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TUBERCULAR BRONCHIAL GLANDS.

Their Diagnosis and Treatment in relation to
Pulmonary Tuberculosis.

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Many cases present themselves at hospital showing signs of early pulmonary tuberculosis, which upon investigation appear to be the result of pressure on the lungs by enlarged bronchial glands.

Some years ago, Percy Kidd drew attention to this occurrence but did not suggest any specific treatment.

In view of the fact that hospitals for tuberculosis refuse - so far as possible - all cases so far advanced that there is little hope of permanent arrest, it is most important to discriminate between early and advanced stages of the disease.

It is the object of this thesis to discuss certain cases which at first sight appear far more advanced than is really the case, but in which the symptoms are misleading and apparently inconsistent, and to submit the theory that certain patients who appear to show signs of established pulmonary tuberculosis and who would be classed as fairly advanced cases, may in reality be suffering from enlarged bronchial glands, yielding very satisfactorily to treatment.

(1) Text Book of Medical Practice. Ed. Bain - 1904.

This is based on a number of cases in the Brompton Hospital for Consumption and Diseases of the Chest and at a Tuberculosis Dispensary, of which ⁽¹⁾ six hospital cases have been appended in illustration.

It will be noted that the patients are all children or young persons and this point is important -

- (1) because tuberculosis in children has a much greater tendency to become widespread than in adults;
- (2) because there is far greater hope of complete arrest while the trouble is still confined to the lymphatic system;
- (3) because if there be any truth in Dr. Batty Shaw's ⁽²⁾ contention that development of tuberculosis in later life is more often due to auto-infection than to re-infection from outside sources, it is the more important to arrest the disease in its earliest manifestations.

Methods of Infection.

Tuberculosis in children is regarded by some authorities as a purely lymphatic disease and it is generally agreed that pulmonary tuberculosis is

(1) These cases were under the care of Dr. J.F. Perkins, to whom the writer acted as House Physician from February 1915 to May 1919.

(2) Lecture delivered at Brompton Hospital on Pulmonary and other forms of Tuberculosis. Lancet Jan. 24th 1920.

rarely seen in patients under the age of puberty. It is also generally conceded that tuberculous infection of the lung is rarely direct - especially in children and young persons, although the access of the bacillus takes place through the respiratory tract in the majority of cases.

(1)

Robert Hutchison states that of 216 children suffering from tuberculosis at the Great Ormond Street Hospital, 63.8% had been infected through the lungs.

What usually happens is that the tubercle bacillus present in the air is caught somewhere in the respiratory tract, trachea, bronchi or air vesicles, and passed by the lymph stream to the bronchial glands. If these be in a healthy condition and there is no strong predisposition to the disease, no developments occur and it is presumed that the bacilli are destroyed by the gland, but if the gland be in an unhealthy condition as a result of bronchitis broncho-pneumonia or any other predisposing cause, the tubercle bacilli multiply and a tubercular condition of the gland is set up. If this condition is allowed to develop, pulmonary tuberculosis may ensue,

(1) Lectures on Diseases of Children.

- (1) As the result of direct ulceration from the diseased gland into a bronchus;
- (2) By a succession of tuberculous deposits radiating outward through the pulmonary tissue;
- (3) By ulceration into a blood vessel and hence the passage of the bacilli into the blood stream;
- (4) By the dispersal of the bacilli into the lymphatic system and hence into the blood stream.

In either of the two last cases, general tuberculosis may be expected to ensue.

The cases under consideration are confined to enlarged bronchial glands giving signs of pulmonary tuberculosis, but it will be seen that in each case this was accompanied by an enlarged condition of other glands - in fact, patients usually presented themselves at hospital for the treatment of enlarged cervical glands. It is not supposed that there is any direct infection between the bronchial and other groups of glands, though Robert Hutchison in referring to the prevalence of dust-infected cases, adds this foot note:-

"This statement (that dust is the main source of infection) will probably require modification, for evidence is accumulating that bacilli which have gained access to the human body by the alimentary canal, may travel up to the bronchial glands and first reveal their presence there."

It is difficult to see how this is possible

until the bacilli have gained access to the blood stream, since the bronchial glands receive their lymph from the lung and pleura only, and although they transmit a certain proportion of it to the superior mediastinal glands - which also receive lymph from the oesophagus - there is no direct connection from the lymphatic system of the alimentary canal to the bronchial glands. Afferent lymphatics of the posterior mediastinal glands drain the liver, but again there is no direct connection between these glands and the bronchial glands.

This statement by Robert Hutchison is interesting, however, in view of the fact that not only did the cases under consideration show enlargement of cervical glands, but in two cases the glands of the groin were also infected. It is only fair however to add that both these cases were of boys and it would not be safe to conclude that the enlargement was directly due to tubercular infection.

The enlargement of the cervical glands is also easily explained on grounds other than direct infection between different groups of glands. The infected dust which led to the infection of the bronchial glands had first to pass through the mouth or nasal pharynx, and as in the case of the

lung, the bacilli may have been passed on to the cervical glands by the lymph stream without directly affecting the tissues by which they were caught. Hence it would not seem unreasonable to conclude that both cervical and bronchial glands had been separately infected from the same source.

In this connection it would be interesting to know whether Dr. Batty Shaw considers that the latent tubercular infection which he suggests is present (1) in all infants, is to be found throughout the system generally, or whether he too considers that in its earliest stages it is confined to the lymphatic system. In his lecture already referred to, he gives no idea of the seat of infection, nor does he suggest methods of primary infection.

Now, since it is generally accepted that in children and young persons the invasion of the lung or of the whole system takes place in the majority of cases through an infected gland, it is of the utmost importance that the disease should be diagnosed and dealt with in its earliest stages, while the effect is still localised.

The problem is therefore a dual one - correct diagnosis must be followed by suitable treatment.

(1) Lancet January 24th 1920.

Diagnosis.

There is considerable difficulty in diagnosing the trouble,

- (1) because such signs as do occur are easily mistaken for those of pulmonary tuberculosis;
- (2) because no noticeable symptoms occur until the condition is fairly well advanced;
- (3) because symptoms and signs usually regarded as typical, are often absent.

To exemplify these statements:-

- (1) The examination of the chest in each case showed dullness to a greater or lesser extent, and variation of breath sounds ranging from harsh inspiration to typical bronchial breathing. Cog-wheel breathing was present in two cases and crepitations in two others. It would not be unnatural therefore to attribute the condition to pulmonary tuberculosis, but the progress of the cases under treatment pointed to the fact that in spite of these 'signs', the disease had not yet attacked the lungs. There was an absence of symptoms usually accompanying pulmonary tuberculosis; the sputum was negative in every case - there was no history of fever and little cough or wasting - in fact patients were often rather above the average in physical development.

Again, it is very rare in cases where there is actual tubercular infection of the lung that such definite signs of dullness and accompanying sounds should clear up so completely, and there appeared to be a definite relation between the reduction in the cervical glands and the disappearance of the chest signs.

- (2) In one case only of the six under consideration, did the patient appear at all seriously ill - whereas in two cases there was an appearance of almost robust health.

Three were sent to hospital for treatment of enlarged cervical glands - there being no suspicion of chest trouble; two had been sent to a tuberculosis dispensary for an opinion on their lungs, and in one only was there any wasting, and this subsequently proved to be due to insufficient nourishment.

This absence of noticeable symptoms is borne out by a remark of Dr. Clive Riviere - speaking at a meeting of the Tuberculosis Society on December 1st 1919⁽¹⁾. He said that "most children had bronchial gland with slight hilus disease, but of these few developed signs or symptoms which demanded treatment".

(1) Lancet. December 13th 1919.

Thus the trouble may be easily overlooked until it assumes an aggravated form.

- (3) The absence of symptoms usually regarded as indicative of enlarged bronchial glands was particularly marked. Cough was not a prominent symptom - it was absent in three cases and only slight in two others of the six. There was no wasting or general illness and D'Espine was observed in one case only.

It has been questioned whether such definite signs as were observed in these cases, could be produced by enlarged bronchial glands. That such signs can be caused by pressure on the lung has been seen in cases of new growth, verified by post mortem examination. Any absolute proof of this hypothesis in the case of enlarged glands however is difficult, owing to the fact that the condition is not of itself fatal and hence immediate post mortem examination impossible, but X Ray examinations supported the theory.

Each case was examined upon admission; two plates gave definite evidence of enlarged mediastinal glands, and hard calcareous (?) hilum shadows were reported in the remaining four.

Unfortunately owing to the restriction in tubes due to war conditions, it was only possible to obtain one X Ray report upon discharge. In this case however the clearing up of the lung was confirmed.

Opponents to the theory contend that to produce such signs as those observed, the bronchial glands must be very considerably enlarged. This is not denied, but an enlargement of the bronchial glands corresponding in proportion to that actually observed in the cervical glands, would exert sufficient pressure to give rise to very definite signs.

In accounting for the signs, there is some difficulty it is true in tracing an exact relation between cause and effect and various hypotheses have been put forward.

It has been suggested that such signs are attributable to:-

- (1) direct pressure on the lung tissue,
- (2) collapse, owing to pressure on a bronchus,
- (3) lymphatic congestion, due to pressure on a lymphatic gland,

and possibly all these conditions are present to some extent.

Since the bronchial glands are embedded in the root and substance of the lung along the bronchi, their enlargement might exert considerable pressure on the actual lung tissue, especially toward the apex where the area is much more confined, and it was in this region that dullness appears to have commenced and where it was most apparent. Such extensive dullness as noted in Cases 1 and 2 however could scarcely be attributed to this cause alone.

It is not difficult to imagine that an enlarged gland might exert sufficient pressure on a bronchus to produce a certain degree of collapse, but the signs were scarcely consonant with this theory. In cases of collapse breath sounds disappear, whereas in all those under consideration such sounds were a prominent sign.

Congestion however seems a more reasonable hypothesis. Since the blood vessels and lymphatics lie embedded in the walls of the bronchi, the enlargement of glands situated along the bronchi would naturally produce pressure on these vessels and set up a certain degree of congestion, which would disappear on the removal of the pressure. With congestion, a certain amount of exudation is expected and it will be noted that in the two cases

in which the dullness was most extensive, crepitations were observed.

Whatever be the explanation of the signs however, the result of experience tends to show that given the following conditions, a diagnosis of enlarged bronchial glands may not unreasonably be made.

Such conditions are -

- (1) Enlargement of superficial glands, particularly cervical.
- (2) Signs suggesting early pulmonary tuberculosis.
- (3) Hilar shadows on X Ray examination.
- (4) No history of fever or wasting.
- (5) A negative sputum.;

the diagnosis being the more probable if the patient is a child or young person.

Treatment.

Since the glands are regarded as the first line of defence in resisting the invasion of harmful organisms, the natural line of treatment would be to strengthen ^{this} ~~their~~ defence.

This is done by the injection of tuberculin B.E. the object of which is to raise the resistance.

It has been noted that when tubercular infection is first introduced to a race which has hitherto been free from the disease, the mortality is far greater

than in a race in which tuberculosis has long been present. One concludes therefore that the constant subjection to infection begets a certain degree of immunity, that is, the regular introduction of the bacillus into the system in small quantities tends to raise the ^{Opsonic Index} ~~resistance~~ and a considerable power of ~~resistance~~ is developed.

The technique employed was as follows:-

An injection was given sub-cutaneously at intervals of one week and the first dose was experimental in character, being very small so as to prevent any untoward symptoms. This however was rapidly increased until some definite reaction was obtained. From this point onward, increasing doses were given, with the object that each fresh injection should produce some reaction, such as a slight rise in temperature. If however the reaction at any point in the ascending scale of doses was marked, the dose was repeated the following week, and if very marked reaction was shown a smaller dose was given.

It was found that there was considerable variation in the amount which could be given. Thus in Case I the dose was raised from $\cdot 000005$ ^{mgm.} on July 14th to $\cdot 001$ ^{mgm.} on November 2nd, whereas in Case IV a dose of $\cdot 00007$ ^{mgm.} produced a marked local reaction, whereupon it

was reduced to ^{mgm.} 0.00006 at which point a lesser local reaction was obtained on three consecutive weeks, disappearing on the fourth, and no larger dose was given during hospital treatment of the case.

There ^{is} ~~was~~ much difference of opinion as to when the injections should cease. Some advocate carrying them on until massive doses are reached, but in the cases appended the injection was stopped when it was concluded that the optimum dose had been reached, i.e. when the patient showed marked recovery and there were indications that the natural resistance of the body was capable of dealing with the infection.

Occasionally as in Case IV, the maximum dose may be reached in which case further increase is inadvisable..

Any generalisation from a limited number of cases would be unwarranted, but it ^{is} ~~was~~ interesting to note that in the treatment of tubercular glands by tuberculin, there appears to be far less uncertainty as to reactions than in treating pulmonary tuberculosis and in no case was the result either negative or harmful as far as could be seen.

Progress of Cases.

Each case responded well to treatment. There was a gain in weight, a reduction in cervical glands and presumably in the bronchial glands also, since

the dullness diminished and the breath sounds approached the normal.

It was possible to examine four cases about one year after being discharged from hospital. In three of these the progress was maintained, the patients were steadily gaining weight, were free from all symptoms and stated that they felt perfectly well. In the fourth case there was some loss of weight, but not sufficient to reduce it below normal, and the loss was accounted for by over-work.

Conclusions.

- (1) When 'signs' indicative of pulmonary tuberculosis occur in patients together with evident enlargement of some glands - particularly cervical - and when in addition the usual symptoms of pulmonary tuberculosis are absent - more especially a positive result of sputum examination - a diagnosis of enlarged bronchial glands is in all probability correct and the case may be treated on this assumption.
- (2) That such cases should be treated with injections of tuberculin, beginning with about .00001 m.gr. and increasing according to the reactions in the individual case.
- (3) That by so treating cases of enlarged bronchial glands, the development of pulmonary tuberculosis might possibly be prevented in a number of cases.

F R A N K B U R B U R Y . C A S E 1 .

Age 9. No occupation.

Admitted July 12th 1918. Discharged February 7th 1919.

Result. Very much improved. To attend Tuberculosis Dispensary. Gained 7 lbs.

Family History. Good.

Previous History. In June 1916 had an attack of whooping cough and in November of that year was treated for pneumonia. Was in bed for six months.

Since then he has been practically an invalid.

At the beginning of 1917 his mother noticed the glands in his neck were becoming enlarged and about Christmas of that year they broke down.

Three months before admission he began to suffer from a profuse nasal discharge, worse at night.

Sputum. Negative.

State on admission.

Patient is a well nourished boy of 9 with a healthy colour. He complains of enlarged glands on each side of his neck and an enlarged submaxillary gland on the left side, which has suppurated and is discharging. There is also an ulcer of left cheek, the result of a small abscess. The nasal passages are blocked with dried discharges. He has also got adenoids.

Circulatory System.

Heart's apex beat not palpable. Dullness. Left border cannot be defined. Right border as in diagram I. Sounds normal.

Respiratory System.

See diagram I. Chest wall well covered. There is diminished expansion at right apex and to a less extent over the whole of that lung.

Percussion and Auscultation see diagram.

Digestive System.

Tongue clean. Teeth fairly good. No difficulty in swallowing. Nothing abnormal to be felt in abdomen. No pain or tenderness on palpation.

Lymphatic System.

Enlargement of cervical and inguinal glands on both sides.

Urinary System. Nil.

Nervous System. Nil.

X Ray Report.

Restricted movement of right side of diaphragm. Hilum. Right and left. Many enlarged mediastinal gland shadows.

Peri-hilum and peri-bronchial shadows increased.

Heart almost entirely displaced to right.

- 24.7.18. Less discharge from glands. The one on the ~~right~~
~~side of the~~ face much better. Both show healing
surfaces.
•000005 mgm. B.E. given.
- 5.8.18. Crepitations ^{over} on right lung after coughing not so well
heard as formerly except at base.
- 24.8.18. Crepitations after coughing over right lung in front.
Nothing heard behind. Face healing and very much better
than on admission. Glands in neck are freely movable
and appear to be smaller.
- 2.9.18. See diagram II.
Still a good many crepitations at right apex in front
after coughing, though none can be heard over right
lung behind. General condition much improved. The
sores on his face have now almost healed up. Heart's
apex beat still well inside mid-clavicular line and
heart remains displaced to right. Has gained $5\frac{1}{4}$ lbs.
- 18.9.18. Adenoids removed.
- 22.9.18. Glands in neck freely movable and are smaller. Is
steadily gaining weight.
- 16.11.18. Last dose tuberculin given •001 mgm.

4.12.18. See diagram III.

A great improvement all round. Has gained $8\frac{3}{4}$ lbs. since admission. The glands in neck are very much smaller and there is no peri-adenitis. The condition of the lungs also shows marked improvement. There are no crepitations and the typical bronchial breathing heard on admission has disappeared. Vocal resonance increased at both apices behind as shown in diagram.

20.12.18. Continues to improve.

3.1.19. Dullness over left base less. There are still one or two small glands in neck which have not quite disappeared but they are very much smaller than formerly. Has gained 9 lbs. General condition since admission most satisfactory.

3.2.19. X Ray report before discharge.

Base of right lung has cleared to great extent. Movement of diaphragm more extensive. Heart still displaced (i.e. fixed) to the right.

7.2.19. See
/Diagram IV. Discharge.

CASE I.

Diagram I 12-7-18.

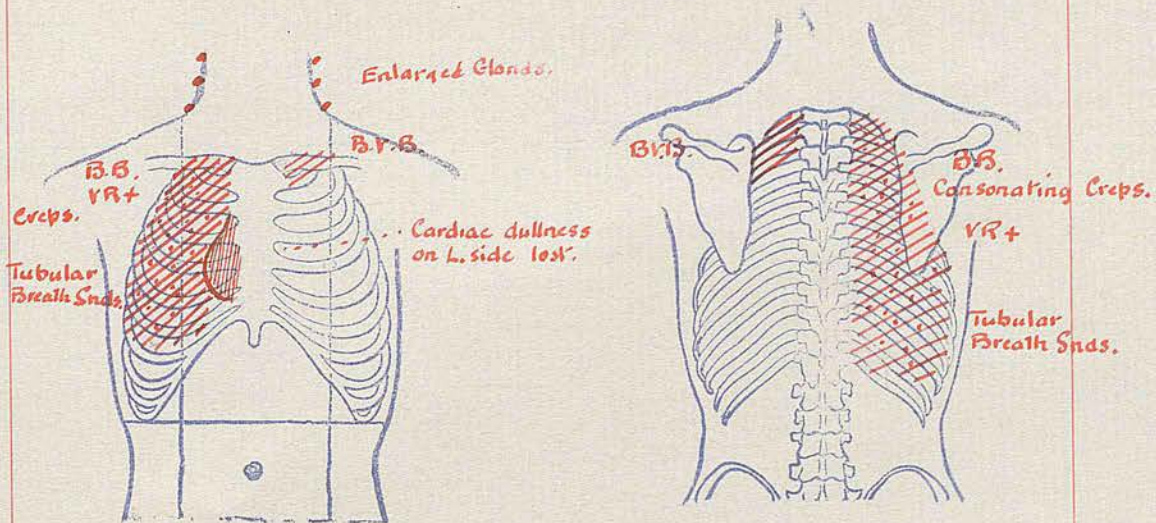


Diagram II 2-9-18

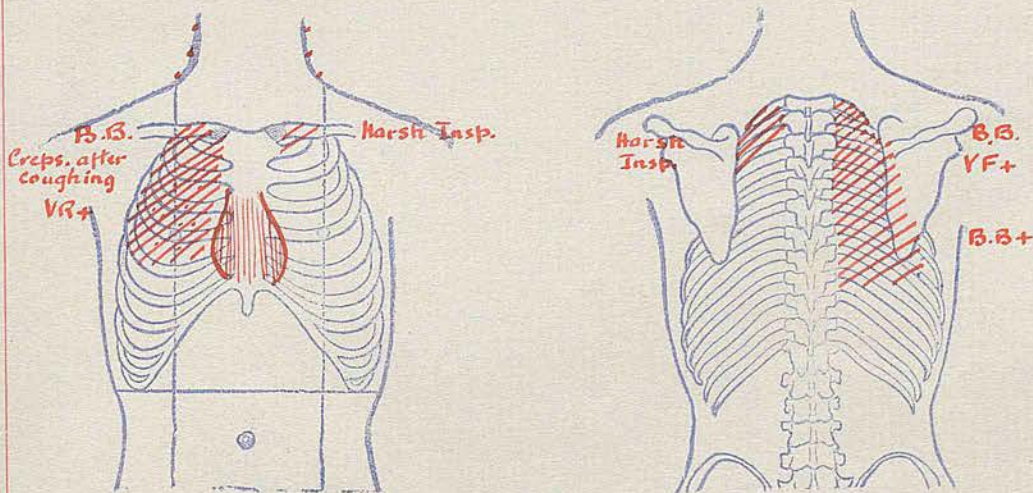


Diagram III 4-12-18

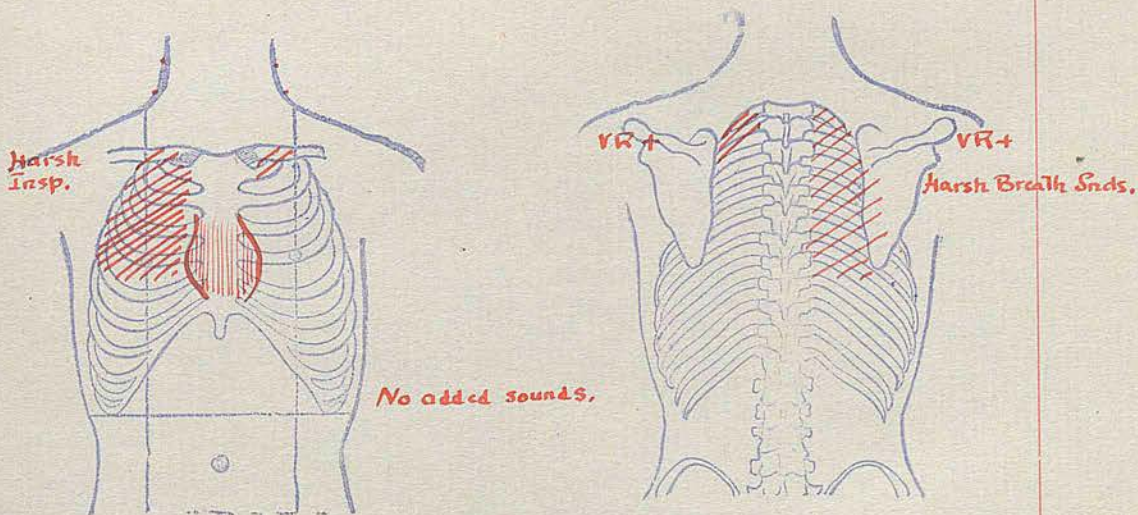
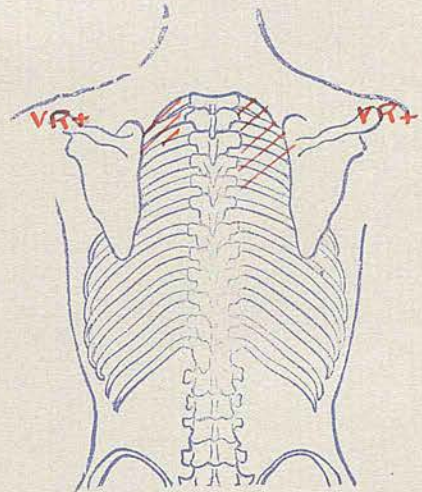
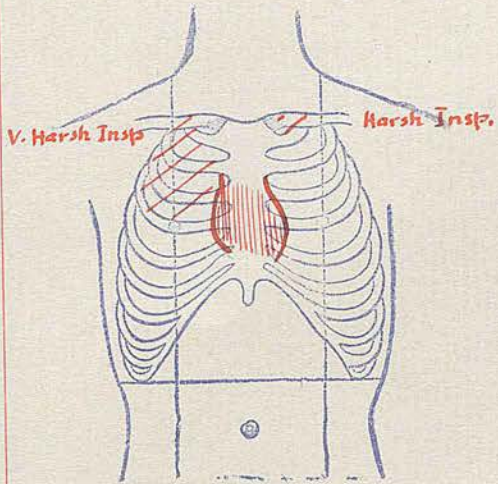
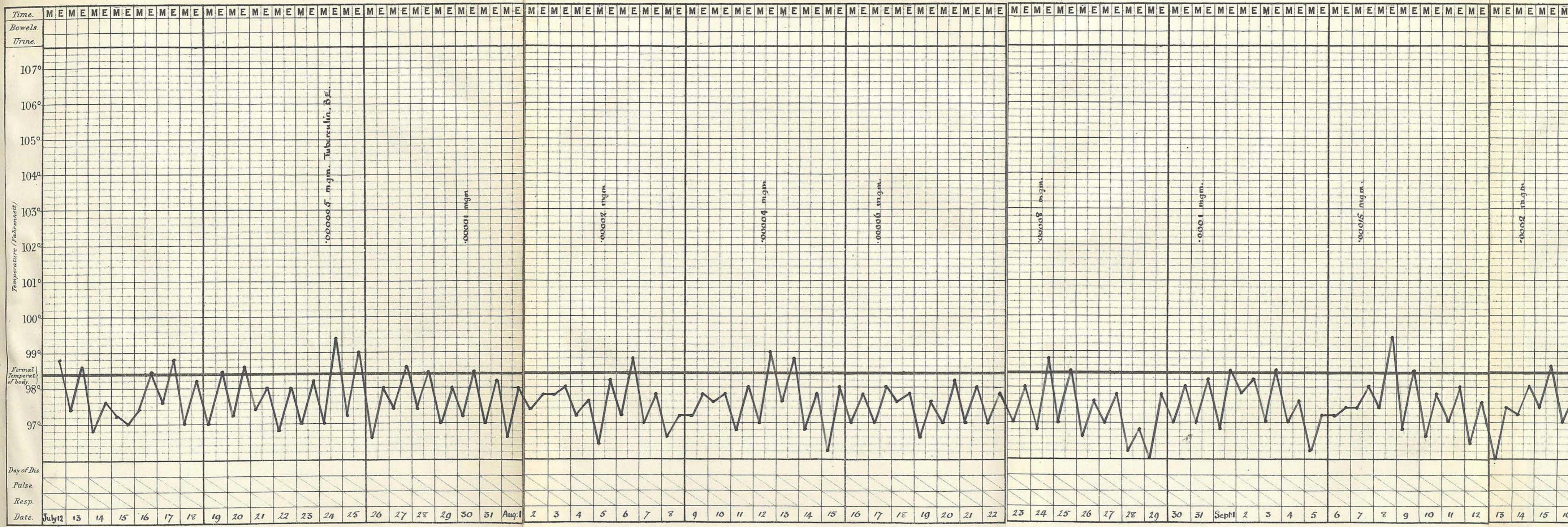


Diagram II. 7.2.19



CASE I.



ERNEST SIMMONDS . CASE II.

Age 11. No occupation.

Admitted July 24th 1918. Discharged 17th January 1919.

Days in Hospital 153.

Result. Very great improvement.

Family History. Good.

Previous History. Measles, whooping cough when 9 weeks old.

Seven weeks ago he complained of pain in the back and has not been to school since. He has been losing weight and has had a slight cough.

Mode of Onset. Pain in back.

Duration. 7 weeks.

Sputum. Always negative.

Clubbing of fingers. +

Present Illness.

Cough +	Emaciation -	Diarrhoea -
Expectoration -	Night Sweats +	Voice -
Pain + in back	Dyspnoea +	
Haemoptysis -	Dyspepsia -	

State on admission.

Patient is a poorly developed boy of 11½ years.

Circulatory System.

Heart's apex beat $\frac{1}{4}$ " outside Mid-clavicular line in 5th interspace.

Dullness. ^{area} Enlarged towards the left side.

Respiratory System.

Chest wall fairly well covered. Flattening at left apex and diminished expansion. The whole of the left lung does not expand as well as the right.

Percussion and Auscultation see diagram I.

Digestive System.

Tongue clean. Teeth not very good. Palate very arched, ^{no} and difficulty in swallowing.

Nothing abnormal to be felt in abdomen and no tenderness on palpation.

Lymphatic System.

Slight enlargement of glands on each side of the neck. Enlargement of inguinal glands on each side.

Spleen normal.

Urinary System. Nil.

Nervous System. Nil.

X Ray Report.

Restricted movement of diaphragm. Heart displaced to left.

Lungs. Expansion lessened at both apices and want of translucency.

Hilum. Soft woolly shadows.

Peri-bronchial shadows exaggerated.

Report on examination of Throat.

Pharynx. Stumps of tonsils.

Nose. Greenish grey crusts in left nasal fossae.

Deflection of septum on right side.

Naso-pharynx. Adenoids.

- 3.8.18. No change in physical signs.
- 7.8.18. Tonsils and adenoids removed.
- 11.8.18. Rhonchi over both lungs at end of inspiration. E.T.100
- 19.8.18. No rhonchi heard.
- 2.9.18. See diagram II. Glands in inguinal region much smaller, likewise the cervical ones, but not to the same extent. Abdomen is rather full but nothing abnormal can be made out and there is no pain on palpation.
- 22.9.18. No further change in physical signs. Glands in neck are smaller. Steadily gaining weight. Patient has been up 8 hours for some days.
- 4.12.18. See diagram III. A very great improvement since admission. He has gained $8\frac{1}{2}$ lbs. and his general condition is much better. There are still a few enlarged glands in his neck but those in the groin have quite disappeared. Condition of the lungs most satisfactory as will be seen by comparing the first and third diagrams. The last dose of tuberculin was

given on November 16th viz. .001 mgm. B.E.

31.12.18 Physical signs remain the same since last diagram.

Doing very well and gaining weight, viz. 7 lbs.

CASE II.

Diagram I. 24-7-18.

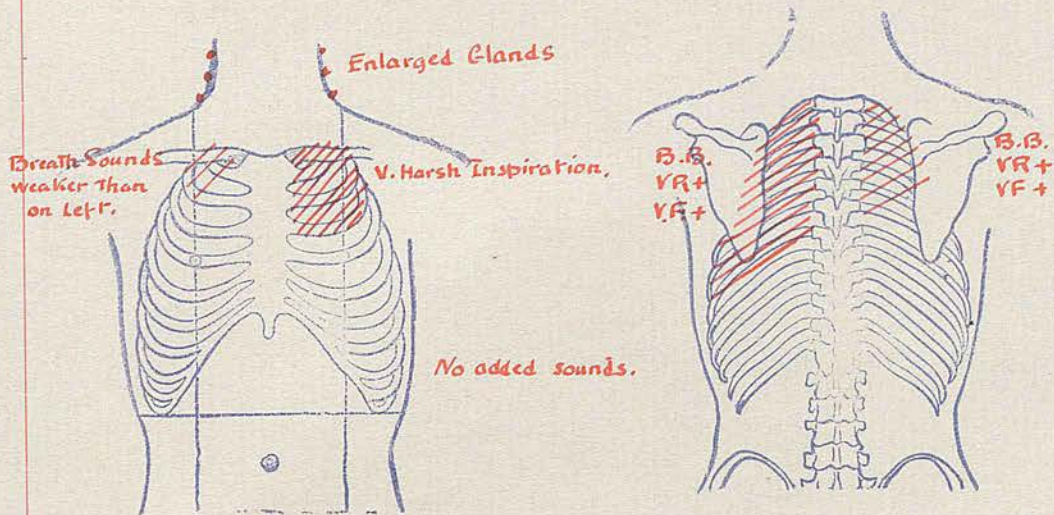


Diagram II 2-9-18.

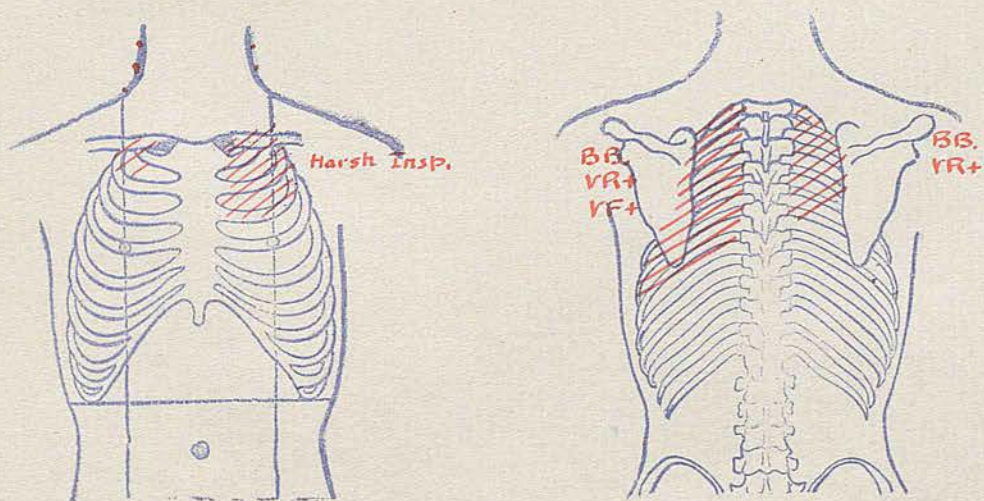
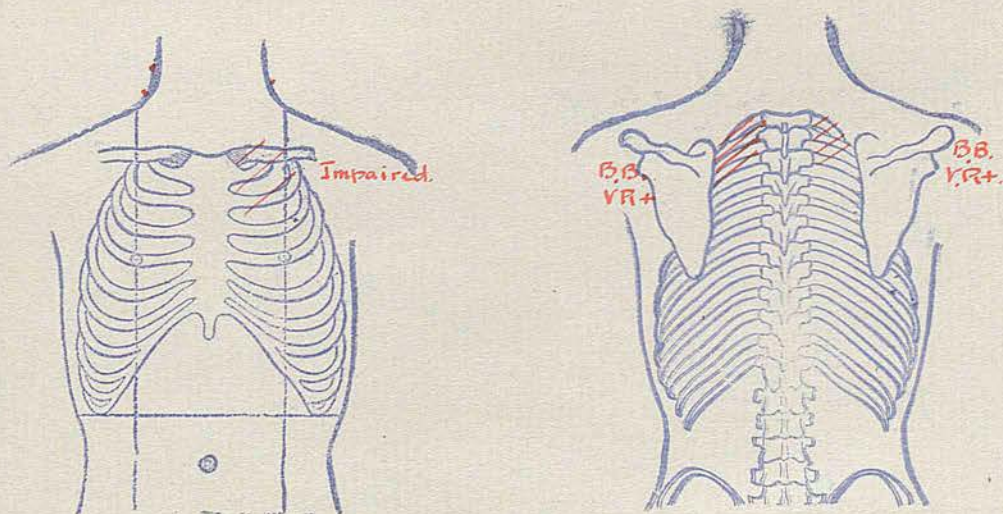
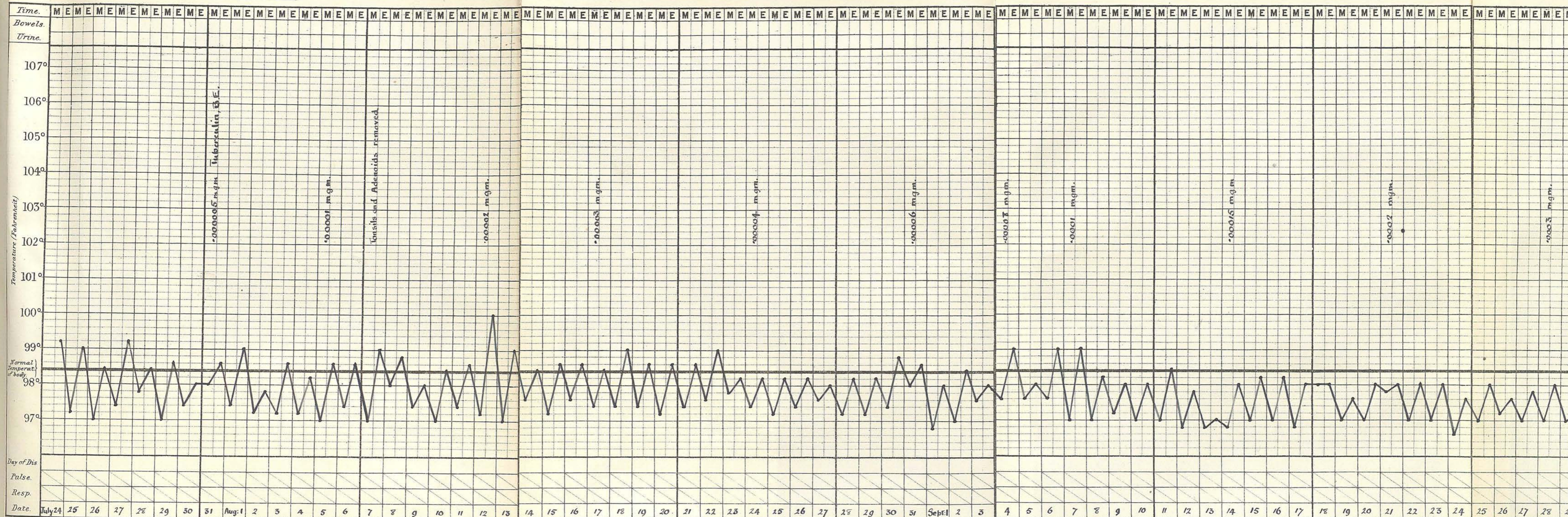


Diagram III 4-12-18



CASE II.



JACK GORDON TAYLOR. CASE III

Age 8. No occupation.

Admitted 6th January 1919. Discharged 11th May 1919.

Days in Hospital 126.

Result. Much improved. Gained 8½ lbs. To attend Tuberculosis Dispensary.

Family History. Good.

Previous History. Measles at 2. Influenza December 1918.

Mode of Onset. ?

Duration. ?

Sputum. Always negative.

Present Illness.

Cough - Emaciation - Voice -

Expectoration - Night Sweats -

Pain - Dyspnoea -

Haemoptysis - Dyspepsia -

Diarrhoea -

State on Admission.

Patient is a fairly well developed boy of 8 who complains of no definite symptoms, He was sent by the School Medical Officer for an opinion as to the condition of his lungs.

Circulatory System.

Heart's apex beat 4th interspace ^{internal} ½" ~~out~~ to mid-clavicular line.

Bullness normal. Sounds normal.

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Expectoration - Night Sweats -

Pain - Dyspnoea -

Haemoptysis - Dyspepsia -

Diarrhoea -

State on Admission.

Patient is a fairly well developed boy of 8 who complains of no definite symptoms, He was sent by the School Medical Officer for an opinion as to the condition of his lungs.

Circulatory System.

Heart's apex beat 4th interspace ^{internal} ½" ~~out~~ to mid-clavicular line.

Bullness normal. Sounds normal.

Respiratory System.

Chest wall well covered. A little flattening at both apices. Expansion fairly good, equal on both sides. Percussion and Auscultation see diagram I.

Digestive System.

Tongue clean. Teeth good. No difficulty in swallowing. Nothing abnormal to be felt in abdomen and no tenderness on palpation.

Lymphatic System.

Slight enlargement of glands on each side of the neck.

Urinary System. Normal.

Nervous System. Normal.

X Ray Report.

Hard (calcareous) hilum shadows.

Linear (bronchial tube) opacities exaggerated, especially in upper lung area.

Expansion ^{and} _{translucency} somewhat diminished at apices.

16.1.19. Doing well. No change in physical signs.

24.1.19. Von Pirquet test +

14.2.19. See diagram II. Physical signs the same, ^{but no crepitations.} No cough.
No sputum.

5.3.19. Dullness over left lung much diminished, but that over right still remains.

13.3.19. Improving. Has gained $7\frac{1}{4}$ lbs.

11.4.19. Greatly improved. † Up all day.

24.4.19. See diagram III.

Glands in neck much smaller. Has gained 8 lbs. since admission.

12.3.20. See diagram IV.

(1 year later).

Improvement maintained. Chest quite clear. DeEspinec sign still present. General health improved.

CASE III.

Diagram I 6-1-19.

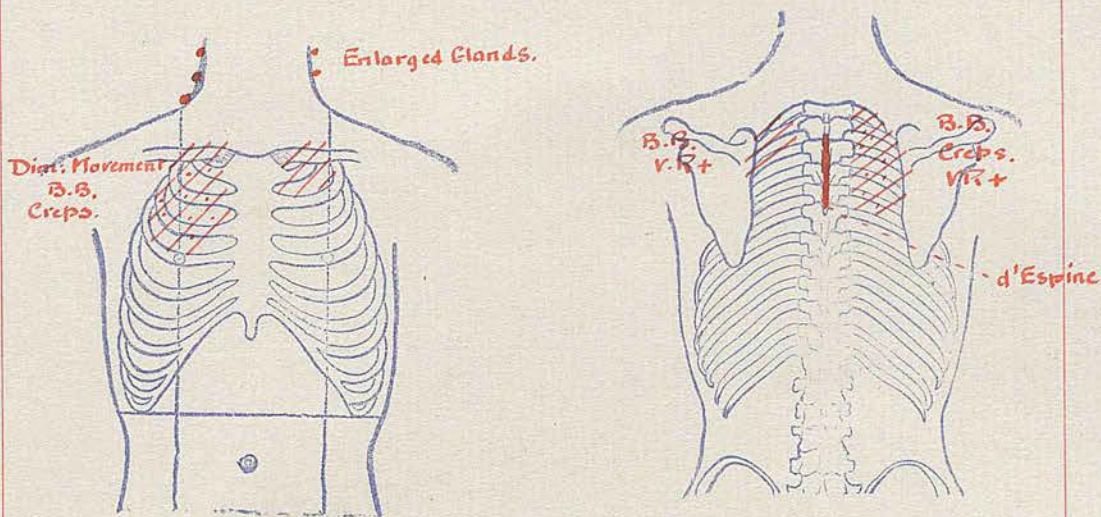


Diagram II 14-2-19.

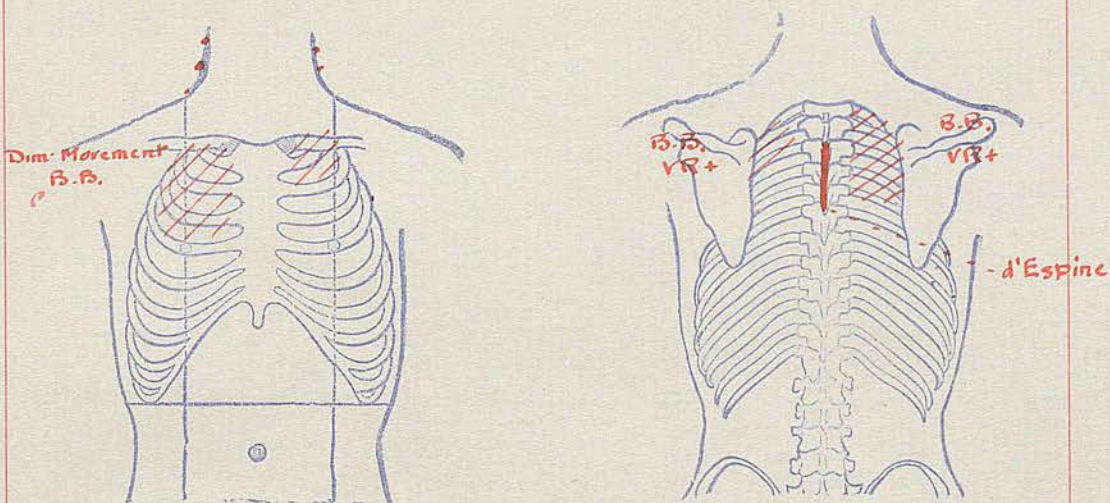


Diagram III 24-4-19

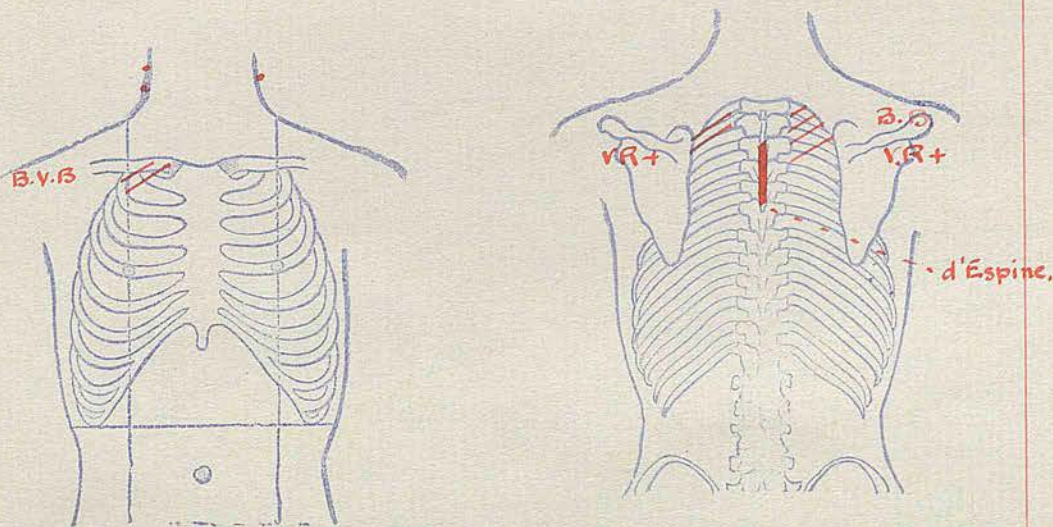
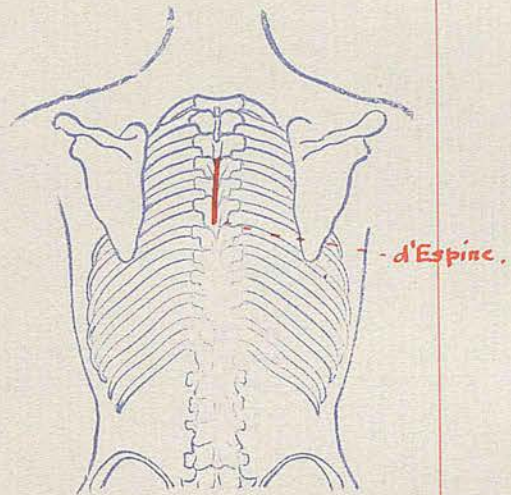
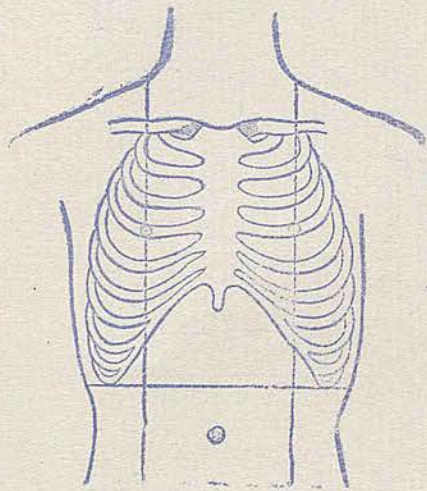
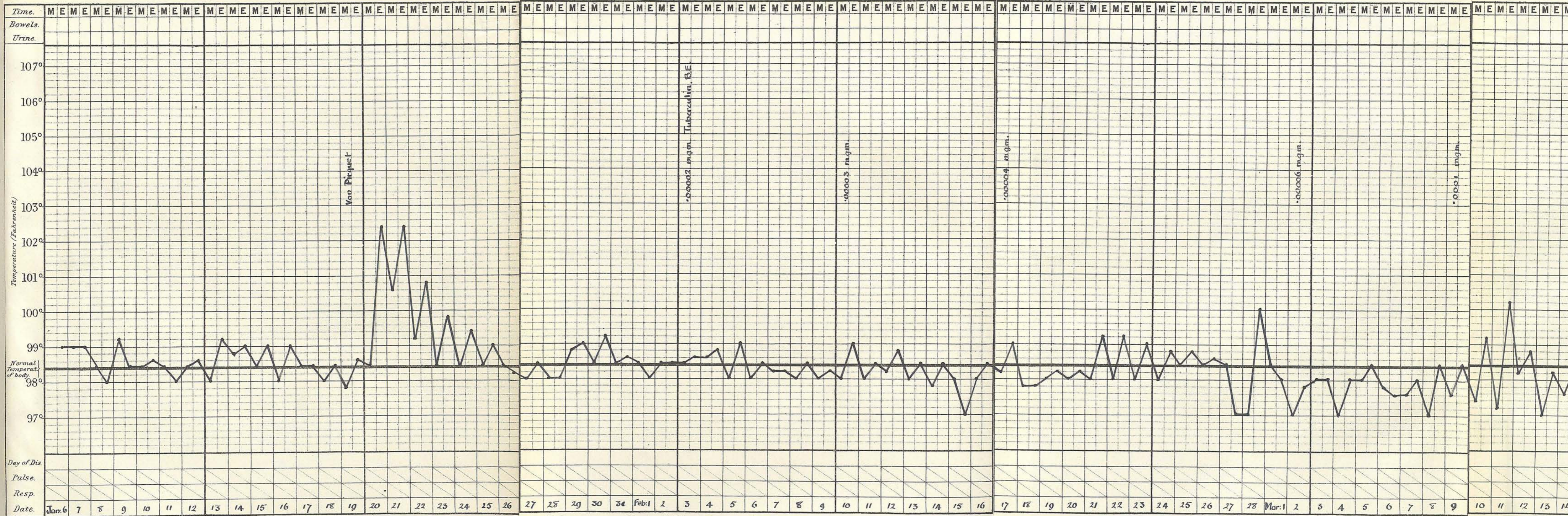
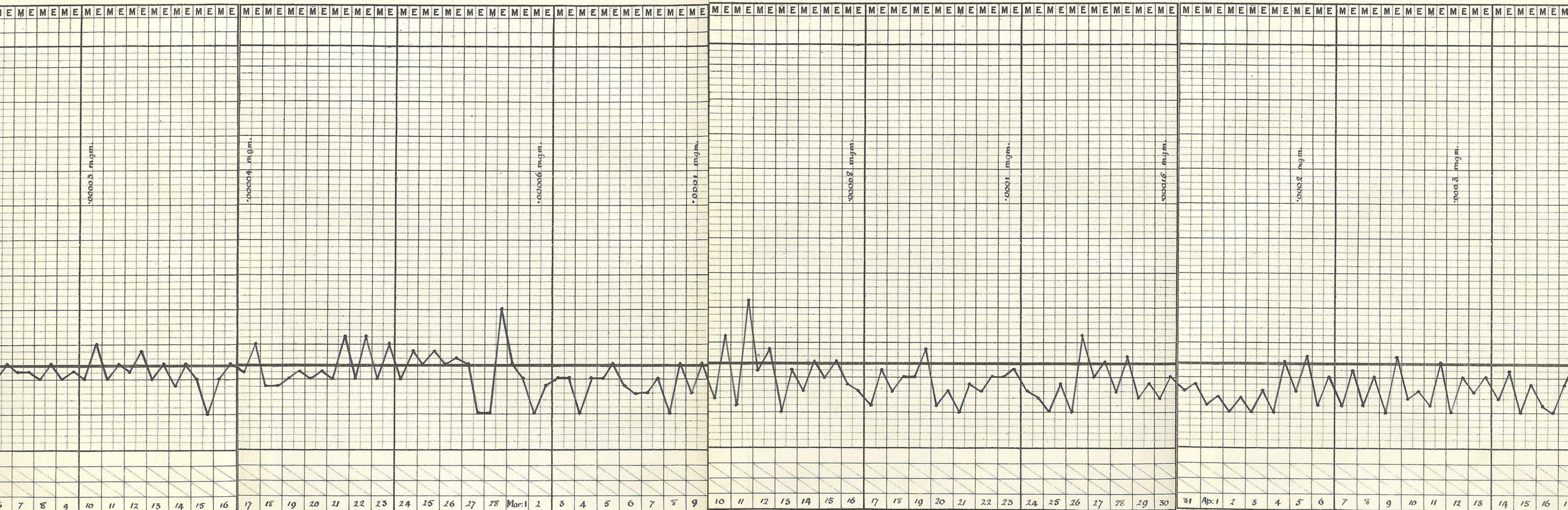


Diagram IV 12.3.20 (1 year later)



CASE III.





D O R O T H Y B R I G H T . C A S E I V .

Age 16. Single. Occupation Clerk.

Admitted 11th January 1919. Discharged 4th April 1919.

Days in Hospital 85.

Result. Much improved. To attend Tuberculosis Dispensary. Gained $11\frac{3}{4}$ lbs.

Family History. Mother died influenza followed by pneumonia. Rest of family alive and well.

Previous History. Two years ago she noticed the glands ⁱⁿ ~~and~~ her neck becoming enlarged. She attended Tuberculosis Dispensary for nearly two years getting injections of tuberculin, with considerable benefit, the glands becoming smaller. Since discontinuing the treatment the glands have again become enlarged.

Mode of Onset. Enlarged cervical glands.

Duration. 2 years.

Previous treatment. Kingston Dispensary.

Sputum. None.

Present Illness.

Cough -	Emaciation -	Diarrhoea -
Expectoration -	Night Sweats -	Voice -
Pain -	Dyspnoea -	
Haemoptysis -	Dyspepsia -	

Condition on admission.

Patient is a well developed girl of 16 who complains of enlarged glands in her neck.

Circulatory System.

Heart's apex beat 5th interspace $\frac{1}{2}$ " inside mid-clavicular line.

Dullness normal. Sounds loud and clear.

Respiratory System.

Chest wall very well covered. Expansion good - equal both sides.

Percussion see diagram I.

Auscultation see diagram I.

Digestive System.

Tongue clean. Teeth fairly good. No difficulty in swallowing.

Nothing abnormal to be felt in abdomen and no tenderness on palpation.

Lymphatic System.

There is considerable enlargement of the glands of the neck, especially on right side.

X Ray Report.

Enlarged mediastinal and bronchial glands. Want of translucency at both apices.

Base of left lung shows lessened translucency.

- 20.1.19. No further change in physical signs. Glands not any smaller.
- 3.2.19. Glands in neck more movable. No cough, no sputum.
- 11.2.19. Marked local reaction after last injection. Physical signs remain the same.

26.2.19. Glands getting smaller. Has gained 10 lbs.

10.3.19. See diagram II.

Dullness over lungs behind much diminished. Glands are more freely movable.

2.4.19. See diagram III.

Bullness still diminishing. Glands smaller but still much enlarged on the right side. Has gained 10 lbs.

10.3.20. See diagram IV.

(1 year later.)

~~3.3.20.~~ Physical signs in chest normal.

Glands on left side no longer enlarged. Those on right side still enlarged but much smaller than formerly.

Weight 9st.0 $\frac{1}{4}$ lb. Gain of 13 lbs. since first seen.

Working full time as a dressmaker - under suitable conditions. Feels perfectly well.

CASE IV.

Diagram I. 11.1.19

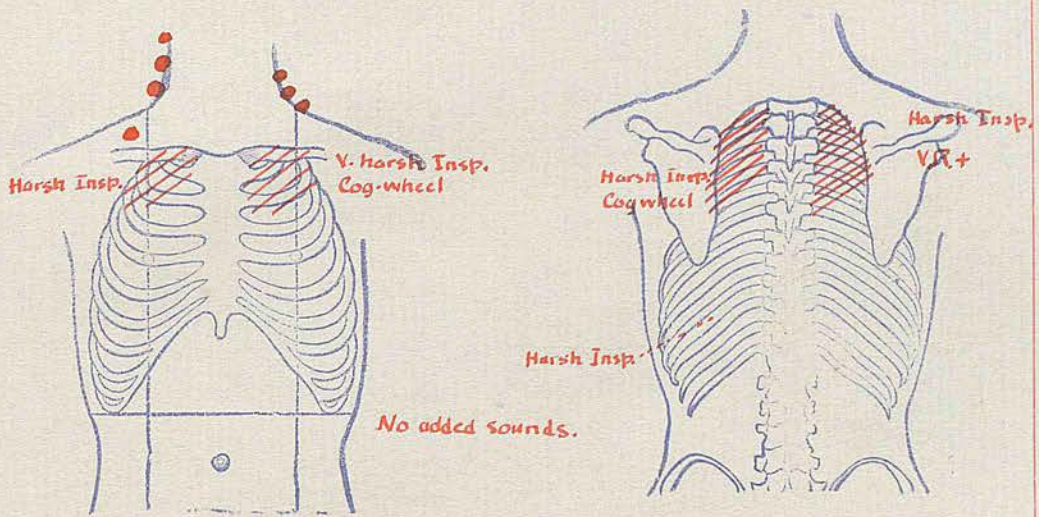


Diagram II. 10.3.19

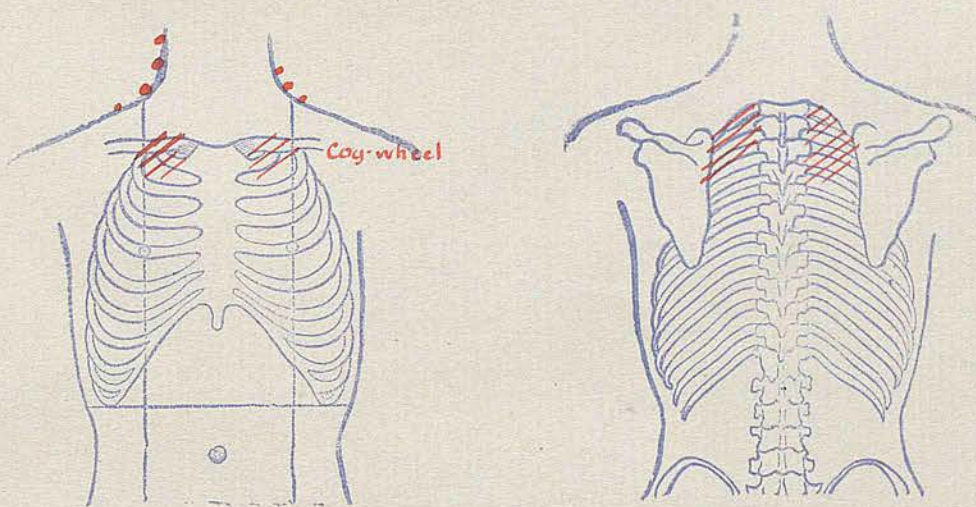


Diagram III 2.4.19

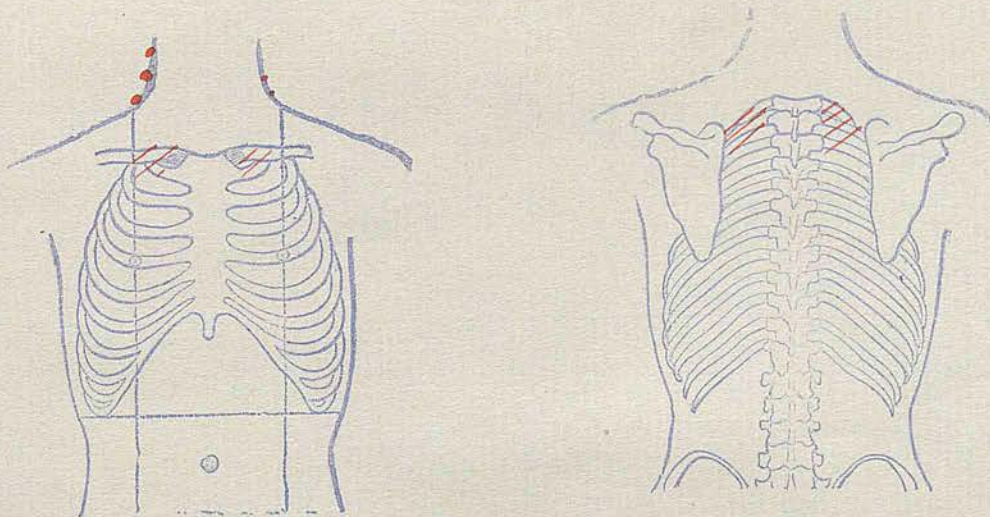
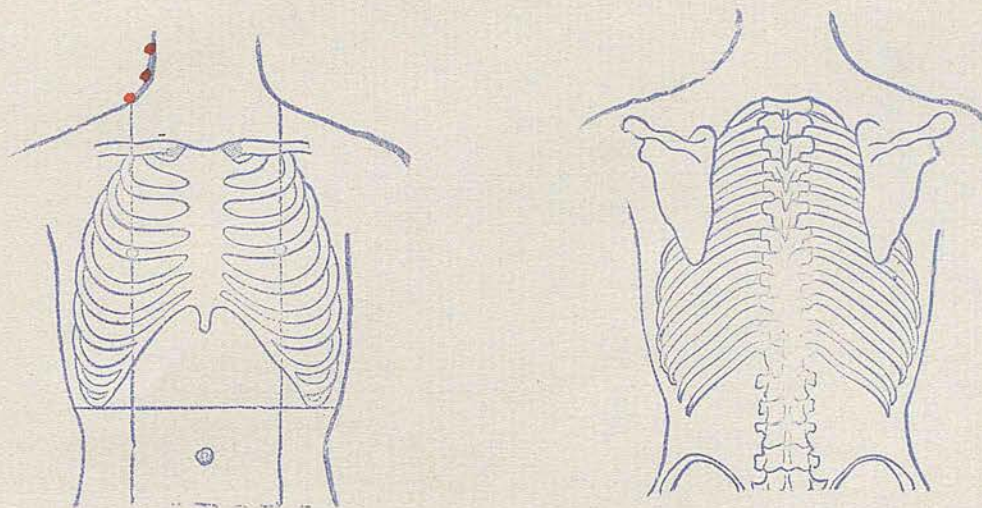
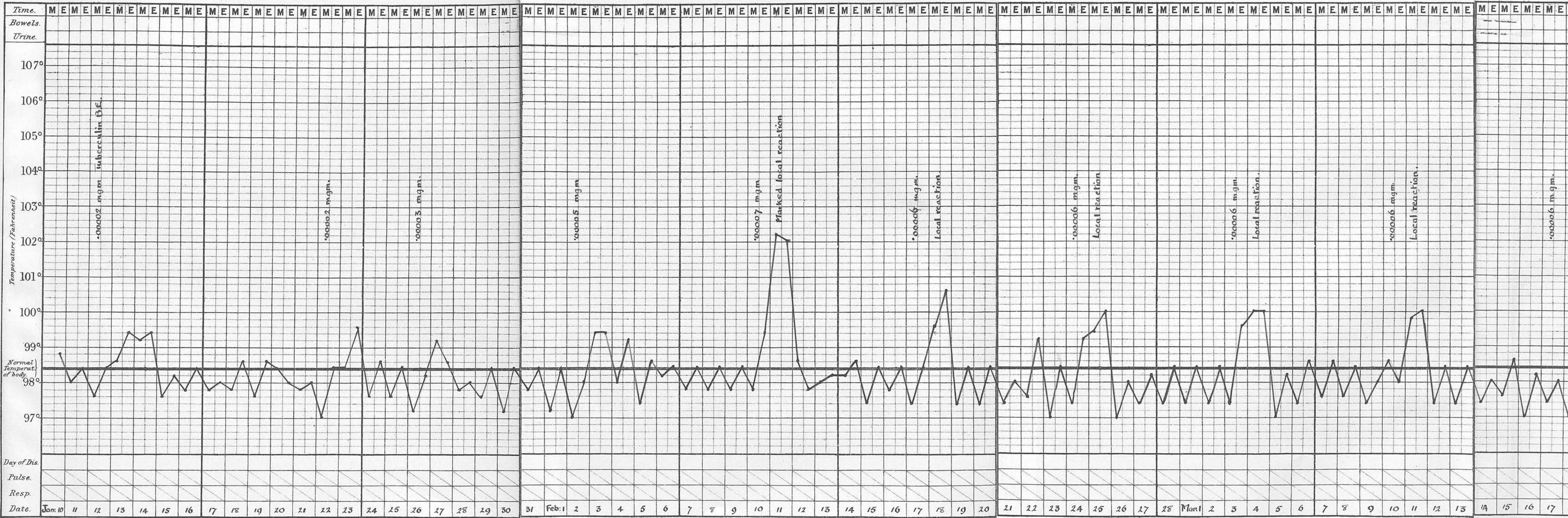
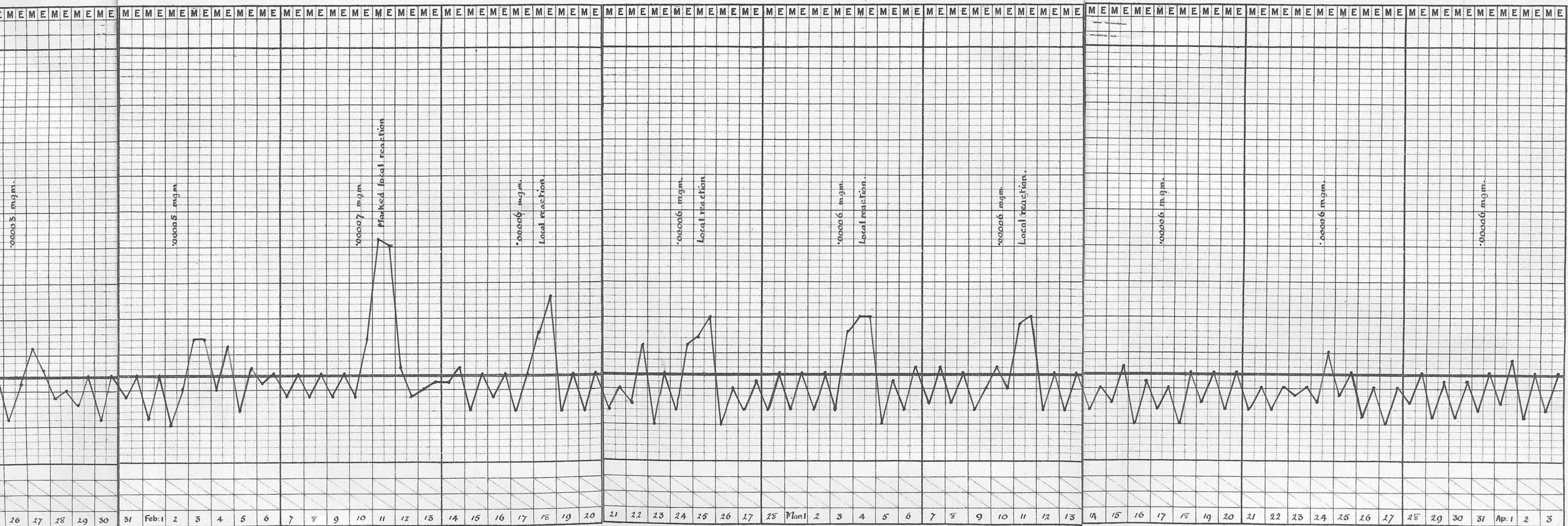


Diagram IV. 10.3.20 (year later).



CASE IV.





H E L E N L O U I S E L E S S I T E R . C A S E Y .

Address. ~~64 Bronson Road, Raynes Park.~~

Age 21. Single. Occupation. Nurserymaid.

Admitted 31st December 1918. Discharged 7th April
1919. Days in Hospital 99.

Result. Very much improved. Gained 18½ lbs.

Family History. Mother died phthisis. No other
tuberculous history.

Previous History. Diphtheria at 7. Tuberculous
abscess in neck at 12, which was opened at St. George's
Hospital. Had no further trouble until January 1918
when she noticed the glands were becoming enlarged
again. She was recommended to attend the Tubercu-
losis Dispensary where she received injections of
tuberculin for 5 months with good results.

Mode of Onset. Enlarged tuberculous glands.

Duration. 12 months.

Previous Hospital Treatment. St. George's Hospital.
Glands of neck 1910.

Sputum. None.

Present Illness. Cough + Expectoration -
Pain - Haemoptysis - Emaciation -
Night Sweats + Dyspnoea + Dyspepsia -
Diarrhoea - Voice normal.

Condition on Admission.

Patient was a well nourished young woman with a
healthy colour, who complained of a cough and

enlarged glands in neck.

Circulatory System.

Heart's apex beat 5th interspace ^{internal to} $\frac{1}{2}$ " into the mid-clavicular line.

Dullness normal. Sounds normal.

Respiratory System.

See diagram I.

Chest wall well covered. Expansion good but not quite equal on both sides, the left less than the right.

Percussion. Dull note at both apices in front and behind.

Auscultation. B.V.B. at apices in front and bronchial breathing with whispering pectoriloquy at right apex behind. No added sounds.

Digestive System.

Teeth very good. Tongue coated. No difficulty in swallowing. Nothing abnormal to be felt in abdomen and no tenderness on palpation.

Lymphatic System.

There are some enlarged glands on each side of the neck and in each supra clavicular fossa, all freely movable.

Result of X Ray Examination on Admission.

Hard calcareous patches at roots of lungs.

Linear hilum striation exaggerated.

Coarse mottling of lung tissue at both apices.

? fibrosis ? excavation right upper lobe.

Heart normal and vertical.

- 31.1.19. Patient up 6 hours. Glands more freely movable. Crepitations at left apex in front and behind. Cough troublesome in morning. Glands getting smaller.
- 17.2.19. Crepitations still present at left apex. Glands in neck much smaller. Has gained 11 lbs.
- 3.3.19. Glands getting smaller $\frac{1}{2}$. Dullness clearing up. No cough, no sputum. Gained 14 lbs.
- 2.4.19. See diagram II.
- Slight dullness over left apex in front. Slight dullness at extreme point of apex behind.
- Dullness over right lung in front confined to supra-clavicular region and 1st interspace. Behind dullness still present, with B.V.B. V.R.+
- Glands in neck much smaller. Has gained 13 lbs.
- 8.3.20. See diagram III.
(1 year later.)
- ~~18.3.20.~~ Slight impairment of note over left apex posteriorly. Breath sounds normal. Cervical glands normal, with the exception of one on the left supra-clavicular fossa.
- Some loss of weight since leaving hospital, which she attributes to extra housework due to her mother's illness. Complains of slight fatigue.

CASE V

Diagram I 31.12.18

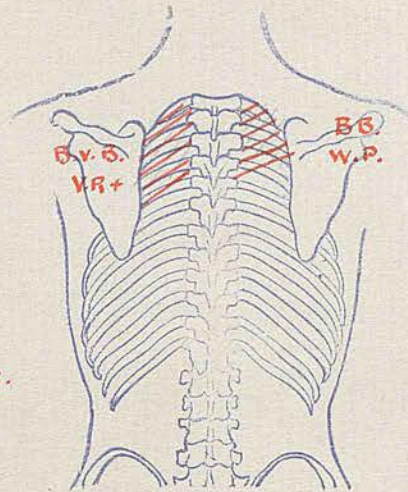
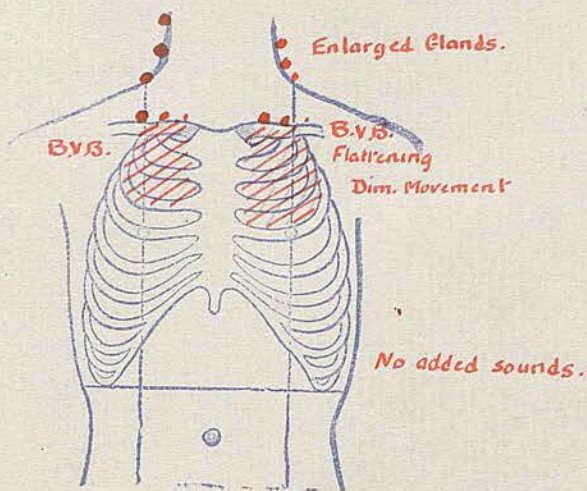


Diagram II 2.4.19

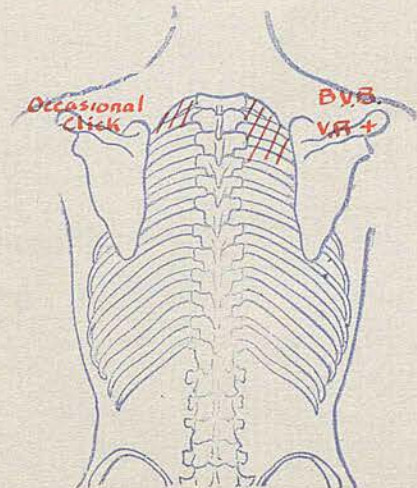
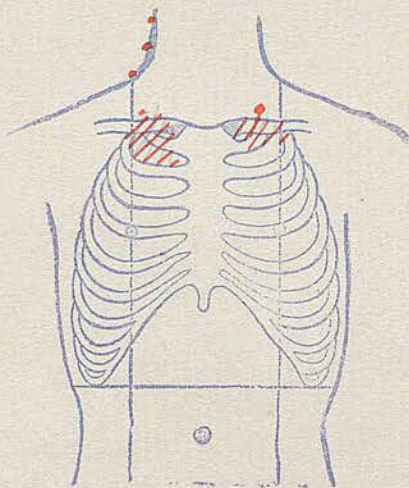
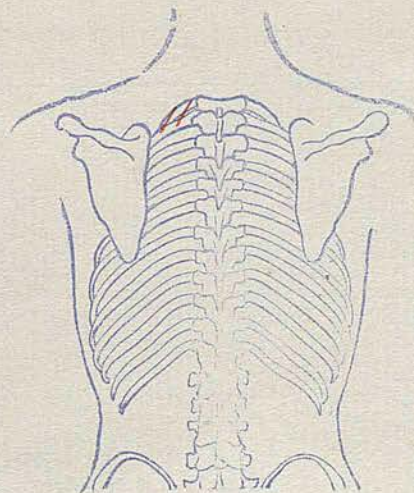
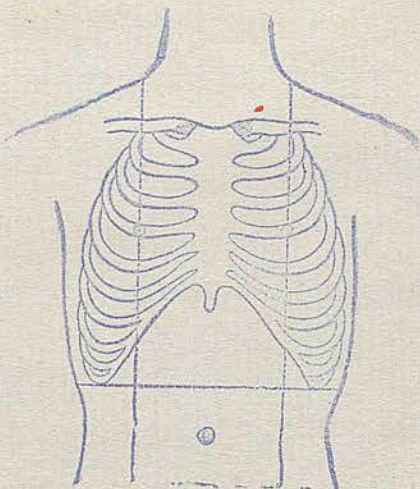


Diagram III 8.3.20 (1 year later)



L I L I A N M A Y L A N D . C A S E VI.

Age 14. No occupation.

Admitted December 20th 1918. Discharged March 10th
1919. Days in Hospital 81.

~~Gained 9 lbs.~~

Result. Much improved. To attend Tuberculosis
Dispensary. Gained 9 lbs.

Previous History. Whooping cough at 5 years.

Was sent to Tuberculosis Dispensary by School Doctor
for an opinion on condition of her lungs.

Complains of nothing and states she feels quite well
but subject to colds.

Mode of Onset. ?

Duration. ?

Sputum None.

Present Illness.

Cough + slight Emaciation - Diarrhoea -

Expectoration - Night Sweats - Voice -

Pain - Dyspnoea on exertion.

Haemoptysis - Dyspepsia -

State on admission.

Patient is a well nourished healthy looking girl
who complains of nothing except occasional colds.

Circulatory System.

Heart's apex beat at 5th interspace at mid-
clavicular line.

Dullness, ^{Area} a little enlarged to the left.
^

Sounds normal.

Respiratory System.

Chest wall well covered. There is some flattening and diminished movement at left apex.

Percussion as in diagram I.

Auscultation. Cogwheel breathing over left lung in front ^{and} behind, also to a less degree at right apex.

Digestive System.

Tongue clean. Teeth good. No difficulty in swallowing. Gastric resonance extends rather high. Nothing abnormal to be felt in abdomen and no tenderness on palpation.

Lymphatic System.

Glands on each side of neck are a little enlarged.

Urinary System. Nil.

Nervous System. Nil.

X Ray Report.

Hilum ^{and} peri-hilum opacities and calcareous patch.

Linear opacities at roots of lungs.

No mottling of lung tissue.

20.1.19. No further change in physical signs. Gained $2\frac{1}{2}$ lbs.

11.2.19. Glands in neck have almost disappeared. Dullness at apices getting less, especially in front.

26.2.19. Dullness diminishing. Has gained 9 lbs.

4.3.19. See diagram II.

No cough. No sputum. Dullness at apices only.

3.3.20. See diagram III.

(1 year later)

~~17.3.20.~~ Slight impairment of note at left apex posteriorly.

Cogwheel breathing at left apex anteriorly and in the region of the scapula.

Glands in neck small, hard and freely movable.

Weight 7st. 11 $\frac{1}{4}$ lbs.

Working full time and feels perfectly well.

CASE VI.

Diagram I. 20.12.18.

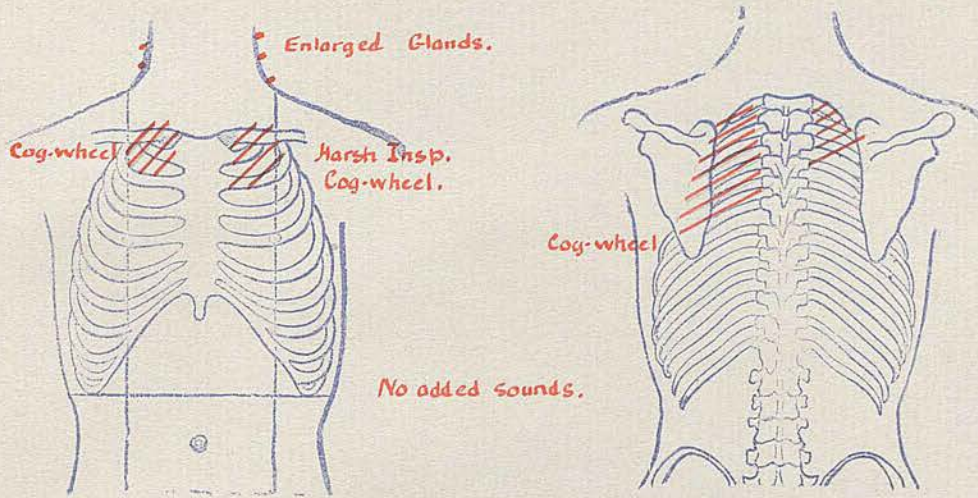


Diagram II. 4.3.19

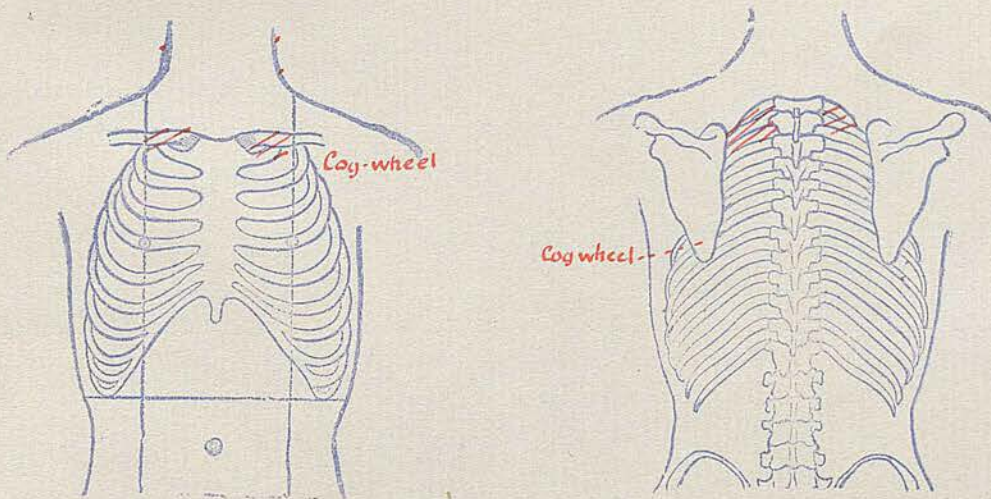
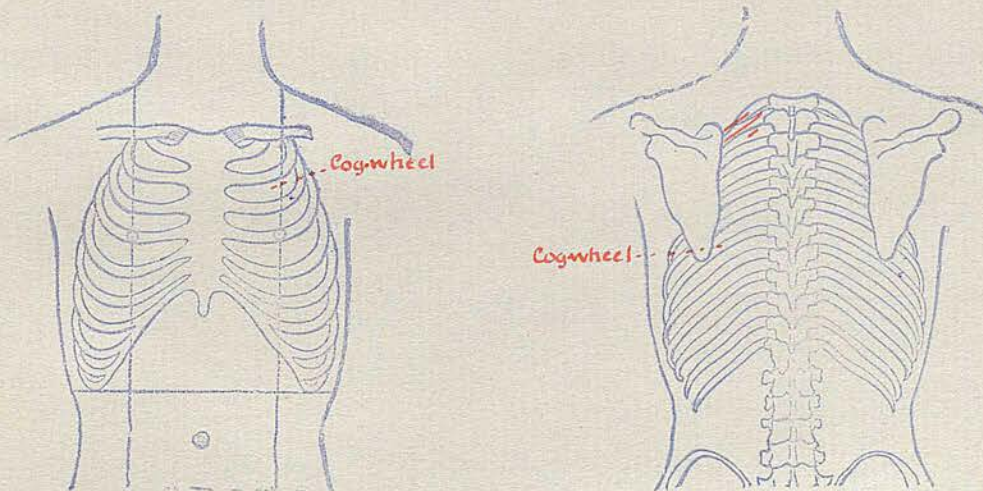


Diagram III. 3.3.20 (1 year later).



CASE VI.

