ulation of the terminal nerves results in more prompt and effectual action than when stimulation is applied to the nerve trunk. In experiments on dogs I have observed that heat stimulation applied to the soles of the hind feet produces a marked effect on the splanchnic circulation. When hot water is applied at the temperature of 50 C. it causes a marked contraction of the splanchnic vessels with a rise in blood-pressure. When moderate shock is produced in the dog it is possible to lessen it by the application of heat to the soles of the hind feet. When profound shock is established it requires more active measures, such as the introduction into the stomach of the hot-water bag at a temperature of 55 C.

In order to provide a practical and effectual means of applying heat at a constant temperature, to the soles of the feet during surgical operations, I have had made the hot-water-coil slippers shown in Fig. 10. These slippers have been of valuable service in the prevention of shock in my own experience. I now recommend them to surgeons in all abdominal operations. Even when shock is not imminent the use of heat applied to the soles of the feet is valuable. A good effect is produced on the circulation and better elimination is established.

NEURASTHENIA AND THE REST CURE.

BY FREDERICK A. MCGREW, M.D.

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The use of the rest cure as a method of treatment is rapidly increasing. "Retreats," "rest-homes," etc., are springing up in the neighborhood of cities in numbers almost rivaling the hospitals. In growing numbers patients with nervous complaints present themselves with a history of having "already taken the rest cure." Some of these have done so under professional advisement; others at their own discretion, or at the solicitation of friends. Some have been benefited, for without doubt it is a valuable resource in certain neurasthenic states. Some have escaped with no unpleasant effect other than an irksome sequestration; while others have returned with either a waning confidence in the judgment of their physicians, or a firmly fixed belief that their ailments are beyond the comprehension and reach of ordinary medical skill.

Considering the ill-defined scope of the term "neurasthenia," and the inexactness with which text-book and journal writers prescribe the rest cure for its treatment, it is not surprising that there should be many "cut-and-dried" rest-cure methods. Unless we desire this useful measure to come into disrepute, there must be a more definite knowledge of its proper use and limitations. And this means, first of all, the substitution of a working scientific basis in place of the prevailing haphazard fashion of disposing of troublesome neurasthenia patients.

From my observation of these cases in private practice, and during a service on the resident staff of the Alma Sanitarium, where the study of neurasthenia and its treatment is simplified by the number of cases for comparison, I have come to classify them under three heads, viz.: 1. Developmental neurasthenia. 2. Over-stimulation neurasthenia. 3. Developmental plus over-stimulation neurasthenia.

A long discussion of the symptomatology of each of these classes is foreign to the object of this paper. It will suffice for our present purpose to indicate the distinguishing features of the two primary classes, as the

third class partakes, in varying degrees, of the qualities of the other two.

Neurasthenia, whether due to abnormal development or over-stimulation, exhibits itself symptomatically in fatigue, especially that of brain and muscle. We rely on the history and the symptoms associated with fatigue in determining the class to which a given case belongs, and, as will appear, the course to be pursued in the treatment.

DEVELOPMENTAL NEURASTHENIA.

There are some individuals in whose lives a nerve asthenia is an evident and prevailing factor from the cradle to the grave. Most of them are the offspring of degenerate parents and the neurasthenia is inherited. Occasionally individuals are born with a constitutional nerve weakness which can be traced to no taint in the immediate or remote ancestry, and then it is due to some adverse influence during fetal life; some disorder of nutrition during the developmental period; some accident of labor; or perhaps, unhealthy environment and habits during the formative years of childhood. Neurasthenia due to abnormal development usually manifests itself at an early age, but is either disregarded by the guardians of the child, or they trust to time for a cure. Instability and imperfect balance characterize the activity of the brain and cord in these nervous children, who commonly combine an inability to sustain prolonged exertion with an unusual cleverness of thought and action.

The developmental neurasthenic who eventually comes under professional care is usually a woman of remarkably healthy appearance, who complains most of a chronic fatigue. Her other symptoms are various, indefinite, and legion. Many of them are not incompatible with health, many more are exaggerations of normal physiologic functions, but she readily discloses the fact that they are nearly, if not quite, all associated with exertion, and consequently with the fatigue which follows it. She appears well nourished, but her flabby muscles, weak heart, insufficient respiration, and languid air tell us more plainly than words, that under the superficial accumulation of unoxidized fat there are nerves and muscles, a heart, stomach, and other organs which years of indolence have made inactive.

It is quite evident that what such a patient needs is not rest, but *exercise*—such exercise as shall tend to harmoniously develop and strengthen every part of the physical organization. Much care needs to be used in inaugurating such a course of physical training, because self-confidence is at low tide, habits of mind and body are slow to yield, and a failure of persistent effort is not only easy but woefully discouraging. It is seldom possible to bring such patients sufficiently under the directing and moral influence of physician and nurse in their own homes, but oftentimes intelligent treatment in the routine course of an institution will bring about a comfortable degree of resistance to fatigue, and such an amelioration of the symptoms as amounts almost to a cure. The change of diet and surroundings, and the carefully graduated physical culture must be combined with stimulating and eliminative hydrotherapeutic measures and massage. And it may not be out of place to remark, that these patients should have the judicious sympathy of their attendants, and a ready attention to their petty complaints, that their coöperation and confidence may be secured, for without these latter it is needless to attempt a cure.

OVERSTIMULATION NEURASTHENIA.

In this class belongs the individuals born with nervous strength equal to their general organic hardihood, but whose baneful habits of life end finally in the exhaustion of their inherited nervous vitality. Habitual overstimulation is the physiologic expression of the cause. In contrast to the vast majority of the neurasthenias of development, which are inherited, those which result from overstimulation are all acquired.

Usually they are men in the prime of life, so far as years are concerned; business men worried by their affairs, troubled by sleepless nights and hurried days, until the brain fags and the nerves are "on edge." Equal strife for wealth and position, equal emergencies in business, responsibilities, exhausting labors, etc., do not exhaust equally the nervous vitality of different men, for the pace that kills the common horse only strengthens the thoroughbred.

To this class also belong the overworked and underfed student, the society "bud" who rests little from the excitement of her first seasons, the minister of the gospel who assumes too much work and responsibility, and all of that large element of American men and women who inherit nerve strength sufficient for the places in life to which they are born but insufficient for the strain which the circumstances of a more ambitious career throw on them. Any endeavor will sap the nervous force which drives the blood too fast and too long through the brain, exhausts its energy, gives it insufficient time for relaxation and repair, and takes from the remaining organs of the body the blood they need for removing the waste matter and restoring the wearing cells. Those who acquire neurasthenia usually suffer from indigestion and all the evils attending malnutrition and defective elimination.

When body and brain finally refuse to respond longer to stimulation, they strike, and "nervous prostration" is the result. We then have the lamentable spectacle of a "nerveless," melancholy, dyspeptic man with no confidence in himself and no abiding faith in others, tremulous, hesitating, incredulous, often suicidal. He is afflicted with insomnia, morbid fears, nervous chills, seminal emissions, flatulency, constipation, pain through the loins and back, weariness, and general debility. Digestion is deranged, malassimilation and malnutrition supervene, and a consequent loss in weight adds to the depression of his mind.

Evidently what such an individual needs is *rest*, as complete as it is possible to have, food for his wasted tissues and an opportunity for them to be restored. The rest cure is the treatment par excellence for the neurasthenia of habitual overstimulation.

In addition to complete rest and feeding, general massage, combined with passive movements; special abdominal massage; hot fomentations along the spine and over the stomach and liver; saline spongings, and general faradism are measures promoting elimination of fatigue and waste products and increasing the general muscular and arterial tone. This supplementary treatment is all sedative and nutritive, and should be given in the quietness and subdued light of the rest chamber, by a nurse adapted by disposition and training to care for rest-cure patients.

Some degree of gastric dyspepsia accompanies the neurasthenia of overstimulation. It exists in the form of a neurosis, and consequently presents as varying aspects as does the neurasthenia itself. An analysis of the stomach contents after a test-meal to-day may

show more or less hyperacidity, while a repetition to-morrow may show a subacidity or even an anacidity. The rest treatment of the neurasthenia benefits the gastric neurosis, and the recovery of the latter precedes or keeps pace with the former. Nitrohydrochloric acid and *nux vomica* should be administered.

Besides the psychic causes already enumerated, neurasthenia may be acquired in consequence of the derangement or misuse of the organs. Gastric hyperacidity and abuses connected with the sexual affections may be mentioned as especially frequent forerunners of the disease. The former, due to habitual gluttony, causes undue stimulation of the stomach to excessive secretion, and results eventually in gastric fermentation, starch indigestion, intestinal dyspepsia, and ptomain poisoning. Gorging, toxemia, increased acidity of the blood, and gastric irritability find expression in "nervousness," "fidgets," insomnia, "blues," lassitude alternating with periods of intense energy, and all the other symptoms of uricacidemia. The attack of so-called "nervous prostration" may finally come precipitately. Inability to control the hand in writing, or to concentrate the mental faculties to the business in hand, a wavering disposition, a lapsing memory, take the place of the energy, firmness, power of prolonged application, and general high-pressure activity that previously characterized the individual.

Gastric hyperacidity and the neurasthenia which follows it are benefited by the rest cure. The diet in these cases requires careful management, for most patients will need a dry one, restricted in amount, and with little residue, until the habit of prodigious stimulation under which the stomach has been accustomed to act, is broken up. Loss in weight is the rule, and a long course is often necessary to re-establish the organic functions on a healthy basis. Liberal draughts of mild saline waters are exceedingly beneficial in promoting nutrition and the elimination of the toxins from the body. Colonic flushings, to counteract the constipation and clear the large bowel, will be found valuable. They are stimulating to the circulation and sedative to the nervous system. But of all the adjuvant measures of utility in cases of neurasthenia accompanied by hyperacidity, the best one is gastric lavage, which should be given twice each week, at regular intervals, an hour before taking food. After the patient has emerged from the rest-cure chamber a rest of half an hour in recumbent posture should be strictly enjoined, and the stomach washings should be continued until the patient has recovered, though they may be diminished in frequency during the last weeks of convalescence. In the after-treatment only very moderate exercise should be taken and that not immediately after meals. Indeed, rest in bed for half an hour should be the rule after the noon meal until recovery is complete. This course differs from the method adopted for overstimulation neurasthenia from psychic causes, for there abundant exercise in the open air is enjoined, and the cultivation of athletic pursuits and calisthenic exercises advised.

There is a class of cases, common among women, in which neurasthenia seems to be closely connected with the sexual affections. In the psychic cases hitherto mentioned the intellectual faculties have played the greater part, but it is the emotional faculties which overreach the capacity of the individual's endurance. Psycho-sexual emotions are serious and frequent offenders. Excessive indulgence, sexual uncongeniality, and a trifling with various methods of preventing conception

are probable causes of emotional overstrain, with nervous prostration as a grave consequence. Unrequited love, love-longing, conjugal infelicity, and diseases disqualifying for sexual pleasure and gratification, have each their quota in the ranks of this class.

The rest cure, as outlined above under the treatment of overstimulation neurasthenia, meets every demand here, and recovery is likely to take place promptly. In cases connected with abuses of sexual intercourse, unless the physician assume the unwelcome task of teaching husband and wife the physiology of the sexual act, and it be then indulged in with moderation and to the mutual pleasure and gratification of both, relapses are likely to occur. Regarding the other conditions mentioned, little need be said, but any organic disease of the sexual organs, bladder, rectum, etc., should at once receive its appropriate treatment.

DEVELOPMENTAL PLUS OVERSTIMULATION NEURASTHENIA.

Either the developmental or the overstimulation element may be the chief factor in a neurasthenia in which both are concerned. The degree of nerve strain necessary to precipitate an attack of neurasthenia is in inverse ratio to the degree of developmental weakness. Just how much is due to insufficient nervous vitality and how much to the abuse of what vitality there is in any given case is a delicate matter to determine, and for the purpose of treatment an approximate estimate must be made.

In those cases in which loss of weight, dyspepsia, headache, neuralgia and other symptoms indicating a failure of nutrition accompany a history of recent nervous overstrain, the rest cure is the best thing, preliminary to subsequent treatment to develop nerve vitality as indicated above under the first class. On the other hand, with patients who have succumbed to a slight overtaxation of the nervous system, the overstimulation element may be disregarded altogether, and treatment for the development of nerve force instituted at once, and it is with this class that a sea voyage or a sojourn among the mountains proves most beneficial.

INTRALARYNGEAL INSUFFLATION.

FOR THE RELIEF OF ACUTE SURGICAL PNEUMOTHORAX.
ITS HISTORY AND METHODS WITH A DESCRIPTION
OF THE LATEST DEVICES FOR THIS PURPOSE.

BY RUDOLPH MATAS, M.D.

NEW ORLEANS, LA.

(Concluded from page 1375.)

HISTORY OF PULMONARY INSUFFLATION AS APPLIED TO
THE SURGERY OF THE CHEST.

It is difficult, if not impossible, to ascertain to whom belongs the credit of first suggesting the value of pulmonary insufflation in thoracic surgery. It is probable that the same thought occurred to many observers who were interested in the same problem simultaneously. As indicated by the preceding review of the evidence, it is plain that no originality can be claimed for the procedure itself, or even for the appliances used, since we see that the fundamental ideas have been thoroughly exhausted by a large number of investigators who during the eighteenth century developed the practice by successive contributions until it reached its maturity at the present time. In its surgical phases the thought of inflating the lungs to counteract the evil effects of

pneumothorax must have forced itself upon the attention of many of the practical surgeons of the modern period—the period of the Listerian renaissance—in which the feverish activity of the enterprising operators in quest of new fields of splanchnic conquest found itself blocked by this apparently insurmountable barrier in the thorax. They must have realized that while all the other conditions for success were ripe for the invasion of the chest this one great desideratum was still lacking.

In trying to discover when and where this suggestion originated, or where it was at least first put on record, we find that most of the references cluster about the period embraced from 1872 to the present time. Pean, the distinguished Parisian surgeon, is reported to have appreciated the importance of increasing the intrabronchial pressure in intrathoracic operations. In one instance in which he resected a portion of the sternum for the removal of a mediastinal growth he operated in a chamber much like a diving-bell, within which a pressure of two atmospheres was maintained. The operation presented great difficulties, and the patient died on the second day. I can find no reference to this case, but I quote it from H. Milton, of Cairo. (*The Lancet*, London, March 27, 1897.) Délorne, in a discussion at the Société de Chirurgie, Feb. 16, 1897, referred to M. Lambotte, a Belgian surgeon, as having advised, some time before him, the artificial inflation of the lung in surgical conditions. Délorne himself said that the need of an appliance to inflate the lungs had occurred to him when he first performed his operation of decortication and liberation of the imprisoned lung in chronic empyema. But the surprising manner in which the lung expanded spontaneously and filled the pleural cavity after it had been released from its confining shell of exudates, in his first case, and in another, operated upon by Lardy, of Constantinople, showed him that the expansion of the lung could be effected without the help of such appliances and by the efforts of nature alone. He believed that a sufficient increase in the intrabronchial pressure is obtained by the closure of the glottis in the paroxysms of cough that occur in the course of the operation. But that nature's unaided efforts are uncertain and can not be trusted under such circumstances is proved by other operators who, in more than twenty-seven instances of the same kind, have adopted Délorne's procedure. Cases of this class in which the lung is forced into activity after a long period of inaction, and when ample opportunity is given to the organism to accommodate itself to a crippled respiratory function, are not apposite to the acute conditions here considered, as in these the desideratum is to obtain a certain means of preventing acute pneumothorax in surgical operations. But it is to Tuffier and Quénu, with their associates, Hallion and Longuet, and to Doyen and to H. Milton, that we owe the chief debt of recognition for their scientific demonstration of the value of artificial inflation of the lung through the larynx for the prevention and relief of surgical pneumothorax. Tuffier and Hallion reported their first experiments to the Société de Biologie, November 21, 1896, and Tuffier read a paper on the same subject in the Société de Chirurgie in February, 1897 (*Bulletin et Mem. Société de Chirurgie*, February and March, 1897). The great merit of these observers is that they obtained the desired result by insufflating the lung through an *intralaryngeal* tube, and that they secured the necessary data by which to regulate the intrabronchial pressure with scientific accuracy.

*Read at the meeting of the Southern Surgical and Gynecological Association, held at New Orleans, November, 1899.