as to the time for removing the needles, an inquiry of equal moment, has been in the same communication thoughtfully considered. So that I shall now merely mention, in a tabular form, the ages at which the several complicated cases detailed in the present series of reports were operated upon, and, likewise, the periods after operation when the needles were taken away—the latter question being, in my mind, settled from the satisfactory results obtained.

TABLE of *Complicated Cases of Hare-lip*.

Cases.	Age when Operated on.	Period at which Needles removed.
Case 4.	14 days after birth.	96 hours after operation.
Case 5.	14 days after birth.	96 hours after operation.
Case 6.	34 days after birth.	96 hours after operation.
Case 7.	36 days after birth.	96 hours after operation.
Case 8.	1 yr., 6 mos., and 5 days after birth.	96 hours after operation.
Case 9.	2 months and 20 days after birth.	96 hours after operation.
Case 10.	3 years and 5 days after birth.	96 hours after operation.
Case 11.	3 months and 24 days after birth.	96 hours after operation.

Lastly, as relates to the administration of chloroform in these cases, in my former essay I most unhesitatingly condemned its adoption, and I see now no reason for altering this opinion. Here again I would caution the surgeon not to argue from trifling cases^a.

ART. XV.—*On Paralysis of the Bronchial Muscles*. By JAMES F. DUNCAN, M.D. T.C.D., Fellow of the King and Queen's College of Physicians; Physician to the Adelaide and Simpson's Hospitals^b.

THE morbid changes occurring in the muscular tissue of the pulmonary system do not appear to me to have attracted that attention from pathologists which has been so readily extended

the lip being carefully pared, they were brought together, and retained so by three fine needles and the twisted suture, each step of the operation being sedulously conducted according to the rules set forth in the above reports. On the fourth day, ninety-six hours after the operation, the needles were withdrawn, and I was happy to find that union was secured throughout. Support was afforded by adhesive straps; and after a fortnight the child was sent to the country, perfectly restored, and the parents most contented with the issue.

^a Plate VI. Mr. Butcher's instruments for cutting through the projecting osseous pieces in complicated hare-lip, without dividing the soft parts and the vascular supply behind, previous to bending them back, after Gensoul's method; Fig. 1, for the anterior projecting piece; Figs. 2 and 3, for the right or left lateral portions.

^b Read before the Association of the King and Queen's College of Physicians.

to every other structure in the body. It is quite true, that we have for a very long period been accustomed to recognise spastic contraction of these fibres as a frequent cause of some forms of dyspnœa; and various appropriate remedies have been resorted to for the relief of those diseases, suggested by the idea of their convulsive nature. But the opposite condition of impaired contractile power, if it has not been totally overlooked, has at least been greatly disregarded. No attempt, that I am aware of, has been made to ascertain the peculiar symptoms and signs arising from such a state, or to determine the treatment suitable for its removal or relief. And yet, judging from analogy, no reason can be assigned why such a condition as that of paralysis, or impaired vital energy, should not occasionally occur here, as well as in other muscles; or why, when such a condition does occur, its existence should not be discoverable by a careful observation of its attending phenomena.

Several circumstances naturally suggest themselves as serving to account for this omission. In the first place, the small size and obscure development of these muscles give us the idea that they are to be regarded rather as a rudimentary structure, preserving the analogy of form with the same parts in other animals, than as an apparatus designed for any special use in the economy of man. Very few practical physicians, I believe, look upon these muscles as performing any efficient part in healthy respiration; and hence they are not prepared to expect any material inconvenience to be produced as the result of their impaired action. In the second place, the fact that care has been taken, by the very organization of the parts, to prevent the respiratory process being materially interfered with by morbid changes in the vital action of these fibres, renders the occurrence of these changes, when they do take place, less obvious to the general observer. Not being voluntary muscles, neither the patient nor the physician is placed in a position to discover the loss of their contractile energy, while the manner in which they are associated with the elastic structures of the lungs is calculated to counteract the injurious effects that would be sure to follow, were collapse of the air-passages a necessary result of their paralysis. In the last place, morbid changes in the muscular structure generally are not of a nature to be recognised by microscopic examination. Changes in other tissues are too obvious to be overlooked. The mucous membrane may be congested, or thickened, or stripped of its epithelium. The serous membrane may lose its transparency, or be covered with an adventitious layer of lymph. The air-cells may be ruptured, enlarged, or otherwise altered. The parenchyma of the

lungs may be hepatized, infiltrated with purulent matter, or cedematous, all of which can be easily recognised by the senses. But the muscular structure seems to defy alike the scalpel of the anatomist and the lens of the microscopist. Even atrophy, a condition, with the occurrence of which in other muscles every pathologist is familiar, becomes, in the instance before us, an uncertain phenomenon, to be discovered with difficulty, because the normal structure itself is so delicate that it seems scarcely possible to decide whether the appearance, in any particular case under examination, is really a morbid condition or not.

I have said that analogy would lead us to expect that occasionally, at least, these fibres should exhibit the condition of diminished vital energy, or paralysis. To Dr. Stokes the profession is indebted for having, many years ago, enunciated a pathological law, as regards muscular structure, which has been universally recognised since as a well-established principle. The principle is this, that when muscular fibres have been long exposed to a continued irritation from the existence of inflammation in an adjacent structure, those fibres which at first are thrown into a state of unnatural contraction, by contact with the inflamed parts, at last become paralyzed from over-stimulation. It was in this way he explained the bulging out of the intercostal muscles, which is universally observed in the advanced stage of empyema. But this principle, which is universally admitted, when applied to muscular fibres in contact with serous membranes, is equally applicable to muscular fibres in contact with mucous membranes*. In fact, it has been so applied to explain appearances discovered in the dead bodies of persons who have died of ileus. Now, if this be true, and there seems no reason to doubt its accuracy, it follows as a matter of course, that long-continued inflammatory action in the bronchial mucous membrane ought frequently to impair, or even destroy altogether the contractility of the muscular fibres which lie in close contact with the under surface of the inflamed bronchi.

This idea was strongly impressed upon my mind by a case which I had recently under my care in the Adelaide Hospital, which presented some features of a peculiar character, that appeared to me to tally with what might be expected to follow

* Dr. Stokes has not omitted to notice this fact in his *Treatise on Diseases of the Chest*. He applies it to explain the production of dilatation of the bronchial tubes, and he also says it may be connected with certain forms of dyspnoea, but he has not given any rules for the recognition of the particular forms in which this paralytic condition exists.

from impaired energy of these fibres, and which derived immediate and obvious benefit from a plan of treatment adapted to such an hypothesis. Under the impression that this idea may be well founded, I venture to lay the particulars before the Association, in the hope that more extended observations may confirm the conclusions at which I have arrived, or, at all events, that the hints which I now throw out may lead to some practical improvements in the treatment of particular forms of chronic bronchitis.

Eliza Simpson, a married woman, forty years of age, the mother of nine children, was admitted into the Adelaide Hospital, December 12, 1859, labouring under a hard cough, with frothy and scanty expectoration, and suffering from intense dyspnœa. Her history was this : she was a laundress by occupation; twelve months previous to her admission, when in a state of perspiration, she had gone out of her washing-room into the open air, to gather in some clothes, when the weather was very severe, and snowing. In this way she got cold, which affected her breathing, and from which she had never recovered; within the last four or five weeks her condition had got very much worse, her sufferings being greatest at night; for several weeks she had been totally unable to lie down.

At the period of her admission she was a picture of suffering; she was worn out from want of rest; looked pale and emaciated; her lips were livid, and her respiration, though only 18 in a minute, was forcible and laboured. On examining the chest, it was of a rounded form, hyper-resonant on percussion, with a feeling of increased resistance under the pleximeter, and with loud, sonorous, and cooing râles, audible in every direction. There was no lateral or antero-posterior enlargement of the thorax during respiration: it moved, as a whole, as if the ribs and cartilages formed one firmly united and unalterable piece, and the only increase its capacity admitted of was by the elevation of its upper margin, and the depression of the diaphragm.

The manner in which the respiration was carried on sufficiently accounted for the pain and difficulty she felt at night. The involuntary muscles not being able, without assistance, to maintain the necessary expansion of the chest to carry on respiration, each act of respiration was, to some extent at least, an effort of volition; and as the condition of sleep implies the abeyance of sensation, she was obliged to remain awake, to keep herself alive. But there was one feature in her dyspnœa which could not fail to strike the most ordinary observer, and which appeared to me to give it a peculiar character, and that

was, the great disproportion which existed between the duration of inspiration, and that of expiration. In health, so far as I have been able to observe, the act of inspiration is really longer than that of expiration; at all events, I am satisfied that it does exceed in duration the period of time occupied by expiration. But in Simpson's case, this ratio was reversed, the duration of expiration being fully three times as long as that of inspiration. This could be seen by the eye, as well as felt by the hand, and heard by the stethoscope. I am well aware, that in chronic bronchitis, a prolonged expiratory murmur, attended by sonorous and sibilous râles, is one of the commonest and best known signs of the disease. But even in cases where the stethoscope reveals this sign, it is rare to see the difference manifested in a marked manner to the other senses, as it was in this instance.

How is this prolonged effort of expiration to be accounted for? I believe the usual way of explaining it is, by referring it to the diminished force with which the air is expelled from the lungs, as contrasted with that with which it enters; hence, when any mechanical impediments exist to the free exit of the air, owing to congestion of the mucous membrane, or the existence of the products of inflammation on its surface, it must take a longer time than usual for the accomplishment of the effort. But if this were true, how does it happen that such a phenomenon is never observed in acute bronchitis, where such congestion undoubtedly occurs, as well as in the chronic affection? Rejecting for this reason the explanation just given, I attribute the prolonged expiratory murmur to impaired action of the muscular fibres. So long as they retain their healthy vigour and contractility, weak as they are, they materially assist the act of expiration, by simultaneously diminishing the volume of the lungs; but when their vital power is impaired, by reason of the long-continued irritation to which proximity to an inflamed mucous membrane subjects them, they no longer assist, or assist but very feebly and imperfectly, the other agents, whose office it is to diminish the capacity of the chest.

This, then, is what I would consider as the distinctive sign of paralysis, more or less perfect, of the muscular fibres of the bronchial tubes.

But to return to our case. She was treated on her admission with stimulating expectorants, and turpentine stupes at night, but with very little relief. A variety of expectorants were tried in succession, but without advantage. On December 24 she was put upon a mixture containing nitric acid,

which agreed rather better with her than any she had previously used.

On the 26th the galvanic coil was used, and a current of electricity directed through the chest from the side of the neck to the pit of the stomach. This gave her no annoyance, but was productive of no benefit. On the 27th the report was:—"Looks a little better, but there is no material change; sleeps very little (all her sleep had to be taken in the sitting posture, or sleeping in bed with her head raised up); her breathing is very difficult." On that day she was ordered pills, containing half a grain of extract of *nux vomica*, and one grain of *ipecacuanha*, one to be taken three times a day, and her nitric acid mixture to be continued. The effect of this treatment was most surprising, and, I must confess, most unexpected. That night she was able to lie down and sleep all night; her breathing was much easier, and her expectoration free. She looked cheerful; and her appetite, which had been very deficient during the whole period of her illness, was improved. That was the first night, as she stated, that she had been able for seven weeks to lie down and sleep all night. Instead of broken snatches of rest in an uneasy posture, she was able, without inconvenience, to resume the natural incumbent posture, and to enjoy the refreshment that none can appreciate so well as those who have been long deprived of it. This treatment was continued with the happiest effects during the remainder of her stay in the hospital: with the exception that, on the 31st of December, the quantity of the extract of *nux vomica* was increased from half a grain to a grain for a dose: not because the former quantity had in a measure lost its effect, but under the idea that it might the sooner enable her to return to her employment. The effect of the pills, as she described them herself, was to relieve her breathing, promote expectoration, increase her appetite, and keep her bowels open. I certainly was not prepared to find *nux vomica* a promoter of sleep, believing, as I do, that it is in many of its properties an antagonist to medicines of the narcotic class. Yet so it was: the poor creature, who before was almost unable to close an eye, began to sleep in the day-time, to her own infinite relief. It is scarcely necessary to say, that I do not regard this result as contradictory in any measure to the physiological properties of *nux vomica*. It was the consequence, not of its direct, but of its indirect action. It did not narcotize the sensorium, but it stimulated the muscular apparatus of the pulmonary system, and, by so doing, removed a mechanical impediment to the

proper performance of the respiratory functions. On applying the stethoscope to the chest, it was found that the bronchitic râles had lost much of their intensity; they were shorter and looser, and the expiratory murmur, as contrasted with the inspiratory, was less prolonged. Corresponding to this change in the phenomena of auscultation, there was a corresponding change perceptible to the eye and hand in the relative duration of inspiration and expiration. The former, having lost somewhat of its voluntary character, was neither so forcible nor so short, whilst the latter, though still preternaturally longer, scarcely exceeded the former in duration. At the period of her discharge from the hospital, January 6, 1860, the two effects were very nearly equal in length of time.

ART. XVI.—*Case of Ascites, in which Nature effected a Cure by spontaneous Rupture of the Abdominal Parietes, at a point midway between the Umbilicus and Pubes; with Remarks on the Treatment of Ascites.* By HUGH CROSKERY, L.R.C.S.I.; Honorary Member of the Surgical Society of Ireland; Member of the Obstetrical Society; late Assistant-Surgeon R. N., &c.

I WAS summoned, a short time ago, to see a middle-aged negro, living on the summit of a hill in the heart of the mountains of Jamaica, in whose person nature was said to have effected, and skilfully too, an operation which the annals of medicine tell us she very rarely undertakes, and which it is now my good fortune, as well as my duty, to bring to the notice of the profession.

A case somewhat similar has been described by M. Delmas*, in which nature had effected a cure by spontaneous rupture of a pouch which had presented itself at the umbilicus.

William Jamison, aged 50, had been suffering from ascites for some weeks. His abdomen had acquired a considerable size; the respiration was laboured and difficult; the feet, legs, thighs, and scrotum were almost bursting with œdema; he was restless, wakeful, and debilitated, and for the last few days a painful tumour, over the centre of the hypogastrium, added to his sufferings. On the centre of this hard and painful spot, a small slough appeared—the poor fellow lay awake nursing his tender burden—when, suddenly, he felt something give way, his bed was saturated—he was being tapped by nature! The

* Dict. de Méd., vol. iv., p. 202.