affected, and did not become implicated afterwards, excepting by direct structural continuity with the focus of the disease.

Secondly, the absence of any tendency towards *suppuration*, sloughing, or gangrene was remarkable. There was no loss of tissue up to the time of death; vesication had occurred on the surface of the growth, but the part was still covered with epithelium. There was venous turgescence in all the infiltrated tissues, as indicated by the dark colour which they assumed; but microscopic examination did not indicate any marked vascularity, such as would have been the case if the development of new vessels had progressed *pari passu* with the growth of the disease. The original tissues became more and more swollen by a process of infiltration; but the new product did not manifest any tendency towards permanent organisation, nor did it manifest any retrograde tendencies.

Thirdly, the combination of a very rapidly growing lympho-sarcomatous growth with a condition of *leukemia* is interesting. What is the relation of the two? That the one is not indispensable to the existence of the other, is shown by the numerous reported cases where lymphoid growths have been found, and the blood has presented no abnormality. The history of this case can leave no room for doubt as to which was the primary condition: the spleen was enlarged and leukemia existed when the patient first came under observation, and at a time when the morbid growth was small. Growths of this kind must result from either—

a. Proliferation of the connective tissue-corpuscles.

b. Hyperplasia of adenoid tissue.

c. Development from the leucocytes of the blood which have escaped from the vessels, have retained their vitality, and have continued to reproduce similar cells in the part where they are found. It seems probable that, just as pus results from the escape of the colourless blood-corpuscles from the vessels, so a lymphoid growth may result from a similar cause by a slight modification in the nutritive changes which the cells undergo. Presuming, then, that it is possible for the tissues to become infiltrated with leucocytes from the blood, a morbid growth of lymphoid origin may be a direct, though not a necessary, result of leucocythæmia. The commencement of the process may be accidental; but, having once commenced, the leukæmic condition is likely to cause a very rapid growth in any part once affected. A lymphoid growth is likely, therefore, to be of short duration when associated with leucocythæmia, whereas, in other cases, the process may continue for several years. In the case of Pope, death took place in seven months from the first appearance of the morbid growth; but, in the clinically and histologically very similar case reported by Dr. Beigel as "*lepra tuberosa*", and in which the blood was in a normal condition, the patient lived for three years after the morbid growth first commenced.

The cause of death was asthenia, in consequence of frequently recurring hæmorrhage. The blood was thin, pale, and had little tendency to coagulate. If death had not resulted from this cause, it would have been impossible for him to survive the rapid spread of the morbid infiltration of his tissues which was going on; breathing and swallowing were becoming impaired from the infiltration of the tissues in the neck.

It would be interesting, in future cases of this kind, to note the appearance of the colourless corpuscles, particularly with regard to the activity or otherwise of their amœboid movements, also to compare the size of the leucocytes within the vessels with the cells which are found to infiltrate the diseased tissues.

RIGOR MORTIS IN AN INFANT AT BIRTH.

By J. ASHBURTON THOMPSON,

Surgeon-Accoucheur to the Royal Maternity Charity, etc.

DR. GRIGG has added two important observations to his first description of the above case; that the jaw again became fixed after extension had been made and the stiffness thereby removed, and that the legs were not so firmly set as the upper part of the body. These two facts, considered in relation to each other and the well known phenomena of *rigor mortis*, are all important, and may be admitted to establish the presence of that condition in the case described. It is much to be regretted that they were not included in the original report of it, which even now lacks the scarcely less important information as to time of examination, and of the return of stiffness to the forcibly extended muscles. With these additional facts at command, I am not surprised that Dr. Grigg declines to discuss his case with me.

Still, I must confess myself unable to share the conviction with which Dr. Grigg asserts his view; and it is possible that others of the Associates may feel sufficiently interested in the subject to make it worth

while to point out the chief difficulties to be met with in maintaining it. In the first place, bearing in mind that rigidity invariably occurs in the bodies of individuals, whether they die within a few hours of birth or at the most advanced age, the extreme rarity with which it has been observed in the fœtus at birth is enough to raise a suspicion that the latter is of another kind. Those who wish to maintain its identity with the former, must account for its rareness; they must show that the one or two cases in which it has been detected differ in some essential particular from all the other cases in which it has not occurred; for, since the *rigor mortis* is the result of a physical property of a constituent of the muscular mass, it must always occur under similar circumstances. This difference cannot exist in the time of delivery as compared with the time of death; because all those obstetricians of experience who have failed to note rigidity of the fœtus have had the opportunity of inspecting bodies at every period, from a few minutes to a few weeks after death. Secondly, granting the liability of the still-born to cadaveric rigidity, on what ground is it to be anticipated that it may show itself earlier in those than in other bodies? Still, bearing in mind that it is the result of a physical change, must not the same conditions always modify it in the same way? Dr. Grigg himself supposes this fœtus to have lived within an hour and a half of birth, and there is every reason to regard this as the extreme period at which death may have occurred; for the hæmorrhage—or, in other words, the partial separation of the placenta—only began at that time. It died, in fact, of asphyxia; and that is a tedious mode of death *in utero*. What conditions are here to favour the speedy occurrence of cadaveric rigidity? Not the mode of death—that is one cause of its delay in the individual; nor the temperature to which the body was exposed, for a high temperature has no influence over the time at which the rigidity occurs.* So the precipitate occurrence of rigidity under circumstances unfavourable to the development of true *rigor mortis* affords a further ground for suspicion that it is rigidity of another kind.

I say "suspicion," because I ventured an opinion on grounds which I still think not unreasonable; and to better reason such an opinion will always yield. While, therefore, I now admit willingly that Dr. Grigg did observe *rigor mortis* in his case, I do not yet see clearly that it occurred *in utero*. Cadaveric spasm is fairly described by many writers—by Taylor among others; and it is a peculiarity of it worth noting in this connection that, whether the result of a final act of volition or of convulsive action, it persists until the supervention of cadaveric rigidity. Not, therefore, because the latter state was observed by Dr. Grigg under these apparently so adverse circumstances, was it the only state which had affected this fœtus.

ON PLEURITIC EFFUSION.

By JOHN RICHARD WARDELL, M.D., F.R.C.P.,
Physician to the Tunbridge Wells Infirmary.

[Continued from p. 615 of last number.]

THE first means to be had recourse to in order to ascertain the presence or otherwise of thoracic effusion is *inspection*. When the condition now considered obtains, careful observation notices less mobility in the affected side. There is generally, at the lower third, a greater or less degree of bulging, and the surface looks smooth and rounded. The intercostal spaces are less defined, and the intercostal muscles are often absolutely motionless. When the liquid has for a long time been effused, the intercostal muscles, from having been continuously stretched, lose their contractile power, become paralysed, flat, and then even tend to protrude. Albertini supposed, and Stokes believed, that such state denoted pus. A decomposing and debased fluid in contact with the wall of the chest, it has been thought, is sufficient to produce such flabby and flattened condition of these muscles. When the effusion is considerable, there is, as the result of left pleurisy, visible displacement of the heart; the apex-beat may be seen far away from its normal position, at or beyond the right edge of the sternum, or below the ensiform cartilage in the epigastric region. I saw one marked example of such dislocation of the heart not long ago, where the apex-beat was near the right nipple. Murchison says there is greater danger of fatal syncope when the effusion is in the left side. My own experience is certainly that there is more frequently irregular and feeble heart's action in left-sided effusion. Increase of motion in the sound side is often apparent. The patient, when asked, will tell you he feels the air go down deeper into the one side of his chest than the other. The side of effusion not

* See Taylor's *Medical Jurisprudence*, 1865, p. 14; see also, at p. 13, the account of experiments by Sommer, who placed two children, born asphyxiated and still, in a tepid bath of from 90 deg. to 99 deg. *Rigor mortis* did not set in until between three and four hours.

only looks larger, but mensuration proves it to be larger. Fourteen out of the eighteen cases measured more on the diseased than the sound side. The increase, according to my own observations, seldom exceeds an inch; sometimes, when the cavity is almost filled, the excess will be an inch and a half. On the contrary, I have known a considerable amount of fluid collected when the measurement of the diseased side has been the same as the other. Much depends upon the yieldingness of the thoracic wall. In thin and debilitated people, the parietes are more prone to expand; and in those whose muscular systems are well developed, there is a less extensile tendency. In children, it should always be held in view there is a ready and early expansion of the chest-wall; in them, the white and elastic tissues are more developed, the cavity more easily distends, and there is less liability to visceral dislocation.

In cases of empyema of long standing, inspection beholds a different condition of configuration and anatomical change. The most obvious of those alterations which have been effected is the greater or less degree of approximation of the costal edges. The intercostal and pectoral muscles become wasted; false membranes bind down the lung, and prevent its filling the cavity; and thus there is less resistance to the pressure of the external air, and hence the side becomes flattened and smaller. But this flattening and approximation of the ribs, and pressing inwards of the chest-walls, is in most cases conservative. Partial expansion of the lung and partial contraction of the thorax not unfrequently result in the obliteration of a vacuum and a secreting surface, and constitute the main means whereby nature will effect a cure. When this falling in of the chest-wall is considerable, the spine is apt to curve towards the affected side. I have known marked deformity thus produced, and long continue, when there has been a fistulous opening; but when the orifice closed, the inclination of the spine quite disappeared. I can well call to mind one case, that of a gentleman whose trunk, for three or four years, depended towards the side of his complaint, but who ultimately became erect. Laennec gives so characteristic a description of this change, that it may here be fitly quoted. "The subjects", he says, "have the appearance of being bent upon the affected side, even when they try to keep themselves erect. The affected side of the chest is evidently narrower; on measuring it with a cord, a difference of more than an inch is often found between it and the sound side. Its breadth is also diminished; the ribs are in closer than normal proximity to each other; the muscles, particularly the pectoralis major, are only one-half the size of those of the opposite side. The difference between the two sides is so striking, that, at a first glance, one would suppose that it is much greater than it is found to be on measuring. The vertebral column generally retains its straightness; but sometimes, however, it deviates a little, in consequence of the patient always leaning towards the affected side. This habit imparts to the mode of walking a peculiarity somewhat similar to limping." There is another reason why the sound side not only looks, but becomes actually, larger than its normal condition. When the breathing has to be mainly carried on by one lung, the efforts of a needed compensation gradually enlarge the pulmonary tissue. The minute bronchial ramifications and the air-cells become dilated, and the puerility of the breath-sound gives confirmation to this fact. The chest-wall by degrees accommodates itself to the pulmonary enlargement consequent upon a demanded excess of the respiratory function. I lately, in the instance of a person between thirty and forty years of age, who for many years had had a fistula consequent on empyema, and whose right thorax was much contracted, saw a marked illustration of this unsymmetrical alteration effected by the compensating power of the sound lung. His left thorax had become large and rounded; and at all points it was hyperresonant. Another instance of this peculiarity came before me. A man presented himself at the Infirmary whose left chest bore the traces of a fistula, which, it was reported, had for a very long time been open, and which for many years had been closed. The ribs were in absolute approximation; and thus half of the chest was so small and flattened, that it looked as if it had been crushed in. Scarcely any respiratory murmur could be heard, and that which could be heard was merely a little tubular breathing at the interscapular region. The right side was unsymmetrically large. His breath was good, and for years he had pursued an out-door occupation with little or no inconvenience from his ancient malady. This person, who was a labouring man, and who had necessarily been exposed to great excesses of temperature, had lived long and procured his livelihood by hard work, and looked fairly well. In fact, it might have been said of him, in more than the significant language which is often employed, that he lived by one lung.

In making our investigations in this complaint, *palpation* confers no little certitude in addition to the other physical signs. If the flat hand be placed first on the side of effusion, and then on the sound side, the absence of vocal fremitus in the one, and the distinct voice-thrill im-

parted in the other, supply facts of great significance. The rounded, smooth, even feel adds testimony to those impressions made by inspection. The flat hand, glided first over one thorax, then over the other, *feels* the difference. If the palmar surface of the index finger be applied horizontally, so as to coincide with an intercostal space, and repeated pressure be made, the sensation given to the finger will be that of pressing upon fluid. In thin and attenuated subjects, this means of diagnosis is of much value, more especially in children, whose chest-walls readily give way, and in cases of some standing, and where there is a large quantity of fluid. There are other instances in which the sense of touch supplies a knowledge of the condition of things within. When absorption is taking place, and the effusion has become considerably diminished, and roughened surfaces, the results of fibrinous deposition on the pulmonary and costal pleurae, are brought into contact, a distinct thrill can often be perceived. This was eminently so in case No. 11. This sensation augurs well of recovery. Again, this thrill, but in less degree, can sometimes be felt when the opposing serous surfaces are at the first rendered tumid, and lymphic deposition is commencing. It soon, however, passes off, because increase of serous secretion interposes between two surfaces which normally glide with smoothness over each other, and ere long keeps them apart. If the palmar aspect of both hands be placed simultaneously on each chest-wall, and full inspiration be made, the difference of mobility will be very perceptible. In certain of the foregoing cases, such inequality of expansion was readily felt. In case No. 16, ascites and some anasarca were associated with the other conditions. Dr. Handfield Jones gives an instance of this dropsical complication in a young man aged nineteen, who had left pleuritic effusion and ascites at the same time, and from whose chest eighty ounces of fluid were withdrawn, and who made a full recovery (BRITISH MEDICAL JOURNAL, 1871, vol. i, page 139). I published, some time ago, the case of a child eleven years of age, who had thoracic effusion with considerable anasarca, and whose parents would not consent to tapping, but who fully recovered under the means taken to promote absorption.

On none of the physical signs can more reliance be placed than on *percussion*. The evidence which it bears of fluid is striking and distinctive. That dullness which tells of fluid is quite characteristic, and unlike the dullness elicited in lung-consolidation. It is more profound and absolute than in condensation. Its lines, when the chest is not full, are narrowly and nicely demarcated. At an earlier date of effusion, the movement of the trunk, as the rule, varies the dull line. In examples of long standing, this variableness may not obtain. When the liquid is not localised by adhesions and false membranes, and more especially at an early date of the disease, the dull line ascends to variable heights—that is, according to the quantity of effusion. I have known the dullness to reach as high as the clavicle, and up to the suprascapular fossa behind. When the fluid has thus largely accumulated, the sac is pressed laterally, and visceral dislocation in a marked manner supervenes. Sometimes the secretion is contained in septa; then the dull lines do not vary on trunk-movement; succussion gives no splash; nor is the dullness continuous from below upwards. In a case of long-standing empyema, which some time ago was under my care, there were dullness immediately below the clavicle, and some resonance below the dullness, and dullness at the base. And the full recovery of this case showed it did not proceed from tuberculosis; and the subclavicular dullness was altogether too absolute and characteristic for it to be attributed to solidification. When the effusion is in the left side, and in great amount, the diaphragm may be so pushed downward as to have its convexity below, and the spleen may be felt at the costal edge, or depending under the thoracic border. It is well to bear this in mind, or dullness so low might be regarded as produced by splenic enlargement. In left-sided effusion, the cardiac lines of dullness may be substernal, or distinctly traceable quite beyond the right sternal edge. Sometimes the cardiac dullness can be followed into the epigastrium. In case No. 11, the cardiac dullness was absent. It was evident that the organ was thrust inwards and backwards. When the right pleural sac is the seat of disease, the hepatic dull line is carried low down into the hypochondrium, and the epigastric and colonic resonances may become considerably lower in the abdomen than normal. Encephaloid tumour and large hydatid cyst in the liver may give marked dullness; but then the clinical history, and certain negative and positive facts, will be our guide. On referring to my note-book, I find the ample report of the case of a gentleman who for some time was under my care. He had very distinct dullness of the lower third of the left thorax, which was most proclaimed at the back. He had cough, could not lie on the right side, and only slight and distant tubular breathing could be heard over the dull region. Succussion gave no splash, nor did movement of the trunk vary the line of dullness. Remedies gave no relief. The respiration became affected, and the heart's action was much increased on exertion. He consulted three London physicians, but none could speak with certainty as to the ailment. In the course of

time, the disease proved to be encephaloid cancer of the lung. Such instances, however, are most rare, and, as the rule, need not be regarded as a source of fallacy in diagnosis. I have observed that in children there is, as the rule, less visceral dislocation than in adults. The diaphragm is not so often driven downwards, nor is the heart thrust away so frequently from its position. Their yielding chest-walls expand, and percussion discovers but occasionally that the heart or liver is displaced. When recovery from absorption takes place, the percussion-dulness of the hepatic edge and the resonant sound of the stomach ascend to a higher level. If the heart have been pushed from its place, the pleximeter indicates its gradual recession; and the same fact obtains when the spleen has descended. When paracentesis has been employed, it is curious to observe how soon dislocated viscera right themselves. I have known the heart, on some occasions, fall back to its position before the whole of the fluid had been withdrawn; and the same occurred when the spleen had been forced from its site. Dulness may, and often does, remain in the thorax long after either absorption or the withdrawal of the fluid. Fibrogenic deposits may be thrown out in considerable quantity, false membranes be formed, and adhesion of the pulmonary surface to the costal pleura may eventuate, and thus a certain amount of dulness, though not of that absolute character produced by fluid, will afterwards be permanently discoverable. When such is the case, its presence is not of significance.

That this physical sign was the constant accompaniment of the examples which have been given to the reader, is clearly seen. In No. 1, there was marked dulness up to the angle of the scapula, and the line of dulness varied on the movement of the trunk. I examined this lady after her recovery, and resonance was quite restored. In No. 2, there was dulness at the lower two-thirds. In No. 3, there was that absolute dulness denoting fluid. No. 4 had great dulness over the lower two-thirds of the left back. No. 5 had three-fourths of the left chest dull, and when he was discharged the dulness had disappeared. No. 6 had unusual dulness over the left thorax. In No. 7 this sign was most marked; and, in No. 8, the same condition obtained. No. 9 had much dulness. In No. 10, the same sign was distinct. In No. 11, the dulness was absolute. In No. 12, the dulness at the right back ascended to the scapular angle. In No. 13, percussion gave that absolute dead sound which is alone elicited when there is fluid. In No. 14, the dulness was evident up to the spine of the scapula. In No. 15, the dulness was discovered at the left inferior back. In No. 16, the utter loss of resonance over the region of the effusion was a cardinal sign. In Nos. 17 and 18, the dull, dead sound, given by percussion, left no sort of doubt as to the existence of fluid. It is thus seen, that the condition in question is never absent in effusions; in fact, it is one of the most commonplace laws in physics, that liquid thus placed, should not, when percussion is made over its site, emit sound. It is, as I have said, the most reliable of all the physical signs.

The next most potent means whereby we ascertain the presence of effusion is *auscultation*. In all the previously given cases, it has been shown how the stethoscopic signs bore out the inferences to be deduced by the other modes of diagnosis. In each instance, bronchial breathing, and bronchophony at the spinal hollow; and faintness, or most generally abolition, of the respiratory murmur over the dull regions, were the significant facts elicited. In some of the examples, there was scarcely any tubular blowing at all; in fact, the displacement of the lung into the spinal fossa, and the great pressure exerted by the fluids, doubtless, so compressed not only the pulmonary tissues, but the bronchial tubes, as to exclude the air. Some time ago, a young woman was admitted into the infirmary, whose left chest was dull to an extreme degree at every point, nor could the least breath-sound be heard at any part. Paracentesis was decided upon. She died, however, suddenly, in the night previous to the day on which the operation was to have been performed. Inspection showed that no air whatever had entered the lung. It was carnified, bound close down to the spine, and thus its functions became absolutely and entirely abolished. In the earlier stages of effusion, I have always first noticed tubular breathing, and bronchophonic cough and voice-sounds. These vary in the degree of their intensity according to the amount and continuance of effusion. In the more advanced conditions, and in exceptional cases, amphoric respiration, gurgling and cavernous voice, are well recognised when pulmonary excavations might be thought of; but concomitant symptoms will be our guide. Béhier is of opinion that amphoric breathing is only heard when the indurated lung is compressed against the larger bronchial tubes. It would be well to bear in mind that, in some cases, mucus in the large tubes will produce gurgling. It is said by Trousseau, that amphoric sounds may be produced when the effusion is inconsiderable; and it may also be said that the pathological states which give rise to amphoric sounds are by no means uniform. In effusion, there is no crepitant rhonchus; and the blowing

respiration is of the diffused quality, deep, and best heard at the spinal hollow, and sometimes alone heard at the last named place. When recovery is going on, and the lung is expanding, the tubular breathing becomes less pronounced, and coarse crepitation is heard at points where before there had been only silence. In the sound side, the stethoscope recognises very customary and characteristic changes. The breath-sound becomes loud and puerile, because increase of function is thrown upon the lung which can perform its office. Sometimes the respiratory murmur becomes so intensified, that it can be heard on the effusion side of the spine—a fact which was first pointed out to me by Dr. C. J. B. Williams many years ago. In chronic cases of empyema, it is well not to lose sight of what may thus occur. In most of the chronic cases puerility is strikingly proclaimed. In long standing empyema, the sound lung gradually relinquishes its right to that expression—it becomes hypertrophous and emphysematous. Excess of action is followed by excess of volume; just as mitral obstruction gives rise to ventricular enlargement, or as the liver grows large in tropical climates. On *post mortem* inspection after protracted empyema, I have seen the compensating lung so large, that it seemed to be too big for its proper cavity. Walshe remarks that a lung in this state, instead of receding when the chest is opened after death, may actually protrude through the opening.

In Nos. 1, 2, 3, 4, and 5, the main points elicited by the stethoscope were, the abolition of the respiratory murmur, and the presence of bronchophonic voice over the dull area. As recovery gradually ensued, coarse crepitation became audible at points where previously no air entered, and by degrees the normal vesicular murmur became re-established over the greater part of the space before occupied by the effusion. In No. 6, the breath-sound was abolished generally throughout the left thorax. Even at the subclavicular space, it could not be recognised; and, above the clavicle, only an indistinct tubular blowing could be heard. In the right chest, supplementary sounds were at once audible; everywhere over that side there was puerility. The inference could only be, that the cavity of the affected side contained a large quantity of fluid; and this opinion I had, on my first examination of this patient, expressed with much certainty; nor did the fruitless attempts which were made, by the introduction of the catheter, to draw it off, influence this conviction. As before related, inspection proved the existence of nearly two quarts of straw-coloured liquid; and this too was present, not with a lung collapsed and driven upwards and backwards into the spinal hollow, but with a lung consolidated and adherent to the chest-wall. Under such circumstances, fluid of that quantity could not do otherwise than fill the chest. When the pulmonary tissue becomes so compressed as to resemble a mere membrane, there is then far greater capacity for effusion than in instances like that of this patient, in which there was such an abundance of tuberculation. The tubercular deposit, and the adventitious products thrown out by a low form of inflammation, solidified, and in a great extent maintained the configuration and volume of the organ, and thus prevented that compression which is so notable in empyema. In cases No. 7 and No. 14, it is extremely probable that much the same condition of things obtained as in No. 6. The woman Lawrence had a phthisical aspect, and the man referred to had evidently tubercular mischief at the right apex. In case No. 9, the air did not descend into more than the lower third of the left chest; and, externally, the auscultatory examination traced abolished breath-sounds up to, and until confounded with, the increased extent of cardiac dulness. In the young gentleman No. 10, only tubular breathing was heard at the lower half; and, as he progressed towards recovery, it was matter of much diagnostic and pathological interest to watch the steady increase of coarse crepitation, and afterwards of vesicular breathing, almost to the base. In No. 11, the stethoscopic signs were in close accord with the facts elicited by palpation and percussion. Tubular breathing, without admixture of vesicular sound, added to the testimony of many other facts which told the tale of long standing lesion with abundant effusion. In nice correlation with the improvement of the stethoscopic signs, there was less dyspnoea, less feeling of fatigue, fewer tendencies to fainting, and greater ability to ascend steps and lie on either side. In case No. 12—the pale young woman admitted into the Infirmary—as the absorption went on, the auscultatory sounds improved. In the woman No. 13, with regard to the stethoscopic indications, the same remark might be applied. In the man No. 14, auscultation gave evidence of much interest. By two operations, no less than 153 ounces of fluid were withdrawn; and, as reported, on each occasion much comfort followed the evacuation. Not only did the vesicular murmur return over a considerable space at the affected side, but the moist crepitations at the right apex at length almost disappeared. The relief afforded by paracentesis seemed to have a curative tendency at the top of the other lung, which, when I first saw him, was not only dull, but had evidently begun to break up. The practical conclusion, then,

deducible, is that, in effusions which we know to be of tubercular origin, paracentesis becomes warrantable merely with a view to the mitigation of existent symptoms. In the young gentleman No. 16, there were all the stethoscopic signs above in repetition noticed as so indicative of effusion. Dr. Day, Mr. Bisshopp, and myself, at our examinations after the two operations, were much interested at the descent of respiratory sound as the more general symptoms of amendment became manifest. When he had made what might be regarded a full recovery, and when I examined him six months after the operation, only a patch of coarse crepitation, and at the very base, existed; and this, doubtless, was soon to be succeeded by the normal vesicular sounds. This patient, at this date, is without a trace of his malady. In No. 17, in the instance of empyema in the little boy, the auscultatory sounds were quite in accordance with the other conditions of long standing compression of the pulmonary tissue. I was informed several months ago by Mr. Manser that the breathing was then heard low down, and that the little patient gave every promise of full recovery. In the last named example, absorption was followed by the proper puerile respiration, and full recovery.

It is always important in these cases to carefully note the cardiac sounds; and, in those instances in which thoracentesis is contemplated, it is absolutely imperative, as the trocar can never safely be introduced without a knowledge of the exact position of the heart. In eight of the above recorded examples, this organ was pushed under or more or less beyond the right edge of the sternum. In No. 6, the cardiac sounds were heard in greatest intensity at the right sternal edge; here there was no risk of entering the pericardium when the left thorax was pierced. In No. 7, the apex-beat was felt, and the sounds were best heard beyond the right sternal border. In No. 11, the cardiac sounds were but very faintly heard; and I concurred with Dr. Fuller and Mr. Rix that, in such a case, the greatest caution was needed in the introduction of the trocar. The side of effusion was most carefully auscultated, lest the pericardium should be wounded. In case No. 14, the heart could be felt and most distinctly heard beneath the right nipple. In No. 16, the cardiac sounds were intensified towards the right. Displacement of the heart, and the twisting of the aorta and large vessels, may give rise to morbid sounds, which cease to be heard when, by absorption or operation, the fluid has been removed and the organ has resumed its normal position. When orthopnoea is added to other of the graver symptoms, the heart-sounds are generally pronounced feebly, consequent upon the mechanical pressure exerted upon this organ or the great vessels. Auscultation in such cases gives information of the greatest consequence. The removal of the apex-beat and the greatest intensity of the sounds are by far most marked in left-sided effusion. In antero-posterior expansion, the cardiac sounds become feeble or lost. The auscultatory signs, not only of the lungs, but of the heart, are necessarily varied by a variety of phenomena. Pericardial effusion may be coexistent with pleural effusion, as in case No. 9. Cohesions, empyema, costal approximation, long duration of the disease, and other circumstances, must very naturally modify cardiac action. In some cases of left pleurisy, the cardiac sounds are best heard to the left of the nipple, and, in exceptional instances, even below the axilla.

In some cases, a considerable amount of fluid may be contained in the pleural sac; and for some time this may remain, without giving rise to any marked symptoms, or to any great inconvenience to the patient. A person under such circumstances may look tolerably well, have a fair appetite, and even pursue his occupation; nor may there be much fever, pain, or local distress. Bronchitis, pneumonia, and phthisis present objective symptoms which at once lead us to suspect the true nature of the malady; but it is not so in certain low and masked forms of pleuritic effusion. In the last named affection, a strict attention to the physical signs is of the greatest importance; and it has repeatedly come to my observation that a neglect of the physical signs has led to the gravest mistakes. A patient will present himself under the idea that his case is by no means serious. He does not, and has not, suffered much. The absence of acute pain, and not having experienced any marked attack of illness, favours the supposition that his complaint is not of great consequence; and it has most probably been referred to cold or some undefined temporary loss of health. He tells you, however, of his having for some time had a cough; that his breathing becomes accelerated on increased exertion, and that he cannot lie on either side; and, on being interrogated, he admits the loss of flesh and strength. The facial indication confirms our suspicion. If, in addition, there be languor of the circulation, as evinced by cold extremities and an irregular pulse, and a tendency to syncope, very conclusive evidence is then presented. Effusion into the pleural cavity cannot, however, remain there for an indefinite period harmlessly. Its mechanical disturbance, and the other derangements to which it gives rise, fail not sooner or later to become manifest. Hasse says sometimes the effusion may prove perilous or

fatal through its character or amount, without the appearance of such symptoms as to excite alarm. Amongst the other morbid conditions produced, a febrile temperature is generated; the digestive organs become impaired, and a diminished vitalism is the consequence. Claude Bernard has beautifully shown that, when digestion is not normally carried on, the gastric secretions do not retain their physiological properties, and are unequal to those functions in vital chemistry which are so necessary to the process of chymification; hence we see one cause why it is that fever in pleuritic effusion becomes of the hectic character, and is followed by exhaustion. In chronic cases, flatulent dyspepsia is most common, and the patient is usually troubled with acid eructations. In empyema, I have generally noticed these conditions as permanent symptoms.

It is a fact of practical importance, and one which should always be borne in mind, that thoracic effusion is sometimes thrown out with great rapidity, and even a few hours will be long enough for a large amount of liquid to collect. Its sudden presence in the sac generally produces much systemic disturbance; but, as the mediastinum and the diaphragm give way, and as the intercostals become stretched, the feelings of dyspnoea and distress become mitigated; the organism is rendered more tolerant of, and accommodates itself to, the extraneous product. I have been astonished at the celerity with which these collections form in children, which peculiarity may, perhaps, be accounted for by the quicker circulation and the greater exudative tendency which there is in children than in adults. In all the acute affections of childhood, if there be any dyspnoea or signs of pulmonary disturbance, physical examination of the chest should never be omitted. When effusion occurs in children, it is nearly always as the complication or sequel of some other form of disease. Bronchitis, pneumonia, or pleuropneumonia, are the frequent associations or forerunners of this condition. It forms the not uncommon sequel in eruptive fevers, when the liquid is nearly always sero-purulent or purulent. The younger the child, the less chance is there of recovery in this affection. In the acute empyema of children, pus may be secreted from the outset of the inflammatory symptoms. In children, the effusive tendency is more prone to extend to the pericardium than in the adult; and a fatal termination in these little patients sometimes comes on in sudden and unexpected manner.

[To be continued.]

ARSENICAL POISONING BY ARTICLES OF DRESS.

By R. R. CHEYNE, F.R.C.S.Eng., Nottingham Place.

THE following case of arsenical poisoning, in a little relative of my own, from wearing a ruby-coloured merino tunic, occurs *à propos* to give emphasis to the remarks in the JOURNAL upon the poisonous nature of red wall-papers, founded upon an article in the *Gazette des Hôpitaux*. The attention to which this case is entitled, as a warning against the too confident use of articles of clothing dyed red with coralline dye, will be rendered evident by the concise report of the analysis made by Dr. Dupré of the Westminster Hospital for the purpose of investigation.

Master T. B. M., aged 2 years and 4 months, after some indications of disorder and a few restless nights, vomited several times on October 1st last, and had slight diarrhoea. Vomiting after food continued until the 6th, when it ceased until the 13th. During the same period, there existed depression, anorexia, now and then tremor, or a kind of quivering of the muscles, once a screaming fit in the night (as if from fright), and a state of extreme irritability, with frequent micturition. The degree of illness in the child thus far seemed to be out of all proportion to any discoverable local lesion. On the sixth of the month, however (the day on which the vomiting subsided), he awoke agitated, and, after a warm bath, a rubeoloid rash appeared, succeeded by a cough, which day by day became more troublesome, being most severe for an hour, between 3 and 6 A.M. The eruption was capricious as to its extent and duration, leaving, when absent, a mottled look of the skin, which was also stained by the red dye drawn out of the tunic by the very profuse perspiration characterising the disorder. It was this latter circumstance, with the fact, now observed, of the recurrence of the vomiting not long after the tunic (which had been left off for several days) was again worn, that led me to the discovery of the real wolf in lamb's clothing with which I had to contend. Upon inquiry, I learnt that this ruby-coloured merino frock was first put on on September 24th, and was laid aside on October 6th, when the little patient was strictly confined to bed. For the week following, there was exemption from sickness; and then (two days after the use of the tunic was resumed) the stomach again rejected food. It seemed likely, therefore, that the gastric disturbance was in some way excited by wearing that particular garment; and if, as I imagined, the existence of arsenic