the neck, which is very uncomfortable. In the cases above detailed, in one only had the joint formed, and it was the result more probably of a compensatory effort for the elongation of its fellow on the opposite side from the bronchocele, than from inflammation. Usually, however, as far as my experience permits me to determine, inflammation and effusion of fibrine precede obliteration of the ligament, when the capsule which primarily is its sheath becomes thickened, contracted, and then surrounds the terminal ends of the cornua. This has been determined by dissection and examination of cases of true dislocation in the living. The thyro-hyoid articulation, therefore, is one of interest and importance, and should always be remembered when inspecting throat disease. In some cases there is a tendency to recurrence of disease until the ligament has become obliterated. It also sometimes happens that the thyro-hyoid joint becomes affected with dropsy; instances of which, with other allied affections are related in my essay on the *Diseases of the Hyoid Bone*. The symptoms of thyro-hyoid disease, as above described, are not unfrequently wholly misinterpreted, and erroneously supposed to depend upon intrathyroid or laryngeal disease.

Original Communications.

ON NIGHTMARE, THE ACTION OF ANÆSTHETICS, ETC.

By Thomas Hodgkin, M.D.

Having for some years been occasionally subject to that disagreeable affection called nightmare, I could not help paying some attention to the physiology of the symptoms which attend it. I shall not attempt a review of the opinions which have been advanced on the subject, having paid very little attention to them; but I have not been able to adopt the commonly received opinion, that it depends on some disturbance of the circulation.

It is unnecessary that I should describe the variety of pictures presented to the half-sleeping imagination of the sufferer from nightmare, some of which have furnished ludicrous subjects for the painter. The essential symptom, which may take place either with or without these apparitions, seems to consist in the distressing consciousness of inability to move. As this state mostly ceases on waking, and as the attention of others is not likely to be called to the symptoms while they exist, it is not surprising that they have been imperfectly studied.

Of later years, I have observed that waking has not so completely done away with the conditions on which the nightmare depends, but that the mind, when recalled to perfect consciousness, has had sufficient opportunity to analyse them; and a wakeful companion, interested in averting or arresting the attack, has, by recognising the premonitory symptoms, been able to prevent or cut short the paroxysm.

By examining the state of the pulse and heart as soon as consciousness reminded me that the inquiry was to be made, I became satisfied that no material derangement could have taken place in that quarter. At a later period, I noticed some partial condition of the limbs somewhat resembling that which is felt when a part is said to be asleep, but to a minor degree, and without the peculiar sensation called pins and needles. As the duration of the waking symptoms has increased, I became struck with the fact that the involuntary movements of respiration seemed to be suspended, whilst the chest seemed to be passively collapsing from elasticity and other causes. I was naturally desirous to have the paroxysm terminated by being awakened as soon as abortive efforts at articulation called attention to my distress; but I noticed that this kind attempt at first rather increased than mitigated the suffering, if it tended in any degree to favour the collapse of the chest, as in the case of the hand being placed upon it. On the contrary, the most prompt and effectual relief has been obtained by so moving the arms that the pectoral muscles might elevate the ribs; and it is now some years since I have begged that one arm might be worked like the handle of a pump, which completely agrees with the theory and practice which have of late been ably advocated by Dr. Silvester in relation to the treatment of suspended animation from asphyxia. Reflecting on these symptoms, I recollected the views of the late Sir Charles Bell regarding the involuntary movements of respiration, and the doubts which I had entertained as to a particular part of the spinal cord, with the nerves emanating from it, being specially devoted to this part of the respiratory function; and I felt almost compelled to subscribe to his doctrine, the strongest argument in favour of which seemed to be supplied by the fact that when, in the state which I have described to exist, on waking in the paroxysm, I have made forced voluntary efforts at inspiration by raising the ribs to expand the chest, the diaphragm, instead of simultaneously descending, was, on the contrary, elevated by the pressure of the atmosphere on the abdomen—a result which would hardly have taken place had the normal provision for the cooperation of these parts been in working order. I felt persuaded that, if the state which I have described were not relieved by the early waking of the patient or by the efforts of assistance opportunely at hand, death must be the consequence. It is probable that persons who have been found dead in their beds may have so perished; and verdicts of death from affection of the heart may have been recorded in consequence of the distended condition of the right cavities.

Another reflection is perhaps of some importance in connexion with the investigation now going forward: I mean that in relation to the causes of death under the use of chloroform.

Is it not highly probable that, under the influence of chloroform and other anæsthetics, there may be, simultaneously with the loss of feeling and consciousness, the suspension of the involuntary movements of respiration; the one suppressing the symptoms of distress which the other would induce, if the sensation were not more abolished than in sleep? That interruption of the involuntary movements of respiration is not necessarily commensurate with the degree to which sensation and consciousness are lost, is evident from the effectual persistence of these movements, though accompanied with stertor, in cases of apoplexy and drunkenness, as well as in the majority of cases in which chloroform is used. The prompt employment of the most effectual means of maintaining artificial respiration would, therefore, seem to be the first step to be taken when danger is threatened after the employment of chloroform or ether. On the other hand, placing the patient on his back, and rubbing the chest and other parts of the trunk to remove supposed syncope, would be injurious rather than beneficial; and, could he be conscious of what was going on, the dreams of nightmare would to him be realised.

It seems to afford some confirmation of the view which I am offering, that both the production of nightmare and the occurrence of danger under the use of chloroform are connected with the state of the stomach. Nightmare is frequently attributed to taking a full supper shortly before going to bed. In my own case, it is most certainly induced by a draught of cold water or soda-water on retiring to rest; but I have also known it after continued absolute fasting, both in the sitting and in the reclining posture, though very seldom in the

former position. So, in the administration of chloroform, experience has taught that neither a perfectly empty nor a very full stomach is desirable. My friend Steggall of Queen Square has informed me that, having occasion to give chloroform to a child previously to the performance of an operation, he was surprised at the appearance of very alarming symptoms when but a moderate dose of the anæsthetic had been given. From these the child was happily and quickly relieved by rejecting from the stomach a large quantity of rich plum-cake which the child had, without the knowledge of the operator, eaten but a short time before. Facts like these direct the attention to the eighth pair of nerves; and I remember that, so long ago as in 1821 or 1822, I wrote a juvenile essay, the subject of which was the section of these nerves, in which I expressed the opinion that death, not being the immediate consequence of the simultaneous division of both nerves, was to be attributed to the maintenance of voluntary respiration for some hours after involuntary respiration had ceased.

Having commenced but not completed committing these reflections to paper before starting for a journey on the continent, I have had an opportunity of conversing upon the subject with my friend Dr. Foville, whose attention is well known to have been long turned to the anatomy, physiology, and pathology of the brain and nervous system, and whose abandoning of the completion of his work is a grievous loss to our profession. The doctor, after patiently hearing my statement, was so far from rejecting my ideas, that he related a case tending to confirm them. A patient of his, labouring under some form of paralysis which ultimately occasioned his death, complained of being distressed with nightmare on falling asleep. The doctor, having an opportunity of watching the approaches of the paroxysms, observed that his respiration became interrupted, and then suspended, which resulted in his waking up in agitation and fright. Attention to position in his sleeping state to some degree, but imperfectly, prevented the paroxysms. Dr. Foville further told me, in reference to what I had said regarding the eighth pair of nerves, that Professor Blainville had made some experiments on the section of them, in the course of which he observed that the death of the animal was accelerated if it were placed on its back, but retarded by the chest being downwards, as when it is in the standing position; which seems to coincide with the need to facilitate and maintain the voluntary efforts at respiration.

In close relation to the points upon which I have here touched, I would take leave to add a few words of a practical tendency, though I fear they may be regarded by some as crotchety. It is well known that ether and chloroform have very conspicuously the power of averting or greatly mitigating the paroxysms of spasmodic asthma, which they probably do by blunting the exaggerated perceptions, the normal and healthy action of which call for and determine the involuntary movements of respiration. If, on the other hand, their influence be superadded to a state approaching to morbid, and in which these perceptions are too feeble, we may expect the symptoms which occur when the influence of chloroform is alarming or even fatal. I have repeatedly noticed that medicines which contain ether or chloroform, although at first very agreeable, as is especially the case with the latter, have a decided influence in disturbing the stomach and producing indications of indigestion; whilst an influence diametrically the reverse of this is produced by brandy and other nearly pure alcoholic spirits. Hence their frequent employment to correct the stomach, and the abuse thereby induced. This conviction as to the effect of ether, etc., has made me for a long time averse to the use of etherial medicines, though so commonly resorted to as antispasmodics. Here also we may suspect that the influence is exerted through the eighth pair of nerves.

Though I have not and at present cannot consult medical authorities, I must observe that, a short time before leaving home, I read part of a paper relating to the agency of chloroform in the British Medical Journal. It went far in support of the views which I have long held, and have here endeavoured to sketch. I think it was by Dr. Kidd, and bore chiefly on the employment of chloroform in obstetrics. The condition very suitably designated as *apnœa* seems to be exactly that to which I have here referred. I am sorry that I omitted to look to the other portions of the same essay, given in different numbers of the periodical.

Marseilles, 30 Imo., 1863.

PATHOLOGICAL AND PRACTICAL RESEARCHES ON THE VARIOUS FORMS OF PARALYSIS.

By Edward Meryon, M.D., F.R.C.P.

[*Continued from page* 478.]

The anatomical connection between the sensitive posterior columns of the spinal cord in their entirety and the cerebellum, the extension of nerve-fibres from the cerebellum to the corpora quadrigemina, and from these bodies to the optic thalami, are facts which indicate the existence of close physiological relationship between these parts. And I venture to assume that it is through these channels that objective sensations are conveyed to the cerebrum, the centre of volition; that from the ganglionic cells contained in the corpora striata and optic thalami, the mandates of the will are extended through the vesicular matter of the crura cerebri, of the pons, and of the medulla oblongata, to the anterior horns of grey matter contained in the spinal cord by means of the corpora pyramidalia and the anterior columns of the cord, the fibres of which communicate directly or indirectly with the ganglionic cells of the anterior cornua, which become the excitors of muscular motion; and that the transverse fibres in the mesocephale and medulla oblongata, which are almost, if not quite as numerous as the longitudinal, serve as conductors of the orders of the will to the nuclei of motor nerves, for the consentaneous action of corresponding muscles in the movements of the face and tongue for expression and speech, in the contraction of the gullet for deglutition, and in the movements of the ribs for respiration.

But how are these several acts performed? In other words, what is the nature of that mysterious nerve-force which, beginning its physical career in the organs of sense, passes to the sensorium, where it becomes an object of consciousness, and, operating on the cerebrum, engenders actual ideas or volitions which are transmitted to the spinal cord, and there excite muscular motion?

Is it simply electricity, in the development of which every minute molecule of nervous matter, by virtue of a dipolar attribute, adds its quota to the evolution of an electric current? Or is it some other power which may be represented by a given quantity, say of heat, which would be required to raise the temperature of a given quantity of water so many degrees as to produce a certain amount of mechanical energy or motion?

Many physiologists have embraced the latter opinion, chiefly in consequence of the different behaviour of a muscle when under the influence of a nerve in a physiological active state, and when artificially placed in an electrotonic state by the transmission of a constant galvanic current through it. In the first case, the muscle is kept in a constant state of contraction; in the electro-tonic condition, contraction occurs only on closing and opening the circuit. In the interval, the muscle is in a state of relaxation, and remains so.