

**EASTPORT, MAINE.**—Situated on the coast of Maine near the Canadian border, is a town of about four thousand inhabitants. It is an attractive place, located upon a small island on the western shore of Passamaquoddy Bay. It is not known as a seaside resort, although it affords a cool summer temperature and facilities for fishing and boating. Its climate is representative of that of the northern New England coast, a cool summer marine climate—as indicated by the following table. Fogs are frequent as at most other resorts upon this northern coast.

CLIMATE OF EASTPORT, ME. LATITUDE, 44° 54'; LONGITUDE, 66° 59'. PERIOD OF OBSERVATION, APRIL 1ST, 1873, TO DECEMBER 31ST, 1883.

Data.	January.	July.	August.	Year.
Temperature (Fahrenheit scale).—				
Average or normal .....	19.7°	60.5°	60.8°	41.2°
Average daily range .....	15.9	17.2	15.6	
Mean of warmest .....	27.6	69.6	68.9	
Mean of coldest .....	11.7	52.4	53.3	
Highest or maximum .....	51.0	86.0	88.0	
Lowest or minimum .....	-20.0	45.0	45.0	
Humidity—				
Average relative .....	77%	78.7%	78.9%	76.3%
Precipitation—				
Average rainfall in inches .....	3.15	4.82	3.16	48.91
Wind—				
Prevailing direction .....	N. W.	S.	S.	S.
Average hourly velocity in miles .....	12.4	6.3	5.9	9.7
Weather—				
Average number clear days .....	7.1	5.2	8.0	78.7
Average number fair days .....	12.3	14.0	11.5	134.3
Average number fair and clear days .....	19.4	19.2	19.5	213.0

Edward O. Otis.

**EATON RAPIDS WELLS.**—Eaton County, Michigan. Post-Office.—Eaton Rapids. Numerous hotels. Access.—From Jackson, Mich., via Grand River Valley Railroad to Eaton Rapids.

The town of Eaton Rapids is pleasantly situated on the Grand River. The wells were discovered in 1869 and 1870, and have drawn considerable attention to the place. Several of the wells are connected with the hotels, and all facilities for bathing are offered. The following analyses were made before the insertion of the first tubing, and it is probable that a considerable proportion of surface water was contained in that submitted for examination. The first three springs were analyzed by R. C. Kedzie and the fourth by C. T. Jackson:

One United States gallon contains.	Bedine Springs, Grains.	Mosher Springs, Grains.	Shaw Springs, Grains.	Storling Springs, Grains.
Sodium carbonate .....	5.05	1.15	1.27	
Sodium bicarbonate .....	3.00	19.43	20.74	
Potassium carbonate .....	40.47	4.52	3.84	
Calcium carbonate .....	8.40	1.00	2.23	2.80
Calcium bicarbonate .....	2.35	1.00	2.23	12.50
Magnesium carbonate .....	57.50	45.16	48.13	55.20
Magnesium bicarbonate .....	8.40	1.00	2.23	9.40
Iron carbonate .....	2.35	1.00	2.23	5.21
Iron bicarbonate .....	2.35	1.00	2.23	
Sodium sulphate .....	57.50	45.16	48.13	
Calcium sulphate .....	8.40	1.00	2.23	
Magnesium sulphate .....	1.50	.90	.90	
Sodium chloride .....	2.00	2.54	1.40	
Silica .....	2.00	2.54	1.40	
Organic matter .....	.....	.85	.90	
Loss .....	.....	.....	.....	
Total .....	120.17	80.93	90.98	85.30

James K. Crook.

**EBOLICS AND EMMENAGOGUES.**—Emmenagogues are remedial agents which stimulate or restore the menstrual function of the uterus when it is irregular or absent.

Echolics are agents which, by exciting uterine contractions, cause the contents of that organ to be expelled. Strictly speaking, this applies to foreign bodies and new growths like polypi and fibromata as well as to the products of conception, though the last is the usual interpretation. From the wide prevalence of the practice of criminal abortion echolics are the most abused class of remedies in the range of therapeutics. It is necessary to consider these subjects in conjunction with the pathological conditions for which they are employed. Were the uterus absent, amenorrhœa would continue in spite of all drugs. It is unnecessary to mention other pathological conditions that have a similar effect. Aside from such considerations, however, no doubt many different remedies act, with or without assistance, to increase the amount of menstrual discharge or to restore it, after long periods of amenorrhœa or at times when it would not appear at the expected time.

C. Martin, who carefully studied the subject of menstruation (*Brit. Gyn. Jour.*, November, 1893), reached the following important conclusions:

(1) Menstruation is a process directly controlled by a special nerve centre. (2) This centre is situated in the lumbar portion of the spinal cord. (3) The changes in the uterine mucosa during a period are brought about by catabolic nerves and during the interval by anabolic ones. (4) Menstrual impulses reach the uterus either through the pelvic splanchnics or through the ovarian plexus—possibly both. (5) Removal of the uterine appendages arrests menstruation by severing the menstrual nerves.

These deductions are in the main correct. However, abolishment of menstruation by removal of the uterine appendages is by no means constant. Clinical experience demonstrates the incorrectness of this statement. Excessive exercise or sexual indulgence or even desire, and strong emotions, will continue menstruation. Whether a diseased endometrium or uterine muscle is the direct cause cannot now be stated, though such occasional influence is not to be doubted.

**Indications for the Use of Emmenagogues.**—Two distinct varieties of amenorrhœa are met with. One of them, in which the appearance of menstruation is delayed considerably beyond the usual age of puberty, is known as *emansio mensium*. The other is called *suppressio mensium*. In the former we have first to consider the age and general condition of the individual. It is only in those cases in which the patient has reached the age of at least eighteen years that treatment should be attempted, unless the general condition or the environments of the patient be bad. When such conditions exist they should be righted, and if molimina be present some of the direct emmenagogues may be employed preceding or during the existence of the molimina, usually with happy results. Physical obstructions to the menstrual flow may exist and may later require investigation. Very rarely indeed are direct emmenagogues indicated in the treatment of delayed, scanty, or absent menstruation. Usually some faulty general condition of the patient exists, the menstrual disorder being merely one of the many symptoms present. It is one, however, to which much importance is attached by the mind untrained to such matters, and consequently it assumes the place of first importance and may indeed be the only complaint made by the debilitated or neurotic girl, or by one who is the unfortunate victim of tuberculosis. This matter is to some people of such seeming importance that a regular, scant flow of three days or a good amount of flow recurring regularly at slightly greater intervals than four weeks, causes them to seek the advice of the physician in attempting to increase the amount in the one case or the frequency in the other. The usual training received by girls during the first five years of menstrual life is unfavorable to the proper development of their genitalia. It likewise debilitates or prevents their general physical development. The nervous system is usually overstrained and as a result the proportion of neurotics large. A markedly intimate relation exists between the nervous and reproductive systems; the neurotic origin of menstrual abnormalities is clear.

**The Therapeutic Use of Emmenagogues.**—The remedies which act directly on the uterus to increase the amount of menstrual flow are called *direct* emmenagogues, and those which act by changing the general condition of the patient and thereby increasing or producing the menstrual flow are named *indirect* emmenagogues. The latter class is important and comprises not only the tonics, as iron, arsenic, copper, manganese, gold, digitalis, barium chloride, strychnine and quinine, but also salicylic acid and its salts, *Cocculus indicus*, *Lappa officinalis*, and such external applications as the spinal ice-bag and baths.

The principal direct emmenagogues are ergot, oxalic acid, apiol, binoxide of manganese, santonin, eumenol, indigo, aloes, *Menyanthes trifoliata*, permanganate of potassium, turpentine, cantharides, myrrh, rue, savin, tansy, pennyroyal, guaiac, American mistletoe, senecio *Jacobea*, *cimicifuga*, saffron, cotton root, quinine, *pulsatilla*, water pepper, *serpentaria*, aconite, sage, chamomile, blue cohosh, leeches to the cervix, warm vaginal douches, sitz baths, and local applications of electricity.

It is evident from the long list of direct emmenagogues that a short route to success in the treatment of menstrual disorders is frequently attempted, in spite of the well-known fact that they are usually due to some general vicious condition. By such treatment it may be possible to produce the menstrual flow once or twice in most cases, but the previous condition recurs. It is only by treating the underlying general condition that success is to be expected.

In such general conditions as tuberculosis, carcinoma, and syphilis amenorrhœa is probably a conservative feature and should receive no treatment. Anæmia is the principal cause of lessened menstrual discharge and calls for the tonics mentioned. An elixir of the seeds of the common burdock (*Lappa officinalis*), in the dose of a teaspoonful after each meal for a period of a month, has been highly recommended for suppressed menstruation in young girls. *Digitalis*, by increasing the arterial tension, acts well in many cases. Salicylic acid and the salicylates are the most efficient remedies when a uric-acid diathesis underlies the suppression. *Guaiac*, though generally considered a direct emmenagogue, certainly acts well in this condition. Phillips strongly recommends picrotoxin, the active principle of *Cocculus indicus*, in doses of gr.  $\frac{1}{10}$  to  $\frac{1}{5}$ , in anæmia with amenorrhœa. The preparations of iron, especially when combined with manganese, are favorite remedies for such conditions. General galvanization and faradization are useful as general tonics. The ice-bag applied to the lumbar spine has a stimulating and tonic action on the nervous system, especially the vaso-motor portion. It increases the amount of menstrual flow by engorging the pelvic blood-vessels and stimulating the centre of menstruation. General bathing in cold water, sea-bathing, brisk rubbing, and the cold plunge often prove to be efficient indirect emmenagogues.

The usual accompanying constipation is best treated by aloes and myrrh or by carbonate of magnesia. Aloes and myrrh act by engorging the pelvic viscera. The magnesia salt is given in delayed menstruation in doses of gr. xxx.-xc. The smaller dose may be given nightly for a fortnight, but afterward the larger dose should be prescribed until the flow appears. After the continued use of general tonics direct emmenagogues are often indicated. The simplest consist of the sitz bath, pediluvia and external friction, to which may be added hot drinks (infusions) of cinnamon, chamomile, ginger, tansy, pennyroyal, water pepper, sage or *serpentaria*, all of which act as relaxants or diaphoretics. Some, however, act as stimulants to the pelvic circulation. White (*Lancet*, London, 1895) praises wineglassful doses of *Menyanthes trifoliata*. Ergot, though a pronounced direct emmenagogue, acts best in small doses with iron. *Guaiac* is valuable in anæmic amenorrhœa, but it should not be administered except in combination with other agents. It may be given for weeks without danger. When heavy nerve strain has produced irregular or delayed menstua-

tion, a combination of strychnine, aloin, and atropine is of signal benefit. The bromides are also often useful in this class of cases. The compound sumbul pill (Goodell's formula), consisting of iron, sumbul, asafetida, and arsenious acid, is valuable when nervous manifestations accompany anæmia. Physical shock has been known to restore the menses when other remedies had failed. Aloes acts well in obesity by depleting the system and engorging the pelvic circulation. The spinal ice-bag is here useful. When the flow is absent as a result of "taking cold," general treatment in the way of hot baths and cathartics to the extent of restoring the circulatory equilibrium, is required. Aconite acts well in such cases, especially when given in hot water. A few days before the expected flow the employment of nearly any of the direct emmenagogues has a marked tendency to restore the menstrual function. Most of the direct emmenagogues act by stimulating the centre of menstruation in the spinal cord. Ergot acts as a strong stimulant upon all unstriated muscular fibres, in doses of gr. x. to xxx. daily; combined with iron it is a splendid though treacherous emmenagogue. V. Poulet (*Arch. de Toool.*, Paris, 1886, xiii., 539) first called attention to the emmenagogue action of oxalic acid. Since then it has been largely employed with gratifying results. It is not without danger, as pointed out by Talley, who noted marked prostration and partial collapse following a small dose of the drug. One-quarter grain every four hours in syrup of orange or lemon may be given for a few days preceding the expected flow. Apiol, used just preceding and during the period, is best given in pill form, in doses of gr. i. or gr. ij. after meals, for a period of from one day to several weeks. Ringer says it will restore the flow in young girls after a lapse of two years. It is useful in amenorrhœa from seasickness and in women between the ages of thirty and forty who are rapidly increasing in weight and in whom the flow is decreasing. Manganese binoxide may be employed advantageously under similar circumstances. Santonin is principally employed when anæmia complicates the absent flow. Its beneficial action appears to depend upon its power to cause contraction of the engorged uterus. It is given in ten-grain doses at night for two nights preceding the time when the flow is expected. The dose is large and the drug treacherous. Its use will never be popular on this account. Local faradization and the application of the negative galvanic pole against the cervix or in the cavity of the uterus have been resorted to with moderate success. The results of the use of indigo have not been such as to give it a prominent place in this list. Eumenol, Merck's preparation of the Tang kui root, is strongly endorsed by Mueller and Hirth. It has been employed for centuries in China as an emmenagogue. Turpentine and cantharides are dangerous emmenagogues because of their tendency to irritate the urinary organs. Pennyroyal, rue, savin and tansy are unreliable and dangerous by reason of their liability to produce gastro-intestinal irritation and because they exert an echolic action. The American mistletoe and cotton seed are largely employed, in the form of infusion, in the West and Southwest for menstrual suppression due to cold, and undoubtedly they have merit. Leeches to the cervix are troublesome and of little value. The bleeding following their removal is often severe.

**Echolics.**—Nearly all the direct emmenagogues given in large doses are echolics, and in still larger doses they check the flow. Direct emmenagogues should never be employed when the existence of pregnancy is probable. The principal echolics are ergot, apiol, quinine, rue, savin, tansy, pennyroyal, cotton root, oxalic acid and turpentine. Ergot is the strongest in its action, but many others like cotton root, pennyroyal, and cantharides, are employed by ignorant people as echolics. Oxalic acid is unquestionably an echolic. Carter says that the American mistletoe produces more prompt and sure uterine contractions than ergot. Manganese dioxide has a similar action, cases of abortion from its use being recorded. The echolic action of quinine is probably less than is be-

lieved. That it has the power to strengthen uterine contractions cannot be doubted. All these drugs are dangerous in their action and should not be employed without a thorough familiarity with their actions and dangers.  
J. Wesley Boëe.

**ECLAMPSIA INFANTUM.**—(Synonyms: Convulsions in children; acute infantile epilepsy; spasms.) By eclampsia in children is meant a variety of convulsions, more or less general, occurring with or without prodromal manifestations, and not dependent upon any material organic lesion of the nervous centres. Most authorities regard absolute abolition of consciousness as an essential element of eclamptic as well as of epileptic attacks. This loss of consciousness need not persist during the whole attack, but must have occurred at some part of it. It is true that there are attacks of very slight spasms in children in which it is difficult to be positive that consciousness has been lost, by the application of such imperfect tests (irritation of the conjunctivæ, etc.) as these little subjects will admit; but analogous attacks in adults prove that loss of consciousness, however brief, is an essential element of an eclamptic convulsion. An important point in the differential diagnosis between an attack of eclampsia and one of epilepsy is, that in the former the convulsions are not repeated in a series. It is true, attacks of eclampsia may be repeated, but unless the repeated attacks can be shown to have depended upon one or other of the conditions which ordinarily give rise to eclampsia, every repetition of the convulsion renders our suspicion as to its epileptic character stronger.

In describing an eclamptic seizure, it is important to remember that the convulsion differs in no way from an attack of epilepsy. Hence a general clinical picture of the disease will be that of an ordinary epileptic spasm. There may be an aura, a cry, then convulsive movements in some of the voluntary muscles, proceeding rapidly to more or less general convulsions, at first tonic, then clonic in character. There is loss of consciousness, generally, before the tonic convulsions have set in, the little patient may froth at the mouth, the tongue may be bitten, the respiration is that characteristic of epileptic attacks; finally the spasm is often followed by sleep. It is evident, then, that we must not depend upon the character of the convulsion for a differentiation between epilepsy and eclampsia, although a careful study of the clinical history of the case will generally give us the data necessary to a correct diagnosis.

**CLINICAL OCCURRENCE.**—Nothnagel<sup>1</sup> and Ozanam<sup>2</sup> discuss the possibility of the occurrence of eclampsia infantum as an idiopathic affection. The latter authority limits the term eclampsia to convulsions of non-epileptic origin, occurring independently of other diseases or pathological conditions. Nothnagel, however, includes under the term eclampsia convulsions which are the reflex expression of some peripheral irritation, such as dentition, etc. The convulsions occurring at the outset of acute infectious diseases and acute inflammations he terms simply epileptiform, a term that might be applied to all varieties of eclamptic attacks. Eclampsia infantum should be considered not so much a disease as a symptom of other diseases; in one case the convulsion may only precede or usher in a pneumonia, in another it may appear at the same time with a brilliant scarlatina; here dentition appears to have been the exciting cause, there the ingestion of indigestible food; in all of these conditions the attacks resemble each other, although in each case the clinical etiology is different. Looking, then, upon eclampsia from an etiological standpoint, it appears that all the possible conditions under which eclamptic attacks may occur in children will come under one of the following subdivisions:

1. Febrile or symptomatic eclampsia.
2. Reflex eclampsia.
3. Toxic eclampsia.
4. Eclampsia of rachitis.

**Febrile or Symptomatic Eclampsia.**—The most common form of eclampsia occurring in young children is un-

doubtedly the first group, the febrile or symptomatic eclampsia. By this class is meant that form of eclampsia which occurs, as a rule, at the *outset* of febrile diseases; we say at the outset, to distinguish these initial convulsions from those occurring later on in the course of severe inflammatory conditions, and due not so much to the fever as to cerebral adynamia, or the aggregation of toxic elements in the blood as a result of the disease. So commonly does a convulsion mark the outset of inflammatory disease and acute infectious fevers of infancy, that it would almost appear that in these little patients the eclamptic seizure corresponds to the chill which ushers in similar diseases in adults and grown children. This substitution of a convulsion, an eminently nervous phenomenon, for a chill, corresponds to the exalted irritability of the nervous system characteristic of infants. This excess of irritability is especially marked in the medulla oblongata; and since the studies of most observers, among others Schroeder van der Kolk,<sup>3</sup> point to the medulla as the starting-point of the changes resulting in an epileptiform convulsion, the increased liability to convulsions at this early age is readily explicable. How shall we explain the occurrence of this febrile form of eclampsia? Is the convulsion due to the fever, or to some mysterious infection of the blood by the poison of the disease of which the fever is a symptom? Authorities differ as to this point, the tendency being to individualize and explain the occurrence of the eclampsia in distinct ways for different diseases. In the first place, in inflammations of the brain and meninges the convulsions are not eclamptic, being dependent upon a material lesion of the nervous centres. But the eclampsia introducing an attack of pneumonia, pleurisy, measles, or scarlet fever, how is this produced? Steiner<sup>4</sup> considers the convulsions which precede an attack of pneumonia as the reflex result of the irritation of the peripheral filaments of the pneumogastric distributed to the congested lung. The weakness of this explanation does not lie in the fact to which Soltmann<sup>5</sup> calls attention, that eclamptic convulsions do not occur in all cases of pneumonia in children, but rather in this, that the convulsions are not so frequently repeated as we should expect were this theory true, for the lung remains congested during many hours, while the convulsion lasts but a few minutes, and in many cases is not repeated. We do not think that any further explanation of the eclampsia of the early stage of pneumonia need be given than that it is due to the high temperature which ushers in the disease. The rapid and bounding pulse, characteristic of the febrile process, produces cerebral hyperemia, the already over-excitable medulla is rendered more excitable, and a convulsive discharge of nerve force takes place; the cause here is evidently simply increased temperature, and its recognition serves as an important indication for treatment.

In the acute infectious diseases, one might readily be excused for supposing that the initial convulsion is most probably due to the altered condition of the blood. The bacteria of scarlet fever, as well as those of measles and diphtheria and other infectious diseases, may well have so changed the blood, even in the opening stages of the disease, as no longer to enable it properly to nourish the nerve centres; accordingly such writers as Soltmann<sup>5</sup> and Henoch<sup>6</sup> consider that the eclampsia, even in the onset of these diseases, is mainly due to the toxæmia; and yet these convulsions frequently do not occur in the most severe cases, and do occur in the mild ones. The toxæmia must be regarded as varying in direct proportion to the severity of the affection, and the same should be true of the convulsions to enable us to accept the view of Henoch. We do find, however, that in most of the cases in which convulsions have occurred, the temperature was very high, irrespective of the severity of the disease. I recall a case in my own experience, similar to one reported by Hunter,<sup>7</sup> in which, with the onset of a varicella, the temperature rose to 105° F., and the child had two eclamptic convulsions; on the succeeding day the temperature had fallen and the little patient was able to run about in the room. One can cause the cessation of re-

peated eclamptic attacks in a case of commencing infectious disease by the application of a cold bath. For these reasons it would appear that in these cases also the active cause of the convulsion is the increased heat of the body. It must be acknowledged, however, that there are cases in which the specific toxæmia of the disease is so great that the nervous centres are completely overwhelmed. In these cases the convulsions are really toxic in character, and are far more fatal than those depending upon the fever; here, too, we shall often find upon post-mortem examination inflammatory disturbances of the brain and spinal cord. In the vast majority of cases of eclampsia occurring early in the course of infectious diseases, reduction of temperature will result in cessation of the convulsions. The diseases in which this febrile form of eclampsia may occur include almost all of the febrile affections of childhood, that is, all of the acute infectious diseases, among which must not be forgotten erysipelas and typhoid fever; also all of the inflammatory affections of the respiratory organs, such as laryngitis, bronchitis, pleurisy, and pneumonia; and the acute catarrhal, croupous, and diphtheritic affections of the throat and pharynx. Febrile eclampsia, although more frequent at the outset of febrile diseases, may occur later on in the course of these diseases. As already stated, the eclampsia then occurring is, as a rule, dependent upon blood changes; but not necessarily, for although the nervous system of the child seems to become habituated to mere elevated temperature, yet a great and sudden rise of the fever at any stage of the disease may produce a convulsion. Thus, I have seen a convulsion occur in a child suffering from a pneumonia on the evening before the critical day, the convulsion being simultaneous with the highest rise of the temperature curve.

Malarial fever, according to many authorities, frequently has the chill which ushers in the paroxysm in adults, replaced, in children, by a convulsion.

Malarial eclampsia, so called, is most frequent in infants under three years of age suffering from intermittent fever. In older children the convulsion is absent while the chill is present. When the convulsion takes the place of the chill it is said to be exceedingly severe and may last for hours; sometimes each recurrence of the malarial paroxysm is accompanied by a convulsion. Dubrisay<sup>8</sup> reports a case in which the convulsion recurred with eleven distinct malarial paroxysms. These convulsions are probably toxic in character.

Parotitis, when accompanied by high fever, may be an etiological factor in the production of an attack of eclampsia. Dysentery, gastritis, cholera infantum, all of these when accompanied by high fever may produce a convulsion. Here again, however, we must distinguish the febrile convulsions from those which occur in the later stages of these diseases and are dependent upon the cerebral vascular changes, of which the depressed fontanel is so characteristic a symptom. In conclusion, it may be said that any affection accompanied by high fever may result in an eclamptic attack in infants.

**Reflex Eclampsia.**—By the term reflex eclampsia, which is the second subdivision under which we shall discuss the subject, we mean that form of eclampsia which is the reflex motor expression of some peripheral irritation of sensitive nerves. Such motor manifestations as a reflex result of peripheral irritation are not unfamiliar, even in adult life; as an instance we have the hysterical, and even epileptic, manifestations in females as a result of uterine disease. In infants the inhibitory action of the brain over the spinal cord is still in abeyance, and reflex action is more uncontrolled; there is an exalted irritability of the spinal cord, and hence these little patients are excellent subjects for the full manifestation of the evil effects of a constant peripheral irritant. Among the most constant of these peripheral irritants during infant life is dentition, and this is accordingly the most frequent cause of reflex eclampsia. There are those who believe that dentition, being a physiological process, cannot be connected with the production of so serious a pathological condition as convulsions, but they are of right in the minority. When

it shall have been proved that other physiological processes are never productive of serious morbid states, then we shall give some credence to such a view; for the present, it is emphatically the opinion of the vast majority of authorities that difficult dentition is frequently the only assignable cause for a series of eclamptic attacks. The convulsion is often followed in a short time by the appearance of one or two teeth; some children have a convulsion preceding the breaking through of almost every tooth. We deprecate the assigning of dentition as a cause for almost all the diseases to which infant life is liable; but, on the other hand, we place this physiological process as the chief among the peripheral excitants which sometimes result in reflex eclampsia in infants. To account for the occurrence of these convulsions during the period of first dentition, and their almost uniform absence during that of the second, it is only necessary to remember that the condition of exalted irritability of the nervous centres, which is present in infants, is not present in the older children; hence a similar, or even greater irritation will fail to produce a convulsion in the older child, which in the infant might have produced a serious eclampsia. The gastro-enteritis, which is one of the direct results and a concomitant condition of difficult dentition, may cause an attack of eclampsia in teething infants. In this case we would consider the eclamptic attack the result of the toxæmia caused by the auto-infection from the stomach and intestinal tract, and not due to an irritation of the peripheral nerves terminating in the gums. For an excellent discussion of the subject of dentition eclampsia I would refer the reader to Fleischmann<sup>9</sup> and Politzer.<sup>10</sup>

Helminthiasis is another condition which is supposed by many authorities to give rise in some cases to eclampsia infantum. Such convulsions occur more frequently with the larger worms (round worms, tenia). I recall a severe epileptiform attack in an adult, who had never suffered from epilepsy, which preceded the expulsion of a tapeworm. Other authorities give undoubted cases in which the convulsions were the precursors of the discharge of large quantities of worms. It must not be forgotten, however, that the convulsions may depend upon the intestinal catarrh which is the result of the helminthiasis. Here, again, the toxæmia resulting from the auto-infection from the bowels is the cause of the convulsions. The auto-infection may also be caused by the absorption of toxic products specific to the parasite or such as arise from undigested food due to the catarrhal enteritis produced by the presence of the parasite.

The irritation of indigestible food, or food in too large quantities, may be the cause of a convulsion. In these cases, again, the convulsions may be reflex in character as a result of the irritation of the indigestible matter in the stomach, or they may be produced by an acute rise of temperature; finally, the spasm may be the result of a toxæmic condition of the blood. If the attack be the result of the irritation of indigestible food, it generally occurs soon after the ingestion of the offending nutriment. Children vomit so readily that emesis will generally free the stomach from this irritant, and thus prevent a repetition of the attack. This cause of eclampsia has been acknowledged and well recognized as far back as the time of Hippocrates.

I am disposed to class under this head the occasional attacks of eclampsia resulting from præputial irritation and masturbation<sup>11</sup> in children. Where these attacks are frequently repeated, they would with more propriety be classed as epileptic. Other peripheral irritants have been observed, by good authorities, to produce convulsions in children. Soltmann mentions a case in which ascent of the testicles into the inguinal canal resulted in a convulsion. Foreign bodies in the ears have been repeatedly shown to be active in the production of a convulsion. Scalding of the surface of even a small portion of the body, or any other extremely painful, sudden injury, even if of short duration and of slight character, has been sufficient to produce an eclamptic attack.

**Toxic Eclampsia.**—The group of toxic eclampsia, al-