

it. Cold douches daily with proper friction afterward are most commendable.

Bandages of a supporting nature, or proper-fitting corsets which support from the pelvis, are useful; such corsets are constricted about the hips, but are loose about the epigastrium and lower part of the thorax, thus affording room for breathing, and not allowing the stomach to be without support from below.

Medicinal Treatment.—*Strychnine* is probably the most suitable of all drugs, and may be given in moderate doses after meals. Condurango bark has been recommended in those cases in which the appetite is deficient. It may be given in doses of fifteen to twenty drops of the fluid extract, or may be prepared as a decoction with the addition, afterward, of HCl. If there are signs of supersecretion, atropine may give relief.

For *constipation* purgatives are to be avoided where possible. Cascara and colocynth may be recommended. Massage, proper exercise, and occasional injections of water and oil may not only excite peristalsis but soften the stools. Two per week are sufficient. But few saline waters are useful here. The Carlsbad (Sprudel) are the best of all the salts.

For *vomiting*, diet and lavage should suffice; or if they do not, then nutrient enemata may be employed. Should the symptoms still persist and if they are not due to mere irritability, surgical intervention may be recommended.

For the *thirst*, a Dover's powder, gr. iv., will often be of service.

Surgical treatment in dilatation of the stomach is indicated in: 1. Acute cases in which medical treatment is contraindicated or useless, e.g., twisted duodenum.

2. Idiopathic dilatation (atrophic or atonic form): (a) When the medical treatment (dietetic, mechanical, etc.), though beneficial, must be continuous and cannot be properly carried on; or (b) when these means fail to relieve sufficiently. The weight of the patient under treatment and the strength and the amount of urine serve as good criteria.

It is well not to wait too long, lest the enfeebled condition may make operation more difficult to withstand.

3. Stenosis of the pylorus (*vide infra*).

The *objects* desired are: To remove the cause of the insufficiency and gastrectasis; to remove the consequences of insufficiency and gastrectasis, i.e., stagnation and retention, and thus give readier transport of food to the intestines.

Patients must realize that with gastrectasis they cannot with benefit carry on the usual routine of living, but that special care is absolutely essential.

Kind of Operation: Gastro-enterostomy, as being simplest and most rational, is by far the best, even when stasis exists. Of this, *vide infra*.

Bircher's operation, to diminish the size of the stomach, affords no benefit and has many disadvantages.

IV. HYPERCHLORHYDRIA.

Definition.—Increased secretion of the hydrochloric acid with the gastric juice during digestion. This is to be distinguished from hypersecretion in which the gastric juice is secreted in excess, not only during digestion, but also at any period of the day or night. It is a symptom rather than a disease *sui generis*, and occurs as a neurosis purely or as a reflex irritation from organic disease of the stomach itself or of other organs (pyloric stenosis from cicatrized ulcer, cholelithiasis, etc.).

Etiology.—This is a very common affection, occurring in young adults rather than in old people, and equally in both sexes.

Among the causes which have direct relation to the disease are chlorosis, neurasthenia, melancholia, psychical disturbances, generally worries and excitements; dietetic errors (eating too quickly or at irregular intervals, especially food which is irritating, e.g., too cold or too hot food, spices, coffee, alcohol). The condition is common in students and overworked business men (stock-brokers). It frequently accompanies ulcer of the stomach, excessive

use of tobacco, renal calculi, cholelithiasis, etc., and is often, too, associated with biliary affections and migraine.

Symptoms (in pure hyperchlorhydria with normal motor functions).—The symptoms occur always during digestion, either after each meal or mostly a few hours after the chief meal of the day. Inasmuch as the symptoms arise coincidentally with the appearance of the free HCl, their time of onset will depend on the size of the meal (i.e., on the amount of the stimulus). The symptoms bear no ratio to the amount of HCl secreted. There are in pure cases usually a gradually increasing uneasiness, discomfort in the epigastrium, with acid eructations, and heart-burn. About the same time pain appears, which may be slight or severe or of a burning character, and perhaps followed by water-brash or, more rarely, actual vomiting. As a rule the ingestion of food, especially albuminous food, or alkaline drinks, affords temporary relief, while vegetarians find but little comfort under similar circumstances. Headache and dizziness may be present, but all the symptoms disappear as the stomach becomes empty. The appetite is usually good, often voracious (*Heiss-lunger*), and there may be great thirst. Constipation is frequent.

These patients, as a rule, have comfortable nights, and maintain good general health and nutrition.

The *objective* signs present are chiefly a diffusely tender epigastrium, especially during digestion, slight enlargement of the stomach upon inflation, while a test meal reveals a normal motor power, well-digested albumins, and less digested starches. The total acidity is variably increased, the increase being due to HCl. The contents may be rich in ferments, and no bacteria of importance are evident.

Course.—The symptoms may come and go irregularly or periodically; sometimes after certain kinds of food, or sometimes only after psychical or other causes, and in spite of a proper diet. Sometimes there is no pain at any time, even with great hyperacidity, and Riegel is evidently justified in insisting on an examination of the contents to establish a diagnosis.

Cases last for a variable period, most often with remissions and exacerbations, and a cure in aggravated cases is effected only when the cause is removed. In other cases symptomatic treatment alone is of use, and the underlying condition (e.g., tabes dorsalis) keeps up the trouble persistently.

All grades of the condition may occur, from slight temporary attacks of hyperchlorhydria to the advanced condition of chronic hypersecretion.

Prognosis.—The prognosis is good if the condition be uncomplicated. Even after relief has been afforded, however, recurrences are very frequent.

Diagnosis.—The *subjective symptoms* often suffice for a diagnosis. Thus, for example, the pains coming on at definite periods after meals, the relief afforded by certain foods, the good appetite and preserved nutrition, are all important. An accurate diagnosis, however, depends on a chemical examination of the contents and the finding of excessive secretion of free HCl. The presence of free HCl, shown by a qualitative test, and the finding of a total acidity of 70 by the burette after a test breakfast, or of 80 after a test lunch (Germain Sée), indicate a hyperchlorhydria. The excess may double that amount.

One must exclude ulcers of the stomach, gall-stones, and Reichmann's disease (chronic hypersecretion).

The *morbid anatomy* is practically *nil* in pure cases.

The complications are hypersecretion, dilatation, and ptosis.

Treatment.—The daily regimen is of paramount importance. The daily life should be regulated and cares avoided where possible. Proper exercise, especially riding and the like, and a cold bath every morning, are to be advised. Patients should rest after meals.

Medicinally, sodium bicarbonate or magnesia usta in hot water taken half an hour before the pain is expected, usually prevents attacks.

Diet List: Food should be eaten at regular intervals, and slowly, and should be well masticated, and it should

not be too hot or too cold. One should avoid anything which stimulates secretion of HCl, e.g., coarse, insoluble foods like cabbage, turnips, celery, carrots, nuts, fruit cores, etc.; too much fatty food and too much sweets; sharp spices, e.g., pepper, mustard, vinegar and other acid foods, horseradish, rich salads, and very salty dishes. Avoid also coffee, beer, and strong alcoholics.

For beverages one may take Apollinaris, seltzer, Vichy, soda waters, etc., with a little mild wine or milk.

Of proteid food one recommends eggs, fish, meats—veal, beef, mutton—and limits starchy foods, which should be well divided up and combined with proteids; also dextrinized forms, e.g., toast or, as soup, oatmeal gruel. Potatoes must be mashed, and sugar should be taken in solutions if no atony exists.

Sample Dietary: 1. Early breakfast: 7-8 A.M., weak tea, milk, or cocoa, dry toast with butter.

2. Late breakfast: 10 A.M., roast meat or chicken, or eggs, toast, and weak tea.

3. Dinner: 1 P.M., soup with egg; roast meat, chicken, or fish; asparagus tops; a little mashed potatoes; omelette soufflée; Vichy or Apollinaris with hock or claret.

4. Tea: 5 P.M., tea and biscuits.

5. Supper: 7-9 P.M., cold meat sandwich, or a hard-boiled egg at bedtime, cocoa or milk, or a little honey instead, Swiss or Dutch cheese and crackers.

If the appetite is good, meals Nos. 1 and 4 may then be omitted, but three meals daily taken; if the appetite is poor, four or five small meals should be taken daily.

Alkalies are taken as directed, and among the most useful are the Sprudel salts for constipation, one teaspoonful being taken in hot water before breakfast.

V. HYPERSECRETION.

(Synonyms: Continuous Secretion, Reichmann's Disease, Gastro-succorrhœa Continua Chronica).

Definition.—An excessive secretion of gastric juice, usually hyperacid, occurring not only after meals, but during fasting also. This is more often a symptom than an idiopathic disease, and occurs probably oftener than is realized in benign pyloric stenosis and certain forms of chronic gastritis; also in gastric neuroses. It is at times paroxysmal and recurrent (the intermittent form), and has been called gastroxyntsis (Rossbach) and intermittent hypersecretion (Riegel). Patients thus afflicted are usually quite well in the intervals. To the more continuous form the term Reichmann's disease has been applied. Normally there should not be more than 20 c.c. of gastric juice at any time when the stomach is without food, and usually there is only from 1 to 10 c.c.

Etiology.—Young nervous men are most often affected. Dietetic excesses in quality and quantity, excitement and gastric motor insufficiency, are the chief direct causes.

Symptoms.—These vary according to the degree, and come on insidiously, often after long-standing dyspeptic symptoms. Early signs are restlessness, discomfort, and finally pain two to three hours after meals; then perhaps headache, nausea, flatulence, and, after another hour or two, vomiting supervenes, giving temporary relief, or the vomiting may occur after many hours of fasting. The vomitus varies in quantity, is usually fluid, of a low specific gravity, 1.004-1.006, showing free HCl usually in excess, is clear, or turbid green with bile, and bitter to the taste. Sometimes vomiting is absent.

These distressing symptoms come on frequently at night and in the early hours of the morning, disturbing the patient's sleep, a fact which is of considerable importance in the diagnosis. Added to the headache are signs of intestinal indigestion, from an over-acid chyme, and constipation. The appetite varies, as also does the sense of thirst. Emaciation and weakness follow, and the patient, if untreated, often develops signs of cachexia.

The degree of these symptoms varies greatly. In some cases they are of short duration, but recurrent at long intervals; at other times several attacks may occur in a

single day, or, lastly, the condition may persist and the patient be a chronic sufferer.

Examination of the patient reveals often a sunken abdomen, and perhaps an enlarged and dilated stomach, at times too a gastroptosis. The stomach contents, after a test meal of Riegel, show marked digestion of albumens, and relatively little alteration in the starches.

Diagnosis.—If the tube is passed in the early morning before food has been taken, a varying but excessive quantity of gastric juice (usually hyperacid) may be removed—an indication that secretion persists even without the stimulus of food. This is the *crucial feature of the diagnosis*, though to avoid error it is important thoroughly to wash out the stomach on the evening previous to such an examination, inasmuch as there may be a concomitant motor insufficiency (which should of course be thus excluded).

One must exclude ulcer of the stomach and duodenum, scarred ulcer, hypertrophic stenosis, and other benign obstructions at the pylorus, and finally organic cerebral and spinal-cord lesions.

Course and Prognosis.—The course depends upon the possibility of removing the cause. Intermittent cases are usually easy to relieve. These idiopathic cases may, if mild, be readily cured by treatment. The severe ones may last for years, and then usually result in a complicating dilatation. In such cases the symptoms become aggravated and patients suffer much, especially at night. Death does not occur from the simple idiopathic condition, but in complicated cases it may follow from marasmus or fatal hemorrhage from an ulcer.

The prognosis is uncertain. Recurrences of the mild condition are common; complicated cases are especially difficult to cure. Operation (gastro-enterostomy) relieves cases with marked dilatation and motor insufficiency.

Treatment.—Treatment must be directed to prevent stimulation of HCl, and yet to afford enough nutrition without overburdening the stomach. Hence those substances should be taken and avoided as in cases of hyperacidity (*vide antea*). Special care must be taken in the diet to avoid the onset of motor insufficiency, or, if it is already present, to prevent its increase. Hence meals must be nourishing and in small volume. Fluids and starches must be limited, the latter finely divided, and given when the stomach is freest from HCl. In most cases it is well to give food five or six times daily in small quantities each time.

Lavage is useful in most cases, and is essential where atony is marked. It is best carried out, as Riegel suggests, before the evening meal. Pains are thus relieved and digestion made more easy. Alkalies, however, often suffice to relieve the pain, and are given before digestion reaches its height. If no atony exists, one may give alkaline waters with benefit; or one may use powdered calcined magnesium and sodium bicarbonate. Atropine sometimes gives remarkable relief, while others find in Dover's powders immense benefit.

Gastro-enterostomy is of value only where marked motor insufficiency is present, and in such cases it is useful, not only in aiding digestion, but also in relieving the pains and discomfort of faulty digestion. The excessive secretion need not thereby cease. It is doubtful if the direct application of galvanism to the stomach has more than a normal effect on the condition.

Hygienic conditions and daily regimen are to be provided for, as in cases of hyperacidity.

VI. NEUROSES OF THE STOMACH.

To group the neuroses of the stomach one may well follow the German method, according to which neuroses are: motor, secretory, or sensory. Even more than in other classifications these divisions overlap, neuroses of different groups frequently occurring in one patient. Leube even puts into one group those cases which show a combination of two or more of the above divisions. These he speaks of under "Nervous Dyspepsia," in which chapter he shows that the sensory disturbances predominate.

And one is reminded here that no irritation or disturbance can be felt by the stomach or transferred to the centres, or *vice versa*, except by means of the nervous system. Every gastric trouble then is, strictly speaking, largely nervous. We now know, too, that for the secretion of gastric juice the undisturbed function of the vagi is essential, the mere mechanical irritation of the gastric mucous membrane not always sufficing, while suitable stimulation of the mouth or gullet, or even some of the organs of special sense, will call forth the secretion. The circulation in the stomach, too, as well as the secretion, and the muscular tone are controlled, for the most part, directly by the nervous system.

The causes of gastric neuroses in general are those which so incoordinate the nervous system by afferent impulses, or so exhaust it by afferent energy, that it is unable to supply that work which is one of the essentials to gastric function. The exciting causes are frequently illustrated by persons eating large meals while in a condition of general exhaustion. A physician's eating heartily immediately after a worrying night's work in obstetrics, a commercial man's taking an unusually large meal after an anxious day, or an athlete's heavy meal after his first practice, are familiar examples. Such indiscretions are followed by distress and burning sensations, restlessness, at best diarrhoea and flatulence, leading to a "bilious" attack next day. Atony is a frequent accompaniment.

MOTOR NEUROSES.—*Peristaltic Unrest* (Kussmaul).—Strong, sometimes visible and palpable movements, not due to stenosis or ptosis, are rare. They do, however, occasionally occur as a result of increased excitability of the peripheral nerve apparatus—that is, as a motor neurosis. This may be observed even in the early morning when the stomach is empty, but it is usually worse after a meal, and sometimes produces movements even in the small intestine. This neurosis may be temporary or permanent, and it is frequently observed with ptosis. There are, of course, all grades between peristaltic unrest and that condition in which digestive movements are abnormally hastened (hyperkinesis). The patient complains of a sense of unrest, movements in the stomach, and a drawing-together of the abdominal organs which leave him no peace, although there is no pain. There are usually no secretory or other changes.

Anorexia, nausea and vomiting, and insomnia may accompany the other complaints. On inspection of the abdomen one sees the peristaltic movements. Palpation and chemical examination should exclude the presence of any organic disease.

Diagnosis. Diagnosis is easy if there is ptosis, which enables one to watch the stomach, including the pylorus, satisfactorily. If there are only subjective symptoms, one must exclude mainly stenosis and dilatation. It is well to remember that the fact of a patient being neurotic is not *per se* sufficient to insure the exclusion of organic disease!

Course and Prognosis.—This depends on finding and removing the cause.

Treatment. Remove the nervous cause if possible. General hydrotherapy may be ordered. The diet is to be non-irritating, and the evening meal light. Compresses or galvanism may be tried, and small doses of bromide of potassium.

Hyperkinesis.—This is an increased motor activity, the stomach emptying itself more quickly than normal, and is a pure neurosis. In its pure form it is a neurosis without secretory changes; but nearly always there is, preceding the condition, an increased production of hydrochloric acid. For the diagnosis one must carefully examine the stomach contents and the motor power.

Spasm of the pylorus is usually secondary to ulcer, more rarely to cancer (even if lactic acid is present in increased quantity), to gastritis, and to secretory disturbances. It is also due to dietetic errors, especially extremes of temperature of the food, or mechanical excess. According to Osler, its existence as a true neurosis is doubtful. Clinically, one hears of sharp pain and observes a

prompt peristalsis, perhaps vomiting, or flatulence and distention, and a sudden relief, which is suggestive. One can sometimes feel the hard pylorus. Inflation is easy, but evacuation is prolonged. Intermittent stagnation and retention turn one's mind to this condition. Pyloric spasm, when secondary to a continuous hyperacidity, may lead to dilatation and its sequelae.

Etiology. In searching for the cause one looks for a neurotic constitution, with worry and anxiety. The disease has been caused by biliary colic and acute enteritis.

Treatment. This is general and dietetic, according to needs. Galvanism and bromides may be of slight service.

Spasm of the Cardia.—This is a spasm of the circular fibres of the cardia with or without pain, and of variable duration. Food and secretions are retained in the oesophagus, above the spasm; gases remain below the spasm, in the stomach.

Etiology. Spasms of the cardia result from: 1. Irritants entering the oesophagus, *e.g.*: (a) the stomach tube, (b) irritant poisons, (c) food which has been too quickly swallowed, and (d) too hot or too cold food. 2. Inflammations. 3. Ulcer. 4. Cancer. 5. Hyperchlorhydria. 6. Tympanitic stomach. 7. Simple spasm. This last is rare, though it may occur at any age as a result of hysteria in neurotic individuals, and has been met in air swallowers. It is caused by tobacco, by arteriosclerosis, by tetanus, and by diverticula.

Spasm of the cardia may last for a long time, or may be of short duration and recurrent. Each attack is sudden, with painful contraction perhaps, and a sense of pressure and pain. One feels as if the food were held back about the stricture or regurgitated. In a few there is distress, with retching and vain attempts to bring up food, or actual vomiting may occur. The patient makes voluntary efforts to compress the thorax, or holds his breath, or drinks fluids in order to force the food through into the stomach. There is dysphagia or delay in swallowing, and sounds of deglutition are less distinctly heard or long delayed. In passing the tube one meets with a resistance which can be overcome.

Einhorn believes that the recurrent filling of the lower area of the oesophagus with food and taking water to force down every few mouthfuls lead to dilatation of the oesophagus. Riegel doubts this, rather regarding the dilatation, more especially the diverticula, as the result of concurrent inflammation. The dilatation may be symmetrical, pouched, or diverticular. As soon as dilatation exists dysphagia becomes constant, and there is more dyspnoea, with palpitation, contributed to by fermentation and putrefaction. A dilated oesophagus may hold more than one pint.

Differential Diagnosis. One must exclude the various non-spasmodic obstructions, such as tumors causing external pressure, or, again, organic stricture from any cause.

Treatment. Mostly prophylactic. In general the food should be of a proper temperature, slowly eaten and well chewed. If a sensitive oesophagus seems to be the cause, pass thick sounds, which gradually relieve, unless erosions are present, in which case only very soft food is allowed. As a rule in such conditions local treatment is over-treatment. It has been recommended for chronic cases to give food of the consistence of soup, to direct the patient to press the food past the stricture, to stretch with sounds, and to perform lavage daily!

Nervous Eructations.—These occur independently of meals and from nervous causes; flatulence being generally present. They may be audible, and may last for hours or days. They depend on hysteria or neurasthenia, while children produce them in mimicry. The air which escapes is not always gas generated in the stomach; it may be air which has been aspirated or swallowed, chiefly the latter. The discharge is partly reflex, but mainly voluntary, the swallowing of air being followed by induced spasm of the pharynx. The paroxysm has no constant relation to food in any way or at any time. Emotions, however, are closely related to the eructations. Belching may or may not relieve. Sometimes the eructa-

tions are periodical, while at other times they are sudden and unexpected, being noisy and most embarrassing. They cease at night generally.

Diagnosis. The problem is to distinguish between the nervous and the fermentative origins. One may examine the stomach contents, though the general aspect of the case is of more significance.

Course and Duration. These depend largely on the success or failure of suggestive therapy and general treatment of the nervous system.

The treatment is mostly psychic, though bromides will relieve, temporarily at least. Tonics, change of climate, and hydrotherapy have done good. One can stimulate self-control by advising great care in combating the trouble.

Nervous Vomiting.—The following varieties are not included:

Cerebral Vomiting.—(a). Organic disease of brain, circulatory changes, concussion, tumor.

(b) Intoxication, *e.g.*, opium, chloroform, ether, tobacco, uræmia, cholæmia.

(c) Psychical, through the special senses—*e.g.*, sight of disgusting objects, or waves on the ocean.

(d) Reflex, due to anatomical changes, *e.g.*, neuritis, vagus affections (in mouth or in stomach); peritonitis, ileus, appendicitis, ovarian disease, pregnancy, etc.; liver disease, kidney disease (stone), worms, constipation, etc.

Spinal Vomiting.—Tabetic crises, characterized by sudden pain in the abdomen, with agonizing vomiting of food, then of mucus, often with hyperchlorhydria. The crisis may last two or three days, and in the interval the stomach is normal. Such a crisis comes either early or late in the disease and may persist. It is sometimes seen, too, in general paresis, multiple sclerosis, and myelitis.

True nervous vomiting is hysterical and therefore far more frequent in the female sex than in the male. It may come with or without other symptoms, coming easily with no preceding vomiting, and not always after a meal. In some cases it is produced only when solids have been eaten; in others, when fluids have been taken. In some patients it occurs only in the recumbent position; in others only in the erect posture. The quality of the food seems to make no difference, and there are no other dyspeptic troubles in the interval. It is striking, too, that the nutrition, as a rule, is well maintained, though exceptionally there is emaciation. Psychic influences are strong in its causation. Hæmatemesis rarely accompanies it. As a rule, the general health is unaffected. In its diagnosis one must exclude all anatomical changes and then find a cause. One must exclude, too, hyperchlorhydria, hyperchylia, and tabes.

The treatment is suggestive. In severe cases rest in bed with careful experiments in dieting is necessary. Lavage is useless, and one may have to resort to rectal feeding.

Periodical vomiting resembles tabetic crises. It occurs in healthy people independently of any spinal disease, suddenly and without apparent cause, often in the early morning before any food has been taken. Nausea precedes the vomiting, which is violent, and then perhaps malaise, headache, etc., follow. Vomiting begins as soon as food is taken; the vomit is copious, and when all the food has been returned the vomit becomes bilious. Then it ceases, either suddenly as it began or gradually. More food can now be taken and retained, sleep intervenes with recovery until the next attack, which is a close copy of the first. Often there is no pain, but sometimes the patient complains of cramps and of considerable prostration afterward.

Regurgitation.—There is a nervous regurgitation of liquid or solid food, apart from organic disease of the stomach. The ejected material shows no abnormality of smell or of taste and is spit out, or in some patients swallowed again. Relaxation of the cardia is suspected in these cases. In severe cases, with loss of large quantities of chyme, serious inanition has been observed (Einhorn). Intra-gastric faradization is of doubtful use, and strychnine may be ordered. The patient should be informed of

the evils of such a habit, and her self-control otherwise stimulated. When a subject of this neurosis faithfully reswallows according to order, it may give place to genuine

Rumination or Merycism.—This implies the regurgitation of food, its remastication and subsequent reswallowing. It is generally acquired through mimicry and may lead to a habit. Einhorn could collect only one hundred and six cases in the literature, and most of them were males. It is repeatedly seen in the insane, while in Montreal hospitals and elsewhere we have found it not uncommon in persons healthy in both mind and body. Like other hysterical manifestations it is influenced by critical events, it having appeared the day after marriage in one case; in another it was cured by marriage. Suggestive treatment has proved the most successful. The patient should be soundly lectured on the vice, for it is among the most disgusting of habits.

Gastroplegia.—Atony of the stomach is familiar as the result of many organic changes in that organ and of general wasting processes. A paresis of functional origin does rarely occur, in the diagnosis of which a very thorough exclusion of other causes must be carried out. The main symptom is marked motor insufficiency. Its main treatment must accordingly be directed along these lines.

Pyloric Incontinence.—This can be recognized by the presence of bile and intestinal juice in the stomach during the fasting hours, though this is not constant. Generally speaking, one is not able to force air through the pylorus during excessive inflation. An incontinent pylorus, however, is apt to prevent prolonged distention of the stomach after inflation, and a test meal is said to leave the stomach sooner than normal.

SECRETORY NEUROSES.—1. *Hyperchlorhydria and Hypersecretion.* (Vide sections IV. and V.)

Hyposecretion and "Achyilia Gastrica."—Under this heading one includes deficient hydrochloric acid, deficient total secretion, and absent secretion. The existence of the latter as a neurosis is doubted by many. Such are secondary to many organic diseases, *e.g.*, cancer, gastritis, amyloid degeneration, profound blood changes, and atrophy. They occur, too, as a neurosis. Complete achylia, it is said, sometimes occurs in tabes. In true achylia due to organic disease one can generally find without much delay definite signs of organic change, whereas in neurotic achylia the mucous membrane is in normal condition. In a case recorded by Einhorn the secretions returned after five years of total achylia gastrica! Subjectively the patient may be in good health and free of symptoms, but if motor insufficiency or intestinal trouble is present there are always symptoms. There are generally various gastric symptoms and mild enteric manifestations, though no characteristic symptom complex whatever. Objectively, one finds, on withdrawing the contents after a test breakfast, that their total bulk is small, and there is very little fluid. The food is unchanged, hydrochloric acid is absent, and the contents are neutral or faintly acid, a total acidity of four and even two having been observed. Lactic acid is absent, or very nearly so; there is no peptone, propionate, pepsin, or rennet ferment, and no mucus.

The course is very protracted, and the treatment consists of stimulation by lavage or faradism, preparation of the food to suit the intestines, a large proportion of vegetable food, and medicinally nux vomica with hydrochloric acid.

SENSORY NEUROSES.—**Hyperæsthesia** occurs also with ulcer, hyperchylia, gastritis, chlorosis, arthritis, uræmia, irritating foods, habitual ingestion of narcotic drugs, fasting, and various excesses.

Subjectively there is discomfort immediately after a meal, whether fluid or solid, then a tingling pain throughout digestion (due to contact of food with the mucous membrane). Sometimes there are excessive nausea and vomiting. During gastric repose there is no pain, but generally a sense of emptiness, and perhaps faintness. Pain is induced sometimes by too warm food, or by

pressure over the stomach, and often by the tube. The skin of the epigastrium may be tender. Fear of pain leads the patient to take an insufficient quantity of food, and this, with vomiting in severe cases, brings about emaciation. The secretions remain normal.

One must differentiate this neurosis from:

(a) Atypical ulcer, in which there is a distinct relation of the pain to the quality of food, to the evolution of the secretion, and to the movements of the body. The differential diagnosis is often difficult, and can often be only surmised from facts in general.

(b) Hypersecretion, in which the pain occurs later on, toward the height of digestion—*i. e.*, in which the pain is not related to contact, but to function and to the quality of the food. The effect of albuminous foods in hyperchylia may be to relieve; in hyperæsthesia such foods aggravate the pain.

(c) Hypersthenic gastritis; the differential diagnosis is the same as in hyperchylia.

Gastralgia.—*Gastralgia* is symptomatic in ulcer, cancer, gastritis, retention, gastropnoia, and hyperchylia; it is reflex in genito-urinary diseases, etc.; it is central in tabes, multiple sclerosis, myelitis, and tumors; it is neuralgic in neuroses, chlorosis, syphilis, auto-intoxications, and possibly in malaria.

Gastralgia is a pneumogastric neuralgia. It may be mild or severe. The pain is intermittent, *i. e.*, there are intervals of normal painless digestion; it comes suddenly, working up to a paroxysm, being felt first in the epigastrium and then shooting through to the back, with an increase in its severity. It has no relation to functional activity in the stomach, and is not associated with any dyspeptic signs except distention. This pain may last several hours or may persist during two days.

The urine is usually neutral, and on the cessation of the pain large quantities are passed. Sometimes vomiting ends an attack. The stomach contents are normal.

Gastralgia nervosa is to be differentiated from all diseases in which pain occurs at or near the epigastrium, *e. g.*, from intercostal neuralgia and myalgia; from gall-stone colic; from intestinal colic; etc. In gall-stone colic the pain may also be felt to the right of the twelfth dorsal vertebra. The liver is enlarged and the gall bladder palpable, while there may be jaundice and fever. The colic may be related to the taking of excessive food, as in two cases which I have seen; the differential diagnosis is then often difficult. The stools should be carefully examined.

When, in a case of intestinal colic, the seat of the trouble is in the transverse colon, the diagnosis may be difficult. There may be mere peristaltic pain, or plumbism, simple distention or mucous colitis.

Gastric hyperæsthesia, hypersecretion, and hyperchlorhydria must also be considered in the differential diagnosis, nor should one omit to think of ulcer (gastric or duodenal), pancreatitis, peritonitis, etc.

Treatment. In severe cases a hypodermic of morphine should be promptly administered by the physician. In less severe cases one may try the various gastric sedatives (bismuth, cocaine, chloroform, and silver nitrate). Washing out the stomach freely with hot water, combined with hot fomentations externally, has acted well, though, as a rule, it is an unnecessary procedure. The chief indication is to treat the underlying cause (general condition).

Anorexia Nervosa.—*Definition*. Anorexia nervosa is a term applied to a sudden loss of appetite, developing along nervous channels, and in the absence of organic disease in the stomach. It is thus a pure neurosis, and occurs most commonly as a very prominent symptom in hysteria or neurasthenia, of which it forms the most striking complaint on the part of the digestive system.

Etiology. Various gastric symptoms are very common in neuropathic persons, whether the latter suffer from a slight passing irritability, a profound neurasthenia, or insanity; and this neuropathy should be looked upon as the background and the foundation of the gastric trou-

ble. Anorexia nervosa occurs, too, in perfectly healthy people, after psychological excitement, a fright, or a sudden depression of spirits, as also after a disgusting sight or odor. In such cases the symptom is of short duration, whereas when it is a part of general hysteria it is very obstinate, becoming serious and even dangerous in many individuals. It is particularly common in young females, owing to the great prevalence of hysteria and chlorosis in such persons. Typical examples have been seen in those who abuse morphine, tobacco, or alcohol. In fact, any influence which exhausts the central nervous system may lead to anorexia nervosa, whose etiology is that of the parent disease, hysteria.

Symptoms. The loss of appetite, which is sudden and generally complete, comes on commonly immediately after the ingestion of food; more rarely it occurs several minutes after the first mouthful. The patient comes to table with a good appetite, but on beginning to eat experiences from the first mouthful a sense of satiety and even of fullness and weight in the stomach; her appetite, and, indeed, her ability to swallow, instantly leaving her. For it is more than a mere loss of appetite, and the approach of food brings about contraction of the œsophagus or an obstinate gagging, while food forcibly inserted is returned before it reaches the stomach. In less severe cases the appetite is absurdly capricious, varying quickly from one extreme to the other. When the ability to eat has gone, no suitably chosen food as to quality or quantity can well be taken, for one spoonful of fluid is intolerable. This may be lasting, and, when such is the case, it leads to loss of weight and muscular restlessness, producing muscular atrophy and contractures, so that the patient lies in flexion, and feeding her becomes a very difficult problem. Such are the extreme cases to which Weir Mitchell applied his treatment. Emaciation may be extreme, the very skin becoming dry and wasted. Patients have died from starvation. Osler records the case of a girl who died at forty-nine pounds' weight without any lesions being found after death. A woman under Riegel's care kept on reducing the size of her meals until only from two to four drachms of fluid could be taken; she became bedridden from weakness, and her weight fell to sixty-four pounds. After ten months' careful treatment she was discharged weighing one hundred and thirty-four pounds.

Diagnosis. The diagnosis depends on the history, family tendencies, and the nervous disposition of the patient, and, above all, on the exclusion of all organic disease in the stomach or elsewhere. Therefore a very searching investigation of the stomach and of the entire organism must be carried out. In the absence of any recognizable disease the symptom may depend on a hidden lesion, notably tuberculosis.

Treatment. In treating these cases, any contributory causes (abuse of drugs, excesses, anæmia) must be combated, and a cure depends largely on the personality of the physician and his ability to win and hold the complete confidence of his patient. In all severe cases the only hopeful treatment is the removal of the patient to an institution where her nurses are strangers and where a strict regimen, dietetic and otherwise, can be carried out. In such surroundings sensational cures are sometimes obtained. Rectal feeding and gavage have at times to be tried, and their psychic effect is in some cases successful.

"*Neurasthenia Gastrica*" and "*Nervous Dyspepsia*."—*Definition*. We have seen above that gastric neuroses are secretory, sensory, or motor. These are, unfortunately, often combined and form what some authors call "nervous dyspepsia," or neurasthenia gastrica. The term "nervous dyspepsia" was first given by Leube to a condition characterized by gastric symptoms referable to the nervous system in the presence of normal digestion—*i. e.*, normal as to its chemistry and duration. Such a condition is generally a sensory neurosis, which, however, is sometimes combined with other neuroses. We, therefore, look upon nervous dyspepsia as a composite neurosis, in which sensory disturbance is always prominent.

VII. GASTRITIS.

ACUTE GASTRITIS.

DEFINITION.—An acute inflammation of the superficial membrane of the stomach with excessive secretion of mucus, desquamation of epithelium, and a resulting disturbance of digestion. The term is often misapplied, and is confused more especially with gastric neurosis, in which there is no evidence whatever of inflammation of the lining membrane of the stomach. The term should be restricted to those cases in which definite evidence exists of a catarrhal or other inflammation of the gastric mucosa, and should not include even those cases of neurosis in which much mucus is secreted in the stomach, and in which there is no cause or symptom otherwise of inflammation. One should exclude, too, the many cases of acute indigestion from temporary indiscretions of diet, etc., and the cases of slight atony, in which there is no reason to suspect an active inflammatory process.

It is true, on the other hand, that in many cases it is impossible to say whether one is dealing with an acute inflammation or with merely an acute non-inflammatory dyspepsia.

ETIOLOGY.—The condition is either primary or secondary.

Primary Acute Gastritis.—The causes of the primary simple gastritis are mainly the following: Food or drink when taken in an irritating form, *e. g.*, too hot or too cold, or if decomposed, or if too spicy, or too bulky and coarse—all these act more especially on an empty stomach.

Alcohol, which is one of the most common causes, induces a very typical form of the disease.

Individual predisposition and sensibility have much to do with the case, and perhaps, too, heredity plays its part. Again, people with impaired vitality—such, for example, as anæmic individuals and those who are convalescing from the specific fevers—are more susceptible. For the same reason tuberculous patients are often susceptible to the disease. Bacteriological invasion is not infrequently a factor in its causation, and more especially is this claimed for the *Bacillus coli communis*, while in many cases the disease is associated with the parasites of pyæmia, diphtheria, anthrax, thrush, lymphangitis, etc. Animal parasites, again, may be introduced, such, for example, as the *Ascarides* and the various *Tæniæ*.

Toxic causes are amongst the most common factors in the production of acute gastritis, though in most instances they produce a more severe form than is here described. Such, for example, are the mineral acids, the alkalies, various salts, alcohol, phosphorus, arsenic, mercuric chloride, calcium chloride, etc.

Externally, heat and cold, when excessive, may induce gastritis, though just why extensive burns on the external surface of the body should produce so frequently catarrhal inflammations of the mucosa is not understood. Foreign bodies when swallowed form another cause (fruit stones, hair, etc.).

Lastly, there seems to be an epidemic form of the disease, the cause being doubtless some micro-organism, though the mode of infection is as yet ill understood.

Secondary acute gastritis frequently develops with the general infectious diseases, such as measles, scarlatina, erysipelas, pneumonia, etc., and may indeed be the primary condition which manifests the early symptoms, and this is especially so with children. In acute nephritis, again, gastritis is a common secondary condition. With diseases of the throat and with putrid bronchitis, gangrene, or other disease of the lung, or in other conditions in which the degenerated tissues are in part introduced into the stomach, a secondary gastritis may readily occur. The disorder, too, is not uncommon with, and as a result of, intestinal disease.

MORBID ANATOMY.—Macroscopically there are a diffuse circumscribed swelling of the mucosa, redness, due either to congestion or to hemorrhage, and an excessive quantity of mucus. Sections under the microscope show partial desquamation of the superficial epithelium, the remaining

Symptoms. The symptoms are a sense of fullness and weight, eructations of gas, nausea, and even vomiting; there may be pain and tenderness (not limited to a small area), also burning, and disturbed appetite. Secondary symptoms are headache, palpitation, insomnia, and moodiness. The symptoms always appear shortly or immediately after taking food, but they do not vary with variations in the quality or quantity of the food, but persist in spite of judicious reductions in the diet. Such symptoms are at times a part of general hysteria or neurasthenia. They occur, too, reflexly from disturbance of other organs, *e. g.*, the female sexual organs, during a heightened general nervous irritability. They probably occur as a result of sexual excess, though in this and other distant disturbances an increased irritability of sensory nerves in the stomach is essential. If this irritability is present, physiological events in the stomach call forth unpleasant symptoms or become painful, leading to abnormal secretion and abnormal motility. The patient may or may not be hysterical, for these neuroses can occur apart from definite hysteria, though a neuropathic constitution is essential. This constitution may be congenital or acquired by such means as excesses, abuse of drugs, chronic malaria, anæmia, etc.

On physical examination of the abdomen one finds no abnormality, not even localized tenderness. The gastric juice, too, is almost always perfectly normal, though rarely it is slightly changed. Motility is generally normal, rarely there is hypermotility, and more rarely atony. Generally there are also perverted sensations in the intestines.

Course. The course is always long, but the condition varies sensorially, especially with the mental state and surroundings of the patient.

Diagnosis. The diagnosis is made only by the general clinical picture, never by any single sign, nor by the examination of the gastric contents. In this condition the pain is not so severe as in hyperacidity. Changes in the secretion or motility at frequent intervals are suggestive, especially when vomiting is absent or infrequent and the tongue clean. Striking variations in the symptoms, synchronously with changes in the humor of the patient, together with excellent nutrition, in spite of severe symptoms, are the most suggestive points. One must not lay too great stress on other functional disturbances, for organic disease in the stomach may coexist with hysteria, and the more conscientiously one examines his patient, the more frequently will he find an organic basis for the symptoms.

The diseases differentiated with greatest difficulty are atypical ulcer, carcinoma, and chronic gastritis. In ulcer, when there is no localized tenderness and no hæmatemesis, one may have some doubt. In ulcer the pain is much more regular in its relation to a meal, and it varies markedly with the quantity and the quality of the food; vomiting is far commoner and the appetite is good, fear alone preventing eating. In ulcer, too, hyperchlorhydria is almost constant, and the symptoms respond more to treatment than is the case in neurasthenia gastrica. In cases of carcinoma, with absent hydrochloric acid as the only sign, one may long be in doubt; one must consider the age, sex, and the course of the disease, and look for constantly absent hydrochloric acid. In chronic gastritis the course is always steadier; there is much mucus, and the symptoms increase or diminish with the diet.

Prognosis. The prognosis is good as to life, but the symptoms are of long duration or frequently recur.

Treatment. One should try to remove all exhausting influences and give his chief attention to the general condition of the patient. The diet is not of prime importance, but should be nourishing and unirritating. A change of scene, as by a trip to the country or by a sea voyage, acts well. Tonics, hydrotherapeutics, massage, and static electricity may be given, mostly for their psychic effect. Obstinate cases can be cured only by the Weir-Mitchell treatment, in which suggestion and the encouraging personality of the physician are important.