

STEWART, IAN STRUTHERS M.D. 1904

.....  
.

SOME OBSERVATIONS

on

A Series of Sixty Cases

of

PULMONARY TUBERCULOSIS

(With special reference to Immediate Prognosis)

.....  
.  
.  
.  
.  
.

Being a Thesis for the Degree of M.D.

Presented by

Ian Struthers Stewart.

.....  
.  
.



-----00000000000000000000-----

In Pulmonary Tuberculosis the question of prognosis assumes a much greater importance than it does in many other diseases, owing to the fact that the patient must place himself unreservedly under treatment for a period, which may extend over many months and sometimes even years. Under such circumstances, it becomes necessary to give the patient the fullest obtainable information, as to how long he is likely to be absent from his usual occupation. The patient ought, as soon as he is told that he is suffering from pulmonary tuberculosis, to make the best provision for his interests while absent, in order that he may be free from mental worry, which is an obstacle to successful treatment very difficult to surmount.

Prognosis may be divided into (a) immediate and (b) ultimate. Under the term "immediate" it is proposed to include not only the earlier results of treatment but also the length of time

during which the patient is likely to remain under close medical supervision. The term "ultimate" prognosis is used to indicate the probable result of treatment whether the patient is likely to recover completely, or if it is to be at the best a question of prolongation of life.

The conclusions expressed in this paper are drawn from a series of sixty consecutive cases of which all have been under my personal supervision from the date of their first visit to the present time.

-----

It is proposed to take up only the question of immediate prognosis and this under these various headings.

- (a) Duration of Symptoms.
- (b) Occupation and Environment.
- (c) Age and Sex.
- (d) The Stage of the Disease.
- (e) The Number and Position of the Lobes

Affected

## (f) Complications.

Bronchitic.

Pleuritic.

Haemorrhagic.

Laryngeal.

Pneumothorax.

Digestive Troubles.

Fistula in ano.

Albumenuria.

Menstruation.

Diazo Reaction.

Cardiac Lesions.

Spinal Caries.

Mental Factor.

Duration of Symptoms;- Under this head is taken the length of time during which the patient has had symptoms which might point to pulmonary tuberculosis previous to his coming under treatment. The question of the type of disease (acute or chronic) is at present neglected but will be taken up later.

From the examination of the histories of the cases now under review it is found that the duration of the symptoms varied from under three months to over four years. The condition of the patient after three months treatment, not the final result, will be taken as the criterion in the formation of the immediate prognosis. By comparison of the figures so obtained it is hoped that some conclusions may be arrived at which will provide some data on which to base the formation of the immediate prognosis.

The term "marked improvement," is used to indicate that in such cases the pyrexia diminished, the physical signs became less evident, and a considerable gain in weight with improved general health took place.

The cases, in whom the symptoms had persisted for over four years, numbered five, and only one showed marked improvement at the end of three months, which works out at 20%. Those with symptoms which had been present for between three and four years, showed the same percentage of cases progressing

favourably. Among those cases where the symptoms had remained for between two and three years none showed the required improvement in the stated time. The percentage of improved cases with a history extending from one to two years showed a marked advance viz. 28.5%. The length of the duration is now brought down to a question of months. When the duration of the illness had extended from nine to twelve months 50% of the cases showed a marked reaction to treatment at the end of three months. The percentage between six and nine months works out to 36.5%, but if the rapid caseous cases, in which the immediate prognosis is always unfortunately more certain, are excluded the percentage of improvements rises to 44.4%. Where the duration had only been from three to six months the percentage of marked improvements rose to its maximum viz. 60%. We now come to the shortest duration of all, which is under three months, where we find that there is a percentage of 66.6%, but again if we excluded

the rapid caseous cases the percentage rises to the same as before 80%. These facts are given in tabular form below.

The conclusions to be drawn from these figures are as follows. The longer the symptoms have been present the longer will be the time which must elapse before any marked improvement can be expected from treatment. Of these cases where the duration was over a year only 20.6% showed marked improvement in three months, whereas when the symptoms had been present under a year 48.5% showed a good and rapid reaction to treatment during the same time. Thus, in cases in which the duration is under a year, the patient's chances of recovery are more than doubled.

TABLE OF CASES.

Duration of Symptoms.	Percentage of Improvements
Over 4 years.....	20%
3 - 4 years.....	20%
2 - 3 years.....	nil.
1 - 2 years.....	28.5%

-----

(Table of Cases contd.)

9 - 12 months.....	50%
6 - 9 months.....	36.3% or 44.4%
3 - 6 months.....	80%
Under 3 months.....	66.6% or 80%
-----oOo-----	

Occupation and Environment;- Of the sixty cases at present under consideration only three had followed open-air occupations. Of these, one was a sea-captain, and from the history of the case it was found that the likely source of infection was a house in which the patient had lodged for a month while in America. In another case, that of a cavalry officer, infection probably took place in Ladysmith during the siege, where there was known to be a large amount of tuberculosis among the cattle, and whose decomposing carcasses were, owing to the lack of sanitation, left lying unburied on the ground. With regard to the other case the place and time of infection could not be definitely fixed.

All the other fifty-seven cases followed indoor occupations and lived, for the most part, sedentary

lives in large towns or cities. One third of these cases were patients who were in poor circumstances while the other two thirds were more comfortably situated. Those cases drawn from the poorer classes, following occupations necessitating the vitiation of the atmosphere, and the performance of hard muscular work, did not with one exception show marked improvement at the end of three months treatment. Alcoholism must be admitted as a possible source of fallacy in these cases, but cases in which this habit was a prominent feature were left out of consideration under this head.

Among the cases drawn from the upper classes only one was obliged to perform hard manual labour when following his occupation and in that case the treatment was considerably prolonged. It is also to be noted that in the cases of two patients who were prominent athletes treatment had to be continued for several months before any marked improvement set in.

The environment of a patient before coming under treatment also plays an important part in the formation of the immediate prognosis. Patients who have had good surroundings at home do not show such rapid improvement as those who come from the less sanitary houses of the poor, and who are suddenly placed under better conditions than they have ever been before. This is a point to be taken into consideration when dealing with patients brought from unhealthy conditions of life, as the mistake may be made of leading these patients to believe their condition is much better than it is in reality, owing to the rapid reaction to treatment and the marked improvement in their general health.

Age and Sex:- The ages of the sixty cases varied from 8 to 44 years. The ages of six of these cases lay between 12 and 18 years, and of whom only one showed a rapid reaction to treatment, the remaining five being all very tedious cases.

This is in line with the well known fact that in those cases where the disease first shows itself at or near puberty it, as a rule, assumes a serious type. It also shows that age may be a factor to be taken into consideration when forming the immediate prognosis.

In relation to sex forty of the cases were males and twenty females. Of the forty male cases 44.5% showed marked improvement at the end of three months while of the female cases only 25% showed the same standard of improvement. The severity of the disease in the male and female cases was much about the same and in fact there was a larger number of very extensive lesions among the men, though on the whole they seemed to react to treatment better than the females. This may be due to the fact that in women the menstrual period sets up a disturbance every month lasting for a day or two and during which the female cases show a tendency to have a higher temperature and to lose weight.

The Stage of the Disease;-- It is proposed to classify the cases as regards their severity into three divisions. (1) Infiltration, (2) consolidation (3) excavation. By infiltration is meant that the lung condition present gave the following physical signs: slight dullness on percussion, with medium pitched bronchial breathing, with or without moisture. Consolidation is used to signify that there was marked dullness on percussion with high pitched tubular breathing. The term excavation is used to include those cases in which the physical signs were clearly those found over a cavity. The diagnosis in the majority of the cases was verified by an examination by means of the X rays either by screen or photograph. In those cases in which there was a doubt as to whether the condition was one of consolidation or infiltration the density of the shadow over the affected part was examined when the patient was admitted and again on his discharge, and if the density had largely diminished the case was classed

as on of infiltration, but if the density remained the same the case was put into the second class.

When there was any doubt as to whether consolidation was present or not the case was classed under consolidation.

Of the total cases eleven showed infiltration only and of these all without exception presented marked improvement at the end of three months. Those cases in which a diagnosis of consolidation without excavation was made numbered 27 and of these 70.5% showed a rapid reaction to treatment. When excavation was present, as was found in 22 cases, only 18.1% showed improvement up to the standard in the required time.

From the above figures it would seem reasonable to draw the conclusion that the exact pathological condition of the lung must be fully appreciated before the immediate prognosis is made. Infiltration cases all seem to recover rapidly and completely and it is in such cases that we may confidently hope for

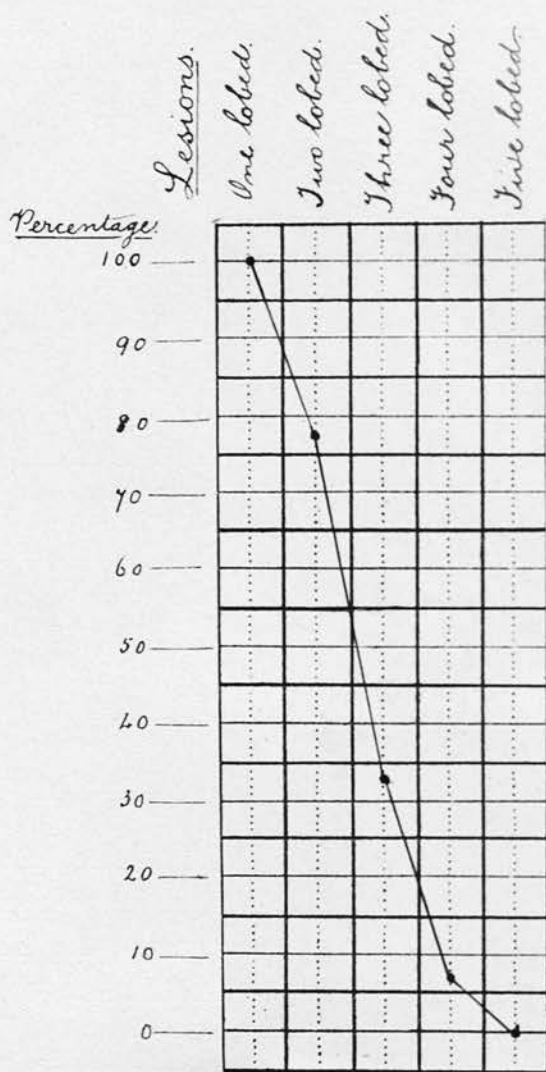
the best results. When there is consolidation the gravity of the case increases in proportion to the extent and intensity of the lesion and when such a case is seen for the first time it must always be an open question as to how long the patient is likely to be under treatment. If the lesion shows signs of increasing the case in a few weeks will probably exhibit signs of excavation, but if on the other hand the patient's power of resistance shows a marked increase under treatment the case may show almost as rapid improvement as one of infiltration, and the final result may be quite as satisfactory. As was seen above, the percentage of cases showing signs of excavation which progressed rapidly towards improvement was small as compared with the other two groups. Among the causes which render this last percentage so small, several factors have to be taken into consideration. When the excavation has taken place the case has either been one of long duration or one of the rapid caseous type. In either case the

patient's general condition is much further below par than is found in groups one or two, and so treatment must begin with the patient at a much lower level of health, and as a result more building up has to be done, hence the longer time taken.

#### Number and Position of the Lobes Affected;-

Under this division it is proposed to discuss the bearing of the extent of the lesion on the formation of the immediate prognosis.

The most common distribution is found when the disease affects three lobes. This was the condition found in 21 of the 60 cases. Next to this comes the two lobed lesion with 18 cases. Third in order of frequency is found the four lobed lesion and lastly the one lobed lesion showing four cases each. As might be expected those cases which showed the smaller distribution showed the quicker reaction to treatment. This is well brought out in the



following percentages. Where the disease was entirely limited to one lobe 100% of the cases showed the required improvement in the required time, also when two lobes were affected there was a high percentage of marked improvements namely 77.7%. The ratio of cases showing rapid recovery now falls rapidly. In three lobed lesions the percentage of improvements was only 33.3%, and when four lobes were affected the diminution is still more marked, the result being only 7.1%, and when all five lobes were diseased, none of the cases showed the required standard of improvement at the end of the time stated. These results are well shown on the accompanying chart.

It now remains to be determined whether the position of the lobes affected has to be taken into account. In all those cases where the disease was limited to one lobe the site of the lesion was found to be the upper lobe on one side or the other, which side seemed to immaterial. Among two lobed

lesions the common distribution was the upper and lower lobes on the same side and much more rarely (3 cases in 10 of two lobed lesions) the upper lobes on both sides. Of these three cases two showed very rapid improvement, while the third though he recovered steadily, took considerably longer.

In this last case there was not much doubt but that the lesion on one side was old and that it resumed activity at the time of the outbreak on the opposite side. Where three lobes were affected the distribution without exception two lobes on one side and one on the other. Of four and five lobed lesions nothing can be determined from the distribution as it must of necessity always be the same from the fact that apparently the middle lobe on the right side is always last affected.

From what has been stated it will be evident that the distribution of the disease when it occurs equally in all the lobes affected is not the important factor in forming the immediate prognosis, but the

extent of the disease is one of the most important points to be taken into consideration. The following cases which are given in detail will show what a marked difference there is in the immediate prognosis when the chief seat of the disease is in the lower lobe.

#### CASE I.

T.P.A. male aged 24. When this patient was first seen he complained of lassitude and cough which had persisted for at least two months, but on further questioning it was found that the duration may have been considerably longer.

The patient is the eldest of a family of six of which all the rest are alive and enjoying good health. Patient's father is dead, the cause being laryngeal cancer, mother is alive and healthy.

Patient has had the usual illnesses of childhood but nothing else of a serious nature. Patient

has always been "in training" as he was much given to athletics. While at work he was closely confined to a desk in an office.

Although feeling rather run down for a considerable time, patient put off consulting a medical man, thinking that he had merely a trifling ailment, till at least two months had passed. When he came under medical supervision pulmonary tuberculosis was at once diagnosed, and was confirmed by the presence of tubercle bacilli in the sputum. Patient was then advised to try sanatorium treatment, which he did.

On admission patient's condition was as follows:- he is a tall muscular man, emaciation not marked, cough troublesome and fairly constant during the day but rarely wakes the patient from sleep. There have been no haemoptysis. Sputum is of medium amount, 20cc. to 40cc. in twenty four hours, is mucopurulent in character and contained tubercle bacilli in fairly large numbers. Dyspnoea was not marked.

Physical examination of the chest showed a two lobed lesion on the right side, where the disease involved the whole of the upper lobe and the lower lobe down to the level of the sixth dorsal vertebra. The left side seemed quite clear.

The left side of the heart showed some enlargement which was probably physiological, as the result of the long continued muscular exercise. The cardiac sounds were close in all areas. Pulse 80 per minute, regular in time and force, tension and volume fair, arterial wall not thickened.

The digestive system showed nothing abnormal and the appetite was very good.

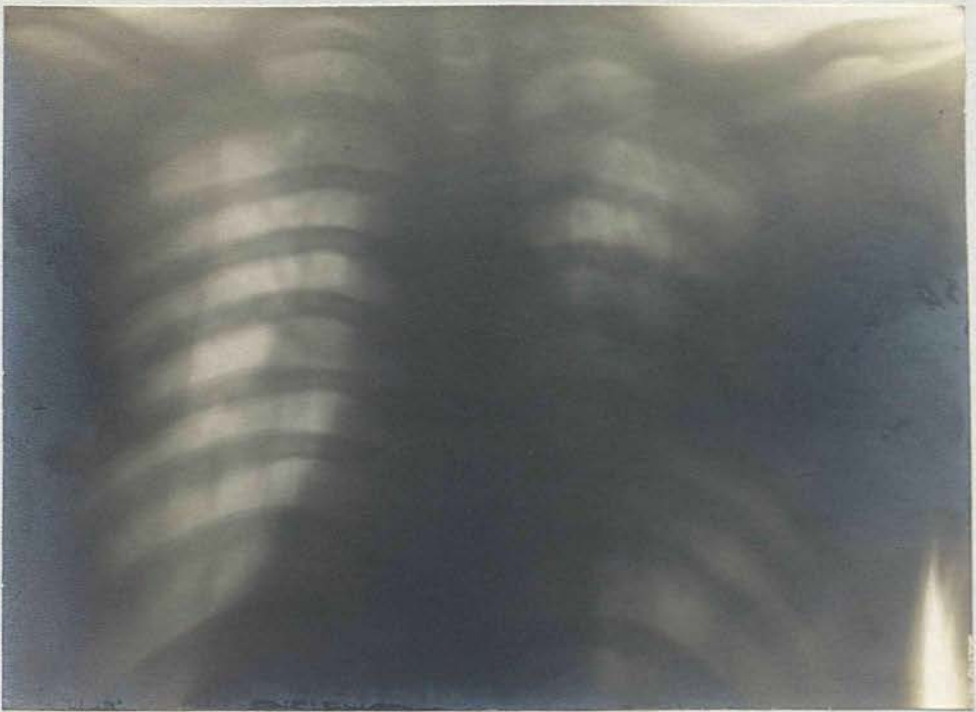
Night sweats began about a fortnight ago and have come on every night, but only once or twice to any great extent.

The temperature during the first week oscillated between 37.3C and 38.5C.. Weight on admission was 69.250kg..

The diagnosis made was that the lesion was two

L

R



lobed with consolidation in the right upper lobe, but probably only infiltration in the right lower lobe.

One month later physical examination showed high pitched tubular breathing with medium crepitation and increased vocal resonance at the apex of the right lower lobe, which all pointed to a considerable area of consolidation in that position. Nothing could be discovered on the left side which could indicate the presence of disease at the apex on that side. An X ray photograph taken at this stage of the case confirms the diagnosis and a reduced print on the opposite page shows the exact condition that was present. The photograph shows a certain amount of infiltration of the right upper lobe, with very marked consolidation of the right lower lobe, the left lower lobe being apparently clear.

The temperature at this time remained above normal, oscillating between 37.2c and 37.9c.

For eleven weeks the patient had to be kept in

bed, as during this time the temperature remained irregular and elevated. At the end of this time the patient was able to be moved out to the balcony and a week later exercise was begun at 100 yards in the morning and the same in the afternoon. This was gradually increased till the end of the twenty first week when the patient was able to do  $3\frac{1}{2}$  and  $1\frac{1}{2}$  miles. During the twenty second week the temperature showed a tendency to rise, the patient was then put back to absolute rest which was enforced for two weeks, at the end of which time gentle exercise was again attempted, but had to be discontinued at the end of the twenty eighth week on account of rise of temperature. Rest was prescribed and continued until the end of the thirty seventh week, when a very small amount of exercise was allowed till the forty fourth week, when on examination of the chest the amount of moisture was found to have considerably increased, and at the same time the general condition of the patient

was not improving. Rest was therefore again prescribed. This had to be continued till the fifty sixth week when on examination some amelioration of the lung condition was found, and the patient was allowed to walk short distances (440yds) on the level. From the fifty sixth to the sixtieth weeks the patient was much troubled by hay asthma, but this eventually yielded to the administration of adrenalin, sprayed into the nostrils. The exercise was now gradually increased until three weeks later when the patient was able to walk two miles in the morning and one and a half in the afternoon. Patient left in the middle of the sixty second week to go to one of the well known health resorts on the Continent.

⊕ Description of the Average Chart:- This is the

⊕ AVERAGE CHARTS:- These charts are made out as follows. The average highest and lowest temperature for a stated period is taken, generally one week, and these are entered on a special chart. This is filled up with a block of colour. The weight in kilogrammes is plotted in in a blue line. The sputum in cc. is plotted in in a dotted red line. The pulse and respirations are put in in figures the average of the week morning and evening.

# NORDRACH-ON-DEE.

AVERAGE CHART.

Name *Mr. J. P. A.*

# NORDRACH-ON-DEE.

AVERAGE CHART.

For *Mr. J. P. A.*

1903

# NORDRACH-ON-DEE.

AVERAGE CHART.

For *Mr. J. P. A.*

For \_\_\_\_\_ day periods

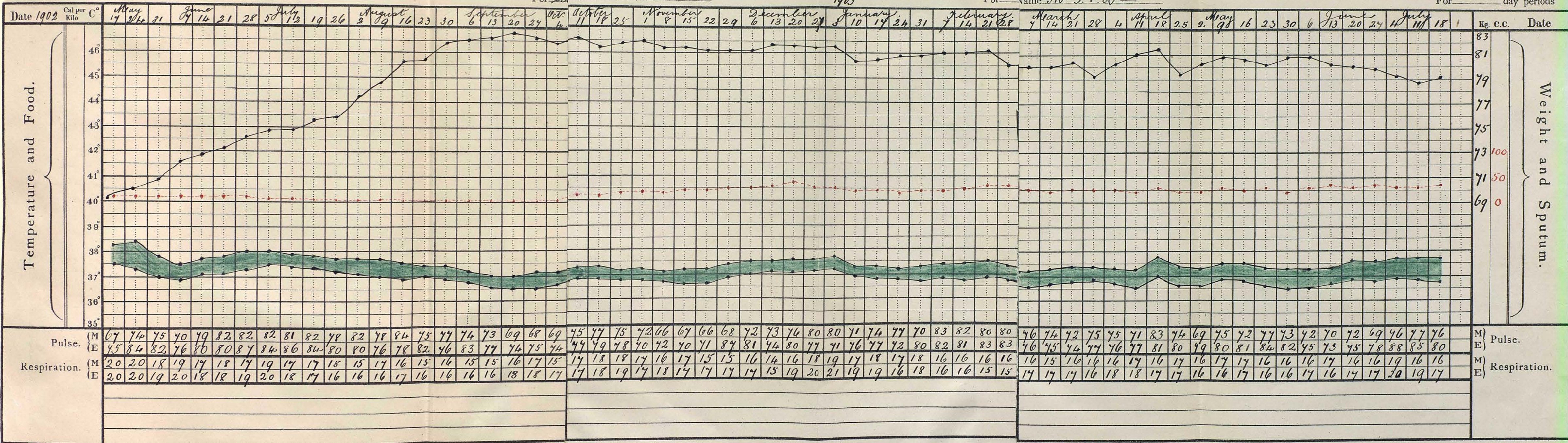


chart of a long standing case. It will be noticed that although the temperature showed a tendency to fall at the beginning of treatment it never remained very steady and often showed some elevation. The sputum also showed some tendency to rise. The weight rose rapidly at the beginning and remained high almost the whole time patient was under treatment but towards the end of the patient's residence here it began to fall slightly. The pulse rate was irregular.

The points to be noted in this case are these; the long period during which the patient made very slow progress, the marked intensity of the lesion in the right lower lobe where large coarse rales without excavation were abundant, also the marked bronchitic element which was present all over both lungs.

## CASE 11.

J.S.G. male aged 17. When first seen complained of cough and shortness of breath with some hoarseness and loss of voice. The probable duration of his illness had been about six months. The family history was bad, although both parents were alive and healthy, except that the patient's mother suffered slightly from winter cough. Patient is the eleventh in a family of thirteen; of these four brothers and four sisters are alive and healthy two sisters having died of phthisis, and one is at present under treatment for the same disease.

Since childhood the patient has had no serious illnesses. He lived at home in the country but went into the city every day to follow his occupation as an apprentice to an architect. Not given to athletics. Cigarette smoker.

About six months previous to admission patient had an attack of what was called influenza and which was followed by a slight but persistent cough.

At that time he was only confined to bed for a few days. Shortly after the patient noticed that his appetite became poorer and that he began to lose flesh. About five months after this it was noticed that his voice began to lose its tone and that he suffered from attacks of hoarseness. His general health became worse and as he was unable to follow his usual occupation medical advice was sought. It was now discovered that the patient was suffering from pulmonary tuberculosis and that probably this disease had also affected the throat. Open-air treatment was at once advised.

The following was the condition of the patient when he came under treatment. He was tall, well built, with fair hair and clear complexion. There was some pallor of the gums and lips. No evidence of cyanosis. Voice distinctly hoarse. Emaciation not marked. The cough was troublesome both during the night and day, and often woke the

patient from sleep. There had not been any haemoptysis. Sputum varied from 10 to 15cc. and contained numerous tubercle bacilli, the majority of which stained intensely.

Physical examination of the chest revealed a two lobed lesion on the left side with a very dull note on percussion over the apex of the lower lobe. The breath sounds over this area were high pitched tubular and were accompanied by numerous medium rales. The note over the right apex behind was suspicious, but otherwise nothing could be discovered to indicate the presence of any active disease at that point.

The circulatory and digestive systems showed nothing abnormal. Pulse 90 to 100 per minute regular in time and force, tension and volume fair.

Night sweats were present to a slight extent at first but gradually disappeared.

The temperature during the first week oscillated between 37.5 and 38.3C. Weight on admission 57.000 kg.

L.

R.



The examination of the larynx revealed considerable infiltration of the right vocal cord which was general all over the cord but no ulceration could be made out. The left cord did not present any definite lesion but was markedly congested throughout its entire length. The movement of the cords was not diminished. The arytenoid region did not show any signs of infiltration nor ulceration.

The accompanying photograph will give a fairly accurate idea of the condition of the chest at this date. The very dense shadow over the apex of the lower lobe on the left side indicates the site of the most important lesion. It will also be noted that the upper lobe on the same side is almost clear there being very little shadow observable.

For the first ten weeks under treatment the patient was kept rigidly in bed, as the temperature did not fall steadily. At the end of this period

gentle exercise was allowed (440yds) on the level and was continued without intermission for two weeks. During the twelfth week the patient's vocal cords were curetted which entailed keeping him at rest for several days. After this, the patient was able to continue his exercise until the eighteenth week when the temperature began slowly, but steadily to rise, and the physical examination of the chest showed an increase of moisture all over the left lung with well marked rhonchi. Patient was again kept at rest and during the twenty fourth week a pleurisy developed over the left base and some effusion was poured out, which was gradually absorbed but the temperature remained unsteady till the end of the thirtieth week. Patient now left this country and went abroad for further treatment.

The average chart of this case shows well the gradual retrogression. It will be noticed that at first the temperature became lower but that there always was a considerable evening rise. The weight



rose rapidly at first. Towards the end of the chart there is a rise of temperature, a rise in the amount of sputum, associated with a fall in weight, which when taken together indicate that a case is doing badly.

#### CASE III.

B.W.R. male aged 15 who, when first seen complained of troublesome cough and shortness of breath on the slightest exertion. The duration of the illness has been stated to have been from two to three months.

Patient is an only child and has a bad family history on both sides. Father died of phthisis aet 38 and father's uncle died of phthisis aet. 21. Mother alive and healthy, but her father and one brother died of phthisis aged 27 and 20 respectively. Patient's grandmothers on both side died

of phthisis. A history of pulmonary tuberculosis is found in several more distant relations.

In childhood patient had measles. Has been at a boarding school for several years, and for the last six months it was noticed that his reports of school work had been gradually becoming worse; at games also he became easily tired and was accused of "skulking". He was forced to play football all the winter term. During April, when in the country, it was noticed that the patient could not walk uphill on account of shortness of breath. Feverishness and sweating at night now began. Medical advice was sought, and pulmonary tuberculosis being diagnosed, open-air treatment was recommended.

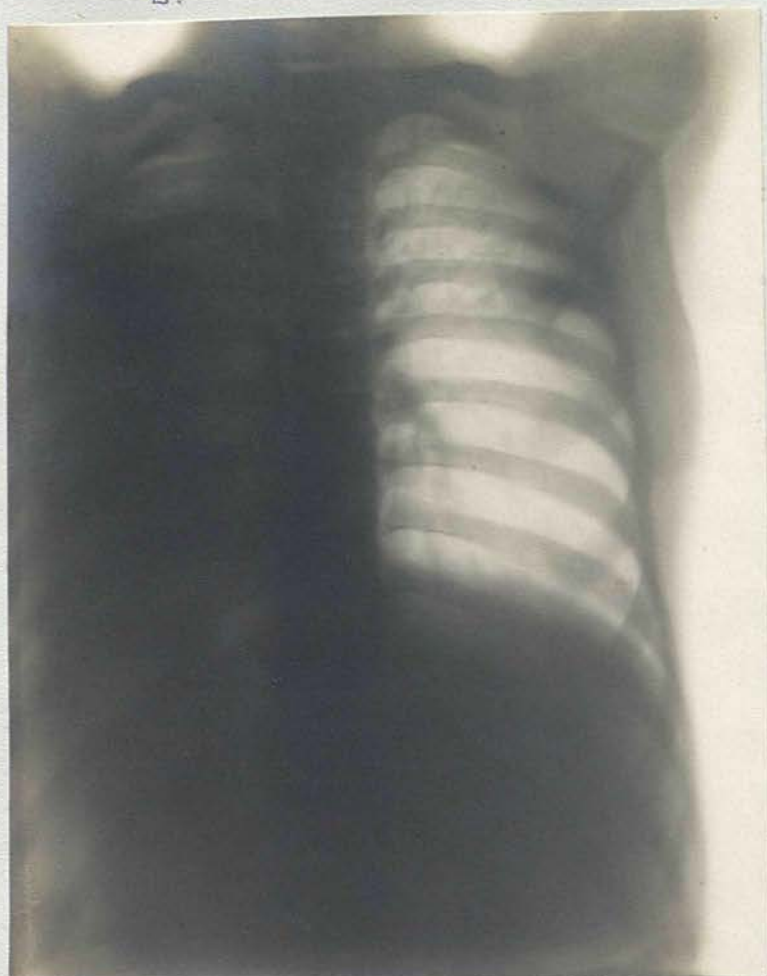
On admission the following facts were noticed. Patient is a small non-muscular boy with dark hair and pallid complexion. Emaciation not marked. The cough was very troublesome and the slightest exertion set up a paroxysm which was often followed

by vomiting. The amount of sputum was not large and it contained very large quantities of Tubercle bacilli all of which stained intensely. Dyspnoea was evident even when the patient was at rest.

Inspection of the chest showed deficient movement all over the left side, with flattening of the ribs in the upper part. The vocal fremitus was found to be increased over the same area. Percussion gave an absolutely dull note over the left side in front, to the level of the fourth rib, and behind to the seventh dorsal spine, below which there was a band of comparative resonance and the note became dull again over the extreme base. The note on the right side showed slight hyper-resonance. On auscultation the breath sounds were bronchial over the area corresponding to the upper dullness, over the lower part the respiratory murmur gradually became more distant till at the extreme base no breath sounds were audible. Moisture was present over the whole of the upper

L.

R.



lobe and the upper third of the lower lobe in considerable quantity. At the angle of the left scapula aegophony could be detected. The vocal resonance was increased over the dull area but pectoriloquy was not present.

The alimentary system showed nothing abnormal nor was there any cardiac displacement. Appetite was good.

The diagnosis was that of a two lobed lesion with a pleurisy and small effusion at the left base. This latter was confirmed by the withdrawal of two ounces of clear fluid for microscopical examination.

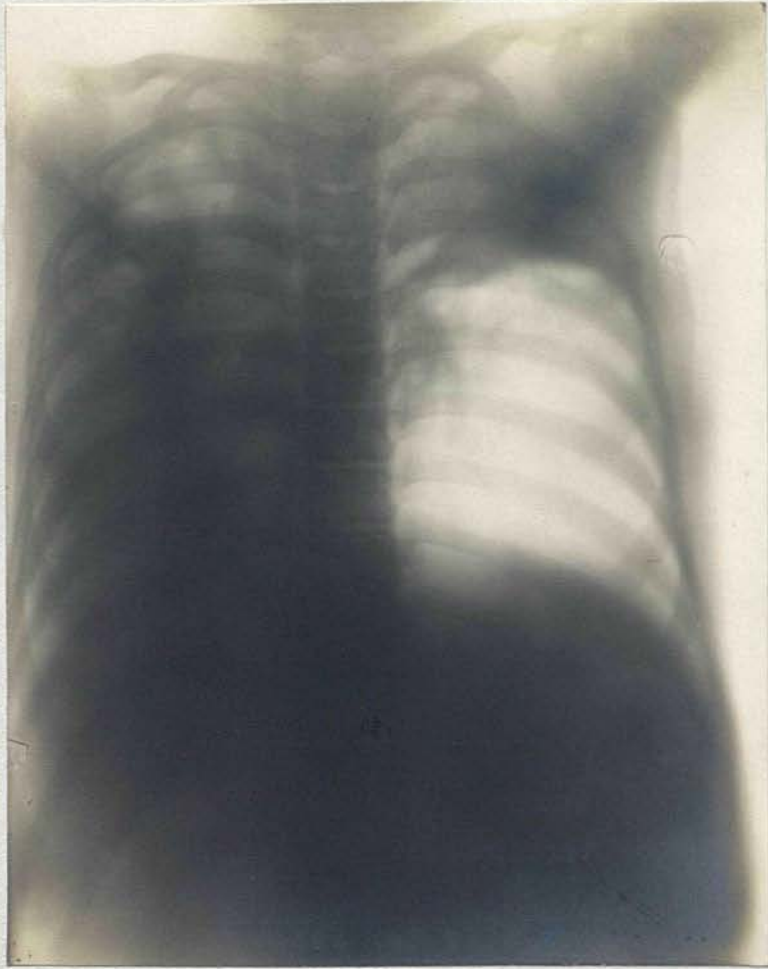
The condition of the chest at this stage is well shown in the photograph on the opposite page where it will be observed that the whole of the left side shows a dense shadow. The upper part of of this shadow was caused by the area of consolidation and the lower by the pleurisy with effusion.

For the first six weeks there was continuous pyrexia the morning temperature ranging from 37.20 to

37.5C. At the end of this time the morning temperature slowly descended to 37C but there was still a considerable rise in the evening to 38.2C. This excursion did not diminish as time passed and during the ninth week physical signs began to make themselves apparent in the right upper lobe. These at first consisted of rhonchi and were localised. Shortly after this the cough became much more troublesome. It was almost impossible to measure the sputum, as in spite of many warnings, the patient persisted in swallowing it. Slowly the temperature began to show a more and more marked swing, and by the eighteenth week dullness and crepitation were evident over the right upper lobe and over the apex of the lower lobe on the same side with distinct bronchial breathing. In the left upper lobe signs of cavity formation soon became evident. About the end of the twenty second week it was noticed that the breath sounds over the apex of the left lower lobe had become

L

R



much higher in pitch and that the amount of moisture had increased. This showed that at that point there was a dense patch of consolidation. This is shown in the photograph on the opposite page where will be seen a very dense shadow corresponding to the apex of the lower lobe.

During the twenty seventh week the temperature became very irregular and on the whole showed a tendency to rise. Physical examination revealed signs of excavation taking place in the left lower lobe in the area over which the high pitched tubular breathing had been heard. At the beginning of the 28th. week the patient had a small haemoptysis (45cc.). After this the temperature rose considerably and remained very irregular for about ten days when it showed some sign of returning to normal, but on the twelfth day the patient had another and larger haemoptysis (250cc.) after the temperature rose and remained elevated. On physical examination it was evident that a large cavity had formed in the



left lower lobe, which was accompanied by great displacement of the heart to the left, the apex beat being in the fourth space  $4\frac{1}{2}$  inches from the middle line. This stage could not be photographed owing to the illness of the patient.

After the thirty first week the disease appeared to have become slightly less active, and as the patient is still under treatment the final result cannot be determined, but in the face of the facts brought forward it will be seen that the prognosis is none too favourable.

The average chart of this case shows the irregularity of the temperature and the steady rise of the pulse rate. The sputum is not of much account in this case as a large amount of it was swallowed.

## CASE IV.

T.W. male aged 26 a West Indian merchant.

When first seen the patient complained of general lassitude cough and fever. Patient believed his illness to have lasted for eleven months.

Patient is the youngest but one in a family of four. His father died of hydrophobia aet. 38, mother is alive and healthy, there are two brothers alive and strong. One sister, a child younger than the patient, died, aged eleven, from a long illness which caused great emaciation. It was not possible to find out whether this illness was of a tubercular nature or not.

During childhood patient had a long illness after which he was sent to live in the country for two years. Up to adolescence there is a history of several attacks of "inflammation" of the lungs. In 1895 patient went out to Trinidad where he was very closely tied to office work. He returned to this country in June 1902 and went out again in

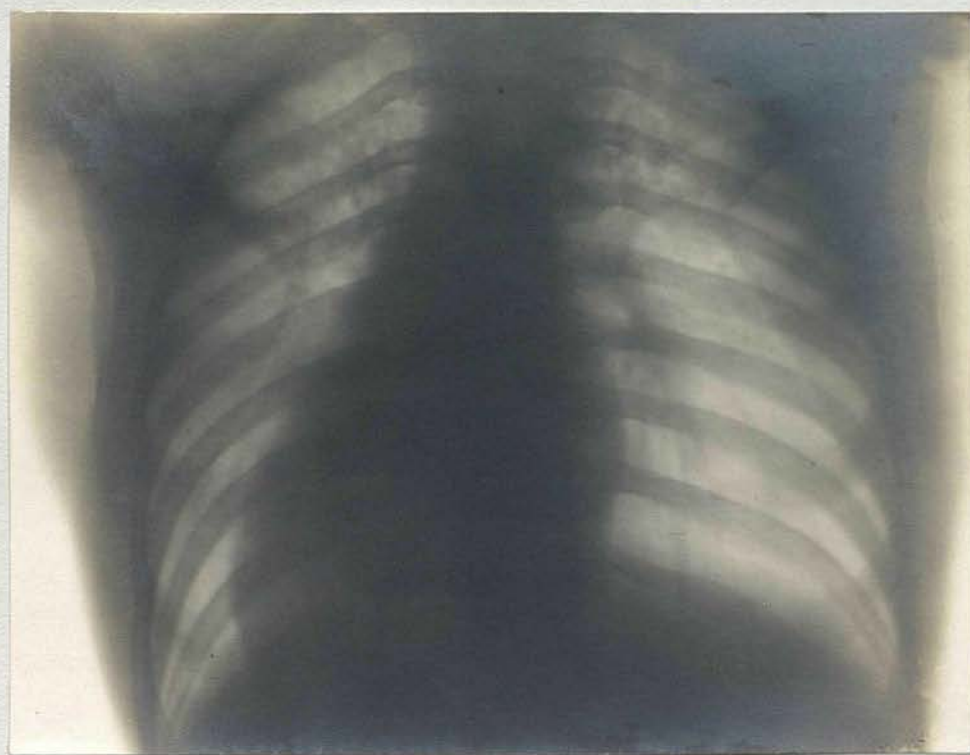
August of the same year. In September the patient noticed that he began to feel ill and that in the afternoon he became feverish. He consulted a medical man who treated him for malaria. In January 1905 cough with a good deal of sputum began, accompanied by profuse sweating at night. He was now sent for a voyage to Jamaica and returned to Trinidad, where he managed to work for a month. At the end of that time he felt so ill that he decided to return to this country.

Patient was tall, fair, and rather pale, of a nervous temperament. Emaciation was not marked. Cough was not so troublesome as it had been previously. Sputum 15cc. per 24 hours and contained tubercle bacilli, but not in large numbers. Dyspnoea marked, there had been no haemoptysis.

On examination of the chest, dullness over the upper lobes on both sides in front and behind was found and more intense on the right side.

L.

R.



Moisture was present but not in great quantity, on both sides in front and behind. There was also some impairment of the note over the left base, but there were no accompaniments.

The digestive and circulatory systems showed nothing abnormal. The anterior border of the spleen was half an inch in front of the mid-axillary line.

The temperature on admission, was swinging from 36.5C to 37.5C. Weight 51.100kg.

As the patient's general condition was so good and the temperature came steadily down to normal, exercise was begun at the end of the second week and was continued in slowly increasing quantity till the eighth week when pain over the left base behind was complained of, accompanied by a rise of temperature. On examination it was found that there was a dry pleurisy over that area without effusion. Patient was in bed for three weeks and for ten days at rest outside,

# NORDRACH-ON-DEE.

AVERAGE CHART.

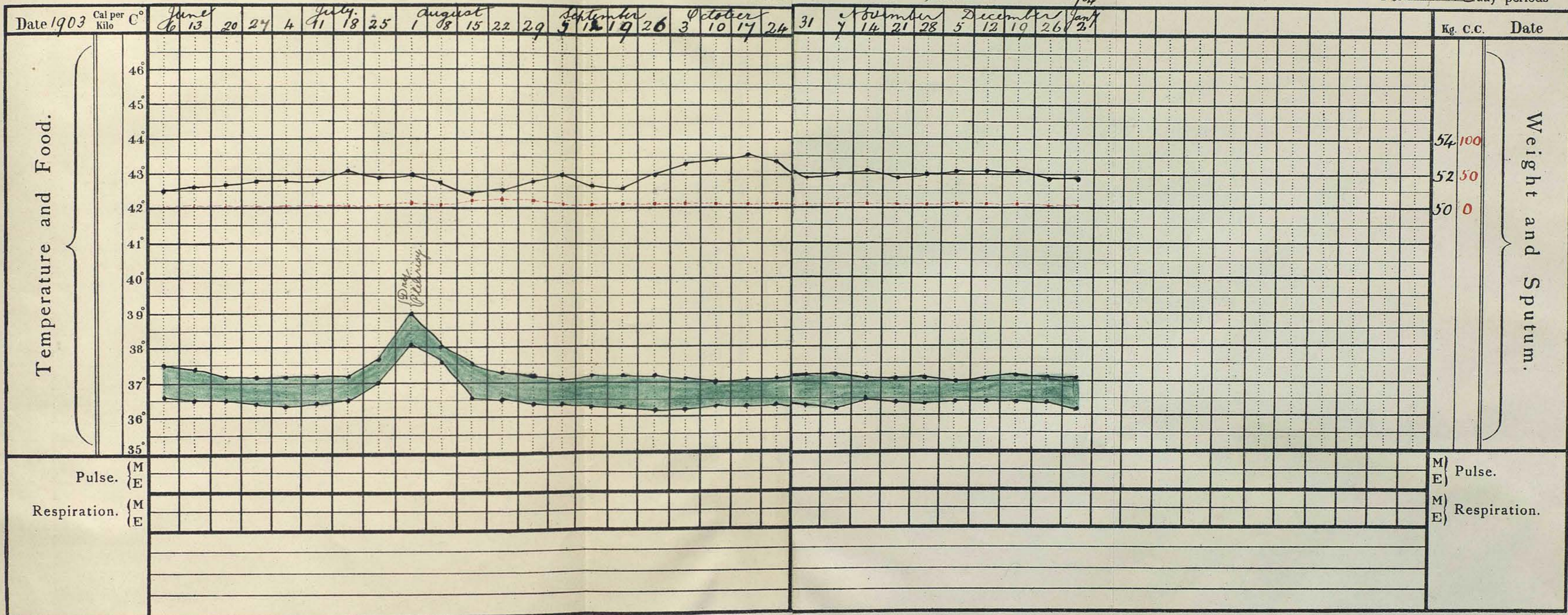
Name *N<sup>o</sup> 4 W.W.*

For ~~see~~ Name *N<sup>o</sup> 4 W.W.*

# NORDRACH-ON-DEE.

AVERAGE CHART.

For *Seven* day periods



when exercise was again prescribed and continued without intermission till the thirty first week when patient was discharged.

On discharge examination of the chest revealed some dullness over both upper lobes in front and behind, which was more marked on the right side. There was also some impairment of the note over the left base. No moisture could be detected over the apices, but over the left base there were a few collapse rales resulting from pleurisy which had probably caused some adhesions. No tubercle bacilli could be found in the sputum for two months before discharge. Patient is now out in Trinidad following his usual occupation and enjoying good health.

The average chart of this case shows well the steady progress towards recovery. As will be seen there never was much pyrexia. The rise of temperature in the end of July is due to an attack of dry pleurisy. The sputum rose a little after that but on discharge was merely a trace.

## CASE V.

L.A. male, aged 30, bank inspector, who first came under medical supervision two months ago on account of "blood spitting". Patient was taking a holiday when the first haemorrhage occurred and immediately after it he returned home and saw his usual medical attendant who sent him to live in the country for about two months. At the end of that time, as the patient's condition did not show satisfactory improvement, sanatorium treatment was recommended. Patient had to return to business for ten days before following this advice.

The patient has never had a serious illness since Scarlet Fever and Measles in childhood.

He is the youngest of a family of six, four sisters and two brothers. One sister died of peritonitis after an illness which lasted two days, another sister is at present a semi-invalid.

There are one brother and two sisters alive and healthy. Patient's mother is alive and strong

his father died after a long illness of which jaundice was the chief symptom.

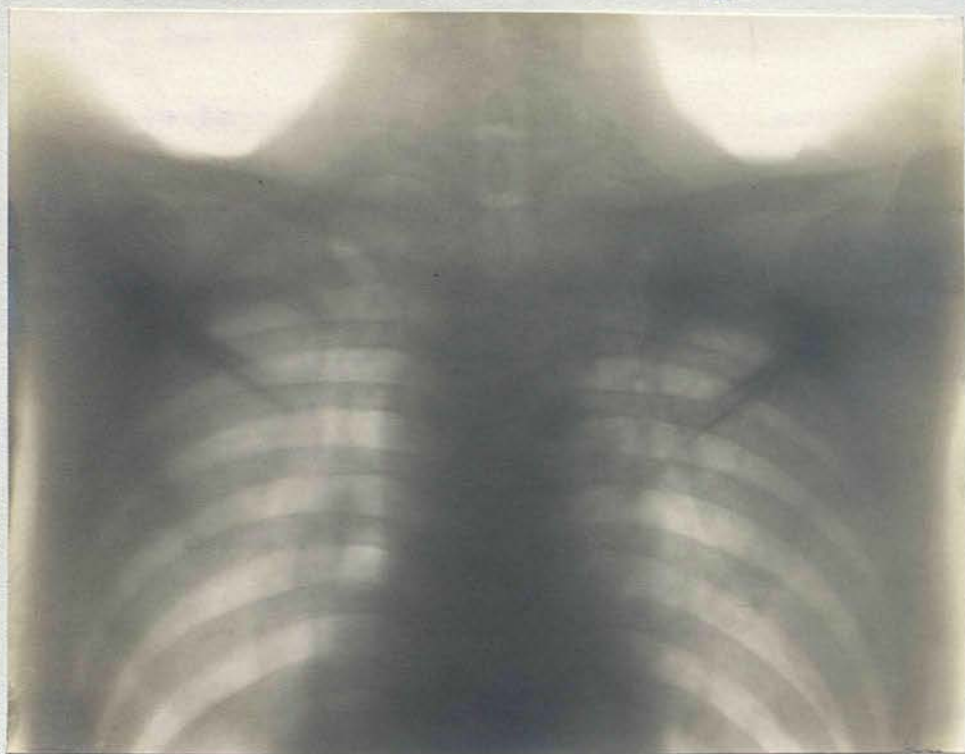
On admission the patient, a tall, well-built man, showed no obvious morbid appearances, and no emaciation. His cough is only troublesome in the morning, and the sputum on an average is 50cc. per twenty-four hours. Tubercle bacilli were found in small numbers. There had been no recurrence of the haemoptysis, the last being two months ago.

Physical examination showed a well formed chest, with some deficiency of expansion over the right side. On testing the Vocal Fremitus it was increased over the apices of both lungs. Percussion showed marked dullness over the right side extending to the level of the fourth rib in front, and behind to the level of the seventh dorsal spine, below which the note was impaired.

On the left side there was slight dullness extending to the level of the second rib in front, and behind to the third dorsal spine. On both sides the

L

R



breath sounds were distinctly bronchial, with a large amount of moisture on the right side in front and behind. On the left side there were a few crackling crepitations audible in front and behind only after coughing. At the left base the breath sounds were very distant, but no signs of effusion could be made out, and an exploratory puncture confirmed the view that no fluid was present, and that there was thickening of the pleura over that area.

The circulatory and digestive systems showed nothing abnormal. Continuous night sweats were never marked, but have been present from time to time for a few nights only.

The temperature on admission ranged from 37.00 to 37.60. Weight 65.200kg.

The diagnosis made in this case was that of a three lobed lesion, two lobes being affected on the right side and one on the left. This latter lesion was probably of long standing and had been

quiescent, but again became active when the opposite lung was affected. There was some thickening of the pleura over the left base the result of several attacks of pleurisy. There was no excavation.

As there was slight pyrexia for the first three weeks after admission the patient was kept rigidly in bed. About the end of the fourth week patient was allowed to walk 200 yards on the level. This was gradually increased till the end of the sixth week, when patient was allowed to walk one mile in the morning and half a mile in the afternoon, without any rise of temperature following. From this time onwards there has been steady progress onwards towards recover. A month after admission there was a sensible diminution in the amount of moisture in the right lung and none could be detected in the left. The case had now become quite apyrexial. By the twelfth week the patient was put on hill-climbing, which involved altogether a walk of six miles. The sputum had now largely



diminished, in fact on some days there was none at all and on others merely a trace.

By the sixteenth week the physical signs had largely gone and all that could be detected was a few fine crepitations over the left lower lobe, and that only after cough followed by a prolonged respiratory effort.

Average Chart:- This is the chart of a case progressing very favourably. The case had gradually become afebrile and the sputum is now nil. The tendency of the weight to fall is due to the large amount of exercise which the patient is doing.

## CASE VI.

Mr. O.W. male, aged 51, complained of cough and spitting of blood, with pain over the left lung. The first appearance of symptoms was a haemorrhage four years previously, after which the patient seemed to have enjoyed good health until two years ago, when he contracted an attack of pleurisy, from which he recovered. Two years later there was a second attack of pleurisy, more severe than the first and second, and the medical man in attendance told patient that both lungs were diseased and recommended sanatorium treatment.

The patient has a younger brother alive and well. The parents are both living and strong. No history of tuberculosis, cancer, nor of diabetes could be found in the more distant relations.

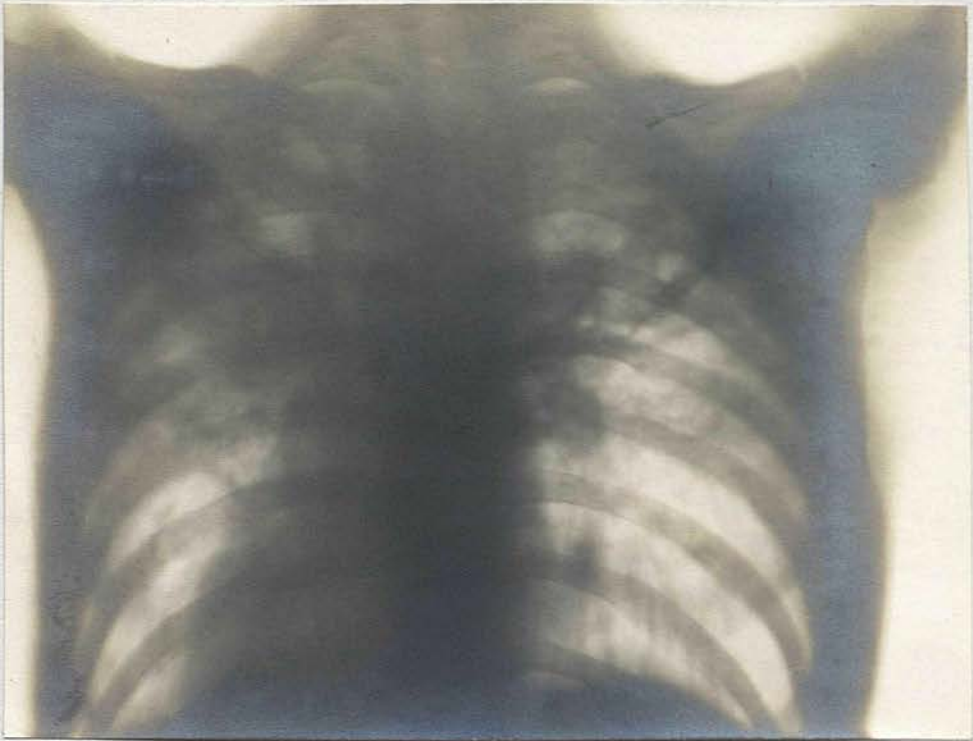
Patient's occupation necessitates and indoor life and for the past eight months he has been continuously working overtime.

Patient is tall, dark, with sallow complexion,

and marked emaciation. The cough was very troublesome in the morning, and in the evening on going to bed. Sputum averages about 15cc. in the twenty-four hours, is purulent in character and teeming with tubercle bacilli which stain intensely. There is considerable pain over the right base extending round to the front. Dyspnoea is marked on the slightest exertion. Muscularity very poor. Inspection reveals poor expansion over both apices. Percussion showed dullness extending in front to the level of the second space, and behind to the fourth dorsal vertebra. On the left side in front the dullness extended to the level of the fourth rib and behind to the eight dorsal spine. Bronchial breathing with medium crepitation was found over the right upper and lower lobes, also over the left upper lobe. The breath sounds over the right upper lobe for two inches below the apex were of very low pitch. Over this area the resonance was much increased and articulate pectoriloquy was present.

L.

R.



These signs were taken to indicate the presence of a cavity in that position.

The circulatory system showed nothing abnormal beyond some tachycardia. the pulse rate being 100 per minute regular in time and force, with tension and volume fair.

In the digestive system some disturbance was found. On admission the patient complained of a great deal of flatulence most marked after meals, and accompanied by intermittent attacks of diarrhoea. This all passed off after three weeks of treatment.

Night sweats had been increasing in amount lately and are very profuse now.

The temperature oscillated between 37.5C and 38.2C. The weight was 48.200kg.

During the night following admission patient had two small haemorrhages, together amounting to 150cc. The temperature remained irregular for about two weeks after this, but at the end of the second week showed a tendency to fall. The morning

temperature remained steady at 37C during the fourth week, but again it rose and remained slightly elevated till the ninth week, after which it slowly descended, and in the beginning of the fifteenth week the patient was able to begin gentle exercise (200 yds.) on the level. This was gradually increased, till on discharge the patient was able to walk eight miles per diem.

The physical signs have undergone a steady diminution, the moisture is now very much less, and the signs of cavity formation which were so evident on admission are now considerably less prominent and are not found over so large an area which probably indicates the cavity is contracting. The point which has probably been most in the patient's favour is that after the first disturbance had passed off there was no further trouble with the digestion.

The average chart of this case brings out several points in the progress very clearly.

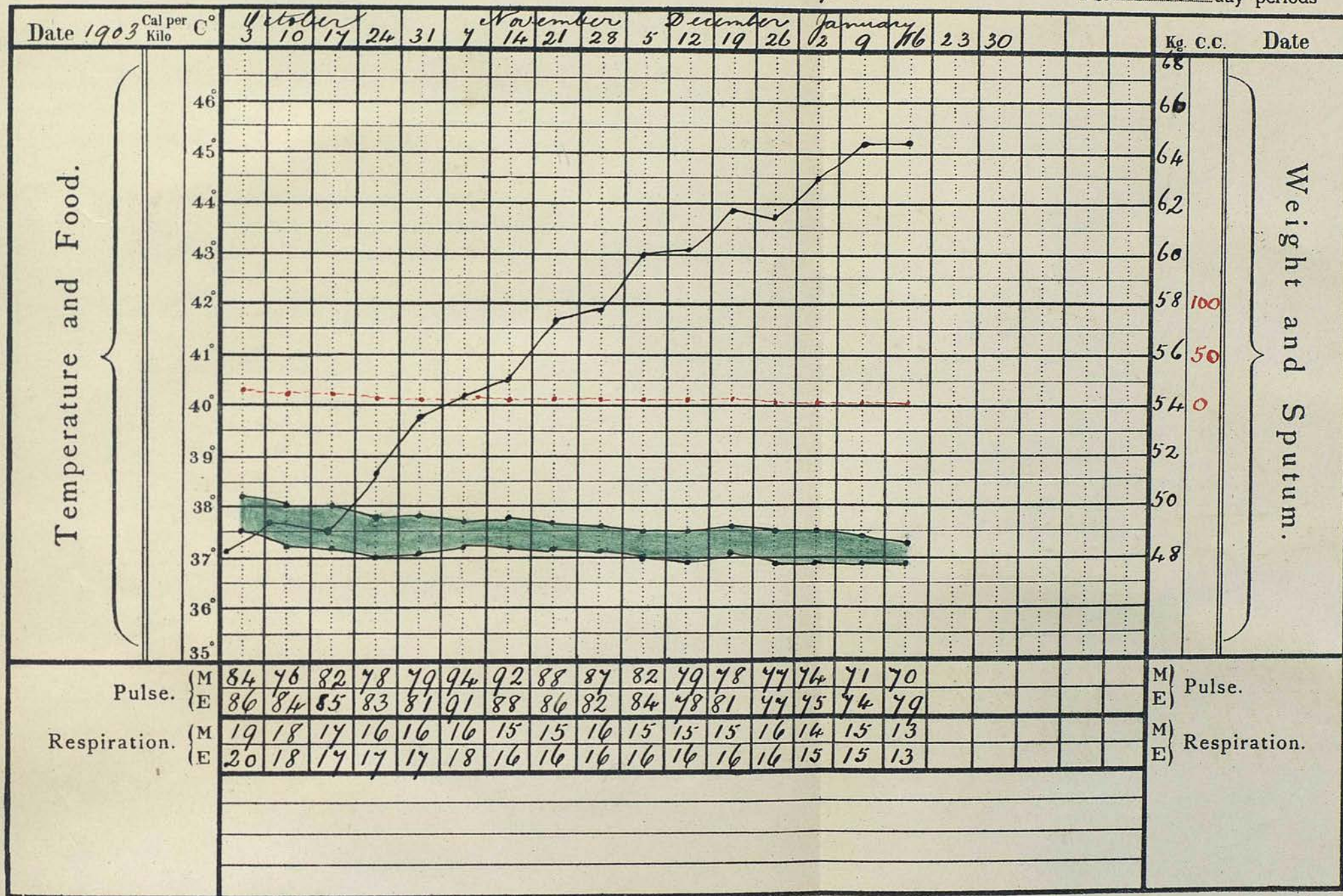
# NORDRACH-ON-DEE.

## AVERAGE CHART.

Name M. O. W.

1904

For seven day periods



Beginning with the temperature, it will be seen that it fell steadily and slowly and that the evening rise was never very great. Towards the end of the chart the morning temperatures remain steadily below 37°C, while the evening temperatures are seen to slowly descend to that level. It will be noticed that the pulse rate steadily became slower. The sputum also shows a steady diminution in quantity till, at the end of the chart it is merely a trace. The weight however shows the most marked change of all. It has risen steadily since the patient's admission. This is typically the chart of a case progressing rapidly towards recovery.

Patient is now back at work in a large town in the Midlands and is enjoying good health.

-----

Of the six cases which are given in

detail above, the first three presented well defined lesions in the lower lobe, while the second three had lesions of a similar distribution, but in them the site of the most active disease was not in the lower lobe. The first three cases did not show rapid improvement while the second group showed rapid and tsteady progress from the begining of treatment.

Of the total sixty cases at present under review six had their chief lesion in the lower lobe. The results in all six of these cases have been very disappointing. One is dead and five are still under treatment either in this country or abroad.

These facts all seem to point in one direction namely that when the site of the most active lesion is in the lower lobe the immediate prognosis becomes guarded and the ultimate result more unsatisfactory. It is impossible to state at present owing to the limited number of cases available, whether the side on which the affected lower lobe is, has any effect

on the prognosis. Of the six cases four had the lower lobe lesion on the right side and two on the left.

#### COMPLICATIONS.

Under this head will be considered the effects of intercurrent complications on the immediate prognosis. As a general rule the presence of one or more of these complications tends to lengthen the period during which the patient must remain under treatment. They may or may not impair the permanency of the final recovery.

(1) Bronchitic Complications:- Under this term are included those cases in which the distribution of the moisture exceeded that of the dullness, where the rales, more numerous at the bases, had a distinctly bubbling character and were very coarse, and of a totally different character from those heard at the apices in pulmonary tuberculosis. This class

of case always showed a tendency to an increase in the amount of moisture in damp weather. Of such cases fourteen were found among the sixty cases, and in four of these asthma was superadded. Without exception these cases showed very slow progress towards recovery. None of them came up to the required standard in three months, and all presented a marked tendency to relapse. With regard to the final result of treatment in such cases it is too early to express an opinion, the fact however remains that two of the fourteen cases are already dead.

The cases in which there is some superadded bronchitic tendency do not seem to show so much improvement during the winter in this country as they do during the summer and are probably better advised to winter abroad either in Egypt or in the Canaries, returning to this country in the summer to avoid the great heat of these places.

It is conceivable that fibrosis taking place in a healing lesion may give rise to dilatation of one or bronchi which in time might form a small bronchiectatic cavity. In one case where the patient was seen by a well-known chest specialist this condition was diagnosed. The patient seems to have quite recovered from the original lesion, but still suffers from severe attacks of coughing, which are aggravated by exertion, and from time to time large quantities of sputum are brought up. This does not prevent the patient from following an easy, comparatively sedentary, occupation and his general health remains good.

(2) Pleuritic Complications:- In two cases a dry pleurisy developed during the course of the treatment and in one a small effusion was formed which was re-absorbed no indication for tapping having arisen. In four more cases there was a history of several attacks of pleurisy, and during

treatment there were one or more attacks, but in only one case was an effusion thrown out. In those cases where there was only one attack during treatment the progress towards recovery was steady, except during the month or so immediately following the attack. This is clearly shown in the average chart of Case No. 4. When there were repeated pleuritic attacks the patients did not react to treatment so well and all were more tedious cases. The following case where a large effusion was present was an exceptionally slow one. The effusion was tapped and 27 ounces were withdrawn, the fluid re-accumulated and eight ounces were drawn off at intervals of three days. This was continued for four months, the intervals between the tappings becoming lengthened towards the end of that time, when considerable re-expansion of the lung took place and improvement became rapid.

(3) Haemorrhage:- In many cases a sharp haemorrhage is the first symptom which directs

the patient's attention to his illness; such cases do not appear to do worse or better than those in which this symptom is absent. A small haemoptysis at the beginning of treatment may not influence the subsequent progress of the cases as is shown in Case No. 6.

Among the total number of cases seven suffered from haemoptysis during treatment. In five of these the haemoptysis was repeated at intervals and these all did badly. In one case the haemorrhage was so severe that the patient died on the spot. The one case which had a single attack showed marked improvement within three months.

In one case where the haemoptyses were repeated every few hours for three days the injection of gelatin per rectum as recommended by Ticknell of Nordrach, Germany, was tried, but without producing any effect on the haemorrhage.

There is one other point in connection with haemorrhage that might be brought forward and it is

its comparative infrequency in female cases. Of the cases quoted only one occurred in a woman and in the writer's two and a half years experience he has only seen one other case.

Tubercular Laryngitis;- Of the total sixty cases eight showed the presence of this complication. In all, except one, ulceration of the vocal cords developed. In one case the disease did not pass beyond the stage of infiltration. In another in addition to ulceration of the cords the epiglottis was also affected producing such marked dysphagia that the patient could only eat after the application of cocaine to the part. In all cases where ulceration was present marked improvement did not take place within three months, the treatment was much prolonged and the final result unsatisfactory. In the case where the epiglottis became infected the disease under-  
-went a rapid change for the worse. The case which presented only infiltration had also a one lobed

pulmonary lesion and showed marked improvement in the three months.

In several of those cases showing ulceration, a tendency to exacerbation of the throat symptoms was noted, and it was nearly always found to be accompanied by a relapse in the lung condition, with irregular temperature for a few days and with some loss of weight.

The treatment in cases of ulceration of the cords consisted in the application of solutions of lactic acid in strengths varying from 10% to 75%. Where pain was a prominent symptom insufflations of orthoform were used and where dysphagia was present a 10% solution of cocaine was applied before taking food.

Pneumothorax:- Only one case of this serious complication occurred. The case was far advanced with lesions in both lungs extending almost to the bases behind. It was noticed that the respirations began to rise and in two days rose

from 24 to 40 per minute. Examination revealed the presence of hyper-resonance over the right base which had previously been dull. This hyper-resonance extended to the left border of the sternum while the cardiac dullness was displaced to two inches outside the nipple line. The pain was not extreme. Exploration with a hollow needle only resulted in the withdrawal of a few drops of clear serous fluid and no pus was found. After this the patient's condition became gradually worse and he died ten days after the onset of the pneumothorax.

Digestive Troubles;- It is not always easy to ascertain whether these have been a factor in the causation of the lung condition or whether they are the sequel to it. In all cases where dyspepsia appears there is a tendency to the formation of a vicious circle involving digestive and respiratory systems. The digestion goes wrong and re-acts on the general condition, which in turn

re-acts on the lung condition which lowering the patient's power of assimilation and setting up gastric and intestinal disturbances completes the circle. Many cases showed great gastric derangement when they first came under treatment, but after a period varying from four to eight weeks, this gradually passed off. Case No. 6 was one of this kind. These cases, where the digestion continued to give trouble, all showed very slow progress. Flatulence, accompanied by pain an hour or so after meals, was the most common symptom. Constipation was the rule in such cases.

When diarrhoea was a frequent and uncontrollable symptom the progress was more often retrograde than progressive.

In one case a mass could be felt in the right iliac region and the symptoms complained of were continued distension with attacks of severe abdominal pain which as a rule came on after meals and latterly the patient was never quite free from pain. The

presence of indican in the urine indicated fermentative decomposition taking place in the intestine. This case showed very slight re-action to treatment and gradually doing downhill died of a large haemorrhage from the bowels.

Dilated stomach seems to be a fairly frequent condition in cases of pulmonary tuberculosis when the disease has persisted for some time. This complication was found in five cases and in all of them gastric lavage was carried out with some amelioration of the symptoms, the diet being carefully regulated at the same time. All these cases were of long standing, and it is difficult to say how much of a hindrance to progress the gastric condition was, but there can hardly be any doubt that it had a considerable effect in depressing the patient's general health.

In two cases a floating right kidney was found with its attendant abdominal and mental symptoms. One case, after the application of a Muirhead's

pad, showed complete and rapid recovery, but the other was of an acute type and terminated fatally within eight months.

Fistula in Ano:- This complication was present in five cases, all of which were of long standing. In two cases operation was performed and the fistula healed up. In the other three the fistula is still discharging. Two of these cases are holding their own, while the third is slowly becoming worse. Both the cases which were operated on are now dead. In none of the cases did the fistula appear at an early stage of the disease but only after the pulmonary condition had persisted for a considerable time.

Albuminuria:- This symptom was present in two cases where there was a history of Scarlet Fever in childhood. Nothing could be found after repeated examination which would point to renal disease at that time. The circulatory system showed nothing abnormal. There was no old-

-standing bronchitis nor emphysema. In one case the albumenuria disappeared at the end of two months when the patient exhibited some signs of improvement but re-appeared again three months later when the patient had a relapse. In the other case the albumenuria persisted for three months at the end of which time the patient had gained slightly. It was absent for about six months when a rapid extension of the disease took place and the albumenuria appeared once more. Both cases are now dead.

Diazo Re-action:- This was present in five cases, four of which are now dead. One case in which it was present when the patient first came under treatment and persisted for six weeks, is now making slow but steady progress towards recovery and the re-action has disappeared.

Menstruation:- Female cases seem to take a somewhat longer time to re-act to treatment than male. A factor in this may be that the

menstrual period occurring every month causes a slight disturbance of the general health accompanied by a rise of temperature, loss of weight, and appetite, and on the whole seems slightly to retard the progress of the patient.

Cardiac Lesions:- Two cases showed a history of rheumatic fever and examination revealed the presence of an old standing mitral stenosis with probable regurgitation. There were signs of backward pressure in both cases which largely diminished under rest and appropriate treatment, but in neither case was there much tendency towards recovery and after an illness, in one case of ten months, and in the other of seven, a fatal termination ensued.

Spinal Caries:- This was found in one case in a very slight degree. The site of the disease was in the lower cervical and upper dorsal vertebrae where there was marked pain on pressure and some deformity. Patient was kept in bed at

absolute rest with sand-bags on either side to diminish movement and patient was on no account allowed to sit up. Counter irritation over the affected area was also used, and this combined with general treatment was continued for five months when the patient was allowed gradually increasing freedom of movement. He has gone on improving steadily since then and the pulmonary lesion has become quite quiescent.

The Mental Factor:- This seems to be a point of some importance in the formation of the immediate prognosis. Some patients seem to throw their whole energy into the treatment and appear to recover more rapidly than those of a lethargic tendency. The type which seems to do best is the patient who has a nervous temperament or is even slightly neurotic. The decidedly neurotic patient does not as a rule show a rapid recovery, as he exhibits a morbid tendency to dwell on and to

exaggerate his symptoms. Patients who are natives of the Highlands seem to show a want of stamina and have a tendency to allow themselves to pass into a depressed state of mind which is very prejudicial to successful treatment.

#### CONCLUSIONS.

With such a limited number of cases the conclusions arrived at must be only of the most general nature, and even then may have to be modified or amplified in the light of further experience. The writer has arrived at the following conclusions. These are.

(1) The longer the symptoms have been present before the patient comes under treatment, the more delayed is the re-action to treatment.

In cases where there is an old healed lesion with a fresh outbreak in a different part of the lung the commencement of the illness should be dated from the

first appearance of symptoms for the second time.

(2) Those patients who have to perform hard muscular work while following their usual occupation re-act more slowly to treatment.

(3) The age-period which lasts from 13 years to 19 years is the most unfavourable. The female sex show a slightly slower re-action to treatment.

(4) As might be expected, cases showing only infiltration recover most rapidly, while those showing consolidation are slower, and excavation cases are slowest of all.

(5) Distribution is an important factor. The fewer lobes affected, the more rapid the recovery. Cases in which the lower lobe is the chief site of the disease, all seem to be tedious.

(6) The presence of complications hinders recovery. Pulmonary complications have the most deleterious effect, next come affections of the larynx and with these may be classed digestive troubles.