CLINICAL LECTURE

ON

A CASE OF GUN-SHOT INJURY OF THE CHEST.

Delivered at University College Hospital.

By JOHN E. ERICHSEN, ESQ.,

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I WISH to-day, Gentlemen, to direct your attention to a case of as great interest professionally as it has been socially, and one which involves several questions connected with penetrating wounds of the chest in a very instructive and interesting manner. I mean the case of that unfortunate man McDonnell, who was shot in so barbarous and cowardly a manner last Saturday week in the neighbourhood of Bloomsbury. The particulars of this case are, in all probability, tolerably fresh in your recollection; but I will just remind you of its main features, by reading to you a short abstract of the case, taken from the more copious notes which you will find in the case-book.

Edwin McDonnell, aged 23, was admitted into the Hospital a little before two on the morning of September 28th, having been shot in the chest about half an hour before. On admission, he was cold and pale; countenance somewhat anxious; pulse 136, weak and small.

On examination by the House-Surgeon, a small circular wound, about one-third of an inch in diameter, was found close by the edge of the sternum, and just below the fifth costal cartilage. The wound was cleanly cut; the edges were very slightly depressed. A second wound was also found at the back of his chest on the same side, somewhat higher than the one in front and further out, being just outside the inferior angle of the scapula. The size of this wound was slightly larger than that in front, and its edges were a little everted.

His clothes were found perforated in front, but not behind; and, during their removal, the bullet fell to the ground. It was conical in shape, and about one-third of an inch in diameter. There was no hæmorrhage; and, from the condition of the man's clothes, not more than an ounce of blood had escaped externally. He was placed on the injured side, and covered with blankets.

Mr. Heath (who was summoned in the absence of Mr. Erichsen) inserted a probe into the anterior wound, to ascertain that the track of the ball was not subcutaneous. Soon afterwards, some air was seen to bubble out of the wound.

The patient complained of pain on movement and on drawing his breath. There was no cough, nor expectoration. The injured side was resonant on percussion; the breath-sounds were weak.

A pad of lint was placed over each aperture, and a broad piece of strapping applied over the pads from the spine to the sternum. An opiate was administered, and only ice and cold milk allowed.

During the day, the patient did well in every respect, with the exception of a slight draining of blood which took place from the anterior aperture, but which was easily arrested. The pulse ranged from 100 to 108; no cough. The pain became less severe.

September 29th. The patient was not quite so well. His face was flushed; skin hot. Respiration 40. Pulse 100. There was slight working of the *alæ nasi*. About two tablespoonfuls of dark bloody viscid matter were coughed up. Dr. Wilson Fox examined the chest, and found the resonance tympanitic, with considerable resistance over the upper part of the thorax above the fourth rib. Below that, and in the axillary region, it was dull. The respiration above the fourth rib was bronchial; below, it was very weak and distant. In the upper axillary region, it was high-pitched and distant, with an occasional moist *râle*. In the lower axillary region, it was almost suppressed, slightly jerking, and attended with a little indistinct friction. Vocal fremitus and vocal resonance were suppressed over the right front of the chest.

September 30th. The patient had passed a comfortable night. He had coughed up about half an ounce of bloody matter, and felt as though he could bring up more, but the pain stopped him. Skin cool; pulse 92. Respirations 28. The line of dulness had risen to the third rib.

October 1st. The symptoms were unchanged. He had expectorated about an ounce of the same dark sputum. Pulse 112. Respiration 34. In the evening, the tongue was slightly furred, and the skin hot.

October 2nd. The skin was cooler. The bowels had been opened by an enema. The sputum and dulness were unchanged. The breath-

sounds were less distinct. He had more pain about the wound. There was slight working of the *alæ nasi*. Pulse 108. Respiration 38. He was ordered a teaspoonful of brandy every two hours. Towards evening, there was some restlessness and sweating.

October 3rd. He had passed a bad night. Pulse 132. Respiration 44. The physical signs were the same. He vomited once during the afternoon. Towards evening, his face was covered with a cold sweat; the expression of countenance was anxious. Pulse 110. Respiration 48.

October 4th. He had passed a calmer and comfortable night; but the sweating still continued. The expectoration was more tenacious, still bloody. Respiration 34; pulse 130. Soon after 10 A.M., a change for the worse took place; the sweating became more profuse; and, although brandy was frequently administered, he rapidly sank.

POST MORTEM EXAMINATION, twenty-four hours after death. The appearance of the body was greatly changed; the whole of the subcutaneous cellular tissue having become emphysematous, although during life not a trace of emphysema could be found. On removing the sternum, the cavity of the right pleura was found to contain three pints of a dark bloody fluid, evidently a mixture of blood and serum; some masses of lymph were floating in it, as well as a few clots of blood. The surface of the pleura was found to be covered with a soft spongy layer of fibrine, and adhesions had formed in several places. One of these existed a little above the wound, at the place where breathing had been heard during life. On tracing the path of the bullet, it was found to have perforated the anterior wall of the thorax below the cartilage of the fifth rib and close to the right border of the sternum, and, having passed through the base of the right lung, to have made its exit through the fifth interspace, externally to the angle of the scapula, the ribs having escaped injury. The apertures were almost occluded by the inflammatory products thrown out. The pulmonary tissue adjacent to the track of the bullet presented the appearance of a mass of coagulated blood, the surface of the wound being irregular, and almost uniformly black. The base of the left lung was much congested. Very little fluid was found in the left pleura. When the pericardium was opened, about an ounce of dark coloured fluid escaped, in which were found floating a few masses of lymph; and some adhesions had taken place at the posterior part.

That is a brief summary of this poor fellow's case; and you will see that the most important points are these. He was shot right through the chest and through the lung. Notwithstanding being shot through the chest and through the lung, he had no cough, and but little expectoration of any consequence, for the first four-and-twenty hours. The bloody expectoration did not come on to any extent till a later period. There was dulness on percussion on the right side of the chest soon after the accident—too soon for it to have been due to inflammatory effusion; and it must, therefore, have been the result of the extravasation of blood. That dulness gradually increased; and he eventually died, partly from exhaustion, partly from inflammation of the pleura and of the lung, partly from the dyspnoea caused by the accumulation of a large quantity of fluid in the right side of the chest. In the *post mortem* examination, we found that the bullet traversed the base of the right lung; and Mr. Bruce has ascertained, on more minute examination, that there is a largish blood-vessel opened along the track of the bullet, from which, no doubt, the hæmorrhage proceeded. There was a good deal of blood infiltrated into the substance of the lung; and inflammatory action had taken place around the track of the bullet. We also found that the right side of the chest contained three pints of bloody fluid. It was not pure blood, for there was no distinct coagulum; but it was evidently blood mixed with inflammatory effusion and a good deal of plastic matter. Those are the leading circumstances connected with this very interesting case; and now let us investigate its main features a little more closely.

First of all, with regard to the apertures of entry and of exit made by the bullet. Here is the aperture of entry through the anterior chest-wall. It is situated a little to the right of the sternum, between the cartilages of the fifth and sixth ribs, neither of which was touched by the bullet. The missile passed out just below the angle of the scapula, in the interspace between the same ribs, without coming into contact with the bones, but passing through the base of the right lung in its transit across the body. The aperture of entry is somewhat oblique, somewhat valvular; the direction being not immediately from before backwards, but also rather from within outwards. It was remarked at the time of his admission, and it was equally noticeable at the *post mortem* examination, that there was scarcely any difference between the two apertures of entrance and of exit. Both were about the same size, and presented as nearly as possible the same characters. The aperture of entry was a little depressed. The lips of the aperture of exit may have been a little everted. The aperture of exit is said to have been a little larger than the aperture of entry, but very little. So it would really have been a somewhat difficult matter, on looking at these two apertures, to have

established so decided a difference between the two as to have justified a surgeon in swearing before a court of law as to what direction the bullet had taken—by which aperture the bullet had entered, and by which it had escaped. Now, the similarity that existed between the two apertures in this case, so different from what is commonly met with in gun-shot injury, was, no doubt, attributable to two or three circumstances. It was due, first of all, to the bullet being conical, and consequently, by its wedge-like action, more likely to separate than to lacerate widely the parts through which it passed. Then, in the second place, the bullet, in passing through, had not come into contact with a rib; it had not carried with it any splinters of bone or fragments of clothing. It is the addition of splinters of bone or fragments of clothing to a bullet while traversing a body that often adds very greatly to the size of the aperture of exit. A bullet goes in clean; and, if it carry along with it a sort of halo of splinters of bone and bits of clothing, it becomes very much larger in its passage across the body, and has to tear its way out, not only through an aperture corresponding to its own size, but through an aperture that will allow of the escape of this circumjacent mass of splinters and clothing that is being propelled before it; and a great number of these splinters of bone will very commonly be found in the aperture of exit. But in this particular case there was nothing of the kind. No clothing was found in the wound. The bullet passed into and out of an intercostal space; consequently, it did not fracture bone, and carried no bone before it. There was, therefore, none of this halo of splinters to enlarge the aperture of exit by which it tore its way out. There is a third reason why there was no great difference between the two apertures. It is this. The aperture of exit has been shown—by Mr. Guthrie especially—to be usually larger than the aperture of entry, in a great measure because the bullet has lost a certain amount of its momentum in its passage across the body; and, losing its momentum, it tears more widely, and does not separate so cleanly. And hence it may be laid down as a general rule in surgery, that, the greater the resistance that is met with by a bullet in traversing the body, the greater will be the difference between the aperture of entry and the aperture of exit. Hence, if the momentum of the bullet was not materially diminished, the resistance of the tissues being comparatively small—for no tissue in the body would offer less resistance to a bullet than the structures that fill up an intercostal space and the soft lung-substance—it is an additional reason why the two apertures were nearly the same.

The next point in this melancholy case to which I wish to direct your attention is an exceedingly interesting one. It is the absence of any emphysema of the cellular tissue that could be detected during life. Here was a man with two holes in the wall of his chest, back and front, and with his lung perforated, and yet there was no escape of air into the cellular tissue of the body. I must confess that this struck me as being very remarkable. Emphysema might have occurred from any one of these wounds—from those in the chest-wall, or from that in the lung. Nothing is more common than for emphysema to occur where there is a wound of the chest-wall, even with perforation of the pleura, but without any wound of the lung itself. Emphysema results from a wound of the chest-wall involving the parietal pleura in this way. Air, during inspiration, passes in through the aperture in the chest-wall, and accumulates in the pleural cavity, constituting some pneumothorax; it is then compressed during the expiratory effort, and is driven into the cellular tissue of the body, which is blown up and rendered emphysematous. This, of course, is more likely to happen if you get a wound in the lung *plus* the wound in the chest-walls. Here we had all the conditions that favour emphysema, but none occurred. There was pneumothorax, but no emphysema. Why did it not occur? I think the reason for this also is pretty evident. Both of the wounds in the chest-walls are somewhat oblique, and they are small. The bullet was conical, and fired at a very short distance from the sufferer; and consequently the tissues were probably separated, rather than extensively opened, so that they had a tendency to collapse after the passage of the bullet; and thus, by their mere resiliency, the aperture was closed, and the tendency to the entrance of air during inspiration was diminished.

But why did not emphysema result from the wound in the lung? The same conditions which prevented the entrance of air through the chest-wall doubtless operated, to a certain extent, in restraining the escape of air from the lung. And, moreover, if you remember the condition in which we found the lung, this circumstance will be to a considerable extent explained. At the *post mortem* examination, the lung was found infiltrated with blood to some distance around the track of the bullet. This infiltration of blood no doubt took place very rapidly, since the bullet in its course had divided a large vessel; and it would effectually seal up the air-cells and smaller bronchi, rendering that portion of the lung almost impervious to air. And hence it was that no considerable quantity of air escaped, merely a few cubic inches—just enough to constitute pneumothorax, but not enough to give rise to emphysema.

But there was undoubtedly a third cause, although I think that it came into operation after the second one I have just mentioned. The third cause was the rapid effusion of blood into the pleural cavity. The lung-substance being cut across, and a largish pulmonary branch divided, blood was rapidly effused; and, as the wound in the lung was at the base, the blood in the pleural cavity rapidly rose to the level of the wound, and so prevented the escape of air from the lung.

From these three causes, then,—the small size and the clean nature of the wound in the chest-wall, the rapid infiltration of the lung-substance with extravasated blood from the divided pulmonary vessel, and the rapid accumulation of blood in the pleural cavity, rising above the wound in the lung,—from these three conditions, I think we may explain the circumstance that, although the chest-wall and the lung were so freely injured, no emphysema occurred.

Now, the next point of interest in the case is the accumulation of blood in the pleural cavity. You will recollect in the history of the case, of which I have given you an abstract, that there was no external bleeding, and indeed no coughing up of blood for some little time after the injury. But the blood rapidly accumulated in the pleural cavity; for, the first time he was auscultated, fluid was found as high as the fourth rib, so that more than half of the pleural cavity on that side was already filled with fluid; and as that accumulation had taken place in twenty-four hours, it must have been blood, for there was not time for the occurrence of inflammatory effusion. There was, then, rapid hæmorrhage into the pleural cavity; but from the small size of the wounds of the chest, and the way in which the lung-substance had been plugged up, there was neither escape of blood externally, nor expectoration from the lung; but there was a rapidly formed hæmorrhax. To that I wish to direct your particular attention, for I want to speak of it by and by in relation to an important point in the treatment. This accumulation increased, so that in twenty-four hours the level of the fluid had risen by one inch; but by that time, no doubt, inflammatory action had set in in the pleura, and lymph was beginning to be effused, so that this increase in the accumulation may have been due to the products of pleuritic inflammation rather than to the continuance of the extravasation of blood. It is doubtful, at all events, to which it was due, and it may have been the result of both these causes.

The presence of this fluid was readily detected by Dr. Fox on percussing and auscultating the patient. The line of dulness was very distinct, because above it there was a space of extreme clearness of resonance; that clearness arising from the accumulation of air in the pleural cavity—from pneumothorax. The air rising above the liquid, and entering the upper part of the chest, gave rise to an almost tympanic note there on percussion. But there was one point of special interest to which Dr. Fox drew your particular attention, viz., that the respiratory murmur could still be heard through the clear resonance of the pneumothorax. At the *post mortem* examination this phenomenon was explained, as Dr. Fox then pointed out, by the fact of there having been an adhesion between the two surfaces of the pleura in this situation, thus gluing the lung-substance to the anterior wall of the chest, so that the respiratory murmur could be heard notwithstanding and through the pneumothorax. If there had not been pneumothorax, there would have been puerile respiration. In all these cases where there is rapid accumulation of blood in the lower part of the chest, and the lung is compressed up into the upper part, it has been very generally found that there is puerile respiration. That puerile respiration is very marked, and renders the diagnosis of the line of effusion particularly easy in these cases; and the difference between the dulness on percussion, and the clear note in that part of the chest that is still occupied by inflated lung, is always very distinct indeed.

There is a fourth point of considerable interest in this case, and that is, the character of the expectoration. Here was a man shot through the lung with a large pulmonary vessel opened—as was found at the *post mortem* examination—and yet for many hours he spat up no blood. Is not that contrary to what one would expect, to what is generally met with, and to what is stated by almost all writers on injuries of the chest, military and civil? One of the most common signs of a wound in the lung is said to be a tickling cough, with the expectoration of florid frothy blood, either in a case of wound of the lung from fractured rib, in a case of stab, in a case of bullet injury. Here there was nothing of the kind. There was no expectoration for many hours, and when the expectoration did come it was neither florid nor frothy, but it was viscous and nearly black. So that, although the man was shot through the base of the right lung, you had not, at a single period of the history of his case, that most marked and prominent symptom of injury of the lung; namely, the expectoration of florid and frothy blood, or frothy mucus tinged with florid blood.

This is really to my mind a very remarkable phenomenon in connection with this interesting case, perhaps the most remarkable of all the

phenomena, but I think that the condition of things found at the *post mortem* examination will enable us to explain this also. What was found at the *post mortem* examination? Why, that the bullet traversed the lower lobe of the right lung, that there was an extensive extravasation of blood into the substance of the lung traversed by the bullet, and a great accumulation of blood in the pleural cavity around the lung, compressing it very rapidly. What happened in this case? As soon as the man was shot, the bleeding took place in the chest, and an extravasation of blood took place into the lung-substance itself, which swelled up rapidly as any loose-textured structure, with a considerable ecchymosis, would. In such a case the extravasated blood coagulates rapidly in the meshes of so cellular and spongy an organ, which renders that portion of the lung inoperative for breathing purposes. In consequence of the rapid accumulation of blood in the pleural cavity, the portion of lung that is wounded becomes speedily pressed backwards against the spine, becomes annihilated, as it were, for all purposes of respiration, so that no air enters it, and consequently any blood that is in it does not become oxygenated, and would not become florid. In that way we are able to explain how the sputum was not of a florid character. There was no blood effused into the bronchi that would come up rapidly, but the blood had effused itself into the general spongy substance of the lung, had compressed the air-cells and tissue there, and thus did not become subjected readily to the contact, and chemical changes that would otherwise have been impressed upon it by contact, with the atmospheric air. That, and the rapid compression of the lung, perhaps explain the absence of expectoration altogether at first. It also explains why the expectoration, when it did come, was not florid. It was not freshly poured out blood that was then expectorated, it was glairy mucus, the colour of prune-juice, and called the "prune-juice expectoration." What was then taking place in the lung? There was, first of all, pneumonia going on, and we know that when pneumonia has once set in the substance of the lung becomes consolidated, and the sputa are always rusty and brown. It is undoubtedly viscid sputum, tinged with decomposed blood—somewhat the kind of blood that you see in a bruise, first black, then becoming brown, purple, and green, in consequence of certain changes that go on in it after it has become extravasated. The sputum of pneumonia is tinged in that way. Such sputum we had here after the inflammation had set in; but, in addition to the ordinary rusty colour of pneumonia, it was tinged with a considerable quantity of decomposed blood, which had been extravasated around the track of the bullet, and which was being expectorated in a semi-decomposed state, with colour changed by decomposition and lengthened extravasation. Thus the condition of lung will explain the character of the sputum, which was so marked and exceptional in this case.

So much for the general symptoms; and, as I have already said, the poor fellow died from a combination of causes, inflammation of the lung, very extensive pleurisy, coupled with profuse extravasation of blood into the cavity of the pleura, poured out by a large vessel that was wounded.

With regard to the treatment in this case, there are two points to which I wish to direct your particular attention; but before going to them, I will say one or two words about some minor points in the management of these cases.

First of all, as to the position of the patient. In such a condition of things as we had here, the patient should always be laid upon the injured side. For this there are two reasons: first, that the apertures may be dependent, so that any fluid that may accumulate in the chest may escape more readily. Secondly, that the lung on the injured side is already compressed, or being compressed, by the extravasated fluid; and hence, if you lay the patient upon the sound side, the sound lung is compressed by the weight of his body, and his respiration becomes most seriously embarrassed. Lay him on the injured side, and he has then the sound lung to respire with, uninterruptedly and freely.

With regard to dressing the wound in such a case as this: the dressing applied should be of the simplest character possible, merely water-dressing and a piece of lint.

One of the most important questions with these cases of injury of the chest is undoubtedly that of the propriety of bleeding the patient, of employing venesection. Now this is a point of practice of great importance. It is a point of practice that has been insisted upon very strongly by almost all military surgeons, who have necessarily had by far the greatest amount of experience of chest-wounds. Military surgeons in this country, and I believe I may say in France, but in this country certainly, are generally agreed upon the propriety of bleeding in penetrating wounds of the chest. But surgeons cannot, and do not, advocate indiscriminate bleeding in all these cases. I think that we may say this, that where there is a copious spitting up of florid frothy blood, shortly after a wound on the chest, it has been found by experience, that taking away blood from the arm lessens this expectoration of blood from the

lung. When I say "copious" I do not mean so copious a hæmorrhage as to destroy life in the course of a few minutes; but, when the hæmorrhage is moderately severe, venesection has been found to be the best mode of arresting it. It does that in two ways. By diminishing the propulsive power of the heart, blood is not driven with so much force through the substance of the lung, and it does not enter or pass out of the vessels so rapidly. Also, the force of the heart's action being diminished, an opportunity is given for the formation of a coagulum in the lung-substance, thus preventing the further escape of blood. This is then a point of practice upon which surgeons are pretty well agreed; they bleed early in cases of chest-injury to restrain too profuse hæmoptysis. Death by bleeding is, I should say, the great danger in the first eight-and-forty hours. They bleed early to obviate this. At a later period, bleeding may possibly be necessary to restrain inflammatory action, if other circumstances indicate it.

In this case bleeding would not have been proper in the first instance, because there was no hæmoptysis, and it was very doubtful what the condition of the internal hæmorrhage was. The poor fellow might have died in other ways. If the wound had been nearer the root of the lung, he might have died in the course of an hour or two. Bleeding, therefore, in the absence of the possibility of knowing the exact amount of injury, would not have been a proper course to adopt here. There was no hæmoptysis, and the existence and amount of internal hæmorrhage was altogether doubtful. Besides this, there is no evidence to show that bleeding is useful in any case of internal hæmorrhage. It would be as rational to bleed a man to arrest the hæmorrhage from a cut femoral, as to bleed a patient with a wound of the pulmonary artery which is bleeding very copiously into his pleura, with a view of restraining the bleeding from the latter. It is only where the hæmorrhage from the lung is comparatively moderate in quantity, and evidently no large vessel has been injured, that blood-letting is at all practicable as a counter-action to the bleeding from the wound in the lung.

Well, then, the practice of bleeding would never have been proper as a primary measure in this case. At a later period, as a secondary measure, the question was never raised, for the poor fellow became too prostrate for us ever to dream of it.

But there was another important point of treatment involved in this case. It was this: here was a man who had a large accumulation of fluid on the right side of the chest. It was evidently increasing, or at all events had reached his fourth rib. His respiration was becoming impeded by this accumulation of fluid. Would it have been proper in this case to open the chest on the right side and to let out those three pints of fluid that we found after death? Well, before I answer that question, let us hear first of all what military surgeons say upon this point. You will find that Dupuytren, Valentin, Sanson, the late Mr. Guthrie—and I believe I may say that the surgeons who practised in the Crimean war agreed with their opinion (what opinion they have held since I do not know very positively)—these surgeons, I say, are clear upon this point; that you may open the chest of a man who has been wounded in the lung, and who is suffering from accumulation of fluid in the pleural cavity; you may open the chest, but you must not do it until you are perfectly certain that all the hæmorrhage has ceased, and that all the possibility of recurrence of hæmorrhage has passed by. In other words, it is quite right to open one of the bullet-wounds and put in a catheter or a cannula, or to tap the chest, if necessary, when it is inflammatory effusion, or inflammatory effusion mixed with blood, perhaps; or it may be right to do so after so many days have elapsed from the time of the receipt of the injury, that no more bleeding can occur; but it is not right to do so previously to this. It is of course very difficult, nay, impossible, to say when the bleeding has ceased, or is likely to recur; and hence military surgeons generally say that you ought not to tap the chest, or to reopen the wound, to let out fluid that has accumulated, until the eighth or tenth day after the receipt of the injury. Allow eight or ten days to elapse, and then the chances are that it will be more inflammatory effusion than blood; or, at all events, by that time the chance of the recurrence of hæmorrhage has passed by. Undoubtedly, if this poor fellow had lived till that time, and had been in a condition not too prostrate to admit of anything being done, we should have opened up the posterior wound and let out the fluid that had accumulated within his chest. But he did not live long enough, and was too prostrate for that.

Why is it not proper to open the chest before the eighth or tenth day? You will see a very good reason for that, as there is for most of these rules in surgery. It is not proper to open the chest before that date for the following reason: When bleeding takes place into the pleural cavity, what happens? Why, as the blood accumulates in the pleura, it pushes the lung more and more back against the spine; it continues to press the lung, until at last, when the pleural cavity is pretty well filled, the lung is so compressed as to lie back in a collapsed condition

and be impervious to air. Thus the accumulation of fluid, by its pressure against the lung, by the collapse which it induces, and by preventing the alternate expansion and contraction of the lung during respiration, tends to restrain the hæmorrhage; and the blood that has already escaped, by its very accumulation, prevents the escape of further blood. You will observe that, in this case, the line of dulness increased up to about the third day, and then reached up to the third rib; so that, by that time, in all probability, this man had lost as much blood as he was likely to lose so long as the chest was left in a quiet state. The lung had become pressed back against the spine and consolidated, and the bleeding had ceased. But if we had tapped the chest, and drawn off the fluid as it escaped from the chest, the lung would have expanded, the lung-tissue would have opened up, the coagula in the pulmonary vessels would have been disturbed, and the hæmorrhage would have immediately recommenced; for, just in proportion as the fluid was drawn off and removed from the outside of the lung, and the compression exercised by it removed, the blood would have begun to pour into and out of the pulmonary vessels within the lung. If he had lived for eight or ten days, a quantity of lymph would have been deposited on the lung, the wound in the lung would have become covered over by a thick layer of plastic matter, and that portion of the lung, more or less, permanently bound down against the spine as in a case of empyema. After the lung is thus bound down, you may remove the fluid without the danger of the recurrence of hæmorrhage. The lung-tissue continues to be compressed, the blood-vessels to be walled up by coagula and plastic matter; no movement of expansion in the lung follows the escape of the fluid, no disturbance of the closed vessels, and no liability, therefore, to the displacement of clot and the recurrence of hæmorrhage. For the reasons just given, we did not think it proper to draw off the fluid from the poor fellow's chest at an early period; and, during the last thirty-six hours of his life, he was not in a condition to bear any operation; even turning him in bed gave him intense pain; and, indeed, he was evidently sinking.

The case, then, is, in many of its aspects, an important and a particularly instructive one, and one which presents many points of interest that place it in a somewhat separate category from the ordinary run of cases of gunshot injury penetrating the chest.

OBSTETRIC MEMORANDA.

UNDER this head we shall from time to time, as materials come to hand from correspondents, publish records of cases remarkable in themselves, or illustrating points of interest in obstetric practice, therapeutic or manipulative. We shall probably in this way preserve from oblivion the notes of very many useful and instructive occurrences in private practice; for the great obstetric experience is that, for the most part hitherto unwritten, of the great body of general practitioners throughout Great Britain. We will only ask those who may forward cases for record to relate them with the utmost brevity, and equally to condense any appended remarks.

LABOUR OBSTRUCTED BY A FIBROUS BAND: DISEASED PLACENTA.

By HENRY C. ROGERS, Esq., Newport Pagnell.

On September 15th, I was called to Mrs. B—, aged 20, in labour with her first child. On examination, I found the membranes protruding through the os uteri, which was soft and yielding. The membranes having been ruptured, the head quickly descended to the perineum. I then found an obstruction to its exit by what I at first thought to be the lip of the uterus over the head; but, upon passing the finger under the obstruction, I found it to be a band, apparently fibrous, attached anteriorly and posteriorly to the vagina, and which, until the pressure of the head distended the soft parts, had been lying along the side of the vagina. It was evidently an abnormal deviation of the hymen, and of so tough a character as to require division with scissors before it would allow the passage of the head, which was born with the next pain. Upon attempting to remove the placenta, I felt the cord was separating; and on passing my fingers along it, with the intention of reaching the insertion, I found the last seven or eight inches of the funis to be of an almost semi-gelatinous consistence. I then attempted, by manipulation of the uterus, to make it expel its contents; but, failing in this, introduced my hand, and grasped the placenta. It broke down readily, being in a most rotten condition. In addition to this, it was firmly adherent at the anterior portion of the fundus. The uterus contracted firmly after the removal of the placenta; and, with the exception of a slight feverish attack, the mother has had no bad symptom.

OBSERVATIONS

ON

THE FEVER-DENS OF GLASGOW.*

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As Medical Officer of Health of Glasgow, I have had peculiar opportunities of becoming acquainted with the character of the localities in which typhus fever has raged there, and the specialities of these localities. Further, in the course of my official duties, it appeared to be requisite to preserve, in a more accurate form than usual, the records of all the fever cases occurring over a succession of four years, and to put these down in the form of a map, which may be called the Fever-Map of Glasgow during the years 1863, 1864, 1865, and 1866. These records having thus accumulated in my hands, and having been thrown into this somewhat precise form, it appeared to me that in merely shewing this fever-map to an Association like this, and making such casual observations upon it as might occur to me, I might do something to elicit facts or observations from others that might help to aid us in preventing the spread of fever in future.

Now by fever, for the purpose at present in view, I wish to explain that I mean typhus fever, and nothing more. Of course, we have other fevers in Glasgow. I need not say that we have had plenty of scarlet fever and measles; and, at different periods since I became an official there, plenty of small-pox. We have also had various other anomalous fevers that one does not always attempt to name or classify; and also we have had, occasionally, more or less of the disease about which there has been so much discussion lately, under the name of gastric, or typhoid, or enteric fever. The number of these latter cases, however, is in reality a very insignificant item in the general epidemic record of Glasgow. The amount of enteric fever in Glasgow is so small, that, even allowing for mistakes in diagnosis, the general results would hardly be affected. Besides, I have to remark that mistakes in diagnosis, as regards enteric and typhus fever, are rare in Glasgow—rarer, probably, than in any other town in the kingdom; because the physicians in that city, and even those practitioners who in other towns know comparatively little from personal experience of fever, have all been taught from an early period to distinguish these fevers, and do actually distinguish them in practice. Therefore, I say again, that what I am now discussing, is "typhus" fever; and when I speak of the fever-dens of Glasgow, I mean the "typhus" fever-dens of Glasgow.

From an early period of my official duties in Glasgow, as the Medical Head of the Sanitary Staff there, it appeared to me to be of singular importance to study the habitats of typhus fever—of much more importance than in any other epidemic disease. In making that remark, I go upon this principle, in which, I have no doubt, I shall be supported by the experience of the Dublin physicians, that, while scarlet fever and even small-pox are diseases that will run and spread even in families and in houses where there is a fair ordinary attention to hygienic conditions, typhus fever will not so spread to any considerable extent—not, at least, so as to cause an epidemic. Typhus, according to my experience of it, is a disease of which you may say with absolute certainty, that, in a roomy house, inhabited by a well-to-do class of people, and where proper precautions are taken on the first occurrence of the disease, it cannot spread. It is not in the nature of typhus—it is not possible for typhus, I believe, to spread under good hygienic conditions. And therefore I say, that the study of typhus fever seems of peculiar interest to the sanitarian, because, while it might be urged, as to scarlet fever, for instance, that it is brought by the visitation of God, nobody knows how or why, you may be perfectly certain, with regard to typhus, that, wherever it spreads, and affects a large number of persons in a building, the laws of health are there in some very serious and decided, nay, even very manifest way, disregarded. That is my experience of typhus, as a physician; and, putting that experience into use and operation as a sanitary officer, I thought it was on this account of peculiar importance to become acquainted thoroughly with the haunts and habitats of typhus fever in Glasgow. Besides, typhus fever is a disease which you have no difficulty, generally speaking, in arriving at a knowledge of. With regard to small-pox, and still more with regard to measles and scarlet fever, which are emphatically diseases of children, it is notorious that dozens, scores of cases of them, may occur, and never become known

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