descends first should be the last to be returned, and primarily all effort should be directed to the posterior wall which has been the last to descend. The posterior wall of the vagina rarely descends spontaneously, maintained as this is in position by its indirect attachment to the sacrum through the medium of an intimate connection with the rectum.

Immediately below the orifice of the urethra is the entrance to the vagina, which is in the virgin more or less narrowed as a rule by the hymen. The hymen is a thin double fold of mucous membrane and although usually perforated it may nevertheless continue intact and closing the vagina completely, give rise after the establishment of puberty to retention of menstrual fluid. After rupture of the hymen some small rounded tags remain called carunculæ myrtiformes which occasionally, especially in the newly married female, become irritable and produce great pain on connection or even hinder sexual congress altogether. Mucus crypts and sebaceous glands are found beneath the prepuce upon the labia majora and outer surface of the nymphæ, and these becoming distended give rise to the cystic swellings so frequently found about the external genitals.

The bladder as I have already remarked, rests on and is supported by the anterior wall of the vagina in which lies imbedded the urethra. The female urethra is very short being only about one and a half inches in length, it is wide and capable of great expansion. Because of the contiguity of bladder and uterus, we often find the functions of the former disturbed and interfered with, not only

because of pathological but also on account of physiological changes in the uterine organ. In cases of fibroid of the uterus for example, we may find according to the position of the new growth, either occasional retention or incontinence of urine. In the majority of such cases however, the vesical disturbance is more likely to be complained of just before an expected period than during menstruation itself.

II.

Facts Relative to Menstruation.

In every healthy human female as a rule, during the so-called child-bearing epoch, which extends on the average over a period of thirty-two years, the uterus becomes the seat of a periodically recurring functional disturbance evidenced by the emission of a more or less marked hæmorrhagic discharge. As the initial establishment and each subsequent recurrence of this monthly phenomenon is frequently accompanied by symptoms of a general as well as local character, we shall designate under the appellation *menstruation*, the whole essential train of events and not its mere outward manifestation.

Menstruation is a crisis of transition, and as such changes generally are full of pain, it is not at all astonishing that we should so frequently find this phenomenon in the human female associated with more or less disturbance of a

constitutional character. The eagle when it moults is sickly and rids itself of the old beak by dashing it against a stone. Normally all the functional disturbances of the body are through habituation performed in a somewhat automatic manner, and, although these changes may at one time, in the evolution of life, have excited a conscious sensation, they are now wholly ignored by the higher centre participating in feeling and fail to arouse, therefore, any knowledge of their presence. This fact is one worthy of note, being as it must be the key to a correct appreciation and interpretation of all painful impressions. Our epiperipheral and visceral sensations may, when augmented, produce a sensation of pain. A gentle warmth applied to the body may prove grateful, yet it is possible to so augment this pleasurable sensation that it becomes an actual pain. All pains, therefore, may be considered as aggravated sensations, of pleasure, if you will. In the case of the uterine system, multifarious and, apparently trivial, are the influences at work, which may serve to disturb the healthy evolution of its functions. The molecular world, organic as well as inorganic, exists in a perpetual state of trepidation and vital equilibration is the outcome of an inherent power of adaptation. Normally the structural

and functional integrity of the organism is maintained by a mutual dependence of the organs upon each other, and according to the manner in which they each and all respond to those numerous changes which, from time to time, arise in the environments of the individual. The variations in the waves of molecular motion occurring in every organ and associated with physiological activity are radiated to and affect, however feebly, every ultimate tissue of the body. So completely is this intercommunication through the medium of the nervous system carried on, and so apt are the different structures of the organism to perform functions other than those for which they have become specialised, that vicarious compensation may be readily established. In the case of double organs of the body, it is a noteworthy fact with which every one is familiar, that the removal of one may affect but little, if at all, the well-being of the body generally, the remaining organ, at the same time, because of augmented functional activity, undergoing slight or even well-marked enlargement. This compensatory change will be manifested not only by organs recognised as active, but also by such as hitherto have been considered as somewhat obsolete. In many of the lower organisms where structural differentia-

tion is ill-defined, vicarious function is readily fulfilled. The animal, for example, may be turned outside in with impunity, the vital integrity of the organism being still maintained unimpaired. The endoderm already but feebly specialised, although set apart for assimilation, performing with ease the function of the ectoderm that of elimination, whilst the ectoderm in turn assumes forthwith the power of assimilation and discharges effectually a function hitherto foreign to it, and performed previously by the inner layer. Lately I saw a girl who had never evinced the external manifestation of menstruation, although she suffered from what I called a menstrual hæmaturia, recurring as this did every month in association with marked constitutional disturbance. The uterus was in this case found to be abortive, and there could not be detected any vestige of an external genital tract. The ovary on the left side, the only one which existed, was removed and was found to be somewhat larger than usual and apparently functionally active. When we recall the fact that the kidney and uterus are developed from the same primordial structure, a case such as the above, anomalous, though it is, does not astonish us. In the animal economy one sees constantly enunciated the fact, too fre-

quently ignored, that functional activity and structural integrity proceed together hand in hand, and that they are regulated by a mutual action and reaction upon each other. If the functional activity of any organ be augmented, but not unduly, the structural integrity of that organ will be maintained and be rendered more perfect. That each organ of the body has a representative nerve centre, by which it is governed and enabled to act in unison with and respond to changes in the other tissues of the body, there can be no doubt. It is, therefore, more than probable that the physiological changes recurring from time to time in the uterus are not only anticipated by, but actually the result of some molecular disturbance arising spontaneously in some centre located in the higher part of the cerebro-spinal tract, possibly somewhere in the medulla oblongata. The mere fact that the functions of the uterus may be revealed uninterruptedly after the spinal cord has been completely severed in the dorsal region is no criterion, and cannot justify us in concluding that there exists no representative higher centre. The nervous system is so complex and its functions so entangled, that the human mind is often baffled in its attempts to elucidate and explain revealed facts. It is no-

torious that the spinal cord has been divided in animals, and although paraplegia has forthwith resulted, complete power over the lower limbs has been regained without union of the severed nerve tissue occurring. Structural evolution forces us to accept the hypothesis that a nerve centre must exist for the uterus, and that it is subjected to well regulated periodic discharges, so long as this centre is free from other well marked local and constitutional influences. Like all other nerve centres fulfilling a similar dispensation, this uterine centre is undoubtedly beyond all volitional control, but is nevertheless capable of being disordered by emotional impressions. With this fact every one is familiar. A sudden shock experienced during menstruation and apart from any bodily injury, will produce, as I have frequently noted in some females, immediate cessation of the flow, and has interrupted for a more or less indefinite length of time thereafter its amount and periodic regularity. The resulting disturbance will depend essentially upon the state of the nervous system and its proneness to molecular instability.

The age at which pubescence is attained or rather at which the catamenial discharge makes its appearance depends not only upon climatic but also upon social influences. Throughout

England, menstruation is established about the age of fourteen, sometimes earlier and in a few cases much later. In hot countries puberty is reached at a much earlier period than in cold. Child-bearing is generally observed to begin and cease at an earlier age in tropical than in temperate countries, and the resulting variations of climate are the same for females apparently of all races. In Persia, the girls begin to menstruate at the age of nine or ten, and are often mothers at eleven. Cold acts as a deterrent, serving as it does to delay the appearance of the catamenial discharge. In the Northern parts of Germany, menstruation is rarely established before the age of fifteen. Considerable variation also results from the habits of society. Girls who live a quiet life in the country, evince a healthy evolution of the uterine functions, and are much less likely to suffer from those disturbances of a constitutional character associated with the establishment, and each recurrence of the flow, which are so apt to arise in girls who live a life of excitement in our large cities. The age at which the menstrual discharge becomes established is somewhat hastened in the females, especially those of the higher orders, who inhabit cities, exposed as they are to excitations which not only serve

to accelerate the onset of the periodic flow, but augment its quantity and occasion much more general disturbance of the system. The catamenial discharge continues as a rule from three to six or seven days, and escapes *guttatim.* The actual amount lost cannot, however, be even approximately gauged from the number of days the flow lasts. It is alleged, that the excretion varies in quantity from eight to sixteen ounces. In many cases the flow is interrupted, the discharge during some part of the time ceasing altogether for one or more days, reappearing however to complete its prescribed cycle. It is still a controversial point, whether the menstrual discharge is or is not ordinary blood. That the hæmorrhagic discharge contains some effete material is to be expected quite apart from the fact that it is mixed with uterine and vaginal secretion. I cannot believe it is the exact counterpart of that blood which flows in the arteries, or veins, or as some authorities would have us believe of that which flows in the capillaries. Nature is never superfluous, and we are not justified in surmising that the animal economy would, without some distinct end in view, pour out a secretion or excretion of that fluid which serves to nourish the tissues of the body. Occasionally we see women who have

never menstruated, and others who menstruate but seldom, even once a year. As a rule, however, the discharge recurs about every fourth week. It was at one time alleged that the recurrence had some direct association with the moon. All we can say of the manifestation is that it is a periodic phenomenon, and cannot be explained no more than we can explain that periodicity which is noted regarding many diseases.

With the approach and appearance of the monthly flow, the whole frame as one would naturally expect from what has already been stated, participates more or less markedly in the change, and the amount of disturbance experienced as well as manifested is commensurate with the power the organism possesses of adaptation, and hence of equilibration. Simple determination of blood, because of increased functional activity, to the genital, and in many cases to the other pelvic organs, of itself produces a definite alteration in the waves of molecular motion proceeding therefrom, and radiated in all directions, this trepidation must affect the vascular state of other very important structures, remote though they be from the centre of disturbance.

In many chronic disorders, of whatever system,

affecting the female, every observer must have remarked, that according to the menstrual type of the individual, there is often, either in anticipation or with the appearance of the flow a proneness to aggravation, or in some very exceptional cases to alleviation of symptoms, and with the cessation or disappearance a corresponding gradual reversion to the original stationary or progressive state. In some few cases, the loss of blood may possibly account for much of the disturbance manifested, yet it cannot be the sole factor. In many women where from some inexplicable cause, there is for a more or less indefinite period a total suppression of the characteristic discharge, I have frequently detected such a regularly recurring alteration in the symptoms or manner of the patient, as to place beyond denial the direct relationship of the disturbance to the catamenial cycle.

In no class of disorder do we find so regularly and markedly an interference with the outward manifestation of uterine activity as in *epilepsy*, a disease, the pathology of which is still undetermined. It is more than probable, however, that as we may consider the *epileptic female* as epileptic throughout, even to the finger tips, the interruption of the periodically

recurring functional disturbance in the uterus is the result of some occult condition of the corpuscular elements governing the activity of this organ, and therefore wholly independent of any defective structural state of the viscus itself. Under such circumstances, however, the structural integrity of the uterus may eventually suffer, for inaction and over-action alike tend to exert a prejudicial influence.

Gestation as a rule, although not invariably, determines for a period of nine months, a cessation of the monthly recurring flow. Not infrequently, however, we see women who throughout one or more pregnancies continue perfectly regular, the amount and character of the flow even being unaltered by the physiological process going on in the uterus, and the habit once firmly established is likely to be perpetuated and consequently inherited. In such cases the catamenial discharge is secreted by one cavity of a bipartite uterus or from that part of the uterus which is free from placental involvement. Usually the fertilised ovum affects in some inexplicable manner the uterine organ, thereafter destined to be its source of nutrition; and the gradual molecular changes so produced and radiated to the higher uterine centre alter here the corpuscular state and de-

termine the sequence of events. Disturbance of the pneumogastric centre, because of its surmised proximity to the uterine, commonly follows impregnation, hence the reason that sickness is an almost invariable association of pregnancy.

During the period of lactation and consequent activity of the mammary glands, we find not only the external manifestation of the recurring functional change of the uterus held in abeyance, but also the activity of the generative glands, as impregnation rarely occurs whilst the mother continues to suckle the offspring. Amongst women of the lower classes, the opinion prevails that so long as they continue to suckle, it is impossible that they can become pregnant. In the main this is true, yet it is well to remember that if lactation be too long continued, the mammary glands in the human female will, as in the case of the milk cow, become gradually habituated to the change and remain active, whilst the organs of generation regain their full functional activity. The life of every organism is twofold, first the maintenance of the individual, and then the perpetuation of the species. The latter, however, is always subservient to the former, and so long as there exists a demand for nourishment from the mother on the part of the child *in utero*, so long,

as a rule, will the reproductive power continue latent. Occasionally I have remarked that whilst the child is being suckled by the mother, the organs of generation continue active throughout, and impregnation resulting, signs of early constitutional enfeeblement are apt to occur.

Menorrhagia, as I have already remarked, is a symptom frequently associated with pyonephrosis in the early days of the disease, and more especially when it exists on the left side of the body. This appears to me to result from some reflex nerve influence, and is capable of being explained very much in the same way as the passage of a slightly alkaline fluid into the duodenum determines forthwith a copious secretion of bile. The liver is in direct communication with the duodenal part of the intestine, and considering that the renal and uterine organs are developed from the same primordial structure, it is not irrational to surmise the existence in the adult state of a direct nerve communication. In inflammation of the mucous lining of the fallopian tube with puro fibrinous exudation and accumulation, menorrhagia is frequently an associated symptom, and, apparently, results from some interference with the nerve supply to the uterus. It is more than likely that the nerves governing the func-

tions of the uterus are transmitted along the fallopian tubes, and although menstrual disorders may frequently result with distinct pathological changes existing in such, we must not too hastily conclude that these structures, *per se*, govern the uterine changes. In the science of medicine, there is no question more difficult, than that of determining cause and effect.

In cases of anæmia we often witness either diminution or total suppression of the *menses*, rarely menorrhagia. As we regain the healthy state the function becomes re-established and maintained as it was wont. In such cases the functional activity of the uterus may cease or be lessened, not only because the nutrition of the nerve centre is defective, but also because the organ itself is badly nourished. Functional activity is associated with waste in every animal structure, and the structural integrity is maintained, by the tissue appropriating from the blood circulating in it the ingredients necessary for its well-being. The blood of an anæmic patient is wholly unfit for nourishing nerve tissue, the functional activity of which becomes in such cases consequently enfeebled and wholly incapable of evoking spontaneously the train of events associated with menstruation. In order that the functional activity of any organ shall

continue unimpaired, the nutrition must be maintained.

The true nature of the catemenial discharge is still conjectural, yet its elimination from the body renders it highly probable that having already served some special end, its detention in the blood may exert some deleterious influence on the animal economy. It is generally admitted that ovulation and menstruation are co-incident ; that they may or may not be, I am not prepared to dispute, that however, they are invariably associated, there seems to me much reason for doubt. That the discharge of an ovum may and frequently does occur quite independently of menstruation, I have no misgivings. No one would entertain the idea of gauging the reproductive power of a female, either from the regularity or amount of the catamenial discharge. I have occasionally noted that women who menstruate with marked irregularity are prolific.

It is alleged as an established theorem that from the period of puberty to the climacteric age, there is, besides a gradual death of the mucous membrane lining the whole uterine cavity, which must ever occur to be compatible with life, a more or less regularly recurring and complete death of this coat. In the whole

animal kingdom we search in vain for a physiological change truly analogous with this. The serpent, it is true, may shed its skin more or less intact, but ere it casts off the old coat a new one is already regenerated to protect its body from all extraneous injurious influences. In vital structures change is wont to be gradual; creation and destruction proceed together. There is apparently no departure from this inexorable law. Death of the mucous lining of the uterus takes place imperceptibly, and the change, as in all organs of the body, is one ever going on. In several cases I have examined uteri removed from women who have died, not only during menstruation, but just before an expected period. In two cases the death was sudden, the patient at the time being in apparent good health. In three cases the uterine organ was invaded by growths of a fibroid character which were chiefly submucoid. To the naked eye the mucous lining appeared in all, in every respect, like that of a normal uterus examined at any time indiscriminately. In no case did I detect any breach in the continuity of the lining membrane of the uterus, except in those in which this organ had become the seat of fibroid growths. In such the mucous lining had in places become markedly

attenuated or vanished altogether, but this merely because of a vital pressure exerted constantly on this coat by the underlying new growth. Here gradual absorption had resulted very much in the same manner as bone and soft tissues disappear before the constant pressure of an increasing aneurism. I have never at any time detected any evidence of structural change microscopically in the inner lining of the uterus in cases in which this organ has been removed from the bodies of females, who have died either during or just before an expected menstruation. The glands which stud the inner coat of the uterus in its entirety, consisting of columnar cells lined by a basement as well as a limiting membrane, have, however, shewn marked enlargement in many cases so pronounced, that the outline, not only of each individual cell but of the gland itself, has been lost. The columnar cells appear swollen, and contain frequently large corpuscular looking bodies, which I believe are a simple manifestation of increased functional activity. Prior to cutting the sections by freezing in gum, the tissues had been hardened for two days in spirit and finally placed in a weak solution of chromic acid. The specimens examined were stained in a variety of ways, the best however, and

that affording the clearest definition, was *iron and pyrogallic acid.*

Those who support the denudation theory, assert that each recurring monthly flow is anticipated by a fatty degeneration of the mucous lining of the uterus, that blood is extravasated into its substance, and eventually the whole becoming disintegrated is washed away imperceptibly with the escaped blood. A new mucous membrane is thereafter by degrees regenerated from the inner layer of the muscular coat, which in its turn too, like its predecessor, must undergo a similar degenerative change and be ultimately removed from the body. Some of the lower animals, it is true, retain the power of reproducing limbs, and possibly other parts of the body when such are removed by accident. If the separation of a part be too frequently practised, we eventually exhaust the power, the structural integrity of the regenerated limb or tissue becoming less and less marked with each removal. Clinically, if the mucous membrane of the uterus were shed with each catamenial flow, it must be capable of completing its cycle of degeneration, shedding and regeneration in an incredible number of days. The menstrual anomalies which preclude the acceptance of such a dogma are many. Taking all the facts

into consideration, it is more than probable therefore that the recurring monthly discharge in the human female is a secretion, or rather an excretion, from the glands which stud the lining of the uterus and fallopian tubes without degenerative change other than that commonly associated with augmented functional activity, and comparable with that occurring in any other organ of the body under similar circumstances.

III.

Notes on Sterility from a Physiological Standpoint.

EVERY occurrence in nature is the result of some pre-existing influence, which we have agreed to call the cause, whilst the occurrence itself we call the effect. Nothing is accomplished at any time by a sudden act of transition. Nature never executes her workings, so to speak, by fits and starts, no matter how apparently sudden any result may seem to be. Interdependence is avowedly maintained. In the animal kingdom especially are such facts revealed, whether the end attained be one likely to prove beneficial to, or exert a prejudicial influence on, the species. In the whole organic world change is wont to be gradual. The process of generation manifests the same phenomenon; between that state favourable to the production of a numerous offspring and that culminating in complete sterility there exists no

distinct line of demarcation, so gradually in fact do the two states glide into each other, that we are wholly unable to say where the one ends and the other begins. We may encounter, therefore, every degree of fertility not only in the vegetal but in the animal kingdom as well.

The reproductive function, no matter how fulfilled, is wrapt in obscurity and full of the greatest complexity, yet from a scientific point of view teems with questions of the deepest interest. In support of this tenet witness the mysterious influence of a first fruitful coitus on the progeny resulting from an immediately succeeding sexual congress. A purely bred Arabian chestnut mare was covered by a quagga, the resulting offspring was a hybrid. Now the same chestnut mare was, at a later period, covered by a black Arabian horse, yet so manifestly prepotent was the influence of the coitus by the quagga, that colts fathered by the Arabian horse had the hair of the mane like that of the quagga, short and stiff. The quagga after the birth of its own immediate progeny had never had an opportunity of covering the mare again. Here the first coitus affected in a marked, although wholly inexplicable manner, the offspring of the Arabian horse. The effect of a single coitus may in some cases even exert

for a long time afterwards some influence in the progeny. In order to have as far as possible a clear conception of the multifarious influences at work tending to induce sterility, we must approach the whole subject and attempt to elucidate revealed facts with a mind free from all bias. In this way alone can we serve the end of science by encouraging truth. Lack of observation is the bane of all progress in medicine.

In man and the majority of animals, perpetuation of the species is maintained by a process of gamogenesis by a coalition, and further segmentation of the germinal elements, produced by two sexually distinct individuals. This participation in the act of generation by two parents necessarily hinders us in our investigations regarding those causes which are constantly at work, and liable to the greatest variation, act and re-act directly or indirectly on the reproductive organs. In the case of the male parent, all interest actually ceases with the emission of the sperm element. That there was a time in the evolution of life when the progenitors of the mammalian class of animals, male and female alike, yielded milk and aided in sustaining the young by this secretion, there appears to be but little doubt. All male mam-

mals possess mammæ, and although these glands are now invariably functionally inactive, now and then we find them well developed and functionally active, not only in man but other male animals as well. Facts, therefore, favour the view that in the early days male and female alike participated in the nourishment of the progeny. Why, however, the males should have ceased to share in this great function is a question for pure speculation.

The mother, on the other hand, not only produces a germinal element, but must retain and nourish the impregnated mass for a more or less definite length of time, until, in fact, the resultant shall have reached that state of developmental perfection enabling it to maintain an independent existence. Our inquiry, therefore, into the causes of sterility must not treat merely with those glands concerned in the production of the germinal elements, and the relative affinity of these elements for each other, but deal also with those constitutional conditions which, directly or indirectly, interfere with the functions of the whole reproductive tract and the competent fulfilment of its requirements. When we remember that the female plays the all-important part, and for a continued length of time, in the production of offspring,

it is not astonishing that we should so frequently find authors disposed to attribute the cause of failure in the sexual congress to become fruitful, to some occult influence at work on the part of the mother. This admission does not, however, imply a need for the detection of some structural change in the organs of generation in a female who, because she has legitimately indulged in sexual intercourse for years, has never become pregnant. This I need hardly add is too commonly revealed, but merely as a result of defective observation. In the majority of such cases the alleged alteration in structure has no other than a fanciful existence in the mind of the observer himself. Be not carried away too readily by a semblance of brilliant results obtained by a too meddlesome interference, for careful observation teaches us that the good which follows is, as a rule, the outcome of an enforced sexual rest. In order that any organ of the body shall continue to perform its functions healthily, time must be allowed for the structure to regain its vigour after each period of activity. If sufficient rest be not obtained, the function becomes impaired and the structure itself may eventually undergo change, because of a maintained vascular turgescence. An immoderate indulgence in sexual intercourse, or

an artificial mode of gratifying this passion, tends to induce a state of sterility, and the possibility of conception thereafter is only favoured by a complete sexual rest, followed by a moderate indulgence in the act and its legitimate practice. In the human race there are so many factors at work, not only in the social life, but habits of the individual which thwart us in our endeavours to elucidate questions bearing on the reproductive process, that our chief and reliable information regarding those many causes which tend to induce a sterile state must be obtained from those facts afforded us by the whole organic world, whether it be vegetal or animal.

Lately I saw a patient who at the age of thirty-six had given birth to her first child, and who, although living a marital life for eight years, had never before been pregnant. In this case I found, on interrogation, the delay in conception was the result of the adoption on the part of the husband of a simple and well-known method of protection, and this because of a mutual desire on the part of the husband and wife to be free from the cares of a family. That certain physical states occurring in the organs of generation hinder conception is apparent to everyone, that, however, they are manifestly

over-rated there is no doubt. Never, for example, do we find the lumen of the cervical canal of the uterus so narrowed in a female, otherwise reproductively healthy, as to be a fertile cause of sterility. In order that this may receive some credence, it may be well to recall here the train of events consequent upon impregnation in the bird, as throwing some light on the location at which in the reproductive tract, the sperm and germ cell as a rule meet and coalesce. The egg in birds after fertilisation becomes coated with a calcareous product—the shell, which serves only to protect the contained mass from all extraneous injurious influences, to which, during the process of incubation, it may chance to be exposed. The secretion of this calcareous incrustation takes place in the lower and somewhat dilated portion of the oviduct, the part closely analogous with that which in the human female becomes uterus. Prior to this calcareous deposition taking place the impregnated mass receives an albumenous covering derived from the upper and tortuous part of the oviduct. In this case at least, and possibly in all other animals with a similar reproductive tract, the germinal elements coalesce somewhere about the free extremity of the fallopian tube. So long, therefore, as the lumen of the cervical

canal continues equal to that of the oviduct, it cannot *per se* offer any very serious obstacle to conception. Occasionally we find eggs extruded—by the female bird—which have no calcareous covering, the result of some defective fulfilment of function on the part of the dilated portion of the oviduct. Under such circumstances the impregnated mass, protected only by a membranous coating, cannot readily be hatched, liable as it is to be disturbed by influences acting on it from without. The failure, therefore, on the part of the oviduct to furnish this calcareous coating, must be viewed as a tendency to sterility.

In all animals the reproductive organs, it would seem from facts collated, are highly sensitive. The most trifling changes in the habits or surroundings even serve in some occult manner to disturb the function. In very many cases the suspected agencies at work are so trivial that we can hardly credit the potency. Animals tamed and kept in their own country may become sterile, and this apart from any negligence, in the way of food or want of attention, to the general comfort of the animals, on the part of those who keep them. Elephants domesticated in their native home, living to a good old age and evincing no manifestation of

physical deterioration—capable as they are of performing a great amount of work—have never been known to couple, although the functional activity of the generative organs, it would seem, continues. Mares brought up for a long time in stables on dry food continue sterile. A mere change in food and surroundings will, however, render them fertile. Slight changes will affect the reproductive power of animals. It has been noted by some observers that the lions which belong to travelling shows are more prolific than those kept in our Zoological Gardens. Why this should be so is difficult to understand. The animals kept in shows are not better fed, not better tended than those in the gardens. It is, however, possible that the constant variation in surroundings, and the perpetual state of excitement induced by their movements from place to place, may account for their greater sexual vigour. In some cases domestication increases fertility, and this apparently because of a more easy access to food, the supply being more abundant, and the nature of the food being at the same time more highly nutritious. The lion when confined breeds freely, and produces a greater number at a birth, than any other member of the same tribe. It is some-

times noted, however, that domestication, apparently because of the easy access to and abundant supply of food, produces impotence, the sexual appetite at the same time remaining unimpaired.

The bears kept in the Zoological Gardens have been seen by the keepers to couple frequently, yet the congress seldom proves fruitful, for they rarely produce young. Under confinement male birds evince constitutional change, as they often lose their characteristic plumage, yet the organs of generation continue active, and the bird is as fertile after, as it was before, the change. It is therefore difficult, nay, absolutely impossible, to dogmatise regarding the efficacy of over nutrition as a factor inducing sterility. The sexual passion may continue in abeyance without any apparent reason and without co-relative change being evidenced in the physical well-being. Absence of sexual passion does not, however, in the female imply sterility, for we frequently find women, who, experiencing no pleasure whatever during coitus, nevertheless conceive and sometimes even prove as fertile as those in whom the passion is readily excited. Multifarious and slight it would seem are the changes in the life of the animal and its surroundings which may affect in some occult

and wholly incredible manner the reproductive power. A gardener and his wife lived together for ten years in full connubial state in a little village on the east coast of Scotland. During residence here the wife had never been pregnant. Circumstances about this period of married life compelled them to migrate to a village in the South of England, and some time after taking up their abode in this part of the country, which was warmer than that of Scotland, the wife became pregnant, and eventually was the mother of four children, the husband being the father. In this case a simple change in climate and surroundings was sufficient to determine fecundity. Every male and female mated is not fertile, yet each separately may be highly endowed with the power of procreation, for this same male and same female mated with another female and another male respectively may prove eminently fertile, and produce a numerous offspring. The germ and sperm cell may meet and coalesce; in order, however, that an uninterrupted segmentation may be evolved they must produce by their union not a state of equilibration, but a state of molecular disturbance. If the molecular waves of the two elements are too closely allied to each other, they induce a state of equilibrium with which all vital reaction

ceases, and no further evolutional change becomes possible. If two forces of equal intensity act upon each other in opposite directions a state of rest will result. It is possible thus by adding light to light to produce darkness, or by adding sound to sound to produce silence—the waves of the one force are spent in overcoming the waves of the other force.

It is noteworthy, therefore, that the fault causal of sterility may be assignable to neither parent but to both. The elements produced by each are, in reality, too closely analogous to each other. Placed even under the most favourable circumstances they fail when they comingle to act and re-act upon each other so as to produce that amount of instability needful for further segmentation, and the production of an independent being. This form of sterility is the result of a sexual incompatibility, the reproductive elements derived from two independent beings lacking that amount of dissimilarity requisite for developmental change. In man we find abundant proof of the existence of this anomalous phenomenon. Recently I saw a patient who during fifteen years of marital life with a first husband never became pregnant, yet coitus was fully accomplished and completed. At the age of forty this woman, losing her first

husband, married again and, strange to say, an early sexual congress thereafter proved fertile, and the woman soon after her second marriage became pregnant for the first time. A dog, of known sexual activity, may cover a bitch several times under the most advantageous circumstances, yet the bitch continues barren, and this because of a mere sexual incompatibility; in order to prove the power of procreation it is only requisite to have her covered by another dog. A cart mare covered by a blood horse may, in like manner, prove sterile, whilst the same mare covered by a cart stallion may readily conceive and give birth to a fully mature colt or filly. With plants we witness the manifestation of incompatibility, and this even in the case of grafting. The gooseberry, as is well-known, cannot be grafted on the currant, yet the currant will grow when grafted on the gooseberry. This anomalous reciprocal behaviour baffles the human mind, for we fail to detect any real structural difference between the nurturer and the nourished, or any reason whatever for this apparent incongruity. Both male and female may be quite fertile, yet, because of the existence of some sexual incompatibility, when mated together they are wholly sterile.

Frequently we see women who seem to ex-

haust their full reproductive energy in giving birth to one child, as they never afterwards conceive, and this apart from any detectable structural change. The individual may note no change in the general health, the sexual functions may be as thoroughly maintained, and the congress may be as completely effected as before, yet the sterile state prevails. Barrenness, be it remembered, is wholly independent of change in the general health of the individual, and is frequently remarked as an association of excess of size and great luxuriance. In plants it has been noted that very high nutrition lessens materially, and may even arrest completely, the reproductive power. Many of our trees which become most luxurious, and bear flowers or fruit but seldom, are made more productive by cutting the roots, and thereby lessening the amount of nutrition. I have frequently remarked that women who tend to lay on fat rapidly are most apt to become barren. In the majority of such cases the adipose tendency is a morbid condition, and sterility is a mere concomitant, depending as it does upon that condition inducing the obesity. As I have already observed, the energy expended by the male in the process of perpetuating the species is comparatively slight compared

with that demanded of the female. Sterility, therefore, we shall find often depends upon failure on the part of the mother to supply that amount of nourishment requisite for those evolutional changes consequent upon impregnation. Women who abort habitually are practically sterile. The young of animals born under confinement are either born dead or die soon after birth; sometimes they are badly formed. As a rule sterility is a physiological co-association of functional activity of the mammary glands. This is due to the fact that at least for a time these glands continue to withdraw from the body of the mother that amount of nourishment which otherwise would be devoted to the maintenance of the reproductive activity. In the case of the cow we witness the perversion of this law of nature by habitual interference on the part of man; the mammary glands through constant use being made to secrete milk quite independently of the reproductive system. Women who marry early may for a time give birth to children too rapidly, but eventually the reproductive energy begins to wane, and a state of sterility is induced; the general health of the individual as a rule becomes impaired; in some few cases, however, no sign of deterioration may be evinced. Such

women tend often to miscarry, and this disposition in turn is essentially one verging on sterility.

Bees and ants teach us that—other things being equal—a life of ease and idleness is that most favourable for reproduction, whilst a life of great activity predisposes to barrenness. According to the amount of nourishment the larva receives, it becomes either the small sterile ant or the large fertile female. It cannot of course follow—remembering what I have already stated—that every animal will evince an activity of the reproductive system corresponding with the amount of pabulum it is capable of utilizing. A race which is idle physically and mentally, at the same time that it is well fed, is likely to prove more fertile than one living under directly opposite conditions. The servants of races cruelly treated and made to undergo the most severe physical exertion, are either totally barren, or at least less prolific than those placed under most advantageous circumstances, *i.e.*, living a life of comparative freedom. Twins and triplets, it would seem, indicate a higher state of functional activity of the reproductive organs than usual, consequent it may be upon an abundant supply of food which is easily assimilable. Kaffir women who live

chiefly upon flesh and milk are most prolific, and give birth almost as frequently to twins as to single children. That the higher education of women is detrimental to the race there can be no doubt, tending as it must to engender a state of sterility, or what is worse, to the production of a race evincing great constitutional enfeeblement.

IV.

Prolapsus Uteri.

Descent or "falling" of the uterus, so that the organ occupies a lower position in the pelvis than it ought to, or even protrudes beyond the external genitals is a mere physical, although very evident sign of disorder. It may exist quite independently of any change in the uterus itself, and is the result of a constitutional deterioration, or, it may be, a simple structural enfeeblement of a more or less local character. The weight of the uterus may be materially augmented by the presence of some slowly developing neoplasm, yet no prolapse necessarily results, and this because of an inherent power of adaptation to circumstances on the part of those tissues which serve to support and maintain the organ in position. Compensation, so to speak, has been established. Mere passive weight will not determine any alteration in the position of the uterus, for the abdominal

cavity may be distended to an enormous extent with fluid gradually effused, and yet no descent of the pelvic floor occur. In cases of ovarian dropsy no prolapse as a rule is noted so long as the cyst wall remains intact; should, however, rupture occur, the somewhat sudden extravasation of the fluid contents will invariably determine a descent of the uterus more or less marked, the pelvic tissues already enfeebled being wholly unprepared for such a super-addition of unsupported weight.

In the organic as well as in the inorganic world interdependence is avowedly maintained. Each particle of a magnet is as complete a magnet as the aggregate mass, the one half repelling whilst the other half attracts. In the vegetal and animal kingdoms alike the integrity of tissues is dependent upon a maintenance of these two opposing forces co-relative with an inherent power of adaptation to circumstances. Nature executes her workings at all times with a freedom from superfluousness. It is merely our ignorance of her plans which leads us to believe that certain structures serve no useful purpose in the animal economy.

Normally the uterus is suspended in the pelvic floor, and with this structure rises and falls simultaneously with each ascent and descent of

the thoracic diaphragm. The uterine ligaments are structures actually continuous with and entering into the formation of the pelvic diaphragm; they are therefore functionally inseparable. In like manner, although the vaginal canal may be removed more or less completely without producing any alteration in the position of the uterus, still the well-being of the pelvic floor is dependent directly or indirectly upon that of the vaginal walls and other neighbouring structures. Structural enfeeblement means inpairment of function; anything therefore which constitutionally or locally produces a loss of tone in those tissues which each and all serve to maintain, the position of the uterus will induce a disposition to, or result in, a more or less complete prolapse of this organ.

"Falling" of the uterus may occur at almost any period of life after the establishment of menstruation; it is sometimes complained of before the attainment of puberty, and occasionally I have noted its existence in women who have never menstruated at all, although now well advanced in years. It may occur for the first time after the cessation of uterine activity. Although frequently induced by constitutional changes and local conditions dependent upon gestation and lactation, prolapse

of the uterus may nevertheless appear in the virgin as well as in the multiparous female. When the disposition to prolapse exists, it is the anterior wall of the vagina which is the first to evince the tendency, depending as this structure does upon its own inherent tone for the maintenance of its position, and the support that it offers to the bladder. The posterior wall of the vagina, on the other hand, derives a certain amount of support indirectly from the sacrum through its incorporation with the rectum. In attempting to reduce an incarcerated prolapse of long standing, it is well to remember this mode of development, for the anterior wall being invariably the first to descend should be returned last, whilst full attention should be directed primarily to the return of the posterior wall.

The symptoms associated with initial descent or complete prolapse of the uterus vary not only according to the amount of enfeeblement of those tissues which enter into the formation of, and aid in supporting, the pelvic floor, but also according to the amount of functional impairment of other very important structures, to wit, the abdominal and intestinal walls. If the function of the abdominal walls be materially impaired, the viscera suffer more or less mark-

edly from the withdrawal of that vital support requisite to a certain extent for their well-being. Atony of the gut, on the other hand, not only aggravates the disposition to prolapse by engendering constipation and impairing the general nutrition of the body, but also by allowing the intestines to fall more passively than otherwise they would do, upon the uterus and pelvic floor. In cases of initial prolapse the patients as a rule feel, comparatively speaking, well for some hours in the morning; as the day wanes however, a dragging pain is experienced in the loins, associated with more or less bearing down. Such symptoms are, of course, as one would expect, aggravated by fatigue, and the maintenance of the erect position for too long a period. The majority of women who suffer from this disorder, even when there exists complete prolapse of the uterus, experience immunity from all the distressing symptoms so long as they continue recumbent.

Locomotion is invariably impeded when the uterus projects beyond the external genitals, and the condition of the patient is then rendered altogether most miserable. The mucous membrane then exposed loses its soft velvety character, and becoming eventually somewhat hard and dry resembles that of cu-

taneous tissue. The mere friction of the dress, or that resulting from the use of a diaper to support the uterus, may in time determine an extensive erosion, or even a deep ulceration of the cervix, which may bleed more or less constantly. Under such circumstances the pain may become most distressing, and is, as a rule, augmented by the urine passing occasionally over the raw surface. The bladder, resting as it does upon the anterior wall of the vagina, essentially descends with its prop, thereby the axis of outlet is altered, and sooner or later there is some manifestation of functional disturbance of the viscus. The patient, except when recumbent, experiences invariably a frequent desire to pass water. There may even be complained of an inability to void urine, except when the patient assumes the knee elbow position, or whilst maintaining the erect posture. Complete retention of urine does occasionally result. As a rule, the functional activity of the uterus continues unimpaired. The size of the organ may, however, become somewhat augmented, and consequently the menstrual discharge increased in quantity. Prolapse of the uterus more or less complete does not hinder conception. When impregnation results, utero gestation may proceed

uninterruptedly to the full term. In one case sexual intercourse actually took place in the uterus itself, the os uteri having previously been dilated to allow of the introduction of the male organ. As a rule, a prolapsed and impregnated uterus tends to assert its position after the fourth month. When the organ has risen out of the pelvis, the patient, as a rule thereafter, experiences no further discomfort of note till after delivery. About the fourth month, however, it may produce a disposition to complete retention of urine for a few days on account of simple pressure. In a few rare cases, throughout the whole period of pregnancy, the uterus has developed externally, reposition never having resulted.

The physical signs necessarily vary according to the extent of the structural enfeeblement. In the early days the disposition to prolapse is detected by a certain laxness of the vaginal walls, noted especially anteriorly in that pillar which supports the bladder. When the uterus actually protrudes externally, the condition is only too evident, and the orifice of the vagina is, as a consequence, apt to lose its tone and become more or less patent.

Occasionally I have seen a congenital elongation of the cervix, or a long fleshy polypus mistaken for prolapse.

Treatment.—In the worst cases of prolapse, when the vaginal walls have lost almost entirely their tone, a mechanical support must be resorted to, after reduction. For this purpose I prefer the watch spring or Zwanck pessary. The Zwanck may be modified at will and supported by bands coming from the waist in aggravated forms of the disorder. Great cleanliness is requisite. The pessary should be removed each night when the patient retires to rest, hence the advisability of using some such instrument as a ring or Zwanck, capable as this is of being introduced or removed by the patient herself. If there be extensive erosion or ulceration of the cervix, it is requisite, of course, to heal such before introducing any support. In the early days of the disorder, before the vaginal walls have lost entirely their tone, no pessary should be introduced, strong though the temptation is, to make use of such, because of the immediate comfort likely to be experienced.

Attention should be directed to the recovery of the structural integrity of the parts by the aid of local tonics, such as an injection of infusion of quassia or decoction of cinchona with or without the addition of infusion of digitalis. Lately I have obtained good results from the use of a suppository, containing :—

Quin. hydrochlorate ...	...	...	gr. iv.
Digitalis ...	...	...	gr. $\frac{1}{60}$
Strychnia ...	...	...	gr. $\frac{1}{30}$

The suppository may be inserted in the vagina night and morning, an injection of warm water being used prior to each insertion. Constipation, especially, should be avoided, and great attention should be paid to dress. Improve also the general constitutional state of the patient. If the abdominal and intestinal walls have lost their tone, every attempt should be made to regain such as far as possible. The use of an abdominal belt, unless such be specially adapted to the requirements of each case, can only serve to aggravate existing conditions by pressing the already more or less passive contents of the abdominal cavity down on the uterus and the pelvic floor.

V.

Fibroid Tumours of the Uterus—Fibroma, Myoma and Adenoma.

Fibroid tumours of the uterus, generically so called, are composed of tissue homologous with one or more of the chief structural components of the organ itself. They are capable of being subdivided into three varieties, fibroma, myoma and adenoma, according as the neoplasm is made up in greater part of fibrous, muscular, or gland tissue respectively. Tumours developed in or from the structure of the uterus, may be uniform throughout; frequently, however, we find all three fully formed tissues co-existing in the same new growth to a more or less marked extent. Much needless controversy has from time to time arisen regarding the nomenclature of such benign tumours of the uterus, although there exists no doubt but that they ought to be named according to that structure which appears to form the principal part

of the growth. I shall describe the structural differences of three varieties, retaining at the same time the common use of the term fibroid, serving as it does all clinical purpose. The connective tissue type of neoplasm is moreover that of most frequent occurrence. The fibromata are tumours consisting essentially of fibrous tissue. The fibres are occasionally grouped together in bundles ; usually, however, they are irregularly distributed, although closely interlaced. The stellate corpuscles characteristic of connective tissue are, as a rule, few in number, especially when the tumour has been one of extremely slow growth. Under such circumstances the tissue developed is of a most typically fibrous nature. This form of neoplasm, requiring as it does but little nourishment, is badly supplied with blood vessels ; the walls of the latter are, however, unfortunately incorporated with the structure of the growth itself. When rupture of a blood vessel occurs, the hæmorrhage is apt to be profuse and continued, retraction and ultimate contraction of the coats of the vessel being rendered difficult or almost impossible. The fibromata vary in consistence according to the nature of the connective tissue of which they are composed; the majority, however, are extremely hard and dense.

They are liable to undergo mucoid change, and in a few rare cases they have become calcareous throughout, and been expelled *per vaginam*, constituting what the older writers termed uterine calculi. Cystic change may occasionally result in the fibromata consequent upon hæmorrhage into their structure; they seldom, if ever, undergo true cystic change such as we witness in the case of the adenomata.

The myomata are tumours composed principally of non-striated muscle, which structurally resembles that constituting the contractile part of the normal uterus. The cells are of an elongated spindle shape. All muscle neoplasms contain a greater or less amount of connective tissue; the adoption, therefore, of the appellation myofibroma is wholly unnecessary. The blood vessels run in the connective tissue, and, as in the case of the fibromata, the walls of the blood vessels are intimately connected with this fibrous structure. This form of new growth may become œdematous, possibly as a result of some interference with the nutrition. It may also undergo calcareous change. When such tumours become cystic, it is invariably as a result of change in a portion of the growth which was glandular in structure, or occasionally, as in the case of the fibromata, it may depend

upon the extravasation of blood into the growth itself.

The adenomata are neoplasms composed of racemose or tubular glands. The tubes lined with cylindrical, or (rarely) squamous epithelium may either be grouped together more or less closely, or be separated by a varying amount of connective tissue in which the blood vessels are supported. This type of growth is that which results in cystic formations, and constitutes what ought, strictly speaking, to be termed fibro-cyst of the uterus. Usually the cystic swellings are unilocular; the multilocular variety may however occasionally be developed. An adenoid tumour of the uterus undergoes cystic change in a manner corresponding exactly with any other glandular structure; for example, the ovary, an organ of the body specially prone to reveal this tendency. Fibroid tumours of the uterus insidious in their growth may apparently originate at almost any period of life, seldom however after the cessation of the functional activity of this organ. In European women they are common enough. It is alleged they are much more frequently met with in negresses. The whole uterus may become the seat of change and undergo general and uniform enlargement, or one or more well-defined tumours may grow

in or from the organ. When uniformly invaded, the uterus may attain a large size, weighing as much as forty pounds, and single encapsuled tumours have occasionally reached this weight.

Fibroids develop in any part of the uterus indiscriminately—in the cervix and body alike. They become according to their location in the structure of this viscus intramural, subperitoneal, or submucoid, terms which, intelligibly applied, require no explanation. Like other new growths they may inflame. This is specially true of the subperitoneal variety, which is apt to form adhesions with some part of the gastro-intestinal tract, or with some other neighbouring organ. Into the softer tumours hæmorrhage occasionally takes place and determines a cystic formation, constituting the so-called hæmorrhagic cyst. The typical cyst is, however, always developed from adenoid tissue. If the nutrition of such new growths, which in the harder variety is already scant, be materially lessened, the impoverished structure is liable to slough. The supply of blood in the case of the subperitoneal variety may be cut off by a twist of the pedicle. The submucoid, and the intramural growth as well, which tends to develop towards the interior of the uterus.

derives a certain amount of nutrition from the overlying mucous membrane. The vital pressure exerted by the underlying new growth destroys or gradually absorbs this covering, the disappearance of which, by lessening the supply of nourishment, induces a gangrenous state of the tumour. The small blood vessels in the neighbourhood of a fibroid occasionally become varicose, and rupturing may prove a troublesome source of hæmorrhage.

Fibroid tumours of the uterus are, as a rule, encapsuled growths, the capsule itself being intimately or loosely connected with the surrounding tissue of the organ. In some cases they are capable of being shelled out readily, whilst in others the neoplasm and uterine structure are so blended together that it is impossible to remove the new growth, without at the same time removing part of, and injuring in this manner, the uterus itself. When a fibroid develops in the wall of the uterus as nearly as possible midway between the mucous and peritoneal surfaces, the surrounding tissue tends to hypertrophy, and the tumour may therefore be maintained more or less markedly as an intramural growth throughout its existence. All neoplasms, however, evince an aptitude to develop in the direction of least resistance, and so

make their way most speedily towards a free surface, hence the reason that we so frequently find fibroids of the uterus becoming pedunculated and projecting either into the uterine or abdominal cavity. It is alleged, and possibly with some feasibility, that tumours immediately underlying the mucous or peritoneal surfaces, are aided in their progress towards these free surfaces by the muscular contractions of the organ itself. A fibroid may never become pedunculated, but continue throughout its existence a sessile growth connected, that is, by a broad base, or practically embedded in the structure of the uterus. Pedunculated subperitoneal tumours are capable of great mobility, and wander about in the abdominal cavity, their location being even inconstant.

These new growths affect the uterus in a variety of ways, and deviation of the organ in one or other direction, according to the seat of the neoplasm, is likely to result, if compensation be not established. Under such circumstances, in order that the uterus shall maintain its erect position, the structural integrity of the organ otherwise must continue unimpaired or be even augmented. If the integrity of the opposing wall be defective, the mere passive weight of the tumour is sufficient to determine a version more or less marked.

Complete inversion of the uterus may in like manner result, the mere weight of a developing new growth seeming to induce this anomaly in an organ already enfeebled, expulsion of the offending body being at the same time aided by the feeble contractions of the uterine wall.

Frequently the subperitoneal growths form attachments with other organs, and occasionally they have been, so to speak, found free in the abdominal cavity, the pedicle attaching it to the uterus having ruptured. Nutrition is then feebly maintained through the agency of inflammatory adhesions which surround it.

Regarding the predisposing causes of such tumours, nothing whatever is known. In many cases inheritance appears to play an all important part in their production.

Complications and symptoms.—I have found it advantageous to group these two together, as the symptoms resulting from the presence of a fibroid are often wholly dependent upon existing complications. Insidious in their growth as a rule, innocent tumours of the uterus may produce little or no inconvenience, except that accruing from size and pressure. They may, therefore, have been in existence for years before the patient herself becomes aware of the presence of anything abnormal.

Menorrhagia is the most frequent manifestation of fibroid change occurring in the uterus; it is not, however, an invariable association. Occasionally complete amenorrhœa is complained of, and this more especially at the initial development of a somewhat rapidly increasing growth into the structure of one or other broad ligament. In this case it would appear the interference with the recurring functional activity of the uterus is the result of some nerve disturbance, for menstruation eventually becomes re-established, the amount of the monthly discharge being either unaltered or more profuse. I have frequently seen women suffering from general fibroid change of the uterus, the tumour reaching to and extending even beyond the umbilicus, who have menstruated with perfect regularity, the flow being unusually scanty, the patient never at any time having suffered from profuse menstrual discharge. In the majority of such cases, I have noted this tendency in women prone to lay on fat, or in those addicted to the free use of alcoholic beverages. The lessened functional activity of the uterus in a state of hypertrophy and the abnormal accumulation of fat in the body are co-related, and dependent upon the same primordial cause. If the neoplasm be of the subperitoneal type,

no change may occur in the amount or regularity of the monthly flow. Should, however, the uterus be enlarged by a general change in its structure, or by the presence of an interstitial or submucoid tumour, menorrhagia or metrorrhagia is likely to result. The flow may be augumented because of an increase in the extent of the secreting surface. More commonly it will be noted that hæmorrhage of a varying amount is due to some direct interference with blood vessels, consequent upon the vital pressure exerted by the underlying new growth. A breach in the continuity of the vascular channels having thus resulted they prove a fertile source of hæmorrhage on the slightest provocation. Loss of blood from such vessels may be more or less constant or occur only in association with that vascular turgescence co-relative with increased functional activity. It is therefore frequently manifested just before, although at the same time inseparable from, an expected period, the recurrence of the monthly flow being thereby practically hastened. When rupture of a surface vessel imbedded in the structure of the tumour occurs as a result of necrotic change, so to speak, the possibility of retraction and closure of the walls is rendered necessarily difficult, because of the

fact that the vessels run in and are intimately connected with the fibrous tissue of the growth. The more typically fibrous and therefore dense neoplasms are the most dangerous for this reason, inducing as they may, severe hæmorrhage, and this apart from the influx of blood to the uterus, determined by each recurrence of augmented activity. Hæmorrhage from vessels contained in the softer varieties of uterine growths is more readily stayed, the vessel being more easily affected by our usual hæmostatics. Lately I saw a patient who was suffering from a small submucoid fibroid of a sessile nature in the anterior wall of the uterus. For twelve months she had been losing more or less constantly, but strange to say the hæmorrhagic discharge, which ceased invariably during the night, when the patient was recumbent, reappeared only after the effects of gravitation and locomotion had been in existence for a few hours—usually about twelve o'clock midday. Pain is a symptom seldom complained of, but when experienced depends upon a variety of causes. If the tumour be submucoid pain likened to that of labour may be induced because of the uterus attempting to expel the offending body by contraction of its muscular coat. The serous membrane covering a sub-

peritoneal growth may become inflamed and cause pain of a more or less severe character. The chief pain however is that resulting from pressure, and this especially when the tumour is so located, that it actually grows into the structure, and develops between the layers of the broad ligament on either side. Pain is then referred to one or other side of the pelvis, and complained of as being radiated down the leg of the same side, either down the inside of the thigh as far as the knee, or down the back of the whole leg as far as the heel. Inflammatory changes may be set up in and around the tumours and produce compatible symptoms.

The mucous membrane covering the tumour may disappear from pressure, and the growth thereafter slough more or less extensively, discharge of an offensive character being complained of, in association, it may be, with symptoms resulting from septic absorption. Occasionally, although rarely, the abdominal cavity becomes distended by serous exudation, when one or more pedunculated tumours of the subperitoneal variety exist. The fluid exuded is the result of mere friction, as a rule, although at times it may be dependent upon inflammatory change. The physical signs of dropsy of the peritoneum under such circum-

stances are exactly the same as those characteristic of ascites from other causes. The fluid may be either encysted or free.

A more or less constant feeling of simple pressure upon the rectum may be complained of, and interference with the return of blood may, although rarely, induce hæmorrhoids. When a fibroid grows from the left and posterior walls of the uterus, the lower part of the sigmoid and upper part of the rectum may become incorporated with the new growth, and produce thus complete obstruction of the gut, especially if inflammatory changes be superadded. I have seen rupture of the intestine occur above the seat of constriction, and death as a consequence, the contents of the bowel being evacuated into the abdominal cavity. The inflammatory change originated may produce matting more or less extensive of the pelvic viscera, and even end, as in a case which I recently saw, in abscess formation, and ultimately in a fistulous communication between the bladder and bowel. Cystitis may be developed by extension of the inflammatory process from the peritoneum covering the neoplasm to that covering the bladder and eventually involve the whole thickness of the walls of this viscus. I have seen fæcal matter expelled with the

urine, the result of adhesion, and finally the establishment of a fistulous opening between the sigmoid and bladder. If a neoplasm develop low down in the anterior wall of the uterus below the place where the peritoneum is practically reflected, the posterior wall of the bladder, so to speak, is liable to become incorporated with the developing growth, and the functions of this organ are thereby gradually, although eventually, markedly disturbed. Under such circumstances this posterior part of the bladder is rendered wholly useless, contraction of this portion being prevented because of its intimate connection with the new growth. The bladder somewhat elongated by a process of drawing up, empties its contents feebly, by a disadvantageous contraction of the remaining free wall. A fibroid growing in this way may induce a retention of urine, noted especially just before an expected period. There may exist also a frequent desire to pass water, the act of micturition being slowly completed. If a fibroid develop in any part of the anterior wall of the uterus above the peritoneal reflection, the mere passive weight of the new growth may determine a version forwards, and the uterus thus lying on the bladder creates the sensation of a frequent desire to pass water.

Uterine versions of a more or less aggravated form I have found due more frequently to the existence of small fibroid nodules in the walls of the organ than the majority of authors are disposed to admit. The resulting deviation varies according to the location of the new growth. The patient may seek advice because of an enlargement of the abdomen, or on account of profuse menstruation. In a few cases I have been consulted because of a sudden and complete inability to pass water, more especially just before an expected period. Here retention of urine was determined by a simple increase in the size of the tumour already occupying almost completely the pelvic cavity. Relief is experienced by a diminution in size consequent upon the reappearance of the usual monthly flow. Leucorrhœa may be a symptom associated with fibroid change of the uterus. Sometimes the discharge complained of is thin and watery, the secretion then being due to the presence of a growth of the adenoid type, the mucous covering of which has probably become eroded.

Fibroids, be it remembered, do not necessarily hinder conception, nor do they when impregnation results invariably prevent utero-gestation being fully completed. Occasionally

when the patient becomes impregnated under such circumstances, and carries the child to the full term, the uterine contractions cause the birth of the tumour prior to or after that of the child. Innocent tumours of the uterus have even been known to disappear with the process of involution. Women who suffer from fibroid growths do not always appear anæmic ; even when the monthly discharge is profuse, they continue to look well. The tendency, however is, if the hæmorrhagic discharge is markedly augmented, for the patient to become and continue more or less pale and bloodless in appearance.

The physical signs necessarily vary according to the size, seat and character of the new growth or growths. As a rule fibroid tumours are somewhat hard and dense. Because of their direct continuity with the uterus they move more or less readily this organ when they are moved, and this, as a rule, can be readily elicited by a careful bimanual examination. The introduction of the sound into the cavity of the uterus aids but little, if at all, in arriving at a conclusion regarding the nature of an existing pelvic growth. In the hands even of the most experienced, the use of the sound often gives rise to changes which are apt to

aggravate already existing symptoms. The uterus when the seat of fibroid growth is not invariably elongated; it is well to remember, too, that the uterine cavity may be drawn out because of other subsidiary causes. If, therefore, too much reliance is placed on the measurement of the uterine cavity, we are apt to be misled and form thereby a totally erroneous diagnosis.

Treatment.—Unless the symptoms resulting from the presence of a fibroid tumour imperils, or is judged likely to imperil, the life of the patient, or renders her wholly unfit for her avocation, mere palliation should be attempted. If the hæmorrhage be severe, special attention must be directed to the staying of this by careful dieting and the use of appropriate hæmostatics. If the tumour be of the softer variety, ergot, in conjunction with iron, will be found, as a rule, most useful. Gallic acid and oleum terebinthinæ I have also used in some cases with marked benefit. In some cases the hot douche may be employed advantageously. Rest should be enforced in the recumbent position, and if necessary the foot of the bed or couch raised on blocks of six or twelve inches in height. If pain be severe, morphia, bromide and conium, or some other drug of like action, may prove

of use in allaying this very distressing symptom.

If deviation of the uterus has resulted from the presence of a developing fibroid, I am inclined to believe the introduction of a pessary, instead of being beneficial, is likely to prove after some time detrimental, inducing, as it is so apt to do, pelvic peritonitis and the serious train of events consequent upon this grave complication. We ought rather to combat, if possible, and overcome that state of uterine tissue favouring version, and thus by re-establishing compensation, enable the uterus to maintain its erect position. If the hæmorrhage come from a vessel so placed that there is little possibility of its retraction and closure under existing circumstances, scraping the interior of the uterus may favour this end, and the patient may experience for some time thereafter immunity from loss of blood. This operation is not, however, one free from some risk, and ought not to be advised except after due deliberation. A sloughing fibroid may, because of the constitutional disturbance resulting from septic absorption, call for bold interference and an attempt to remove the offending mass. The cervix should be dilated, and the interior of the uterus explored by the finger, in order to

determine as far as possible the character of growth, whether it be pedunculated or sessile. If the tumour be pedunculated, it will probably be capable of removal by the ecraseur; if, however, it be sessile and the uterus be extensively invaded, removal by abdominal section, if sufficient uterine tissue be available for a stump, will ensure less risk to life. Septicæmia, in spite of what many authors have said, is apt to follow upon enucleation when the neoplasm has, so to speak, to be dug out of the uterine tissue.

In advising a patient suffering from fibroid disease of the uterus what is best to be done, the age of the individual, as well as the symptoms dependent upon its presence must be considered, for be it remembered innocent neoplasms growing in or from this organ often lessen in size, and in some cases seem to disappear altogether, after the cessation of the functional activity of the uterine system, as they cannot thereafter be well defined during life. Regarding the treatment of uterine fibroids by electrolysis, I am not yet in a position to dogmatise. Judging, however, from my own practical observation respecting this much-vaunted remedy, I fear it will

fall far short of producing those brilliant results which, from the statement of authors, we are led to expect. Time alone will prove its utility or utter worthlessness.

VI.

Cystic and Fibro-Cystic Tumours of the Uterus.

Cystic and fibro-cystic tumours of the uterus, although not common, yet appear with sufficient frequency to warrant a separate description. The purely cystic variety is the result of change in a growth containing more or less adenoid tissue. Whether such cysts ought, strictly speaking, to be considered retention or exudation cysts is still doubtful. I am inclined to classify them under the heading of exudation cysts, believing, as I do, that they result from an excessive secretion into structures unprovided with excretory ducts. The fibro-cyst, on the other hand, is a fibroma or myoma which from the first has been œdematous, or has become so. In some cases this œdematous change has apparently resulted from a twisting of the pedicle. The connective tissue spaces thus distended may fuse and a simple cystic swelling be produced.

Fluid infiltration or accumulation is much more likely to take place in tumours of the subperitoneal type, than in those located either in the walls of the uterus itself or just under the mucous membrane lining its cavity. This is most probably due to the fact that when a tumour, say, of the adenoid variety develops close to the peritoneal covering of the uterus, it is much less likely to possess ducts capable of carrying off the fluid secreted, than when such growths appear in or close to the submucous tissue. I have, however, occasionally seen submucoid tumours which have undergone cystic change. Uterine cysts may be either unilocular or multilocular. They are as a rule simple, consisting of a single loculus. Considering the contents of such cysts which are invariably bloody, it is quite possible that some at least have become simple, because of a destruction of the walls of a growth originally multilocular. The amount of solid tissue they contain varies immensely. The cyst wall may be regular or irregular, and thick, or very attenuated.

These tumours may appear at any period of life, but are specially prone to develop after the cessation of menstruation, or as the functional activity of the uterine system is begin-

ning to wane. The symptoms associated with cystic or fibro-cystic tumour of the uterus are as a rule ill-defined and unimportant unless complications have arisen. The size of the growth, whether this has been slowly or rapidly produced, may of course distress the patient and cause her to seek advice. Menorrhagia may be, but is seldom, complained of. Diminution of the flow is much more likely to be evinced, because of a lowered functional activity concomitant with or dependent upon the change. The functions of the uterus are however, as a rule, little if at all disturbed, because, as I have already stated, the majority of such tumours are pedunculated subperitoneal growths. Occasionally we find evidence of more or less bladder disturbance, because this viscus, in conjunction with the uterus, is drawn up out of the pelvis and thereby markedly elongated, causing either retention of urine or a frequent desire to void it.

Physical signs.—Palpation reveals, it may be, the presence of fluid. Fluctuation, however, is commonly ill-defined or altogether absent. On vaginal examination the uterus is invariably detected as occupying a higher position in the pelvis than usual, and careful bi-manual examination elicits evidence of structural con-

tinuity between the uterus and new growth. The introduction of the sound to manifest this phenomenon I always consider coarse and unscientific. The sound otherwise is of no practical use, as the uterine cavity may or may not be elongated. If the cavity measures more than two and a half inches, this fact alone is of no criterion and will only mislead us in our diagnosis if relied upon.

Treatment.—If the tumour be increasing in size, removal should be advised after the clinical facts have been duly considered and a careful examination made.

The following was a most typical case of uterine cyst :

Elizabeth S., æt. fifty-eight, and the mother of five children, ceased to menstruate six years ago. Nine years ago this patient noticed a small hard swelling about the size of an orange located centrally midway between the pelvis and umbilicus, which continued gradually to increase in size and was somewhat painful. She never at any time, however, lost more than she had been accustomed to lose, except on one occasion six years ago, as the functional activity of the uterus was waning when she had "a flooding." Since this flooding she has practically seen nothing. The tumour, thereafter,

gradually disappeared, so that the patient was unable to detect it, and during the following four years she felt and seemed to be practically well. Two years ago she noticed the swelling re-appear in its former situation apparently, and increase somewhat rapidly in size. The pain associated with the presence of the growth this time was more severe than before. Three weeks before I saw her she had had a slight hæmorrhagic discharge from the vagina.

The abdomen was occupied by a tense elastic and fluctuant tumour reaching above the umbilicus and located centrally. Vaginal examination revealed a puckering of the vaginal roof, and the uterus occupying a higher position in the pelvis than usual. The cervix and uterus could be felt to move fairly readily on moving the abdominal tumour. This patient was operated upon and did well. The tumour proved to be an adenoma, growing from the uterus towards the fundus, which had undergone cystic change.

VII.

Uterine Polypi.

A Uterine Polypus is essentially a neoplasm, which, although developing in some cases primarily in the structure of the uterus itself, assumes eventually the appearance of an excrescence from its lining membrane. It is in reality only its situation and mode of attachment which serves to differentiate it from the ordinary fibroid growth already described, and to which it is structurally related. A pedunculated subperitoneal tumour of the uterus is virtually a polypus. The term, however, is reserved for those new growths which, developing in or immediately under the mucous lining of the uterus, project either into the uterine cavity or the vaginal canal. Such tumours detected in the vagina are usually of cervical origin, although not invariably so. Uterine polypi seldom attain any very great size before they produce symptoms

more or less pronounced. This is due to their location and consequent early disposition as a rule to interfere with the integrity of the mucous membrane covering them. They are generally solid growths. They vary much in consistence according as they are composed in greater part of fibrous muscular or gland tissue. Sometimes they are cystic. A polypus which is cystic has either been cystic from the first, or has become so because of a retention of secretion from a neoplasm of the adenoid type, or as a result of hæmorrhage into the structure of one or other of the three solid varieties. The purely cystic polypus is rarely observed. It results, however, apparently from the occlusion of a duct of some size, as I have seen such swellings disappear and re-appear an indefinite number of times. They may reach the size of a hazel nut, and have a broad base of attachment. They seem to arise more frequently in the anterior lip of the cervix than in the posterior. The symptoms resulting from cystic polypus, I may here add, are the same as those associated with an ordinary polypus originating in the same situation.

As a rule polypoid growths are solid

throughout. They vary much in form, character and vascularity. Occasionally they exist as elongated membranous expansions more or less attenuated. Sometimes they assume a distinctly pyriform shape. The structure determines the consistence. The so-called mucous variety is essentially glandular in structure; it is the softest and most vascular. We are wholly ignorant of the cause of this form of new growth.

Symptoms.—Polypi growing from the cervix may exist for a long time without producing any symptom worthy of note. When, however, such new growths arise from some part of the uterine cavity, they produce, as a rule, early manifestations of their presence. When they develop from the interior of the uterus, pain more or less constant and severe is complained of, and this even in the early days of the growth. This is due to continued attempts on the part of this organ to rid itself of the offending body. If, as happens in some cases at least, the neoplasm originate in the structure of the uterus, it produces by its gradual growth and pressure not only erosion, but even a total disappearance in part of the mucous membrane covering it, together with, it may be, a breach in the continuity

of one or more vessels of varying size contained in this structure. The vessels thus exposed may prove a fertile source of hæmorrhage which may be more or less constant, or recur only in association with the determination of blood to the organ as a result of physiological activity. Menorrhagia and metrorrhagia are invariably the most prominent and most urgent symptoms resulting from the existence of uterine polypi, even when such are cervical in origin. Discharge more or less profuse is also a common association. It may be thin and watery, resembling somewhat that so characteristic of the presence of cancer, but free from acidity and the usual offensive odour pathognomonic of malignant disease. Usually the discharge associated with the existence of a polypus is thick and either white or yellowish in appearance. The majority of patients who suffer from this disorder tend sooner or later to become anæmic.

Physical signs. — If the tumour be intra-uterine, and the symptoms are urgent enough to demand interference—but not unless—the cervix may be dilated, and the interior of the uterus explored by the finger, to ascertain as far as possible, the exact state of affairs and the treatment to be adopted. Usually the

polypus is detected either engaging the cervical canal or hanging in the vagina.

I have seen long membranous polypi in virgins protrude beyond the external genitals, and which had been mistaken for prolapse of the uterus. A careful examination should always be effected, not only vaginally, but also bi-manually.

Treatment.—If the tumour be small and the pedicle slender it may be twisted off; this procedure, however, I always consider bad, apt as it is to strip off the mucous membrane for some little distance up the cervical canal; if the scissors can be used I always prefer them. If the attachment, however, is a broad one, I always employ, and would strongly recommend, the wire ecraseur, not only because the resulting stump is a good one, but also because there is less risk of hæmorrhage than by cutting, which is a boon, enabling us as it does to dispense with the use of a vaginal tampoon after operation.

VIII.

The Malignant Diseases of the Uterus.

A MALIGNANT new growth is one which displays a great proneness to re-appear in structures after removal, locally it may be, in the structure from which it has been removed, or even in tissues far remote from those which were primarily invaded. In the case of the uterus, I shall describe under the term malignancy, the sarcomata and carcinomata. The carcinomata, including epithelial, scirrhous, and encephaloid cancer, are the more malignant because of the lymphatics they contain and a consequently greater tendency to rapid constitutional disturbance.

Sarcoma. — Sarcoma of the uterus is a chronic disease consisting in the development of embryonic connective tissue. It invariably appears in this organ as a primary affection, tending however, sooner or later, like other

malignant growths, to infect by propagation other more remote tissues of the body, especially the lung and liver. In a case which recently came under my notice, secondary nodules were detected only in the lung.

Structurally it is composed of three varieties of cells, the round, the spindle, and the giant. The intercellular substance as a rule is so scanty that the cells lie in close apposition. In the same new growth one type of cell may predominate ; usually, however, we find all three varieties co-existing, and the tumour is then called a mixed sarcoma. The consistence of a sarcoma varies from that of a soft and almost diffluent tissue to that of a firm and more fibrous structure. The blood-vessels are abundant as a rule. They evince, because of the amount of embryonic tissue they contain in their walls, a marked disposition to rupture, either spontaneously or on the slightest provocation. Tumours of a sarcomatous nature always originate in or from connective tissue. In the case of the uterus this form of neoplasm develops from the submucous tissue, a fact worthy of note from a clinical point of view.

Sarcoma appears in the uterus more frequently than many authors would have us

believe. Its supposed rarity has actually resulted from a negligence on the part of many to examine microscopically all tumours removed from this organ. The interior of the uterus may be more or less extensively studded with this variety of malignant growth. Sometimes it develops as a distinctly pedunculated and therefore polypoid tumour. In the early stage of the disease sarcoma is characterised by no marked symptom, and in some cases even, may exist for long in the uterus without attracting the attention of the patient. It is especially liable to appear late in life, about the fifth or sixth decade, when the uterine function has begun to wane, or when the periodically recurring, external manifestation of the same has disappeared altogether. The patient usually seeks advice because of irregularly recurring and profuse hæmorrhage resulting from the rupture of one or more vessels of some size. Sometimes large clots of blood are expelled from the vagina. Although the initial hæmorrhage may be delayed once it has been experienced, it is exceedingly apt to reappear, and with increasing frequency. The length of time during which there is immunity from loss of blood varies greatly in the same

patient, as well as in different individuals. When a woman who has ceased to menstruate becomes the subject of a more or less constant bloody discharge, or of hæmorrhages frequently repeated, not only does the patient herself become apprehensive of the existence of some grave disorder, but so also does the medical attendant. I have seen women suffering from diabetes with no evidence of organic disease of the uterus, who now and then had "floodings" long after the cessation of menstruation. I may here add that I believe malignant disease and diabetes are, from an inheritance point of view, co-related to each other. My clinical notes lead me to express this opinion. At the present time I have two sisters under my care, the one suffering from advanced malignant disease of the uterus, the other from pruritus vulvæ dependent upon diabetes.

Discharge, except in the late stage of sarcoma of the uterus, is much less likely to be complained of than in cancer; when present, however, it is offensive and usually watery, occasionally it is mucoid. Pain is a symptom seldom complained of, unless the new growth approaches the peritoneal surface. The uterine wall may become more or less uniformly in-

vaded ; the pain then is apt to be paroxysmal and proves to be a most troublesome symptom. When the uterus is more or less uniformly infected by this variety of malignant disease it assumes somewhat the character of a fibroid infiltration, and hæmorrhage may be rarely experienced. Under such circumstances the new growth originates in the deeper structures, the mucous membrane thereby continues longer intact, and hæmorrhage, at least its external manifestation, is less frequently revealed. If a blood-vessel, however, ruptures in the structure itself, so that the blood is pent up, aggravation of pain results from increased tension.

Physical examination may or may not reveal the existence of a tumour or even any enlargement of the uterus. If this organ be more or less universally enlarged by general infiltration, the character of the swelling and the symptoms resulting therefrom may be so closely analogous with those of fibroid change, that diagnosis, unless materially aided by clinical facts, is rendered most difficult. Occasionally the new growth assumes the character of a polypus, and gradually distending this muscular organ, eventually incites contraction of its walls. The uterus thus attempting to

rid itself of the contained mass causes the neoplasm to engage in and dilate the cervical canal, so that on vaginal examination part of the offending body is felt projecting through the os. As a rule, physical examination reveals no special change in the uterus until the os has been dilated—slowly by means of tents, or what is preferable, rapidly by dilators—and the interior of the organ explored by the finger. Some roughness may be detected because of a general infiltration of the submucous tissue, the mucous lining here and there having given way. Occasionally we find evidence of septic absorption—augmented temperature and increased rate of pulse—especially when the sarcomatous growth is of the very soft variety. The body of the uterus is the usual location of this form of malignant growth, the cervix seldom becomes invaded, and when it does, it is only in the very late stages of the disease. The functions of the bladder and bowel may be disturbed because of the close proximity of the pelvic organs to each other.

Cause.—It is caused by the general causes of malignant diseases, regarding which we know nothing. Heredity plays the all important part in its production. It results in

death by exhaustion, or some intercurrent disease, superinduced, it may be, by secondary implication of other very important organs.

Treatment. — If the disease be recognised fairly early, and the patient will subject herself to a serious operation, there can be no doubt that vaginal hysterectomy is that which offers the best result. This form of malignant growth is one which invades the tissues slowly, and when early and thoroughly removed, the probability of recurrence is remote. All other methods of treatment are merely palliative, whilst vaginal hysterectomy offers to the patient a possibility of complete recovery. If the hæmorrhage be profuse, and the patient herself and friends will not consent to the more serious operation, scraping the interior of the uterus may be resorted to, the cervix previously having been dilated either by tents or preferably by dilators. To stay bleeding after this procedure it may be necessary to apply to the abraded surface some styptic, such as perchloride of iron, by means of a uterine probe or sound. The probe or sound should be prepared in the usual way with a coating of wool. If the hæmorrhage continue, a narrow pledget of lint, soaked in the iron, may be introduced for a few hours into the cavity of

the uterus. No absorbing material should be allowed, however, to remain in the uterus longer than two hours, for fear of septic absorption. In all such cases the strictest cleanliness should be observed to minimise this risk. If the growth be polypoid, it should be removed as completely as possible.

Prognosis.—If the sarcomatous growth be hard and somewhat fibrous, life may be maintained for three or four years; the softer variety proves more rapidly fatal.

IX.

Cancer of the Uterus.

Carcinoma, like sarcoma of the uterus, is a chronic disease. It consists essentially—no matter what the variety may be—in a proliferation of cells of the epithelial type. The individual cells are separated by no intercellular substance, although grouped together in a fibrous stroma. This form of new growth contains many blood vessels, but is unlike the sarcoma in that it possesses abundant lymphatic channels, which necessarily augment the disposition to general infection. The possession of lymphatic vessels by the cacinomatous group of neoplasms renders them more malignant than the sarcomatous group, and induces for this reason a cachectic state of body more rapidly. The scirrhus, encephaloid and epithelial varieties of the disease are so closely allied to each other clinically, that a detailed description of

each would only prove tedious and serve no purpose ; suffice it to say that the scirrhus is somewhat rare, and as a rule more slowly progressive than either of the other two forms. Microscopically the cells of epithelial cancer are indistinguishable from those met with on the cutaneous surfaces. The shape of the individual cells varies according to the amount of pressure to which they happen to be exposed. Here and there we find evidence of rapid cell proliferation, "epithelial nests" or cell globules resulting, and these on section present somewhat the characters of a transverse section of an onion bulb. These globules, with concentrically-arranged cells, wherever found, are considered especially characteristic of epithelial cancer.

The uterus, it would appear, is of all the organs of the body that most liable to become the seat of cancerous disease. Although this form of malignant growth is prone to develop about the age of forty or forty-five, it may nevertheless attack this organ at a comparatively speaking early period of life. In a few rare cases I have detected its existence at the early age of twenty-four, and in such it proved rapidly fatal.

Statisticians, ignoring comparative numbers,

would have us believe that the multiparous uterus is that most likely to evince carcinomatous change. I am, however, of opinion that the nulliparous and the virgin uterus is equally liable to be affected. Occasionally we find pregnancy as a co-association of this disease, when the morbid change is confined to the cervix; the impregnation having resulted either before or soon after the initial development of the carcinoma. The secretion from this form of new growth, in the late stage of the disease, is a poison which destroys the life of the spermatozoa.

Symptoms.—Insidious in its onset, epithelial cancer may invade the uterus extensively ere the patient becomes aware of the existence of any morbid change, still less of such a grave disease as cancer. In some cases even I have seen the whole interior of the uterus excavated without the patient experiencing any special pain, or even discomfort, apart from that due to a slight amount of hæmorrhagic and offensive discharge. Pain is neither a common nor yet an early symptom of this disorder. It is frequently complained of in the late stages of the disease, because of an involvement of the peritoneal covering of the uterus, or because of an extension of the disease to the glands and

other structures in the neighbourhood, and consequent interference with the pelvic plexus of nerves.

The pain, when present, may be stabbing in character, and may be felt unilaterally or bilaterally; it is also experienced in one or both thighs, more especially down the outside of the thigh in the direction of the external cutaneous nerve. Pain in such cases becomes, as a rule, augmented towards evening, and is invariably increased materially when the patient gets warm in bed.

Bladder disturbance is rarely induced except in the late stages of the disease, and this only as a result of extension. I have, however, occasionally seen complete retention of urine produced apparently in a reflex manner by the initiation of cancer in the cervix. In such cases the bladder was emptied by means of the catheter for some days, when eventually the initial reflex spasm disappeared and the patient was again able to pass water herself. The disease thereafter progressed without producing at any future time disturbance of the bladder. As a rule, the patient seeks advice because of a more or less constant hæmorrhagic and offensive discharge. It is acrid, and irritates the mucous membrane of

the vagina, producing great discomfort. This discharge, which is invariably spoken of as thin and watery, although to a certain extent characteristic of cancer, must not be considered pathognomonic of the disease, for we find an exactly similar dirty brown watery discharge, although free from acridity, associated with the presence of an adenoid polypus, the mucous covering of which has gradually become eroded from vital pressure. The odour of a cancerous discharge is typical. It is not, however, infallible, for I have detected exactly the same odour in a patient suffering from discharge which had resulted from the detention of a small piece of placenta for twelve months, and which was undergoing necrotic changes. The innocent nature of the growth in this case was only revealed on microscopic examination.

Sometimes the first thing that is noted by the patient is the production of a slight hæmorrhage on sexual intercourse ; this, however, be it remembered, may also result in cases of very extensive erosion of the cervix, mere friction producing laceration of the granulation capillaries. Hæmorrhages, more or less profuse, recur from time to time, and without apparent reason. Large clots of blood are sometimes expelled from the vagina. The

"floodings" result from a spontaneous rupture of blood vessels, the walls of which are already diseased; or they may be due to an extension of the ulcerative process. Patients suffering from cancer of the uterus become as a rule rapidly anæmic, cachectic and emaciated. The recurring loss of blood, and the constant drain from the blood by secretion, soon tend to induce anæmia, whilst the more constant and rapid development of cachexia in carcinoma, as compared with sarcoma, is due to the presence of lymphatic vessels in the growth itself. The hæmorrhages are often most profuse and alarming, the blood vessels having but little chance of retracting, and so closing, because of the character of the tissue surrounding them.

Epithelial cancer, as it affects the uterus, may assume either the ulcerative or the fungous variety. The physical signs will of course vary according to the character of the growth in each individual case. The uterus may be invaded by a malignant disease which excavates the organ by a process of necrosis resulting from ulceration. In other cases, again, the new growth assumes somewhat the character of an excrescence, the structure especially in the case of the cervix becoming markedly augmented

by invasion, and resembling sometimes the feel and appearance of a cauliflower, because of its papillomatous nature. In the very early days of the disease, especially the ulcerative type, it is often most difficult to express any dogmatic opinion regarding its nature. I have seen some cases which felt and looked malignant, but which have nevertheless resolved under the influence of idodide of potassium. That specific ulcers may and do appear in the cervix I have no doubt. To differentiate between a malignant and specific sore on the cervix is no easy task, even when the diagnosis is aided by a microscopic examination of a piece of the diseased tissue, as in a case at present under my care. The vaginal examination may reveal the existence of a fungoid mass in the vagina which bleeds readily on the merest touch. The physical signs necessarily vary according to the part of the uterus affected and the stage at which the examination is made. The fundus may be the seat of disease and the cervix at the same time be apparently perfectly healthy. If any part of the body of the uterus be the seat of malignant disease, whilst the cervix itself is free from invasion, a careful vaginal examination may reveal nothing of note unless the cervix will allow

of the interior of the uterus being explored by the examining finger.

Treatment. — If it is possible to practise amputation of the cervix through apparently healthy tissue, when this part of the uterus alone is the seat of malignant disease, the operation is one which commends itself most strongly. It ought, however, to be advised in the early days of the disorder. I have seen immunity from the disease in undoubted cases, where this operation has been resorted to, for five years, and examination of the stump then revealed no manifestation of recurrence. When the growth is of the fungoid type, as much of this as possible should be removed, as it offers for a time some comfort to the patient by lessening hæmorrhage and discharge. In very suitable cases where there is hope of eradicating the diseased structure, the surrounding tissues being apparently free from infiltration, vaginal hysterectomy may be advised. The operation is a grave one ; the risk run ought therefore to be stated plainly to the friends. If the disease be of the ulcerative type no operative interference should be attempted, for I am convinced that those patients suffering from disease of this character, who subject themselves to scraping and the actual cautery,

experience no relief, nay, are apt to suffer more, as peritonitis is, as a rule, induced most readily. Palliation, in such cases, is all I would strongly urge you to attempt. The pain should be quieted by an opiate, or better still if possible, by conium or codeia, as the latter drugs interfere less with the functions of the gastro intestinal canal than morphia or opium. To stay hæmorrhage and lessen the amount of sanious discharge, I would strongly recommend the use of a vaginal injection of perchloride of iron —half an ounce of strong perchloride of iron mixed with one pint of lukewarm water, and used twice or even more frequently every day.

X.

Inflammation of the Mucous Lining of the Fallopian Tube with Puro Fibrinous Exudation.

In subacute or chronic pyosalpingitis an exudation containing many pus cells is secreted by the altered mucous lining of the fallopian tube. The fluid so effused may escape into the uterus and be expelled. It may, however, be detained in the tube itself, and accumulating, distend this structure. The free extremity of the tube is securely sealed by the peritonitis, which is an invariable concomitant of the disease.

In the majority of the cases pyosalpinx is, strictly speaking, a secondary disease, and appears most commonly to accompany those inflammations of the genital tract which are of a specific nature, gonorrhœal or syphilitic. It rarely develops as an independent disease in females previously healthy, yet it may ac-

company simple inflammation of the uterine lining in persons of a strumous habit of body, or in those otherwise debilitated. I have seen cases in which it was undoubtedly tubercular. In the early days of the disease, when it is of acute or subacute origin, there is some elevation of temperature and increased frequency of pulse. Pyosalpinx may, however, exist for months with no other subjective sign than pain and a varying amount of purulent discharge. In the late days of the disease, when fluid has begun to accumulate in and distend the tubes, and inflammatory changes are apt to extend to and affect the surrounding structures, symptoms of a definite and truly charac teristic nature invariably develop.

Pain is a constant and troublesome symptom. Its seat and character, however, vary according to the extent and manner in which the pelvic nerves severally become involved. It is more or less constant or periodic, and is usually referred to that iliac region in which the diseased condition is to be detected. If both fallopian tubes are the seat of change, as is commonly the case, when the disease is due to specific inflammatory extension, pain is complained of in the neighbourhood of both groins. In many cases the periodic attacks

of pain last six or seven days, with an interval of immunity of like duration. The onset of the recurrence is generally accompanied by a feeling of faintness. The pain, as a rule, is materially affected by position, the patient experiencing relief and a feeling of comfort when lying on the affected side. It is aggravated by the upright posture and by locomotion. A dragging sensation is often developed when the patient is lying on the opposite side to that on which the disease exists. Sometimes there is backache; occasionally sharp pains of a stabbing character in the vagina are complained of, shooting in some cases upwards, in others downwards. Usually radiating pains referred to the inside or outside of the thigh are experienced; they extend as far as the knee and correspond with the side on which the fallopian tube disease exists. Menorrhagia is the symptom which is most likely to attract special attention. Depending, as this appears to me to do, upon an interference with the nerve supply to the uterus, profuse menstruation is a symptom seldom complained of, until the distension of the fallopian tube has become marked and the condition unmistakable.

Considering the close proximity of the pelvic viscera to each other, and the manner in which

each derives its nerve supply, it is not to be wondered at that change arising in one of these organs is more or less likely to affect and influence the functions of the others. In pyosalpingitis there is usually a frequent desire to pass water. During the time of hæmorrhage the patient is apt to complain of a difficulty in emptying the bladder, as though there existed co-relatively a paretic state of this viscus, it being necessary for the patient to strain much and call into action those voluntary muscles which aid in the performance of the act. In some cases there may even be produced a complete retention of urine. It is but seldom that pain is complained of during the time of voiding urine. Should the patient, however, be obliged to retain the urine longer than usual, so that the bladder becomes somewhat distended, pain will be experienced in the location of the diseased tube. Sometimes there is diarrhœa. Occasionally there is pain before voiding motions, more especially if the rectum be loaded and the disease exist in the left fallopian tube, which may, by extension of the inflammatory process, have become closely attached to the lower bowel. In a few cases the patients have complained to me of a stiffness of the thighs. In those cases in which there exists a frequent

desire to pass urine, cold aggravates this condition.

Physical Signs.—Vaginal examination reveals the presence of a swelling, which on a careful bi-manual examination is found to be cystic, occupying one or other of the lateral fornices of the vagina. The tumour is more or less tender to touch and as a rule fixed, because of the peritonitic adhesions which have resulted from extension of the inflammatory process through a continuity of tissue. The outline of the swelling varies ; it may be regular or somewhat lobulated. The uterus is invariably deviated more or less markedly to one or other side of the pelvis ; it may be even retroverted. Both tubes may be diseased when the cause has been of a specific nature, yet one tube only may be distended, one tube only becoming occluded, whilst the other continuing patent allows of a free passage of discharge into the uterus and thence externally.

Treatment.—Palliation should be attempted by counter-irritation and the admininistration of a mixture containing calcic chloride or the hypophosphates of lime and soda. If the symptoms are such as to demand operative interference, the diseased structures should be removed by abdominal section. Spontaneous

rupture of the fallopian tube distended with pus may occasionally occur—it is extremely rare, however ; the symptoms resulting from this accident are the same as those arising from extravasation of any irritating fluid into the peritoneal cavity—collapse and death within a few hours.

XI.

Alcoholic Amenorrhœa.

Man, in common with every other animal, is destined to fulfil two great functions in life, the maintenance of the individual and the perpetuation of the species. The latter, however, is always subservient to the former, a fact in the main revealed by the whole animal kingdom. The essential structures of the body generally must first be nourished and maintained, whilst the surplus alone is devoted to procreation. This being so, it necessarily follows that anything which tends to disturb the functions of the different tissues, and impoverish the constitutional state, must inevitably act indirectly on the organs of generation, and either impair their functional activity or render them altogether impotent. Although it is still a matter of controversy whether ovulation and menstruation are coetaneous, or in any way related to each other, yet the recurrence of the monthly

hæmorrhagic discharge in the human female during the so-called child-bearing epoch is deemed a physiological phenomenon and a necessary concomitant of health. We cannot, however, as I have elsewhere remarked, gauge the reproductive power of a female by the amount or regularity of the monthly flow, for some women who seldom menstruate, and this apart from any evident physiological preventable cause, are most prolific. When, however, we find a function which has become fully established, and has been healthily maintained, begin to wane and show sign of enfeeblement, we look for and expect to find some necessary cause.

Amenorrhœa may depend upon a variety of constitutional states and causes. I have frequently noted a sudden and prolonged suppression of the menstrual flow in women addicted to the imbibition of alcoholic drinks. In such cases I had no doubt that the continued deleterious influence of this poison in the system was the determining cause of the amenorrhœa. It was this symptom alone which led the patients to seek advice. In one case I was consulted by a patient who, because of this evidence in association with morning sickness and some spurious sensations, firmly believed she was pregnant. As a rule it is the frequent

and continued imbibition of small quantities of alcohol which proves prejudicial to the economy, intoxication itself never being requisite. It is noteworthy that there may be, if the patient come early under observation, no emaciation nor other evident sign of constitutional deterioration. The symptoms, however, of gastro intestinal disturbance, so commonly associated with chronic alcoholism, are usually well defined. The appetite fails and morning sickness may prove a troublesome symptom. The ingesta, without undergoing any material change and passing through an intestinal tract already congested, produce irritation and consequently diarrhœa. The liver may or may not be enlarged. In one case which came under my care the liver dulness in the nipple line measured seven and a-half inches.

It is alleged that alcohol tends to prevent tissue waste and hinder proliferation. If this be so, it is evident that this arrest or impairment, if prolonged, must eventually end in structural and functional deterioration, and prove hurtful to the whole animal economy, facts of which we have abundant proof. A physical examination of the pelvic organs reveals no evidence of structural change.

Treatment.—Bland nutritious food and with-

drawal of all alcoholic liquors. Medicines should be given according to the symptoms present in each individual case.

XII.

Perforating Ulcer of the Bladder.

The type of ulcer I am about to describe as affecting the bladder has hitherto been looked upon as peculiar to the stomach and duodenum. When, however, we consider the probable cause of formation of such ulcers, it is not to be wondered at that other parts of the intestinal canal, and even the bladder itself, may become the seat of a similar necrotic change. In the *Lancet* of March 7th, 1885, I recorded a case in which the ascending colon had been thus perforated, and doubtless careful pathological observation will prove that such are not uncommon.

Perforating ulcer of the bladder is primarily always an acute disorder; if, however, there be extensive destruction of tissue the functions of the organ are likely to be permanently disturbed, and the disease becomes one of a truly chronic character. This ulcer is specially apt

to recur—a fact strongly in favour of a diathetic tendency or proneness to the affection; it usually develops without sign of inflammation or suppuration, and, as in the stomach and other parts of the intestinal tract, apparently results from a plugging of the vessels which run in and nourish the coats of the viscus. If the blood supply to any tissue of the body be withdrawn suddenly, as happens when a vessel becomes occluded, and collateral circulation be not readily established, death of the part is inevitable. Embolism and thrombosis are the most frequent causes of softening in the brain and spinal cord. It is more than likely that these factors play an important part in the production of perforating ulcer of the bladder. Round ulcers, similar to those we are considering now, have been produced in the stomachs of animals, by the artificial introduction of emboli into the gastric vessels. This form of necrosis is truly analogous with dry gangrene occasionally seen in the extremities of the aged, where the arteries, because of degenerative changes in their coats, have become impervious. The embolic theory of chorea is still tenable, and all who have seen much of this disorder remark its frequent association with rheumatism or a rheumatic

predisposition. Judging from those cases of perforating ulcer of the bladder which have come under my notice, I am inclined to believe that the rheumatic diathesis augments the tendency to this affection, and favours embolism as a probable cause of its production. In one case the symptoms attributable to perforating ulcer of the bladder developed during an attack of acute rheumatism, and as the patient died some time afterwards in a state of collapse opportunity was afforded for verifying the diagnosis. The whole thickness of the bladder towards the fundus had been completely destroyed to the extent of an area barely covered by that of a sixpence. The heart in this case showed no trace of valvular disease. Females are more prone to this affection than males, apparently, as all the cases I have seen have been in women. It is specially apt to develop about the period of puberty and recur. No exciting cause can as yet be suggested.

One or more ulcers may develop according to the number of vessels occluded; some days, however, must necessarily elapse before disintegration is completed. Whether the necrotic change shall invade the whole thickness of the bladder wall or not, depends on the seat of obstruction of the artery, the completeness or

incompleteness of the plugging, and the period at which the collateral circulation becomes established. Should, however, the destructive process attack all the coats of the bladder, and at a part covered by peritoneum, this coat tends to thicken and form adhesions with neighbouring structures, it may be to the small intestine, or, as in a case I saw, to the omentum, thereby preventing, rupture of the viscus, extravasation of its contents as a consequence, and death by shock or peritonitis. If the bladder form adhesions with any part of the intestinal canal the ulcerative process may extend and invade this organ too; vesico-intestinal fistula, although rare fortunately, may therefore depend upon simple perforation. In such cases it may even happen that a careful enquiry into the clinical history may fail to reveal the probable starting point.

The symptoms and course of perforating ulcer of the bladder are usually very insidious, and fatal peritonitis may result from destruction of all the coats, ere the grave condition has been recognised. Pain more or less constant and referred to the hypogastrium is a frequent symptom; it is aggravated by pressure and any slight distension of the organ. There is frequency in micturition, and the

pain as a rule becomes sharp and cutting in character towards the end of the act. The most distressing symptom of all is tenesmus, which results from a spasmodic contraction of the muscular coat, and may continue for some time after the organ has completely emptied itself. Blood usually appears in the urine about the third or fourth day—it is small in quantity, and is expelled with the last drops of urine. The disease is one which rarely proves fatal.

Treatment.—Rest with bland food. Opiates must be given to allay pain and relieve the intense bearing down.

XIII.

Some Notes on Hysteria.

Hysteria, like epilepsy, is a functional disease of the nervous system, and since it may affect the whole or any part of the cerebro-spinal tract, the symptoms, irregular and variable, cannot be included under one rigid formula. An exhaustive description of the disorder would prove tedious and unprofitable. I shall therefore merely attempt to note a few details regarding its etiology, and pass on to discuss some manifestations of this nerve disturbance, a full appreciation of which may aid us in recognising others which belong to a like category as they arise in any individual case.

The appellation "hysteria" is at best faulty, conveying as it always does misapprehension to the minds of outsiders, and employed as it too frequently is as a cloak for our own ignorance, or lack of observation, whenever unable to interpret otherwise, existing symptoms. Let

us ever beware and guard against making this reprehensible error, for many unfortunate sufferers who have evinced no other manifestations than those of a so-called hysterical type, have ultimately succumbed, with no special or marked alteration of symptoms, the victims of true organic disease. In many cases, if not all, the organic disease has existed from the onset, and is not, as many authors would have us believe, a mere sequel of the functional disturbance. Occasionally I have witnessed autopsies on the bodies of those who during life were the supposed victims of hysteria or hypochondriasis, and at which no trace of organic mischief was revealed. The simple fact, therefore, that hysteria, as such, has hitherto eluded all detection is no criterion, and cannot justify the conclusion, usually tacitly implied, that it has no other than a mere fanciful existence in the mind of the unfortunate sufferer. That the mental state exercises a mighty influence over the well-being of the body no one can dispute, and it may be occasionally the dominating, if not sole, factor at work in producing functional manifestations.

Regarding the essential or fundamental cause of nerve instability, nothing definite is known, and the whole question, still wrapt in obscurity,

may yet, we hope, be evolved under the guidance of the scientific mind, free from all bias. So far it appears to depend upon some alteration in the relative amounts of the chemical constituents of nerve tissue, and in their mode of union, whereby there results an augmentation of elasticity or tension, and consequent increased proneness to molecular trepidation. Through the medium of our nervous systems each organ of the body, and every ultimate tissue even, is made aware of and acts and re-acts in harmony with those multifarious changes for ever going on, not only in the organism itself, but its environments. When, however, we remember that higher organisation and greater functional activity are concomitants of lessened structural stability, it is not at all astonishing that a tissue so highly organised and functionally active as that of the brain and spinal cord of man should so readily be deranged. Considering the manifold influences at work in the organism itself and its surroundings, it is to my mind more a subject of surprise that deviation from the apparently normal state is not more commonly displayed.

The nervous system of the female is evidently more prone to manifest functional change

than that of the male. Yet hysteria is not exclusively a disease of the female sex, for I have frequently witnessed its evolution, as a traumatic sequel, in the apparently robust and energetic labourer. In the female it usually appears between the period of puberty and the cessation of sexual activity. It is not, however, confined to this age. I have occasionally noted its existence in children, and recently to a most marked extent in a girl of seven. In both sexes it is a most intractable disorder. Possibly it is more amenable to treatment in the female than in the male.

In many cases derangement of the nervous system is supposed to result from functional disturbance, or true organic disease, of the genital organs, and often no other associated or casual disturbance can be elicited. Here the influence may be of a direct nature, or occur through the agency of the emotions, for, be it remembered, sexual disturbances often prey upon the mind, and may thus indirectly produce prejudicial effects upon the whole animal economy. With the approach and appearance of each recurring monthly flow, the whole female frame may, in health and apart from any resulting emotional state, participate in the change. In some cases of organic disease of the nervous system in the

female, menstruation, I have occasionally noted, is anticipated by the development of symptoms, otherwise latent, or the aggravation of symptoms already in existence—a fact strongly presumptive of a close relationship direct or indirect between the sexual functions and the cerebro-spinal state. In many cases of hysteria, anomalous sensations are complained of; as the majority of such are vague and indescribable, it would be futile to attempt more than a decription of those commonly experienced. Anæsthesia, or loss of sensibility, may affect the lower limbs, when it is usually associated with a simple paresis or even complete loss of power. It extends to the same level on both extremities. It may partake of the form of hemianæsthesia, in which the whole of one side of the body is more or less completely involved. The loss of sensibility may or may not co-exist with motor manifestations of disturbance, hemiplegia, hemiparesis, or even hemichoreiform movements may at the same time be displayed. Under such circumstances the head and special senses on the anæsthetic side may escape, occasionally, however, these too participate in the change. Nor is this to be wondered at when we recall the fact that the special senses are but highly organised modifications of the tactual. When

loss of sensation is confined to one side of the body, it will be noted that a line passing through the middle of the body longitudinally, separates in a most marked manner the healthy from the disordered half. In a few rare cases I have elicited the co-existence of hyperæsthetic patches on the anæsthetic half of the body, more especially in the region of the ovary and breast, and this apart from menstruation. There can be no doubt that the hemianæsthesia is central and results from functional disturbance of the higher cortical centres of the brain; whilst the simultaneous existence of hyperæsthetic patches depends on a markedly augmented tension of the peripheral nerve endings located in the region manifesting the change. Pain is, in reality, an aggravated pleasure. The finger placed in tepid water may convey to the cerebrum a sensation of pleasure, whilst placed in boiling water it forthwith excites a sensation of intense pain. These two states are essentially the result of like peripheral changes, the one being merely a more intense excitation than the other. Of the special sense disorders, co-existent with hemianæsthesia, that of the visual apparatus demands special note. The change manifested is not a hemiopia, but a crossed amblyopia.

There is dimness of sight with the eye on the anæsthetic side, contraction of the field of vision, and loss of appreciation of colour. The opposite eye likewise manifests, although to a much less extent, a diminution of its field of vision. Hyperæsthesia, apart from anæsthesia, and occurring in scattered patches, is a common manifestation of functional disturbance of the nervous system. The merest touch produces a sensation of intense pain, whilst deep and continued pressure is readily borne—a fact strongly in favour of the change being one confined to the nerve endings as a rule. This symptom is not, however, one peculiar to hysteria, for I have seen it associated with true organic disease, and recently to a most marked extent in a female, the subject of disseminated sclerosis of the cord, in whom during locomotion, the dress when it impinged against the legs elicited great tenderness.

The motor manifestations of functional disturbance of the nervous system are most varied and full of interest. The most common form is that of convulsions, the movements being, as a rule, somewhat purposive in character. One of their characteristic signs is that they never cause loss of consciousness. The recognition of a so-called hysterical convulsion is not, how-

ever, always easy, even when one has had great experience with such cases. It may be a post epileptic state, that is to say, the convulsive phenomena have been preceded by a fleeting loss of consciousness of a truly epileptic type. The hysterical fit may consist in a mere twitching of one or more limbs, especially the upper. In some cases the whole body may be more or less violently affected, and the contractions may even become tetanic in character. Opisthotonos, pleurosthotonos and orthotonos are seen often enough as a result of functional disturbance in women. Hysterical patients may even bite their tongue, possibly accidentally ; they may also however, I feel convinced, pass urine during the convulsive attack, although I am well aware many authors deny this.

Occasionally we witness a peculiar phenomenon, the so-called paradoxical muscular contraction, the result of some change in the muscle state, whether of the nature of a contraction or of a relaxation is still conjectural. The phenomenon allows of the foot or any other part of the body being so posed, passively, that it will maintain this position for a more or less indefinite length of time. Under favourable circumstances, it is avowed, this muscle state may be induced by knead-

ing those muscles antagonistic to the attainment volitionally of the new position. By friction and the application of heat, to the group of muscles apparently the seat of change, I have brought about complete relaxation and the cessation of the phenomenon, and this doubtless through a distinct alteration in the relationship of the muscle and nerve molecular state. During health many muscles of the body act in association, the resulting movements being purely automatic, and in reality produced without the intervention of the will. Every one is familiar with the fact that the will often tends to prevent movements, which, if otherwise left to the guidance of the automatic centre, would be performed with the utmost precision, the mere intervention of the influence of the higher nerve centres determining failure. It is not, therefore, astonishing that functional disturbance of the cerebrum should occasionally result in a dis-association of movements at other times harmoniously combined. Recently I witnessed the manifestation of this phenomenon in a female. The eyes were constantly closed, and any attempt to open them only resulted in a frown or contraction of the corrugators; whilst any attempt to close them more firmly was equally ineffective, and

induced merely a contraction of the frontalis muscle resulting in corrugation of the forehead. Elevation of the eyelids is a movement associated with contraction of the frontalis muscle, as every one may verify for himself on gazing at an object placed at some height above him. Frowning, on the other hand, is commonly associated with a more or less distinct closure of the palpebral opening. In the case I have just mentioned, there was therefore evident lack of harmony in movement, or rather total reversion.

Paraplegia, complete or incomplete, is a frequent concomitant of functional disorder of the brain and spinal cord, and here it is impossible to differentiate whether the change is really in the cord or in the cerebrum. Anæsthesia more or less pronounced often co-exists, and although incontinence of urine is said never to result, yet I believe it may occasionally occur. The legs are invariably rigid, and reveal to a varying extent the phenomena induced by sclerosis of the lateral columns.

Ankle-clonus is as a rule readily developed, but assumes a peculiar yet withal characteristic constructive type, whereby, instead of the regular to-and-fro rhythmical movements of the foot, there are evinced, occasionally, marked in-

terruptions. In such cases it is also a most inconstant sign, whereas when the result of true organic disease it is most uniform and constant. Hemiplegia is sometimes noted, but one limb is invariably more affected than the other, and there is no affection of the face—a sign of great diagnostic value.

Sometimes we find retention of urine a prominent symptom, and the patient may allege she has passed no urine at all for several days. Occasionally we find women of a highly neurotic temperament complain of a profuse watery discharge from the uterus. The quantity of fluid so secreted and expelled varies, six ounces may be expelled at one gush, and the expulsion of like quantities may be repeated at intervals of four or six hours. The change resulting in the uterus in such cases is comparable with that occurring in the kidney during the secretion of the so-called hysterical urine. In the *British Medical Journal* of May 24th, 1884, I described this anomalous excretion under the name of non-gravid hydrorrhœa.