entirely around the cervix and extending into the posterior cul-de-sac. Then, in order to secure the greatest amount of space, a longitudinal median incision is made for an inch or more toward the base of the bladder, and the bladder stripped away from vaginal wall and uterus. Gauze sponges with strings are now pushed up to protect the intestines and the appendages are freed by two fingers working upward through the posterior cul-de-sac. The uterus is then held only by the tissues of the broad ligaments. The cervix is drawn firmly down and toward the left, and the lateral vaginal wall held out of the way by a retractor. The left index finger is placed beneath the right broad ligament, and a stout silk ligature is passed about 1 cm. up and away from the cervix and securely tied. The included tissue is cut near the cervix with stout scissors and a second and third bite are taken and the tissues divided. The uterine arteries having been secured and divided, one may often, by pushing the cervix back, bring the fundus and appendages down into the vagina and then ligate the remainder of the right broad ligament from above. After one side has been freed the uterus comes down lower or out of the vagina and the remaining broad ligament may then be more easily tied off and the uterus removed. The field of operation is now sponged clean. Each ligature is examined and any that seems at all loose is at once replaced. Especial care is to be given those placed around the upper portion of the broad ligament. All bleeding points having been secured, the gauze sponges are removed, the anterior and posterior peritoneal folds are brought together by one or two points of suture, the ligature ends are gathered together in two bunches and cut just inside the vagina, and the cavity is packed moderately firmly with gauze. If clamps are used the packing is to be as already described. When the fundus cannot be inverted into the vagina the ligating and cutting may have to be done alternately on either side until a ligature can be passed over the top of the broad ligament.

Kolpo-coelio-hysterectomy, or combined hysterectomy, is accomplished by freeing the cervix from below and finishing the remaining steps of the operation from above. It is most strongly indicated in cases of cancer of the cervix when the body of the uterus is considerably enlarged, as by a complicating pregnancy or fibroids. In a case of this nature the breaking-down cancer tissue is removed with the curette, the raw surfaces are seared with the Paquelin cautery, the lips of the cervix are closed with sutures or, if the disease has spread too far to allow this, a piece of dry gauze is packed against it. The vagina is then carefully sponged clean and ringed by a knife cut at a level an inch or more below the level of the growth. The vaginal walls are carefully dissected off up to the level of the cervix, and their edges sewed closely together so as to retain the gauze and prevent if possible any subsequent infection of the peritoneal cavity. Any bleeding points in the vagina are secured by ligature and the vagina is lightly packed with gauze. The instruments and gloves used in this part of the operation are discarded and the operation is finished through an abdominal incision as already described.

In any case in which it is probable that one must finish from above, ligatures and not clamps should be used in securing the uterine arteries, as the presence of the long clamp forceps in the vagina markedly increases the difficulty of any subsequent work through the abdomen.

After-Treatment.—After an abdominal hysterectomy, before the patient is taken off the table, and while still under the influence of the anæsthetic, a high enema of a pint of decinormal salt solution is introduced into the rectum, and if there is shock this is repeated every three to six hours. Nothing is to be given by mouth for six or eight hours, and then hot water in half-ounce doses with ten drops of lemon juice added is allowed every hour. If the stomach will retain it, half-ounce doses of hot broth or hot milk may be given at hour intervals. If the case progresses favorably, it is not necessary to begin to move the bowels until at the end of forty-eight hours; but if there is evidence of intestinal distention, salines should be started as soon as twelve hours after the operation. Many good operators give calomel or a saline an hour before the beginning of the anæsthetic. Rubinat or Apenta water in half-ounce doses followed by a half ounce of cool water, or drachm doses of Rochelle salt are to be given every hour for twelve doses. Three hours after the last dose an enema of an ounce of glycerin and eight ounces of water is given. In desperate cases with dangerous and increasing distention the author has seen brilliant results follow the enema recommended by Hardon[12] of an ounce of alum in a quart of hot water. Strychnine is often useful in one-fortieth to one-twentieth grain doses hypodermically. After the bowels have moved freely and when there is no distention, the food is to be cautiously increased, and the patient gets the treatment employed after abdominal operations in general. She can usually be allowed to lie on the back or side, as she may prefer. The urine is to be passed naturally if possible, but often has to be drawn for a few days by catheter. The catheter should be used for four days when it has been necessary to drain through the vagina.

After the *vaginal clamp operation* the patient is usually kept on the back with the knees supported by a firm pillow. At the end of forty-eight hours the keys are applied to the lower forceps and the catch is separated a quarter of an inch. The keys are then removed and the forceps is rotated gently and slowly about ten degrees in either direction while very gentle traction is made. If the forceps does not come away readily no force must be used. If the gauze is adherent, it is to be separated from the forceps by a blunt, flat instrument. When all the forceps have been removed the patient is kept quiet on her back for six hours, and then is allowed to turn on the side if she wishes. On the eighth day she is put in the Sims position and the dressings are carefully removed and renewed. The instruments used are a long-bladed Sims speculum, Pryor's trowel, and a dressing forceps. The gauze strips in the centre are removed first so as to loosen those next the vessels. When all the gauze has been removed the red, oozing, lymph-covered rectum and blackening lateral stumps are seen. These sloughing tissues smell bad unless kept dry by repeated and ample dressings of gauze. This gauze is to be renewed as often as a free discharge comes through it, which is usually every fifth or sixth day. Sloughs are not to be pulled off but must be allowed to separate spontaneously. Patients are usually allowed out of bed at the end of three weeks.

After abdomino-vaginal hysterectomy, or Werder's operation, the vagina is loosely packed with gauze until granulation begins and is then kept clean by irrigation with warm boric-acid solution.

The *complications* peculiar to the operation, met with during and after abdominal or vaginal hysterectomies, are mainly due to injuries to ureters, bladder, or intestine. The main causes of death are hemorrhage or sepsis, leading to fatal exhaustion or general peritoneal inflammation with intestinal atony. The supravaginal operation undoubtedly gives the most satisfactory finished result, but the recent observations of Broun[13] and others seem to prove that the chances of a secondary infection, possibly of a fatal character, are slightly less when the entire cervix has been removed. The statistics of mortality vary greatly, but in general, in the hands of properly skilled operators, it varies between four and eight per cent. The author's operations have shown a mortality of a little less than five per cent. for the supravaginal operation and five and a half for the vaginal. *Brooks H. Wells.*

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HYSTERIA.—The disorder to which this name is given is evidenced by an almost innumerable variety of symptoms, which may be grouped in a general way into signs of increase, diminution, or perversion of the various nervous functions. In *hysteria major* convulsive and emotional seizures often occur with intervening signs called *stigmata*, especially including paralysis and anæsthesia, or the stigmata may appear alone. Hysteria is a psychosis. Post-mortem investigation gives no clew to the morbid process, and theoretical study of its nature has led, as yet, to little more than conjecture. The ancient view that a disordered uterus lay at the bottom of the trouble (whence the name, from ὑστέρα, uterus) has been long since discarded, and although the symptoms may be exaggerated, or even brought on, by disease of the uterus or its appendages, such disease is not an essential factor, the strongest proof of which lies in the fact that men, as well as women, suffer from hysteria. Whatever the exact nature of the disease, its seat must be regarded as the nervous system. It is generally considered that all parts of the nervous system—brain, spinal cord, peripheral nerves, and sympathetic—are implicated. The most marked symptoms are referable, however, to cerebral disturbance, and it seems justifiable to assume that the cortical structures are the principal sufferers from altered irritability. Most of the paralytic symptoms, for example, are best explained on the supposition of decreased irritability of the cortical centres, while the spasmodic symptoms allow of explanation in part on the ground of their exalted irritability, and in part on that of diminished inhibition. The psychical symptoms can, of course, be referable only to cerebral disorder.

Etiology.—Hysteria may exist as a primary neurosis, significant of degeneration, or it may be acquired. It appears commonly among females, but typical examples are found in the opposite sex. Briquet considered that fully half the women possess an impressionability differing little from hysteria. It is more frequent between the ages of ten and thirty, most frequent between fifteen and twenty, but may appear in infancy and also in advanced life. A most constant and important factor in the etiology is heredity, under which head must be included not only hysteria in the parent, but also other nervous and mental diseases. Extreme sensitiveness, irritability, emotional tendency, and allied traits in the parents indicate also a type of nervous organization in the family, which may lead to the development of hysteria in the individual. Other predisposing causes are, for example, ill-directed training, depressing influences, unhappy surroundings, desires ungratified, and all causes of continued anxiety and disquiet, especially if joined with excessive bodily fatigue. The advent of other disease may hasten the approach of hysteria, most frequently, perhaps, disease of the reproductive organs. Too much importance should not, however, be attached to coexisting disease of these organs; in many cases the coexistence is merely a coincidence, and in many the local symptoms are secondary to the general nervous disorder. The advent of menstruation and of the climacteric, as well as of pregnancy, may usher in the first signs. A mental or physical shock, a violent emotion or irritation, are common immediate and determining causes. Severe trauma, especially that resulting from falls blows, and railway collisions, is not an infrequent exciting cause. Many of the cases formerly classed under "railway spine" are now recognized as hysterical, and the former term has been largely replaced by traumatic neurosis, which includes traumatic hysteria. Predisposition is not essential, but in those cases in which the violence and duration of symptoms is out of all proportion to the violence of the trauma, the latter is probably only the excitant, not the fundamental, cause of the condition. In many of these cases the term "litigation neurosis" would be appropriate, inasmuch as the circumstances accompanying the suit for damages often play a greater part in the etiology than the original shock. While the disease is by no means confined to the upper class of society, it not infrequently appears there in young ladies whose comparatively aimless lives alternate between the excitement incident to balls, theatres, etc., and complete mental and physical idleness. This manner of life tends to the cultivation of the emotions and favors morbid introspection, while offering little opportunity for the exercise of will power. An irritability of the nervous system is thus produced which predisposes to hysteria.

Clinical History.—The disease in most cases is of so gradual growth that it is impossible to date its commencement. The patient inherits a neurotic tendency, which is fostered in childhood and youth by some of the predisposing causes already mentioned. It follows that, although the first decided symptoms, as paralysis or convulsions, may appear later in life, apparently on account of some trifling mental shock or bodily injury, the existence of the disease must date much farther back. Any or all the symptoms to be enumerated may appear in the given case, and in almost any order. In some cases the persistence of certain symptoms is a marked feature; in others the symptoms appear and disappear with great rapidity, without order in respect to locality or to sequence. The distinction between *hysteria major* and *hysteria minor* is largely one of degree, for both are characterized by exaltation and depression of nervous function with tendency to crises. In hysteria minor, however, the persistent symptoms do not extend beyond morbid sensitiveness, mental or physical, clavus, globus, backache, flushes and chills, while the crises are limited to emotional outbursts of moderate violence such as attacks of laughing and crying, followed by copious discharge of pale urine of low specific gravity. For convenience of description, the leading symptoms may be divided into disturbances of sensation, motion, circulation, secretion, and excretion, and of the mind.

Disturbances of Sensation.—Hyperæsthesia is one of the most constant symptoms of hysteria. When it is of a high degree the lightest touch causes signs of extreme distress, and even convulsive movements. When spread over a large surface the hyperæsthetic region is generally sharply bounded by lines which do not define the distribution of any particular nerves. These regions show no tendency to bilateral distribution, being often limited to one side of the body, and not infrequently bounded accurately by the median line. A common peculiarity of these tracts is to change their boundaries and situations, spreading gradually over one side of the body, disappearing in one place to appear in another, or passing from one side to the opposite. Circumscribed areas of anæsthesia, or of normal sensibility, may appear in the midst of an hyperæsthetic region. The sensitiveness is often limited to certain spots. Such spots are found most constantly over the vertebræ at varying heights, and on the scalp, but appear also on the neck, breast, abdomen, in the genital region, over the joints, and elsewhere. Hyperæsthesia of the larynx causes spasmodic coughing to be brought on by the least irritation, as the inhalation of cold air. The mucous membrane of the nasal, buccal, and faucial cavities, the conjunctiva, the meatus externus, and the tympanum may, any or all, be found hyperæsthetic, with exaggeration of the physiological reflexes. Spontaneous pains are common and may assume the character of superficial neuralgias, or appear to lie deeper, as in muscles, periosteum, or abdominal viscera. Hysterical patients are especially prone to headache and to the so-called clavus hystericus, a boring or burning sensation at or near the vertex, a symptom not more common in hysteria, however, than in neurasthenia and allied nervous states. An infinite variety of disagreeable, though not absolutely painful, sensations are complained of, often of the most vague and indescribable character, and again more or less typical, as the globus hystericus, and the sense of pressure in the epigastrium or over the chest, combined with a feeling of anxiety, or even the symptoms characteristic of angina pectoris. Sensitiveness and pain in the ovarian region (*ovarie*) are often found, generally on the left side. Pressure over this region sometimes produces a convulsive attack; and again, continued pressure is said to

cut short such an attack when under way. The constancy of seat, together with the fact that the irritable spot rises and falls with the uterus before and after pregnancy (Féré), renders it probable that the irritability lies in or about the ovary rather than in the abdominal walls. Sensitiveness about certain joints (knee, hip, ankle, wrist), both with and without swelling, constitutes the "hysterical joint," a phenomenon which may be mistaken for more serious disease, but which generally disappears spontaneously, sometimes suddenly. Hyperæsthesias of the special senses are not rare. That of vision is shown by dread of light and of certain colors, and by hallucinations of sight. The auditory centres may be so irritable that all sounds are disagreeable, and that sounds are distinguished which are not audible in the normal condition. Tinnitus aurium, auditory hallucinations, and vertigo, resembling that of inner-ear disease, appear, the former frequently. Smell and taste may be abnormally acute. Certain odors and tastes agreeable to others may cause distress, and again the most offensive substances may be pleasurable. Hallucinations in these senses also occur. Psychical hyperæsthesia rarely fails; peculiar and excessive likes and dislikes are of every-day occurrence, and violent emotions, both pleasurable and the opposite, are excited by minimal stimuli. Anger, horror, dread, disgust, are produced by objects to others comparatively or quite inoffensive.

Anæsthesia.—All forms of sensation, general and special, may be impaired. The anæsthesia may rapidly change its boundaries, suddenly disappear, or remain for a long time stationary. It sometimes appears after convulsive attacks. Analgesia is most frequently noted, but all varieties of general sensation suffer, including the so-called muscle sense. Loss of "electro-muscular" sensibility is common, but not diagnostic. The anæsthetic regions are generally sharply defined, and vary from limited spots to large tracts. In hemianæsthesia the boundary is generally sharply drawn at the median line, back and front. Sometimes both sides of the body are anæsthetic in different degrees. In hemianæsthesia the special senses generally disappear on the affected side, and in a degree corresponding to the loss of general sensation. This form of anæsthesia is easily overlooked, owing to the patient being unaware of its existence; it should therefore be systematically sought for; if genuine, it proves an invaluable aid in diagnosis. Single extremities may be anæsthetic, or separate spots on the trunk, limbs, hands, or feet. The mucous membranes are apt to be included, and to lose their reflex irritability (sneezing, vomiting). Anæsthesia of the larynx is common. The bladder and rectum may lose their sensibility, as shown by the accumulation of fæces and urine without the patient's knowledge. The urethra and vagina may also take part. The blood-vessels are sometimes contracted over the anæsthetic areas, the prick of a pin being followed by less bleeding than normal. Anæsthesia of the special senses is apt to occur coincidently with anæsthesia of the skin about the organ of special sense affected. Visual anæsthesia is evidenced by retraction of the field of vision, central amblyopia, and loss of color perception. Ophthalmoscopic examination reveals nothing of note. Hysterical deafness has been long noticed, but less extensively investigated than hysterical blindness. The writer has found loss of hearing by the bone and impaired perception for high tones in a series of cases. Taste and smell may be affected, the loss being generally unilateral. The application of a magnet to the anæsthetic region either touching or within a few centimetres of the skin is followed in some cases by return of sensibility, general and special, and sometimes by a transfer of the anæsthesia to another part, most frequently to the corresponding region on the other side (transfer). In hemianæsthesia the entire disturbance may pass from one side to the other and in susceptible cases oscillate from side to side until equilibrium is reached. The time occupied by the transfer varies from a few minutes to an hour or more, becoming shorter with repetition. The same phenomenon has been brought about with other substances, as blisters, metals, or pieces of wood, and in certain cases the patient's expectant attention alone doubtless suffices.

Disturbances of Motion.—Spasmodic contractions appear in almost every part of the muscular system. They may be limited to one muscle or set of muscles, or be widely spread, as in general hysterical convulsions. The contractions are sometimes tonic, sometimes clonic; they may come in attacks, or last for a long time (contracture). They vary in severity from firm contractions, resisting all efforts to overcome them, to the slight twitchings popularly termed "fidgets." Between these degrees come the movements of hysterical chorea, which are generally confined to the face and neck. Spasms not occur only in the extremities, and in the muscles of the trunk, head, and neck, but in deeper-seated parts. The "globus hystericus" is caused by contraction of the muscles of the œsophagus, pharynx, or both, giving rise to the sensation of a lump rising in the throat. The tongue may be included in these spasms and be drawn upward, backward, or to one side. Peculiar sensations in the abdomen, as of a body rising from the uterine region to the stomach, or of something moving about in the abdomen, probably are caused in part by increased peristaltic movements in the intestines. "Phantom tumors" are produced by intestinal distention combined with spasm. Hysterical vomiting, which occurs both with and without loss of appetite, both after eating and while the stomach is empty, is another symptom of convulsive action in the digestive tract. Spasm of the bronchial muscles is evidenced by difficult respiration. Attacks of this nature are sometimes brought on by irritation of the diseased uterus (*asthma uterinum*, Jolly). Convulsive laughter and weeping are familiar symptoms of hysteria, both isolated and preceding or following severer convulsive attacks. Attacks of shrieking are not uncommon, and spasm of the glottis may even appear to threaten life by asphyxia. Spasmodic action of the sphincter vesicæ not infrequently causes retention of urine.

General convulsive seizures come on sometimes as a result of physical or mental shock, or of strong emotion, and again without apparent exciting cause. They are often preceded by peculiar sensations, as of suffocation, or of abdominal pain, and sometimes by a cry. The onset is generally gradual, and the patient is rarely injured by a sudden fall. Tonic spasms gradually ensue, involving a part or the whole of the body. Extreme opisthotonus may be reached and maintained for a considerable time, also emprosthotonus or pleurothotonus. The patient may gradually change from one of these positions to another. The consciousness is generally impaired, sometimes appears to be entirely suspended. The attack varies in length, sometimes persisting for hours. The tongue is rarely bitten, and stupor rarely supervenes, but pain and stiffness are complained of for some time after. Gesticulations, emotional language, and more or less purposeful movements are not uncommon. Although these convulsions cannot be called voluntary, the patient often has it more or less in her power to resist their onset, and is apt to postpone the seizure until a convenient occasion. The power of resistance lessens with the continuance of the trouble. A sudden shock may prevent or cut short an attack, and pressure on one or the other ovary may cause relaxation of the spasms.

Paralysis may attack any or all of the extremities. It may appear as hemiplegia, or as paraplegia, or may attack single muscles or groups of muscles. The face is commonly exempt, not being drawn to one side in otherwise complete hemiplegia. The degree of paralysis varies from slight impairment of power to complete loss of motion. The electrical reactions are not materially affected. The appearance and disappearance of paralysis are generally sudden, sometimes gradual. Change of seat is rapid and frequent in some cases; in others the same form persists for a long time. Contractures sometimes accompany and follow paralysis, and it has been claimed that organic changes (sclerosis) may result from persistent functional disease. Paralysis, like other hysterical symptoms, may disappear upon the application of powerful stimuli. Tremor is sometimes present in the head or extremities. Anæsthesia generally accompanies paralysis of motion, although the converse is less uniform. In general, disorders of motion are less frequent than those of sensation. Paralysis of the pharynx and œsophagus may necessitate artificial feeding. Paralysis of the intestinal muscles is evidenced by tympanites and obstipation. Paralysis of the vocal cords generally appears suddenly under mental excitement, and sometimes disappears in a similar manner. It is often most persistent, and when it is combined with lingual paresis the patient is unable even to whisper. The laryngoscope reveals nothing abnormal about the cords, but generally paralysis of their contracting muscles on one or both sides. The thyro-arytænoideus internus is often affected. Paralysis of the bladder is not infrequent. Paralysis of ocular muscles in hysteria is not common, but paresis of the levator palpebræ is frequently seen, causing a drooping of the lid, which is characteristic, usually bilateral.

Circulatory, Secretory, and Excretory Disorders.—Palpitation ensues in some cases upon slight exciting cause, and again, the heart beat is reduced to the minimal as in the cataleptic condition. Variations in the peripheral circulation are frequent and rapid. The pulse is sometimes small and tense, sometimes full and soft. The skin varies from cold and pale to red and hot. In the former case less blood than normal follows the prick of a pin, and the perspiration is apt to be lessened, increasing with the dilatation of the cutaneous vessels. The regions over which these changes take place vary from circumscribed spots to the half or the whole of the body. "Flushes" are common, and redness and heat of the head are liable to coexist with coldness of the extremities. Fainting is common, due probably to cerebral anæmia. Swelling of the extremities, with œdema, sometimes appears suddenly, to disappear as suddenly, without disease of the heart or kidney or other complication. These swellings are classed under the term angioneurotic œdema, and are sometimes quite persistent. The skin may be of waxy pallor, and may pit, or be dark colored and brawny. Gangrene does not follow. Most of these phenomena owe their origin probably to vaso-motor irregularities. Possibly similar changes in the cortex of the brain are at the bottom of some of the symptoms referable to that organ. Actual bleeding follows congestion in various localities. Menstrual irregularities are common. Increased or decreased flow of saliva has been noted, and the vomiting of large quantities of fluid without ingestion points to increase of gastric secretion. The urine varies in quantity from greatly increased (especially after convulsive attacks) to notably diminished. Cases of genuine anuria have been established. The presence of urea in the vomitus points to vicarious excretion. It seems probable that the difficulty, whether vascular or purely nervous, lies in the kidney itself, although spasm of the sphincter vesicæ may be also present (Charcot). Increased and irregular lacteal secretion has been noted, and more frequently leucorrhœa without local disease, particularly after convulsive seizures.

Mental Condition.—Hysteria occurs in persons of every grade of intelligence, and by no means implies deficient intellectual power. Lack of balance and of will power, however, is generally apparent even when combined with quick perception and excellent memory. The emotional side of the nature is generally disturbed; on the one hand, the least stimulus is sufficient to bring about an exalted state of happiness or deep melancholy, and on the other hand emotion may seem quite wanting, the patient exhibiting the utmost indifference to her surroundings. Extreme sensitiveness is common, the patient takes offence easily, and is easily made unhappy by neglect. In general such patients are extremely egotistical and selfish, and while demanding, directly or indirectly, the most extreme attention from others, fail to exhibit the least consideration for those about them. Lack of application is a common failing, yet once aroused the patient may show a persistence and untiring energy far in excess of that demanded by the occasion, or of that which a person of good judgment would display. These patients often persist in making themselves martyrs, and in drawing attention, directly or indirectly, to their peculiarly trying circumstances and sufferings. The regard for veracity is often diminished, and the desire for sympathy may lead to the most outrageous deceptions—a fact which has caused the name hysteria to bear with it a degree of opprobrium which it by no means necessarily deserves. Hysterical patients, especially hystero-epileptics, are prone to somnambulism, hypnotism, ecstasy, and allied conditions. The step from hysteria to insanity is often a short one and hard to define. Hysterical delirium leads to fixed delusions. Melancholy, mania, *folie raisonnante*, and even dementia may follow.

Hystero-epilepsy (for the analysis of which, as of all phases of hysteria, we are especially indebted to the efforts of Charcot and his pupils) is the severest form of convulsive seizure to which hysterical patients are subject. It is distinctly a symptom of hysteria, and in no way to be confounded with epilepsy when it assumes its typical form, although certain cases, in which hysteria and epilepsy coexist, may offer difficulties in diagnosis. The seizure is generally preceded by change in disposition, perhaps for some days, and more directly by an aura, abdominal or epigastric, which affords the patient time to seek a position of safety. The attack proper is divided into four periods: (*a*) the epileptoid, (*b*) the period of contortions and great movements, (*c*) the period of emotional attitudes, (*d*) the period of delirium. The (*a*) epileptoid period is generally ushered in by a cry, the consciousness is lost, the patient falls to the ground, the face is pale, the features are distorted. Tonic spasms ensue, affecting all extremities. Clonic spasms follow, resembling those of epilepsy. The face becomes tumefied and violet. The patient sometimes froths at the mouth and bites the tongue. A short period of relaxation follows, with coma. In the second period (*b*) various extraordinary positions are maintained for some minutes, with great force, for example, that of extreme opisthotonus. In this stage the respiration is not interfered with, and the face is not turgid. The great movements which follow are distinguished from the clonic spasms by their greater extent, and the non-rigidity in the parts affected. These movements may be executed by the whole of the body or by a part. Most characteristic are flexion and extension of the trunk, rapidly alternating, the forehead striking the knees on flexion, the head and back being thrown violently on the bed in extension. Such a movement may be repeated fifteen or twenty times. The next period (*c*) follows generally without intervening repose, the great movement, or the contortions, merging into the emotional attitudes. These attitudes, representing gayety, sadness, etc., seem to result from hallucinations, and to express a delirium of the imagination. The period of delirium (*d*) represents the more or less gradual return to equilibrium, and is analogous to the initiatory period. Sadness pervades this stage, in which the patient dwells on events of her past life with lamentations. After the attack, large quantities of pale, clear urine are voided. The duration of the attack proper, exclusive of the stage of delirium, varies from fifteen to twenty minutes, the epileptoid period lasting from one to three minutes, the period of contortions and great movements about the same, or a little longer, the period of emotional attitudes from five to fifteen minutes. The supervening delirium varies from a few minutes to a considerable time. Hystero-epileptics generally present marked constant symptoms, contractures, motor and sensory paralyses, notably hemianæsthesia, and the mental characteristics of hysteria are apt to be particularly well marked in these patients. The *ovarie* is commonly present, firm pressure over this spot during an attack causing complete relaxation and return of consciousness, to be followed by relapse into the previous condition on removal of the pressure. Other hysterogenic zones are found in various parts, as above

and below the breasts, less constantly, however, than in the ovarian region.

DIAGNOSIS.—The diagnosis of hysteria from organic disease of the nervous system is of the greatest practical importance, and is in general not difficult, especially when the course of the disease is known. The predominance of subjective symptoms over objective disturbance is noteworthy. There is, in general, absence of such definite signs of organic disease as local atrophy, electrical change, pupil irregularities and loss of light reflex, of ankle clonus and the Babinski reflex, of bedsores and cystitis, as well as of facial, ocular, and bulbar paralyses. There may be rapid and complete change in seat and character of the symptoms, a nervous history and nervous antecedents. The presence of globus, clavus, ovarian and spinal tenderness, hemianæsthesia, segmental anæsthesia, aphonia, convulsive attacks, and characteristic contractions, assist in the differentiation of hysteria from most organic diseases with which it is liable to be confounded. Hysterical hemiplegia differs from the common form of organic hemiplegia in the exemption of the facial muscles, in the absence of spasticity, and in the sharp boundaries of the anæsthesia if present, whether occupying half the body, a single extremity, or spots of irregular distribution. The anæsthesia of organic cerebral disease is most marked at the extremities and shades off gradually as the trunk is approached; it is more apt to impair the power of recognizing objects in the hand with eyes closed (stereognostic sense, with its factors, spacing, localization, and posture senses) than the sense of pain, of touch, or of temperature. The latter are more often lost in hysterical anæsthesia, and the hysterical patient will often handle intelligently, and use with dexterity, an instrument which she states is not felt. This offers marked contrast to the hemiplegic, who states that the knife or pen is felt, but who neither recognizes its character nor uses it naturally.

Hysterical hemianæsthesia is easily recognized by its typical distribution, and by the fact that the special senses are generally involved to a corresponding degree. It is important to avoid mistaking the transient loss of power accompanying *myasthenia gravis* (pseudo-bulbar paralysis) for hysterical paralysis. The paralyses of myasthenia gravis are prone to appear in the latter part of the day, and are peculiarly liable to attack the ocular and bulbar muscles, regions ordinarily spared in hysteria. It must always be remembered that hysteria does not preclude the coexistence of organic disease, as tumor, abscess, or meningitis. Hysterical symptoms occurring in elderly women, not hitherto subject, should always suggest the possibility of malignant or other exhausting disease. The diagnosis should never be limited to hysteria till organic disease has been carefully excluded. Convulsions of hysteria are generally distinguishable from epileptic seizures by their longer duration, by the absence of the characteristic clonic spasms of epilepsy, and by the greater excursion of the movements. The hysterical patient rarely injures herself in falling, and only exceptionally bites the tongue or froths at the mouth. Stupidity rarely intervenes, but a large quantity of pale urine with low specific gravity is often voided directly after an attack. Doubtful cases are more apt to prove epileptic, and should generally be given bromide treatment. Aphonia, of hysterical origin, may be distinguished by the rapidity of onset and recovery, together with the absence of symptoms pointing to organic disease of the larynx. The diagnosis between hysteria and other functional nervous diseases is not so important, and the line is often hard to draw. The hysterical has many symptoms in common with the neurasthenic patient. The presence of paralyses, contractures, convulsions, hyperæsthetic regions, and of well-marked circulatory, secretory, and excretory symptoms, places the case under hysteria, the name *neurasthenia* applying to patients suffering from nervous exhaustion and irritability without the so-called hysterical stigmata. On the boundary line fall certain irritable, worn-out patients, prone to laughing and crying, and other lighter emotional symptoms. In such cases it is difficult and unnecessary to make an accurate classification. The essential peculiarity of the *hypochondriac* is his undue attention to, and anxiety regarding, his own condition. Either the hysterical or the neurasthenic patient may, therefore, suffer also from hypochondria.

PROGNOSIS.—Life is threatened only in the rarest instances. Patients have died with hysterical symptoms, but it is doubtful if hysteria itself can be said ever to be fatal. Radical cure of well-established tendency to hysteria, when primary and degenerative, is hardly to be expected, though separate attacks are likely to disappear spontaneously or under treatment. Attacks of hysteria with definite exciting cause, as trauma, or exhaustion, without predisposing tendency, promise more favorably than cases of the same severity resulting from hereditary tendency. Cure may be generally expected in such cases in a period varying from a few months to a few years. Litigation seriously delays recovery. In general, the longer the disease has persisted the worse the prognosis. This is especially true when convulsive attacks are present.

TREATMENT.—The early training of children predisposed by inheritance to functional nervous disease is important. Too great indulgence and solicitude are as bad on the one hand as severe punishment and ridicule on the other. Every means should be taken to cultivate the child's self-control, and for this purpose removal from its home will often be found beneficial, inasmuch as bad example is there added to faulty training. Physical development should be encouraged. Anæmia should be treated if present. Early marriage should not be encouraged, for it is as liable to aggravate as to lessen the tendency.

Given a case of hysteria once developed, the first aim is to remove the causes which foster it. Anæmia and debility must be combated; arsenic in small doses may prove of benefit, besides the ordinary tonics. The German Eisenzucker (ferrum oxidatum saccharatum) will be found an agreeable preparation of iron for persons of delicate digestion. Disease of the uterus and its appendages, when present, must be rectified, although scepticism is always in place regarding local disease as an etiological factor, and unnecessary manipulation of the genitals should be avoided. Flatulence, indigestion, and constipation should be treated. Atony of the alimentary canal may be benefited by nux vomica, strychnine, or quinine. If the presence of family and friends is believed to be deleterious, the surroundings should be changed. The patient should neither receive excessive sympathy nor be ridiculed as an imaginary sufferer. An endeavor should be made to gain the patient's confidence and rouse her to the systematic exercise of will power and self-control, not only regarding her symptoms, but also in the ordinary duties and disturbances of her life. Regular employment and physical exercise, such as bicycling or horseback riding, should be encouraged. Valerian and asafœtida will be found useful in spasmodic conditions, the latter especially in hysterical tympanites and colic. As a rule, neither bromide of potassium nor chloral will be found of sufficient benefit to justify continued use, though they must sometimes be resorted to for sleeplessness. Opium and alcohol are likewise to be avoided. To relieve individual attacks of pain by morphine is only to weaken the patient's own power of resisting pain, and perhaps to add a craving for the drug. Hyoscyamus, conium, and cannabis indica may be substituted. Good diet, cold baths, the douche to the back, massage, regular exercise in the open air, mental diversion, and avoidance of excesses are important. Electricity sometimes proves of value, especially the static current. Application of the magnet and of various metals, while of great physiological interest, as in the study of "transfer," will hardly prove of much therapeutic value. During convulsive attacks over-solicitude will tend only to aggravate and render them more frequent, excepting when the consciousness is entirely lost. The severer attacks can sometimes be cut short by a sudden shock, as pouring

cold water on the face, and the memory of such treatment doubtless lessens the probability of recurrence; there are, however, many objections to this proceeding, and it will rarely be found advisable. The inhalation of ether or the subcutaneous injection of apomorphine may cut short an attack. Judicious neglect will often hasten recovery. Firm pressure over one or the other ovary will sometimes cause cessation of hystero-epileptic or other convulsion. Removal of the ovaries must be kept in mind as a last resort when disease of those organs is present. Nutrition should be kept up during cataleptic conditions, rectal alimentation or the stomach tube being resorted to if necessary. In obstinate cases, especially when malnutrition exists, after other methods have been tried in vain, it will be often advisable to adopt the plan (perfected by Mitchell) of seclusion, rest, massage, electricity, and full feeding. *George L. Walton.*

IBIT, bismuth oxy-iodo-tannate, a close relative of airol, bismuth oxy-iodo-gallate, is an odorless, tasteless, fine, greenish-gray powder. It is permanent in diffuse light, but in direct sunlight or in contact with water or animal fluids slowly decomposes with the liberation of iodine. This change is more rapid with warm water. Ibit is insoluble in ordinary solvents, but dissolves in acids or alkalies. It is used for wounds as a dusting powder, salve, or lotion. *W. A. Bastedo.*

ICHTHALBIN, ichthyol albuminate, is an odorless, almost tasteless, fine grayish-brown powder, insoluble in water and acid solutions, and soluble in alkalies and the intestinal fluids. It is prepared by adding ichthyol to fresh albumin and washing the resulting precipitate till it is free from ichthyol. It sets free in the tissues ichthyol, of which it is said to contain seventy-five per cent.

On account of its antiseptic and stimulating properties it has been used by Mack, Binder, Martin, and others internally for gastric and intestinal fermentation and for enteric fever. Sack says it sets free ichthyol in the intestine, but not in the stomach. It is claimed to be neither irritating nor toxic. Locally it may be applied in powder form. Binder uses it by insufflation for gonorrhœal or catarrhal vaginitis, endometritis, or erosions of the cervix. For chronic hypertrophic rhinitis it may be used as snuff two or three times a day. Mack obtained good results in eczema and furunculosis from the internal dose of 0.12–0.3 gm. (gr. ij.–v.) three times a day. Rollay places the dose at 0.3–0.7 gm. (gr. v.–x.) for a child of one year, while Homburger considers 0.1–0.2 gm. (gr. iss.–iij.) sufficient. No untoward effects were noticed from administering 0.5 gm. (gr. viij.) three times a day to a five-months-old child.

W. A. Bastedo.

ICHTHARGAN, ichthyol silver, silver thio-hydrocarbo-sulfonate, is a brown, odorless, amorphous powder of neutral reaction, containing thirty per cent. of silver and fifteen per cent. of sulphur. Its odor is wanting, or slight, suggesting chocolate, and it is somewhat sternutatory. It is easily soluble in water, glycerin, or dilute alcohol, slightly soluble in ether or chloroform, and insoluble in absolute alcohol. On exposure to light it is slowly decomposed, so must be kept in dark bottles. It is precipitated by sodium chloride or albumin, the latter precipitate dissolving in excess of albumin.

Aufrecht showed this drug to be more strongly antagonistic to anthrax, gonococcus, and other bacteria than is silver nitrate. In 0.3–0.5-per-cent. solution it prevents the decomposition of meat, bouillon, etc. With frogs, guinea-pigs, rabbits, and dogs it is much less toxic than silver nitrate. It is also more penetrating. Lohstein uses it in gonorrhœa as an irrigation in 1 to 4,000 to 1 to 2,000 strength. Leistikow considers its results in gonorrhœa remarkable; he uses a 0.02 to 0.2-per-cent. injection. For posterior urethritis Fürst employs an instillation of six to ten drops of three-per-cent. solution by Guyon's urethral syringe. As a prophylactic following suspicious coitus he instils three or four drops of a ten-per-cent. solution. It is said to be much less irritating than silver nitrate, and to be followed by no desire to urinate. Unna says that, unlike silver nitrate, it does not favor granulation, but favors rather the production of epithelium. The best results are obtained in clean ulcers and in old hard ulcers with callous margins after the horny layer has been removed by salicylic plaster mull. It is a strong astringent for indolent, œdematous, or hemorrhagic granulations. Falta uses a half to three per cent. solution for granular conjunctivitis. *W. A. Bastedo.*

ICHTHOFORM is a blackish-brown, amorphous, almost odorless and tasteless powder, resulting from the action of formaldehyde on ichthyol. It is insoluble in all ordinary solvents. Aufrecht has made a comparative study on bacteria and animals, especially frogs, rabbits, and dogs, and finds it to have a greater antiseptic power than iodoform and analogous compounds, and to be comparatively innocuous. Goldmann uses it locally for endometritis in ten-per-cent. glycerin mixture on tampons, and as a deodorizer in ozæna. Internally he employs it in atonic or functional digestive disorders. Five grains (0.35 gm.) may be given every three hours for acute gastro-enteritis and intestinal tuberculosis, in which conditions it is highly recommended. Polacco employs 0.5 gm. (gr. viij.) in capsule up to twelve capsules a day for enteric fever. It has no action on the nervous system, and its continued use in large dose is said to be without effect on the kidneys. In conditions of indicanuria with headache and malaise, its administration is quickly followed by disappearance of the indican from the urine and the relief of the symptoms. On account of its irritating properties in vaseline mixture, Unna prefers it made up with zinc ointment in one-per-cent. strength as an application in eczema capitis of children, psoriasis, eczemas of seborrhœic origin, and in pityriasic forms of eczema. As its hardening powers lead to superficial necrosis, it can be used only in affections which tolerate the desquamation of the horny layer. *W. A. Bastedo.*

ICHTHYOCOLLA. See *Isinglass.*

ICHTHYOL.—This is the trade name of a compound described as ichthyo-sulphonic acid in combination with ammonium. It is obtained by the distillation of a bituminous mineral deposit of the Tyrol, which contains an abundance of the fossil remains of fish and other marine animals. During dry distillation there passes over, between 100° and 225° C., a crude volatile oil. This is treated with an excess of concentrated sulphuric acid, which forms ichthyo-sulphonic acid, and this is precipitated by the addition of brine. The product, in addition, contains an uncertain percentage of unchanged oil, which cannot be removed without producing decomposition of the whole compound.

Ichthyo-sulphonic acid forms salts with ammonium, sodium, zinc, lithium, calcium, iron, silver, and various other metals, but the ammonium salt is that generally understood by the title ichthyol.

Ammonium-ichthyol-sulphonate, $C_{28}H_{36}S_2O_8(NH_4)_2$, is a thick, brownish fluid, with a smoky bituminous odor and taste. It is soluble in water, oil, glycerin, and a mixture of alcohol and ether. Its virtues are ascribed to the large amount of sulphur that is present, about sixteen per cent. It has a great affinity for oxygen and is a powerful reducing agent. It is stated to be an active germicide and to be free from any toxic action, but an instance is recorded in which the applications of one part of ichthyol to two parts of glycerin, to the curetted surface of the uterus, produced very alarming symptoms. The patient complained of the taste of the drug, tachycardia, and depression, and remained prostrated for twelve hours.

The therapeutic value of ichthyol depends upon three factors: its antiseptic action, a contractile effect which it exerts on the vascular system, and its reducing property.

It was introduced in 1883, by Unna of Hamburg, as a