of the lymph glands and follicles, with a thymus above the average, are encountered.

As a rule, the subjects of status lymphaticus appear in what we are pleased to call a well-nourished condition, though its anomalies are sometimes found in debilitated subjects, particularly in infants advanced in rickets. The lymphatic infants usually appear plump and well-fed; the adults are robust, even inclining to moderate corpulence, and the young adult males are generally well-built, well-nourished, and even decidedly athletic in appearance. In infants, however, notwithstanding the appearance of good nutrition, a condition of perfect health is contradicted by the peculiar pallor of the skin and the flabby state of body. The skin is both pale and of the condition called pasty, giving, as the Germans describe it, the "pasty habitus." A tendency to eczema, either of the head or universal, is quite common in lymphatic infants. In adults the thick, coarse skin, and muddy complexion are found.

For purposes of diagnosis, aside from the general features just noted, it becomes important to discover, if possible, the evidences of a general or local hyperplasia of lymphatic structures and of narrowing of the arteries where this is associated. The hypertrophy of the faucial, lingual, or pharyngeal tonsils, of the "pharyngeal ring," with augmented prominence of the follicles at the base of the tongue, should, if accompanied by enlargement of the cervical, axillary, or inguinal glands, suffice to arouse suspicion, as Ewing says. The mesenteric glands may occasionally increase until they become distinctly palpable tumor-like masses. Generally the spleen is enlarged to a point which can be determined by careful exploration. Hypertrophy of the thymus manifests itself by increased substernal dulness, and has, especially in infants, been detected during life and confirmed at autopsy. In adults, and especially in the well-nourished, enlargement of the thymus of the relatively moderate grade incidental to status lymphaticus is not easily demonstrable by physical examination. It may be possible under exceptionally favorable conditions to detect hypoplasia of the peripheral arteries both by their reduced size and by their increased tension, and Ortner noted an absence of aortic pulsation in the neck in his cases which he regards as pathognomonic if found in a muscular subject. Hypertrophy of the left ventricle, and dilatation of this chamber have been mentioned as accompanying aortic hypoplasia.

The frequent association of rachitis with status lymphaticus should always be in mind, and when one or more of the osseous manifestations of rickets appear, along with lymphatic enlargement, increased thymic dulness, etc., a diagnosis of the lymphatic state may safely be hazarded. In infants a mild grade of craniotabes, retarded closure of the fontanels, retarded dentition, the rosary, enlarged epiphyses of the long bones, and curvature of the legs and spine are found in varying degrees in those cases of status lymphaticus which are associated with the rachitic dyscrasia. In adults, marks of one-time rickets may still be demonstrable, especially such as pigeon-breast, spinal curvature, narrow pelvis, bow-legs, etc.

The blood changes of status lymphaticus are, as has already been said, too indefinite to permit of diagnostic discrimination.

Etiology and Relationship to Associated Clinical Manifestations.—We are still in the dark as concerns the etiology of the strange constitutional condition whose morphological characteristics have been portrayed. It is well established that some relationship exists between rachitis and status lymphaticus, and one would be inclined to call the latter the lymphatic form of rachitis were it not that cases are encountered without manifest evidences of rickets, that is to say, we have a non-rachitic status lymphaticus. The frequency with which the conditions coexist, especially in infants where changes of rickets retain their prominence, argues for the direct relationship of the two affections, and I am inclined to believe that more exhaustive search, especially such as is comprehended by histological studies of the epiphyseal bone changes, would demonstrate the presence of rachitic lesions in cases of the lymphatic state where none of the coarser anatomical manifestations are to be found. It is, in fact, quite probable that status lymphaticus and rickets of a gross or a microscopically demonstrable grade will be found to be invariably associated. Were this the case we would still be a-field in the question of etiology, since the direct exciting element in the causation of rickets is as yet unknown. Of all the theories, however, the one attributing rickets to an infectious agency seems most plausible, and adherents to this view are rapidly increasing. According to this theory, rachitis is the result of a microbic infection, not necessarily due to a single bacterial species, but to one of several of the pyogenic organisms which act slowly, and which elaborate poisonous products capable of producing the osseous or other alterations found in the disease. The view that rachitis is caused by a slumbering or latent pyogenic infection, like a focus of middle-ear or mastoid disease, and that the gradual or periodic discharge of toxins from this focus induces the rickets, is particularly inviting, and even at the present moment claims some experimental data in its support. If we accept the infectious theory of rickets it becomes easier to reconcile its association with status lymphaticus, for the latter then becomes its lymphadenoid form, in which the various lymphatic structures give a hyperplastic reaction in response to the chronic intoxication. That various forms of lymphatic overgrowth result from infections has long been definitely determined, and at the present moment we witness the tendency to include such pronounced diseases of the lymphatic system as pseudoleukæmia and even leukæmia in the category of infectious diseases. In the face of this tendency it seems entirely reasonable to look to the enlarged lymph nodes, lymph follicles, and swollen spleen of status lymphaticus as the products of a slowly acting latent infection, or to the gradual or periodical discharge of attenuated pyogenic products from a hidden focus of infection.

As to the relations which exist between status lymphaticus and the clinical phenomena associated with it we possess but little information. We have already found that the theory of reflex cardiac paralysis has been admitted to explain the sudden deaths of status lymphaticus, the increased susceptibility of the heart to various forms of irritation being a part of the lowered vital resistance incidental to this constitutional disorder. This hypothesis has been generally accepted, but it still leaves something to be desired in the way of more fully explaining the exact mechanism by which the cardiac paralysis is induced.

The causal relationship between status lymphaticus and such convulsive disorders as spasm of the glottis, eclampsia, idiopathic tetany of infants, and epilepsy is largely conjectural. Eschereich, who regards spasm of the glottis (thymic asthma) as one of the syndromes of tetany, attempts to account for these neuroses by an hypothesis somewhat like the following:

If, from analogy with the thyroid, we assume that the hyperplasia of the thymus and its coördinated organs (characteristic of status lymphaticus) is, or may be, the expression of an incomplete or perverted metabolism, the condition (status lymphaticus) might be regarded as a dyscrasia or chronic intoxication, comparable to Basedow's disease or the myxœdema of cachexia strumipriva. The changes in the skin and in blood formation, and especially the phenomena referable to the central nervous system, show a decided similarity, but differences are present quite sufficient to distinguish the two dyscrasias. While the strumous diathesis tends to impair the intellect to the point of imbecility or idiocy, we find, in the case of the hypothetical lymphatic-chlorotic constitution, that a latent irritability of the nervous system exists, which reacts to trifling stimuli, ineffective in the case of ordinary individuals, with spasmodic conditions in various portions of the body. To this is added, especially in severe cases, the fatal tendency to syncope, mostly in

consequence of some opportune case further acting harmfully upon the heart.

Galatti directs attention to a peculiarity of status lymphaticus which, in my opinion, is a factor of importance in explaining some of the clinical phenomena, viz., the peculiar predisposition to œdema. This, as Galatti asserts, is shown by the pasty condition of the skin, by the tendency to eczema, and by the occurrence of œdema of the brain. I would add, from my observation upon lymphatic epileptics dying abruptly in a single seizure or from rapid status epilepticus, œdema of the lungs as another of the manifestations; an observation already made by Kundrat in a case of sudden death during chloroform anæsthesia, by Langerhans in the case of his son's sudden death after a prophylactic antitoxin injection, and by Paltauf in at least one of his cases of sudden death. Galatti holds that slight factors like auto-intoxications of various kinds may incite this tendency to œdema into activity. Piedecocq, in his belief that sudden death in infants with hyperplastic thymus is due to increased intracranial pressure resulting in compression of the medulla, is evidently upon the tack taken by Galatti, though he wishes to ascribe the increased cerebral pressure to compression of the great vessels in the neck caused by a backward flexion of the head, aggravating the pressure already exerted by an enlarged thymus.

Whatever its mechanism, I am, from my observation upon lymphatic epileptics and my reflection upon these studies, strongly disposed to the belief that a periodic increase of intracranial pressure, acting either on the exterior or interior of the brain, or on both portions simultaneously, and manifesting itself as a result of the tendency to œdema characteristic of status lymphaticus, is a directly provocative factor of such neuroses as spasm of the glottis, tetany, infantile eclampsia, epilepsy, and the various forms of sudden death incidental to the lymphatic state. According to this view, the clinical phenomena would depend upon the extent and location of the intracranial œdema, or, in other words, upon the portion of the encephalon particularly subjected to pressure. In the event of compression of the external portion of the cerebrum, various convulsive disorders of the motor apparatus are provoked; when the balance of pressure becomes so distributed as to raise the intracerebral tension, other more severe symptoms supervene, ending, in case of pressure upon the floor of the fourth ventricle, in sudden respiratory or cardiac failure. Granting the hypothesis just advanced, we are brought one step nearer the explanation of the *modus operandi* of several obscure neuroses whose kinship has repeatedly been recognized on purely clinical grounds, and whose morbid anatomical association is proven by the establishment of the lymphatic state as a common basis for all. Cheadle's dictum that "laryngismus, tetany, and general convulsions are the positive, comparative, and superlative of the convulsive state of childhood," finds support and elaboration.

Treatment.—Recalling the intimate association of status lymphaticus and rickets, treatment, particularly in its prophylactic phase, is clearly indicated. Measures which are efficient in the prevention or treatment of rachitis are, on *a priori* grounds, destined favorably to influence the lymphatic state, and incidentally to control those disorders which result from these constitutional dyscrasias. While not recognizing the kinship of rickets and status lymphaticus, Gowers, for instance, reached the conclusion that a certain proportion of cases of epilepsy were ascribable to rickets, and he urged the prophylaxis of rickets as a means destined to prevent epilepsy. My studies on epilepsy and its relations to the lymphatic state have brought me to this same conclusion, and I agree with Gowers that the prevention of rickets is a matter of great moment in suppressing epilepsy, as well as in favorably influencing such other neuroses as spasm of the glottis, tetany, and infantile eclampsia. It is out of the province of this article to discuss the means, especially those of a dietary and hygienic nature, advised for the prevention of rickets, or for combating it when once established. These agents, with the medicinal aid ordinarily employed, are rationally indicated in the prevention or treatment of status lymphaticus.

On the supposition that the thymus is the chief anomaly of status lymphaticus and the agent in producing an auto-intoxication, numerous suggestions for the employment of extracts of the gland have been made. Permanently beneficial results have not been recorded in cases in which thymus extract has been administered, and this is likewise true for the thyroid and adrenal extracts. Very recently Mendel, who attributes rickets to disturbance of the internal secretion of the thymus, has reported good results following the exhibition of fresh calves' thymus in doses of one gram for each month of the child's age.

Partial removal of the thymus has engaged the attention of those who adhere to the pressure theory of thymic asthma, and in at least two cases this heroic procedure has been practised. One case reported by König, and quoted by Blake, was a child nine weeks old, which since it was eight days old had suffered from severe attacks of dyspnœa. The thymus was made out to be enlarged, extending to the cricoid in the neck. By means of a transverse incision it was exposed, the cervical portion excised, and the thoracic portion drawn up and anchored by sutures to the fascia over the manubrium. The operation was completely successful in relieving the dyspnœa, and healing was uneventful.

The second case, also reviewed by Blake and reported by Siegel, was a boy of two and a half years, who had been tracheotomized for a sudden attack of dyspnœa. The insertion of an ordinary cannula did not afford relief, and it was not until a tube had been inserted nearly to the tracheal bifurcation that the dyspnœa ceased. A diagnosis of enlarged thymus was made, and the thymus was drawn up and sutured to the fascia over the sternum. Recovery was uneventful, with no recurrence of the dyspnœa. What interpretation to place upon these two cases is uncertain. Whether, for instance, the apparent good results were due to relief of pressure, as König and Siegel believe, or whether due to the extirpation of a portion of the thymus *per se*, or to a changed anatomical relationship of the gland, by which some autotoxic effect was annulled, cannot be decided from two isolated cases. However, these cases are at least suggestive from the standpoint of the surgical therapeutics of status lymphaticus, though it is not probable that such a severe measure as partial extirpation of the thymus will be recommended as a legitimate procedure in any except the class of cases indicated by König and Siegel. In this connection, however, it is well to recall the remarkable results which usually follow the removal of nasopharyngeal adenoids and of hypertrophied faucial tonsils, which, as we have learned, are manifestations of the lymphatic state. After making due allowance for the good effects resulting from the relief of the mechanical obstacles imposed by these enlarged structures, the remarkable change in bodily and facial configuration, and the brightening of the intellect not uncommonly observed in these cases, has suggested to more than one observer the possibility of other far-reaching influences besides those of a mechanical nature. It seems highly probable, indeed, that the removal of the offending lymphatic structures carries with it some deep-seated beneficial effect such as one might imagine to result from the removal of an auto-intoxication. There is certainly abundant evidence to show that the surgical treatment of the enlarged lymphatic structures of the nose and throat is a rationally indicated procedure in the therapeutics of status lymphaticus.

Albert P. Ohlmacher.

Bibliography.

Owing to the confusion concerning the relations of the enlarged thymus to the constitutional disorder, most of the literature bearing upon status lymphaticus will be found under the diseases of the thymus as indicated by such titles as "Hypertrophy of the Thymus," "Sudden Death and Hypertrophy of the Thymus," "Thymic Asthma and Sudden Death," etc.

Therefore, instead of attempting to enumerate the papers in which the anatomical and clinical features of status lymphaticus are more

or less explicitly discussed, the student's attention will be invited merely to the leading articles dealing specifically with status lymphaticus in its different aspects. Even in some of these articles the title refers directly to the thymus:

Rokitansky: Path. Anatomie, Wien, 1842–46. Definitely mentions the lymphatic dyscrasia and plainly points out the coördinate relations of the enlarged thymus to the lymphadenoid hyperplasias.

Virchow: Beiträge z. Geburtsh. u. Gyn., 1872. Discusses the relation of arterial hypoplasia and chlorosis and defines the "lymphatic-chlorotic constitution."

Grawitz: Ueber plötzliche Todesfälle im Säuglingsalter. Deut. med. Wochenschr., No. 22, 1888. Reopens the discussion upon thymic, or, more properly, lymphatic sudden death, and marks what may be called the recent era in the study of status lymphaticus.

Paltauf, A.: Ueber die Beziehung der Thymus zum plötzlichen Tod. Wiener klin. Wochenschr., No. 46, 1889, and No. 9, 1890. Clearly defines status lymphaticus by its morbid anatomical basis, and deals with various forms of lymphatic sudden death.

Pott: Ueber Thymusdrüsenhyperplasia und die dadurch bedingte Lebensgefahr. Jahrb. f. Kinderheilkunde, No. 34, 1892. Deals especially with spasm of the glottis and resulting sudden death. The relation of status lymphaticus as the anatomical basis is kept in view.

Nordmann: Ueber die Beziehungen der Thymusdrüse zu plötzlichen Todesfällen im Wasser. Correspdbl. f. Schweizer Aertze, No. 7, 1894. As its title indicates, this paper deals especially with lymphatic sudden death in the water. Status lymphaticus in its anatomical and etiological relations is discussed, though the thymus claims most attention.

Kundrat, v.: Zur Kenntniss des Chloroformtodes. Wiener klin. Wochenschr., Nos. 1–4, 1895. The relations of status lymphaticus to fatal surgical narcosis are there elucidated together with a number of original cases.

Escherelch: Bemerkungen über den sog. Status lymphaticus des Kindes. Berl. klin. Wochenschr., No. 29, 1896.—*Ibid.*: Tetanie, Traité des maladies de l'enfance, tome iv. Considers the various neuroses of status lymphaticus like tetany, spasm of the glottis, eclampsia, and lymphatic sudden death, and elaborates a theory to explain the association.

Galatti: Zur prognostischen Bedeutung des Status lymphaticus der Kinder. Wiener med. Blätter, No. 50, 1896. Lymphatic sudden death is considered, including a discussion of fatal accidents after antitoxin injections as illustrated by the Langerhans case. Mentions the predisposition to œdema.

Ewing: The Lymphatic Constitution and Its Relations to Some Forms of Sudden Death. New York Medical Journal, July 10th, 1897. An excellent review of status lymphaticus in its different aspects, with a presentation of most of the literature. Especially valuable as being readily accessible to the American student. Apparently the first article in English dealing with status lymphaticus *per se*.

Ohlmacher: Bulletin of the Ohio Hospital for Epileptics, Nos. 1, 2, and 3, 1898–99. Several papers discussing especially the question of status lymphaticus and epilepsy.

Daut: Ueber die Beziehungen des Status lymphaticus zur Diphtherie. Jahr. f. Kinderheilkunde, Heft 2 and 3, 1898. As shown by its title, this paper concerns the relations of status lymphaticus to diphtheria and contains the most exhaustive study of this phase of the subject thus far published.

Klein: Neuere Arbeiten über die "Glandula thymus." Zusammenfassendes Referat. Cent. f. allgem. Path. u. path. Anat., Nos. 16–17, 1898. Though primarily considering the diseases of the thymus, this review cites all of the important papers bearing on status lymphaticus, and reviews them briefly.

Blake: The Surgical Aspects of the Status Lymphaticus. Annals of Surgery, June, 1902. The most recent American paper, the purpose of which is indicated by the title.

STAVESACRE.—(*Staphisagria*, U. S. P.; *Staphisagriæ Semina*, Br.; *Staphisagria*, Codex Med.) The dried ripe seed of *Delphinium Staphisagria* L. (fam. *Ranunculaceæ*).

This seed is derived from a handsome annual or biennial species of larkspur, native of the South European countries, Asia Minor, etc., and also cultivated. The seeds are imported from the south of France and Italy. They were known to the ancients, and for twenty centuries have been used for about the same purpose as at present—killing pediculi and similar vermin.

Description.—About 5–7 mm. ($\frac{1}{8}$–$\frac{1}{4}$ in.) long and nearly as broad, flattish-tetrahedral, one side convex, another small and opposite to a pointed extremity, the edges rather acute; brown, gray-brown, or sometimes blackish, strongly and coarsely reticulate-wrinkled, containing a whitish, or becoming gray-brown, oily perisperm and a small, straight embryo; nearly inodorous; taste very bitter, acrid, and somewhat biting.

Composition.—The seeds contain about twenty-five per cent. of a non-drying fixed oil, and about one per cent. of alkaloids, occurring mostly in the shell, of which the following have been isolated and named: *delphinine*, in fine, large crystals; *staphisagrine*, amorphous; *delphinoidine*, also amorphous; and *delphisine*, in crystalline tufts. Of these, the first is the most important and active, the second least so, while the third and fourth resemble the first, but are weaker.

Action and Use.—Stavesacre is an active and poisonous drug, irritant to the skin and mucous membranes, causing itching, stinging, burning, sneezing, etc., as well as diarrhœa and vomiting. Of the alkaloids, delphinine best represents the drug; rubbed into the skin, this causes local inflammation, on the tongue burning and numbness, in the stomach nausea and distress, and, when absorbed, cardiac and respiratory slowing, diminished spinal irritability, and sometimes mental disturbance. The others resemble delphinine, but are less intense. Delphinine reminds one of both aconitine (to which it is botanically related) and veratrine. Staphisagrine is somewhat peculiar; it is not very active, but appears to resemble curare in its action upon striped muscle.

Neither the crude drug nor its alkaloids are given internally; so its exact action has but little practical bearing. It has from a remote time been employed, either by itself or in ointments or other vehicles, solely for the purpose of killing pediculi and related animal parasites, on man and animals. At the present time it is mostly consumed in veterinary practice, kerosene or petroleum, petrolatum, sulphur, and *Unguentum hydrargyri* taking its place in human medicine. An ointment can be made with twenty per cent. or so of the powdered seeds, or with from one-half to one per cent. of the alkaloid.

Larkspur seeds, the product chiefly of *Delphinium Consolida* L., and produced in Europe, are almost identical in constituents and properties with stavesacre. They were formerly official in the United States Pharmacopœia, and tincture of larkspur is a very popular application for head lice. They are several times smaller than stavesacre seeds, of about the same form, but with sharper angles and markings, and usually of a jet black color. *Henry H. Rusby.*

STEAMBOAT SPRINGS.—Routt County, Colorado.

Post-Office.—Steamboat Springs. Hotels.

Access.—Viâ Denver and Rio Grande Railroad to Walcott, thence by stage, a twelve hours' ride to springs. Also connected by good mountain roads with Laramie City, Wyo., and with Georgetown, Dillon, Glenwood Springs, Hayden, and other points.

The town of Steamboat Springs is located in a charming valley in northwest Colorado, just over the main range of the Rocky Mountains and near the headwaters of the Yampa River. The site is upon a bend of the Yampa, where, from its northerly flow, it turns sharply to the west. The mountain range here follows the contour of the river, lifting its lofty summits, covered all summer with their ever-melting but never-melted snow, on two sides of the valley to the north and east. Thus is formed a natural basin, sheltered on the side toward the north by its mountain bulwark, leaving its southern slope open to the rays of genial sunshine. Three large mountain streams—Soda Creek, Crystal Brook, and Spring Creek—rise at different points along the curve in the mountain range, and, converging as they flow down, join the Yampa on the town site. These streams furnish a never-failing supply of pure water, and, with a group of sixty varieties of hot, warm, and cold mineral springs, make this valley one of the most remarkable natural watering-places in the world. The first settlement was made in the valley in July, 1874, by Mr. James H. Cranford, the present manager of the springs. Since that time a flourishing town containing churches, schools, libraries, banks, newspapers, and other adjuncts of civilization, has sprung into existence. The town and vicinity offer many attractions to the enterprising settler, as well as to the tourist, the sportsman, and the invalid. The climate during the open season—*i.e.*, from April until late in December—is ideally temperate, clear, balmy days and cool nights being the rule. The springs, one hundred and forty in number, yield an exhaustless supply of water, but they have not been fully developed yet. They range in temperature from 40° to 103° F., but none of them appears to have been subjected to a complete analytical examination. Among the prominent ingredients are soda, magnesia, iron, and sulphur. The waters have been found useful in rheumatism and skin diseases, and were resorted to by the Indians for many years before the appearance of the pale face in this region. A large bath-house with swimming pool and numerous bath-rooms has been built to utilize the water from the hot springs. *James K. Crook.*

STEAPSIN. See *Pancreas.*

STEATOMA.—By many writers this term is used synonymously with lipoma; but by others it is applied to a hard variety of this tumor, in which the fat cells are of small size and the amount of connective-tissue reticulum relatively large. Such tumors resemble bacon in their gross appearances and have been designated by German authorities "Speck-tumor." In the majority of cases such tumors arise from the atrophy of the fat cells in any ordinary lipoma, and the characteristic appearance and consistence of the growth are, therefore, to be regarded as the result of secondary changes. Other writers apply the term steatoma to any variety of fibrolipoma, and the designation has even in a few instances been transferred to fibromata. By other writers still, atheromata, sebaceous cysts, and dermoid cysts, as well as retention cysts of varying origin containing fatty or pultaceous material, are also called steatomata. The varied and indefinite use of the term would appear to offer good reasons for its abandonment. *Aldred Scott Warthin.*

STERIFORM. See *Formaldehyde.*

STERILITY IN THE MALE. See *Sexual Organs, Male, Diseases of.*

STERILITY IN WOMEN.—

"If a woman do not conceive, and wish to ascertain whether she can conceive, having wrapped her up in blankets, fumigate below, and if it appear that the scent passes through the body to the nostrils and mouth, know that of herself she is not unfruitful."—*Hippocrates, Aphorism 59.*

Sterility (from στερεος, "barren") in woman is an inability to conceive or bring forth a living child. Inability to conceive is called absolute sterility; inability to complete gestation is denominated relative sterility. It may be congenital and due to some insuperable error of conformation, or it may be acquired as the result of some local or general barrier. When a woman has never been able to conceive it is called primary sterility; when she has conceived one or more times, but is unable to conceive again, it is called secondary; when she can conceive, but is unable to carry the child to full term, it is called comparative sterility.

Prior to puberty, during lactation, and after the menopause, sterility is physiological.

The generally accepted ratio of sterility among civilized nations is eleven per cent. In primitive conditions and rural communities it is much less than in complex civilizations and in cities. Rich diet and luxury seem to be inimical to fertility; spare diet and poverty appear to increase fecundity. Sterility is rapidly increasing in the United States, especially in native-born white women. Prior to 1850 it was only two per cent. In 1900 it was twenty per cent. Among foreigners in the United States it is thirteen per cent. It is greater in the United States than in any country except France (Engelmann).

The fecundity in some parts of Europe is eight to a family; the average is five to a family. In the United States there are only two children to a family. In women who are college graduates the ratio is 1.6 to a family.

The causes of this increase of sterility are many. They are moral more than physical. Distaste for the burdens of maternity, from motives of ease and on account of the demands of society, is a prominent cause. The prevention of conception and the production of abortion are increasing ominously. The sin of Onan is making its moral and nervous wrecks. The abomination which Mme. De Staël describes as "a cobweb as regards protection and a bulwark against love" is ever more frequently employed. The marital approach is often guarded by the paraphernalia of the brothel. The secular and religious press is besmirched by advertisements of so-called emmenagogues; of sundry ingenious syringes, and other devices to thwart nature in the procreation of the species. These latter causes for sterility must be taken up by the political economist and prevented by legislative enactment. The increase of sterility from these reprehensible immoral practices, if not restricted, will be an occasion for national alarm. Mathews Duncan says:

"A healthy woman living in wedlock all of her childbearing life under the most favorable circumstances for natural procreation, should have a family of ten. Women, under such circumstances, bearing fewer than ten, are relatively sterile, and the sterility is inversely as the number." He found the mean interval between marriage and the birth of the first child to be seventeen months; and that the likelihood of conception proportionately decreased thereafter. Only twenty-five per cent. of women bear the first child after four years of wedlock. A woman, therefore, who has been married three years without conception, and where no means to prevent it have been resorted to, may be presumed to be sterile.

Simpson out of 1,252 marriages found 1 in 8.5 unfruitful. Ansell, in the British peerage, found 1 in 6$\frac{1}{3}$. Engelmann among college graduates, 1 in 3$\frac{1}{3}$. Duncan says the average for Great Britain is 1 in 10, which may be taken as the general average.

In all sterile matrimonies it must be borne in mind that the male may be at fault. Gross, in 192 instances, found the male to be at fault in 16$\frac{2}{3}$ per cent. Kehrer, in 40 cases, found 31.5 per cent. Emil Ries estimates 30 per cent. Vedder, of Christiania, in 310 examples, found 70 per cent. due to the male, either to impotency or azoospermia. He includes infection of the wife by gonorrhœa, but this should not be included in an estimate of essential male sterility. Gonorrhœa in the male, resulting in double epididymitis and occlusion of the vas deferens, is the greatest factor. Surgical relief from this asexualization of men is much to be desired.

Assuming that from one-third to one-half of all childless marriages are due to the male, the woman should not bear the reproach until a microscopical examination of the semen of her partner is made, to determine the absence or presence of living, healthy spermatozoa.

Causation.—Any cause which prevents the meeting of virile spermatozoa with a perfect ovule in the genital passages of the woman, and their further fixation and retention in the uterus until gestation is completed, will result in sterility. These causes may be generalized as follows:

I. Incapacity for perfect copulation.

II. Inability of spermatozoa to enter the uterus, or anything that may prevent the occurrence of fixation after insemination of an ovule.

III. Imperfect ovulation or tubal impediments.

IV. Failure of the uterus to retain the embryo.

V. Sexual incompatibility.

VI. General diseases or diatheses.

Anatomically, these causes are found to be malformations or pathological conditions of (*A*) vagina; (*B*) uterus; (*C*) Fallopian tubes; (*D*) ovary.

(*A*) *Vagina.*—Absence, incomplete development or atresia of the vagina; imperfect hymen and congenital narrowness or shortness of the vagina; adherent labia minora; abnormal communication between the vagina and the bladder, rectum, or urethra; vicious insertion of vagina; double vagina, transverse hermaphrodism; vaginismus or dyspareunia from any cause; laceration or relaxation of the perineum; vaginitis; genital fistulæ; elephantiasis and tumors of the pudenda; prolapsus of uterus and vagina.

(*B*) *Uterus.*—(*a*) Cervix: Atresia or stenosis of the os or cervical canal; hypertrophy of the whole or of one of the segments of the cervix; elongated cervix; contrac-