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Contributors

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J.C. Dr. Bennett
with the compliments of
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7 October 1843.

CASES AND OBSERVATIONS

ILLUSTRATIVE OF THE

NATURE OF GANGRENE OF THE LUNGS.

By David Craigie, M. D. F. R. S. E.
Physician to the Royal Infirmary.

(*From the Edin. Med. and Surg. Journal, No.* 148.)

Since the time when Laennec directed attention to the peculiar characters of gangrene of the lungs, a considerable number of instances of that lesion have been recorded by Schroeder, Lorinser, Dr Bright, Andral, and Cruveilhier. It is nevertheless a disease, the presence of which it is difficult to distinguish in the early stage from that of other diseases of the lungs; its determining causes are totally unknown; and it is not known that in any genuine instance of it the patient has made a recovery. During the last six months three cases of this lesion have fallen under my own observation; and I think they are sufficiently important to deserve being recorded. I shall premise one case which fell under my observation in the spring of 1837.

Case I.—Mary Goodall, aged 24, was admitted into the Royal Infirmary on Thursday the 16th of February 1837, in consequence of symptoms indicating affection of the brain and lungs.

She stated that she had lately recovered from an attack of influenza, and that on Thursday last, the 9th of February, she was attacked with pain in both temples, which gradually increased in

severity. This pain, however, was not at all times equally severe, and sometimes she represented it to be merely a dull sense of uneasiness. She had not suffered any pain in the epigastric region, but she had vomiting taking place early in the morning. The skin presented no eruption. She had little thirst; the tongue was covered with a viscid whitish-gray fur; and the bowels were stated to be confined. She believed herself to be in the sixth month of pregnancy.

At admission, the pain of the head, and especially in each temple, continued; but the eyes were not injected, nor the temporal arteries distended. The expression of the countenance was heavy and listless, the eyes heavy and languid, and the aspect that of a person who did not readily comprehend questions, and who seemed to be wakened out of sleep.

There was slight cough, with puriform expectoration; the respiration was hurried, 28 in the minute, and accompanied with large moist rattling in the right mammary region. The sound elicited by percussion was neither unusually dull nor clear. In both subclavicular regions was a good deal of bronchophony, with marked resonance of the voice, amounting under the right clavicle nearly to pectoriloquy. The action of the heart was natural, from 68 to 70 in the minute.

Two compound colocynth pills were ordered, and afterwards a dose of the saline infusion of senna.

17th, Next day the cough was not complained of, but expectoration of the same character continued. The pulse was 72. The bowels had not been opened. Two scruples of the compound rhubarb powder in peppermint-water were given, and afterwards one ounce of castor-oil.

18th. Expectoration of dense opaque puriform matter continued. The headach had interrupted sleep, and continued more severely than yesterday. Both draughts were rejected by vomiting; she had some sickness and vomiting in the morning; no motion took place, nor did any effect follow the use of an enema. The tongue was covered with a whitish fur; the pulse continued at 68; the voice was strongly resonant, especially in the left scapular region; the respiration was bronchial, but without rattle or wheezing. In the right submammary region the moist crepitating rattle was still audible.

Eight leeches were applied to each temple; a purgative enema was ordered to be administered; and afterwards one blue pill and two colocynth pills were to be given and repeated in the course of two hours.

19th. The leeches bled freely, and the pain of the frontal region speedily underwent abatement. Three motions took place; the vomiting did not return; the tongue, however, was covered with a dry fur; the pulse was 68, rather feeble; and the extremities

were cold. She had a listless and depressed look. The cough was abated, and the expectoration was diminished in quantity.

She was ordered one ounce of the saline ammoniated mixture every second hour, two colocynth pills at bed-time, and tea in order to quench thirst.

20th. She slept imperfectly during the night, in consequence of pain referred to the orbits and eyeballs, but without intolerance of light. One motion took place; the tongue was still covered with a rough file-like dry grayish coloured fur; the pulse was 60, extremely feeble; and the listless look with dull heavy eye, as if roused from sleep, continued. When interrogated as to the pain of the head, she stated that it was felt in both temples, most towards the right; but she did not distinctly say whether it was pain or weight, or a sense of constriction. She complained of some uneasiness in the left side of the breast; and an offensive smell issued from the breath.

A blister was applied to the coronal and vertical region of the head, and one to the left breast; the saline ammoniated mixture was continued; six grains of calomel, with three of extract of colocynth, were directed to be given; and afterwards one drachm of the compound jalap powder.

In the afternoon of the same day, about six, she fell into a state of complete insensibility and unconsciousness, with slow languid respiration; dilatation of the right and contraction of the left pupil; spastic rigidity of the voluntary muscles, and loss of the power of deglutition; the pulse at 60, feeble, and the extremities cold. Twenty leeches were applied to the temples, and produced a free discharge of blood, but without manifest alleviation of the symptoms; and at ten o'clock the same night, eighteen ounces of blood were drawn from the arm, with the effect of raising the pulse to 80, but rendering it irregular. A blister was also applied to the occipito-cervical region, sinapisms to the legs and feet, and a terebinthinate enema was administered. As the insensibility and unconsciousness continued, the veins were reopened at twelve, and eight ounces of blood withdrawn.

21st. She continued much in the same state. The bowels were moved several times during the night, and the urine was withdrawn by the catheter. This morning, however, before ten, she spoke and swallowed liquids. Twenty more leeches were applied to the temples, and bled freely; and the blisters have since produced vesication.

At the hour of visit, (twelve noon,) she had recovered some degree of sensibility and consciousness, being capable, when requested, of protruding the tongue, which was covered with a white moist fur, and of raising the hand to the right temporal region, as the part most affected with pain. The pulse was 96, quite regular, but

rather small; the respiration 24, languid and feeble, but regular, and not laborious. No expectoration had taken place since the commencement of the attack of insensibility and loss of motion; but the breath and the person in general exhaled an offensive and fetid odour.

Ten ounces of blood were directed to be drawn from the arm; ice to be applied to the frontal and coronal regions; six grains of calomel, with two drops of croton oil, and three grains of colocynth, were to be given as a cathartic; and a purgative enema, with two ounces of oil of turpentine, was directed to be administered.

22d. Twelve ounces of blood were drawn from the arm immediately after the visit; and ten ounces were drawn from the temples by cupping, at six in the evening. Several motions took place. She swallowed easily in the morning, and could indicate by signs, and saying yes or no, that the pain of the right frontal region was gone. She was also completely conscious and sensible to external impressions, but very feeble, drowsy, and listless. The pupil was contractile to light; the pulse was 120, small; the countenance was pale; the tongue was covered with a moist gray fur.

Four ounces of the saline infusion of senna were directed to be given immediately, and repeated at the end of two hours.

23d. Four motions took place, and the urine had been voided by the spontaneous efforts of the bladder. She, however, had several rigors during the night and in the morning. The pulse was 140, rather small. She complained still of pain over the greater part of the head, did not seem to comprehend questions, looked stupid, answered slowly, and carried the right hand slowly to the right side of the head. The pupils were natural and contractile. The breath emitted a very fetid odour; but no expectorated matter or anything vomited had been seen.

Twelve leeches were directed to be applied to the right temple; and six grains of calomel, one grain of extract of scammony, and three grains of extract of colocynth were directed to be given in the form of electuary in honey.

24th. Next day the leeches had bled well, and three motions had taken place. Last night, without previous symptom, she was delivered of a dead fœtus of about six months, and the placenta was expelled without subsequent hemorrhage. She continued much in the same state during the night; and was still able to swallow, and take food and drink. She made no complaint of headach; but the eye was turbid and glassy; the expression listless and stupid; and the cheeks were flushed. The pulse was 116, of better strength. The tongue was cleaner, but rather smooth and dry. The breath was offensive; but she coughed little.

Medicines were given up; but diet was continued.

25th. Spent a quiet night with sleep, but was still stupid and

somnolent. She made no complaint of headach or pain in the belly. Both pupils were contractile; the cheeks were still flushed; the tongue was covered with a dry glassy fur; the pulse 116; one motion.

One drachm of the compound jalap powder was ordered, and afterwards one ounce of castor oil.

On the 26th, she was still in a languid listless state, as if half asleep, and could be roused, though with difficulty. The eyes were spasmodically turned up; the tongue was still dry; and the pulse 104. As the bowels had not been moved, the medicine was directed to be repeated. One pound of beef-tea was allowed during the course of the day.

27th. She continued much in the same state as yesterday, was perhaps a little more conscious and more sensible to external impressions; and took food and drink, though imperfectly. The eyes are still spasmodically turned upwards; the pupils contract slowly when light is applied; she makes no complaint of headach. The pulse 108, small; no indication of pain in the belly, but very strong pulsation of abdominal aorta. The tongue is cleaner, but still preternaturally red and glassy. Three motions took place.

Ice was directed to be applied to the forehead; the skin behind the ear to be blistered by blistering liquid; and four ounces of saline infusion of senna, with half an ounce of tincture of senna to be given.

28th. The medicine produced three motions, and the blister rose imperfectly. She continued, nevertheless, in the same state of stupor and somnolence; but was rather more easily roused, and showed greater consciousness of external impressions. She made no complaint of pain or uneasiness either in the head, chest, or abdomen. The complexion was clearer; but the eyes were dull and heavy, and the expression was drowsy and vacant. The tongue was dry, red, and glassy. The pulse 100, of good strength.

Six ounces of blood were directed to be drawn from the right occipital region; and some of the saline infusion, followed by castor oil, was directed to be given.

March 1st. Only four ounces of blood were drawn, and three motions took place; but the symptoms of listlessness, somnolence, and stupor continued, and some rigidity was observed in the muscles of the upper extremity. The tongue was still covered with a glassy dry fur. The pulse was 120, rather small.

The scalp was directed to be again shaved, and a blister applied to the coronal and vertical region. The saline infusion of senna was repeated.

On the 2d, the blister had risen well; but the symptoms were unchanged. Next day, however, (3d,) she gave evidence of a greater degree of consciousness, and paid more attention to external impressions. The face was less flushed; the pulse 132,

small; and the tongue still red, dry, and glassy. Some sero-sanguine discharge had taken place from the vagina since yesterday. In the latter part of this day and in the course of the fourth, the muscles of the trunk, and especially those of the extremities, were agitated with tremulous motions. The breath continued offensive, but less strongly than formerly.

One drachm of the compound jalap powder was directed to be given in the morning.

Several motions followed from the powder.

But the shaking and tremulous motion of the muscles continued unabated. The right pupil contracted slowly and imperfectly. The pulse was 140, small; the tongue glassy and dry.

On the 6th, she was less sensible and less conscious; the stupor and debility were greater; the countenance had the hippocratic expression; and, after continuing some hours in this state, she died calmly at eleven at night.

The body was inspected on the 9th, and disclosed the following appearances.

Head.—The membranes of the brain were somewhat thickened by the effusion of sero-albuminous fluid within the subarachnoid tissue. The vessels of the *pia mater* were much loaded with dark-coloured blood.

These appearances were most conspicuous in the right hemisphere, the convolutions of the posterior part of which were much and distinctly flattened.

On examining the right hemisphere at its posterior region, it was found soft, compressible, and undulating; and on attempting to remove the brain from the cranium by the most gentle handling, a quantity of opaque greenish yellow purulent matter escaped from a small lacerated aperture at the posterior end of the hemisphere and on its mesial margin. When an incision was made through this, it disclosed an oblong irregular cavity about two inches and a-half long, and one inch broad at its broadest part, nearly of this shape ⊂, filled with greenish yellow purulent matter, and with rough irregular flocculent rugged walls. This cavity did not communicate with the right lateral ventricle, but was situate partly above, partly behind the posterior cornu.

The arteries of the brain were slightly roughened interiorly by steatomatous or waxy-like deposit.

The rest of the brain was healthy.

The right lung presented in the lower part of its upper lobe and the upper part of the middle lobe, both of which were united by adhesion, a portion softened, broken down, irregular, of a brownish inky colour, and effusing an inky brownish fluid, and exhaling a very fetid and offensive odour. This softened and broken down portion was irregular in shape, and might be as large as a common sized egg. The central part was most destroyed, and in-

deed it was converted into a homogeneous soft brownish-black mass. The margins were less softened, and terminated insensibly in sound lung. The bronchial tubes were loaded with foul viscid bloody-coloured mucus. The middle and upper lobe adhered to the *pleura costalis*. The left lung was free from disease; but a little emphysematous.

The mucous membrane of the stomach was extensively softened at the cardiac and splenic ends.

Epicrisis.—This case is remarkable in presenting two distinct lesions, each very important, and each alone sufficient to have caused the fatal termination. I have recorded the case also, not only as a good example of inflammation of the brain terminating in suppuration, but also as a case illustrating the mode in which disease of the brain influences and obscures the symptoms of disease of the lungs.

Though in this case the symptoms of disease in the brain had taken place previous to admission, and were also present at the time of admission, yet they did not present so prominent and distinct a character as they afterwards assumed, and the patient evidently thought the disorder of the lungs the most serious complaint under which she was labouring. From the puriform expectoration, the cough, and the sound of large moist rattling in the right mammary region, it was inferred, that a tubercular cavity was forming in that region, that is, about the lower part of the upper lobe of the lungs, or that there might be some pneumonic abscess forming in that region. The former inference was believed to be confirmed by the strong resonance heard in the right subclavicular region. As the cough and expectoration, with this peculiar rattling, continued on the 18th, it was still believed that some process of this kind, which could not be easily arrested by the use of remedies, was going on. On the 19th, the cough was abated, and the expectoration was diminished in quantity, apparently spontaneously; and, excepting the rattling, it would have been inferred that the lesion was subsiding. Next day, however, the offensive smell of the breath denoted clearly the nature of the pulmonary disorder under which she was labouring, and it could no longer be doubtful, that part of the right lung was in a state of gangrene. The fetid smell of the breath continued to be felt more or less strongly during the whole course of the disorder, to its termination; and, though sometimes less forcible and more faint, it was never wholly absent. It is remarkable, however, that the cough abated much, and little matter was expectorated, apparently partly from inability to cough, and partly from the bronchial mucous membrane not transmitting its impressions to the expiratory muscles with the energy, with which they are known to do, when the influence of the brain and nervous system is unimpaired.

It is true, that this inference regarding the existence of gangrene

of part of the lung did not interfere with the previous inference of the existence of a tubercular cavity, or even pneumonic abscess. For it sometimes happens, that part of a tubercular mass, or the surrounding lung, is affected with gangrene; and such a mode of origin was not inconsistent with the history and actual symptoms of this case. The general and sudden obscuration, however, of most of the symptoms of disease of the lung, and the distinct and unequivocal urgency of those indicating disease of the brain, put a stop in the meantime to all speculation on this subject, and by demanding immediate attention to the moderation and extinction of the cerebral symptoms, caused the symptoms of the pulmonary disorder to be less closely attended to.

It is not easy to determine the commencement of this dangerous affection of the lungs. It is clear that it was present on the 16th of February, when the patient was admitted; for this was indicated by cough, the symptoms of purulent expectoration and moist mucous rattling in the right mammary region; and the fetid smell of the breath, which was recognized on the 19th, merely indicated that a communication had taken place, on that or the previous day, between the gangrenous portion and the air in the larger bronchial tubes.

It is not, however, quite so clear how long previous to this date the disorder of the lungs had existed. The statement regarding the attack of influenza gave no accurate information regarding the origin of the pulmonary disorder; for when the patient was requested to mention her symptoms at that time, she answered that she had cough and considerable weakness. If we suppose that the pulmonary disorder, which terminated in gangrene, began at the time at which the patient was labouring under the catarrhal symptoms, then it must have begun at least ten or twelve days before the 9th of February, that is, some time about the close of January 1837. If this estimate be correct or well-founded, then the pulmonary disorder lasted between 35 and 45 days, probably more nearly the latter time, and at least 20 days elapsed before the first symptoms of gangrene became manifest.

It appears to have been while this pulmonary disorder was advancing, and when it had been established about ten or twelve days, that the symptoms of disease of the brain first began to give evidence of their presence.

There could be little doubt that the disorder of the brain, which terminated in suppuration, began, at least, on the 9th of February, that is, seven days before admission, and eleven days before the attack of coma and paralysis. At this date, she first felt the pain in the temples, and had vomiting, a symptom which, if not uniformly, is, at least, pretty frequently present in inflammation of the brain or its membranes. At the same time, it must be ob-

served, that, from the circumstance of her representing herself to be pregnant six months, it was supposed possible that the vomiting might be connected with this state. When, however, it was observed to recur on the 17th, and to be connected with pain in the right temple; and when the languid, listless look, the heavy, drowsy expression, and slow comprehension of questions, peculiar to patients labouring under symptoms of disease of the brain,—were considered,—it became impossible to doubt that in that organ some morbid action had been commenced, and was proceeding steadily to disorganization.

[I find that in my clinical notes on the case, I had first looked on it as an instance of meningitis.]

This conclusion was put beyond doubt by the symptoms which took place on the evening of the 20th February. Though in the usual state at the hour of visit, she was attacked about six hours after with loss of consciousness and sensibility, and palsy of the muscles of deglutition, and incomplete palsy of the voluntary muscles generally, with slow pulse and respiration.

Though some of these symptoms subsided, and were abated in intensity under the use of remedies, they never totally disappeared; and she continued to present the semi-comatose or somnolent state, with the slow obscure intelligence throughout the whole course of the disorder to its termination on the 6th of March.

Though the occurrence of the rigors at two or three periods in the course of the disorder, but especially during the night of the 22d and morning of the 23d of February, led to the conjecture that purulent matter was forming either in the brain or in the lungs, yet their disappearance, and the circumstance of their not returning, rendered this doubtful. The flushed cheek, the dry tongue, and the rapid pulse, equally indicated disorder of the lungs; and had it not been for the listless stupid expression of the patient and the somnolence, though it was still to be inferred that the brain or it membranes was affected, it did not follow that the lesion should be of the severe and serious nature which dissection disclosed. Even the absence of very marked symptoms of paralysis, and the degree of recovery from the symptoms of coma and convulsion, which took place on the 20th of February, were calculated to lead to the inference, that the lesion, though serious, had not proceeded to the extent of softening or of suppuration. When, however, the extensive purulent collection was found in the posterior lobe of the right hemisphere, it in some degree explained some of the symptoms, and, by disclosing a lesion not altogether expected, it showed that suppuration of a considerable portion of the brain might take place, yet without the occurrence of the symptoms usually alleged to indicate so considerable a lesion.

The whole duration of this lesion, from its commencement on the 9th of February, till the date of the fatal event, on the 7th of March, occupied twenty-four days.

The early part of this period, viz. between the 9th of February and the 16th, when headach came on, and was felt more or less the whole time, was most probably the first or inflammatory stage of the disorder. Yet it is important to observe, that this pain, which was felt in both temples, was the only symptom, except the vomiting, denoting affection of the brain or its circulation. There was no confusion of thought, no loss of memory, no incoherence of language, and, in short, no delirium or mental disorder. The pulse was not more than 72, and on the 18th it was only 68, yet without any indication of coma. It is also to be observed, that this pain was sensibly abated by so moderate an evacuation as the bleeding produced by sixteen leeches applied to the temples. That the morbid action, however, was not removed, was clearly shown by the recurrence of the pain in the orbit and eyeballs the following evening, (19th); and more especially by the attack of coma and convulsions the ensuing evening, viz. the 20th.

The whole of these facts are important in showing that a severe and rapidly destructive action may be established in certain regions of the brain, and probably under certain circumstances of previous disease in other organs, without giving rise at first either to very acute pain, or to any great disturbance in the mental faculties. This is probably to be regarded as showing, that the posterior lobe of the hemisphere may be the seat of considerable disorder, without necessarily producing disturbance in the mental faculties.

I have said that between the 9th and the 16th February, and, I might add, a few days after, the disease was probably in its early or inflammatory or vascular stage. At least, there is little reason to think that suppuration had then commenced, or that there was more than mere inflammatory injection of the posterior part of the hemisphere at this time. On the evening of the 20th, however, there is every reason to believe that a considerable change in the morbid action had taken place; either that the inflammatory action had become more extensive or more intense, and more concentrated to a particular point, or that it was then tending to the destruction of the part by the formation of lymph and purulent matter.

It is here also to be observed that, previous to this state, the pain, when complained of, was referred to both temples equally; whereas the lesion found after death was situate in the posterior part of the right hemisphere. After the attack of coma, on the other hand, the pain was referred only to the right temple, while the anterior part of the right hemisphere was sound, and the posterior part, to which no uneasiness was referred, was the seat of a purulent abscess. A question, therefore, suggests itself, What caused the pain to be referred to parts which were found healthy, while that which was diseased was not the seat of any morbid sensation? Are we to regard the brain itself as insensible to the

stimulus of inflammatory irritation, and, while one part is under this irritation, the morbid sensation excited in a remote part rather of the membranes than of the brain itself?

It is not easy to ascertain the time occupied in the production of suppuration. That process was perhaps beginning or going on on the 20th of February, at the period of the attack of coma and convulsions. It must nevertheless be admitted, that of this influence we have no positive or unequivocal proof. The increased severity of the symptoms, as indicated by the attack of coma, might have been produced by an increased extension, or a more violent degree of the inflammatory action. The only symptom indicating commencing suppuration is the fact, that the patient had occasional rigors during the night of the 22d,—the second day, or about forty-eight hours after the accession of coma. It is probable, therefore, that suppuration had commenced, and was proceeding at this time; and, as the fatal event took place on the 6th of the ensuing month, or twelve days after, it results that the time occupied was atleast twelve days, perhaps thirteen or fourteen.

The cause of this twofold lesion it is impossible to determine. At one time I thought that there might be some connection between the gangrenous disorder of the lungs and the purulent collection in the brain. I thought that it was perfectly consistent for a gangrenous disorder of the lungs, where ulceration and an attempt at separation between the sound and mortified parts was going on, to give rise to the gradual formation of purulent matter, and that the purulent matter might be transferred, as it was formed by the veins, to the brain, and deposited in that organ. I have not been able, however, to meet with any very satisfactory confirmation of this conjecture; and I therefore leave it in this problematical shape.

If the view now given were well founded, it might be a question to what extent we are to regard the suppurative collection as preceded by inflammation, or simply the effect of progressive transference and deposition; and perhaps the slight symptoms by which the formation of matter was preceded, are to be viewed as some confirmation of this view.

The case is nevertheless important in two respects; *first*, as showing the mutual influence which lesions in the brain and lungs exert in obscuring the symptoms of each other; and, *secondly*, as illustrating the progress of suppurative inflammation of the brain.

Case II.—Anne M'Call, aged 25, was admitted into No. 16. on the 27th of April 1840, with symptoms supposed to denote the presence of continued fever. About a fortnight previously, she was affected with nausea and vomiting, slight headach, loss of appetite and much thirst; seven days after she was first confined to bed, complaining of feelings of weakness and debility,

with a good deal of cough, but no pain in the chest. Before her admission, she took two doses of castor oil, which operated well.

On admission, she complained of pain in back and shoulders; she had a good deal of cough, but without any expectoration; the bowels were reported open from the medicine taken last night. The tongue was foul and coated; the pulse frequent. Blood was drawn from the arm to twenty ounces.

28th. Blood drawn to twenty ounces slightly buffed; complains still of sickness; countenance flushed; five motions; pulse 108; tongue covered with a viscid yellow fur; complains of epigastric pain and uneasiness.

Fiat venaesect. ad ℥xii. *Sum. Bol. Jalap. Comp. c. Calomelanos* gr. vj. *Cras mane Haustus Cathartici* ℥iv.

29th. Blood was drawn to twelve ounces. Considerable sickness, but no vomiting took place; the countenance much flushed; she has had no sleep; pulse 116.

Imponatur Vesicat. supra regionem epigastrii; Cap. etiam Pulv. Rhei Compositi ʒi.; *et habeat cras mane Haust. Cathart.* ℥iv.

30th. Had some sleep, and feels to-day better; and countenance less flushed; 6 motions; pulse 120; the blister rose well; tongue covered with a yellowish fur, but moist at margins.

Cont. medicamenta; cap. pil. Colocynthidis duas et cras mane Ol. Ricini ℥i. *Mist. Salin. Ammon.* ℥*i. h. q. secund.*

May 2d. In consequence of sleep continuing, and the patient appearing to be a little comatose, a blister was applied to the head, which rose well. To-day, she is rational, but very deaf; the eyes are suffused; pulse 104; tongue covered with a rough yellow fur; two motions. *Cap. Calomelanos* gr. vi. *Pulv. Jalap.* ℈i. *in thereacea, et repet. c. m.*

3d. Had a restless night; is very deaf, listless, and a little stupid; some subsultus; no complaint; the tongue cleaner; three motions; pulse 88, very feeble.

℞. *Tart. Antimon.* gr. ii.; *aq. fontan.* ℥ii. *Sol. Mur. Morph.* ʒiii. *M. Cap.* ʒi. *h. q. tertia. Intermittatur Mistura Salina Ammoniata. Habeat cras mane Ol. Ricini* ℥i.

4th. Four motions; tongue gray, viscid, and moist; more sensible but very deaf; pulse 100, full and less oppressed.—*Cont. Solutio Antimonialis Opiata. Cras mane Haust. Cath.* ℥iv.

5th. Had a restless night; countenance flushed; eyes still watery and suffused; tongue dry, and yellow in centre, moist at margins; pulse 96, rather feeble; eruption fading; four motions. *Cap. Pulv. Rhei Comp.* ʒi. *cras mane Haust. Cath.* ℥iv. *Cont. Solutio Antimonialis Opiata.*

6th. Tongue still furred. *Cras mane Haustus Cathartici* ℥iv.

7th. Had a good night, with sleep; five motions; pulse 108; tongue moist, clearing at margins and apex, but covered in the centre with a moist gray fur.

Habeat cras mane Haust. Cathart. ℥iv. *Omittatur Solutio Antimonialis Opiata.*

8th. Four motions; tongue moist, but still a little furred; deafness rather abated; pulse 108. *Cras mane Pulv. Jalap. Comp.* ʒiss.

9th. Three motions; had a good night; pulse 108 to 112; countenance clear, but a little flushed; deafness abated; tongue yellow and moist, but complains of soreness of the right side of the organ, which is swelled and indurated. *Pulv. Jalap. Comp.* ʒi. *Cras mane Ol. Ricini* ℥i.

℞. *Subborat. Sodæ* ʒij. *Aq. fontan.* ℔j. *Solve. Fiat lotio linguae admovenda.*

11th. Cough has been very troublesome during the last two nights; pulse 136, small and oppressed; a good deal of frothy expectoration; countenance flushed; tongue a little furred; four motions. *Detrah. sang.* ℥x. *vel* xii. *de regione inter scapulas. Cont. Sol. Antimon. Admoveatur Vesicatorium sterno.*

12th. Blood drawn from the chest only this morning, and cough has been very troublesome during the night; respiration and voice resonant on both sides of chest in subscapular regions behind; respiration bronchial, and accompanied with bronchial rattles opposite the large tubes; percussion natural towards spine, dull in subaxillary regions and at lower angle of right scapula; blister rose well; pulse 108, small and oppressed. *Fiat venæsect. ad* ʒxii. *v.* xvj. *prout vires ferant. Cont. Sol. Antimon. cras mane Ol. Terebinth.* ℥i. *forma haust.*

13th. Blood drawn to sixteen ounces without faintness, covered with a thin buffy coat; respiration altogether bronchial on the left side, and accompanied with sibilous wheeze during expiration, which is rather short; respiration 24; the voice is very resonant in the right subscapular region, and accompanied with faint mucous rattle. Cough continues, with much foul dirty-coloured mucous expectoration, part floating. Countenance still flushed. *Admov. vesicat. supra pectus dextrum. Repet. venaesect. ad.* ʒxii. *v.* xvj.

14th, Blood was drawn to sixteen ounces, one cup presenting a buffy coat of a deep orange colour not cupped. Cough less frequent and urgent, but expectoration continues the same, with fœtid offensive smell. Pulse 112; countenance much less flushed and more natural. The tongue is covered with a gray fur. The breath is not fœtid; but an offensive smell issues from some part of the body, and is more perceptible at the distance of two or three feet from the bed than close to her person. *Cont. Solutio Antimonialis Opiata.*

16th. Had some muttering during the night; expectoration has the same characters. The same fœtid smell continues to be exhaled

from some part of person. The tongue is yellow, but the breath does not exhale a fœtid odour. Cough continues, but is less urgent.

℞ *Pulv. Myrrh* ℈i. *Cærb. Ammon.* ℈i. *in partes* x. *divid. una quater in dies sumenda. Cont. Sol. Antimon.*

17th. A restless night; but states that she is better; no pain; has expectorated opaque dark-coloured matter; fetid smell continues; the countenance is pale and the features are contracted; and the expression is haggard and ghastly; cough continues; pulse 120, small.

Hab. Vin. Rub. ℥ii. *horis sing. donec* ℥xii. *sumptae fuerint. Omit. alia.*

18th. Vomiting continued to recur at intervals, and weakness increased till half-past twelve this morning, when she died.

Inspection of the body on the 20th disclosed the following appearances.

The left *pleura pulmonalis* was universally adhering to *pleura costalis*, and also to the diaphragmatic pleura, and to the left margin of the pericardium. In detaching the left lung from the pleura, part of the posterior surface of the lower lobe gave way in three points, leaving irregular apertures leading into a large cavity in the substance of the lung. A considerable quantity of fœtid mucus, slightly ash-coloured, was found in the bronchial tubes of the lower lobe; and, upon making a longitudinal incision of the whole lung, the upper lobe was found to be occupied with gray-coloured hepatization, and the lower lobe presented a cavity irregular and oblong, but as large as a lemon, containing a quantity of ash-gray coloured matter, and lined with a gray-coloured false membrane, and with its interior very ragged, soft, and fetid.

The right lung also adhered to the *pleura costalis*, though less extensively, being chiefly in the posterior and upper part of the lung; but it was found to contain a still larger cavity; and when it was divided by an incision, this was found to occupy a great part of the upper lobe, containing a small quantity of ash-coloured dirty matter; the cavity itself was irregular, consisting of several small divisions; these caverns were lined with false membranes, and traversed throughout with cords and filaments, the remains of bronchial tubes and blood-vessels.

The lower lobe of the right lung was solidified.

The kidneys were fawn-coloured and flaccid, the exterior surface slightly mottled; and in the left kidney there was a small quantity of gray-coloured soft matter.

The heart was rather flaccid and pale, but not diseased, except in the mitral valves, which were thickened and opaque.

A slight steatomatous deposit was observed at the origin of the aorta.

The brain was healthy.

Epicrisis.—In this case the patient was brought to the hospital with symptoms believed to indicate the presence of continued fever; and, so far as reliance could be placed on the usual assemblage of symptoms, with the eruption, there is reason to think that she actually was labouring for several days, that is, from the 27th of April to the 9th of May, under this distemper. The leading symptoms during these twelve days were headach, tendency to stupor, anorexia, and sickness, thirst, epigastric tenderness, and pain; the tongue at first loaded with a moist viscid fur, which afterwards became rough and dry, and great feebleness. On the 4th of May, that is, the seventh day after admission, perhaps the fourteenth or the twentieth after the first symptoms of indisposition, the eruption was observed to be fading, and she was showing a greater degree of sensibility than she had done for two or three days. Two days after she was still more collected; but one unfavourable symptom remained in the pulse, which had risen from 90 and 96 to 112. She was in other respects, however, so much better, especially in the complexion, physiognomy, and the eye, that no report was thought requisite. On the 10th, the pure febrile disorder seemed to be subsiding.

It must be observed, nevertheless, that this woman had cough at admission, though without pain in the chest, or any expectoration; and though this symptom did not increase till the symptoms of fever were subsiding, it is not reasonable to think that the state of the lungs, on which the cough depended, was in any mode materially improved. As she was labouring under fever, the chest was not examined by auscultation till the 12th, when it was supposed the febrile state was much gone. On the 11th, nevertheless, it was impossible to doubt, from the urgency of the cough, the frequency of the pulse, and the respiration, and the state of the sputa, that she was labouring under an inflammatory and congestive state of the lungs; and though, recovering as she was from fever, and in a state of extreme feebleness, there was little encouragement to employ active depletion, still, as it seemed that the pulmonary symptoms could not be alleviated without evacuation, blood was cautiously drawn from the arm, and other means calculated to produce relief were employed, in the idea that the disorder was bronchitis ensuing on fever, as often happens in this city.

The obstinacy of the pectoral symptoms, however, and the foul appearance of the sputa, with the stethoscopic signs on the 13th, showed that we had to contend not with an ordinary disorder of the lungs; and the fetid offensive smell exhaled by the person of the patient on the 14th put the nature of the complaint beyond doubt.

I must here mention, that, though the latter symptom is not noticed in the reports of the case till the 14th of May, I was sensible of it several days previously. I think so early as the 10th

I felt it distinctly in the middle of the ward, and more so at four or five feet from the bed, than at the patient's person. Neither, indeed, the person nor the breath emitted, when she was approached, any foul or offensive odour; and this circumstance made me doubt whether I was correct in referring the offensive smell to this individual; and, consequently, I did not record the fact as a symptom until I was assured that I could not be mistaken, by the concurrent testimony both of my clerks, Dr Roberts and Dr Orr, and by that of other gentlemen who were in the habit of attending the hospital.

In this case the gangrenous lesion was not, as is usually observed, confined to one lung, but had affected both. In the left lung the gangrenous excavation was less extensive than in the right lung, and it was in some degree circumscribed. In the latter it had produced complete destruction of the greater part of the upper lobe. The gangrene was mostly diffused in the right.

This case seems calculated to throw some light on the question, whether gangrene of the lungs is to be regarded as a disease always essentially and originally gangrenous, or as one of the ultimate effects of the process of inflammation. In the left lung a considerable portion, surrounding and contiguous to the gangrenous part, was granular, inelastic, solidified, and hepatized; and it may be from this inferred that the portion affected with gangrene had been previously in the same state of solidification. At one time I was disposed to believe that it was not necessary that a gangrenous portion of the lung should be previously in a state of inflammation and solidification, but that it passed suddenly and originally, without intermediate stage, into the state of gangrene; in other words, that gangrene of the lungs is either a peculiar affection distinct from inflammation, or, like some of the other sphacelating diseases, is originally and essentially a gangrenous inflammation. I am disposed to think, both from the appearances disclosed in this case, and from those found in others since that time, that this opinion is not well founded, and that gangrene of the lungs may be one of the terminations of pneumonic inflammation, in peculiar habits, and under certain circumstances.

The appearances of the two lungs in this case, but especially of the left, first suggested to my mind the following conclusions.

It was by no means likely that the pneumonic disorder, which proved afterwards to be gangrene, had commenced on the 10th or 11th, when the cough and expectoration were only renewed in a more urgent and manifest form than previously. To have inferred that it had commenced only then, would have been to have assigned it a period of duration too short for such a process, so far as we are entitled to reason from the course and duration of analogous cases. It is much more probable that, at whatever time it had commenced, it had been proceeding steadily, though in a la-

tent form, the whole time during which the febrile symptoms were proceeding, and had probably been somewhat advanced even at the period of admission. It is not indeed, improbable, that a latent pneumonia had been present from the first; and I regret that, in consequence of the apprehension of the presence of febrile symptoms, and the effect of contagion, I did not at first examine the patient by auscultation, in order to place this beyond doubt. It is even possible that the disease might from the first, and throughout, have been latent pneumonia, and that the febrile symptoms may have depended on the pulmonary inflammation; for the diagnosis between pneumonia, and fever with pneumonia or bronchial symptoms, an affection very frequent in Edinburgh in the winter season, is by no means easy. The febrile eruption was the only circumstance greatly at variance with this view.

Upon examining the structure of both lungs after death, it seemed impossible to admit that all the ravages then visible had been effected since the 10th or 11th of May.

The pneumonic induration itself must have taken several days, more probably some weeks, before it could have been so considerable in degree, or so great in extent. Upon examining carefully that portion contiguous to the gangrened parts, it appeared impossible to recognize the presence of any pervious blood-vessels. All were closed and lost in one uniform homogeneous mass of indurated lung. It appeared to me, therefore, that the part had been first consolidated by the exudation of the inflammatory products, and that all the blood-vessels had been compressed externally until they became impervious, and that, in consequence, one portion thus changed had been deprived of the materials of its nutrition, and had thus fallen into a state in which it was deprived of circulation and vital action.

This seemed the most likely explanation, from the circumstance of the lungs being contained within boundaries, with walls to a great extent unyielding and undilatable. As a consequence of this circumstance, when additional matter is infiltrated or poured into the interstices or substance of the lungs, the ribs do not yield, or do so in a very trivial degree; the parts so infiltrated being compressed so much more than usual, become as it were strangulated; and hence the closure of vessels, the impeded circulation, the extinction of vital power and action, and death.

That this lesion was not gangrenous from the commencement, but presented the usual symptoms of pneumonic inflammation, and only became gangrenous about the 12th or 13th of May, may be pretty confidently inferred, I think, from the general symptoms, and more especially from the expression of the countenance. In all cases of gangrene of the lungs which I have observed, the lesion has been attended with a most remarkable change in the expression of the countenance. The features be-

come small, pinched, and contracted ; the countenance is haggard and ghastly ; the expression is miserable and death-like ; the eyes sunk and void of lustre ; and the patient is generally very feeble and languid ; is squeamish ; vomits from time to time ; and becomes quite listless to all external objects. These symptoms may take place before the occurrence of the fetor of the breath and the surface, or at the same time with it, or after its occurrence. When they do appear, though common to many other diseases, yet here taken in connection with the state of the lungs, it is scarcely possible to mistake their signification as symptoms of pulmonary gangrene. In this case these symptoms did not take place till about the 15th or 16th days of May. Previous to this time the symptoms were those, first, of obscure or latent pneumonia, then of fever with pneumonia, and then more distinctly of pneumonia. It was not until the 13th or 14th of May that the features became contracted, the expression death-like, and the complexion earthy. From all these circumstances, together with those disclosed by inspection of the lung, I am disposed to think that this distemper was originally double latent pneumonia, which had assumed the gangrenous character, from the violence of the inflammatory action and the quantity of materials effused, thereby interrupting the circulation, and destroying the texture of the lung.

The kind of pneumonia, however, which takes this direction is peculiar, I must remark, in being much more chronic than the ordinary forms of that disease. It comes on more gradually, more insensibly, and, therefore, more insidiously. Most commonly, as it will appear in the sequel, the patient tells you he has had a cough the whole winter, or for some weeks or months ; that, nevertheless, he has not been sufficiently ill to require to be confined, to take advice, or to use remedies,—at least more than a cough mixture ; and, that it is only in consequence of the cough persisting, and perhaps some other symptoms having been at length added to it, as weakness, fever, sickness, and vomiting, or weight, pain, and oppression in the chest, that at length he applies for advice and assistance. It then results, that, in general, a most complicated disorder of the lungs is cognizable, that is, symptoms of bronchitis, symptoms of pneumonia, and symptoms of pleurisy, with various anomalous symptoms, all united at the same time, and one set not unfrequently obscuring and modifying the other. In this stage of the disorder, nevertheless, excluding those which I have now mentioned, there are no pathognomonic symptoms noticed, in short, distinguishing this as a lesion different from pneumonia, pleuro-pneumonia, or vesicular *bronchitis* ; and it is only when the peculiar expression of the countenance and the colour of the collapsed features become manifest, with the offensive fetor of the person and breath, that the peculiar nature of the distemper is placed beyond doubt ; and precise diagnosis, though

scientifically interesting, is then, for all practical purposes, quite useless.

This idea of gangrene of the lungs being the result of previous pneumonia, and of pneumonia occasionally terminating in gangrene, though not favoured by Laennec, is, nevertheless, not new. Dr Bright, in the first volume of his Reports published in 1827, seems to consider gangrene as in all cases one of the terminations, though the least frequent one, of pneumonic inflammation; and among six cases of the lesion, which he records, he seems not to doubt that all had been preceded by inflammation. He indeed says, that "in some cases gangrene is the result of inflammation, so rapid in its course, as to be almost unattended by the usual symptoms, or at least they have passed nearly unobserved."* This observation, which is, doubtless, in some cases well founded, may afford some explanation of the general prevalence of the doctrine, that gangrene of the lungs is not preceded by inflammation;—that process being so rapid in progress and short in duration as to escape notice.

In 1822 and 1824, M. Andral met with two cases, which obliged him to draw the same conclusion; and when he published his work on Clinical Medicine, in 1835, he added a third from the practice of M. Recamier at the Hotel-Dieu.†

In the first of these cases in a man of 28, there was in the lower lobe of the right lung a cavity as large as an orange, with wrinkled brownish parietes, and exhaling a fetid odour; and around this cavity, the substance of the lower and middle lobes presented a mixture of red and gray hepatization.

In the second case, in a man of 22, there was near the middle of the apex of the left lung, not far from its external surface, a cavity large enough to admit a large nut, exhaling a fetid gangrenous odour, its walls lined with a thin layer of greenish matter, and beneath it the pulmonary tissue red and hard. The rest of the lung was hard and impermeable to air, of a grayish red colour, and traversed by numerous minute yellowish granulations.

In the first of these cases, M. Andral argues that the gangrenous attack succeeded to acute pneumonia, and in the second, to one of the most chronic forms of pneumonia which he had ever seen.

In the case given by the same author from M. Recamier, and which took place in a man of 55, there was found in the posterior part of the left lung, a very large cavity, filled with a putrid blackish sort of pulpy semifluid matter, amounting to more than half a pint, and of a very fetid odour. When this was removed, and the cavity washed with water, the cavity was found to be lined by a membrane, with many filaments and shreds, however, project-

* Reports of Medical Cases, Vol. i. p. 136. London, 1827. 4to.

† Clinique Medicale, Pars II. Livre II. Section II. Chap. IV.

ing from it. This cavity occupied so completely the whole substance of the left lung, that only a small portion of the pulmonic substance, about one inch and a half in size, was left at the apex of the organ, a small portion at the base of the lung, and a mere sac or coating of lung all round. The whole of this was in the state of gray hepatization.

Cruveilhier has also been, by the same sort of evidence, compelled to admit the same conclusions. In 1833, he published, in the third and eleventh numbers of his work on Pathological Anatomy, two cases which, along with others, were well suited to illustrate the nature and origin of this lesion. In the first case, in number third, he adheres to the doctrine of Laennec, that there is a species of gangrene of the lungs independent of pneumonia; and he adduces as proofs of this the absence of the anatomical characters of pneumonic inflammation. Something in contradiction to this, however, he afterwards admits that gangrene of the lungs seldom takes place in persons in perfect health, and is usually preceded by bronchitis, or some similar pulmonary disorder.

In the eleventh number, however, is given a case of gangrene of the lungs, in the person of a soldier, aged 39, who had been epileptic from the age of 22; and from this he infers that gangrene of the lungs may ensue on pneumonic inflammation. "This proposition," he adds, "flows not from the anatomical fact of a thick layer of pneumonic induration inclosing on all sides the gangrenous portion; because the inflammation must be consecutive, in the same manner as the inflammatory circle which bounds the gangrene of a limb;—but is founded on the history of the disease, which presented all the clinical characters of a pneumonic attack manifestly inflammatory." He afterwards adds, that, though he does not deny entirely the occurrence of primary or idiopathic gangrene of the lungs, that is, gangrene unpreceded by inflammatory disorder, yet he believes it to be extremely rare; because, in the majority of cases, the general and local symptoms of gangrene were preceded by general and local symptoms of pneumonia.*

None of the cases recorded by the two latter authors appear to me to establish so clearly, as that which has been now recorded, the inference now mentioned. Not only do the history and course of the symptoms lead very directly to this inference, that the disease was originally an attack of pneumonia; but the whole of the appearances found in the dead body strongly corroborated the same view. If further confirmation, however, be wanting, I think it is furnished by one if not both of the two next cases.

This question is not, like some of those in pathology, merely a point of barren speculation not applicable to practice. It is, on the contrary, one of great importance in a therapeutic point of

* Anatomie Pathologique du Corps Humain, onzieme Livraison. Paris, 1833. Folio.

view. Were gangrene of the lungs always, as Laennec represents, to be an affection originally and primarily gangrenous, then treatment is either useless and unavailing, or antiphlogistic treatment is decidedly injurious and inadmissible. If, on the other hand, it be even in a certain proportion of cases only the effect of inflammation, then the means most likely to prevent the occurrence of the lesion must be those which abate inflammation and counteract its effects.

It may not be unseasonable to advert here to a circumstance, which may deserve future inquiry in an etiological point of view. The first decided case of gangrene of the lungs, which I saw about twenty years ago, in the body of a patient under the care of my late friend, Dr Duncan, took place while the system of the patient was under the influence of mercury, which it had been ascertained he had been taking, for some weeks, previous to the attack of pulmonary disorder. During this time, the patient, who had not means of taking much care of himself, worked at his daily occupation, was exposed to cold, and liable to be overheated, and continued to drink as much strong liquor as he could procure, upon the idea of supporting his strength, and enabling him to stand, as he expressed himself, the effects of the medicine. In the midst of this course of mercurial treatment and spirituous excitation, after suffering from cough and occasional short breathing, he was attacked with symptoms of debility and breathlessness so great, that he was obliged to apply for immediate admission. I do not now remember all the particulars of the case, or how long a time elapsed between the establishment of urgent symptoms and death. But the haggard countenance and fetid breath showed what was the nature of the case; and upon inspecting the body, the lower half of the right lung presented a most distinct and well-marked specimen of gangrene. It consisted of a uniform soft, dirty ash-coloured, pulpy mass, exhaling a fetid odour; and a pretty distinct line of demarcation separated it from the upper sound portion of the lung. Upon making a longitudinal incision, the same distinctness of boundary was perceptible in the substance as on the surface of the lung.

The occurrence of this attack of gangrene of the lungs, while the system was under the influence of mercury, suggested to me the inference, that charging the system with mercury might, in the case of pneumonic inflammation induced under such circumstances, give that inflammation the gangrenous tendency; and though it would be too great a generalization to establish, from a single case, the conclusion, that mercurial impregnation of the system disposes to gangrene of the lungs, I think I have seen some reason to think the conclusion is not unfounded, in various other cases of this distemper.

It appeared upon inquiry, that the woman Goodall, who turned out to be little better than a public female, had been taking

mercury some time previous to her admission into the hospital. The subject of the second case was wife or mistress to a soldier, who her sister stated, treated her badly in various modes ; and they, had, therefore, been living separately some time ; and at other times when she was living with her husband, she was not allowed to approach either her mother or sister. She had become ill, and had taken various medicines which made the mouth sore ; and it was during this time that the pectoral disorder, for which she was sent into the hospital, was induced. She was also much addicted to the use of spirituous liquors.

So far as it was possible, therefore, to obtain information on this point, it seemed certain that both of these females had been pretty liberally drugged with mercury ; and when we consider the peculiar influence of this mineral in causing excessive action, or inflammatory action, or rather in inducing that state of over-distension and excitement of the vessels, which renders the parts no longer able to endure it, but causes them to give way in ulceration, phagedenic action and sloughing, it seems by no means unnatural to think that it may cause this sort of death in organs highly vascular, easily susceptible of violent inflammation, and, above all, confined within cavities, the walls of which, being undilatable, cannot yield to make room for the increased size and distension of the organ, resulting from the deposition of new matter.

This inference, however, I submit in the shape of a problematical conjecture, to be verified or disproved, as further experience may justify. It is important to observe, however, that it is not contradicted by the two next cases. The third case illustrates very well the mode in which the disorder makes it approach, as well as the complicated character which it presents.

Case III.—Dugald Fisher, aged 37, was admitted into the Royal Infirmary on the 16th April 1840, with symptoms of disorder of the chest of considerable severity.

He had been labouring under cough, with occasional difficulty of breathing, the greater part of the previous winter, and, in consequence of these symptoms and bodily weakness, he had been unable to work steadily at his occupation, which was that of a coach-carpenter. Between the beginning and the middle of March, the cough increased in severity and became more constant, and was accompanied with expectoration of clear thin fluid, moderate in quantity, but, according to the statement, without any feeling of pain in the chest. These symptoms continued till the 10th of April, when he was attacked one morning before breakfast with squeamishness, and soon vomited a quantity of greenish-coloured sour-tasted fluid. He was at the same time affected with fixed pain in the left side of the chest, most severe in the subaxillary region,

extending thence in different directions, and continuing without interruption from that time to the present.

On admission he complained much of pain in the left side of the chest, impeding respiration, and preventing him from taking a full inspiration. This pain was represented to be confined entirely to the lower and middle part of the left side of the chest, at the convexity of the ribs; and over the same space the sound emitted on percussion was very dull, and considerable resonance of the voice was heard, while the sounds of respiration were indistinct. At the anterior part of the same space the crepitous rattle was heard. Cough and expectoration continued, and the matter expectorated was viscid and jelly-like, but not rusty or orange-coloured. The tongue was coated with a thick yellowish fur. The pulse was frequent, between 100 and 120, a little sharp; and the bowels were confined.

Sixteen ounces of blood were directed to be drawn from the arm, and he was directed to have immediately a drachm and a-half of the compound jalap powder, and next morning four ounces of the saline infusion of senna.

The blood drawn to the amount desired was buffed and cupped; the pain of the left side was very much relieved, though not gone; and the cough was less frequent and urgent; but the dulness of the lower part of the chest upon percussion, and the resonance of the voice continued.

He was directed to take every third hour two drachms of a mixture containing four grains of tartrate of antimony, and two drachms of the solution of muriate of morphia, in two ounces of water.

On the 18th of April he had slept well, and was much less disturbed by cough, which was abated; the pulse continued at 120, and he was disposed to perspire about the head and neck. The expectoration consisted chiefly of jelly-like mucus, with frothy saliva, but without any rusty colour. The dulness upon percussion continued in the space already indicated, with total immobility of the chest, and the respiration was altogether abdominal. The voice was very resonant in the left subscapular region downwards.

The blood-letting was directed to be repeated as his strength would allow; and if the pain of the chest were not relieved, ten ounces of blood were directed to be drawn from the subscapular region by cupping. The opiate antimonial solution was continued, and an ounce of castor oil was directed to be taken next morning.

19th of April. The blood had been drawn from the arm to the extent of sixteen ounces, and was found much buffed and strongly cupped; and, as the pain of the chest was not relieved, twelve ounces of blood were drawn by cupping from the subscapular region. This had the effect of relieving the pain, so that he did not afterwards complain of uneasiness in the left side; but slight and indistinct œgophony was recognized about one inch and a-

half from the spine on the left side. The pulse was 112, softer; the castor oil had been rejected by vomiting; and the tongue was furred.

Two compound colocynth pills were directed to be taken and repeated to the fourth time, and the opiate antimonial solution was intermitted.

On the 20th, he was asleep at the visit, but perspiring profusely over the head, neck, and chest; respirations were about 20 in the minute; he complained only of weakness; the matter expectorated was opaque, jelly-like, and slightly orange-coloured. A blister was applied on the left side of the chest; the opiate antimonial solution was resumed; and an ounce of oil of turpentine was directed to be given next morning.

On the 21st, the blister had risen well, and perspiration had been less profuse. He now complained, however, of pain in the right subaxillary region. Respiration was bronchial, but performed with a duller sound than usual in the same spot. The pulse was 108. Ten ounces of blood were ordered to be drawn by cupping from the right subscapular region.

On the 22d, when blood had been drawn from the part to the amount ordered, the pain of the side of the chest was rather worse, and it was aggravated by deep inspiration. Percussion elicited a preternaturally clear sound over the whole of the right subaxillary region, and downwards to about two inches from the lower margin of the chest, and crepitous rattling was heard all over the lower part of the right side of the chest, most distinctly during expiration, with a sort of rough friction sound. The respiration was almost entirely abdominal, 30 in the minute, with very little movement of the chest; and he lay entirely on the left side. The sound elicited by percussion behind was much duller than laterally. The pulse was 116, and small. He had been very cold all night, and had a great deal of hiccup. The tongue was covered with a yellowish rough fur, and the bowels had not been moved much since the 21st.

Blood was ordered to be drawn from the arm to the amount of 16 or 18 ounces, afterwards an opiate of two scruples of the morphia solution, and a purgative enema with one ounce of oil of turpentine to be administered. The antimony was stopped.

23d. Only four ounces of blood could be drawn, which was much buffed and cupped. Enema was followed by three motions. The pain became much easier, but the hiccup continued unabated. The pulse was 96, sharp and wiry; and the tongue continued covered with a yellow moist fur. Respiration was totally inaudible in the lower part of the right side of the chest; percussion elicited a duller sound than yesterday; and nothing was heard except the beats of the heart. The voice was not resonant.

Six grains of calomel, six of colocynth, and ten of jalap in treacle were ordered; to be followed by a turpentine purgative

enema if the bowels were not freely moved. One drachm of the solution of muriate of morphia was ordered to be given at the hour of repose.

24th. A good deal of vomiting had taken place, but hiccup was less frequent. The pulse was 116. The tongue covered with a white fur. He had no abdominal pain, and the belly bore pressure well.

He was directed to take six grains of calomel with half-a grain of opium; and to be repeated if vomiting continued; an enema in the evening.

25th. He had two motions before the administration of the enema, and after that four scanty motions, distinctly feculent, and partly consistent amidst fluid matter chiefly of an orange-yellow colour. Hiccup had not recurred since eleven at night; and he slept at intervals. He complained still of a sense of oppression referred chiefly to the sternum. The respiration was from 32 to 36, both thoracic and abdominal, but mostly abdominal; the moist crepitating rattle was heard at the posterior part of the left side of the chest, about two inches from the spine; and percussion elicited there a sound totally dull. There was occasional cooing sibilous noise during expiration. The voice was resonant at the lower part of the chest on the left side.

Six grains of calomel and half-a grain of opium were ordered, and afterwards two colocynth pills. A blister was directed to be applied to the posterior inferior part of the left side of the chest; at bed-time an anodyne with half-a drachm of solution of muriate of morphia; and next morning a dose of castor-oil.

26th. Five motions took place, and the blister had risen partially; but the pulse was 112, very small; and the respiratory motions were very rapid. The features were contracted, and assuming a death-like expression.

Eight ounces of wine were added, and one ounce of the following mixture every hour.

℞. *Spiritus Ætheris Nitrosi* ℥ii.; *Aquae Cassiae* ℥ii.; *Syrupi Citri Aurantii* ℥ii.; *Aquae fontanae* ℥ii. M.

27th. Spent a bad night from restlessness. Complete dulness on percussion in right subscapular and subaxillary region, with moist mucous rattle. The tongue was covered with a gray viscid fur. The pulse was 108, small. The countenance more contracted, and the expression more ghastly; and he is so weak that it is impossible to examine the chest fully.

Wine and mixture was continued.

28th. No report.

29th. He had some sleep; the respiration was still oppressed, 36 in the minute, and performed with much stifling. The pulse was 116, small. The fur on the tongue was viscid and yellowish.

Wine was continued; and an enema, with two ounces of oil of turpentine, was directed to be administered.

30th. He slept well till four A. M., when he was attacked with difficult breathing, which continued till the visit. Considerable rough sonorous rattling was heard in the lower part of the right side. Expectoration was slightly streaked with blood, and with the breath emitted a fetid odour. The pulse was 120, very small; and the aspect was ghastly.

Wine and mixture continued, and six ounces of calf-foot jelly ordered.

May 1st. He complained of great weakness and difficulty of breathing. The respiration was 36, with very strong sonorous rhonchus in the right mammary region, and a faint sibilous wheeze during expiration. Duller sonorous rhonchus was heard in the left mammary region with some mucous rattling. The pulse was 112, very small. He had this morning four ounces of wine additional.

Wine increased to ten ounces daily.

2d. The breathing continued to be short, frequent, and laborious, with great general feebleness; and death took place at four P. M. yesterday.

Inspection of the chest on the 5th disclosed the following phenomena.

Sixteen ounces of purulent fluid were contained in the cavity of the left pleura, thick, homogeneous, opaque, and cream-coloured. Two-thirds of the lower part of the pulmonic pleura adhered to the costal pleura, by not very firm lymph; and the line of adhesion was distinctly marked, red, and vascular. The upper third of the pleura was inadherent. A tubercular hard mass, about the size of a walnut, was situate in the upper part of the left lung. Below that the lung was slightly solidified (hepatized,) and effused much reddish serum from divisions of its substance, which was granuliform and lacerable.

The whole posterior part of the lung, to the extent of 10 or 12 inches, was of an ash-gray colour, soft and pulpy, completely lacerable, and emitting a fetid odour; and, when subjected to a stream of water, the greater part was removed by washing, leaving only bronchial tubes, blood-vessels, and ragged filaments of lung.

A view of the state of the parts in the posterior region of the left lung is given in Plate I.

In the cavity of the right pleura were contained twelve ounces of sero-purulent fluid, the supernatant being thin, green-coloured, semitransparent, and whey-like, and that below thicker and more opaque. A large quantity of soft lymph was spread over the lower portion of the pulmonic pleura, interposed between, and connecting it to, the costal pleura, but not firmly, and extending from about the middle of the upper lobe downwards to the base of the lower lobe. A small hard tuberculated nodule was seated in the apex of the upper lobe of the right lung; and below that, the substance of the lung was solidified, and its substance, which was granuliform and lacerable, effused, when divided, serous fluid in abundance.

The mucous membrane of the bronchial tubes connected with this lung was very much reddened.

Epicrisis.—In order to understand the nature and course of this complicated case, I think it is requisite to distinguish three periods of the disorder. The first is that which took place previous to admission, and the 10th of April, and which, I think, the history of the symptoms, the actual symptoms at admission, and the appearances disclosed by dissection, warrant us in inferring was pneumonia and pleurisy of the left lung, affecting the lower part of the upper lobe and the whole of the lower lobe. The second is that which extended from the 10th of April to the 21st of April, when he was attacked with symptoms of pleurisy of the right side. And the third period is from that time till the fatal event —a space of eight or nine days.

The whole time between the date of admission and that of death was only sixteen days. The first period was evidently the longest, and, so far as the statement of the patient could be trusted, occupied between four and five weeks. The second period was about ten days; and the third, as already stated, was eight or nine days.

1. At the time at which the patient was admitted, his symptoms were those of pleuro-pneumonia of the left side. The presence of the pneumonic affection was indicated by the cough, the expectoration, the crepitating rattle, and the resonance of voice in the middle part of the left side; all of which seemed to show that the lower part of the upper lobe and the upper part of the lower lobe were beginning to be indurated or solidified. It is probable that this disease had been proceeding for some weeks, perhaps the whole of the four weeks previous to admission, during which he had been unable to work. But it is further likely that the disease had commenced, and was proceeding some time previous to this, as it was afterwards ascertained that the patient had been labouring under cough, and occasional difficult and constrained breathing the greater part of the winter, and had been less able than previously to work at his occupation, namely, that of a coach-carpenter.

One symptom generally present in pneumonic inflammation was wanting in this case till the 20th of April, that is, four days after admission. This was the rusty or orange-coloured aspect of the sputa. Previous to this the matter expectorated was viscid and jelly-like, but not rusty-coloured. The absence of this symptom, however, was not material, as it is occasionally wanting in the commencement of the disease, and especially if antiphlogistic measures be employed.

But, besides the pneumonic, there was pleuritic inflammation; and it was manifest that this caused the pain of the left side, the dull sound elicited by percussion over the convex part of the left subaxillary region, and the diminished mobility of that part of the

chest. This inference was also clearly established by the appearances of the left lung on inspecting the body after death; for it was found that the whole of the lower portion of the left pulmonic pleura was united by a layer of loose soft coagulable lymph to the costal pleura, while a considerable quantity of purulent matter was found in the dependent portion of the cavity.

The gangrenous affection, which was confined to the left lung at its posterior part, must have been going on probably at the time of admission, or soon after that event; and, I think, a strongly corroborative proof of this inference is found both in the pleuritic inflammation, which the symptoms showed were established at the time of admission, and also in the appearance and extent of the parts destroyed by gangrene, as shown after death. The reasons for this opinion are the following.

In most, perhaps all instances of gangrene of the lungs, if pleuritic inflammation have not previously taken place and given rise to adhesion, it takes place as an effect of gangrene. It is then partly an effect of the irritation of a violently destructive action, and partly one of the means employed by nature to counteract the progress and effects of the gangrenous destruction. While, indeed, intense inflammation of the lungs may give rise to gangrene, the latter in its turn gives rise to inflammation; and as, when a portion of the lungs is attacked by gangrene, it is likely to come near the surface, or the pleural covering, the inflammation of that membrane is almost a necessary result. In some instances, even I have observed that in circumscribed gangrene, which commonly takes place near the surface of the lungs, a definite eschar as large as a shilling or a half-crown-piece, has dropped off, and left a cup-like cavity on the surface of the lung, but penetrating some depth into its substance, and all round much albuminous exudation in both divisions of the pleura, and some sero-purulent fluid in the cavity.

In the case now under consideration there was gangrene of the whole posterior part of the left lung; and this, which it appeared to me had commenced, and been proceeding previous to, or at the time of admission, had induced the pleuritic inflammation of the convex lateral and anterior part of the pleura.

2. The pneumonic inflammation had been proceeding in a chronic and latent form for four weeks previous to the 10th of April. At this time either the pneumonic inflammation itself, or rather its transition into gangrene, had given rise to pleurisy of the left side. This circumstance, therefore, should mark, I think, the commencement of the second stage.

It cannot, in opposition to what is now stated, be argued, that the gangrenous affection ought to have evinced its presence by distinct and unequivocal symptoms; and that there is no ground to infer the presence of this disorder, without the manifestation of distinct symptoms. The truth is, that it is not easy to specify the pathognomonic symptoms of gangrene of the lungs in the early

and incipient stage of the affection; and it may be doubted whether there are pathognomonic symptoms. The two mentioned by Laennec, viz. the fetor of the breath, and the fetor of the expectoration, evidently do not take place till the disorder is far advanced, and the patient is approaching the fatal termination of his disorder. This circumstance, indeed, led Dr Bright, several years ago, to infer that it was only when a communication was established between the gangrened part and the bronchial tubes, that the breath and expectoration became fetid; and I am confident that, so far as my own observation of this disorder extends, this inference is both reasonable and founded on observation. It was only on the 30th of April, the day before his death, that the expectoration and breath emitted a distinctly fetid odour; and it is to be observed that, at the same time, there were distinct stethoscopic indications of the presence of a newly developed bronchial disorder in the left lung,—evidently attributable to the fetid and bloody matters proceeding from the part gangrened into the bronchial tubes.

3. The third period of the pulmonary disorder of this man seems to be indicated by the developement of a peculiar disorder of the right side on the 21st of April, only the fifth day after admission.

For the origin of this attack it is difficult to account, nor is it easy to perceive any connection between it and the gangrenous affection of the left lung. At the commencement of the attack, in consequence of the clear sound emitted by percussion in the subaxillary region and downwards, I was disposed to ascribe it to the rupture of a cavity either tubercular or gangrenous, and the escape of air and bloody serum and mucus into the cavity of the pleura. In the course, however, of twenty-four hours, the sound emitted by percussion became much less clear, and eventually it became almost as dull as on the opposite side, except at the axillary region, where it continued clear. Behind that, or at the most dependent part of the right side of the chest, the sound was dull from the commencement,—a circumstance which was rather favourable than opposed to the idea, that the pleuritic attack of the right side had been induced by perforation.

Another symptom of considerable importance deserves some notice in this place. With the presence of pain in the right side, the unusually clear sound emitted by percussion in the subaxillary region, and the smallness of the pulse, there was heard by auscultation a distinct and strong crepitating rattle with large bells, that is, as of the sound of a fluid moved to and fro by the motions of respiration, and agitated with air. This sound was very similar to the fluid gurgling heard over one or two large tubercular cavities not emptied, and consequently to which air has not procured free admission. This idea, however, was rendered very unlikely by the position in which the sound was heard, cavities being very rare in the lower part of the lung. The sound was, as it

might be called, dull; and gave the idea of little or no air being in the part where it was formed. It was not, however, the crepitating rattle of pneumonia; for it was both louder and evidently produced by a larger assemblage of fluid than ever attends the effusion taking place in that disorder.

From the other symptoms with which this was attended, I was compelled to infer that, as it was produced neither by pneumonic effusion, nor by tubercular cavities, it was the result of the presence of sero-purulent fluid within the pleura; but, as it seemed unlikely that this rattling sound could be produced without the presence of air, I was hence rather confirmed in my inference, that perforation might have taken place.

This opinion, however, was not confirmed by the state of the pleura disclosed by dissection, which showed that the dulness behind was caused, as it usually is, by the effusion of sero-purulent fluid; and that the pain must have been the result of mere inflammation, while the clear sound emitted by the axillary and subaxillary regions was owing to that part having at first escaped inflammatory action, and only becoming involved in it at a late period of the disorder. The lung also was not collapsed,—a circumstance which always ensues on perforation.

With regard to the symptom of the dull crepitating rattle with large bells, already mentioned, it is necessary to make one remark. I have several times heard this sound, and once or twice I have had opportunities of ascertaining that it did depend upon the presence of sero-purulent fluid within the pleura. At first I did not attempt to form any opinion as to its cause, because any attempt to do so was accompanied with a number of fallacies. In one case, however, of a female in the winter of 1837–1838, who died partly in consequence of fever and partly in consequence of pleurisy, and in which I heard this sound for three or four days previous to death, I traced it so unequivocally to the presence of sero-purulent fluid within the pleura, that, at least in this case, it seemed a just inference, that it could depend on no other cause. I would not attach any importance to one single case, had I not observed it so carefully, repeatedly, and distinctly in the case now under consideration, that I think it impossible that I could be mistaken; and I am therefore obliged to infer, that this peculiar crepitating rattle depends on the presence of sero-purulent fluid within the pleura.

I am not, however, prepared to say, that in all cases of sero-purulent fluid within the cavity of the pleura, this sound is heard; for I am satisfied that it is not heard in all cases. Neither am I prepared to specify the circumstances under which it is heard. I can only say that, when it is heard, it indicates, along with the other symptoms already specified, the presence of sero-purulent fluid within the pleura, perhaps in small quantity, and consequently denotes the early stage of purulent pleurisy or empyema.

The third stage of this man's disorder, which I have dated

from the 21st of April, includes the changed appearance of the face and expression which took place on the 27th of April. I am only in doubt whether it might not be more properly dated from the period when hiccup and vomiting took place, viz. the 22d and 23d. The only reason rendering this questionable is the fact, that hiccup and vomiting do not take place in all cases of gangrene of the lungs, though they appear in a considerable number. Whatever view be adopted is perhaps not very material. After the 22d, it may be said the patient's fate was decided. The disease proceeded steadily to the fatal termination.

This case establishes the truth of the inference, that gangrene of the lungs is in several if not many cases preceded by pneumonic inflammation; fully confirms the observations which I already made regarding the difficulty of recognizing the presence of this lesion in the early stage of the disorder; illustrates the principle already stated, that at first it appears under the form of a severe and complicated, and often an insidious disorder of the lungs; and shows that it is only at a period when exact diagnosis is no longer of any practical use, that the true nature of the lesion becomes manifest.

It was also learned, as satisfactorily as can be expected in cases of this kind, that this person had been taking mercurial medicines during the early part of the winter, or rather in autumn, and that he had caught cold while under mercurial influence.

Case IV.—Peter M'Laughlan, aged 33, admitted August 1, 1840, a wire-worker. This man stated, that, till about nine weeks previous to the date of admission, he had enjoyed good health. At that time he began to suffer from cough and breathlessness, sometimes accompanied with vomiting, yet without any pain in any part of the chest. The expectoration, however, was very copious, of a thick, viscid, and frothy nature, but never tinged with blood. He complained also of general weakness and debility.

On admission he stated that the breathlessness was generally worse at night and early in the morning, sometimes amounting to orthopnœa. The chest anteriorly was prominent, especially in both mammary regions. The shoulders were elevated and inclining forwards. Percussion elicited a preternaturally clear sound over both mammary regions, where there was an approach to a sonorous rattle. Crepitous rattling was heard posteriorly on both sides, but most distinctly on the right side of chest. Expectoration continued copious, viscid, and tenacious. He complained still of nausea and vomiting with thirst.

The respiration was from 24 to 28 in the minute, with considerable motion of the flanks and abdominal muscles. The pulse was 116 to 120, easily accelerated, full and strong, rather hard, especially in horizontal posture, in the erect it became smaller, but was still hard.

2d. Has suffered much from cough during the night. Percus-

sion elicits a dull sound in right subscapular region, where respiration is inaudible, and crepitating rattle only is heard; respirations 24; pulse 116, small and sharp in erect position; fuller and harder in recumbent. The beats of heart are heard preternaturally clear on both sides. The tongue is pretty clean. *Fiat. ven. ad* ℥xxiv. *et statim postea habeat Haust. Anod. c. Sol. Morph. semidrachma; Abrad Capill.; Hab. Calomel.* gr. vi.; *Pulv. Jal.* ℈i. *in Thereac; postea Haust. Cath.* ℥iv.

4th. Blood drawn on the 2d to twenty-eight ounces; but cough continues troublesome. Yesterday, twenty ounces more were taken, all buffed and cupped. The breathing is at present more natural, and less oppressed; but cough continues troublesome; pulse 100, still hard. The expectoration is frothy, but not streaked with blood. The sound upon percussion is still dull in right subscapular region, and crepitous rattle is heard, but respiration is more audible. Dulness most distinct along the angles of the ribs, and below the scapula, and the voice is resonant along the same space. Cough continues so urgent as to interrupt sleep; but he can lie down in the horizontal position. The respiration is more abdominal than thoracic. *Rep. v. s. ad* ℥xx. *et Hab. post venaesectionem Haust. Anod. Ant. c. Sol. Morph.* ℈ii.

5th. Blood was drawn to thirty ounces; and was buffed and cupped; cough little abated, but expectoration much diminished in quantity; moist crepitating rattling, with large bells, continues in the right scapular, subscapular, and subaxillary region; the respiration was 22 to 24; pulse, 100; good strength; no pain nor sense of weight in side, or in any part of chest; tongue covered with a thin fur at base. *Rep. v. s. ad* ℥xviij. vel ℥xx.

℞. *Ant. Tart.* gr. viij. *Aquæ* ℥ij.; *Sol. Morph.* ℥iij.; *sumat drachmas* ij. *horâ qq. secundâ.*

6th. Blood was drawn to eighteen ounces, without producing faintness; breathing has been more free, and moist crepitating rattle much less intense; the cough less urgent; pulse about 100. *Cont. Sol. Ant. Opiata.*

7th. Cough abated, and breathing less difficult; expectoration less abundant, and comes away more easily; pulse 96 to 100; tongue moist, but covered with a yellow fur at base; much thirst. One bottle of beer. *Cont. Sol. Ant. Opiata.*

8th. Cough much the same, with expectoration of a good deal of frothy transparent mucus, but it comes up more easily; the breathing also less laborious; pulse 106; crepitating rattling, with large bells heard at inferior angle of scapula of right side, and more distinctly lower down, with little respiration; also in upper part of chest, in superior spinal fossa, where it is masked by crepitous rattling, and a creaking sound. *Detrah. sang.* ℥x. *de regione subscapulari.*

9th. Blood drawn to nine ounces by cupping; breathing easy, but cough is rather frequent; pulse 112. *Cont. Sol. Ant. Opiat.*

11th. Cough has been rather troublesome during the night; pulse 108, rather strong and full; tongue covered with a yellowish fur; considerable moist crepitating rattle, with large bells, is heard over the right side. Some resonance of voice about two inches below the right clavicle; and there is great dulness on percussion between the angles of the ribs and the lower angle of scapula.

Rep. v. s. prout vires ferant; detrahantur sang. ℥vi. *de regione subscapulari dextra.* ℞ *Calomel.* gr. vi.; *Pulv. Jal.* ℈i. *in Thereacea; cras mane Pulv. Jal. Co.* ʒi. *cum Carb. Sod.* gr. xv.

12th. Blood drawn to sixteen ounces from the arm, producing temporary faintness, thickly buffed and cupped; and six ounces from the chest by cupping. He had no sleep in consequence of frequent and urgent cough. Percussion continues dull on the space corresponding to the angles of the ribs behind the scapula on the right side. A good deal of resonance of the voice is heard in the space between the angles of the ribs and the scapula. Sibilous wheezing heard during inspiration, along with large crepitous rattling. Respiration 30, laboured and panting; pulse 116; several motions.—*Vesicatorium supra partem posticam pectoris dextri; Hab. Haust. c. Sol. Muriatis Morphiae* ℈ii.

14th. The blister rose well; but cough has been very troublesome and urgent. The pulse is 100, throbbing and full.

Cont. Solutio Antimonialis Opiata.

16th. One motion yesterday morning. Slept pretty well during the last two nights; but starts and mutters a good deal during sleep. Moist creaking rattle continues, with sibilous wheeze in the right subaxillary region, and backwards to the angles of the ribs, where respiration was almost extinct, and voice is resonant. Respiration 24, more abdominal than thoracic; pulse 124, thrilling and sharp, with a good deal of heat of the skin; much epigastric pulsation visible, and giving a general shock to the epigastric region. No pain in any part of the chest is complained of.

Detrahantur sang. ℥xii. *de regione subscapulari dextra vel admoveantur Hirudines* xvi.

17th. Blood drawn to half an ounce by cupping, and leeches bled freely. He slept ill, with frequent muttering during the night; cough continues troublesome; pulse 128; expectoration as before.

℞. *Pulv. Digitalis purpureae* gr. xii; *Opii* gr. iii; *Conf. Aromat. sq. s. Ft. Mass. in Pil.* xii. *dividenda, una ter in die sumenda Admov. Vesicatorium regioni subscapul.*

18th. The blister has risen imperfectly; the cough rather less urgent. Medicines continued.

21st. He expectorated a good deal of mucus tinged with blood, and also some pure blood; slept pretty well; respiration 28, with prolonged inspiration and distinct moist crepitating rattle in

right subaxillary region, and backwards to subscapular; breath not fetid, nor does the expectoration exhale a fetid odour; pulse 108; muscular motion slightly unsteady; tongue furred.

Pil. Col. ii. *cras mane Ol. Ricini* ℥ss. Other medicines continued.

22d. Hæmoptysis continued rather more profusely, with fetid breath; has no pain; pulse 112.

Ft. v. s. ad ℥xii.; *Admov. vesicat supra pectus dextrum.*

23d. Died this morning at nine.

Inspection on the 25th of August disclosed the following appearances.

No fluid was contained in the cavity of the right pleura. One pretty firm adhesion was found connecting the costal pleura to the lung, from the middle to the apex, so that the whole costal pleura had to be taken out in removing the lung. When the lung was removed, there was found near the middle of it a loose, soft fluctuating spot, which gave to the finger the sensation of a quantity of fluid. This cavity approached very near the surface of the lung, at the upper and back part of the middle lobe.

A longitudinal incision was made, going quite through it from the apex to the base of the lung, through its most convex part, and this disclosed a spheroidal cavity as large as an orange, filled with a quantity of dark-coloured fluid, clots of grumous blood, and emitting a very offensive fetid odour.

When these clots were removed, the appearance of the lung and surrounding cavity was as follows. The surface of the cavity was very dark-coloured, as if it had been covered over with a mixture of dirty China ink, and covered with loose shreddy filaments, the remains of broken down lung. It was also very irregular, and presented several subordinate excavations. At one part, viz. the most anterior, that is, where it came nearest the surface of the pleura, the interior of the cavity was formed by a gray-coloured, shrivelled, but distinct and firm membrane, the surface of which was smooth and firm, and which was rather less than half of an inch thick. Portions of this membrane could be traced backwards and inwards into the internal part of the cavity, but it was there much less distinct. The whole of the lung around this cavity, especially towards the root of the lung, was firm, solid, and uncrepitating; that of the upper part of the cavity completely granular, and effusing large quantities of frothy serum; only one part at the apex and at the base crepitated. The lobes adhered by interlobular false membrane. This lung weighed two pounds eight ounces rid of the coagula, which amounted to about three ounces. The mucous membranes of the bronchial tubes were reddened and villous, and the tubes contained a considerable quantity of sero-mucous fluid.

The left lung when examined presented a considerable quantity of frothy serum in the bronchial tubes.

The kidneys were vascular upon the surface; and on making an incision, they were found to be penetrated by granular matter.

The mitral valve was thickened, irregular, and cartilaginous.

The semilunar valves were perforated by small holes.

The cavity in the right lung measured $3\frac{1}{2}$ inches in the long diameter, and $2\frac{1}{2}$ in the transverse.

Epicrisis.—I have already anticipated in my remarks on the previously-related cases most of the observations suggested by the one now given. Only a few points may be adverted to as important either in pathology, diagnosis, or treatment.

This case, I think, may be employed as confidently as the second one, in order to confirm the conclusion already stated, that pneumonic inflammation precedes and may terminate in gangrene. This inference is, I think, strongly corroborated, both by the nature and course of the symptoms during life, and also by the appearances disclosed by inspection. The disease presented at the time of admission all the characters of an intensely inflammatory disorder of the lungs, not quite acute, but certainly much less insidious and latent than any of the other cases. There were at the time of admission evident symptoms of inflammation and hepatization of the upper and middle part of the right lung; and the remedies employed to abate these symptoms were for several days effectual in doing so.

Upon inspection of the body after death, the right lung presented a most exquisite and perfect specimen of circumscribed gangrene taking place in the middle of inflammatory induration. The cavity, which was not less than an orange or pippin, was filled with the usual contents of gangrenous cavities, viz. blood, serum, fragments of broken down lung, blood-vessels, shreds, filaments, and fragments of truncated bronchial tubes. The cavity was bounded by, and contained within, a new membrane, evidently the result of inflammation; and besides this, the adjoining lung, both above, below, behind, and before the cavity, was all indurated and solidified in consequence of inflammation. The gangrenous portion was not, as is often the case, and as takes place in diffuse gangrene, insensibly and gradually lost in lung that was sound, or at least not much diseased; but it was at once strongly, clearly, and suddenly separated from the solidified lung by the former constituting a cavity representing, and left in place of, the destroyed lung, and by the latter presenting the usual characters and structure of simply red hepatized or solidified lung. There seemed, in short, in this large spheroidal cavity to be something peculiar and dissimilar to the usual characters of lung affected with circumscribed gangrene. In most of the instances of circumscribed gangrene, an eschar, definite in shape and limited in size, is formed of a portion of the lung,—often near the surface, and at length usually involving the pleura; and on inspection

after death, the mortified portion is either found in its place partially detached, but still adhering, or it has dropped off and left, indicating its previous position and extent, a cup-like or hemispherical cavity, not unfrequently with the surrounding portion of the lung comparatively sound, and elastic, and crepitating, and with merely the immediate thin layer from which the eschar had been separated, firm and solid. In this case the dead portion of lung is at once thrown off; and it is still a portion of lung, deprived of vitality, dry, shrivelled, and hard.

In the variety of circumscribed gangrene here described a very different state of parts is recognized. No dead lung, no eschar, properly so named, is left or recognized. But the portion that is thus deprived of vitality, instead of being separated and thrown off in its original shape and size, is as it were utterly dissolved in a semifluid mass, not indeed, homogeneous, but still so far presenting homogeneous characters that it consists of a quantity of dark blood-coloured pulp, in which the integral constituent tissues of the lung can no longer be recognized. It seems as if the entire gangrened mass were melted down in a uniform solution.

It could scarcely be argued that the inflammatory solidification was in this case the effect of the gangrene. I shall endeavour to show that the part which in the right lung was found to be in a gangrenous state was so on the 3d day of August, and that the process of solution went on steadily and without interruption from this date till the period of the man's death. Now it must be observed that, had the inflammatory action been the effect of the gangrene, it must have gone on *pari passu* almost with it, and its symptoms must have been indicated at the same time. The inflammatory action, however, seems to have been either very far advanced or almost completed by this time; for all the general or rational symptoms showed that pneumonia had been going on for a considerable time, at least several weeks, and the stethoscopic symptoms as clearly indicated that considerable solidification of the right lung had been accomplished.

The symptoms of large crepitous rattling heard in this case from the 3d day of August in the axillary, subaxillary, and subscapular, regions, is a very important one. It was a sound exactly as if a large quantity of semifluid matter in a considerable cavity, not empty, but full or nearly so, had been agitated to and fro with a small quantity of air. It was indeed a moist crepitating rattle with large bells, or something like the fluid or mucous gurgling heard in large but full vomicæ, or emitted by several small communicating vomicæ. Occurring as it did after pneumonia, with inaudible respiration all above and below its site, and so low down as the lower angle of the scapula, and a little below the axilla, I did not think it at all likely that it was produced by a tubercular cavity or vomica I felt, indeed, rather at a loss as

to its precise cause; and I satisfied myself with observing the phenomena, noting them as accurately as the condition of the patient would admit, and observing such changes as they might assume in the progress of the disorder, so that, if opportunity was afforded, a comparison might be instituted between them and the state of parts in the dead body.

When death took place, and the body was inspected, it was then very clearly seen what was the cause of this crepitous rattling or fluid gurgling. The gangrenous cavity, or rather abscess, filled as it was with semifluid matter, was situate partly in the lower part of the upper lobe, partly in the upper part of the middle lobe, and corresponded by this position to the part of the chest externally, where the fluid gurgling was heard, viz. the space extending from about one inch below the axilla, to the lower angle of the scapula. The moist crepitating rattling, therefore, heard on the 3d and afterwards, indicated the process of gangrenous solution at this part of the lung.

The symptoms gave this disorder first the character of pleuropneumonia, yet after some time the occurrence of this moist crepitating rattling tended to obscure the nature of the disorder, and to render the first opinion doubtful. While I was perplexed as to the exact nature of the affection, several symptoms took place which tended to show that gangrene had probably been proceeding. The patient became unusually feeble, was tormented with unquenchable thirst, and acquired a most haggard and ghastly look; and on the 21st of August, when the expectoration became all at once bloody, I was so satisfied that gangrene had taken place, that I thought it necessary to observe and note carefully the smell of the breath. It was not as yet fetid; but next day, when the expectoration was still more bloody, both the breath and the sputa were fetid, and it was impossible to doubt any longer that gangrene had taken place.

I have subjoined, in Plate II., a view of this lung, and the peculiar appearance of the gangrenous cavity. The hepatized portions are easily recognized. For this view, as well as that in the case of Fisher, I am indebted to the pencil of my friend, Dr Robert Paterson of Leith.

Before closing this paper, I may mention, that, besides the forms of gangrene of the lungs now described, there is another, which, though not very common, is occasionally met with. I have seen two specimens of this kind of gangrene; and I think from these, I can describe the general characters of the lesion.

In the kinds of gangrene already described, one portion of the lung or two become affected continuously, and without interruption, with death or gangrene, while the rest of the lung retains its vitality, may be comparatively sound, or may present only pneumonic induration proceeding to gangrene. But in the

form of the lesion to which I now advert, a different state of one lung or of both lungs is presented. The whole substance of the organ is occupied with a considerable number of cavities, very irregular in shape, and of very different sizes, but all with the interior extremely ragged, containing, most commonly, dark or inky-coloured matter, viscid or semifluid, and exhaling a most fetid odour. When this inky-coloured viscid matter is removed by gentle washing, each cavity is observed to be lined by a new, pretty firm false membrane. These cavities are very irregular, and ragged interiorly; and the sections made of a lung thus diseased present the appearance of many holes of different sizes and shapes, with which the lung is as it were riddled.

In size and extent, however, these cavities rarely exceed a small hazel-nut, and more frequently they are much smaller. In this circumstance of small size and great multiplicity, they differ from the ordinary tubercular vomicæ of consumption, in which generally one or two large caverns are found in the upper lobe, and a few smaller vomicæ a little below these. It is almost never the case that in this form of gangrene there is a large-sized cavern; and never the case that they are few in number. They are also, though most numerous in the upper lobe of the lungs, distributed with considerable uniformity over the whole organ. As to comparative size, though the largest cavities are usually found in the upper lobe, and smaller cavities in the middle and lower lobe, there is in this nothing regular or uniform. There may be, for example, one or two ragged cavities as large as a filbert in the upper lobe, and a great number of smaller cavities; and there may be cavities as large as a filbert in the middle and lower lobe.

The pulmonic tissue, surrounding and intervening between these rugged cavities, is always firm, inelastic, hard, and often cartilaginous; and, indeed, between the firmness of the lining membrane of these cavities, and the cartilaginous hardness of the surrounding filamentous tissue of the lung, the whole lung is so much indurated that it cuts much like cheese or cartilage. These intermediate portions are reddish in colour and granular in aspect, and effuse much bloody serum; but they are intersected by whitish or gray bands, very firm, which are evidently the interlobular filamentous tissue much indurated.

The whole lung exhales an insupportably fetid odour, which is evidently to be traced to the cavities and the matter contained within them.

This gangrenous affection of the lungs is, I have reason to believe, much more chronic than the ordinary gangrene. It is the effect, evidently, of an inflammatory disease, as will appear by what I am presently to state; but the inflammatory action is, I think, much more slow in progress, and more tedious than even in the ordinary gangrene.

Case V.—The first instance in which I saw it very distinctly took place in the person of a man under the care of my friend Dr Alison. This person had suffered, though previously without any indication of disease of the lungs, a severe attack of confluent small-pox,—a disease which never fails to be attended with, or followed by, more or less, and sometimes very severe bronchial and pneumonic disorder. From the attack of small-pox he recovered; but it was succeeded in no long time by symptoms of pneumo-bronchial disorder. He had cough, breathlessness, occasional pains in the chest, and at length some expectoration. These symptoms continued for many weeks, notwithstanding the employment of many remedies. He lost flesh rapidly, or rather he never recovered after the commencement of the pulmonary symptoms. For some time before his death, he was decidedly hectic, and the expectoration and breath emitted a very fetid odour. At length he died apparently phthisical.

Upon inspecting the body, the whole of both lungs was found very extensively solidified and indurated. Both lungs were occupied with numerous cavities distributed through them, the largest not larger than filberts, but most of them about or beneath the size of a garden pea. These cavities were exceedingly irregular in shape as well as in size, and very ragged internally; those that were not empty contained a quantity of foul inky-looking matter, which emitted a very fetid odour.

Epicrisis.—This disease might be regarded by some as a variety of tubercular disorganization and ulceration; and, in point of fact, it has been already described under the name of *Ulcerous Phthisis* by Bayle, who has given, out of several cases which had fallen under his observation, two with dissections, (Cases XXV. and XXVI.); and in both of which the breath and expectoration were fetid during life, and after death the same kind of ragged gangrenous ulcers were found in the lungs. But that this lesion is to be distinguished from that following tubercular consumption, must be inferred from this fact, that, though the lungs are much indurated and solidified, we very rarely find in them the tubercular masses which constitute the anatomical characters of that disease. These gangrenous ulcers, on the contrary, appear to be the effect of a process of sloughing which has attacked individual lobules of the lungs previously indurated but not tubercular. It is proper to mention, that Dr Alison informs me, that he has several times seen these ragged gangrenous cavities in the lungs of persons attacked by chronic pulmonary disease after small-pox.

In the following case we have another example of the same kind of lesion of the lungs, combined with affections of various other organs.

Case VI.—Margaret Donald, aged 24, servant, was admitted into the Royal Infirmary on the 10th July 1840, labouring under symptoms indicating the presence of dyspeptic disorder,

uterine derangement, and a peculiar sense of burning and pain of the inside, as she expressed herself.

The catamenia had been suspended, she stated, for about three years, and since that time she had suffered from squeamishness, sour eructations, total *anoreæia*, a sense of distension of the belly, and an excruciating feeling of internal heat, referred to the hypomphalic region on both sides. She had also pain in the lumbar region; and she stated that the legs and feet were occasionally swelled. The tongue was covered with a viscid whitish fur; and she complained of a bad taste in the mouth, with much thirst. The belly was not distended, nor painful on pressure, and the sound emitted by percussion was natural. The bowels were habitually confined. The skin was dry, hot to the touch, and rather harsh. The pulse was 96, rather small. She complained much of alternate heat and chilliness, but most of the former. She had occasional headach. An opaque viscid discharge issued from the vagina. She had occasional *ardor urinæ*, and sometimes a sense of down-bearing in the hypogastric region.

The head was shaved, and the bowels were freely opened by the compound jalap powder and the saline infusion of senna.

For several days she was rather easier; but upon the 14th of July she spent a very uneasy night, in consequence of internal heat. She perspired profusely; and she complained a good deal of headach, with pain and noise in the head, and beating at the cardiac region; the pulse was 92. As the bowels were bound, they were directed to be opened by the use of the compound colocynth pill, and the saline infusion of senna.

Next day she was rather easier; but pain in the frontal and lumbar regions continued. As several of these symptoms seemed to depend upon the disordered state of the menstrual function, pills consisting of sulphate of iron and aloes, with twelve drops of the tincture of the muriate of iron, three times daily, were prescribed, and a blister was ordered to be applied to the loins.

Under the use of these remedies she continued for about six weeks, not improving, but not becoming worse. The sense of internal heat and uneasiness referred to the umbilical and hypogastric regions continued, and she described the pain as commencing in the left iliac region, and ascending towards the epigastric. On the 31st of August, when the distension of the belly was somewhat abated, there was considerable swelling and pain of both labia. The pulse was still 98, strong and full; and the tongue was covered with a viscid moist fur on the centre, though red at the margins.

The pills of sulphate of iron, and the tincture of muriate of iron, were stopped, and the bowels were opened, first by colocynth pills and castor oil, then by pills of calomel, aloes, and colocynth, and the saline infusion of senna. As the skin continued very dry, hot, and harsh, she was directed to use the warm-bath.

On the 4th of September the tumour in the site of the labia had burst on the right side, and discharged a considerable quantity of purulent matter and blood, with disappearance of the swelling and abatement of the pain.

On the 8th of September, as the feeling of internal heat and pain continued, and as she was herself desirous of losing some blood, in order to take away the inflammation, as she expressed it, from her inside, twenty ounces of blood were drawn from the arm, without producing faintness. The blood was not at all buffed, and she still complained of pain, referred chiefly to the left iliac region. The skin continued dry and harsh, and the tongue was furred; but the pulse was reduced to 86. As the bowels continued habitually slow, she was directed to take twice daily a wine-glassful of a mixture consisting of equal parts of the compound infusion of gentian, and the compound infusion of senna, and a little sulphate of magnesia.

She had been improving till about the 20th or 21st of September, the internal pain and heat being diminished, the appetite increased, and strength returning. But about this time, 20th September, the pain referred to the hypogastric region was increased, and she complained still of the sense of internal heat, which was referred to the lips, mouth, and entire gastro-intestinal mucous surfaces. The skin was dry, harsh, and imperspirable; the pulse 80; the countenance and features rather contracted; and considerable emaciation had taken place. She complained also of occasional *ardor urinæ*, and painful micturition; but there was no discharge from the vagina, or the external parts of generation. The pulse was 80.

She was ordered the warm-bath and a scruple of Dover's powder at bed-time, which was repeated at intervals, according to the symptoms.

During the whole of October and November the painful sensation of heat in the left iliac and hypogastric region continued, with dryness and harshness of the skin; but nothing unusual could be detected by examining the belly. The pulse was 76 on the 12th of November. At this time she was ordered two grains of the magistery of bismuth twice daily.

A new train of symptoms now commenced. This young woman had always shown marks of imbecility of intellect. Her mind was throughout the whole course of her complaints tinged with a deep shade of melancholy, gloom, and despondency. She imagined that she had been guilty of many heinous sins; and frequently expressed her conviction that all her corporeal sufferings were intended as punishments for her transgressions. She became very sleepless, and, instead of retiring to bed at night, she used to wander up and down the ward, and through various parts of the house. Upon one or two occasions she went down to the gate,

and got out of the house altogether, and came back at a very late hour. Upon other occasions she drank at once large quantities of the medicine prescribed for other patients. When interrogated as to the reason of her conduct, she maintained an obstinate silence; and indeed she was wont to sit for hours and sometimes days without speaking to a living soul, and uttered only groans and exclamations of distress and melancholy. She was now, indeed, in a state of complete *lypemania*, which partook in some measure of the religious character. She was much emaciated.

All medicine was given up; and she was allowed food and wine as she chose to take it. The head, however, was shaved; and I recommended that the chaplain should have some conversation with her.

In this manner, she went on for about five weeks longer, the emaciation and debility very much increasing, but her mental disorder subsiding into a state of calmness with great taciturnity. Between a fortnight and three weeks previous to death, her person exhaled a very fetid odour, which I was inclined to ascribe to the return of the vaginal discharge, to diarrhœa, under which she was now labouring, or to sloughing of the sacrum and hips. The nurse, however, maintained that there was no slough on the back. The emaciation proceeded steadily with the fœtid smell, yet without cough or manifest expectoration, and death took place on the 22d of January 1841.

Inspection of the body on the 26th of January disclosed the following appearances.

The Head.—The skull was extremely firm, heavy, compact, and sonorous; and the processes internally, as well as the depressions, were very strongly marked. The *dura mater* was not thickened, but it hung rather loosely on the membranes of the brain and the brain, so as to form in various parts pouch-like dilatations. A small quantity of fluid was effused into the subarachnoid tissue, sufficient to flow in minute streams by incisions from the convolutions, but not enough to elevate sensibly the arachnoid membrane from the *pia mater*. The *pia mater* did not adhere to the convoluted surface of the brain more strongly than usual, and it came off easily from every part of the brain and cerebellum.

The convolutions were a little flattened but not atrophied, that is, not separated from each other or diminished in size. About two drachms of serous fluid were found in each lateral ventricle, the largest quantity being in the posterior *cornu*, where it had accumulated from the dependent position of the cavity. A little serous fluid was also found in the base of the brain, and a quantity escaped from the cavity of the spinal cord.

The Chest.—The right lung adhered along its outer and anterior part to the *pleura costalis*, and adhesions also connected the lower surface of the lower lobe to the diaphragm; and upon the

posterior part of the lung were loose membranous adhesions. The whole lung itself was considerably solidified by firm solid portions. The apex of the lung was puckered and contracted and slightly emphysematous; but below this was a large bluish-coloured solid mass of indurated lung. When this was divided by incisions it presented several cavities, none very large, but all containing a quantity of soft ashy-coloured blackish matter, and discharging a fetid smelling inky fluid. At the very apex of the lung was a small cavity, grayish-coloured, and containing puriform matter, which could be scooped out, and after the removal of which, the surface of the cavity seemed lined with a membrane. The rest of the lung was in general occupied with solid masses, irregular in shape and size, granular in the interior, but not tubercular. The colour of these masses was various, generally of a deep reddish-brown, sometimes of a bluish or violet-coloured red. In many parts, especially in the lower lobe, the lung was friable and lacerable. Parts of this kind, when cut out and thrown into water, fell to the bottom, and when examined carefully opposite the light showed a considerable quantity of grayish-coloured deposit, in small patches. A good deal, however, floated, especially where it was not penetrated by the grayish-coloured matter. The internal and anterior, or mesial margin of the lung, was a little emphysematous. The bronchial tubes were dilated, especially where they approached indurated parts, and their lining membrane was reddish-coloured and villous.

The left lung contained a few solid firm and dense portions, separate and disseminated; but the organ was in general elastic and crepitating.

From fourteen drachms to two ounces of serous fluid were contained within the cavity of the pericardium. The outer surface of the right auricle and ventricle was covered with a rough, firm, grayish-coloured deposit of albuminous matter.

The Abdomen.—The right kidney had a little gray-coloured granular matter deposited in its striated texture; but it was otherwise pretty healthy. The left kidney had formed pretty firm adhesions with all the surrounding parts, especially the left angle of the transverse arch of the colon, and it was also considerably larger, and more prominent than natural. When taken out, the tunic was found much thicker, stronger, and firmer than natural, and more closely adherent to the surface of the gland. From many parts, indeed, the tunic could not be taken off without tearing away from it portions of the surface of the kidney. When the tunic was removed, the surface of the kidney appeared highly vascular, mottled, and variegated with reddish-gray and whitish patches. Several of these whitish patches seemed, at first sight, like grains of fatty matter, or encephalomatous deposit; but most of them, when opened, contained a thick cream-like, semifluid

matter, enclosed within a cyst. The posterior surface of the kidney contained not fewer than nine of these whitish-coloured encysted abscesses. The cortical matter of the kidney was also penetrated in various parts with gray-coloured granular matter. All the calyces were very much enlarged and distended; but no calculus was found in either of them, or in the pelvis.

The uterus and vagina were carefully examined, but neither their mucous membrane nor their substance presented anything unusual. In the intestinal canal the mucous membrane was a little villous, and the glands of Peyer were elevated, rough, and more distinct than natural; and in one or two points towards the lower end of the ileum, they were abraded and slightly ulcerated.

Epicrisis.—This case suggests many observations, which it would take up too much space to introduce in this place. One or two merely I shall here mention. It appears, in the first place, that the sense of internal heat and pain of which this woman complained, must have depended upon the state of the left kidney. It seems to be not at all doubtful that the small whitish-coloured bodies disseminated through the cortical texture of the left kidney were abscesses, the result of chronic inflammation; and it seems impossible to doubt that this chronic inflammation had commenced, and was going on steadily at the time at which the patient was admitted into the hospital. Inflammation at the same time seems to have been going on in the investing tunic of the kidney, for it was only by means of inflammation that it could have contracted the preternaturally firm adhesion on the one hand, with the surface of the gland, and on the other, with the contiguous organs. This inflammatory action in the tunic might either have been independent of, or excited by the chronic inflammation in the kidney. The latter, perhaps, is the most probable view. I think also that there is no doubt that this chronic inflammatory disease of the kidney had been the cause of the sense of constant pain and burning heat referred to the left iliac region, and to the inside generally.

With regard to the mental disorder, the symptoms of which appeared very soon after admission, it must be observed that this woman was always imbecile or of an intellect of limited intensity. It is difficult to say whether the mental disorder depended upon the state of the skull, the *dura mater*, and the brain, or whether the morbid state of these parts was the effect of the dark and gloomy kind of melancholy under which this woman was labouring. It seems most natural to infer that the extreme density and compactness of the skull, and the atrophied state of the brain, must have exerted a considerable effect upon the mental faculties, and the manner in which they were exerted; and, while we are not entitled to say, that these changes were not adequate to produce mental disorder, it is not easy to see why they should have produced the particular form of mental derangement which

this woman presented. It was not mania, properly speaking; neither was it fatuity or idiocy; but rather a particular form of lypemania; and this has been known to have been connected with various chronic diseases of the abdominal organs.

Lastly, with regard to the affection of the right lung, it is to be remarked, that it must have come on in a very insidious way. Soon after her admission, the chest was repeatedly examined by auscultation, and nothing morbid was recognized on either side. After emaciation began to be manifest, I repeatedly interrogated her whether she had cough or pain in the chest, or brought up phlegm, or blood, or anything else by expectoration, and the uniform answer was, that she had neither; and to this statement the nurse always added her corroborative testimony. Even about the end of November or beginning of December 1840, when wasting was so considerable that the temples and eyes were hollow, and she seemed little better than a skeleton, and I thought and repeatedly expressed the opinion, that all this wasting must be connected with disease either in some of the abdominal organs, or disease of the lungs, and that she was probably phthisical, she still maintained that she had no cough, no pain in chest, and no expectoration.

As it seemed to be absurd, if not positively injurious, to exhibit medicine in a case of this kind, and at this stage, the treatment was entirely dietetic; and her feebleness was so great that it was impossible to examine her with the necessary care.

To speak, then, of fixing the commencement of this pulmonary affection is impracticable. It seems most reasonable, however, to think that it began about the end of November or beginning of December, and if this conjecture be well founded, the duration of the disorder must have been between seven and eight weeks. The anatomical appearances of the lung after death showed distinctly that it was an example of the ulcerous phthisis of Bayle, or that kind of gangrenous ulceration of the lungs which I have above attempted to describe.

With regard to what may be called the mechanism of this kind of ulcerous gangrene, I think it also results from the anatomical appearances that the disorder is in its origin a species of chronic pneumonia of the lobular kind, that is to say, inflammation attacking the lung in its individual lobules. The hard granular indurated masses observed in the right lung of this woman with healthy elastic lung interposed, must have been the result of inflammation developed in each lobule simultaneously or successively. As inflammation proceeded, it naturally gave rise to morbid products, and as these products must have been effused within spaces comparatively circumscribed, the rapidity and the certainty with which they produced induration, consolidation, and all the other effects in the lobules must have been great; and as, from the limits within which the inflammation was confined, these products could not spread beyond the parts originally inflamed, the lat-

ter would the more readily give way and be deprived of all circulation and vital action, and hence the parts thus inflamed would be dissolved in a species of gangrenous ulceration.

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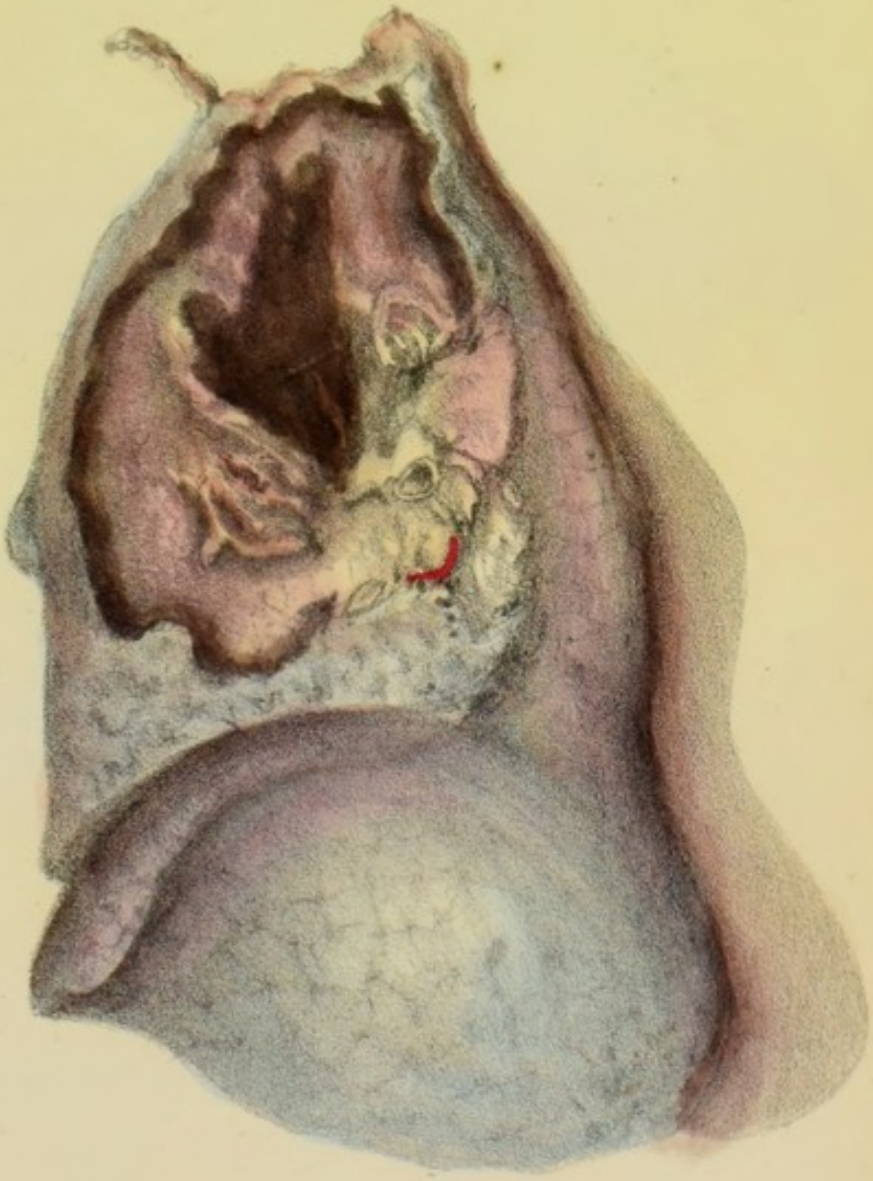
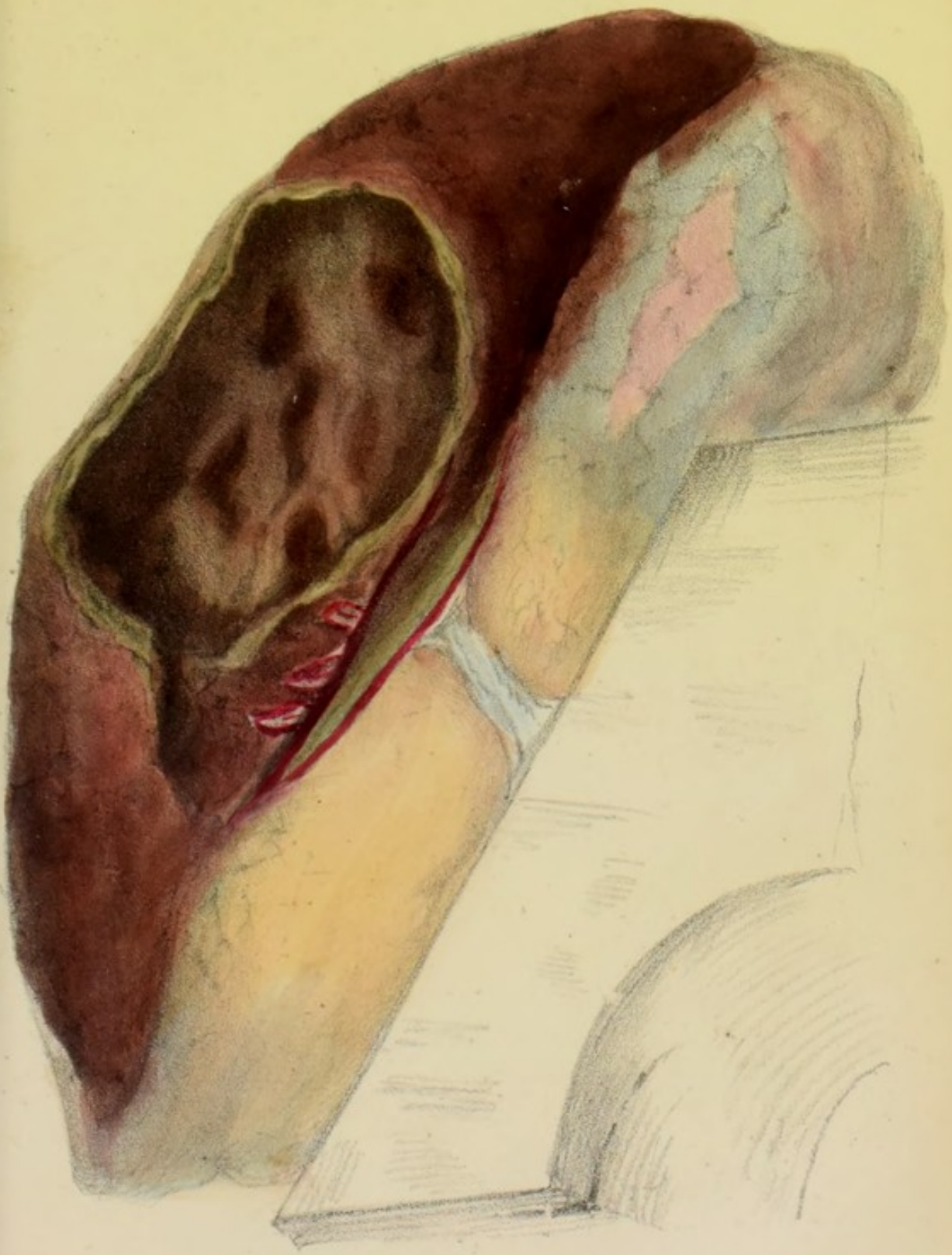
PLATE II.



Diffuse Gangrene of the Lungs.

PLATE II.



Circumscribed Gangrene of the Lungs.