OBSERVATIONS

on some cases of

PLEURAL EFFUSION and EMPYEMA.

A THESIS

by

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1902.

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I N T R O D U C T I O N .

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Pleuritic effusion was known to Hippocrates, and the father of medicine was well acquainted with the form called Empyema, but the certain recognition of serous exudates into the pleural cavity during life was only possible to the modern physicians, who were privileged to serve themselves heirs to the wisdom of Laennec and Auenbrugger.

Effusion into the pleural sac may be said to occur in two fashions, active and passive. In the former there is a "quid quid"irritans" in the pleura as exemplified in acute pleurisy or tuberculosis; in the latter, the occasion of the exudate is a morbid condition of the blood either in constitution or circulation, as we see in renal or cardiac disease; combined, of course, with some definite though as yet indefinable morbidity of the cells of the pleural membrane. It is interesting for the observer either to watch the growth of an effusion from the outset of a pleural malady, or to discover it in the examination of a patient whose symptoms arise from disease of the heart or kidneys. But, whether it be active or passive, inflammatory or dropsical, the results are the same to the patient, there is less room for

the/

the lung, it retreats before the invader, the inspired air can no longer enter its every part, the residual air is forced from the compressed position of the organ which then becomes collapsed and is thrown out of the respiratory economy, and a greater or less degree of pulmonary distress prevails. In many cases the physician can abolish this by a simple procedure for the evacuation of the fluid; other cases find healing in the hands of the surgeon; while others again, and these unfortunately are not a few, are of such a nature that the relief obtained is only for a season. But, looking away from these intractable instances, it may be averred that pleuritic effusion though a sequel that causes, as a general rule, an uncommon degree of misery to the patient and of anxiety to his friends, is happily one which is amenable to the treatment of the physician, and, if necessary, of his ally, the surgeon; and so in the gamut of cases from those which achieve recovery with or without drugs or tapping, through the cases where tubercle claims a tedious convalescence or perhaps a fatal issue to the cases of purulent effusion which are cured for all time by surgical interference, we have learned by experience that the prognosis of the affection may, in the majority of cases, be regarded with equanimity by the physician.

The/

The following record is composed of thirteen cases of pleural effusion, eight of them being serous and the remaining five purulent in character. Twelve of the cases were reported and observed by me whilst house physician to Dr. Middleton in the Glasgow Royal Infirmary, and it is by Dr. Middleton's courtesy that I am permitted to reproduce them. The last case is one which was under my immediate care in Barnhill Hospital. In those cases which required surgical treatment no observations have been made after operation save the mention of the result as they have ceased to be medical in the professional sense.

My attention was directed to such a series of cases by a statement as to the frequency with which tuberculosis of the lung was found to be a factor in the production of pleuritic effusion, but I cannot say that my cases shew a sufficiently important ratio of this nature. This is probably due to the smallness of the number, my experience being of course limited; but I have had the opportunity of examining other cases of pleural effusion which were believed to be tubercular.

A large proportion of the cases in the record appear to be pleural <u>de novo</u> that is arising from acute inflammation of the pleura or tuberculosis of it. One case is perhaps dependent/

dependent upon renal disease; two are illustrative of empyema after pneumonia, and this is regarded now as a fairly common event. In his last half-yearly report the Superintendent of the City Poorhouse Hospital says that of seven cases of empyema operated on, six were the result of pneumonia; this must be an unusually large proportion, yet it may be explained by the fact that the type of pneumonia which prevailed last winter in Glasgow was exceptionally severe.

The cases are tabulated as follows:-

Age	under 10 years.	3.
	10 - 20 "	5.
	20 - 30 "	0.
	30 - 40 "	3.
	40 - 50 "	1.
	under 63 "	1.
Sex.	Male 7.	Female 6.
Side.	Left 10.	Right 2. Double 1.
Serous.	8.	Male 5. Female 3.
Purulent.	5.	Male 2. Female 3.

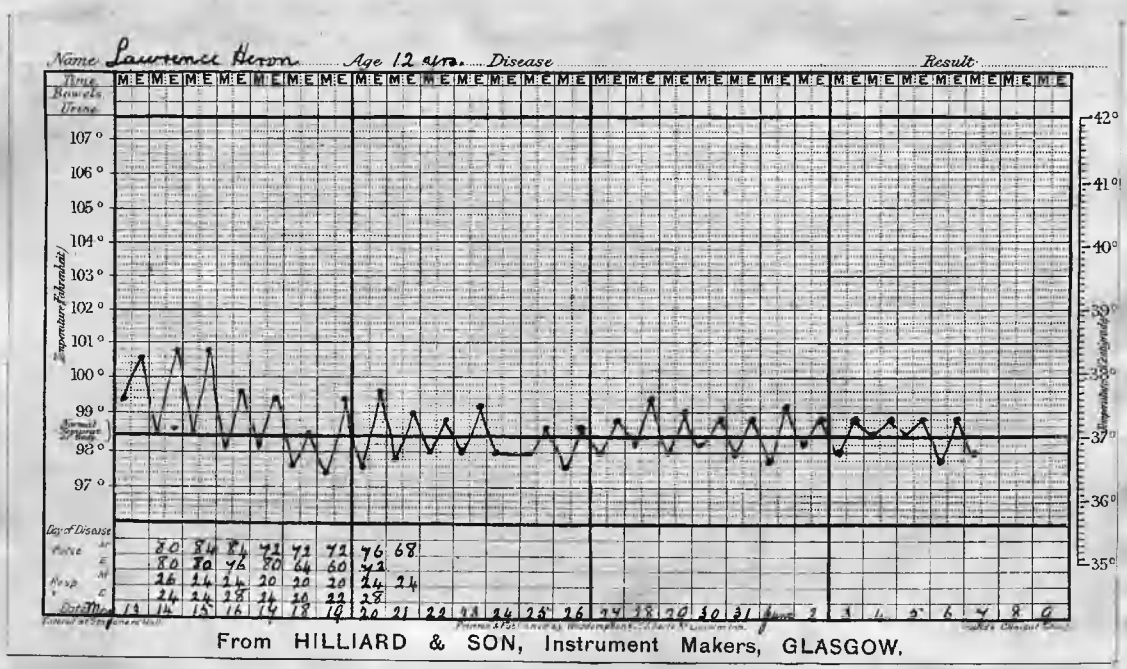
The number of the tubercular effusions is probably not more than 4. In the majority of the cases cyrtometric tracings were taken and recorded but they have not been reproduced. There is only one case of double effusion and it occurred in a patient who was suspected to be phthisical; the/

the effusions were not simultaneous or symmetrical, the second one appearing and reaching its greatest height while the first was obsolescent. A double effusion is regarded as happening usually in phthisis or Bright's disease. The incidence of the effusions is seen by the table to be mostly on the left side and I am not aware of any valid reason for this sinister preference.

As regards sex the numbers are nearly equal. It is stated by Fagge and Pye-Smith that among adults empyema is more common in men than in women, but my cases are not such as to discover any bearing on this point. Ten of the patients were under 40 years of age and the cases of empyema are all in the early part of life.

At the beginning of each case - with one exception - the temperature chart is placed and in one case only has the chart been copied out in full. A number of chest diagrams have been included in the text.

Case No. I.



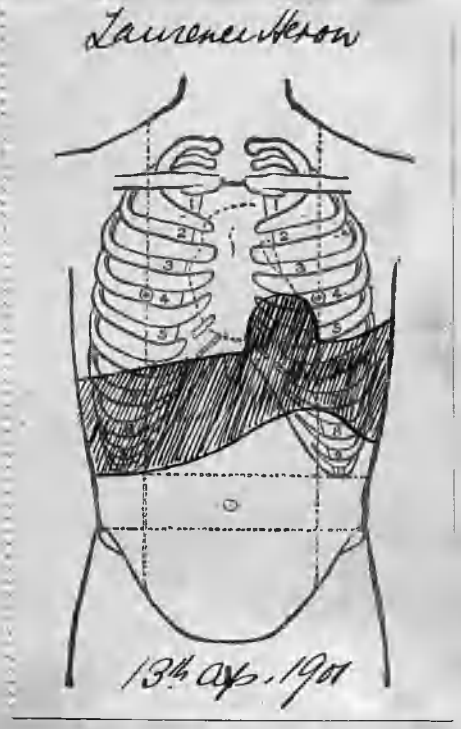
LAWRENCE HERON. Aet. 12. Schoolboy.

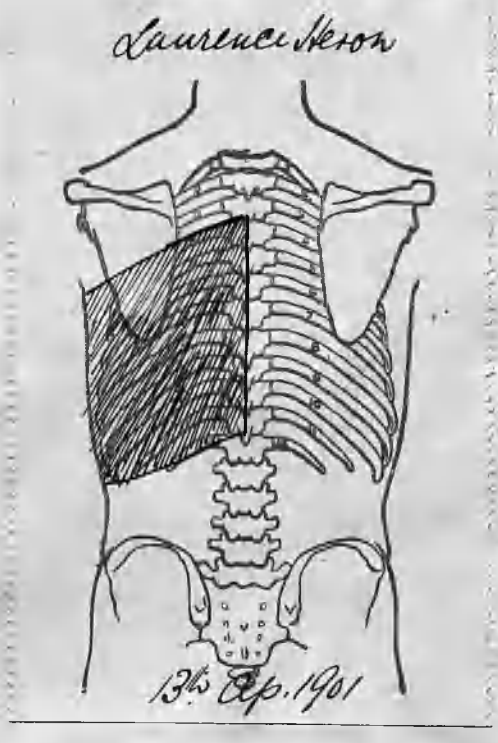
Admitted 13th. April, 1901.

Complains of pain on deep breathing and coughing, the pain is in the left nipple line 2½" below the costal arch.

Present Illness.

Began with a pain in the place indicated on Wednesday, 24th. March. He had no pain elsewhere and he felt otherwise well. He continued at school up to Monday, 6th. April when the pain became so bad that he had to stay in bed and, with the exception of one day, he has been there up till admission. He had a slight cough and he felt the pain when he/





he coughed or drew a deep breath. He had headache occasionally but did not perspire, and the only time he shivered or felt cold was at the very beginning of the illness. His bowels were regular.

Previous Health.

Has had measles, but does not recollect any other illness except a bad cold which he had last year.

Family History.

Good.

Social Position.

Patient is a school-boy, and gets his food regularly.

He/

He may have got cold through playing in the wet.

Present Condition.

Patient is well nourished and healthy looking though somewhat flushed. The pupils are equal and respond to light and in accomodation. The mucous membranes are well coloured. Temperature on admission 99.4°.

Respiratory System.

The breathing is quiet and regular. There is an infrequent cough and very little spit. The breathing is Thoracic as well as Abdominal. On inspection the left side of chest is seen to move less than the right in respiration; and there is distinct bulging on the left side. Respiration rate 36 per minute. The apices are clear to percussion though the left apex appears to have a dull tympanicity in its resonance. In the left Axilla dulness commences at the 4th. rib and extends to the base. On the back of the left side the apex is clear: and dulness is elicited on percussing downwards at about the level of the 3rd. dorsal spine, and the upper limit of this dulness passes outward along the 5th.rib to the 4th. rib in the axilla. From this line to the base the left lung is dull. The vocal fremitus is diminished on the left side at the back and so also is the vocal resonance. The intercostal spaces are full and are markedly resistant. On auscultation over the front of the chest the apices are not different in the loudness

or/

or quality of their breath sounds, but on the back the breath sounds above the spine of the left scapula appear to be rougher than on the right. Over the dull area on the back the R.M. is enfeebled but not lost and toward the base it is accompanied by fine râles heard on deep inspiration. About the angle of the left scapula there is a sound with the R.M. which may be friction sound. In the lower part of the left side between the axillary lines the breath sounds are hardly heard. The breath sounds on the right side appear to be normal and are very plainly heard. The Cyrtometric tracing shews the left side as bulging.

Circulatory System.

The pulse is strong and regular. Rate per min: is 96. The apex beat is in the 5th interspace in the nipple line. There is slight pulsation too in the 4th interspace. The Cardiac dulness begins above at the 4th. rib and extends mesially to the left sternal edge and laterally it is continuous with the dulness of the left chest. The action is regular and forcible and the sounds are apparently pure. No murmur is detected.

Digestive System.

The tongue is clean and the appetite good.

Abdomen.

At a point 2½" below the costal arch in the left nipple line the patient feels the pain when he draws a deep breath.

Liver./

Liver.

Dulness begins at the 6th rib and measures 3" in the nipple line. The spleen is not felt. The gastric tympany extends some distance into the thoracic region.

Genito - Urinary - System.

No complaint.

Urine.

Pale. Acid. S.G. 1020. No albumen, sugar or blood: phosphates, Micros, granular matter.

May 30th.

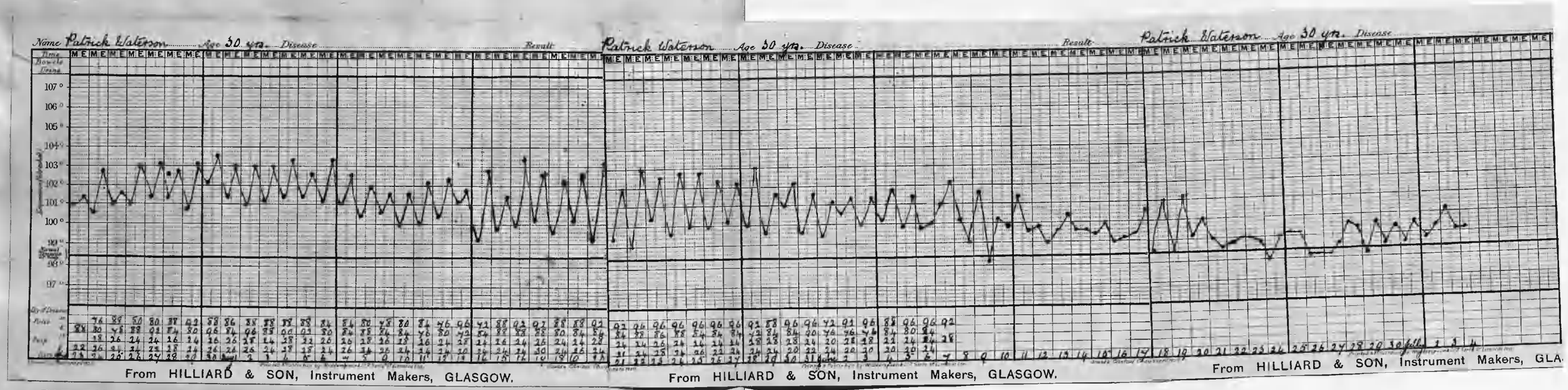
The patient has improved steadily since admission. The tempt: has ranged between 100.8° on the first two days to a minimum of 97.6°. He has been kept in bed but today he was allowed up in the afternoon. There is slight dulness at the left base with a grazing friction sound.

June 7th.

Patient went to the Home today. His appearance was healthy though it cannot be said that at any time during his stay in hospital he looked unwell. The physical signs of last note are still present at the left base.

This is a case of acute pleurisy with effusion which was taking a favourable course when it came under observation. In its onset it is not strikingly acute; the pleurisy itself was not severe but as the fluid accumulated the boy was unable to go about on account of the difficulty in breathing though he/

he remembers more of the pain than anything else. The pain was not felt in the chest but in the abdomen, and this is not uncommon in children; it is probably due to a pain referred from the termination of one of the dorsal nerves. The temperature even when it came close to normal is somewhat suggestive of tuberculosis by its short excursions up and down evening and morning, but I think we are entitled to regard the case as non-specific.



PATRICK WATERSTON. Aet. 30. Labourer.

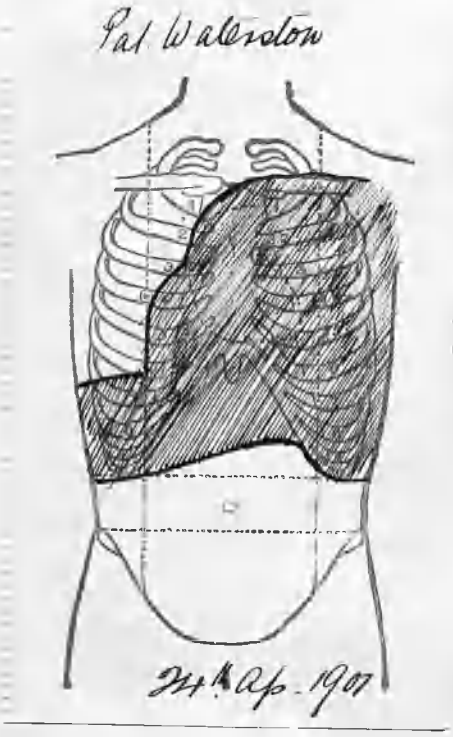
Admitted 23rd. April, 1901.

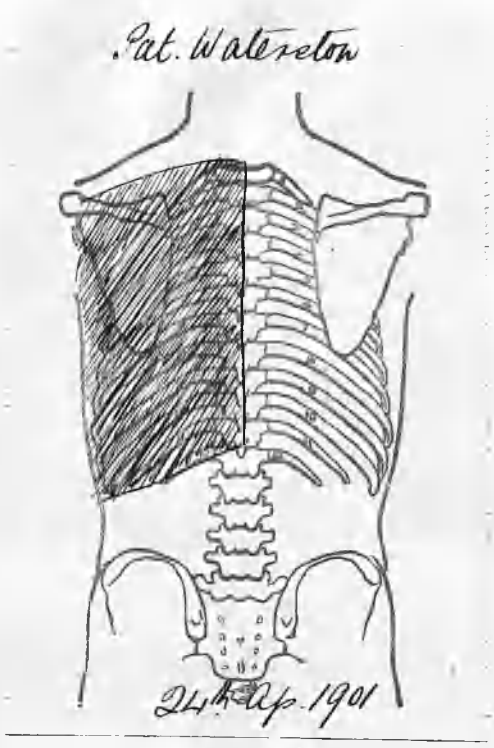
Complains of pain in both sides of chest and cough.

Present Illness.

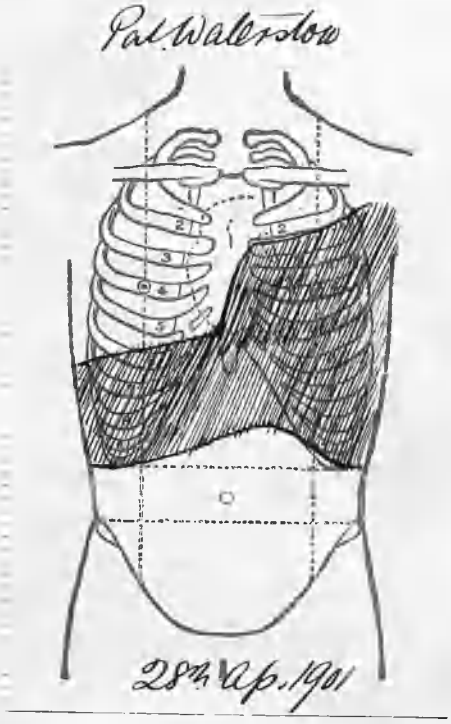
Began 9 weeks ago with "cold in the head" and pain in the left side below and outside the nipple. He had been working on the night gang at the docks and he thinks that this is how he caught cold. He was working at the time he first felt the pain; it came quite suddenly; he did not go to work next night and has not worked at all during these 9 weeks on account of this pain. He had a caugh which made the pain in the side worse and the spit was white and frothy. The pain in the side was of a stabbing nature:

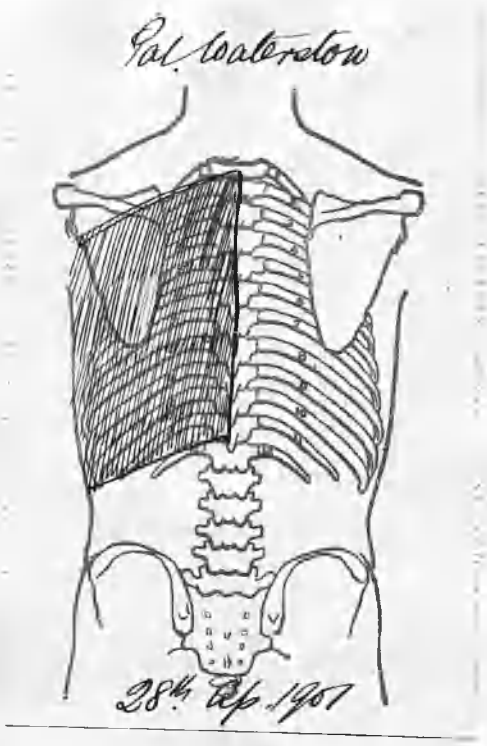
he/





he says "like a needle". He has not been in bed during the illness, that is he had to get up and go out every day as he lived in a model lodging house and had not money to pay for a bed during the day. A fortnight ago he saw Dr. Anderson who told him that he ought to be in bed. He had headache and soreness in the eyes, and shortness of breath due to the pain in the side. His appetite was very poor, he could take nothing but sweet milk. His bowels were confined. He did not shiver at the beginning of the illness: but he has done so frequently during the last few weeks. He perspired at night a good deal and slept badly. On Friday, 17th April, he had/





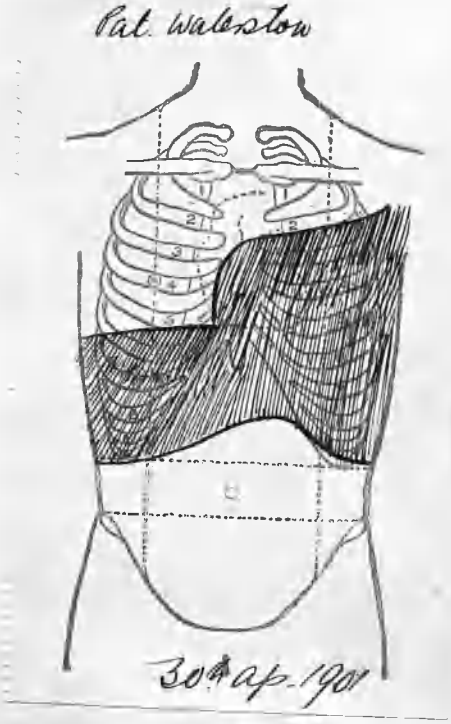
had a severe pain in the lower part of the right chest in front. It was similar to the former one in the left side only more severe. It lasted a few days and improved when he was admitted to hospital. The site of the pain is still tender to pressure. Temperature on admission 101°.

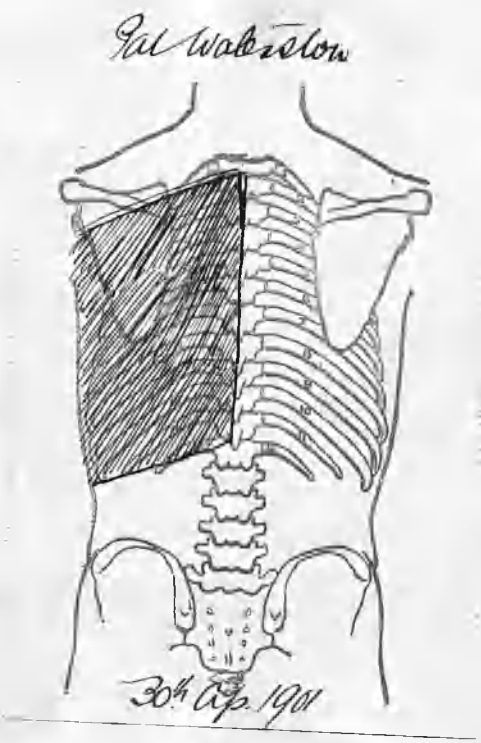
Previous Health.

Always been healthy. Two years ago had typhoid fever. Never had a pain or ache apart from that till the present illness.

Family History.

Good. Mother alive and well. Father dead, cause unknown. Patient has two brothers and one sister: alive and well.





well.

Social Position.

Patient is a dock labourer and is exposed to all weathers. He worked upon the railway but at the time of the onset of the present sickness he was working at the docks, at cargoes. He is married and has four of a family: one died at four months of bronchitis. His wife is healthy.

Present Condition.

Patient is strong and well built though he says he has lost flesh lately. His face is flushed and moist with perspiration: the mucous membranes are not anaemic. The eyes are normal. The skin is hot and moist. There is no swelling/

swelling of the face or abdomen or legs. The temperature tonight is 102.8°.

Respiratory System.

On inspection the left side is fuller than the right and the left moves but little in respiration and the movement of the right shoulder up and down is very apparent. The vocal fremitus is entirely lost on the left side. The whole of the left chest is dull to percussion both back and front: and on the front the dulness crosses the sternum on to the right half of the thorax to within 2 inches of the right nipple. The V.R. is much diminished all over the left side, and the R.M. is extremely feeble. The Cardiac second sound is well heard at the impulse near the right nipple and at the aortic cartilage but it is fainter at the pulmonic cartilage. To the left of the sternum both sounds are almost inaudible. The heart's action is regular: the second sound appears to be pure, but the first sound is so faint that nothing can be observed as to its quality. The pulse is regular and fairly strong: rate per minute is 90.

Digestive System.

Tongue somewhat dirty: appetite not good: bowels have been moved since admission.

Abdomen.

Is not swollen.

Liver.

Dulness/

Dulness commences above 6th. rib and measures 5¼" in the nipple line. The lower edge of the dulness in the middle line is 2 inches above the umbilicus.

Genito Urinary System.

No complaint.

Urine.

Pale. Reaction: Acid, S.G. 1031, Albumen: a trace, No sugar or blood. Deposit slight; microscopically:- debris and translucent wavy deposit

Measurement round chest at nipple on each side 17½". Measurement round right at tip of Xiphoid 18", round left side 17".

25 - 4 - 01. Dr. M.

This is a typical case of large pleural effusion of left side as evidenced by apparent bulging of that side and undoubted tendency to effacement of the intercostal spaces: great deficiency of movement in respiration; displacement of the heart so that its impulse is seen at the right nipple; absolute dulness of whole of left side back and front; the dulness reaching on the right beyond the right sterno clavicular articulation and as far as the right nipple; complete effacement of gastric crescent, the dulness extending down to near the anterior superior spine of ilium; absence of vocal fremitus; while there is little if any difference in/

in the vocal resonance of the two sides. In regard to the R.M. it is nowhere absolutely lost. It is weakest in the lateral region where the inspiratory portion is all but lost while the expiratory is hollow. Over the rest of the left side both in front and behind the R.M. is tubular but distant from the ear: not at all like the tubularity of pneumonia. From the physical evidences it is clear that the fluid effusion has been accumulating since admission, and a fortnight ago, on Dr. Anderson's authority, there was only a little fluid at the left base. Breathing and the pulse have been very little disturbed: the highest record of the former being 28, and the latter 80. On the other hand the tempt: yesterday oscillated between 100.2° and 102.8°. Fully 100 ounces of a serous effusion is removed with the result that the right border of the cardiac dulness receded to the left border of the sternum: while the apex of the left lung is clear to the 2nd. intercostal space. A mere trace of friction is audible but the breath sound over the left side is greatly improved.

May 22nd.

T. B. not found in sputum.

May 24th.

Dr. M. inserted a hypodermic syringe into the left side and drew off a syringeful of fairly bloodstained serum. Under the microscope blood corpuscles were seen but no pus.

May/

May 29th.

The patient's appearance is improving but the cough is distressing and the voice is very hollow.

May 30th.

The left side is dull up to the 2nd. rib in front and to the apex behind: there is complete absence of V.R. and R.M. on left side. Sputum examined, T.B. not found.

June 30th.

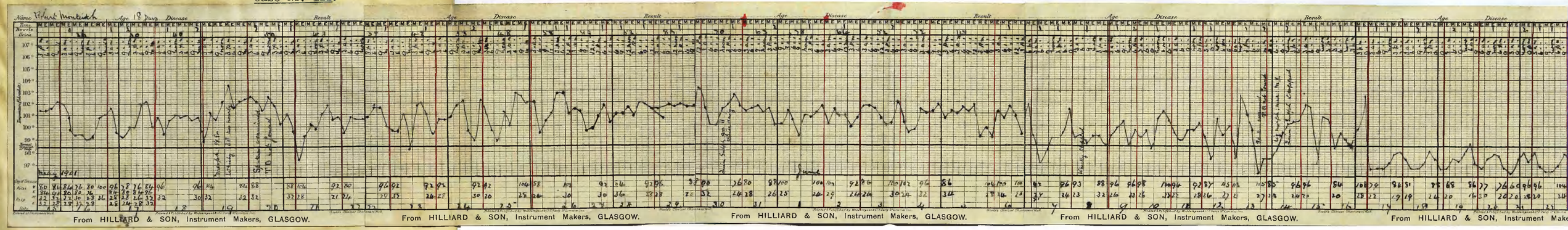
Patient's condition is the same as in last note except that the right border of cardiac dulness is at the left sternal margin. Tempts. have been lower during this last week.

July 4th.

Patient sent to the Home.

It is difficult to avoid the impression that this case is tubercular in origin. The remittent temperatures and the emaciation of the patient speak of tubercular disease but no corroborative signs were found in the lungs or sputum. The return of the fluid is not in itself a tubercular manifestation It is to be noted that the aspiration of the fluid did not cause any diminution in the temperature.

Case No. III.



Wd. 12.

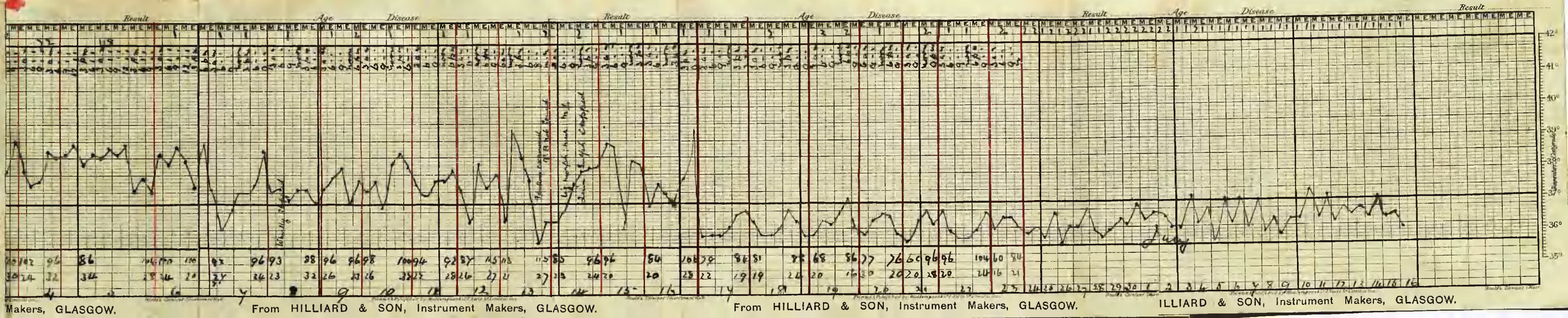
ROBERT MONTEITH. Aet. 20. Journal 9. p. 477.

Admitted 15th. May, 1901.

Complaining of cough and pain in left side.

Present Illness.

On 22nd. April he was attacked by a severe pain in the left side of his chest. He also coughed a great deal, which aggravated the pain. The expectoration was abundant and of a yellowish colour. On 20th. April he participated in a game of football, at which he sweated heavily, and he believes that/



Makers, GLASGOW.

From HILLIARD & SON, Instrument Makers, GLASGOW.

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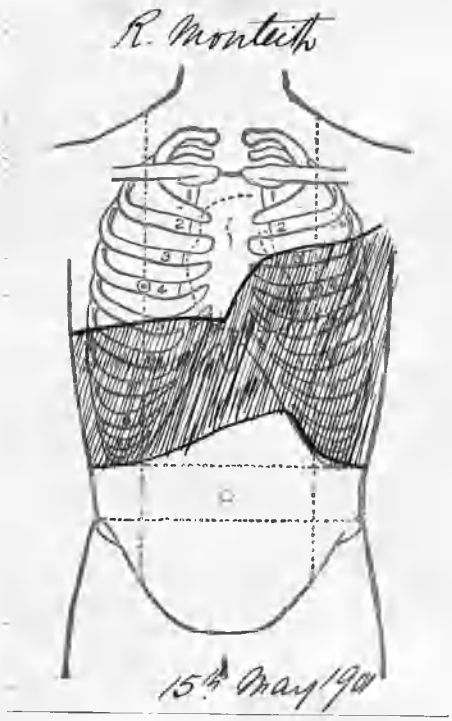
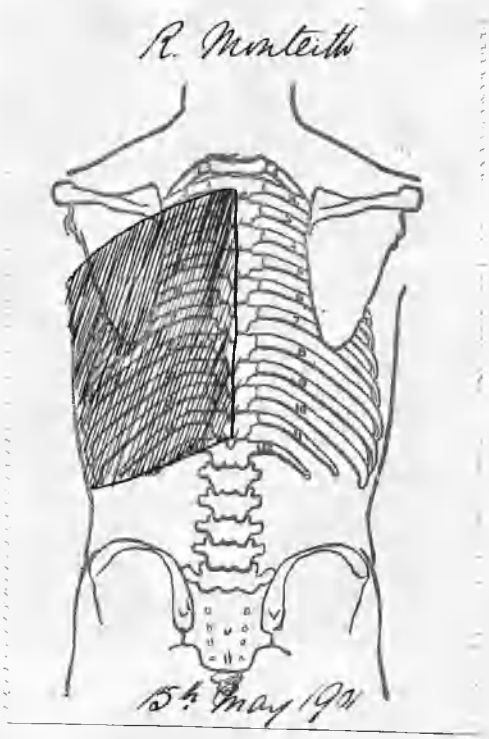




that he afterwards caught a cold, which brought about his present illness. The pain lasted 3 days, during which time he was confined to bed. During the next four or five days he was up and about the house, but did not venture outside. Then he felt so weak and short of breath, that he again had to go to bed, where he remained until admission to hospital. The cough has been very distressing from the commencement and he gets very little rest on account of it, but he has been almost free from pain since the 3rd. day of his illness. He perspires a great deal and has often on awakening from sleep found himself bathed in perspiration. His breathing is fairly easy when he is lying in bed, but when he tries to move/

move or do anything it becomes very "short".

Previous Health.

Had measles 12 months ago, otherwise he has been healthy. He had no cough after the measles.

Family History.

Unreliable. Father alive and well. Mother died on childbed. Seven of the family died in childhood, causes of death unknown.

Present Condition.

Patient is pale and appears exhausted. The breathing is light and hurried. The face is covered with perspiration which is cold and clammy. The left side of the chest moves less than the right. On palpation the loss of movement is again evident on the left. Thrill is felt on expiration and inspiration, in the upper part of the chest above the nipple. To the outside of the left nipple a tender spot is found, the area appears dull to percussion. V.R. and V.F. are diminished on the left below the level of the second rib. The R.M. is also much feebler than on right and is accompanied by large dry râles and with what sounds like friction. On palpating the back V.F. is again found diminished on the left, whilst V.R. and R.M. on auscultation are diminished. The whole extent of left back is dull except suprascapular region. The Cardiac dulness appears normal: the right border/

border being at the left sternal border. The upper border is at the 4th rib. The left border is lost in the pulmonary dulness. The apex beat is in the fifth inter space inside nipple line. Heart sounds rather dull at the apex, getting clearer towards the base. The 2nd. pulmonic sound is accentuated. Pulse is regular, ample, of low tension and numbers 84 per minute.

Urine. Dark S.P. 1022. ac. no albumen, sugar or blood.

Micros. A few epithelial cells and granular matter.

18th. May. Dr. M.

On examining the patient found a friction sound, fine in quality, on the left side below the angula of scapula. The R.M. was absent, but a little higher up it was heard with some hollowness. The left chest is dull up to the 4th. rib and tympany was elicited in left axilla. The patient's tempt: has not been normal since admission ranging from 98.6°F. to 102.2°. Sputum examined, T.B. not found.

19th. May.

The patient's temp: went up this afternoon to 103.6° and he had great pain in the left side. The friction sound was heard at back and into the axilla.

23rd. May.

A hypodermic needle was inserted and a few drops of bloody serum removed.

30th./

30th. May.

Dr. Middleton examined case today and found on the right side puerile breathing: on the left side in front the expiratory murmur is hardly heard at apex, being replaced by snoring râle or friction sound. Lower down very little R.M. is heard at all. The left base behind is not absolutely dull but is nearly so. The V.F. is lost and the V.R. is diminished and hollow, with hollow râles, suggesting a cavity, which when taken in conjunction with the high and remittent tempt: suggest tubercular mischief. The hypodermic needle was inserted on left side at back; nothing was drawn into the barrel and only a little blood stained fluid was found in the nozzle.

13th. June.

This morning patient expectorated a quantity of purulent sputum. It was sent to be examined, but T.B. was not found In the forenoon he, with severe coughing, again spat up as much purulent material. Dr. M. examined the patient with the class and found that there was distinct curvature of the spine, laterally to the right. The left side of the chest is flattened and there is loss of movement, with complete absence of V.F. behind. The heart is still displaced to the right and is evidently anchored there by adhesions. The R.M. on left is very weak. In front it is distantly tubular/

tubular down to the 3rd. rib. On the right the R.M. is strong and there is crepitus round right nipple. There is no hyper-resonance on percussing the right side. At the back there is complete dulness on left side even at apex. The R.M. on left is very faint and has a hollow quality. There is crepitus above the angle of scapula.

25th. June.

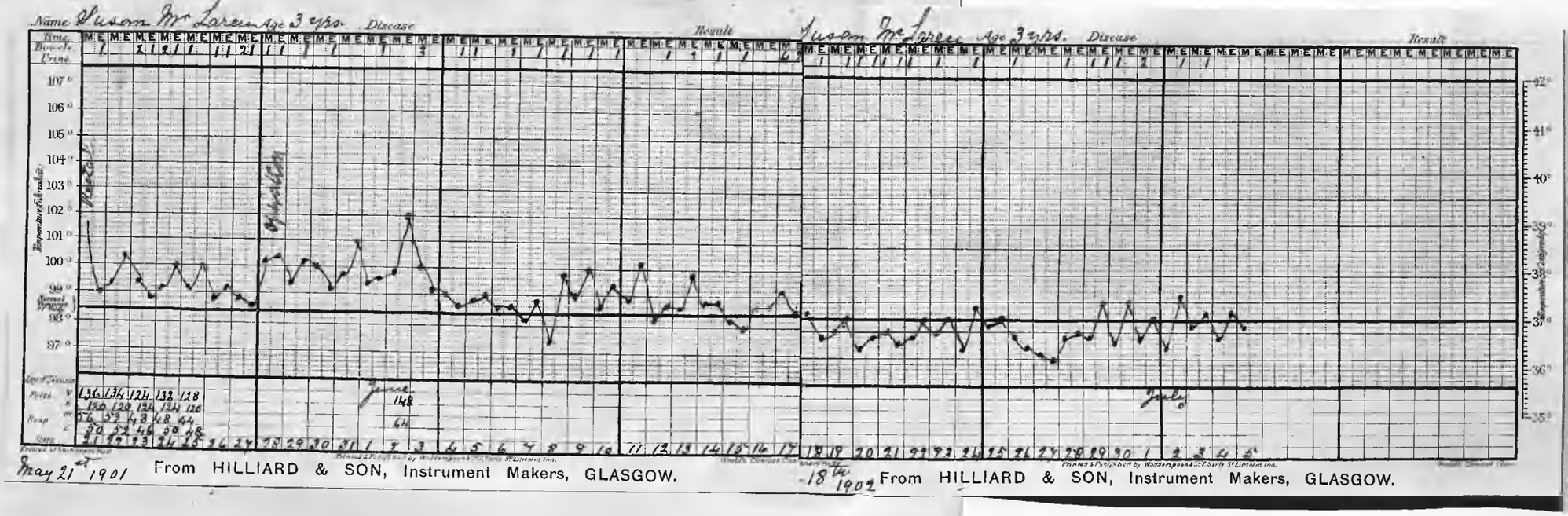
Dr. M. examined patient to-day and found physical signs very much the same as at last note. At the angle of left scapula the crepitus is still heard and is intra-pulmonary in its character since the 17th. inst. The temp: has been subnormal. On the 19th. it was normal, but it has varied between 96.2° and 98°. There is not so much expectoration. The patient is going about the Wd: during last few days. A week later the patient who was always childish during his stay in hospital insisted that he was well enough to leave and his friends took him away.

This case is more definitely tubercular than the last. It is probable that it is a tubercular pleurisy with effusion and some collapse of the lung and organisation of the fibrinous enudate in parts, preventing a satisfactory result with the exploring needle. Between the 22nd. April, the onset of the illness, and the 23rd. May when the needle was first introduced, there was sufficient time for organisation

to/

to take place. What connection there may have been between the expectoration of the pus and the fall in the temperature, it is impossible to say. Had the case been one of empyema it would have been feasible to suppose that some of the pleural pus had found its way into a bronchus by soakage through the lung. This case resembles Case XIII in giving a tympanitic note in the axilla, and in common with the other cases of large left effusion it shewed complete dulness in Traube's quadrilateral space.

Case No. 1V.



SUSAN Mc. LAREN. Aet. 3½.

Admitted 21st. May, 1901.

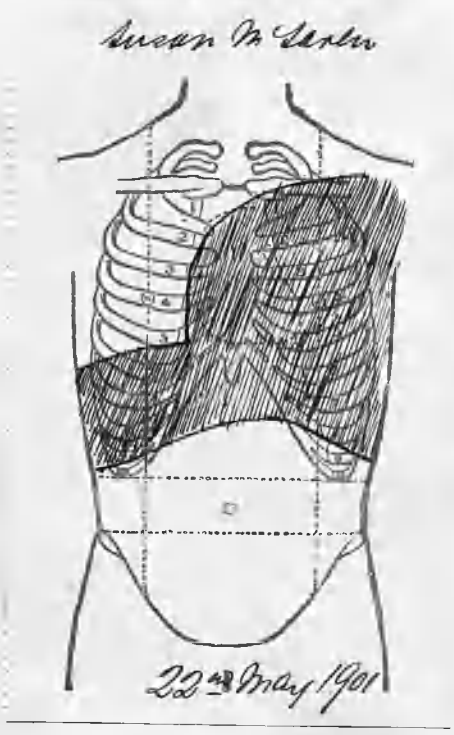
Brought complaining of cough and weakness.

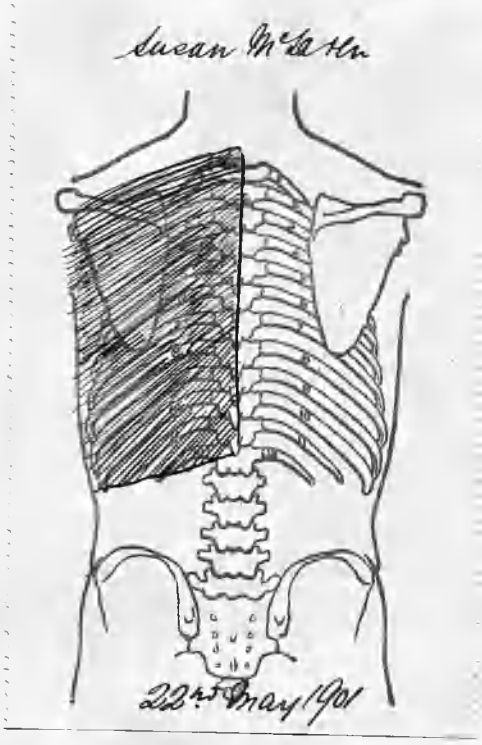
Present Illness.

Began five weeks ago. Her mother noticed that she was not in good health, and that she was troubled with a cough. After 3 weeks, during which time she did not improve but got steadily weaker, she was taken into ward 11 of this infirmary. She was in 3 days being dismissed on 10th. May. Since then she has still continued in the condition of cough and weakness

Previous Health. She had bronchitis when 4 weeks old.

Measles/





Measles 2 years ago. Whooping cough one year ago.

Family History.

Good. Father and Mother alive and healthy. Her two brothers are alive and well.

Present Condition.

The patient is pale and is not well nourished. The legs are rather wasted. The mucous membranes are not well coloured. There is profuse perspiration round the head. The temperature on admission was 101.6°, tonight it is 99.4°. The patient is quiet and sleeps well. She cannot stand alone. There does not seem to be any diminution of sensation and all the limbs can be moved freely actively and passively.

The/

The knee-jerk is present on the left but appears to be diminished on the right.

Respiratory System.

The breathing is costo-abdominal, but the left side of the chest moves very much less than the right and it is seen to be much smaller. The right side bulges and there is lateral curvature of the spine: the convexity being to the right. The left chest measures 9¼" and the right 10" at the nipple level. The whole of the left side is dull to percussion both front and behind: the dulness reaching in front to the left sterno-clavicular articulation and to the right border of the sternum. The V.F. is almost absent on the left side. All over the right side the breath sounds are distinctly heard with occasional small moist râles accompanying the expiratory murmur. On the left side the R.M. is feeble but does not appear to be absent anywhere though towards the base the expiratory murmur is not heard at all. No râles or friction are heard on the left side. The respiration rate is 54 per minute. There is an infrequent but distressing cough: the expectoration is viscid and clear: but some dark red colouration was seen on the pillow tonight.

Circulatory System.

The pulse is regular and of low tension. The rate per minute is 120. The apex beat is felt faintly in the 4th. interspace/

interspace ½" within the nipple line. The cardiac dulness is not ascertainable in its upper and left borders: the right border is at the right sternal edge. The cardiac action is regular and forceful. No murmur is detected.

Digestive System.

The appetite is good. The patient vomited a little today. The hepatic dulness begins at the 6th. rib and measures 2" in the nipple line. The abdomen is full, and not tender and gives a tympanitic note all over. The spleen is not felt.

Genito-Urinary System.

Urine. Pale, slightly acid, Sp. Gr. 1029. no albumen, sugar or blood: some phosphates are present. Micros. Amorphous phosphates.

23rd. May.

Dr. M. examined the case today and found tubular breathing over the greater part of the left side. A hypodermic needle was inserted below the angle of left scapula and a syringeful of pus was obtained.

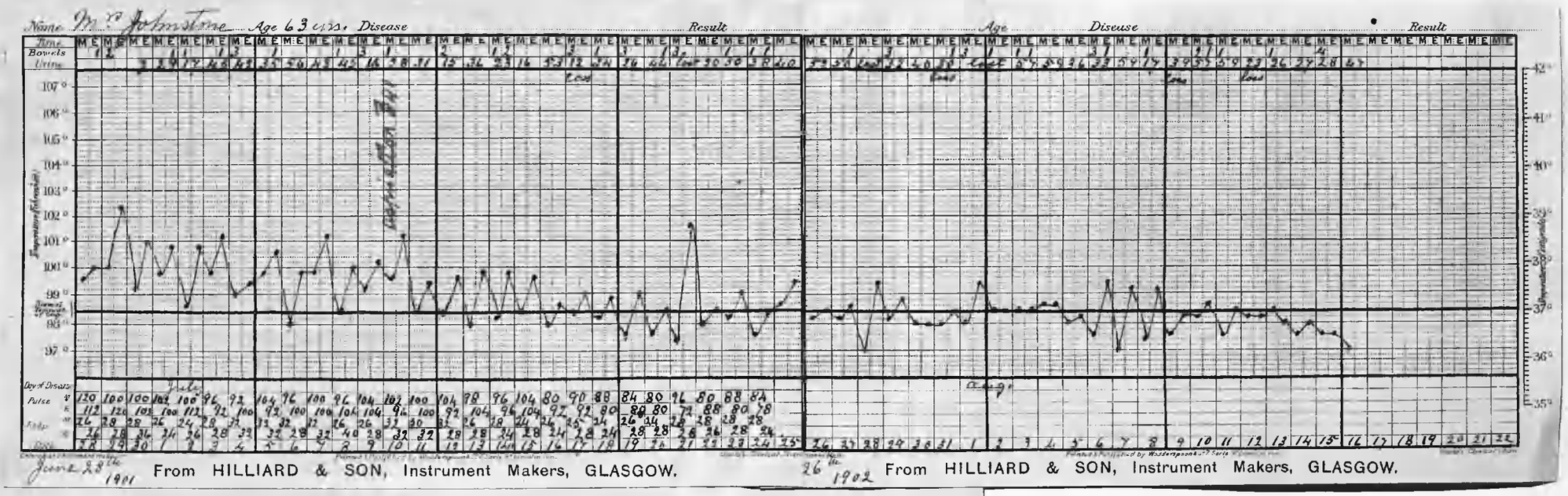
25th. May.

Patient transferred to Ward XV, where the pus was evacuated and she was finally discharged well.

Note. This case illustrates very properly the insidious onset of empyema in childhood. Though the left pleura was so full of pus yet the child was not much distressed; the breathing

breathing was fairly rapid. There was absence of friction and râles, which is not uncommon in the empyema of infants.

Case No. V.



MRS. ELLEN JOHNSTONE. Aet. 63. Housewife.

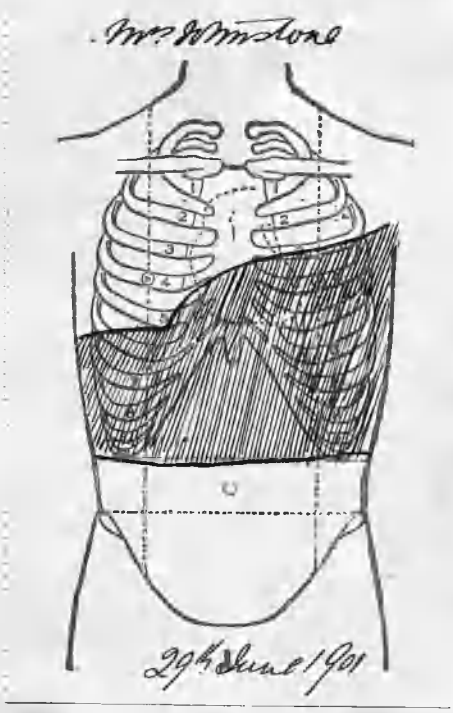
Admitted 28th. June, 1901.

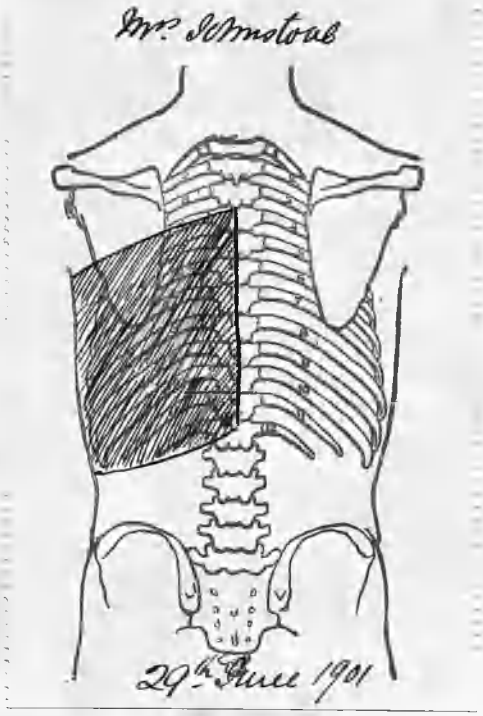
Complains of general weakness and slight cough.

Present Illness.

Six weeks ago patient found that she could not do her ordinary household duties on account of general increasing weakness. She had a slight cough but it did not trouble her much. She had slight pain in the right loin which did not last long. Her appetite was poor. She had little or no expectoration. The only thing that she felt wrong with her was weakness which prevented her doing much work

and/





and she has been in bed mainly by the doctor's orders.

Previous Health.

Good. Has had measles, scarlet fever and whooping cough, otherwise she has been very healthy.

Family History.

Unimportant. Father died of drink: Mother of "dropsy". Patient is married: of her eight children one died in childhood and one of some bowel complaint, four others died in infancy.

Social Position.

Patient keeps house.

Present Condition.

Patient is very thin and wasted and of a sallow colour. She/

She does not complain of anything beyond weakness. There is no swelling of any part of the body. Temperature on admission 99.6°.

Respiratory System.

The breathing is shallow but not embarrassed. There is only a slight and infrequent cough, and no expectoration. On inspection the left side of the thorax is seen to be fuller than the right. The intercostal spaces on the left are obliterated while on the right they are very distinct. There is not much visible difference in movement between the two sides, but on placing the hands on each side of the lower part of the thorax, the left side is felt to be deficient in movement. The V. F. on the left is almost completely absent. On percussion a tympanitic note is elicited at the left apex: lower down the note is quite dull. This dulness crosses the middle line to within 1¾" of the right nipple. Behind, the left side is somewhat tympanitic above the spine of the scapula: below the middle of the scapula it is dull: and there is dulness also in the lateral region. The right lung is clear except in the part in front already mentioned. On auscultation the V.R. is diminished over the dull area and the R.M. is extremely feeble, and almost absent towards the base. At the left apex the R.M. is faint and somewhat tubular. Over the right lung the R.M. is quite distinctly heard in all its parts. No râles are detected. Respiration rate/

rate is 26.

Circulatory System.

The right border of the heart is displaced across the middle line to within 1¾" of the right nipple. The left and upper borders cannot be recognised. The pulse is small feeble fairly regular and rapid. Rate per minute 120. The arteries feel somewhat rigid. The apex beat cannot be detected. There is marked pulsation in the epigastrium, and here the cardiac sounds are best heard: they are scarcely heard at the normal apical area. The 2nd. sound is much louder at the lower end of the sternum than at either of the cartilages. No murmur is detected. The cardiac action appears to be much stronger than the pulse would suggest. There is slight pulsation felt to the right of the sternum.

Digestive System.

Tongue dirty. Appetite poor. Abdomen not swollen. Hepatic dulness extends from 5th to 8th rib in the nipple line.

Urine. Pale, 1013, faintly acid. No albumen sugar or blood. Micros: epithelium.

1st. July. Dr. A.

There is deficient movement all over the left side and V.F. is annulled over the area of diminished movement. Dulness is absolute in front below the 2nd. rib and extends high up into the axilla. Behind it reaches as high as the 5th./

5th. dorsal vertebral spine, and above there is an area of diminished resonance. The cardiac impulse is best seen and felt in the epigastrium, and the right border extends 1½" to the right of the middle line. The upper and left borders cannot be delimited. The cardiac sounds are fine and are best heard in the epigastrium in the middle line. The R.M. over the dull area on the left side is practically absent and V.R. and V.F. are also almost wholly suppressed. No pleuritic friction can be detected. Neither spleen nor liver appear to be displaced. The measurement of the right side at the nipple level is 14¼" on the left 14".

10th. July.

Dr.A. aspirated 340 of fluid from the left side of chest. The temperature rose afterwards from 99.4° to 101.2°. The temperature has oscillated about 100° since admission and has only once been at normal. After aspiration the left border of the heart could be made out with the apex beat in the 5th. interspace within the nipple line.

12th. July.

The patient is feeling comfortable and is looking less sallow than before. The temperature today was 98°- the first time since admission.

16th. August 1901. Dr. M.

Since last note progress has apparently been continuous and she leaves today. There is still some dulness in the left base and left lateral region and the R.M. is defective there/

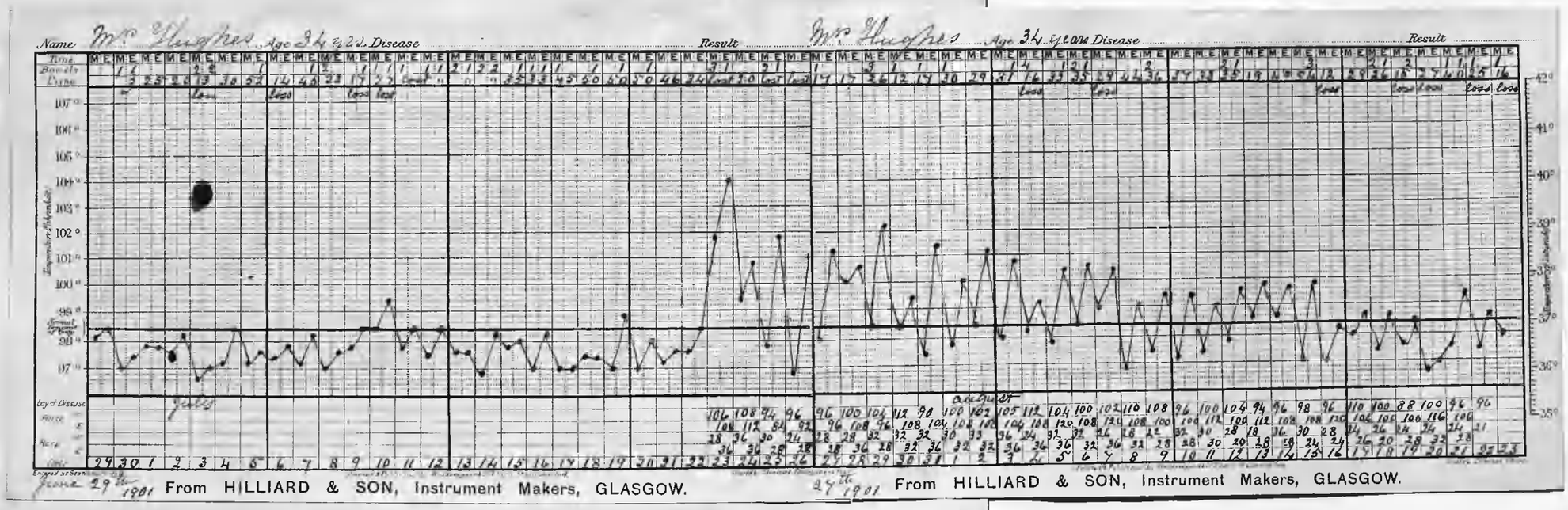
there.

16th. August, 1901.

Patient dismissed today.

The aspiration of the serous fluid in this case was followed by a reduction of the temperature, which continued at normal with one exception, for which no cause was discovered. This case was very insidious in its onset. In this case and in cases II and VI, the affected side was smaller by measurement than the other side; the latter having expanded in compensation while the diseased side tended to contract.

Case No. VI.



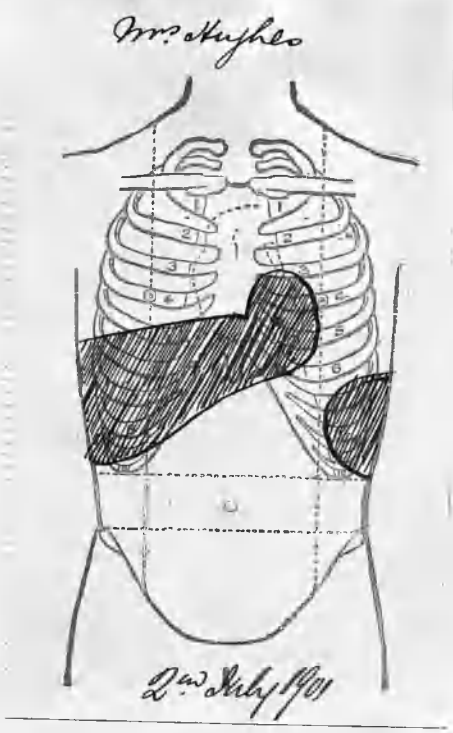
MRS. MARY HUGHES. Aet. 34. Housewife.

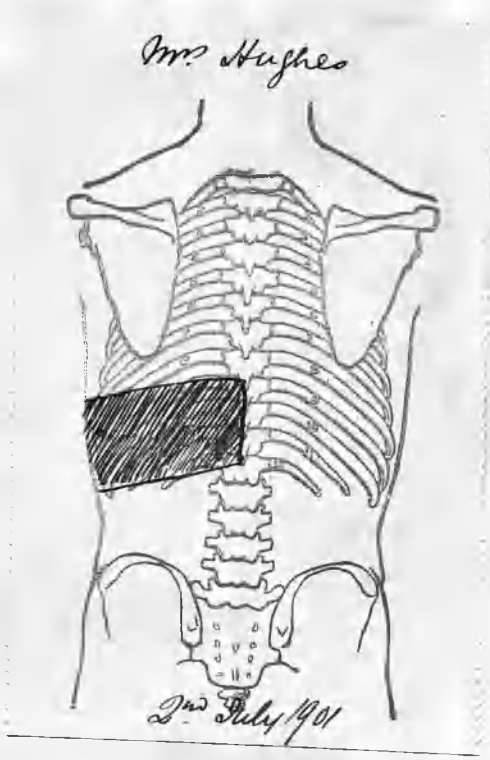
Admitted 29th. June, 1901.

Complains pain in left side and breathlessness.

Present Illness.

In January of this year she had pneumonia " and pleurisy on left side and she has never been right since. She has been in bed almost constantly up to May and since then she has been going about a little but not able to do her household duties. She has become very weak and has lost a good deal of flesh. She had a cough in the beginning but for the last two months she has been almost free from it. Her appetite/





appetite was not good though she was never sick, or vomited. Her menstruation ceased but reappeared about two months ago. She complains now of weakness and breathlessness with an occasional pain. in the left side.

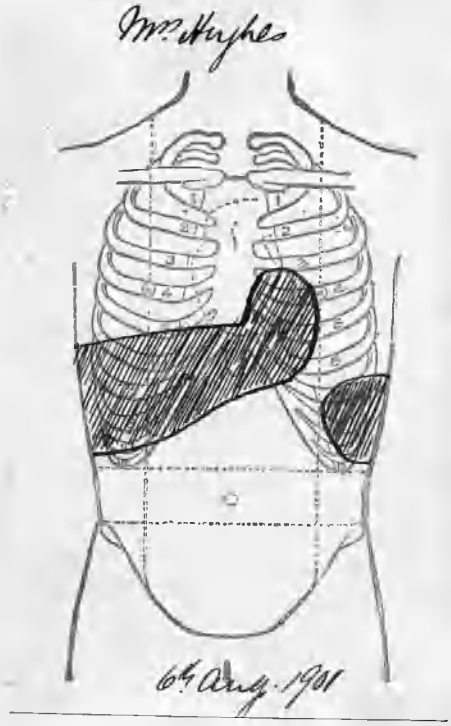
Previous Health.

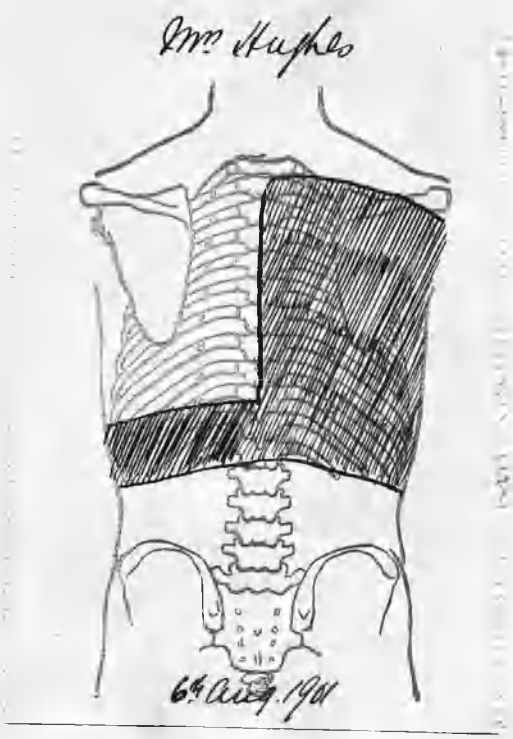
In childhood had scarlatina. At the age of 24 she had what was probably anaemia. Otherwise healthy up to the beginning of this year.

Family History.

Fairly good. No evidence of phthisis.

Father dead, cause unknown. Mother died of some affection of the breast. Those of her brothers and sisters who/





who are dead, died in infancy. Patient is married. Her husband is a plumber: he is healthy. Of her three children, one died of scarlet fever. The other two are well.

Present Condition.

Patient is thin and wasted with a somewhat hectic flush on the cheeks. There is no clubbing of the fingers. The pupils are equal and normal. The mucous membranes are not pale. There is no swelling anywhere. Temperature on admission 98.2°.

Respiratory System.

There is an infrequent cough with a watery frothy sputum. The breathing is shallow. On inspection the left side of the chest is seen to be almost devoid of movement. There is/

is lateral curvature of the spine in the dorsal region towards the right. The right side of chest seen from behind bulges most distinctly. The left side at the nipple level measures 13" round. The right measures 15". There is dulness to percussion at the left base and in the lowest part of the lateral region. Over the dull area the V.F. and V.R. are diminished greatly and the R.M. is almost completely lost. The upper part of the left lung, and the whole of the right lung are clear to percussion. The breath sounds on the right are louder and rougher than on the left. No râle is heard. Respiration rate is 20.

Circulatory System.

The pulse is soft small and frequent: rate per minute 80. The apex beat is neither seen nor felt. The cardiac dulness commences at the 3rd. rib and extends from the sternal left margin to the nipple line. The transverse measurement is 3". No murmur is heard. The cardiac action is feeble.

Digestive System.

Tongue fairly clean. Appetite poor; bowels acting with purge.

Abdomen not swollen. In lower part lineae albicantes. The hepatic dulness begins at the 5th. rib and measures 3½" in the nipple line. The spleen is not felt.

Genito-Urinary System.

No/.

No complaint.

Urine. not obtained, patient is menstruating.

1st. Aug. For three weeks after admission the temperature was mostly subnormal. She still had the flushed cheeks and she felt weak and several times wished to go home. Dr. A. said that the dulness on the left side was not so great as depicted in the diagram and that it was disappearing. She had a slight cough. She was re-weighed on the 16th. July and it was found that she had lost 5 lbs. On the 23rd. July the temperature rose to 104°. patient complained of pain in the right side. She thought she caught cold during the cleaning of the ward. The temperature has oscillated widely since then, having been as low as 96·8° and as high as 102·2°.

The amount of urine has diminished in quantity being down to 12 on the 30th. July. The urine examined to-day is rather dark in colour. The 24 hrs. specimen is muddy and has a foul odour; it is slightly alkaline in reaction, S.G. 1021, and contains a quantity of albumen; no sugar or blood. Microscopically, epithelial cells, granular matter and pus cells are seen. The morning specimen is faintly acid, and is not muddy or putrescent. Dr. M. examined the patient to-day and found tubular breathing with friction sound over the right front of chest in the 2nd. interspace. The right side behind is dull from the scapular spine to the base. The

V./

V.R. is diminished, and also the V.F.

The R.M. is enfeebled and is somewhat tubular in quality. The temperature at noon today is 100.4°. Urine in the last 24 hours measured 30.

6th. August.

Today patient complains of pain in the left side externally to the heart, something like friction is heard over the site of the pain. There is still dulness in the lower left lateral region also at the left base. The whole of right side is dull behind from apex to base, and the V. F. is abolished. The R.M. is silent at the right base.

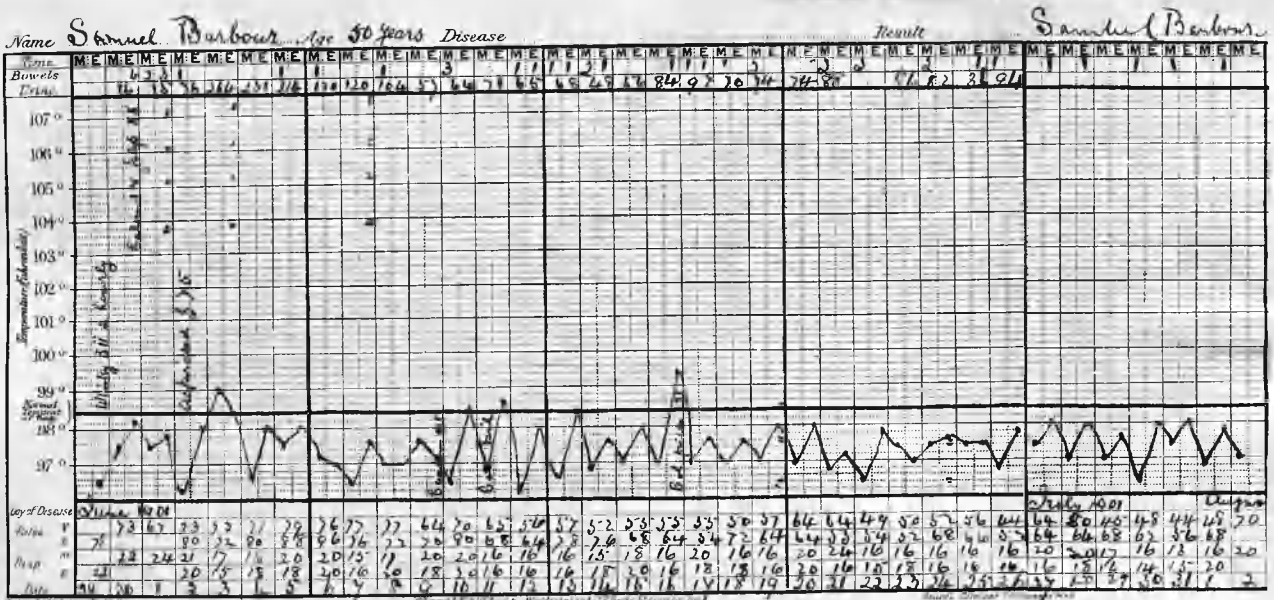
7th. Aug. Sputum examined T.B. not found. Dr. M. said that no friction sound was to be heard on either right or left, that the left side was full of rale and that the right apex behind was not quite dull.

23rd. Aug. Patient left to-day against advice.

NOTE.

Tubercular mischief was suspected in this case, and it is the only case of double effusion in this record. The right side was implicated in the disturbance shown on the tempt: chart on the 23rd. July and it is interesting to notice how the tempt: gradually fell though the fluid was not diminishing to any extent.

Case No. VII.



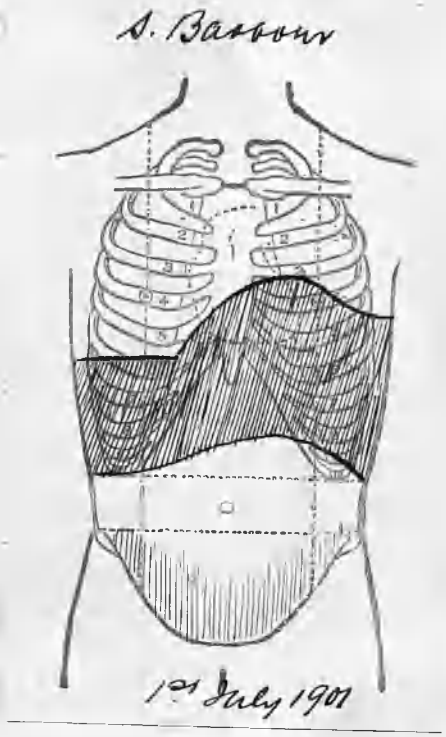
SAMUEL BARBOUR. Aet: 50.

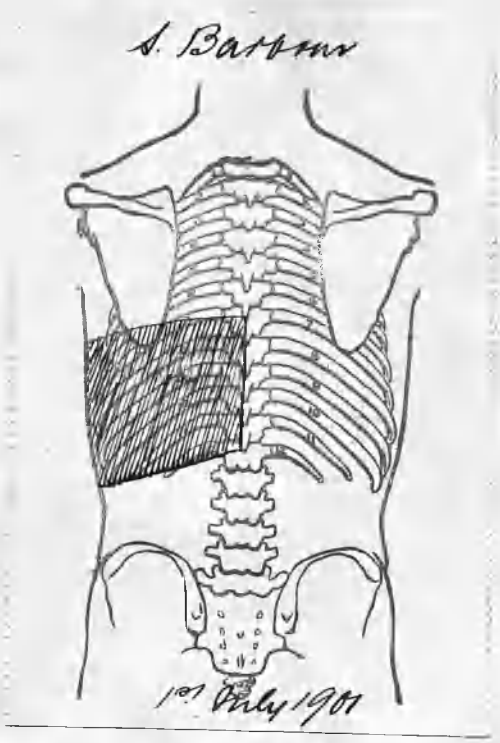
Admitted 29th. June, 1901.

Complains of swelling of the legs and feet and breathlessness.

Present Illness.

Began about five weeks ago. Patient began to have a hacking cough, a week later his feet and legs began to swell, and they have remained so since. He had no pain anywhere, save some soreness across the upper part of the abdomen, and also when he coughed he had slight pains across the front of the/





the chest. He had little or no spit. He had no palpitation. The breathlessness became so bad that for the last two or three weeks he had been forced to recline or sit up in bed and his sleep was broken. He had no headache. His bowels were fairly regular. He had been passing less urine than usual for the last three weeks and the urine has been frequently dark in colour.

Previous Health.

In infancy had measles and scarlet fever and 14 years ago had rheumatics and was in bed for six weeks. Since then he has been in good health up till last New Year: Since then he has been subject to attacks of breathlessness, but/

but these have not been severe.

Family History.

Father died of "Gastric Fever": Mother of "Chronic Bronchitis": three brothers and sisters died in infancy, causes of death unknown.

Social Position.

Patient is unmarried. He is a labourer in an ironwork. He carries iron from one place to another. He does not smoke and he is temperate in use of alcohol.

Present Condition.

Patient sits up in bed during the day and night, though he is able to recline more comfortably than on the day of admission. The breathing is somewhat laboured but not distressed. There is some expiratory dyspnoea. The pupils are equal and react to light and in accommodation. There is slight blenorrhoea. The legs and feet are markedly oedematous and the surface of the trunk is slightly so. Temperature on admission 96.4° F.

Circulatory System.

The pulse is small and feeble and markedly irregular in rhythm but not so distinctly so in force. The rate per minute is about 84. The arteries are hard and tortuous. The apex beat is located in the 5rd. interspace in the nipple line when the patient turns in the left side. It is abrupt in character, and the impulse is felt over the praecordium.

But/

But the most distinct heaving is found in the epigastrium. The cardiac action is irregular and sudden. The cardiac dulness begins above the third interspace. The right border is 1½" to the right of the midsternal line. The left border is not determinable as there is dulness over the adjacent part of the thorax - The cardiac sounds are heard as loudly in the epigastrium in the middle line as they are at the apex. No murmur is detected.

Respiratory System.

There is a short and very infrequent cough - no spit. There is a dulness to percussion over the lower part of left lung, both in the posterior and lateral regions. Over this dulness the V.R. and V.F. are greatly diminished and the R.M. is almost, if not quite, absent. The upper part of the left lung and the right lung are clear to percussion. The R.M. is not enfeebled, the expiratory murmur is prolonged and there is a short but constant cooing râle. Resps. 28.

Digestive System.

The tongue is rather dirty, appetite fair, bowels active. There is no sickness or vomiting.

Abdomen.

Is full. When the patient lies down there is tympany round the umbilicus and dulness in the flanks. When he sits up the dulness in the hypogastrium rises higher towards the umbilicus and the gastric crescent is more distinct. The lower/

lower edge of the liver can be easily palpated. The upper border of the dulness commences at the sixth rib. The measurement in the nipple line is five inches. The spleen is not palpable.

Genito Urinary System.

Patient has been passing less urine lately - that is - before admission. Urine dark amber. Slight deposit. Sp. G. 1031 acid, albumen in quantity. No sugar or blood. Hyaline casts present and some epithelium.

2nd. July.

Dr. A. aspirated 75 oz. of fluid (blood stained serum) from left chest. This gave patient much relief. The left border of the heart can now be made out. The apex beat is in the fifth interspace within the nipple line. The patient is on both diuretin and digitalis. The urine today measured 76 oz. The temperature is sub-normal.

3rd. July.

Patient slept all night, lying nearly in the horizontal position. Temperature 99°. Urine 246 oz. The oedema of legs is very much reduced. Friction is heard below the angle of left scapula.

27th. July.

Since last note patient has been improving steadily. The temperature has been normal or sub-normal except in two occasions/

occasions, but it has not been higher than 99.4°. There has been no reaccumulation of fluid in the chest, which is clear almost to the base. The friction sound is still heard below the angle of the left scapula, but is not loud. No oedema of legs. Pulse tracings since 25th. July show a marked improvement as compared to those taken on admission. The heart's action is, however, still irregular. There is a diastolic murmur heard at the apex. The face is rather red, but this is due to a desquamation which is present over most of the body, but particularly the legs and face. To-day temperature is 97.6, pulse 68, respiration 16.

2nd. August.

Patient left for the "Home". His general condition is as before noted, and he is feeling well and walked quite briskly.

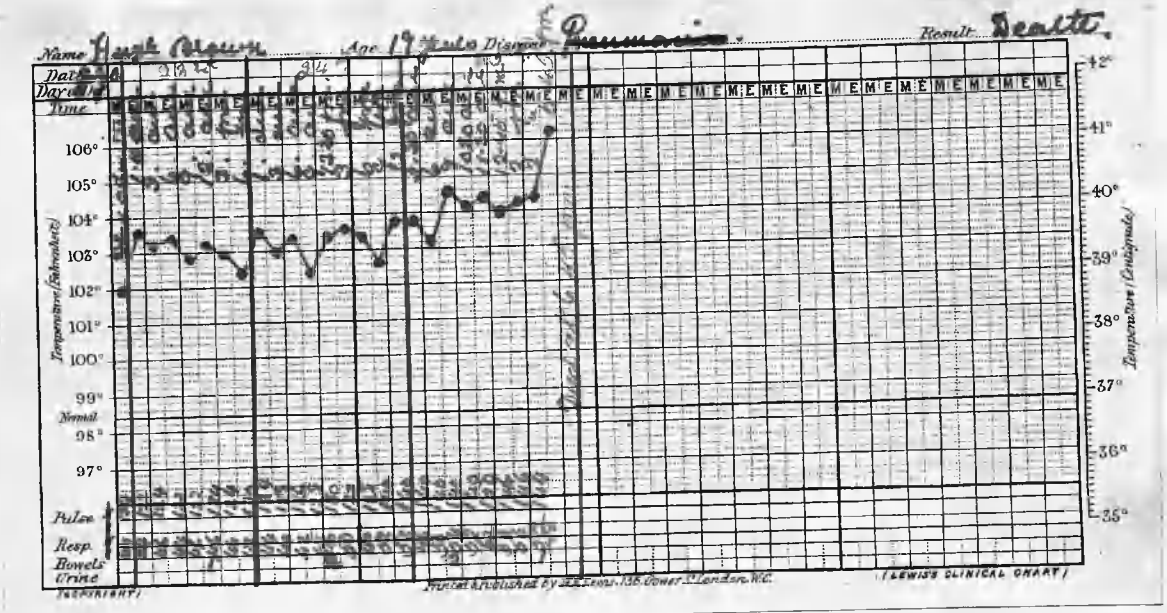
NOTE:-

This is another example of the unsuspected accumulation of fluid. The patient suffered from cough and breathlessness, and the only approach to pain was the discomfort caused perhaps by the mass of the fluid itself. The history suggests that a hydrothorax had occurred, but the character of the fluid indicated that it was inflammatory in nature. Furthermore, there was the presence of the friction sound. After the aspiration the patient passed large quantities

of/

of urine, as much as 246 oz. on one day, thereafter in decreasing amounts for five days till 57 oz. was reached. The patient was seen a month later, when Dr. M. said that the murmur was not diastolic but presystolic.

Case No. VIII.



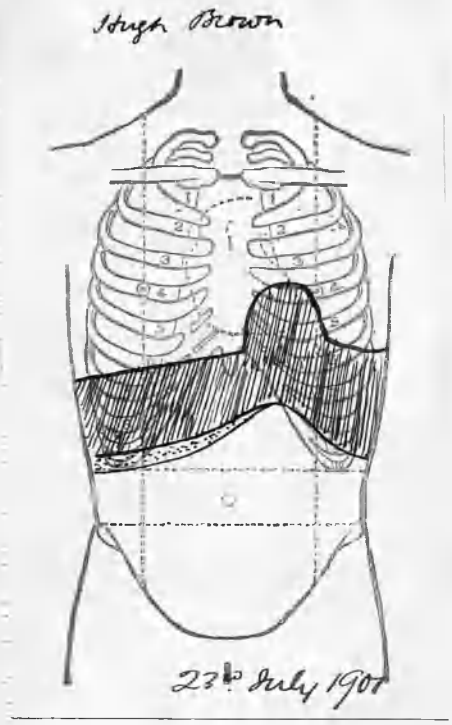
HUGH BROWN. Aet: 19. Coal Miner.

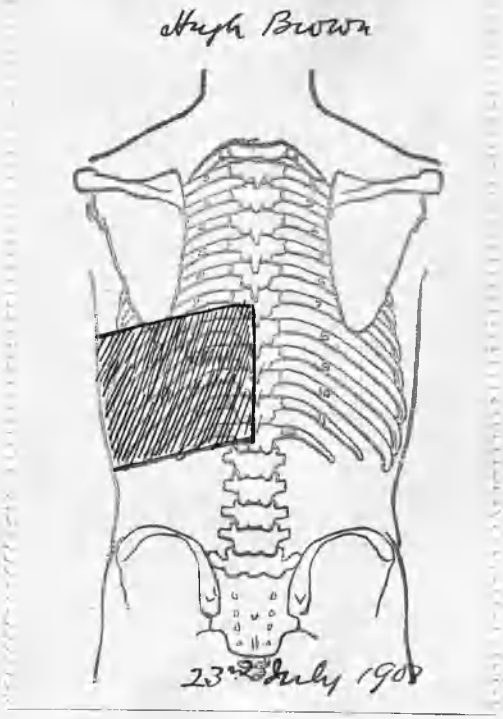
Admitted 22nd. July, 1901.

Brought in as suffering from pneumonia.

Present Illness.

Last Thursday, 18th. July, patient complained of pain in the left side when he attempted to rise from bed. His father says that he appeared to be quite well on the previous evening, and he made no complaint. The pain in the side was so severe that patient could not arise, and he has been in bed/.





bed up to admission to hospital. On Saturday night (20th. July) he be came delirious, and he was extremely so on the following evening. He was brought to the Infirmary on Monday. He had a slight cough, but no sputum. He had no vomiting or diarrhoea.

Previous Health.

Fairly good. Two years ago he had some slight affection of the lungs.

Family History.

Father healthy. Mother dead, cause unknown. His seven brothers are alive and well. One is deaf from inflammation of/

of the brain.

Social Position.

Patient is a coal miner, and works in damp and draughty places. He is unmarried.

Present Condition.

Patient is delirious and was so on admission. The face is flushed. The conjunctivae are clear and bright: the pupils are dilated. The skin is very hot and dry. The cheeks and lips have a distinct purplish tint. The alae nasi move in respiration. The sterno-mastoids are somewhat contracted. Temperature on admission 102.2°.

Respiratory System.

Respiration 44 per minute. Respiration-pulse-ratio about 1 to 3. Breathing shallow. Chest well developed. There is little difference in the movements of the two sides. In front there is a clear note obtained over right side, but over the left the note is of a dull tympanitic quality. The R.M. is loud and harsh, particularly on the right. Behind the right side is clear but there is dulness over the lower part of the left lung. The R.M. over this dull area is enfeebled, and is tubular in quality. There are occasionally some moist sounds heard, but no distinct crepitus. Over the right lung the R.M. is harsh, and at the base is

accompanied/

accompanied by small moist rales. The V.R. at the left base may be increased as it is as strong as that on the right. There is an occasional loose cough, but no spit.

Circulatory System.

The pulse is soft, bounding, dicrotic, as seen by the tracings, and rapid; 124 per minute. The apex beat is in the fifth interspace within the nipple line. The cardiac dulness begins at the third interspace and extends transversely from the left sternal margin to the nipple line, but the adjacent pulmonary area is not very clear to percussion. The cardiac action is fairly regular but somewhat feeble. No murmur is heard.

Digestive System.

Tongue moist, tremulous, and covered with white fur and red at the edges.

Abdomen

Appears normal. Hepatic area: dulness begins at the 6th rib and measures 3" in the nipple line, but lower edge of liver can be felt fully 1" further down. Spleen not felt.

Urine.

Dark, acid, S.G.1020, trace of albumen, no sugar, or blood, chlorides not markedly diminished. Micro. a few granular casts.

On the evening of admission (22nd. July) patient became loudly/

loudly delirious and a watchman was obtained. Hyoscine was given gr. 1/75 and patient slept for an hour after. Tempt. during the night rose to 103.6°.

24th. July.

Patient was delirious all day. At noon gr. 1/75 of hyoscine was given hypodermically and he had about an hour's sleep after but not more. At 7.p.m. he received Chloral Syrup ℥ ii with Tr. Digitalis M. V. and hyoscine at 9.30 and 10.30 p.m. gr. 1/75 each time with the result that he dozed from 10.30 to nearly midnight. The tempt. ranged about 103°. The respiration pulse ratio is a little higher than 1 to 3.

25th. July.

Dr. A. This is the eighth day of illness and the signs shew no abatement, in fact patient's condition is more distressing to-day. His tempt. at 9 this morning was 104.6° pulse 140 soft and compressible. Respirations 54: and the lividity of the face is more marked than previously. His delirium is of the low muttering type, the tongue is dry and brown. There is not,nor has been during the illness, any expectoration. The patient only slept an hour last night in spite of the administration of Hyoscine gr 1/75 at 9.30 and 10.30 and of chloral gr 30 at 7 p.m. and 1.30 p.m. There is now marked evidence of pneumonia at both bases, dull percussion/

percussion and highly tubular breathing.

Patient died this evening at 7.45. For some hours before death he kept working himself down off the pillow into the bed so that his back, which was covered with a red blush on admission, began to shew excoriations and had to be treated with soothing ointment. For an hour before death oxygen was almost constantly administered, and two injections of strychnine gr. 1/60 were given, with a mustard leaf over the heart. The urine and faeces were passed in bed. The tempt. before death was 106.2°. P.144. R.48. The body and limbs were rubbed with ice several times during the last 24 hours.

27th. July.

P. M. Left pleural cavity contains a large quantity of milky fluid. The lung is collapsed and it is pushed forwards and upwards. The visceral and parietal layers of the pleura are covered with a thick layer of fibrin. The fibrin is very shaggy and presents a whitish appearance as if it were infiltrated with pus. On section the collapsed lung presents nothing unusual. The right lung is free from adhesions; it is congested and oedematus. Liver, kidney, and spleen congested. Stomach and intestines shew nothing unusual.

NOTE:-

NOTE.-

The differential diagnosis of basal pneumonia and acute pleurisy with effusion is sometimes a matter of difficulty, and it is a proper and helpful thing to introduce an exploring needle when in doubt. In the present case there was no dubiety in the writer's mind, nor in the mind of a more competent observer, that the patient was the subject of pneumonia and the sectio was an effectual rebuke to overconfidence.

Case No. IX.

(The Chart of this Case was destroyed by accident, and no copy could be obtained.)

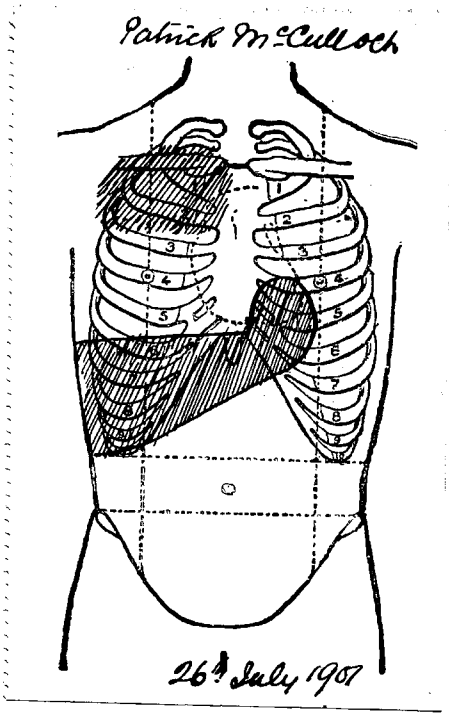
PATRICK MC CULLOCH. Aet. 16.

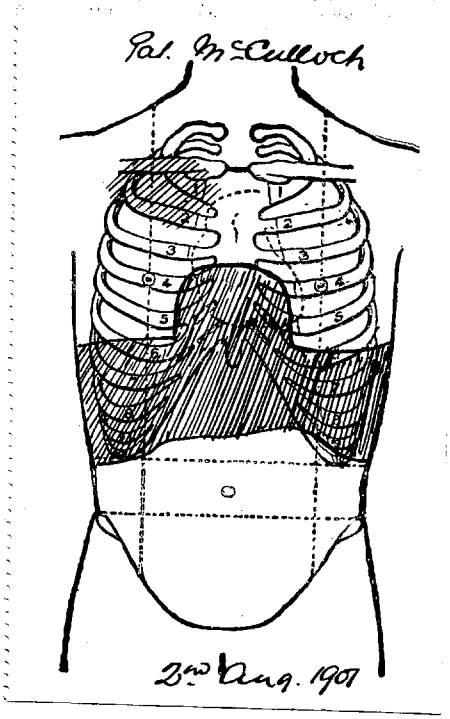
Admitted 24th. July, 1901.

Complains of pain and cough - pain in left side below the heart.

Present illness.

Began on Sunday morning (21st. July) with pains in the chest, and hacking cough which made the pain worse. He says that he did not vomit or suffer from diarrhoea. This is as much as can be made out; patient's mind is wandering at/.





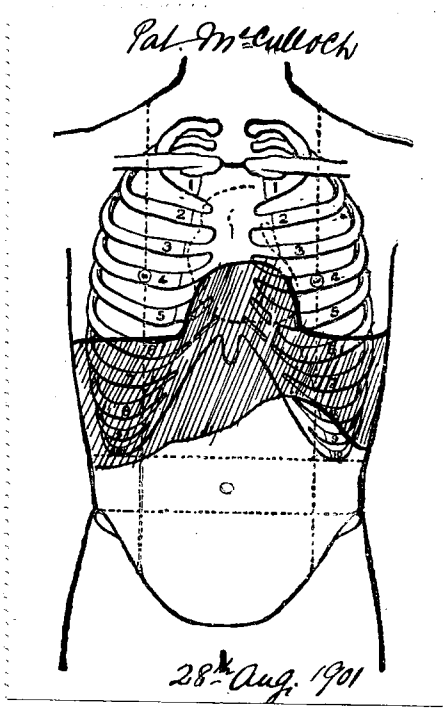
at times.

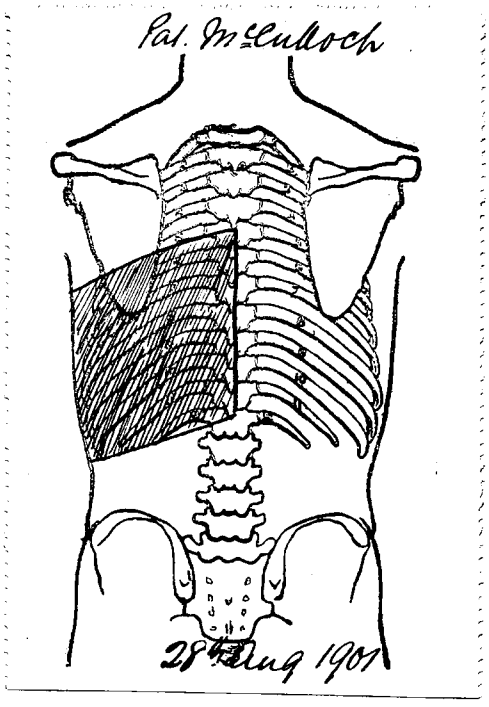
Present Condition.

Patient is a thin, poorly nourished lad. The mucous membranes are not anaemic. The pupils are moderately dilated but cannot be tested. The cheeks are flushed. The patient lies constantly on his right side. He is rapidly becoming delirious. There is no herpes, but some slight marks at corners of mouth suggest that herpes had been present. The alae-nasi move in respiration. The skin is hot and dry. Temperature on admission 103.4°.

Respiratory System.

Respirations 48 per minute. The lungs are clear to percussion/

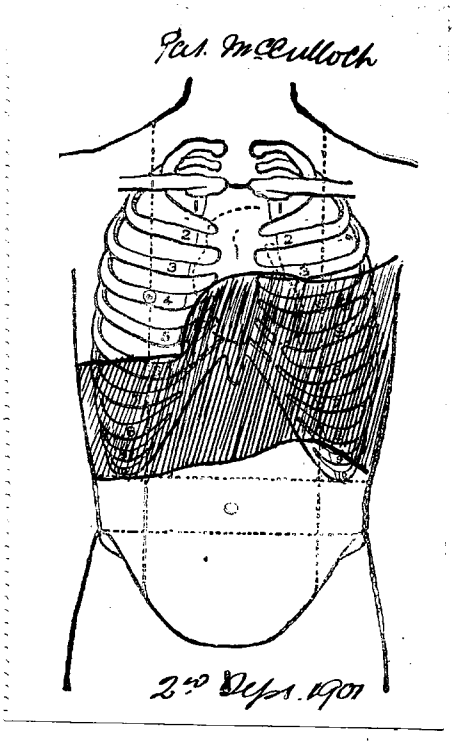


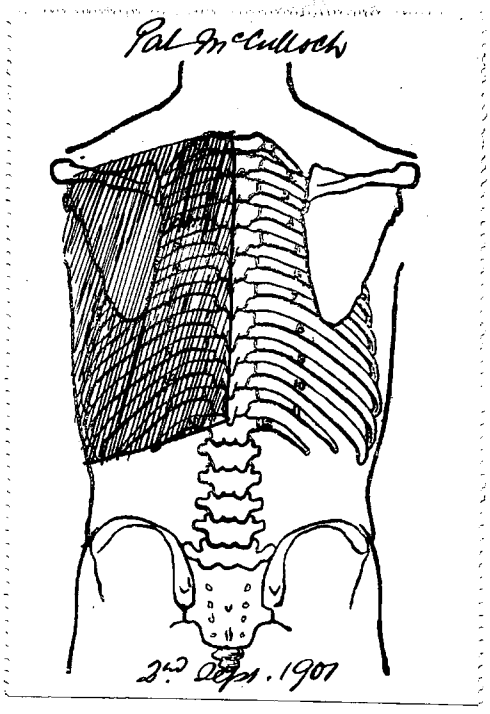


percussion, except at the right apex in front where a dull tympanitic note is elicited. There is some fulness in this region. The R.M. is here distinctly tubular. At the apex behind very small moist rales are heard with inspiration and expiration. At the inner side of right scapula the breathing is unduly tubular and the V.R. is increased, at both bases somewhat coarse moist sounds are heard. Cardiac sounds appear to be free from murmur. The pulse is soft dicrotic and rapid and numbers 120 per minute.

Patient's father gives following history:-

Patient went to bed on Saturday quite well apparently. On Sunday/





Sunday morning when he awoke he was sick, but did not vomit. He had a pain in his left side, which was so severe that he could hardly draw breath, and he could not rise from bed. He shivered a good deal and perspired heavily. He had a short cough but no spit. There was no diarrhoea and he had lost his appetite. On Sunday night he became delirious - has been so more or less since.

Previous Health.

He had measles and scarlet fever, but never had this trouble before.

Family/

Family History.

Father and mother alive and well. Of the family six died in infancy; three are living and healthy.

25th. July.

Patient is still in muttering delirium. Tempt. has been as high as 103.8 with pulse 108 and respirations 50 per minute. He perspired a good deal - Digitalis M. V. and Syr. chloral ℥ 2 were given with some effect.

26th. July.

The right apex is now dull. There is a good deal of moist râle in the right lung with something like friction at a point outside the right nipple. Patient is sensible and complains of pain in lower part of left side of chest. Linseed poultices were applied. Temp. 102.8°. He perspires freely to-night. There was a small quantity of expectoration yesterday blood stained and gelatinous. It is more copious to-day.

27th. July.

The right apex is hardly so dull this morning. The breathing is tubular with fine moist sounds on inspiration and expiration. The coarse sounds near the right nipple seems to be intrapulmonary. Patient is still sensible. The pulse has lost its hyperdicrotism but is slightly intermittent. Strych. gr. 1/60 was given to-day at 9 p.m. The sputum is not/

not increased in quantity. There is a small area of dulness below the right nipple. Urine contains faint haze of albumen and chlorides are distinctly diminished.

28th. July.

Patient appears slightly improved to-day, and pulse is a little stronger, but towards night it was deemed advisable to repeat strychnine injection.

29th. July.

Patient is still free from delirium, but the improvement of yesterday is not maintained. The right side of the chest is full of moist râles. Strych. inject. gr. 1/60 ordered three times daily with once during the night. Face is not so flushed, and the patient appears less distressed. Every day that he was sensible he complained of great pain in the left side - it is present to-day. The highest temp. to-day was 101.8°, P. 122, R. 48. Quin. Sulphr. gr. X which brought about a profuse perspiration, with a fall of temp. Patient is sensible. Râles are heard over the whole of the right lung. The pulse is stronger to-day, but still of low tension.

2nd. August.

Yesterday the temp. was at normal, but rose to 101.6 in the afternoon. Patient is flushed as before and there is some increase in the breathing. He takes nourishment well, and/

and expresses himself as feeling better, but that the cough troubles him. The lowest temp. this morning was 98°. In the last few days the chart shews evening rises with morning remissions. There is faint dulness at the right apex. Cardiac dulness at the level of the fourth rib, and it extends transversely from a line 2" to the right of middle line to a line ½" within left nipple line, transverse measurement is 5½". The Hepatic dulness begins at sixth rib and measures 5" in nipple line. Dulness extend across abdomen at a distance of 1¾" above the umbilicus. The coarse moist sounds are well heard over the right lung and moist rales are heard over left side also. Pulse is of low tension.

3rd. August.

The sounds in the chest are unabated at the left apex, "clicking" rales are heard. Below right nipple there is a return of the dry superficial harsh sound, which was thought to be friction. The R.M. at right apex is still tubular and is accompanied by moist clicking sounds of previous days. Breathing at left apex is not tubular. At times there is faint clicking and some wheezing. The cardiac dulness now measures 4" across being only 1½" to the right of the middle line and 1" from the left nipple line. The hepatic dulness

does/

does not continue across the abdomen. It measures 5" in the middle and 5" in the right nipple line.

5th. August.

In the right nipple line the dulness measures 6¾" and in the left nipple line 5½". Cardiac dulness measures 6" across at the fifth costal cartilage.

10th. August.

Sputum examined: T. B. not found.

28th. August.

To-day DR. Middleton inserted a needle into the left side a little below and inside the scapula angle and withdrew pus. Under the microscope the pus cells are seen to be undergoing fatty degeneration.

2nd. September.

Dr. M. Without any note having been made there has been growing up in this case a considerable amount of evidence of large pleural effusion; on the left side, according to the diagrams, there has probably been pleural effusion there since the beginning of August. The evidence of this was so marked on the 28th. that Dr. M. introduced a needle and found pus. Since that date the dulness in the left back has increased to such an extent as to involve the whole of that side when he is in a sitting posture. When he is lying on

his/

his back there is no dulness on the left front higher than the third intercostal space below which the whole of the side is dull with exception of a well marked gastric crescent. The left side is flattened as compared with the right and moves very little on respiration, but there is no bulging of the intercostal spaces. No oedema of the wall and no tenderness on pressure. The cardiac dulness seems to be displaced to the right of the right border of the sternum. The R. M. on the left side is nowhere absent, but is everywhere enfeebled as compared with that of the right. All over the left side râles are heard of a crepitant type, Smaller towards the base than towards the apex, and in the lateral region suggestive of excavation. The boy is greatly emaciated and very pallid. His cough is not extremely troublesome and his spit is not very abundant. It consists of much purulent material, and on the one occasion when it was examined it did not contain tubercle bacilli.

2nd. September.

Dr. Mc Gregor saw the patient a few days ago, and said that he was willing to operate on the empyema, but the boy's parents would not hear of this and took the boy away.

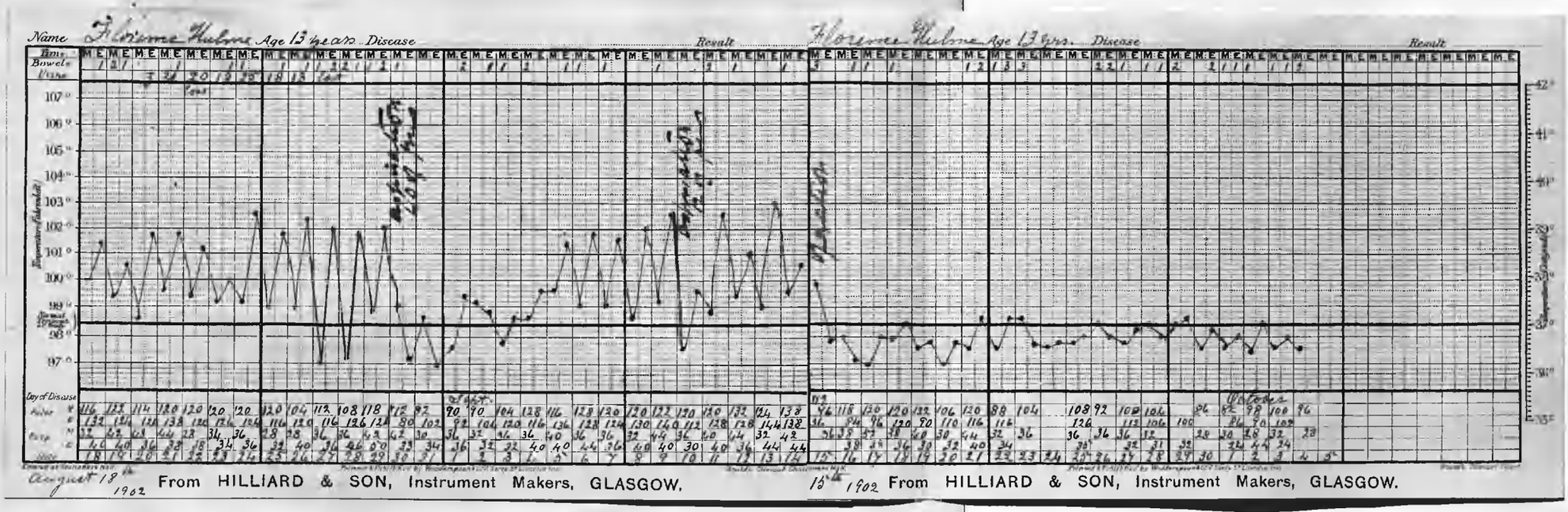
NOTE.

While observations were being regularly made at the right apex, an effusion was growing up at the left base. Its presence/

presence was revealed by percussion dulness, but I was hardly prepared for empyema, as the daily oscillations of the temperature was regarded as due to tubercular mischief.

Empyema is now regarded as one of the sequelae of pneumonia, but in this case it was on the other side of the chest altogether. In this case the empyema was probably tuberculous in origin. Oedema of the chest wall and tenderness on pressure are two of the signs of empyema but they were both absent in this case.

Case No. X.



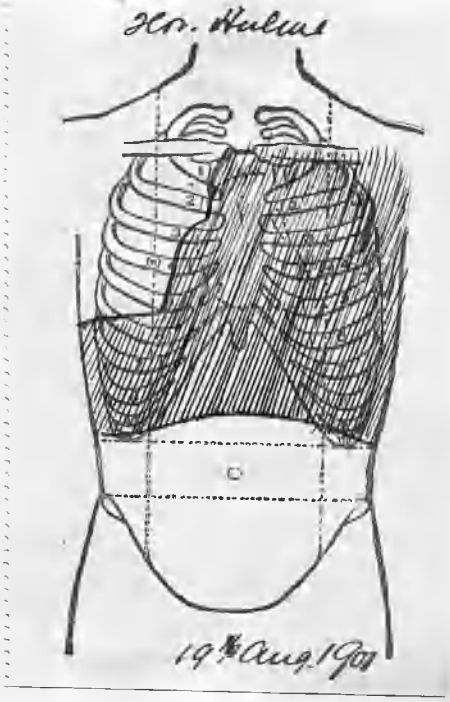
FLORENCE HULME. Aet. 13. Schoolgirl.

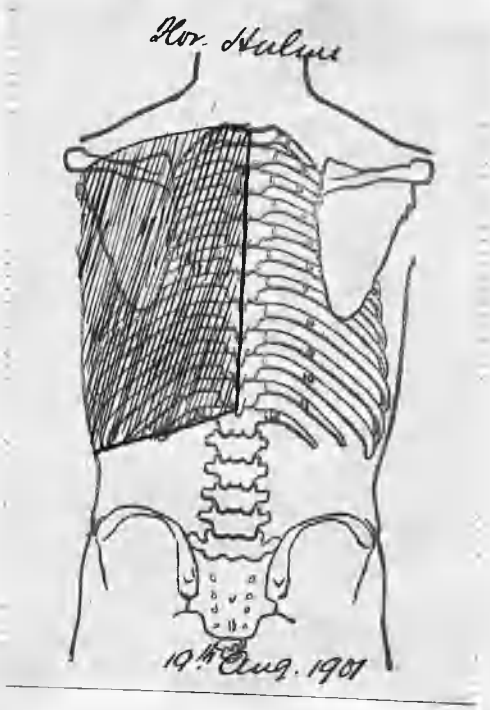
Admitted 18th. August, 1901.

Complaint: Pain in the left side and shortness of breath of six days duration.

Present illness.

On Friday the 9th. inst. patient was sick and confined to bed. On the Monday following there developed a severe sharp shooting pain in the left side in the infraaxillary region, with headache, sickness and vomiting. She felt cold/

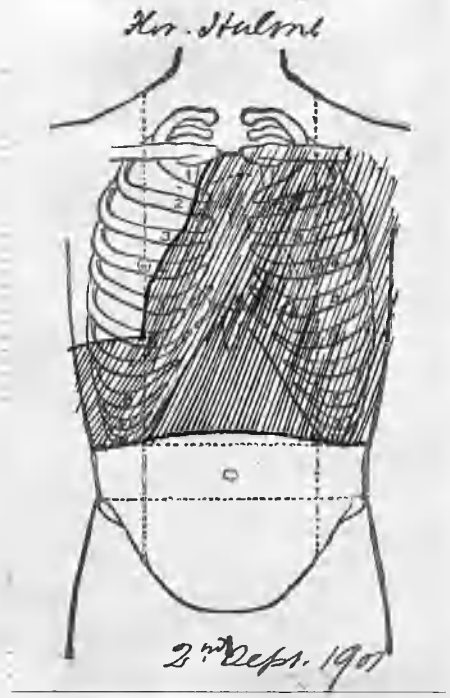


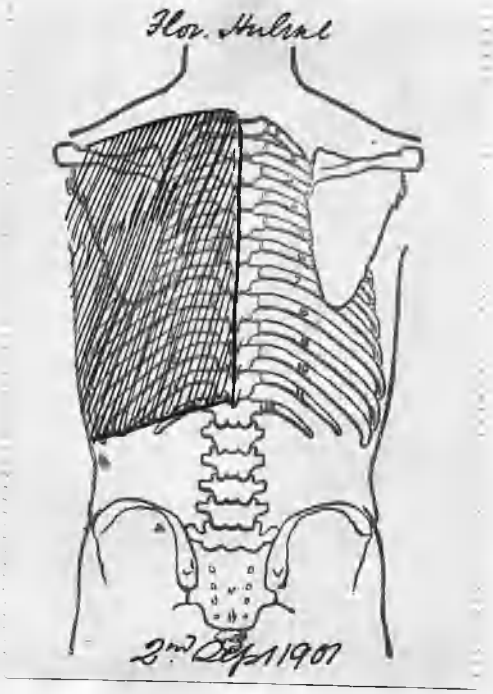


cold and shivered a good deal just when the pain commenced.

The pain was of a very severe sharp stabbing character, and was greatly increased on breathing deeply, or on coughing. The pain continued about the same until two days ago when it gradually abated until it was almost gone, but breathlessness became more marked.

Patient has never been a very robust girl. She has been troubled with a cough since the age of six, and this cough is always worse in the winter time. It is associated with a spit consisting mainly of mucus. She has had two attacks/





attacks of inflammation of the lungs, the last one six years ago, the time of the first attack she is not very sure about. She does not sweat at night, and has not lost anything in weight recently.

Family History.

Fairly good.

Present Condition.

Patient's face is flushed, especially over the malar regions, the eyes are bright, pupils dilated equal and active. The tongue is covered down the centre with a light brown fur, round the edges and at the lips the papillae are injected/.

injected and somewhat prominent. There is some congestion of the fauces, but little or no pain in swallowing.

The breathing is hurried, 32 per minute, the pulse 116, somewhat feeble. Patient shows no tendency to lie on the affected side. (To-day, the 19th., she lies on the left side). On examination of the chest movement is seen and felt to be almost in abeyance on the left side. On percussion of the chest on the left side a dull note is obtained all over both below and behind. This dull area transgresses the middle line at the level of the nipple by $1\frac{3}{4}$" and displaces the gastric crescent: Vocal Resonance is rather increased and has an aegophonic character along the border of the left scapula, while Vocal Fremitus is practically lost.

The R. M. over the upper lobe, especially behind, tends to be tubular but distant, while over the base and lateral regions it is markedly enfeebled. The note on the right side is clear, but the R.M. is very harsh and associated with a good deal of wheezing and mucous râles. The liver dulness begins at the line of the sixth rib above and is bounded by the costal arch below.

The precordial area cannot be marked out from the rest of the dull area on the left side. The apex beat is felt in the fifth interspace about 1" to the right of the nipple line. The action of the heart is rapid, 116, the sounds are/

are somewhat feeble but appear to be free from murmur.

The urine is dark amber in colour, acid in reaction, S.G.1024 contains a slight amount of albumen but no sugar or blood.

Over the cavicles and lower part of the neck and on the back a very fine papular red rash is seen. It is not confluent anywhere, and is absent from the face, abdomen, legs and arms.

19th. August.

Dr. M. states that the rash consists mainly of sudamina.

23rd. August.

This morning patient was again examined by Dr. M. There is some increase in the dull area; towards the right side the right border at the level of the nipples being now situated 2¼" to the right of midsternum and at the level of the second rib 1¼" to right.

Breathlessness has, however, increased though patient sleeps fairly well at night. Cough is not very troublesome.

28th. August.

Patient was to-day transferred to ward XV.

30th. August.

Operation. 40 oz of semipurulent fluid were aspirated.

2nd. September.

Patient transferred to ward VI. Dr. M. examined her and found the dulness as in opposite diagrams.

8th/

8th. September.

Dr. M. inserted the trocar and canula and drew off a very little blood stained pus.

10th. September.

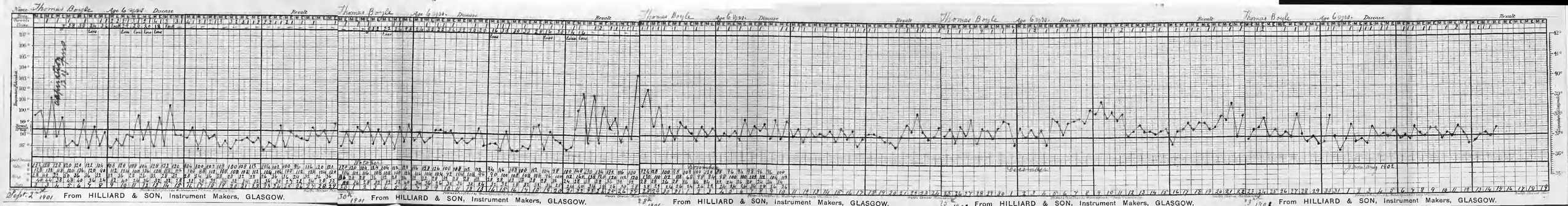
Dr. Dewar aspirated the left pleura and drew off 12 oz of pus.

Patient was again transferred to ward XV where on the 15th. September operation was performed and the pus evacuated She was dismissed well on the 4th. October.

NOTE.

This case in common with those occurring in childhood was probably purulent almost from the beginning, if we can take the shivering fits of 12th. August as signs. The V.R. was increased at the upper border of the dull area, and had an element of aegophony. The temperatures were distinctly pyaemic and were markedly influenced for good by medical treatment.

Case No. XI.



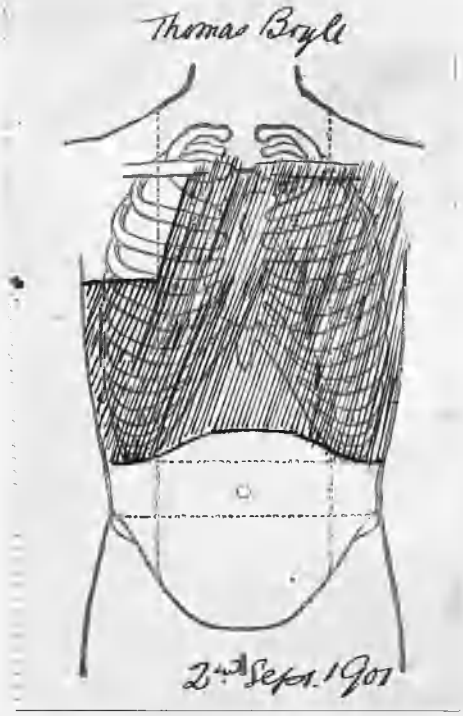
THOMAS BOYLE. Aet: 6

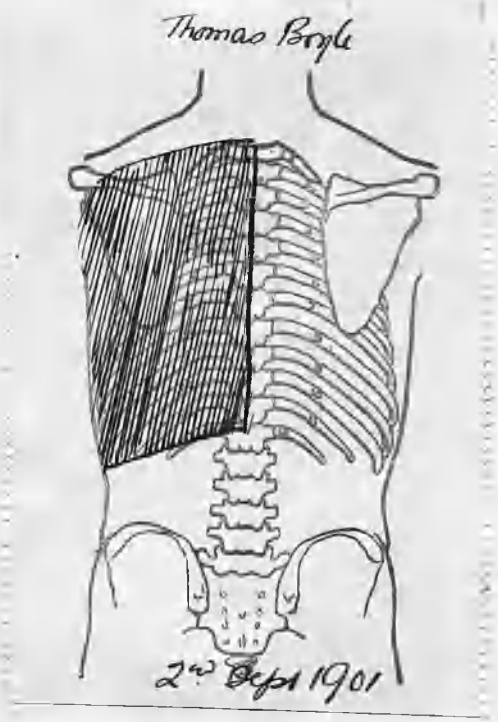
Admitted 2nd. Sept. 1901.

Brought in as suffering from general weakness and cough.

Present Illness.

Patient took ill 7 weeks ago with pneumonia at the left base. He was ill for about a month and he has never recovered his health since. He has become very thin and weak and never moves about without a good deal of coaxing; he was disinclined for play. He complained of headache, of pain in the left shoulder and sometimes of pain in the calves. He was free from cough for a while after





after the pneumonia was cured but lately the cough has begun again. He vomited a little at one time but it was after taking a quinine and iron tonic. For the last 3 weeks he has perspired heavily at night.

Previous health.

Never good. Has had bronchitis 3 times and whooping cough. 2½ months ago he had measles, and a week after coming out of hospital he was seized with pneumonia as before mentioned.

Present Condition.

Patient is full in the face but the body is somewhat emaciated. He is very pale. The pupils are equal and normal. The mucous membranes are anaemic. The lips are dry and/

and cracked. The alae nasi move in respiration. There is no swelling or oedema anywhere. The tongue is clean and moist.

Temperature on admission 99·6°.

Respiratory System.

The respiration rate is about 26 per minute. The right side of the chest bulges; while the left side is somewhat flattened at the side. The left side hardly moves in respiration at all. The left intercostal spaces are obliterated. The right side moves freely and the costal spaces are apparent. The patient lies on his left side.
To percussion, the whole of the left side, in front, laterally and behind, gives a dull note, and the dulness extends in the front to 1¾" to the right of the middle line. Over the left side the R.M. is heard in every part but it is distant and is tubular. It is fainter behind than in front. There are a few râles in front, they are more numerous in the lateral region and most numerous at the base. They are moist in character. Over the left back they are most distinctly heard, and are most numerous, with the inspiratory murmur. There is a constant almost clicking râle, with the expiratory murmur, which is very short. The right side is clear to percussion with the exception noted in front. The R.M. is loud and is accompanied by moist râle at the back from the

base/

base nearly to the apex. The V.F. and V.R. were not satisfactorily tested out, but so far as the examination went the V.R. seemed fainter, on the left, but not much. The patient complains of pain on the top of the left shoulder and of tenderness to the right of the sternum and over the left side generally.

Circulatory System.

The pulse rate is 130 per minute. The pulse is regular and not feeble. There is no impulse in any of the left intercostal spaces but there is marked pulsation in the epigastrium and the cardiac sounds are best heard here. No murmur is detected. The pulmonic 2nd. sound is slightly accentuated.

Abdomen: is neither swollen nor retracted.

The hepatic dulness begins in the 6th. interspace and measures 2¼" in the right nipple line. The gastric crescent is abolished, the left epigastrium being dull to percussion.

Urine.

Sherry coloured, acid, S.G. 1025. No albumen sugar or blood. Phosphates on heating. Micro. nothing beyond some epithelial cells and renal cylindroids.

3rd. Sept.

There is some bulging below the left clavicle. The dulness/

dulness extends on the right front to the outside of the nipple (Dr. M.).

4th. Sept.

Dr. Dewar removed 12 oz. of thick pus by means of trocar and canula with the result that the right border of cardiac dulness has receded to the left of the middle line and an absolutely dull note is got mostly in the upper part of the left front. The gastric percussion note is widely distributed over the left side, and even at the left base behind the note is no longer absolutely dull. The seat of tapping was in the lateral region, a needle introduced into the back not drawing off anything save a little blood stained serum. It is inferred that the left lung is adherent behind and this is borne out by the nature of the sounds there both before and after the operation.

24th. Sept.

There is a tympanicity in the note obtained over the lower part of the left chest behind. The empyema is beginning to point at the place where the former puncture was made.

22nd. Oct.

Transferred to-day to surgical ward XV.

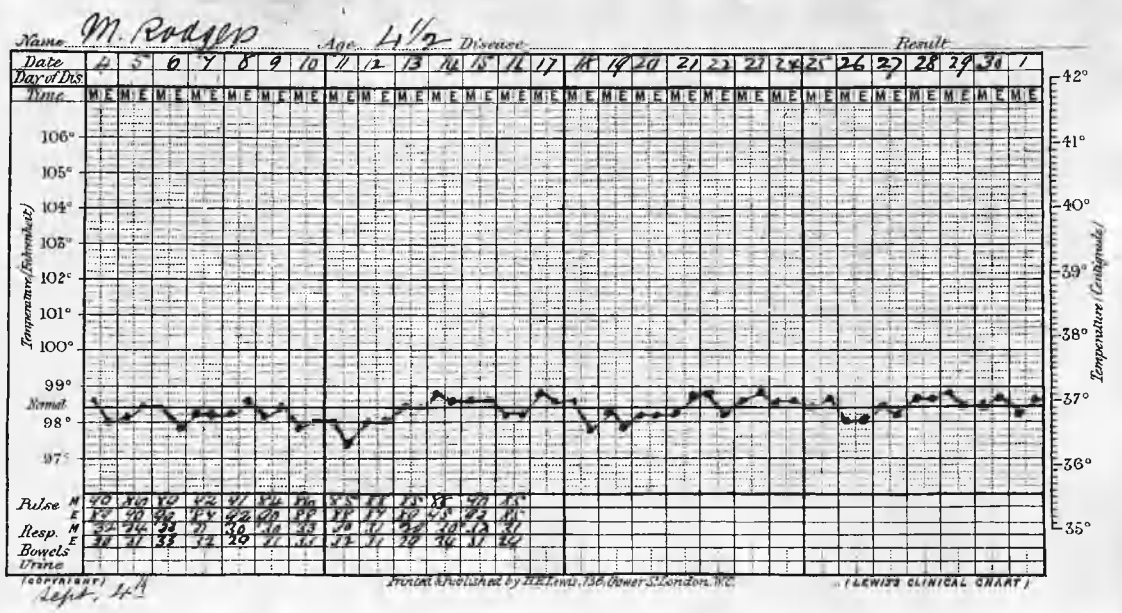
Wound still discharging.

NOTE/

NOTE.

Surgical procedure was successful and he made a protracted and uneventful recovery. This case is in the class of empyema following pneumonia, the empyema being round that part of the lung which had been inflamed. In the former case of this record the empyema was in the opposite pleura, a more deceitful condition. It was notable that the V.R. was not much fainter on the affected side in accordance with what is sometimes found in infantile empyema. The patient's attitude is suggestive; he lay upon the left - the affected - side.

Case No. XII.



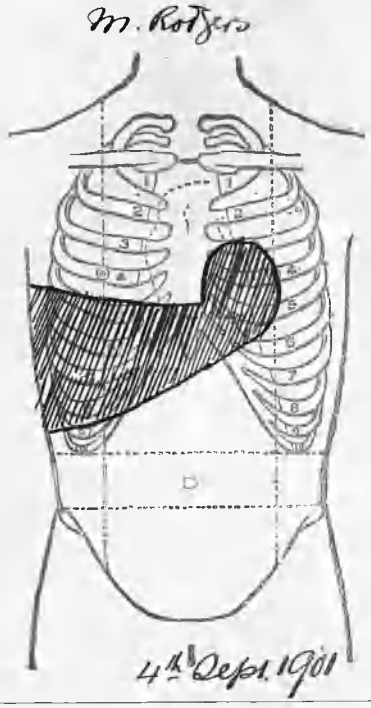
MARGARET RODGERS. Aet. 4½ years.

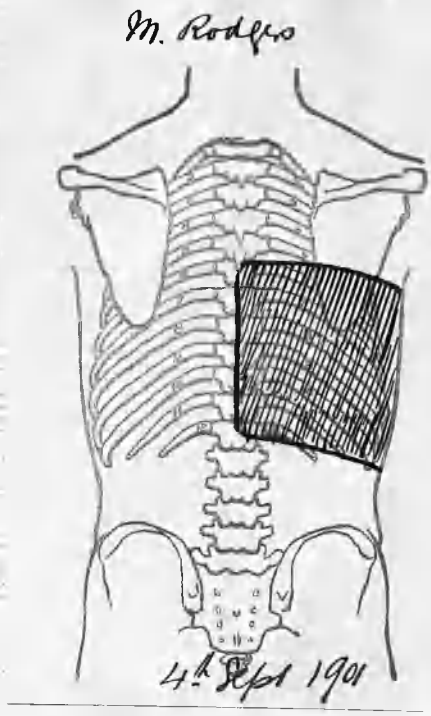
Admitted 4th. Sept. 1901.

Brought in as being subject to cough and weakness,

Present Illness.

Since the month of May patient has been weakly and thin and has had more or less of a cough. A doctor attended her but he did not say to the mother as to the nature of the disease. 3 weeks ago she took measles and was ill about a week. After she had been going about for a few days she began to complain of pain in the lower part of the right side of the chest in front. Dr. Thomas said she had pleurisy. She did not perspire/





perspire much at night and she always slept well. The cough has been frequent and troublesome within the last fortnight and any sputum she had was yellow. Her appetite was very poor.

Previous Health.

Good. Up to last May.

FAMILY HISTORY.

Patient is the second of 4 births. One was stillborn at the 6th. month.

The youngest is delicate, has had bronchitis, "consumption of the bowels" and inflammation of the left lung. The parents are quite healthy.

Present Condition.

Patient/

Patient is pale, and fairly well nourished. She lies equally well on either side. The pupils are equal and normal. The tongue has a faint white coating. The alae nasi do not move in respiration. The skin is dry and somewhat hot. Temperature on admission is 98'6°.

Respiratory System.

The breathing is quiet and unembarrassed. The respiration rate is 32. On inspection the left side is seen to move more than the right in front. Seen from behind the right moves only a very little. The breathing is costo-abdominal. There is a little bulging of the right side laterally, and behind, and the intercostal spaces are hardly apparent. In front the percussion note over the left lung is resonant; over the right it has something of a dully tympanitic quality; below the right nipple a dull area is met which extends laterally with its upper border curving along the 5th. rib. The right back is dull from the lower part of the scapula downwards. The left lung is clear to percussion all over. Over the right front the R. M. is not so loud as that on the left, and it is somewhat tubular. The expiratory murmur is nearly as long as the inspiratory. At the end of inspiration there are occasional small, faintly clicking râles. Over the dull area the R. M. is feeble and tubular, but without râle, at both apices behind a few râles are heard. Over the left lung the R. M. is loud and appears to be free from râles except in the place mentioned. No friction/

friction is heard.

Circulatory System.

The pulse is fairly strong but irregular in rhythm. The apex beat is in the 4th. left interspace just internal to the nipple line. The cardiac dulness begins above in the second left interspace. The right border is ¼" from the left sternal margin. The left border is about ¼" outside the nipple line. The sounds are apparently free from murmur. The cardiac action is irregular. The pulmonic 2nd. sound is accentuated. The pulse rate is about 90 per minute.

Abdomen.

Is clear to percussion except slight dulness in the flanks. In the hepatic area the dulness begins at the 4th. interspace and measures 4" in the nipple line.

Urine.

Pale, acid, 1015, no albumen sugar or blood.

5th. Sept.

Dr. M. There is friction audible above the right nipple.

1st. Oct.

The patient is running about and taking food well and she is well nourished in body. There is no friction heard but intrapulmonary crepitus over the right base.

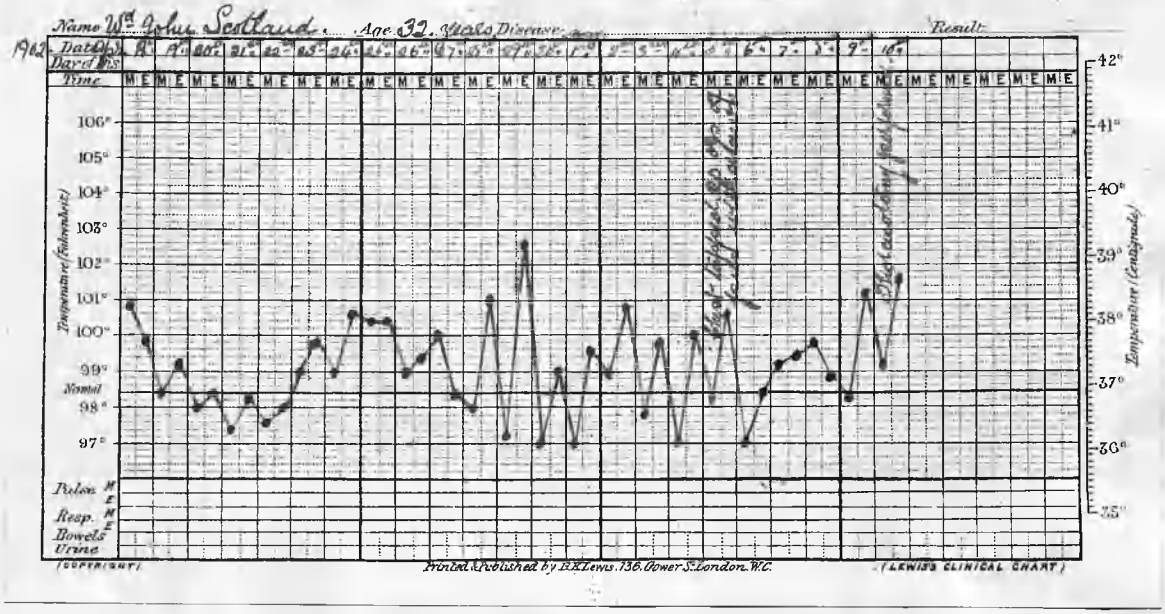
7th. Oct.

Patient was dismissed to-day well.

NOTE Purulent Pleural effusion of certain of the eruptive fever/

fevers is a recognised sequel - particularly scarlet and enteric. This case was one following measles, but the effusion was in the process of absorption when the patient came under observation. The temperature was quite normal while she was in hospital.

Case No. XIII.



MRS. JOHN SCOTLAND. Aet 32.

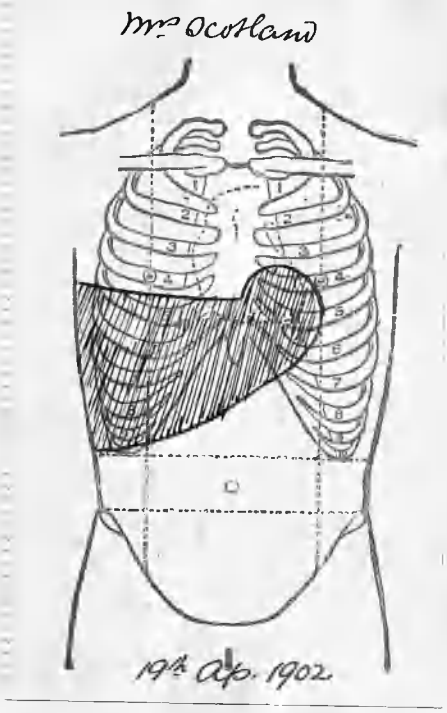
Admitted 18th. April, 1902.

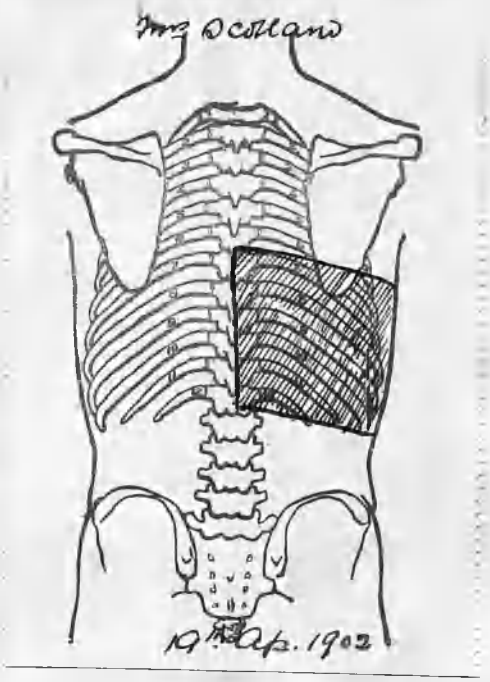
Complains of pain in the right side, cough and weakness.

Present Illness.

About a fortnight ago she had severe pain in the right side of the chest. She shivered a little and was sick, but did not vomit. She had headache and anorexia and the bowels were confined. The pain was aggravated by cough or deep breathing. She perspired heavily and became very weak.

Previous/





Previous Health.

Has always been delicate. Between the ages of 16 and 19 she was troubled with a severe cough and there was occasionally blood in the sputum. From that time she was fairly free from chest complaint until Dec. 1901 when the cough and the bloody expectoration returned. In the beginning of this year she recovered somewhat but in February she felt pains in the right side of the chest.

Family History.

Mother died of consumption; father died of what was perhaps the same disease.

Social/

Social Position.

Patient was married at 22. She had one child. Her husband died of consumption 4 years ago. Since marriage patient has been addicted to alcohol. Latterly she has been a prostitute and has been drinking to excess.

Present Condition.

Patient is thin and anxious looking and appears acutely ill. The pupils are somewhat dilated but react normally. The alae nasi move in respiration. The face and body are covered with perspiration. The tongue is tremulous, is coated with a white fur in the centre and is bright red at the edges. Temperature on admission 100.8°.

Respiratory System.

The breathing is hurried. There is a slight and very frequent cough without sputum. On inspection the right side of the chest is seen to be deficient in movement. The left lung is clear to percussion all over; and the R.M. is everywhere well heard and is free from râles except towards the base where a few small moist ones are found. The percussion note over the upper part of the right lung in front and behind is deficient in resonance but without any tympanitic element in it. The right base and lateral region are quite dull, and the V.F. is diminished. On auscultation the V.R. is slightly enfeebled, the R.M. is faint and is almost obscured by small crepitant rales. In the post axillary line/

line there is a coarse to and fro sound which is regarded as friction.

Circulatory System. The pulse is soft, dicrotic and frequent. The cardiac action is feeble but no murmur is heard. The other organs are normal, the lower border of the liver is not apparently depressed.

Urine.

Pale, acid, sp. gr. 1021 faint trace of albumen, no blood, microscopically epithelium, chlorids not diminished.

24th. April.

The temperature has fallen daily since the day of admission but the patient is still very ill. Today an hypodermic needle was put into the right side and a barrel-ful of blood stained serum was withdrawn. The highest tempt. today is 100. 6^{0}.

5th. May.

Since last note the patient has not improved at all. The tempt. shews evening rises and morning remissions, the maximum and minimum being 102.6° and 97°. The upper edge of the dulness has risen and the back is dull almost to the spine of the scapula and in front to the 3rd. interspace. Today the Dieulafoy Aspirator was introduced into the 7th. interspace in the posterior axillary line and 20 oz. of pus were withdrawn.

10th. May.

Patient was much easier for three days after the aspiration/

aspiration, but examination shews that the fluid has nearly reached its former level. Today thoracotomy was performed and the pus evacuated.

Note.

This patient is not making a good recovery. The effusion may be regarded as a tubercular serous one which became purulent. I have an uncomfortable feeling that the purulence was due to the hypodermic needle for the temperatures rose distinctly a few days after that date, but the necessary antiseptic precautions were taken and one authority says that such an accident very rarely happens. She had a specific family history and her own notorious habits were more than sufficient to foster any phthisical taint she may have received from her husband. At the same time it could not be said that the lungs betrayed any definite signs of tubercular disease. No sputum has been obtainable for examination. At later examinations of the urine the albumen was present only as a trace but one or two pale casts were seen.

In the discussion of the cases, we may consider them in the aspects of diagnosis, prognosis, and treatment.

DIAGNOSIS.

The recognition of pleuritis effusion has been aptly said to depend upon percussion, but we are expected to use corroborative agents in arriving at a correct conclusion.

One of the first symptoms elicited in questioning the patient is weakness. He usually refers to this without suggestion though it is needful to distinguish between bodily weakness and inability to do the usual amount of work without breathlessness. Breathlessness is the first cross which those who perform manual labour are called upon to bear, while those who follow sedentary occupations do certainly complain of languor. With the weakness there is anaemia and the pale wearied faces of the patients with a pleuritic effusion - particularly if it be tubercular - is not readily missed. But it is in the empyema of childhood that the increasing pallor is so evident that it becomes with some physicians a valuable secondary sign. Emaciation, when present, is dependent more upon the cause of the effusion than upon the effusion itself, as in the case of tuberculosis. The wasting was evident in my four cases of tuberculosis. Change in the type of respiration, that is the presence of forced respiration and/

and the degree of its intensity are in direct ratio to the size of the effusion. The nostrils move with each inspiration, the sterno-mastoids stand forth in extreme cases, and the frequency of breathing is markedly increased. Still the breathlessness is not entirely due to the effusion; in the beginning it is occasioned partly by the fever and by the pleuritic pain. But there are cases in which breathlessness is not complained of, as in Case V. The reason probably is that the fluid accumulates slowly.

Pain may persist when the fluid has collected but it frequently disappears or at any rate becomes dulled. This is due to the separation of the pleural layers by the effusion so that the granulations no longer ride one upon another. Often the pain is referred to a point in the abdomen. This occurred in two of the cases. It is not clear that this is due to irritation of the lower dorsal nerves, but it may be so. In one case of empyema, the patient complained of pains in the calves of the legs. In this patient the empyema was on the left side and he had pain to the right of the sternum, probably due to displacement of the heart, but as a rule displacement of organs does not seem to cause pain.

The temperature chart is an interesting study when a complication intervenes but there is often no unnatural record in the course of the illness. In Case I the temperature was practically/

practically normal after the first three days in hospital and examinations shewed that the exudate was gradually disappearing. When the temperature remains high with slight morning remissions, there is reason to suspect that the case is tubercular in nature. Such a temperature is seen in case III; and yet the temperature in this case dropped suddenly and remained down. I have often wondered what connection there might be between the fall of the temperature and the somewhat copious expectoration of pus which took place. There is a difference which is sometimes marked between the fairly high, slightly remitting, temperature of a tubercular effusion and the extremely oscillating record of a purulent one. Of course the oscillations in the temperature of empyema are what we would expect from the presence of pus. In Case VI, the temperature was normal during the decadence of the left effusion but the onset of the right pleurisy was followed by a striking leap in the temperature. It took three weeks to fall to normal. It is evident any influence which a serous effusion has per se on the temperature is by reason of its quantity increasing the tension of the inflammatory processes, for usually the temperature falls after a tapping, as in Case V.

The pulse rate is increased in frequency but not to the proportionate extent of the breathing so that the pulse-respiration ratio is disturbed and the difference is lessened.

In/

In Case I the ratio is about normal but this case was practically convalescent.

The attitude of the patient is sometimes suggestive. When there is much pain the patient usually lies on the affected side to diminish movement of it. When the effusion is large the patient lies, it is said, on the diseased side to secure free play for the other, but though I have looked for this in those cases of large effusion which I have come across, I cannot say that I have been always able to confirm it. In one case the patient most decidedly preferred to lie on his right side; but his liver was enlarged and congested. The patients usually preferred to be propped up a little and this attitude is undoubtedly more likely to give ease.

When we go on to inspection of the chest more positive information is obtained. The affected side shews a degree of immobility and distention in direct proportion to the quantity of the exudate, and the intercostal spaces remain obliterated even when the patient is deeply breathing. A recent observer (Przewalski) has drawn attention to the contraction of the intercostal muscles in the early stage of the effusion and he compares this to the contraction of muscles round arthritic effusions.

In left effusion cardiac pulsation in the epigastrium is the first thing which attracts attention and usually with this/

this there is movement in the spaces to the right of the sternum. The heart is naturally displaced more in left effusion than in right and the diagrams shew this in most of the cases. It is highly improbable that the heart is twisted upon its axis in such displacements; it would be nearer the truth to say that the contents of the anterior mediastinum are pushed bodily across. In right effusions the heart travels only a small distance to the left. The liver is not apparently much affected in position by an effusion above it unless the effusion be very large. It is stated that the liver is depressed by empyema more than by serous enudate owing to the greater gravity of the pus. I have no observations to make on this point beyond the fact that at a later examination of Case XIII - that is before thoracotomy was performed - I got the impression that the liver was not only enlarged but that it was also slightly depressed.

In large effusions there is a faint convexity of the spine to the diseased side; when the effusion is absorbed with the formation of adhesions the once compressed lung does not expand fully and the spine becomes concave to that side with the usual rotation of the vertebrae. This was noticeable in Case III.

By percussion we detect the presence of fluid and delimit the extent of it. To the finger there is a marked resistance of/

of the chest wall over the fluid and, on percussing, the note is toneless. Still there is little difference to be observed between the note over an extensive consolidation of the lung and that over an effusion. The difference is most distinct and valuable when the dulness is small in area. There is a sinuous line traced sometimes by the upper level of the dulness but this was not followed out in the written reports. The Skodaic resonance is not well obtained if there be disease in the upper part of the lung. The resonance may be got in the axilla; it was quite distinct at one period in Case XIII. This resonance in the axilla is sometimes elicited in cases of large pericardiac effusion so that such an effusion may be mistaken for a pleural one.

Vocal fremitus and vocal resonance are diminished to a greater or less degree in the cases. The impairment of them depends upon the condition which prevails in the chest. When the lung is completely surrounded with fluid - as we may suppose was the condition in Case V - few vibrations will reach the chest wall. On the other hand, where the lung has been pressed against the ribs beside the spine, or where adhesions have formed, or when the fluid is thickly purulent, the fremitus and resonance will be more readily appreciated. In Case XIII Bacelli's sign was not obtained though there was a fair quantity of pus present; the whisper was heard equally well on both sides.

Diminution/

Diminution of the breath sounds was a constant feature in all the cases and frequently there was a tubular character of the breath sounds. Friction may be heard when the fluid is withdrawn as in Case VII. The intrapulmonary accompaniments of the vesicular murmur are sometimes helpful to a diagnosis of a tubercular condition in the lung, but I think that those cases in the record which were regarded as tubercular were most likely tubercular pleurisies though in one case - No. III - there was apparently disease also in the lung itself.

None of the effusions was bloody in character. Osler states that tubercular effusions are generally sterile but the enudates, which we withdrew, were not examined bacteriologically. The only case in which the effusion might have been of a non-inflammatory character - or more properly speaking a hydrothorax - is Case VII in which there was evidence of renal and cardiac disease and in which also there was an attack of exfoliative dermatites which is sometimes a complication of Bright's disease; but the fluid contained such a high percentage of albumen that it was apparently inflammatory in origin. A friction sound was heard after the aspiration of the fluid.

In differentiating between acute pleurisy with effusion and pneumonia the exploring syringe is of great value and had it been used in Case VIII the error of diagnosing the latter/

latter instead of the former would not have been made. The needle was used in the other cases and it of course settled the diagnoses of the empyemata at once. I have already referred to the one case in which the exudate was serous in the beginning and became purulent later. The cases of empyema were fairly typical though one indeed might have been overlooked for a time namely Case IX; for the patient was so irritable that it was difficult to examine him. In this case a left basal empyema followed a right apical pneumonia. Still in the beginning there was a certain degree of dulness at the left base. In one other case the empyema followed a pneumonia in the same part, and in another it followed a specific fever - measles . . I believe that in cases of basal dulness persisting in a child for more than seven days with evidences of acute illness one should suspect empyema.

The urine was generally diminished in quantity in the cases of effusion but this is perhaps a result of the fever as well as the result of the loss of fluid into the pleura. In case VII there was an extraordinary amount of urine passed on the day after the aspiration of the fluid; this was in part due to the dirutic treatment but it is difficult to explain how the occasion caused the kidneys to work so excessively.

PROGNOSIS.

We must look to the cause of the effusion before we can guage the issue. There is only one fatal case in the record and it is the case of acute pleurisy with effusion. This is a good enough index that the chance of death is in proportion to the gravity of the symptoms. The tubercular cases went out improved but it is to be feared that, from the conditions of their lives, they are condemned to an existence of deformity and incapacity, and an existence which may not be long. Those cases of effusion which were the remnant of an obsolete inflammation were dismissed practically cured by drugs or aspiration.

The cases of empyema which were operated on were cured. Case XIII may be excepted as the patient, probably on account of her previous dissipated life, is making very slow progress. Empyema when left to itself has naturally a very grave outlook but its surgical treatment, which has been practised since the days of Hippocrates, has a most hopeful prognosis. Even when an external opening is established life may be maintained for many years. The longest case which I have seen is that of a boy whose fistula has existed for nearly two years.

The effusions arising from tuberculosis, whether primary tuberculosis of the pleura or pleural necrosis following pulmonary tuberculosis, are the most serious. None of the record/

record cases was fatal, but the future was not hopeful. One -Case II- was seen a month after dismissal and, though he was not worse, he certainly was not appreciably better. Extending pulmonary tuberculosis or miliary tuberculosis usually ends the scene. In none of the cases was there involvement of the pericardium.

TREATMENT.

This was so uniform that it can be discussed in one place. Diuretics were given and the urine was measured daily. The action of the diuretics is obviously to deplete the blood so that while the volume of the exudate may not be diminished, its increase is certainly hindered. Strychnine and alcohol were given in the more acute cases to sustain the heart, and in the chronic cases pain and restlessness were controlled by hypodermic injections of morphia. Digitalis was also used as a cardiac tonic either in mixture or alone. Hyoscine was used hypodermically in one case - No. VIII - but my experience of this drug is that it is too much of a depressant to be safe.

A direct attack on the effusion must always be considered. In the London Hospitals the operation of tapping the chest is looked upon as exclusively surgical, but in Scotland it is regarded as within the province of the physician and rightly so. The trocar and canula are more suitable than the hollow needle. The needle is apt to injure the lung as the latter expand, and it is also liable to become clogged and cannot then be cleaned without giving further pain to the patient. The usual indication for the use of the trocar is when the fluid has reached the level of the third rib in front but one would not wait for this if there was much distress in breathing. The effusions which were drawn off were tapped in/

in the usual place - the 7th. or 8th. intercostal space in the posterior axillary line. The first puncture does not always succeed and the failure may be due to the needle or canula becoming blocked, or to the passage of the instrument into an organised septum or into an adherent lung itself. No misadventure occurred during any of the tappings; but such a thing has always to be kept in view as a possibility. Stimulant should be at hand and it is well to have a nurse watching the pulse. The cough is distressing sometimes but is not alarming.

Small effusions may be treated with diuretics and the external application of iodine. The first case is one of this kind and it would probably have had as good a recovery without any drugs at all. It is unfortunate that such an easy convalescence is not more common.

The results of the removal of the fluid are first,- the patient loses the feeling of distress and breathes with comparative comfort; second, there is generally a fall in the temperature, which is naturally more marked in empyema; third, there is usually an increase in the excretion of the urine. I have already referred to the two last points. With regard to the first the absence of the fluid permits the collapsed lung to acquire its former bulk if it be not permanently impaired, and the displaced organs to resume their proper location. I think it would be helpful when the patient/

patient is in the fairway of recovery to direct him in breathing exercise and gentle physical drill to promote fuller expansion of the weak lung. This is being done in Case XIII, and I hope that the result will prove beneficial.

The effectual treatment of empyema lies in the hands of the surgeon. In two cases, Nos. X. and XIII, the pus was aspirated but in both the relief was only temporary and they had to go to the operating table. So when we meet with a case of pleural effusion which by a consideration of its history of rigors, sweats, and characteristic temperature we believe to be purulent, and when we have confirmed that belief by the use of the exploring needle, it is imperative that we should recommend the case for surgical treatment.