

**Hyperemesis gravidarum with reference to its etiology and treatment :  
dissertation presented for the M.D. degree, the Victoria University / by  
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**Publication/Creation**

Manchester : Examiner Print. Works, [1892]

**Persistent URL**

<https://wellcomecollection.org/works/ur6gxwrg>

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# HYPEREMESIS GRAVIDARUM,

WITH REFERENCE TO

ITS ETIOLOGY AND TREATMENT.

DISSERTATION

PRESENTED FOR THE M.D. DEGREE, THE VICTORIA UNIVERSITY.

BY

JOHN M. H. MARTIN, M.B., CH.B.

MARCH 1ST, 1892.

EXAMINER PRINTING WORKS, MANCHESTER.

# HYPERTENSIS GRAVIDARUM

Author's Name

## ITS ETIOLOGY AND TREATMENT

### DISSERTATION

Presented to the Faculty of the Medical Department of the University of Michigan

JOHN W. HARRIS, M.D.

1912

Ann Arbor, Michigan

## HYPEREMESIS GRAVIDARUM,

WITH REFERENCE TO ITS ETIOLOGY AND  
TREATMENT.

ONE of the first symptoms of pregnancy, and only second in importance to the cessation of the menses in the earlier months, is the nausea, retching, or vomiting which sooner or later follows on conception in the human subject. There is no record, so far as I have been able to find, of any allied symptom in animals, veterinary surgeons and farmers relying upon the increase in size, manipulation, and auscultation only as signs of pregnancy.

It is known by the name of "morning sickness," an unfortunate and unmeaning term, as retching and sickness are common enough in drunkards (*vomitus matutinus*), gastric catarrh, metritis, irritable conditions of the uterus and appendages, in amenorrhœa, dysmenorrhœa, and the irregular period of menstruation about the climacteric, and, according to some authors, is persistent in carcinoma uteri, and a further cause of prostration, hastening the fatal issue.

That the vomiting of pregnancy takes place in the early hours of the day as a rule, commencing

when the stomach is empty, is an undoubted fact, and patients have complained that when they set foot on the ground on first getting out of bed the nausea and retching immediately begin. But sickness in the morning, taken as a single symptom, is apt to be misleading to a casual or careless observer. Although most common in the morning, the sickness accompanying pregnancy may come on at any hour or part of the day, and either before or after meals.

From my own inquiries, in the majority of cases the first indication of nausea and sickness occurs at periods varying from a week to ten days after the first expected menstrual flow has been missed after conception has taken place, and generally lasts, with different degrees of intensity, during the first twelve or sixteen weeks of gestation. In some cases it may come on shortly after conception and last the whole term of pregnancy, or even be confined to the last three months; but the first and last months are usually free from either nausea or sickness. (Spiegelberg.)

The assertion of some authors that vomiting is more frequent and persistent in primiparæ than in those who have borne children does not accord with my experience; I can only think that in first pregnancies more notice is taken of the fact, whilst in later ones it is looked upon more as a matter of course. I have found, however, that those women who suffer from varicose veins are rarely or never troubled.

Various influences have been attributed to the vomiting of pregnancy with regard to the after progress of gestation with reference to both mother and child. The immediate friends consider it a favourable sign, and in some cases where the food is frequently rejected, causing much debility and weakness, even positive emaciation; the only consolation the sufferer receives from them is that "it is better for her," "only what may be expected," or "she will soon be all right." Scanzoni even says a woman ought to have patience, and not torment herself with trying to stop a malady which will have a natural termination.

The absence of nausea and vomiting to the popular mind indicates that there is something wrong, and experience goes far to prove that where morning or other nausea and vomiting has existed during a pregnancy and suddenly ceases, the death of the embryo may safely be predicted, followed sooner or later by its expulsion. There is a specimen of a four-months foetus, expelled at seven months (missed abortion), presented by me and now in the Owens College Museum, where vomiting in the mother had been a prominent symptom, and its cessation corresponded with the death of the embryo.

The late Dr. Bedford had some strong views on the importance of this nausea, and I cannot do better than quote his own words on the subject. He says: "That there is a striking connection between the absence of all gastric irritation and miscarriage is a fact about which I do not entertain the slightest

doubt, and on this assumption I have predicated a treatment which has *invariably proved successful*. I could cite to you more than one instance in which miscarriage under these circumstances has taken place. Having been consulted in a subsequent pregnancy in which the absence of nausea still persisted, I have been enabled to carry the lady to her full term, and deliver her of a healthy child. The treatment is extremely simple, and it is nothing more than an effort to assist nature, and relieve the effects of extreme congestion of the uterus. I order the patient to take from one-quarter to half a grain of ipecacuanha once, twice, or three times a day, as circumstances may indicate, for the purpose of producing nausea, thus simulating, as nearly as possible, the course pursued by nature when not contravened by influences which we cannot control. This course of treatment is continued until about the fourth month of gestation, at which period the nausea and vomiting usually attendant upon pregnancy, as a general rule, cease."

*Similia similibus curantur.* This savours very much of the Hahnemann doctrine, and one can only think that Dr. Bedford's patient went to the full period in spite of the treatment.

There are also some peculiar forms of vomiting in pregnancy, such as that induced by the *smell* of certain foods, *e.g.*, hare soup, fish, &c., and that by riding in a vehicle, or on taking a railway journey, more especially in the hysterically inclined.

Having considered that nausea and vomiting are not only common but a usual symptom of pregnancy, I think it better for the purpose of study to divide it into degrees or classes under the following definition. It is:—

“A nausea accompanied or not by sickness or vomiting occurring during the period of gestation, and not due to any organic disease.” The words *occurring during* pregnancy perhaps more correctly describe the condition than dependent upon, because various other forms of uterine disturbance give rise to nausea and vomiting irrespective of conception, and it is also quite possible to have vomiting due to phthisis or gastric ulcer coincident with pregnancy.

We will dispose this definition in four classes.

*Firstly.* Where the nausea or sickness is slight, merely an unpleasant feeling, with, at the most, retching, occurring usually in the forenoon, rarely ending in vomiting, and generally passing away before or when quickening takes place, without leaving any ill effects behind.

*Secondly.* Where vomiting as well as nausea is of frequent occurrence, not confined to any period of the day or duration of pregnancy, and resulting in appreciable failure of the general health.

*Thirdly.* Where vomiting is so constant and persistent that all liquids as well as solids are rejected; inability to keep any but the recumbent position; rapid emaciation and debility ensuing, with febrile disturbance, jaundice, delirium, and threatened death.



*Fourthly.* Where vomiting is present, but, from the existence of organic disease, it is difficult or impossible to say what share pregnancy has in producing a dangerous or fatal result.

In considering the etiology of this most interesting and sometimes formidable complication of pregnancy, it must not be forgotten that a profound change takes place in the pregnant woman. Her central nervous system is so modified that the intellectual functions may be quickened or the reverse; habits, both religious and moral, intensified or otherwise; and that a complete change in disposition and character is not infrequent. Morbid cravings and unnatural desires are the outcome of this temporary functional disorder, and events of little importance assume a disproportionate magnitude. The pneumogastric nerves are especially prone to disturbance, and extremely irritable. Altogether the pregnant woman is highly impressionable.

Balin gives it as his opinion that the vomiting of pregnancy is due to direct causal connection with conception and disturbance of the nervous system. This opinion he endeavours to support by describing various cases; but he gives no explanation as to how the nervous system is irritated and the special feature of vomiting caused.

Amongst gynæcologists and obstetricians there has latterly been a strong inclination to attribute this symptom to a nervous origin, apart from any physiological process. There is said to exist a pseudo-

hysterical tendency, accompanied by a disordered and irritable stomach, which leads to nausea and vomiting, and which, once established, is difficult to allay. Kaltenbach, from numerous observations, comes to the conclusion that a nervous disposition and hysteria are the cause, and states that he has passed a bougie into the stomach with the assurance of cure, followed by the happiest results. Similar cases have been recorded, the means used being respectively a hypodermic injection of a few drops of pure water, and vaginal injections of the same fluid. This is practically treatment by suggestion.

It may at once be conceded that nausea or vomiting having been established, the condition of the pregnant woman is thus a favourable one for the prolongation of the disorder, and the hysterically inclined may keep it up until dangerous exhaustion supervenes; but that hysteria is the *initial* cause of the vomiting of pregnancy I consider fallacious.

Hypertrophy of the left ventricle of the heart is an accompaniment of pregnancy, and a natural sequence of the changes and alterations in the blood. Numerous analyses, by most competent observers, have placed beyond any doubt the fact that there is a considerable deficiency of albumen, and that the red corpuscles of the blood are appreciably diminished, the degree given varying from ten to thirty per cent; but the white corpuscles are increased as well as the plasma (the so-called hydræmia and physiological leucocytosis of Virchow), thus accounting for the high

arterial tension. In chlorosis, where a similar diminution of blood corpuscles also takes place, except that the poverty in hæmoglobin exceeds that in red corpuscles (Dowd), there is only occasional nausea, with no reference to either horizontal or erect position. Braithwaite, in a short account of two cases of death from hyperemesis gravidarum, read before the North of England Obstetrical and Gynæcological Society (May 16th, 1890), suggested the toxicity of the albumoses; but I have not been able to detect albumen or its modified forms in the urine of any of my cases since hearing his observations. I must, however, admit that my opportunities in this direction since then have been few. Nevertheless, I believe peptones in the blood are generally regarded as the products of the action of micro-organisms.

A review of the well-recognised anatomy of the female pelvis and pelvic organs may not be out of place at this point, and may give us some insight into the changes and alterations which they undergo after conception.

In consequence of the use for which it is intended, *i.e.*, function, the pelvis differs considerably from that of the male, but varies very little in the different races. Female pelves are nearly all platypellic. The average European index is 79, Negro 81, Australasian 81, Bushwoman 86, Andamanese 87.\* It is the massive bony girdle interposed between the lower

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\*  $\frac{\text{Sagittal} \times 100}{\text{Transverse diameter}}$  (Macalister).

end of the spinal column, which it supports, and the lower extremities upon which it rests. It is spoken of as true and false, and is composed of four bones: the ossa innominata, its boundaries on each side, and the sacrum and coccyx, which complete it behind. The linea ilio-pectinea is taken as the dividing line between the false and true pelvis, the latter being a cavity of as much importance in gynæcology as in obstetrics, and, as we shall see later on, having a direct bearing on the production of vomiting, in consequence of its immovable walls in the *initial* stages of pregnancy.

The *true* pelvis, then, is all that part of the pelvic cavity situated beneath the linea ilio-pectinea. It is smaller than the false pelvis, but its walls are more perfect. It is divided, for facility of description, into a superior circumference or inlet, an inferior circumference or outlet, and a cavity.

The superior circumference forms the margin or brim of the pelvis, the included space the inlet, and it is formed by the linea ilio-pectinea, completed in front by the spine and crest of the pubes, and behind by the anterior margin of the base of the sacrum and sacro-vertebral angle. Its diameters are the antero-posterior, transverse, and oblique. The antero-posterior extends from the sacro-vertebral angle to the symphysis pubis, and its average measurement is  $4\frac{3}{4}$  inches. The transverse extends across the greatest width of the inlet, from the middle of the brim on one side to the same point on the opposite

side, its average measurement being  $5\frac{1}{4}$  inches. The oblique extends from the margin of the pelvis, corresponding with the ilio-pectineal eminence on the one side, and the sacro-iliac symphysis on the opposite side, its average measurement being 5 inches.

The cavity of the true pelvis is bounded in front by the symphysis pubis, behind by the concavity of the sacrum and coccyx, which, curving forward above and below, contracts the inlet and outlet of the canal, and laterally it is bounded by a broad, smooth, quadrangular plate of bone corresponding with the inner surface of the body of the ischium. The cavity is shallow in front, measuring an inch and a half in depth, three and a half inches in the middle, and four and a half posteriorly. From this description it will be seen that the cavity of the pelvis is a short, curved canal, considerably deeper at its posterior than its anterior wall, and broader in the middle than at the extremities from the projection forward of the sacro-coccygeal column above and below.

The lower circumference of the pelvis is very irregular and forms the outlet. It is bounded by three prominent eminences, one posterior, formed by the point of the coccyx, and one on either side the tuberosities of the ischia. These eminences are separated by three notches, one in front of the pubic arch formed by the convergence of the rami of the ischia and pubes on each side. The other notches, one on each side, are formed by the sacrum and coccyx behind, the ischium in front, and the ilium

above. They are called the sacro-sciatic notches, and in the natural state they are converted into foramina by the lesser and greater sacro-sciatic ligaments.

In the erect posture the pelvis is placed obliquely with regard to the trunk of the body, the bony ring which separates the *true* from the *false* pelvis, and which forms the essential part of the pelvis, being placed so as to form an angle of  $60^{\circ}$  with the ground on which we stand.

The bones of the pelvis are covered with periosteum and united by ligaments, of which the greater and lesser sacro-sciatic are the most important as assisting in closing the outlet. The obturator membrane also diminishes the size of the pelvic cavity, being attached to the inner margins of the thyroid foramen. The muscles, though less developed in the female than the male, also diminish the size of the cavity. They are: posteriorly, the pyriformis and coccygeus; laterally, the levator ani. The last two form the pelvic diaphragm, and, if looked at through the pelvic brim, are seen to form on both sides a concave arrangement analogous to the thoracic diaphragm. The obturator internus has an extensive origin anteriorly, and is separated from the levator ani by the obturator fascia.

The bladder is situated anteriorly, and when empty is entirely a pelvic viscus—the rectum posteriorly, and the uterus in the middle, with its annexa shooting out laterally.

According to one author, the long axis of the uterus in the standing position is parallel to the horizon; according to another, vertical to it; midway between these extremes will be found its true position in health.

The viscera are connected and more or less fixed by the pelvic fascia and peritoneum, which form their true and false ligaments; and between the peritoneum and pelvic fascia, and between the portions of peritoneum doubled on itself, there is a varying quantity of areolar tissue. It is in this tissue and beneath the peritoneum (broad ligaments) that the vessels and nerves, medullated and non-medullated, course before being distributed to their respective destinations. It is just as well to mention the ureters as occupying in their lower fourth a position by the uterus in the pelvic cavity.

The arterial supply of the pelvic organs and the numerous vessels contained in the cavity are derived from the abdominal aorta, through the ovarian arteries and the sacra-media. The internal iliac arteries, anterior and posterior divisions, give off numerous vessels, the most important of which is the internal pudic; and the greater length of the gluteal artery is pelvic.

The veins accompany the arteries, but are much larger in calibre (more like sinuses in pregnancy), and form numerous plexuses; and the extensive veins of the vagina empty themselves into the internal iliac vein.

A rich system of lymphatics courses in connection

with the pelvic areolar tissue, and is associated with obturator, sacral, and glands at the isthmus uteri in the broad ligament.

The large cords of the sacral plexus occupy the front of the sacrum in the pelvic cavity and give off at least three branches (*i.e.*, spinal nerves, second, third, and fourth) to the pelvic plexuses of the sympathetic, which are derived from the medially-placed inferior hypogastric plexus before being distributed to the pelvic organs, more especially to the posterior surface and sides of the uterus and the anterior surface of the rectum; and it is not improbable, as suggested by Johnstone, that special nerve fibres supply the body and cervix of the uterus. Allingham has given a very full and correct account of the nerves and their connections which arise from the hypogastric plexus and their association with other plexuses of the sympathetic.

From the foregoing it is abundantly evident that the pelvic cavity in a normal condition is incapable of receiving any further addition to its contents or any rapid increase in growth of its contained viscera without seriously interfering with the normal circulation of the blood.

In normal ovulation there is always great increase in the activity of the ovary. It is not a mere passive function, therefore increase of blood supply is a necessity. When conception takes place there is added to this the preparation of the endometrium for the reception of the ovum, the increase in weight



and size of the uterus which can be ascertained by examination and palpation, its sensitiveness and tenderness by touch, and the intense hyperæmia visible in the walls even of the mucous membrane of the vagina. According to Helme an active process of growth goes on in arteries, veins, and capillaries, with enormous and rapid increase of the musculature and supporting framework of connective tissue of the uterus. I agree with Lee, whose beautiful dissections I have seen, notwithstanding that men of note and experience are opposed to his view, that the nerves distributed to the uterus do enlarge *pari passu* with the general developmental activity, and that hence they are more liable to stimulation.

As long as the impregnated uterus remains a pelvic organ its increase in size, assisted materially by a half-filled bladder and a rectum distended with hardened fæces—a condition practically constant in those cases into which I have enquired—interferes with the circulation in the vessels, which becomes more and more impeded; greater and greater pressure is exercised on the nerves until their stimulation ends in the reflex act of vomiting.

It is easy to understand, as the venous circulation under these conditions is against gravity, that after the night's rest there ensues a partial accommodation to the rapid enlargement, and when the upright position is again assumed a more acute hyperæmia results, with nerve stimulation and reflex vomiting. The weight of the intestines must also be recognised

as a factor, the pressure from above varying, as Lockwood has shown, according to the length of the mesentery.

Graily Hewitt gives some interesting cases to prove that retroflexion more especially gives rise to this symptom, and concludes that in all cases flexion is the cause of the *beginning* of the vomiting. From my point of view, the cases he cites simply prove that all flexions or versions of the uterus intensify the natural sub-acute hyperæmia due to pregnancy, and so to irritation of the hypogastric nerves; the admission where correction of the flexion, version, or impaction of the uterus was unsuccessful also goes far to prove the pressure theory of the vomiting, and its physiological and pathological bearings.

It may be asked why does nausea and vomiting not occur during the development of fibroids of the uterus? The following reasons may be alleged: Fibroids grow slowly; there is no great amount of blood relatively to the size of the growth and no increase in the size of the nerves, the frequent hæmorrhages besides relieving pain, lessening the tension, and so permitting accommodation to increasing growth. There is a greater analogy in the acute affections of the pelvic cavity, such as pelvic peritonitis and pelvic cellulitis, vomiting in the latter being practically a measure of the severity of the attack. Again in pelvic hæmatocele, though not a disease, but the result of a pathological condition, the vomiting is a marked feature, and in malignant

diseases of the uterus and appendages, though not a constant accompaniment, it is more frequent than not. In dysmenorrhœa due to stenosis of the cervical canal, to indurations, cicatricial inequalities, and during inflammatory conditions, it is a question whether the accompanying vomiting is not more distressing to the woman than the pain.

A point very obvious to most practitioners and which has been constantly remarked upon, viz., the comparative absence of this symptom in the lower classes of society, and its more frequent appearance in the educated and refined, is explained by the fact that smaller—I wish to emphasise the fact—*smaller*, not deformed pelves, and a more sensitive, nervous organisation, are more often found in those moving in the so-called upper stratum of society.

The following is a life-history in illustration of this symptom :—

A. B., now living, a lady of education and culture, æt. thirty-six years, and in the enjoyment of excellent health since the birth of her last child eighteen months ago, with the exception of some temporary menstrual irregularities caused by family troubles. I am assured the husband has never had syphilis, nor is there any suspicion of it whatever. Father, æt. seventy-two, and mother, æt. seventy-one, are alive and in good health, and active beyond their years. She has one sister and four brothers alive and well; one brother died abroad.

When thirteen years old she first menstruated,

each flow being accompanied by attempts at hysteria, and faintness appearing at irregular intervals. When seventeen these troubles disappeared, and she kept well until the age of twenty-one, when she had severe leucorrhœa, muscular pains, and nervous irritability, this condition continuing more or less for three years. At the age of twenty-four she commenced to feel pain on awakening in the morning, accompanied by a sensation of bearing down when getting out of bed, after even a good night's rest. She has suffered from constipation ever since she can remember, necessitating considerable forcing at stool. About this time, after a long walk, whilst going up stairs, she felt a severe shooting pain in her abdomen, and was three months in bed; uterus was then *slightly* retroverted; the ovaries excessively tender, and some pelvic cellulitis was apparent. Recovery was considered complete, so that at the age of twenty-seven marriage was permitted, five weeks after which sickness and vomiting of a severe type, accompanied by excessive salivation commenced, and lasted sixteen days. Although nausea and occasional vomiting continued, she felt pretty well until she was so unfortunate as to fall on the ice; premature labour being the result, and an eight-months fœtus survived three days.—January 5th, 1882.

She soon became pregnant again, the sickness and vomiting showing itself about fourteen days after the first missed period, same type as in the first pregnancy, but now leading to some malnutrition. Sickness

stopped on being thrown out of a conveyance, but abortion occurred one week after, at three months.—December 7th, 1882.

Some six months after conceived again; sickness came on at exactly the same period, but its intensity developed at once. She was in bed six weeks; salivation was particularly profuse, and there was great prostration. As soon as she felt pretty strong and took exercise pain came on and she parted with a well-formed foetus of about five months.—January 15th, 1885.

A little over twelve months passed when she again conceived, the sickness and vomiting commencing almost at the same time as the former pregnancies. Expressing a great desire for change, she was carefully removed to Blackpool, the horizontal position being maintained throughout the journey, and for many weeks after. Sickness did not cease on quickening, but, being very irregular, was attributed to digestive troubles. Instrumental labour at term, child alive and vigorous a short time before birth, but could not be resuscitated.—November 10th, 1886.

A month or two elapsed before her usual strength was regained, the loss of the child being a great blow to all her hopes. After another twelve months found herself again pregnant, the nausea and vomiting appearing at the usual time, being accompanied with hysterical outbreaks, insomnia, salivation, great prostration, and jaundice, with occasional delirium. Sickness entirely disappeared when the uterus rose out

of the pelvis, and excellent health was enjoyed until the eighth month, when premature labour supervened.—August 24th, 1888. Child died fourteen days after from diarrhœa.

After another twelve months of robust health conception took place, and, practically at the same period as before, the sickness and vomiting came on, salivation, great depression and jaundice, but no delirium, merely a loss of interest in all her surroundings, and frequently for answers only a vacant stare. Vomiting ceased suddenly again *on the uterus rising out of the pelvis*, and health was restored. About the fifth month had a second attack of jaundice accompanied by a considerable diminution in the volume of the uterus, so that she thought the child was dead. The uterus *had descended* towards the pelvic cavity. The resumption of the horizontal posture relieved the pressure symptoms and gestation proceeded to term, a full-sized male infant being born alive on June 15th, 1890.

This lady, with the exception of what has been stated above, is in perfect health, the only discoverable uterine trouble being a larger uterus than normal, with some prolapse, for which she wears a pessary. Latterly, the constipation from which she has suffered all her life has been less troublesome.

That the working classes occasionally suffer severely, the following case will show :—

C. D., æt. forty-four, wife of an overlooker in a cotton factory, of rather masculine type and physique.

She had enjoyed good health with the exception of an attack of acute rheumatism some years ago, and had had ten children, of whom nine are living and one was still-born. Labours have all been normal. When three months advanced in this last pregnancy, the slight morning sickness became so frequent that she was compelled to seek medical advice. I saw her on December 16th, 1891, and found her suffering from vomiting of an irregular type, but more frequent and persistent in the erect position. She had been subject to slight prolapse, and the uterus was low down and wedged in the pelvis, but could be elevated without difficulty. Slight jaundice appeared after my first visit, but, under treatment, the sickness diminished. Miscarriage took place a little over the fifth month, when all sickness ceased. Ten days afterwards she felt sufficiently well to get up, but before being able to do so her respiration became difficult, coma set in, and she died in thirty-six hours on January 13th, 1892. The diagnosis was embolism of the basilar artery. No post mortem could be procured. Beyond a loud aortic systolic bruit, no other organic mischief had been detected.

The following interesting case, requiring no comment, demonstrates how thoroughly the cause of vomiting during pregnancy should be inquired into:—

E. F., æt. thirty-five, wife of a clerk, was admitted into the Blackburn and East Lancashire Infirmary on January 14th, in apparently a dying condition. No definite history could be procured beyond the

fact that she had suffered from sickness, and that she was four and a half months advanced in pregnancy. The vomiting was slightly stercoraceous, and she had a small femoral hernia, the duration of which was unknown. Under an anæsthetic—ether—she slightly revived, and whilst examining the tumour, without any attempt at taxis, the hernia returned. No relief of the vomiting, however, followed, and she died—collapsed—in a few hours. At the post mortem, a gangrenous patch of intestine, an inch long, was found to have ruptured, and there was fæcal extravasation.

*Treatment.*—In those cases where there is no appearance of the general health being affected, and where the sickness passes off quickly as the day goes on, beyond a saline purgative, no treatment is required. When, however, signs of malnutrition begin to show themselves, the patient should immediately be ordered to bed; the room should be large and well ventilated, and as cheerful as possible. Professional nursing should be insisted upon, as friends, under these circumstances, are not to be relied upon; they are too officious, sympathetic, or grossly ignorant. A thorough vaginal examination should be made, and if any malposition of the uterus exist it should be at once rectified. All changing should be effected in the horizontal position, and a bed-pan used invariably. The bowels should be kept free by the regular and careful administration of enemata, and as soon as practicable the rectum should be prepared by



diminished aperient enemata for rectal alimentation, and, perhaps, medication. It is also necessary to be quite sure the bladder is thoroughly and regularly emptied. Ice water or small lumps of ice are always grateful. Effervescing drinks, such as soda-water, potass-water, either with a dash of hock or champagne, even if vomited again, are refreshing. Counter irritation to the pit of the stomach is worse than useless, but a rubber bag with hot water is sometimes of service, and preferable to Chapman's ice bag, to the spine. Brand's essence of beef in the jelly form and iced, slips down easily, and is readily absorbed if retained a short time. One teaspoonful of sod. bicarb. in two ounces of pure water relieves thirst and acidity if given occasionally. To enumerate the numerous drugs employed to combat the sickness would occupy too much time, but I will just mention those which I have found of service. Nепenthe, in my estimation, heads the list; I have known the stomach tolerate it when everything else was rejected. It is pleasant to take in pure water, and does not lead to constipation, or, more accurately, interferes less with the action of the bowels than any other sedative. I have used sodium salicylate in fifteen-grain doses, and prefer it to salol advocated by M'Call. Calomel in two-grain doses occasionally has a good effect, more especially in the cases where there is an icteric tendency, or confirmed jaundice. I have tried exalgine and thought it did good, but would prefer a further trial before recom-

mending it absolutely. Oxalate of cerium, ingluvin, and potassium bromide enjoy a reputation, and should have a trial. Cohnstein observes, and I quite agree with him, that if the bromide does not act quickly it is of no use persevering in its administration. It is clear that whatever drug is given should be in small bulk, and as little nauseous as possible. Hypodermically, I have tried morphine and hyoscine, but have been somewhat disappointed in both. They relieve the ordinary sickness, but their effect in the graver forms is most unsatisfactory. Morphine suppositories have proved more efficacious in my hands.

With regard to the galvanic and faradic currents, Gunther records relief by the former, and Mitchell gives a case as treated by the latter current, but in the present state of our knowledge the practice is to be condemned.

Application to the external os uteri and cervical canal of nitrate of silver solution, and latterly of cocaine, have been advocated and may be tried. They can at least do no harm, but the extensive application of solid nitrate of silver has been known to produce atresia.

Copeman's digital dilatation of the cervical canal and internal os has been well known from the history attached to its accidental discovery, and should be tried before the more serious operation of inducing abortion. Graily Hewitt readily accounts for it doing good by the manipulations in performing the operation necessarily righting a malposition of the

uterus. From my point of view I recognise the fact that manipulation stretches the nerves supplying the cervical canal and lower segments of the uterus in the area of the so-called Bandl's ring, and give relief as stretching the sciatic nerve does in sciatica, or stretching in a surgical manner any irritable nerve. Mackinnon, who inclines to Graily Hewitt's theory, but remarks that the vomiting causes a greater descent of the uterus into the pelvic cavity, packs the vagina with antiseptic gauze dusted with iodoform, and states he gets most satisfactory results.

The induction of abortion must be considered in those cases that come under the third and fourth divisions of my definition. In the first place, I should like to say that the responsibility of such an operation should be borne by more than one pair of shoulders; in the second, that each case should be considered on its own merits, and the patient should not be prevented having the benefit of an operation in the hope that the vomiting may suddenly subside, as it sometimes does when least expected.

Case G. H., æt. twenty-six, an educated lady of prepossessing appearance, particularly strong and healthy, and who prided herself upon being free from the ordinary women's ailments. She had had one previous pregnancy attended by vomiting of a troublesome nature, but in no way giving cause for alarm, and which disappeared at the fourth month; delivery followed at term of a healthy, living child. The second pregnancy had advanced ten weeks when persistent

vomiting came on, with rapid emaciation, insomnia, slight icteric tint, and dry tongue. All food was rejected, even cold water and ice, and apparently in larger quantity than that taken. In the commencement of the sickness, rectal alimentation had been quite neglected, and when at length resorted to was not tolerated, so that the prostration was very intense and rapid. Valentine's meat juice was given guttatim by the aid of a funnel, tube, and clip; but every remedy, local and internal, appeared useless and failed to give even temporary relief. A consultation was held, and it was decided to induce abortion. This operation was performed by preliminary digital dilatation of the cervical canal and internal os, and then separating the membranes from the uterus by a sound an eighth of an inch in diameter. There being no appearance of abortion after twelve hours had elapsed, a further separation of the membranes was resorted to, and in eight hours complete expulsion of the ovum followed, with very little hæmorrhage. No flexion of the uterus was detected, nor anything abnormal before operation, except slight anteversion. Recovery, though protracted, was satisfactory and complete.

This was a typical case for operative procedure, and I feel convinced the lady could not have survived if the operation had been longer delayed.

From the foregoing cases and others, which have come under my direct observation, I conclude :

*Firstly.* That there is an ordinary nausea and

vomiting occurring during pregnancy that is a physiological act of reflex origin, and a symptom *only*, due to the sub-acute hyperæmia attending the rapidly-developing uterus, vessels, and nerves in a confined cavity.

*Secondly.* That versions, flexions, prolapse of the uterus, &c., are factors of great importance in pregnancy; they are pathological conditions giving rise to reflex and other troubles in health, and how much more so in pregnancy is shown by their converting a merely unpleasant and passing symptom into a dangerous one. That such increase and intensity of ordinary reflex symptoms produces the graver forms of vomiting in pregnancy, leading to exhaustion, and hence are pathological. Therefore I agree with Graily Hewitt that in all forms of more or less continuous vomiting in pregnancy, displacements of the uterus should be looked for and, if found, corrected.

*Thirdly.* That in the absence of flexions, versions, and organic disease, *hysteria*, by prolonging and aggravating a symptom of little moment originally, and which has a natural tendency to subside, is the great cause of the persistent vomiting in pregnancy, which defies all recognised therapeutical remedies.

*Fourthly.* That it is not improbable in pregnancy, with its increased arterial tension, and more especially where lung and cardiac complications exist, gastric irritation may be set up, on account of the close relationship of the respiratory and vomiting centres in the medulla oblongata.

Lastly, it seems quite comprehensible that in tribes or nations which have little or no cultivation, the pregnant woman suffers practically little; whilst among the more highly educated, refined, and sensitive dwellers of the towns and cities of our own later and more artificial civilisation will be found the greatest sufferers from the graver troubles which may occur during this condition.

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