cate texture of the organ within. What is true of the milder forms of inflammatory products, is not less so of the consequences of acute inflammation; but there are also other elements of considerable importance here introduced. In the chest, the tendency to complication, in the inflammatory action, of the lung-structure and pleura, is greater than in corresponding inflammation in the abdomen; and the peritoneum is more susceptible to the presence of its own morbid products than is the pleura; a circumstance apparently referable to the same cause as that to which the relative susceptibility to shock of these membranes, severally, is attributable.

In contrasting the effects of injury to the organs themselves contained in these two cavities, such comparison can be instituted only between the solid viscera of the abdomen and the lungs; as there is no analogy between the anatomical relations of the trachea with its bronchial ramifications, and the membranous viscera of the abdomen. Hæmorrhage is the most frequent cause of fatality in wounds of the lungs, liver, spleen, and, perhaps, of the kidney; but such bleeding always kills by exhaustion when derived from the latter organs; whereas, it may be destructive by suffocation when occurring in the former, either by obstructing the air-passages, or by accumulation in the pleura, and compression of the lung-tissue from without. The diagnosis is, therefore, more simple, from the physical signs present, in thoracic than in abdominal hæmorrhage.

The effects of shock, from contusion or concussion, on the lungs and abdominal viscera are manifested through the same system of nerves, but in a different way. Vascular congestion, the consequence of suspended function in the vaso-motor nerves, characterises the former; paralysis of the muscular coat of the bowels, and disturbance in the functions of the excretory organs is witnessed in the latter; and the duration of these symptoms is generally proportioned to their intensity.

The means by which nature cures these lesions are similar in the lungs and in the solid viscera of the abdomen; and in each, as a rule, the consequences of structural injury are limited, ultimately, to the neighbourhood of the breach. That the arrangements existing for the security of the various vital organs against injury are not perfect, is due to their mechanical requirements in the healthy performance of their functions, and to the necessary structure of their containing cavities in relation to these offices. For, neither in organic mechanism, nor in pathological processes or results, are we to expect incompatibilities, or to look for special provisions for every emergency. But we find the adaptation of the existing material and means to varied circumstances as perfect as the perplexing influence of disturbing elements will permit. And if the curative results are not always commensurate with our expectation or desire, it is because we do not give their full weight to the character and violence of the injury inflicted, nor attach due importance to the various predisposing and existing causes, which tend to mar the natural remedial efforts. Perhaps we may, without an excess of humility, confess that, from the imperfection of our science and art, our own endeavours to render assistance have fallen short of our good intentions; and it is not surprising if honesty sometimes compel us to admit that a better acquaintance with the actual condition of our patient, and a more judicious reading of nature's indications, would have saved us from the mortification of learning, when too late, how to render that timely assistance which might have been successful in protracting or preserving life.

ON A FATAL CASE OF GENERAL EMPHYSEMA PRODUCED BY VIOLENT SCREAMING.*

By T. R. JESSOP, Esq., F.R.C.S.,

Lecturer on Anatomy and Physiology in the Leeds School of Medicine.

GENERAL emphysema, produced otherwise than by accident from without, is an occurrence of sufficient rarity, for me to feel that no apology is needed in occupying this Section for a few minutes, whilst I relate the leading particulars of a case which has lately come before me in my practice.

The subject was a schoolboy, 8 years old, who resided in New Wortley, a suburb of Leeds. During the second week in December 1868, he daily joined his playmates in a game which required the participants in it to kick a stone as often and as violently as they could. On the night of the 15th of December, the lad complained of pain in the left ankle-joint, and, on examining the part, his mother found it red and swollen. On the 19th, I was requested to visit him, and I then found that the joint had become the seat of acute synovitis. There was a high condition of inflammatory fever, and the stomach rejected every

thing he swallowed. Leeches to the joint, followed by an evaporating lotion, a saline aperient, and a complete restriction of the food to small and oft repeated sips of brandy and milk, resulted, on the following day, the 20th of December, in a decided relief of his symptoms. On the 21st, he seemed exceedingly fretful, and complained almost constantly of pain in the right abdomen, and in the head; and, towards evening, he cried out of pain in the left chest. A mustard cataplasm on the chest, and a powder containing two grains of Dover's powder and four of mercury with chalk, procured him a favourable night. Early on the morning of the 22nd, however, he began to scream most violently, and without ceasing. He absolutely refused to be comforted for a moment even, or to give us any clue as to the site of his pain. All that day and the succeeding night he continued his screaming with no intermission. At about 6 o'clock on the morning of the 23rd, his mother noticed a little puffiness on the left side of his neck, and soon she became alarmed at the rapid progress made by the swelling. By 10 A.M., on my arrival, the head, face, neck, chest, and abdomen had become enormously distended; air could be distinctly felt in the cellular tissue all over the trunk, and down the arms as far as the wrists; none could be detected in the legs or thighs, or, indeed, below the groin on either side. He continued screaming, though less violently than on the day before. The treatment I adopted consisted of puncturing the skin in many places, and the administration of brandy. His breathing never became much embarrassed, but the circulation, and his powers generally, became gradually feebler, and at 2 P.M., eight hours after the first appearance of the emphysema, he died.

Twenty-six hours after death I made an examination of the chest, the friends stipulating that the head and ankle should be left untouched. The head, neck, and trunk remained largely distended; and the characteristic crackling could be felt as far down as the wrists in both arms. The ankle had acquired an almost natural appearance, being but little larger than the right joint. On making the incision necessary for opening the chest and abdomen, a large quantity of most offensive air escaped, and the muscles of the abdomen alone were observed to be completely blackened. In the abdomen, the organs were in a perfectly healthy and normal condition, and I was unable to find anything to account for the pain of which he had complained on the 21st. On opening the chest, the mediastina were found to contain air; but, although they were somewhat distended, I could not satisfy myself that the lungs had been greatly impeded in consequence; and this circumstance would probably account for the length of time, considering the extent and degree of emphysema, during which he lingered. Air had also penetrated in small quantity the costal subpleural tissue.

The heart and its coverings were healthy, the right cavities containing dark blood.

The lungs appeared of normal size; their inferior borders and their apices were the seats of slight vesicular emphysema. I was unable to detect any extravasated air beneath the pulmonary pleuræ, except at the roots of the lungs; but, on a close inspection of the outer surface of the right lung, a very thin film of recent lymph was observed, and at irregular intervals I noticed very small immoveable elevations, the largest of which was about the size of a pin's head. On cutting into these, they were found to be small irregular cavities containing air and a little red coloured serum. I counted eight of them, all on the front external surface of the lower lobe of the right lung, and I was unable to find any elsewhere. On microscopic examination, the lung-tissue, which shewed no signs of degeneration, was found torn at these places.

The points which I think worthy of notice in this case are:—

1. The cause of the rupture in the lung: the violent and long continued compression, viz., to which the lung was subjected, in the production of a series of loud shrill notes. The glottis would necessarily be nearly closed, thus offering a great impediment to the exit of the air, whilst the expiratory efforts were the greatest of which the lad was capable.
2. The age of the patient—8 years. Dr. Mapother of Dublin, remarking on a case of general emphysema, in a child, two years old, published by him in the *Medical Press and Circular* of April 29th, 1868, says: "Out of thirty-eight such recorded cases which I have analysed, thirty-four were in children under four years."
3. The great number of points at which the lung-tissue had become ruptured, eight of them at least, be it remarked, having been found upon the surface, immediately beneath the pleuræ; whilst the most usual situation is undoubtedly near the root.
4. The comparatively small quantity of air found in the mediastina.
5. The probable immediate cause of death, which, I think, is to be found rather in the occurrence of a succession of injuries to a vital organ, than in the interference with respiration by pressure upon the lungs of extravasated air.

* Read in the Surgical Section at the Annual Meeting of the British Medical Association in Leeds, July 1869.