organic nervous disease; indeed, their presence in an otherwise doubtful case would almost make the diagnosis. The inability to look one in the face is another symptom which usually puts the physician on the track, as there is no such self-consciousness in organic nerve-lesions, such as locomotor ataxy, which may resemble neurasthenia; the more so, as just now ataxic symptoms have so multiplied that a moderate volume might be filled with them, and the same might be said of neurasthenia.

Pain and weight at the vertex of the head (supposed to be distinctive of cerebral anæmia) are usually neurasthenic. They may depend on cerebral anæmia immediately, but, if so, the anæmia depends on neurasthenia acting through the vaso-motor nerves. Tenderness of the scalp (cerebral irritation) is another symptom. This is to the exhausted brain what spinal irritation is to the exhausted cord. Muscæ volitantes are common, even in the slightly neurasthenic; also noises in the head of various kinds. There is a form of asthenopia, not depending solely on accommodative or even muscular trouble, to which neurasthenics are liable. It often renders reading, writing, and all fine work very painful or impossible, for more than a few minutes at a time. It is very distressing, and may last for years, showing its neurasthenic origin, as nearly all the symptoms do, by suddenly ceasing for a time. In my experience, it is a very common affection. I am acquainted with several young ladies who have consulted competent oculists, and have been told there was no organic disease. Glasses have totally failed to give relief in these cases. In these cases of reflex asthenopia in young women, Mr. Hartridge, of the Royal Westminster Ophthalmic Hospital, tells us to look out for masturbation, or uterine disorder, which is additional evidence of its neurasthenic origin. There is often a passive venous congestion of the conjunctiva, and sometimes of the retina, but it is secondary to perverted innervation. In many neurasthenics, the voice becomes faint, soft, and toneless, like that of a person recovering from fever. Hopelessness is another common symptom, and, like the faint voice, rather diagnostic. In most severe organic diseases, the patient is usually quite hopeful, as in phthisis, heart-disease, cancer, paralysis, ataxy, etc.; but neurasthenics lose all hope of cure, even when they are not hypochondriacal, and fancy a much worse disease than exists. Nervous dyspepsia is often the first symptom of neurasthenia. The cause and connection may not be apparent for years, when it becomes evident through other portions of the nervous system becoming affected, as displayed by the development of some of the more characteristic symptoms. It is distinguished from other forms of dyspepsia, and from chronic gastritis, by the fact that, instead of pain and distress coming on, or becoming aggravated, after a meal, the uneasy feelings are always worst on an empty stomach, the missing of a meal being attended with both local and general distress, pain, and weakness. Eating gives local and general relief at once. The affection is capricious, coming and going without apparent reason. The best treatment is by arsenic, nux vomica, and perhaps a little morphia. Gastrodynia and all the abdominal neuralgiæ and neuroses, for a good account of which we are indebted to the excellent lectures of Dr. Clifford Allbutt, are also, in my opinion, mere symptoms and indications of neurasthenia, especially where it is more centred in the spinal cord, and whether attended with spinal irritation or not. On this view, we would expect that these abdominal neuroses would be more common among races and families of neurotic temperament, than among others, which, according to Dr. Allbutt, is a fact. The fact that arsenic is the most successful drug in such cases is also evidence as to their neurotic origin. Dr. Allbutt says he does not know what the physician could do for such cases, before arsenic was applied to this new use.

Time will not permit me to refer to many more interesting phenomena due to neurasthenia. Many of these conditions of organs, taken by themselves, are most puzzling in both diagnosis and treatment. But, in view of the common underlying condition, they become comparatively easy both to appreciate and to treat. Want of time also prohibits me from more than alluding to relations existing between many women's diseases and neurasthenia, of which they may be either causes or effects. Dr. Allbutt, in this country, and one of the most prominent gynæcologists of America, Professor Goodell, have done good work on this subject. In the *New York Medical Record* Dr. Goodell lately said that the crying medical error of the day is the mistaking nerve-disease for womb-disease. From this widespread delusion, it has come to pass that no organ in the human body is so overtreated, and consequently so maltreated, as the uterus.

BEQUESTS AND DONATIONS.—The Coombe Lying-in Hospital, Dublin, has received £300, under the will of Mr. James Gorman.—Lady Lee has given £200 to the Maidenhead Cottage Hospital.

THE PRECHOREIC STAGES OF CHOREA.

Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Cardiff.

BY C. R. STRATON, L.R.C.P., F.R.C.S.Edin., Wilton, Salisbury.

IF we look back over the cases of chorea that have come under our observation, we shall find, I think, that they fall naturally into two large groups.

The cases which belong to the first group occur mostly in childhood and in early life. They are characterised first, as far as my own experience goes, by sores in the nostril or pharynx, malaise, left apex systolic murmur without hæmic characteristics, blunted intellect, vague pains and swellings of the joints, and some degree of paresis. Then follow the disorderly, unrhythmic, pseudo-clonic movements which we term chorea, which are aggravated by attempts to do voluntary acts, but which subside wholly during sleep. By the time that choreic movements begin, pyrexia, as a rule, is over. These cases are very frequently attributed to fright; they are liable to be spread "by imitation;" and they last from five to ten weeks. In the few instances in which the disease proves fatal, we find in the nervous centres a pretty general hyperæmia, with minute capillary infarcts, some circumvascular exudation, and on the edge of the mitral valve a row of bead-like vegetations, whether a murmur was heard during life or not.

The second group does not run this apparently specific course. It includes chorea due to direct injury to the brain-substance from wounds, falls, or blows, or to cerebral hæmorrhages, such as accompany violent and prolonged fits of whooping-cough, or to epilepsy, hystero-epilepsy, or any organic disease of the brain. These do not occur at any especial period of life; they are not associated with the particular condition of heart to which I have referred; they do not spread "by imitation;" and their duration is perfectly uncertain.

It is, however, to the prechoreic course of the first group that I would to-day direct your attention: and I would ask what has taken place before this "insanity of the muscles" comes on, and is chorea, not merely an occasional sequel of some more frequent specific disease?

Were I to describe by any special name a temporary form of paralysis, most common in childhood, in which all the physical powers were affected and the mind sometimes enfeebled, where the face lost its expression, and there was difficulty of deglutition and of articulation, where the limbs were either paralysed, or where the child having some power left, yet stumbled along in an uncertain and imbecile manner; and were I to add that this temporary form of paralysis had been known to spread in schools "by imitation," and that it generally subsided in a few weeks, under rest, good food, and tonics; you would at once recognise a disease that was formerly very ingeniously accounted for, but which of late years we have come to regard as an occasional sequel of diphtheria, a sequel which shows itself in one case out of five. And have we not many reasons for regarding the chorea which marks the first group of cases as in like manner the sequel of an acute specific disease of childhood, having clinical affinities with diphtheria and scarlatina?

Is it, like them, a communicable disease? The literature of the past on this point must be taken with much reserve. The great bulk of the so-called epidemics of chorea were marked by symptoms that are as a word to the wise, rapid movements of the eyelids, violent eructations of wind, and copious discharge of pale urine. The epidemics of Aix-la-Chapelle and of Strasburg, which spread over Europe in the fourteenth and fifteenth centuries, afflicting many thousands, were not, so far as I can judge, cases of true chorea at all, but might be classed rather with those epidemics of ecstacy which pass over a community in times of deep religious feeling, and are regarded by revival preachers of our time as signs of grace in the hearts of their converts. But beyond all this, it is probable that there was some substratum of true chorea present. In girls' schools, it is admitted on all sides, that chorea may spread "by imitation;" and four cases of this kind are given in the Preliminary Report of the Collective Investigation Committee. Yet this is an etiology that is scarcely satisfactory, and would apply equally well to diphtheritic paralysis; nor would it account for an outbreak reported in the *Gazette des Hôpitaux*, in 1862, where a girl was admitted into one of Dr. Monneret's wards, suffering from most intense chorea, and on the fifth day afterwards, eight other patients contracted the disorder; and in all probability the contagion would have extended more widely had not its influence been arrested by isolation.

During the past year, among the cases of chorea that have come under my care, were two cases in children attending a certain village

school. One little girl had first a sore nose, then cardiac murmur, tender metatarsal joints, stupidity, and lastly chorea. Shortly afterwards, another little girl in the same school had the same symptoms, with chorea, but without the cardiac murmur; and the brother of this second girl had a sore nose exactly like the other two, with a fissure at the anterior margin of the nares; and his mother said that he had become even more stupid than his sister, but he had no chorea; he had gone through the prechoreic stage, but the choreic sequel was never developed. It may, therefore, be possible that it is a communicable disease, and that chorea need not always follow, any more than paralysis is a necessary sequel of diphtheria.

To make the prechoreic course more clear, allow me to return to the pathological facts to which I have already referred, the cardiac vegetations, the condition of the nerve-centres, and of the joints. The cardiac vegetations are found in rows just where the two sides of the valve come into apposition during closure; and they consist of a sub-endocardial exudation. The base of each is infiltrated with leucocytes, then comes a transition zone, and on the outer part of the vegetation we have a coagulative necrosis, with colonies of micrococci on the surface. Now, what would be the natural result of those micrococci being carried into the blood-current, and deposited in the capillaries of the brain and in the neighbourhood of joints? The recent experiments of Dr. Angel Money render speculation on this point unnecessary. When he injected granules of starch or carmine suspended in a saline solution into the carotid artery of animals, he succeeded in producing an infarction of the nervous-centres, which gave rise to choreiform movements. We can scarcely doubt, therefore, that when these pathogenic micro-organisms become distributed in the blood-current, we shall find that state of capillary embolism which Kirkes and others have described, and with this the blunted intellect and the paresis. The same cause in other parts of the body gives rise to quasi-rheumatic pains, and affections of the joints. Here the case may end, and recovery take place, or the choreic stage may follow. Where the actual particulate injection of pathogenic organisms has not been sufficient to at once set up chorea, there are yet certain exciting causes which may determine the access of movements in one who has gone through the prechoreic stage; these are, dental irritation, gastric irritation, pregnancy, fright, or strong mental emotion. Few persons realise how powerful is the effect of great mental shock on the human brain. Acute primary dementia may result from fright alone; and in chorea it is one of the most potent factors, not only in determining the access of choreic movements, but also in aggravating them when they have once set in. Instances such as this are sufficiently common. A child passes unwittingly through the prechoreic stages of cardiac vegetations and cerebral and joint infarcts, and is progressing towards recovery, when some sudden fright at once developes the choreic movements; and, should the child die, the cardiac vegetations and the cerebral infarcts will be found, although no murmur was detected during life. It is highly probable that a large number of cases thus pass undetected, and, should no exciting cause exist, never develop the choreic sequel at all, but are recorded in the journals from time to time as cases of "anæmia with a high temperature," as "simple endocarditis," or "scarlatina without rash."

To summarise; the prechoreic sequence of events appears to be a soreness of the nose or throat, with often a fissure at the anterior margin of the nostril, the sores yielding a micro-organism which takes aniline dye; an endocarditis with the formation of valvular vegetations which undergo coagulative necrosis, and develop colonies of micrococci; the introduction of these products into the circulation producing capillary embolic infarction of the nerve-centres, and of the parts around the joints; with the clinical symptoms of valvular murmur, blunted intellect, paresis, and vague pains. There the case may end and recovery take place; or it may run on to the choreic sequel, especially if the child have been exposed to fright or mental shock.

I feel that it is presumptuous in me thus crudely to express my views on this subject, but I do so with the desire that attention may be directed to those cases (not themselves choreic) of sore nose, stupidity, and joint-pain, with or without murmur, which may be found associated with cases of true chorea; and with the desire also that cases of so-called "imitation" may be more closely scrutinised, and the true character of this cause more accurately determined.

LOTION FOR BRUISES.—In severe contusions and bruises, where pain is severe, Dr. Hewson, of Texas, recommends the following lotion, which has been found of great use in the treatment of the severe injuries often received by the lumbermen: ℞ Sodæ hyposulphit., ℥iv.; acid. carbolic. crys., ℥ss.; glycerinæ, ℥ij.; aquæ, Cj. M. A cloth saturated with the lotion is kept constantly on the injured part.

WHEN A PATIENT DIES OF EXHAUSTION, FROM WHAT DOES HE DIE?

Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Cardiff.

BY J. MILNER FOTHERGILL, M.D.,
Physician to the City of London Hospital for Diseases of the Chest.

WHEN this question first puts itself to oneself, or is propounded to another, it seems absurd. That is the first impression. Then follows another impression, to the effect of what is meant by "exhaustion." For the answer to that, I must appeal to the experience of each man present. We all know what is meant by death from exhaustion. It is "failing power." We know of death from shock, from hæmorrhage, from nerve-failure, as in death from sheer pain. We also know of that form where the patient sinks before our eyes, slipping away because we cannot "keep up the strength," or "husband the powers," or "maintain life," as we variously phrase it. We know well that, when the sick man declines food, in a limited time he will sink. We give him the readily oxidisable alcohol, but we all know he cannot long survive on that alone. What is amiss, that we fail to keep him alive?

We know that, if a shipwrecked sailor be deprived of food for a certain time, he will die of starvation. He grows weaker and weaker, till, at last, he dies of exhaustion. Just like the sick man, he sinks. We know, too, that, while a man so deprived of food in a cool locality will die in about ten days, he will die in less time in a cold locality; while life will be maintained for a longer period of time, even to seventeen days, in the tropics. (It is assumed that he has access to water.) Starvation is a slow form of burning up. But what is burnt up? The fuel-food of the body, clearly. The fuel of the body is glycogen, and fat—the stored form of fuel. How fat is burned in the body, we do not know; but we all know of the fat pig which was buried under a chalk-cliff at Dover for 160 days. It weighed 160 lbs. when it was immured; when dug out, it weighed 40 lbs. only. It lost 120 lbs. in 160 days, and came out a lean pig. It got some moisture.

Glycogen is burnt, we believe, as lactic acid in union with soda—lactate of soda. From the carbohydrates of our food, glycogen or animal starch is stored, mainly in the liver. This glycogen is stored up from each meal, and given off, as grape-sugar, as the body requires it. Disturbance in the glycogenic function of the liver gives us diabetes, a wasting disease. In the diabetic person the combustible portions of the body are burnt up, just as in death by starvation. The liver gives off grape-sugar as long as it has any to give; and, when its store (and the spare store, the body-fat) is exhausted, then the lamp of life dies out, just as the lamp on our study-table dies out when the oil is exhausted.

Now how does all this bear on our patient sinking from failure of the powers, otherwise "dying of exhaustion?" It bears very materially upon his case. Virtually, the patient is hungering to death; he is dying of starvation. How do we feed that perishing patient? We give him beef-tea, calf's-foot jelly, alcohol, and milk, and seltzer-water or other effervescing-water. He may get a small quantity of other foods; but that just given is the staple of his regimen. Now, let me ask, in all seriousness, how much of the body-fuel (grape-sugar) is contained in the list? A small quantity of milk-sugar there is certainly; also, a small quantity of fat in the milk; some oxidisable alcohol certainly. But are we not mocking the famishing man by giving him a stone when he asks for bread? Do we not stand round his dying bedside, and, with the best intentions in the world, let him die by inches before our eyes, unsuccoured, unfed? It is a terrible question we must ask ourselves. Do we, or do we not, let our fellow-creatures perish; because we do not know how to help them? It is a grave and serious matter, indeed. In asking this momentous question, no reproach is levelled at our noble profession. Hitherto, we have worked up to our lights. Is our advancing physiological knowledge giving us more light; or am I wasting your time by talking frivolous nonsense? Are we now in a position to feed our patients by the light of science, as well as by that of empiricism? We may speak of the day-light of science and the lamp-light of experience, in relation to this matter, I think.

Fashion prescribes the food of the sick-room to a large extent. Veal-broth had given way to calf's-foot jelly when my professional experience first began. Then a patient who had not had calf's-foot jelly had been neglected—was the verdict of the public. Now the calf can scamper about in safety; its feet are not in demand. Now it is beef-tea which holds the place of honour in the sick-room. The afflicted relatives of a dying man will declare, with a distinct consciousness of