THEESIS

ON

MALIGNANT MEDIASTINAL TUMOURS.

April 30th, 1900.
Preface.

In the following pages are embodied the records of a series of very interesting cases which I have observed during a residence of nearly three years in the Bradford Royal Infirmary.

During my stay in the infirmary I devoted considerable time to the pathological department where tumours removed in the operating theatre and in the post-mortem room were submitted to me for examination, the growths recorded in the following pages being among their number. The scarcity of literature on growths of this nature led me to believe that the notes of these cases would be of some value.
Having had several cases of malignant disease occurring in the mediastinum brought under my notice within the last few years, and having had the case of a number of these cases, I propose in the following pages to give an account of the clinical history during life, and of the appearances found on post-mortem examination where such examination was made, in the hope that it will help in the earlier diagnosis and clearer appreciation of the conditions which give rise to such various and perplexing symptoms associated with this disease.

The difficulty of arriving at a diagnosis in these cases is generally admitted, and it is only by a careful study of the various symptoms of each individual case that this can be accurately made.

Physical signs are in themselves often misleading, enabling us to recognize conditions which exist as the result of the growth and pressure of the tumour on the important structures situated within the mediastinum. Conditions which are however much more frequently present in connection with other diseases. I have often noticed that the most obvious and troublesome symptoms arising in a case of this nature are
by no means those that would at first sight suggest mediastinal tumour; in fact they are apt often to suggest some more common disease.
In three of my cases the patients were admitted into the Infirmary for paralysis; in another the skin was dark resembling Addison's disease and in another vomiting and gastric symptoms were alone complained of. After examining some of my cases I have felt undecided whether or not the patient was the subject of two diseases occurring together; in others again the nature of the case was only revealed at the post mortem examination.

The possibility of arriving at a diagnosis of mediastinal tumours during life was discarded until a comparatively recent date. I think however it unnecessary to go into the records of early cases as a considerable amount of confusion is evident as to the condition found.

Dr. Walsh in 1868 published his treatise on diseases of the lungs he collects fifty-eight cases of mediastinal tumour which he classifies under the heads of Sarcinus, Encephaloid, Tumid, haematoid and doubtful and Dr. Cattell in his book on Intra-thoracic Cancer 1868.
adopts this classification but a study of
his cases convinces one that many
of them were typical cases of what
is now generally known as lympho-sarcoma.
More recently many cases of lympho-
sarcoma were regarded as cases of
Hodgkin's disease occurring in the mediastin-
al lymphatic glands, but the two
diseases are now known to be quite
distinct, and such terms as malignant
lymphoma are now falling into disuse
although many workers continue to describe
lympho-sarcoma and lymphadenoma as
one and the same variety of new growth.
I therefore prefer to consider a lympho-sarcoma
as a true neoplasm, that is a sarcoma
originating in connection with lymphoid
tissue, distinguishing it from the progressive
enlargement of the lymphatic glands in such
diseases as Hodgkin's disease which if
regarded as a new growth may lie more properly
between lymphadenoma
of the varieties of malignant tumours that
arise in this region the sarcoma are the
more important and call for special
mention being responsible for some of the
most interesting cases met with in medical
practice; the carcinomatous perhaps more
frequently fall within the range of the
Surgery being generally met with in connection with obstruction in the oesophagus. Primary carcinoma except in relation with the oesophagus is I believe rare in this situation.

Varieties of Sarcoma:

By far the most common variety of Sarcoma occurring in the mediastinum is that known as the Lympho-Sarcoma. Originating as it does in the mediastinal lymphatic glands it retains a structure somewhat similar, consisting of lymphoid tissue containing small round and spindle cells with a fine intercellular reticulum and numerous thin walled blood vessels running throughout the tumour. The sarcomatous elements may be composed entirely of round cells or spindle cells or they may be mixed in either case the lymph glands form their seat of origin, these enlarge and coalesce so that their original outline is entirely lost.

*Some writers describe these tumours as small round celled sarcomata but in many cases that I have examined I have found both round and spindle cells present and on examining secondary deposits from these growths the same arrangement was bland Sutton on Tumours.
Found to obtain.
These tumours grow to an enormous size filling up the mediastinum and invading neighbouring organs; they form large white masses which may come to weigh several pounds; they are soft on section and yield a creamy juice; the surface is often mottled with points of haemorrhage. In places they may be found broken down forming cavities similar to abscess cavities which contain brown pus-like material.
From its original focus it spreads in all directions commonly outwards along the bronchi to the lungs, the entire lobe of which may be converted into a solid mass of growth. It extends upwards into the neck and may at times be found appearing above the clavicles, backward to the spine filling the mediastinum with a mass of new growth. Its method of growth is interesting and instructive extending along the paths of least resistance it moulds itself to the tubular and vascular structures situated within the chest, in the first case recorded the aorta was found surrounded and lying in a funnel of growth the vessel was was however unaffected the growth being easily separated from the coat of the artery arteries may of course be compressed by
The symptoms but the leaves are rarely illus-
ated into.

The veins suffer more than the arteries their
thin walls being unable to withstand the
effects of pressure to the same degree, and it
may happen that the sudden onset of edema
may be the first indication of disease.

The bronchi are also frequently found
surrounded and embedded in a mass of
new growth, the action of the growth on
their walls being peculiarly destructive.

This may in part be due to the fact that
as a rule a considerable mass of growth
is found situated at the roots of the lungs
and the walls of these structures may be
subjected to more prolonged irritation.

The bronchial walls may be quite disintegrated
nothing being left but a narrowed channel
running through the tumour.

As can easily be understood, the condition
of the bronchi will often determine the
nature of the physical signs present in
any particular case.

The result of pressure on nerves may be
noticed in alterations in the voice, paralysis
of the vocal cords, inequality of the pupil
and pain; but I am inclined to think
that vomiting and gastric disturbance may
often be attributed to interference with
The veins, trunk, and pleuresy situated within the thorax.
In two of my cases, paralysis of the lower extremities resulted from direct pressure on the spinal cord.
This form of sarcoma is very liable to form secondary deposits and these may be found in any situation and must be looked for in any suspected case as they often form an important guide to diagnosis. When such a case comes under notice, the lymphatic glands above the clavicle or in the axilla may be found enlarged and tender.
The liver frequently is the seat of metastatic deposits but as a rule this only becomes manifest towards the later stages of the disease, when the irregular surface of the liver may be felt through the abdominal parietes.
The kidneys, spleen, pancreas have all been found to contain deposits although not so frequently. The lungs are as a rule involved by extension of the growth from the mediastinal lymph glands.
The course of the disease is exceedingly rapid and the manner in which fresh symptoms make their appearance is very striking. Acute pleurisy and acute pericarditis may
Came on quite suddenly as the result of the extension of the growth to these membranes and may be of some help in establishing a diagnosis.

The disease is usually fatal in a few months, in the cases recorded it ranged from three to nine months from the onset of the initial symptoms. Nothing is as yet known as to its causation, heredity appears to play its part. In two of my cases an injury was sustained shortly before the onset of the disease, but I think it is very doubtful if this can in any way be laid down as a factor in the causation.

Sarcomata may also arise in connection with the sub-pleural connective tissue. Sarcomata of this nature are rare and are found in children. I have never heard a case of this nature. A case of the kind was reported by J. Thompson in the Glasgow Medical Journal. The tumour occurred in the anterior mediastinum of a child 10 years of age. The mass was heart-shaped, weighed 3 lbs. 5 oz. and measured 7/2 inches in its greatest length and 5 1/2 inches in its greatest width. Within the thorax it occupied very much.

the portion of the heart, but projected considerably towards the left side. The left lung was greatly collapsed, and the heart and vessels were carried over to the right side, so that during life the greatest impulse was felt below the right nipple. The signs closely resembled those of extensive pleuritic effusion on the left side; and on tapping a small quantity of serous fluid was removed, but without causing any appreciable change in the signs. Throughout the case the tubular breath sounds were very distinctly heard over the whole of the left back, which was dull to percussion and only very feebly over the situation of the tumour in front.

A glandular tumour of the median line was diagnosed.

Microscopic examination showed the tumour to be composed of small spindle-celled sarcomatous tissue, combined with a large amount of very dense fibrous connective tissue.

Dr. Joseph Coats said that as the tumour was entirely covered with pleura, being perfectly smooth on the surface, he thought that it must have originated from an organ lying free in the pleura or
else behind the pleura. In the former case there would probably have been such pressure on the trachea and roots of the lungs as to have led to definite symptoms. He was therefore more inclined to regard it as originating in the subpleural tissue. He was reminded of a case of retroperitoneal tumour which had occurred to him many years ago, the tumour was a very large one and composed of small spindle cells similar to those in this case. Such retroperitoneal tumours are not very rare but a subpleural one is apparently very uncommon.

A case that may possibly have had a similar origin was reported by A. Angel Money in the British Medical Journal. The case was that of a sarcoma in an infant, age fifteen months, growing from the posterior mediastinum. It was the size of a man's foot and projected into the right side of the thorax, it extended from the fifth dorsal vertebra down to the diaphragm it was one fourth the size of the thoracic cavity and caused extensive collapse of the lungs; it pushed the heart, aorta, and main carotid in front of it and displaced the liver downwards, it did not.

*British Medical Journal November 1885. page 1046.*
grow from the vertebrae, and the spinal column was not eroded.
During life the symptoms resembled those found in extensive collapse of the lungs.
The physical signs were extensive dulness of the right lower half of the chest, with absence of breath sounds, elsewhere bronchial rales obtained.
An exploring needle thrust into the dull area felt as if held in a dense solid tissue, no fluid could be withdrawn. Microscopic examination proved the tumour to be a round cell sarcoma without any non-striped muscular fibre.
With regard to the microscopical appearances of this case I would like to point out that it is often an extremely difficult matter to find non-striped muscle fibres, and may require repeated examinations of various portions of the tumour. I remember a case of sarcoma of the kidney in a child in which these fibres were only to be found in a very limited portion of the tumour, and although afterwards I made several sections of the tumour for this express purpose I was not successful.
Sarcomata occasionally arise in connection with the thymus gland. I have recorded one case which I believe to be of this
Nature. The microscopic appearances of this case were apparently somewhat similar to those recorded by D. Thompson.
These tumors have rarely been recorded and must be very seldom met with.

Melanotic Sarcoma: Melanotic Sarcoma may originate as a primary growth in connection with the intestinal lymph glands, and I have recorded an interesting case which may have originated in this way.

Melanotic Sarcoma arise especially from structures in which pigment naturally exists, namely the skin and choroidal coat of the eye. Primary melanotic sarcoma arising in the lymphatic glands and in the skin have also been noticed. It is one of the most malignant of all forms of sarcoma and may be propagated by both the vascular and lymphatic system.

This form of sarcoma will be much more frequently found as a metastatic deposit in the lungs than as a primary growth in the mediastinum. In the case recorded the course of the disease was decidedly more prolonged than that of the lympho-sarcoma.
Secondary Sarcoma:

Secondary Sarcoma are frequently found in the lungs, but from the present standpoint they are comparatively unimportant; it is therefore unnecessary that they should be discussed at any length. Secondary Sarcoma of the mediastinum are much less frequent than similar tumours in the lungs, the lungs in most fatal cases of Sarcoma will probably be found to contain deposits, it is however more with the obscure symptoms that arise in connection with the primary tumours with which we have to deal in this essay.

Secondary Sarcoma microscopically will be found to reproduce the characters of the primary growth and may therefore contain baccilli and contagious elements in their substance.

From what has been written it will be seen that I regard the mediastinal lymph glands as the structures most likely to be the starting point of Sarcomatos disease within the thorax and that their extension is usually through the lymphatics, this opinion is perhaps
Somewhat at variance to that generally held as to the presence of carcinoma to spread through the blood stream. This may be so generally felt, it is certainly not the case in the mediastinum, and although no lymphatic vessels have been demonstrated to exist in carcinoma, the extension of the growth here is mainly by the lymphatics, as is shown by the fact that the lymph glands above the clavicles, and in the axillae may often be found infiltrated early in a case.

Carcinoma, as far as I am aware, do not show the same preference for lymph glands in other situations, and as a cause for this preference, I would suggest with considerable reserve, the prolonged irritation which these glands are subjected to as the result of particles of dust and coal. Often in healthy, long lived individuals after death, the lymphatic glands of the mediastinum may be found quite black, and it is well known that carcinoma may arise in chimney sweeps as the result of the irritation of coal.

Erickson says perhaps the most marked instance is that of cancer of the mediastinum.
In chimney sweeps, developed by the
irritation of the dust lodged in the nook
of the part.

Bathin brings forward three reasons for
believing that in this case the dust itself
is really the determining cause of the
ailment.

Firstly: that in two recorded cases cancer had
occurred on the hands in persons habitually
handling coal.

Secondly: that other equally dirty trades
do not cause it.

Thirdly: that a sweaty condition of the skin
so often met with in parts with which
the dust comes in contact.

Kerosene, crude tar and paraffin also
show some liability to the same disease.

I now propose to give an account of
some cases of sarcoma of the mesentery
which have come under my notice
during a residence of some years in
the Bradford Royal Infirmary. The symptoms
and physical signs are recorded as they
were found on admission and during
the stay in hospital, and it will be seen
that they generally represent what one
would have expected to be present from
the condition of the parts found post-
mortem.
Case 1
Lympho-Sarcoma of the Mediastinum
involving the Right Lung in which the Aorta was found surrounded by new growth.

George College, age 64 years
Patient was admitted into the Bradford Royal Infirmary on March 27th 1898 with the following history. He had been ill for four months previously, before which time except for an accident two years ago he had enjoyed good health.
Four months ago he first noticed that his face was swollen, then swelling appeared in his left arm. He was troubled also at times with shortness of breath and cough.
On two occasions he had had a slight haemoptysis but this had never been very severe and soon ceased.
Two months ago he first noticed that he had some difficulty in swallowing solid food but the attempt was unaccompanied by pain.
On admission he showed considerable dysphoria and cough. The face was greatly swollen so that he could hardly see out of his eyes; there was oedema over the sternum and the veins here
were found heightened.

The patient seemed poorly pulse 114 per min.
Respiration 46 per min and laboured
He however preferred to lie flat in bed
An enlarged lymphatic gland could be
felt in each axilla which was tender
when manipulated; but with this
exception he experienced no pain.

Examination of chest: Percussion over the
Manubrium sterni showed marked dulness
but below this the percussion note was
resonant.
The movements of the chest was laboured
on account of the dyspnoea. Anteriorly the
apexes of both lungs showed impaired
resonance on percussion, and on Auscultation
in these areas the breath sounds were
sibilant and distant until the lower lobes
were reached when the vesicular murmur
was well heard.

Posteriorly on the right side the percussion
note was dull from the apex to the angle
of the scapula, and the breathing was
sibilant, distant, and bronchial. No
crepitations were heard at the apex;
at the base the note was resonant. But
the breath sounds were not well heard.

On the left side the note was
impaired at the apex and the
Breathing Bronchial, below the spine of the scapula the breathing was natural.
The heart was normal; the left pulse was a little weaker than the right.
Abdomen: The epigastric veins were found distended, otherwise the abdomen showed nothing abnormal.
The patient got rapidly worse and sank into a semi-comatose condition rambling day and night; he was difficult to manage, constantly trying to get out of bed.
On April 2nd signs of fluid were evident at the right base so that the right side was now quite dull.
The left base remained clear.
Marked cyanosis was noticed about the ears and lips. Both arms were edema-tons but no edema occurred in the lower extremities.

The glands refused to as swelling in the ascites were now decidedly larger.

The patient continued to get weaker and died on April 18th after an illness of six months.

Dr. Brown. April 19th, 1876.

Body spared, edema of both arms.

On opening the chest a slight effusion of yellow serum was found in the left pleural cavity, considerable effusion of serum on the right side.

The mediastinum was occupied by a large mass of new growth, most of it lying between the aorta and trachea, one portion of the growth was found lying in front of the arch of the aorta. The aorta therefore passed through a tunnel of growth corresponding to the point of origin of the carotid and innominate arteries.

The growth was not firmly adherent to the aorta and could be easily dissected from the wall of the vessel. The growth extended outwards on each side of the sternum and was...
adherent to the pleura as the right apex.

The growth on section was firm with some mottling on the cut surface from hæmorrhage. The right lung was somewhat collapsed, a large mass of growth occupied the base of the organ but did not reach the pleural surface.

The apex was free from invasion.

No extension of growth occurred into the left lung.

Heart normal, no aneurysm of the aorta, the mucous membrane being smooth and healthy. The other organs were free from disease with the exception of the thyroid gland which contained a few cysts containing serpæaceous matter.

Microscopic examination of the tumour showed it to be composed of a dilute stroma containing numerous round and spindle cells.

The clinical symptoms in this case were I think fully borne out by the post-mortem appearances and accounted for the following points of interest noted when the case was taken.
1) Palpation to percussion over the manubrium.
2) Inequality of the radial pulses
3) Edema of the head, neck and arms
    owing to the close proximity to the
    superior vena cava of the mass of growth
    found surrounding the aorta.

Of very great interest is the manner in
which the growth moulded itself to the
arch of the aorta without in any way
eroding the wall of the vessel. This feature
of the growth is quite different to that
of a carcinoma which obliterated into
these structures in its immediate neighbour
hood.

Aneurysm although present prior to
admission in this case does not appear
to be a very frequent accompaniment
of mediastinal carcinoma.

The lymphatic glands the adenomas
cause coalesce to form a large mass
at once distinguishing it from lymph-
adenoma in which they remain
divide.
Case II

Hydrop-narcoma causing constriction of the oesophagus occurring six weeks after an injury.

Jane Wilkinson, age 58 years
Admitted into the Bradford Royal Infirmary April 17th, 1898.

At Christmas, 1897, patient had an attack of influenza, associated with pain on the right side. Pain in this area continued at intervals and the back ached.

Patient had an attack of rheumatic fever when 16 years of age.

Six weeks previous to admission, she had a fall and struck the epigastrium with a stone which was lying on a heap of earth. She had severe pain in the epigastrium after the injury and this pain has continued up to the present time. The pain is unaffected by breathing or on taking food, but if she should happen to stoop it is very severe.

A few days before her admittance into the Infirmary she began to reject all food which was on one occasion noticed to be mixed with a little blood.

The vomiting was unaccompanied by pain; since the onset of the vomiting she has wasted rapidly.
Recent condition: Patient now complains of pain in the epigastrium with inability to swallow solid food. She is weak and loose, and has a cough which becomes troublesome if she attempts to lie on the right side.

Extreme tenderness is complained of in the epigastrium. The tongue is dry and furrowed, and the patient's feverish temperature 101°F.

The abdomen on examination was flat. No enlargement of the liver could be made out, and the stomach showed no signs of dilatation.

Examination of the chest. The right side of the chest showed impaired movement on account of pain resulting from pleurisy. Pleural friction was distinctly audible below the sixth rib anteriorly; posteriorly the percussion note was impaired at the base and the respiratory murmur was almost absent below the angle of the scapula, above this point the breathing was regular.

The left lung was apparently healthy.

Trachea: none. The front of the chest showed a few dilated veins but no edema was present over the sternum. The percussion note over the manubrium sterni was distinctly impaired, and
This was also noted in the first and second spaces close to the sternum on the right side. Loud bronchial breathing was heard over the manubrium. No thoracic pulsation or tenderness could be made out.

1. Fracture below each rib.
2. Dullness and bronchial breathing over manubrium and 11 1/2" right space.

The shaded portion represents area of definite and definite respiratory impairment.

The pulses were equal as were also the pupils. The eyes held steady.

The most troublesome condition present was vomiting which occurred a few seconds after taking food. Milk was returned almost unaltered. Much with a little mucous, but not curdled.

As it was found impossible to get any food into the stomach, rectalfeeding...
On April 1, the patient managed to swallow some bread and milk but complained of it sticking in the throat. A bougie was passed and was stopped 11/6 inches down the esophagus.
The pain in the epigastrium continued very severe and some resistance on palpation was noticed in this region. The patient continued to get worse and went home on April 30th. The post-mortem examination was conducted at the patient's home on May 24th.

Jane Wilkinson, date of Post-mortem May 24th 1898. The body was found to be extremely wasted. On opening the chest a mass of new growth could be at once felt filling the mediastinum and invading the root of the right lung. The growth extended upwards behind the manubrium on the right side. A considerable mass of growth was situated behind the second right costal cartilage. No fluid was found in the right pleural sac, the lung was however found to lie firmly adherent to the chest wall, and the lower lobe was converted into a solid mass of growth which had extended from the root outwards. The main bronchus was completely enveloped in growth its walls being disintegrated on opening up the lobe it was found to be full of a brown pus-like material.
The left lung was slightly adherent but otherwise healthy. The heart was un
mineralized and the valves competent.

The esophagus was found to be obstructed for two inches and would only admit
a fine cone of half an inch diameter.

The right wall for two inches was
enlarged by the growth which appeared
to lie extending from without, for on
opening the bag the bulk of the growth
was found to lie submucous.

The mucous membrane was elevated at
one point only. The left half of the
esophagus was free from growth.

Abdomen: The stomach was empty and
small it contained no growth; a gland
the size of a walnut was found at
the cardiac extremity of the stomach.

The mesocolon was globular the size of a
wrenched ball and contained a firm tumour
in its wall.

Microscopically the tumour proved to be
a small round cell sarcoma.

The herine tumour was an ordinary
herine fibroid

The persistent epigastric pain noted
in this case was probably due to
the presence of the enlarged gland.
found at the cardiac end of the stomach at the post-mortem.
I would also draw attention to the destructive action of the growth on the bronchial wall.
The case also illustrates the manner in which the esophagus may be obstructed by the pressure of a sarcoma from without.
Lympho Sarcoma of the Mediastinunm in which effusion occurred in both pleural cavities.

Spring Wright, age 25 years, admitted into the Bradford Royal Infirmary July 19th 1899.

Patient was quite well until five weeks ago when he was playing stones in a邀彩 his master came to him and asked him if he had been fighting. He told him that his eyes were puffed up, and he felt himself as if his eyes were swollen. The swelling got a little worse during the next day but improved again during the course of a week and has since varied in intensity. He found also that his neck was swollen so that he could not button his shirt at the neck.

The swelling was always worse in the morning, sometimes he could hardly see out of his eyes as swelling occurred in the arms.

Patient is a strongly built man. He is up in bed, cannot lie down at all. Veins of the forehead distended, face flushed, neck very swollen, ears are dusty and the eyelids puffed. No edema of the chest or arms.
It has been troubled with a cough for a fortnight and complains of a dull aching pain under the sternum.

Enlarged lymphatic glands can be felt above both clavicles and in the axilla.

Urine: Acid, 89. 1031. No albumen. No sugar.

Examination of chest: The veins at the right margin on the right side were found dehiscended. The lungs expanded equally on the two sides.

The sternum was tender on percussion and the note was impaired.

The right lung anteriorly showed impaired percussion resonance and bubbling breath sounds below the third rib; posteriorly there was absolute dulness from the spine of the scapula, with diminished vocal fremitus and distant bronchial breathing.

The left lung showed some impaired resonance at the base posteriorly and the breath sounds were weak at the apex. The vesicular murmur was well heard.

Heart: No murmur; trachea was present.

The pulses were equal, no bronchial tugging or abnormal pulsations.

Lungs equal, vocal cords unaffected.

Examination of other organs, negative.

On July 29th the patient's condition was unchanged. The chest on the right side
was aspirated and two pints of clear fluid withdrawn; after the removal of the fluid, the left side of the chest measured 17½ inches and the right side 15½ inches; the percussion note on the right side continued impaired after the removal of the fluid.

August 13th. The right side of the chest was again full of fluid, at this time the patient complained a good deal of hoarseness, but was otherwise in much the same condition; the swelling of the face and neck were however not so marked.

On September 2nd the fluid was again removed from the right pleural sac 2½ pints being withdrawn. The fluid continued clear and free from blood.

The note on September 8th reads as follows: Patient losing weight progressively when in bed he breathes in a wheezy manner and generally prefers to lie on his face.

Examination of the right lung shows continued presence of fluid and physical signs as before noted.

The left lung was now quite dull below the middle of the scapula, with absence of vocal fremitus and breath sounds.
Above the middle of the scapula the breath sounds were harsh. Fluid was therefore certainly present at the left base also.

The patient went home on September 9th and was visited from the Dispensary. I saw the patient on several occasions at his home. On November 20th on account of the urgent discharge present the right cheek was again aspirated two pints of fluid being withdrawn.

The liver was now found to be decidedly enlarged and the surface irregular, some ascites was present.

If the patient sat with the legs over the end of the bed the ankles began to swell.
His general condition being disturbing in the extreme.
In the middle of December the right side of the chest was again quite full of fluid. The edema had become general. The legs and thighs were enormous, and the abdomen contained a considerable amount of ascites. The skin was somewhat jaundiced, and he complained bitterly of hemorrhoids. His condition was such as to make it certain that he would not live long. He died on January 8th.

A limited post mortem was made on January 8th.
The body showed general edema. The abdomen was distended from the presence of ascites.

Thorax: The right pleural cavity was full of fluid, also a considerable quantity of fluid was present on the left side. The fluid was clear yellow serum and contained no blood.
The mediastinum was occupied by a huge mass of growth which extended forwards towards the root of the right lung and upwards and to the left, being in close relationship to the pericardium.
The lower lobe of the right lung was
occupied by a mass of growth which had extended outwards from the root.
The left lung showed a smaller mass of growth situated also in the lower lobe.
The liver was greatly enlarged and contained several nodules of growth, the largest being about the size of an orange.
Some of the nodules projected from the surface of the liver corresponding to the right lobe of the organ.
The other organs were not examined.

The mode of onset in this case was very suggestive of serious obstruction as the result of a growth.
When fluid accumulates in the chest in cases of malignant disease it should be evacuated at once because relief can be obtained by this means. Its reaccumulation is often very rapid. The fluid in cases of malignant disease and I believe in found clear and free from blood unless the pleura is itself the seat of malignant deposit.

Microscopically the tumour proved to be a round cell sarcoma.
Case IV  Lympho Sarcoma of the Mediastinum  
Which infiltrated into the Pericardium

Luke Sharpe  age 34 yrs. admitted May 26th 1898.  
The patient was brought into the Infirmary  
Morbund and died almost immediately, 
owing to his condition no physical examination 
could be made.  
He had been ill for about three months, 
two months prior to admission he had 
attended as an out patient.  
Post Mortem May 29th 1898.  
The examination was limited to the chest.  
Bodily thin and wasted, marked Post -  
Mortem lividity.  

On opening the thorax, a large quantity of 
Blood stained fluid escaped from the 
upper and posterior part of the left pleural 
cavity.  The pericardium contained about 
four ounces of similar Blood stained fluid.  
The heart walls were thin, but the valves 
were found competent and free from disease.  
The posterior surface of the pericardium 
showed several masses of growth,  
projecting on its surface, one of these 
had broken down into the pericardial 
space forming an ulcer from which  
No doubt the Blood stained fluid had
Arrived. The mediastinum was quite free of growth. Extending to the spine posteriorly, a large mass of growth was found lying in close relationship to the aorta, which was pressed upon by the tumour. In section, the mass was soft and yielded a creamy juice; in the mediastinum, the tumour was three to four inches in thickness. The growth of the mediastinum spread from the root of the left lung outwards along the interlobular septa with finger-like processes which invaded the lower lobe. The upper lobe of the left lung was free from growth. The lung tissue was in a state of necrosis in the lower lobe. Between the processes of growth, it was friable and of a blue-black colour. In the upper lobe it was blackish-grey and almost devoid of bronchial fluid on pressure, it was however free from smell.

The root of the left lung was embedded in growth; the pulmonary vein being narrowed and the walls of the left bronchus disintegrated and broken down. The right lung was free from growth.

Microscopic examination of the tumour showed it to be composed of small
Round and spindle cells with a delicate fibrous stroma and presented all the typical appearances of what is usually described as lymphosarcoma.

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This case must have run a very rapid course as the patient was able to attend as an out-patient a month before his death.

The rapidly fatal termination in this case was evidently due to infiltration and subsequent ulceration into the pericardial sac.

The necrotic condition of the left lung was probably the result of compression at the root of the lung. The destructive effect of these growths on the walls of the bronchi may again be noted.
Case V

Lympho-sarcoma of the trachea with extensive infiltration of the right lung.

Mary Ann Prior, aged 56 years, admitted into the Bradford Royal Infirmary October 12th, 1895.

Patient had been ill for six months suffering from cough and shortness of breath. In July last she attended as an out-patient, when she was found to be suffering from emphysema, and edema around the ankles.

Six weeks before admission she complained of pain between the shoulders of a dull aching character, which became much worse when bending backwards.

In the last three weeks she has been obliged to remain in bed as when moving about she experienced considerable difficulty in breathing. When in bed the breathing was much easier when sitting upright. She says she has lost about a stone in weight, her appetite is failing and although she has no difficulty in swallowing her throat feels dry. She also complains of some pain at the root of the neck.

Her general health, rep to the present...
Illness has been good, she has never been troubled with winter cough and always been strong and able to follow her employment.

Present Condition: Patient is very wasted and has a weak, cachectic appearance. Malnourished membranes and anaemia, some edema around the ankles.

Great difficulty in breathing is complained of and she requires to be propped up in bed and even when in this position the breathing is laboured and noisy, a sense of suffocation is experienced if she should lie flat in bed.

Examination of the Chest: The right side of the Chest is absolutely dull from apex to base posteriorly.

Diagram of right lung showing dullness to percussion. Absence of vesicular breath sounds. Liver dull but faint, chest heart.
The movement of the right side of the chest is very deficient. Vocal fremitus is absent over the lower 2/3 of the lung over the upper 1/3 it was indistinctly felt.

The muscular movement was absent, a faint wheeze could be heard over the upper 1/3 of the lung posteriorly. The breath sounds in the axillary region were replaced in a similar manner a faint distant wheeze being alone audible.

Anteriorly the percussion note was definitely impaired but above the 2nd rib breath sounds could be indistinctly heard.

The left lung was apparently healthy.

Heat normal, a needle was inserted into the right side of the chest and no fluid could be withdrawn. "Solid mass."

The patient was huddled, begs hard cough accompanied by sputty expectoration. Pupils and pulse equal no local oedema.

Urine acid 1009 trace of albumin, no sugar.

The patient died on October 14th six days after admission.

Post Mortem October 19th 1898

Body macerated, post mortem rigorously well marked.
Thorax: On opening the chest, the right lung was found firmly adherent to the chest wall. No fluid was present in the right pleural sac.

The mediastinum contained a large mass of growth which extended to and surrounded the root of the right lung. The right bronchus and pulmonary vein were partially occluded.

The right lung was nearly a solid mass of growth, processes from the growth at the root extended nearly to the apex of the lung; the lower lobe was occupied by growth which was in a process of disintegration and had in places completely broken down forming cavities similar to abscess cavities.

The left lung was healthy. The trachea at its point of bifurcation was found surrounded by growth. The heart was healthy. The oesophagus was free from growth. The other organs were examined with a negative result.

Microscopic examination of the tumour proved it to be a small round cell sarcoma, whose appearances were similar to those already described in former cases.
The value of an exploratory puncture was well borne out by this case. The physical signs present might well have been interpreted as those of pleurisy with effusion, and in this case no doubt it aided materially in the diagnosis. I have never seen harm result from the introduction of a clean needle into the chest even on repeated occasions.
Case VI: Lympho Sarcoma of the Mediastinum, extending into the Spinal Canal and causing paralysis of the lower extremities.

Hubert Shackleton, age 23 years, houseman. Patient was admitted to the Bradford Infirmary on March 29th, 1878, with the following history. Nine weeks ago he complained of pain in the side which was very severe and of a shooting character, so much so that he was obliged to remain in bed, the pain lasted only a few days and then improved but returned every now and then.

He has not been well since this time; as a rule he could walk about in his room, but often on account of the pain he was quite helpless. Only four days ago he could speak about the house but at this time he complained of aching pains in the loins and weakness of the legs. He was also troubled with headache, and was unable to obtain sleep at night; the bowels were confined and the appetite failing.

The patient is the youngest of five. Mother still living, father died of Chronic Bronchitis, no history of tuberculosis in the family.
After admission to the Infirmary, he appeared to become much weaker and never attempted to help himself. He could only be made to sit up in bed after great difficulty. He complained of severe pain in the back and said that his legs were stiff.

On examining the back, no tenderness could be made out on percussion, and the spine appeared to be natural in every way. The legs likewise except for some weakness appeared to be natural; he said that he was unable to lift the legs from the bed, but with very little assistance from the hands placed under the thighs he was able to do so. Sensibility to touch and pain were present everywhere and no hyperaesthetic areas could be made out, so that it appeared as if he did not try to move the legs.

Lungs: At the right apex the percussion note was impaired as low as the third rib, and the air entry was diminished. Auscultation: the breath sounds being indistinctly made out. Palpably there were no signs of the apex. Over the remainder of the right lung the breathing was harsh. No inspirations.
could be heard over the right lung.
The left lung was resonant to percussion
and on auscultation the venous murmur
was quite distinct.

Percussion over the Manubrium Sterni
showed marked dullness as compared with
other parts of the Sternum, and on heavy
percussion the patient complained of
pain.

The urine was acid, specific gravity 1020 and
contained no abnormal constituents.

On April 2nd the patient was decidedly
lethargic and the condition of the legs was
noted as follows. The Patellar reflexes
somewhat exaggerated, ankle clonus present
on both sides; plantar Clismael'sic and
abdominal reflexes absent.
The muscles reached to isradism and
the grip was powerful. Mental condition
sound, no affection of the cranial
nerves.

Test leaked 100 per min. Apex in 3rd inter-
space inside the nipple line. On auscultation
a slight roughness precedes the full sound
at the apex.

April 4th Patient had incontinence of urine
and on examination it was found that
the legs had become anaesthetic to touch,
and also to pain; the knees jerked without
Alonzo, and Bladder reflexes had disappeared and in addition there was complete motor paralysis of the lower extremities. Sensation had disappeared from just below the zephrum to the hyperesthetic zone was complained of.

The same evening April 4th he had retention and the urine had to be withdrawn with the catheter. On examining the urine now it had materially altered it was acid specific gravity 1013 and contained blood. In account of the rapidly appearing spinal symptoms patient was placed on a water bed and a mixture containing Potassium lodide was prescribed.

April 5th. The catheter was again required on account of retention; he had now also lost control over his bowel, and the finger forced into the rectum was hardly grasped by the Sphincter.

Severe pain in the back was now complained of and on percussing the spine marked tenderness was present corresponding at the spinous processes of the 5th, 6th, 7th dorsal vertebrae. On each side of the spine in this region a slight fulness was noticeable.

April 6th. Urine withdrawn and found turbid, so that the bladder was irrigated.
withivic acid lotion.

The condition of the lungs remained the same, respiration was hurried and there was slight cough and a small amount of expectoration which was examined for the tubercle bacillus with a negative result. There was no haemoptysis and no night sweating.

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| NAME       | William Shackleton |
| AGE        | 23 yrs             |
| DISEASE    | Tuberculosis of bronchial glands. Cough paroxysm. |

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These Charts are now kept in stock by Messrs. Lewis Brothers, 137, High Holborn, London, W.C., and will be supplied to Affiliated Homes or Queen's Nurses at the rate of 100 for 2/-, 200 for 4/-, 500 for 8/-, delivered free on receipt of a Postal Order for the amount accompanying order.
April 9th. Patient continued to get worse. He complained of thick expectorations, 34 per minute, and he now complained of a gruel sensation at the level of the fifth intercostal space.

The fundi were examined with the ophthalmoscope and found to be normal. He died the following day.

Post Mortem, April 9th, 1875.

Belly poorly nourished, limbs somewhat wasted. Post mortem rigidity present.

Spinal Column: On inspecting the spinal column, the spine of the sixth dorsal vertebra was found to be fractured and on each side of the fifth spine a whitish, calcified growth could be seen. On opening the spinal canal similar growth was found in the canal opposite the fifth dorsal vertebra. Masses of new growth of a similar nature were found in the spinal canal at the level of the 11th and 12th dorsal vertebra.

The tumour was compressing the spinal cord at both these levels, and when the cord was removed it was found soft and fluid, corresponding to the points of compression.

The intervertebral foramina were found.
full of growth, which was evidently
spreading from the chest.

Thorax: on opening the thorax a mass of
growth was found lying in close
relationship with the root of the right
lung, extending round the pulmonary
artery, and then passing directly into the
right lung, forming a large mass in the
upper lobe. The right lung was firmly
adherent to the chest wall.
The left lung was slightly adherent at
the base of the organ but was otherwise
healthy.
The tail of the pancreas was found to
contain a nodule of growth, and the
spleen glands were enlarged and cancerous.
The microscopic examination of the tumour
proved it to be largely composed of
spindle cell sarcomatous elements.

The case has many points of interest;
the difficulty of arriving at a diagnosis
arose from the fact that the pulmonary
symptoms were quite masked by the
rapidly appearing spinal symptoms.
The case was considered to be one
of tuberculosis with secondary tuberculous
deposit in the spinal canal, and the
physical signs noticed at the right
After sounding at first sight lend support to this view, but the cause was I think decidedly too rapid for one of tuberculosis disease.

In connection with the physical signs noted when the case was taken, dulness to percussion over the manubrium sterni is important and has been repeatedly noticed in the cases which I have observed. In making sections of these tumours for diagnostic purposes I find that formalin or formalin syrup a good hardening medium. The tissue requires to be hard hardened and is rather friable; it is allowed to remain in the formalin solution for five days, from which it is transferred to a solution of gum aram syrup and after a day to gum alone, which may be cut on a pathologic microscope. Much better sections may however be obtained by embedding the tumour in Celloidin.
Sarcoma of the Medias trium invading
into the spinal canal and causing
paralysis of the lower extremities.

Adam Ogden, age 32, Joiner
Patient was admitted into the Bradford
Infirmary on the 15th July 1898, having lost
the use of his legs for one week.
Patient has been ill since Christmas
Complaining of pain between the shoulders
and cough, pain at first was intermittent
coming on for two or three days at a time,
but five weeks ago it became almost
constant, and a month ago it prevented
him from following his work; and he has
been confined to the house since that
time. The pain was situated between the
shoulders, rather more on the left side
sometimes it is felt in the left clavicle
and down the left arm, it is very severe
at night and often prevents sleep; coughing
makes it worse and causes considerable
distress. In the past six months he has been
troubled with cough accompanied by
yellow frothy expectoration; but never any
haemoptysis or night sweating.
A fortnight before admission he experienced
some weakness in the legs, he found
that he had difficulty in walking.
Strait and staggered during the attempt he also noticed some numbness of the legs and difficulty in passing urine.

The weakness in the legs became worse until seven days ago when he became quite paralyzed.

In addition to the paralysis of the legs he suffered from retention of urine and incontinence of feces, there was also loss of sensation below the waist and a gentle sensation perhaps due to the bladder distention.

Four years ago he contracted a chance followed by sore throat.

Present condition: Patient is thin and weak, lies flat in bed and is quite unable to move his limbs. Below the third intercostal space sensibility to touch is quite lost; sensibility to variations in temperature is also lost from the same level. Loss of sensibility to pain extends downwards, from two inches below the umbilicus on the right side, on the left side from below Poupart's ligament.

Anesthesia and analgesia complete in the legs, above the third rib sensibility is unaffected. No zone of hypesthesia. There is complete motor paralysis in the legs, the intercostal muscles below the
fourth rib are paralysed, the diaphragm and upper intercostal muscles alone acting during inspiration.
Patellar reflex absent. No ankle clonus. Plantar reflex exaggerated and when elicited causes spasm of the legs.
Abdominal and epigastric reflexes absent. Retention of urine and incontinence of faeces; some numbness has been noticed in the left arm.
Cranial nerves unaffected. Mental functions clear, no optic neuritis or other changes in the fundus detected.

Examination of spine: No undue prominence of the spinous processes, but on heavy percussion some tenderness is
Complained of over the upper dorsal spines from about the second to the sixth.

Examination of the chest: The movement on the left side is decidedly deficient; on percussion the left lung auditory was resonant, but on auscultation the breath sounds were found to be weak and in marked contrast to the loud vesicular murmur heard over the right lung. Posteriorly the left lung was dull to percussion at the base and the breath sounds were entirely absent. No abnormal accompaniments were detected.

Right lung resonant auditory and posteriorly and the vesicular murmur loud and well heard.

Heart: Normal. Abdomen dis tended, tongue furrowed. Urine clear, acid, no albuminuria has to be withdrawn with a catheter.

On July 20th the dulness to percussion on the left side had increased, a needle was injected but no fluid could be withdrawn. July 26th the left side was now quite dull to percussion auditory and posteriorly except for a resonant area at the apex; the breath sounds had also disappeared and vocal freedom was very indistinct. Apex beat not displaced, patient had
A troublesome cough and is feverish; his general condition is decidedly worse. August 15th: Bed sore appeared on the back; urine became foul so that the bladder had to be washed out.

August 19th: Patient is getting rapidly worse. Temperature runs up to 102° F. at night. He is often very restless and requires hypodermics. The signs in the left lung remain as

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**MEMORANDA**

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Before no signs of disease are evident on the right side.

A huge bed sore is present over the sacrum with a deep sloughing base which in spite of careful treatment continues to increase.

On examining the abdomen the lower was first noticed to be decidedly enlarged extending to below the umbilicus, its surface could be felt to be irregular from nodules of growth. The cutaneous veins on the abdominal wall were dilated but no ascites was present in the abdominal cavity. The patient continued to get worse and died on August 30th.

Post Mortem August 31st 1896

Body emaciated, rigor mortis present in all extremities. A large sloughing ulcerate situated over the sacrum.

Spinal column: On each side of the second dorsal spine a soft white growth was found. This could be seen extending into the thorax. By removing the transverse processes of the third and fourth dorsal vertebrae on the left side the transverse processes were softened by the growth.

The spinal canal was largely occupied by similar growth at the same level.
The growth was found adherent to the dura-mater but did not appear to penetrate the membrane. The tumour caused contraction of the cord and failure the second dorsal vertebræ and softening of its substance was advanced. At the point of contraction and immediately above and below this point the cord had been severely damaged, and in addition no differentiation could be made between white and grey matter below the level of the third dorsal vertebræ, the appearances of the cord were healthy.

In the lumbar region nothing could be found to account for the marked signs of lumbar cord disease noted during life.

There was no fluid was found in the pleural sac on either side. The lymphatic glands at the root of the left lungs were greatly enlarged. The left lung was found adherent to the chest wall especially toward the apex; the upper 2/3 of the lung was occupied by a large sarcomatous growth which had spongelike extensions from the root; the remaining portion of the left lung was dense, slate-grey colour resembling grey-rehepatisation.

The main bronchus was patent but surrounded by a mass of growth.
The right lung was described as free from growth. A large serous hollow lymphatic gland was found situated between the first and second costalcartilage on the left side.

The liver was of immense size weighing 6 lbs. 17 oz. Presenting on its surface numerous white nodules which penetrated deeply into the organ. One mass on the upper surface of the right lobe was two inches in diameter.

The other organs were examined but found to present no special abnormal appearances.

The great similarity between this case and that of the preceding led me to expect a similar cause, and even before the condition of the liver made the diagnosis evident I felt certain that the patient was the subject of a mediastinal new growth. The conditions present would closely simulate a case of phthisis with tubercular deposit in the spinal canal, the dulness over the left lung was however too extensive to be attributed to this, and in the absence of fluid after the introduction of a needle the diagnosis
of new growth was decided upon.
The louse came over the sacrum and the
bladder symptoms pointed to a deposit in
the lower dorsal or upper lumbar
region, but although the cord in this
situation was examined microscopically
nothing was found to account for
these symptoms.
Microscopic examination proved the
growth to be a spindle seeded sarcoma.
The growth in the spine was of the same
nature, but the general arrangement closely
resembled the grouping seen in Carcinom-
ous tumours. A section of the growth
when the spine was shown by me at
the Bradford Medical Chirurgical Society's
Meeting on January 10th, 1898.

Microphotograph of section of the louse showing
the arrangement of the neoplastic cells. x 60 diam.
Case VIII.  Case of malignant growth in the chest, in which gastric symptoms were the prominent feature.

Alfred Coles, age 56 years. Coachman.

The following case came under my notice some months ago, when I saw the case in consultation with another Medical man.

Patient had been ill since the beginning of June 1899, before which time he had enjoyed good health.

In August when I first saw him he was weak and wasted and drooped forwards when he walked. He complained of pain and distention after food and had frequent cramp-like pains. Vomiting was also of common occurrence so that he was afraid to take any solid food as it increased the pain and was often returned.

He said he had lost weight rapidly of late and attributed it to the fact that he was unable to take solid food, his appearance was strongly suggestive of a person the subject of malignant disease.

On examining the abdomen I discovered a small ventral hernia which I returned with the result that the pain almost entirely disappeared, otherwise the abdomen appeared to be normal.

Examination of Chest: The air entry was...
equal on the two sides, the percussion note was impaired posteriorly on the left side and the vocal resonance in the same area was distant and indistinct. Alone the angle of the scapula, the breath sounds were very loud.

The right lung was healthy, the heart was normal; the patient was troubled with a slight cough and some expectoration. The sputum was acid, 1020 and contained no abnormal constituents.

I saw the patient again about the middle of September, vomiting and gastric disorders were still the symptoms that caused him most trouble. On deep pressure in the epigastric region some pain was complained of but he had experienced considerable relief from pain generally since the reduction of the hernia. The physical signs noted at the left base were still present; patient's general condition was much the same; he could walk about but was not fit to carry on his occupation. I now decided to try the effect of washing out the stomach, this I did on several occasions, the food passed easily and a considerable amount of glossy mucus was evacuated, but the patient derived no benefit.

I saw the patient on one or two occasions...
During the course of the succeeding month, he had lost a few pounds in weight and on examining the epigastrium an indefinite sense of resistance and pain on deep palpation were noticed. The left lung was decidedly dull to percussion below the middle of the scapula, as compared with the right side, vocal fremitus was present, but the local sounds were very indistinct.

In October 26th he complained of rather severe pain in the epigastrium and in preparation what appeared to be the depressed left side of the lungs could be indistinctly felt. It was smooth and rounded and tender on manipulation.

The left lung continued in the same condition. Although the vomiting and gastric symptoms were now less severe, and patient was still able to walk about the house, it was evident that his strength was failing.

On November 7th he was confined to bed on account of troublesome cough, and difficulty in breathing. On examining the chest the left lung was high up so that the spine of the scapula was quite dull with absence of vocal fremitus and breath sounds. A needle was inserted into the left pleural cavity and some limited air was removed, which on
Microscopic examination contained red blood corpuscles. The right lung continued healthy. The heart apex was displaced towards the fluid, the pulse beats 100 per minute were force and irregular. Abdomen: A distinct mass could now be felt corresponding to the 9th & 10th cartilages on the left side and projecting downwards and inwards evidently a mass of new growth projecting from the left lobe of the liver. There was no ascites present and the patient was free from jaundice. Patient continued to get worse, he became restless and at night nothing delirium was often noticed. Dyspnea on account of fluid in the left side of the chest was severe, and his relations would not consent to having the withdrawal. He died on November 30th.

The case was I think one of Sarcoma of the mediastinum, with extension to the lower lobe of the left lung with subsequent secondary deposit in the left lobe of the liver. At first I fancied that the patient might be suffering from obstruction to the oesophagus as the result of the growth of an epithelium, but this was disproved by the very manner in which the
The esophageal tube was passed into the stomach on several occasions without any obstruction being noticed.

The patient's general appearance accompanied by the physical signs noticed at the base of the left lung caused me to believe early in the case that mediastinal tumor was the probable explanation.

The implication of the pleura accompanied by the rapid iteration of fluid which under the microscope was found to contain blood lends support to the suspicion that the case was one of sarcoma.

The marked gastric symptoms during the early course of the case may have been due to implication of some of the nervous structures situated within the mediastinum.
Case of'developing sarcoma which
pressed upon the spinal cord and
caused paralysis of the lower extremities.

Alice Swinton, age 36 years.
Patient was admitted into the Bradford
Royal Infirmary on July 24th 1879, with
paralysis of both lower limbs, loss of
sensation in the lower limbs and
incontinence of urine.
Two years ago, while going downstairs
she fell and hurt her back, she was
laid up in bed for some time afterwards
but gradually got better. Six months
after the injury she began to notice
weakness of the legs, with some alteration
in sensation. At the beginning of June 1878
the paralysis was complete and she
became an inpatient of the Leeds General
Infirmary. This was therefore just a year
ago, since this time she has entirely
lost the use of her legs.
On admission, patient had complete
paralysis of the lower extremities with
loss of sensation of the lower limbs and
of the abdomen and chest as high as
the sixth rib. Plantar reflexes were
present, psoas reflexes absent.
So wasting had occurred in the muscles
of the Leg. A constant effusion was present in the left great toe which however was not noticed by the patient.

On examining the spine in the region of the 5th, 6th, 7th dorsal vertebrae a marked projection of the spinous processes was evident, and on percussion over the spine in this region tenderness was complained of.

A large lenticular area was present over the sacrum with a black sloughing base and over the heels the skin was broken. Sanguinorrhoea, very slight movement of the extremities, breathing being mainly diaphragmatic. The lungs were resonant on percussion and vascular. Pulmonary distinct.

Heat, Pulse 90 per min. after 6th transfuse no valvular trouble.

The case was transferred to the surgical wards with view to operation as it was decided that the patient was suffering from the effects of pressure from a tubercle deposit in the spinal canal. Although after a long a hiding very little hope of success was upheld.

On 24th August patient was taken to the operating theatre, laminectomy having been decided upon.
An incision was made over the spines of the 6th, 7th, 8th dorsal vertebral when almost immediately a dark mass was exposed which closely resembled blood clot, lying on each side of the apices processes.

A portion of this substance was handed to me for microscopic examination, I was fortunate in being able to procure a fresh section which proved to be a melanotic sarcoma, in consequence of this the operation was abandoned. The wound was dressed up and the patient sent back to the ward, she however got rapidly worse and died on August 28th.

Dick Morton August 29th 1849.

Body enucleated, large red bare over the sacrum, a number of small pigmented spots noticed in the skin. Angular curvature of the spine in the mid-dorsal region.

On cutting down to the spine an irregular mass of deep black tumour presented in the bed of the operation and tended into the bodies of the 5th, 6th, 7th dorsal vertebral and also into the corresponding ribs on the left side. Two smaller portions of growth were
found in the lower dorsal and lumbar regions.

The dura mater was nowhere invaded by the growth, but on opening the dura the cord opposite the sixth dorsal vertebra was found compressed. Considerable thickening of the cord was evident above and below the point of compression, and faint tracing of ascending and descending degeneration could be made out.

The dorsal nerve roots from the 4th to the 7th were pressed upon by the tumour.

Tram normal. Heart normal.

Lungs: Right lung now adherent. Pleural surface studded at intervals with black spherical masses of growth varying in size from a pin-head to a small walnut. The substance of the lungs contained a few nodules of growth which were most numerous near the root.

Left lung firmly adherent to the ribs and spine. The lower lobe was almost entirely converted into a mass of growth which was semi-diffuse and in parts necrotic and foul. The upper lobe was only slightly invaded by the growth.

The central pleura showed several black points of growth near the spine.

The other organs were examined and...
found in the lower dorsal and lumbar regions.

The dura mater was nowhere invaded by the growth, but on opening the dura the cord opposite the sixth dorsal vertebra was found compressed. Considerable thickening of the cord was evident above and below the point of compression, and faint tracing of ascending and descending degeneration could be made out.

The dorsal nerve roots from the 4th to the 7th were pressed upon by the tumour.

Brain normal. Heart normal.

Lungs: Right lung non-adherent. Pleural surface studded at intervals with black spherical masses of growth varying in size from a pin-head to a small walnut. The substance of the lungs contained a few nodules of growth which were most numerous near the root.

Left lung firmly adherent to the ribs and spine. The lower lobe was almost entirely converted into a mass of growth which was semi-fluid and in parts necrotic and foul. The upper lobe was only slightly invaded by the growth. The focal plexus showed several black points of growth near the spine.

The other organs were examined and
found to be in a healthy condition.

The seat of origin of the disease in this case is not easy of determination, but I see no reason why the disease may not have arisen in the lymphatic glands of the posterior mediastinum. I can find no authority stating that melanotic sarcoid may arise in connection with bone; but they all agree that the seat of origin may be situated in the lymphatic glands.

At the post-mortem examination, the cause of this nature it is often impossible to recognise the portion in which the tumour originated.

It seems hard to believe that the extreme changes in the left lung came on subsequently to the operation, and I am inclined to believe that the condition of the lung was not detected during life, although no cough or pulmonary symptoms were complained of, and her general condition before the operation was such as to warrant a serious operation of this kind.

Two other points in this case require further notice; first, the injury six months before the onset of the weakness in the legs, second the very lengthy history.
The patient had been ill for 15 months.
This is considerably longer period than any of my cases of lympho-sarcoma.
Microscopic examination proved the growth to be a melanotic sarcoma. Below will be seen a micrograph of the section made during the course of the operation. It however fails to reproduce the character of the cells in a satisfactory manner.

Microphotograph of melanotic sarcoma
× 150 diam. Unstained
Case X.

Sarcoma of the thyroidium in a boy, age 6 years, probably originating in the thymus gland.

George Ambrose, age 6 years. 
Patient was admitted into the Redfern Royal Infirmary on December 2nd 1879, suffering from some dyspnea. 
He had been ill for three months previously and was suffered to be afflicted with whooping cough. 
A fortnight before admission his mother noticed that his shirt would not fit at the neck, and on looking at his neck she found it to be swollen. His breathing also was noisy and difficult, and he had severe attacks of coughing. 
On admission he was suffering from dyspnea. Respiration was 28 per minute with a long drawn and stridulous inspiration, considerable excursions were made by the larynx. 
He also suffered from very severe attacks of coughing which if prolonged cause his face to become cyanosed, the neck is swollen generally but on each side of the trachea the enlarged lobes of the thyroid gland can easily be made out, the neck measured 11½ inches in circumference.
The lungs were healthy, the laryngeal
stridor could be heard all over the
chest. Laryngoscopic examination negative.
The voice was quite natural.
The child took his food well and experienced
no difficulty in swallowing.
During the course of the next few weeks
the child had two or three very severe
attacks of ophrym of the glottis, and
as it was thought that anyone of these
attacks might prove fatal from
aphysia it was decided to divide the
parathymus of the thyroid gland.
The operation was successfully performed
under chloroform on December 20th.
The child after the operation seemed to
be improved. The breathing being easier
and the dyspnea less marked, though
not absent.
On January 2nd whilst asleep the child
had a sudden attack of ophrym of the
glottis, became cyanosed and convulsed
and died in five minutes.

Post mortem: January 2nd, 1900.
Body fairly well nourished, rigor
mortis present. Operation wound two
inches long in mid line of the neck
over the larynx and trachea.
In separating the skin from the chest wall the right pectoralis major muscle was found to be infiltrated with new growth of firm consistence.

The thymus and costal cartilages were built difficultly separated from the mediastinal contents, being held down by similar new growth adherent to them. On removing the thymus the anterior mediastinum was found occupied by the tumour, which spread upwards into the neck infiltrating the whole of the thyroid gland and extending alone to infiltrate the glands at the angle of the jaw; this was more especially the case on the left side.

Downwards the growth extended to and became attached to the right auricle, the lymphatic glands in the posterior mediastinum were enlarged and evidently the seat of similar infiltration.

On section the growth was firm and of a greyish-white appearance. The lungs were healthy, no marked congestion was found on opening up the larynx or trachea. All the other organs were healthy.

Result: New growth pressing on trachea from appearance the thyroid gland was involved only secondarily by the spread.
of the growth, upwards from the anterior mediasinum, where it may have originated in the thymus gland, this structure could not be differentiated from the mass of growth.

The microscopic examination shows the growth to be a small round peded tumour divided up into alveoli by a fine meshwork of connective tissue.

These appearances are somewhat similar to those found by D. Thompson in his case (repeatedly). The pathology of tumours of the thymus gland is not well known but the tendency of pathologists generally is to regard such a structure with suspicion.

The case is certainly a very uncommon one and the diagnosis of whooping cough during the earlier stages was quite natural.
In discussing the symptoms met with in a disease of this kind it is obvious
impossible to give a detailed description of
the very numerous conditions which arise,
not will this be attempted. As no combination
of symptoms may be considered at all
characteristic of the disease, and a train
of symptoms present in one case, may
all be absent in the next case met with.
I therefore propose to mention a few points
which have attracted my notice.

Pain this varies considerably in different
cases and is frequently entirely absent. In
my experience it is decidedly less severe
than would have been expected and I
find that on going through my cases it has
never been so severe as to require thoracic.
When present it may be referred to any
region frequently to the side, when such
is the case it is often the result of lining.
When This is the symptom also I find is
not of very frequent occurrence and in
my cases was almost uniformly absent.
In case II it was present on two occasions
but never to any serious extent.
In this connection it may be mentioned
that the symptoms have very little
destructive action on blood vessels, which
may be found coursing through the tissues
and surrounded by growth, but modern without their capsule being in any way damaged. Red-amant jelly esophagus is described by some authors, but I have no experience of this sign.

Dyspnea: Dyspnea is usually present in cases of mediastinal tumor, and from the condition found it was certainly to be expected. It may arise from any various causes, and the cause such as pleuritic effusion, displacement of the heart, pancreatitis, etc., should if possible be determined.

Acute Pericarditis and Acute Pleurisy: A very important symptom of mediastinal tumor is the manner in which they cause acute inflammations of the pleura and pericardium. These arise as the result of extension of the growth to these membranes.

Case V illustrates the manner in which the pericardium may become involved. The sudden onset of acute inflammatory conditions such as these would be strongly in favor of a malignant growth.

Local edema. This of all I consider a most important symptom, and can perhaps be laid down as the only symptom which is at all characteristic. Most characteristic when it occurs is the edema.
of the head and neck and has been previously referred to. Edema may also be present
over the sternum and in the arms.
In many of my cases it was the presence of
such edema which led to a correct diagnosis.
Effusion into the chest. They often be found
as the result of pressure of the tumour round
the root of the lung, and as I have before
pointed out it may be clear and free from
blood and in the great majority cases will
be found to be so.
I have never found pus present in the
pleura in cases of sarcoma, a case in which
pus was found with an exploring needle
has been recorded by Dr. Trott in the
British Medical Journal. The case was
operated on for empyema but no pus
was found at the operation, so that the
presence of pus originally is rather doubtful.
the case died and proved to be a lympho-
sarcoma.
Engorged and dilated veins are frequently
met with when present on one side only
such as engorgement of the veins at the ile.
Margin this sign is suggestive, dilated
veins over the Manucrium and in the
Ophryastrium are also frequently to be
noticed.
British Medical Journal. November 1888, page 1045
Enlarged lymphatic glands are a very great help in assisting in the diagnosis of these cases as they may be found quite early in the case, they must be looked for alone the clavicle and in the axilla and are usually somewhat painful on manipulation. Thomas claims of the tumour may itself be found appearing alone the mammary sterni.

Many other symptoms may be found but have no special features characteristic of this disease such as cough, expectoration, ataxia, inequality of the pupils, coma delirium, etc.

The presence of these are known of considerable value. Causing alteration of the voice, paralysis of the vocal cords, ataxia, cough and inequality of the pupils etc. The effect of pressure on nerves causing vomiting and gastric troubles have been already referred to. (See case III)

Physical signs: The most important sign is address by percussion when this is abnormal over the tumour the possibility of neoplastic growth should be borne in mind; absence of vocal frictions and mandible respiring sounds would be present. Ears from Plural effusion...
or from the presence of a solid mass in
the lung or to some serious obstruction
to the main bronchus. This last must
always be kept in mind as the condition
of the bronchus will certainly often be
responsible for the physical signs observed.
And during the course of a case if this
structure should become involved a
Corresponding alteration in the physical
Signs must be expected.
The physical signs have been so
frequently referred to in the record of
cases that it is hardly necessary to
specify further, suffice it to say that
they must not be looked upon as
Characteristic signs of the disease but as
Accidental accompaniments, which will
be the better understood if the histological
characters of these growths and the manner
in which they invade Neighboring organs
is borne in mind.
In considering the Diagnosis of Mediastinal
sarcoma many other diseases may be
found to simulate it very closely, a
few of these will be very briefly
noticed.

Pneumonic Effusion: This affection is
probably most likely to be Confounded
with that of Mediastinal Sarcoma
But considering how frequently the two are associated together, the diagnosis of the former does not exclude the latter.

At the same time a diagnosis of phrenicitis with effusion is very commonly made. Nearly every case recorded it was found necessary to explore the chest, and this in itself indicates that the signs present might have correctly been attributed to the presence of fluid.

Percussion puncture is the only reliable method of distinction, and although fluid is absent it may help in the recognition of a solid mass in the lung.

Aneurism will certainly in some cases simulate mediastinal sarcoma very closely and great difficulty will be experienced in distinguishing between the two. The presence of bruit or abnormal pulsation would be in favour of aneurism but a careful study of the chest symptoms present in each case must be relied on.

Interlude: The frequency with which the cases recorded were mistaken for tubercle has been pointed out; in one case it led to a very unnecessary operation.

I find also in my notes that the
Aplectrum has in many cases been suspected for the tuberculous bacillus.

The general history and course of the case must be taken into account.

A mass of tubercular mediastinal lymph glands would probably cause symptoms clinical to those of some cases of sarcoma-like growth.

A disease which has of late been exciting general interest and on which a series of articles have appeared in the "Lancet" would appear to be fairly mistaken for mediastinal tumour, I prefer to Chronic Mediastinitis or mediastinum - pericarditis; and a case of this nature recorded by Mr. Whippam in the "Lancet" has many points of similarity. I have never met a case of Chronic Mediastinitis which I believe is a very uncommon disease.

Other diseases with which these tumours have been mistaken are Chronic Intestinal Pneumonia, collapse of the lungs, coughing cough.

The diagnosis will have to be arrived at by a process of exclusion, and this implies a very intimate knowledge of the diseases referred to, and as is seen in some of my cases, although the signs present.

Lancet April 15 1899 page 582.
I have carefully noted a proper interpretation of the signs was less fortunate; but I know that some of the prominent features of the cases recorded in this essay will be of assistance when an obscure intra-thoracic condition is met with, and assist in solving one of the most difficult varieties of chest disease.

Treatment must be entirely symptomatic unless indeed something of the nature of Galen's fluid be attempted. Aspiration for the relief of pleuritic effusion will give temporary relief and has been previously referred to.
Carcinomata:

Primary carcinoma occurring within the chest is an extremely rare affection, with the exception that is an epitheloma arising in connection with the mucous membrane of the oesophagus, with this exception it is difficult to find records of a undoubtedly primary carcinoma occurring in this region. Most writers agree that such tumours are found, within the chest, but such growths on account of their extreme rarity are generally dismissed without further remark; similarly a primary Carcinomatous tumour is recognized as arising very rarely from the surface of the pleura, but no description of the nature or characters of such tumours is ventured upon.

Carcinomata except under exceptional circumstances originate from epithelial tissues and for this reason is most likely to be found in the thoracic mediastinum where we have the epithelium of the trachea, bronchi and oesophagus to form a starting point for the growths.

Secondary carcinomatous growths may of course often be found as metastatic deposits in the lungs and mediastinal
lymphatic glands, after similar growths have made their appearance in other organs such as the mamma, lung, stomach, etc.; but it must also be remembered that a carcinoma of the breast may infect the mediastinum by direct continuity. Dr. Calkin, in his Manual on Pathology, writes in connection with metastatic deposits in the mediastinum and lungs as follows: as the cancer is usually arrested in the lymphatic glands it happens that in all forms of cancer secondary tumours in the lungs are of late development. As the secondary tumours are in the lymphatic glands we may regard these in the lungs as of a derisory order. Further, the material which produces these tumours often passes to some extent through the wide capillaries of the lung and on into the systemic arteries so that the may have derisory tumours occurring at the same time in a variety of organs. The tumours in the lung are multiple and they repeat the structure of the primary tumours wherever lie the variety of cancer which has formed it.

Secondary and tertiary growths of this

Nature are so various, and so frequently met with, and alarmingly the same
indifference does not attach to them, as
do to primary tumours that they
will not again be noticed.
occasionally, however, growths with
appearances and characters similar to
those of carcinoma have been found
occurring in situations in which endo-
thelium and not epithelium forms the surface
of origin such growths have been designated
as endothelium. They have therefore been
found in the membranes which line
the large cavities of the body, namely
the pleura and peritoneum.
Dr. Payne in his Manual of Pathology says:
Endothelium is a name sometimes given
to this and other growths originating
in and composed of endothelium.
The name is also applied to sarcoma
with alveolar structure where the cells
contained in the alveoli resemble and
are derived from endothelium.
If the endothelium of the serous membrane
lying the great cavities of the body lie
regarded, in accordance with modern
encephalographical views as derived from the
hypothalamic epithelium, the destruction
intended by the word endothelium
Carcinomatos tumors in the mediastinum do not form the huge masses of growth that are found in the stomach, and are often quite small and insignificant, causing symptoms almost entirely confined to their seat of origin.

The only form of primary carcinoma met with in the mediastinum that is at all well recognized is the epithelium arising in connection with the esophagus. Epithelium of the esophagus is a disease which as a rule occurs in persons over 40 years of age. It is always a primary growth and as a rule does not grow to any great size, but forms a hard nodule of growth from one to three inches in length situated in the wall of the esophagus. It occurs chiefly in the situations at the upper end of the gullet, implicating also the lower part of the pharynx behind the larynx, about the middle opposite the bifurcation of the trachea, and at the cardiac extremity but it may be met with in any part of the canal. In at least 70 per cent of the cases the disease assumes the form of squamous epithelium, and this is almost invariably the case when the growth is situated at the upper part of the lower
End glandular carcinoma is more common. Carcinous growths in the larynx are especially liable to ulceration and ulceration into the trachea or other structure may be the direct cause of death. The mediastinal lymphatic glands as a rule become secondarily enlarged and carcinous.

A case of Epitheliuma of the larynx is as a rule easy to recognize, it is so very generally gives rise to dysphagia that when this symptom is complained of in a person of advanced age, Epitheliuma is at once thought of. Difficulty in swallowing solids is at first complained of while liquids may be easily taken, afterwards the patient is quite unable to swallow solid food. Cases of Epitheliuma of the larynx perhaps more frequently fall to the lot of the surgeon on account of the dysphagia present. The signs and symptoms of this disease are as well known and can be found described in any text book on Medicine or Surgery that I will not pursue the subject further.

Primary carcinomatous growths may also arise from the epithelium lining the trachea and bronchi I have no experience of these cases, which I believe are of
Primary carcinoma of the pleura is also very rarely met with. I have recorded a very interesting case which I believe to be of this nature, and I have found another case recorded in the Lancet which has many points of similarity.

These tumours form dense white growths which spread over the surface of the pleura, and give rise to secondary deposits in the mediastinal glands and other organs. Under the microscope they exhibit a considerable amount of fibrous tissue, and in some places may lie entirely fibrous. Flattened cells are found in the tumour which lie in spaces surrounded by fibrous tissue giving an alveolar arrangement.

Such tumours must be distinguished from a pure fibroma which is occasionally met with in the mediastinal space and also from the dense thickening found in cases of the rhachitic arthritis and in chronic mediastinitis.

I will now proceed to give an account of a few cases of primary carcinoma as it has occurred within the thorax.
Case 1

Epithelium of the oesophagus perforating into the trachea.

John Smith, age 67 years, admitted into the Bradford Royal Infirmary, October 17th, 1898.

Patient was admitted febrile, much troubled with a history of oesophageal structure, he was given trichinum, sucrecal, and syrupy per rectum but died on the day of admission.

Post mortem, October 18th, 1898.

Body very much wasted. No subcutaneous fat remained.

On removing the oesophagus a growth was found surrounding the tube situated about one inch above the bifurcation of the trachea. From this point the wall of the oesophagus was invaded with growth, for one and a half inches at the site.

The lumen of the oesophagus was not greatly constricted but the tumour was undergoing ulceration and this had extended deeply causing a perforation the size of a shilling between the oesophagus and trachea, the perforation was found situated immediately above the point of origin of the
right bronchus. The mucous membrane of the larynx was ulcerated and in a sloughy state; the larynx and trachea were bound together by firm adhesions. The trachea was congested and covered with pus around the position at which the ulcer had perforated. The lungs were congested and showed some bronchitis but were fairly healthy. The heart showed nothing abnormal. The abdomen was not examined. Microscopically the growth proved to be a squamous cell carcinoma. The ulcerative effects of these growths is well seen in this case and was evidently the immediate cause of death. As the constriction in the larynx was not very great, the condition of the lungs also proves that the perforation must have occurred shortly before the sale issue.
Case II

Malignant growth of the larynx ulcerating into the right lung.

William Watson, age 62 years, farm labourer, admitted into the Bradford Royal Infirmary March 16th 1876.

Patient has been ill for nearly eighteen months with pain in the stomach accompanied by constipation and headache. He attended as an out-patient in November 97, and since that time has gradually got worse.

Three months ago he passed a number of round worms like earth worms and was also at this time troubled with pain in the epigastrium after taking his food. For these weeks prior to admission he has been troubled with diarrhoea, and his appetite has failed. Round worms were again passed three days after coming into hospital.

He has never been troubled with vomiting and before the present illness had enjoyed fairly good health except for a slight cough during the winter months.

Patient is a tall thin man, extremely wasted. Cheeks prominent and eyes sunken. He appears to lie in a very
Week state, the temperature is elevated at night, and his breath is most offensive. Tongue moist, coated with a white fur. He experiences no pain, and has no difficulty in swallowing his food. Abdomen soft, not distended. No enlargement of the liver or spleen can be detected, and on palpation in the epigastrium, pain is not complained of. Nor can any thickening be found in the region of the pylorus. Examination for peritonitis negative.

Pulse 72, regular fair rate anterior.

Auscultation Heart sounds normal.

Lungs: Resonant, no dulness or bronchial breathing heard. But general ronchus over both sides of the chest is easily made out.

He spits large quantities of frothy sputum, having a mousy smell similar to his breath. Sputum examined for the Tubercle Bacillus negative. Numbers of cocci were however noticeable having taken up the stain of the Methylene Blue.

The urine was high coloured, muddy and contained urates.

A week after admission he appeared to lie much better and looked less emaciated.
he was however disturbed with a troublesome cough and considerate indigestion which was examined a second time for tubercle bacilli with a similar result.

On April 2nd some change was noticed in the physical signs present in the lungs. The percussion note on the right side was impaired the dull area being most noticed over the middle lobe, at the base the percussion note was also decidedly impaired and the air entry was weak. Anteriorly the right apex was somewhat dull to percussion. General rhonchi were still present.

The left lung remained resonant, rhonchi were heard as before.

On April 12th, it was still noticed that the middle lobe of the right lung was quite dull and at the base posteriorly the percussion note was impaired but not to the same degree as the impaired resonance noticed over the middle lobe. On auscultation crepitations accompanied by weak bronchial breathing were now noticed. The patient was on fish diet which he took fairly well, but he mentioned occasionally that this food was
Difficult to swallow, and slight pain on taking solid food was complained of. No local edema was present.

On April 11th he regurgitated all food the food was returned immediately it was taken. The breath and expectation were most offensive.

The signs in the right lung on April 18th were found to be the same, but corresponding to the position of the root of the left lung a dull area was noticed over which bronchial breathing was audible and below this point the air entry was feeble and indistinctly heard, so that some presence on the branches was suggested.
An exploring needle was thrust into the right middle lobe and half a dram of blood withdrawn.

The patient gradually lost ground. He had occasional attacks of vomiting, the signs already noticed in the lungs did not undergo any marked change. The patient's breath and spuotum were so very offensive that it was found necessary to place him in a ward by himself. He died on May 10th.

Post Mortem May 11th, 1878.

Body emaciated. Slight post mortem lividity present.

Thorax. The left lung was free. The right lung was extensively adherent over the upper and middle lobe of the organ.

Heart: Some traces of fluid was found in the pericardial sac. The organ was small and the muscular substance dark and firm, the valves were healthy.
In the middle of the course of the esophagus, there is an elevated opening which communicates directly with the right lung close to its root. The wall of the esophagus at this part is slightly thickened by a hard, firm band which causes a constriction of the lobe. The band is apparently of fibrous structure, but on cutting into it vertically a mass of growth the size of a hazel nut was found lying beneath the mucous membrane.

The right lung was solid posteriorly and on section was dark and on pressure yielded brown tinged fluid on pressure. The bronchi were dilated and from their cut ends the brown fluid was seen to exude. The left lung, lower lobe partially solid, the substance of the lung was friable and necrotic; the upper lobe was healthy. No cavities were found to stick in the lungs.

Liver congested and fatty, spleen normal.
Kidneys: Capsule slightly adherent in both. Kidneys no other change.
Stomach small, two pyloric thickening observed.
Enlarged mediastinal glands were found situated near the cardiac orifice which contained cancerous deposits.
Result: Malignant structure of the aesophagus disseminating into the lung with bronchectasis, edema and consolidation of the lung.
Microscopical examination: Structure largely composed of fibrous tissue but in places cancer cells were seen lying between the bands of fibrous tissue. Section of the growth showed a structure similar to scirrhus cancer.
The occurrence of scirrhus cancer in the aesophagus is not very frequently noticed, the seat of origin of such growth is generally supposed to lie in the mucous glands, and this is certainly I think the true explanation.
The diagnosis of this case presented considerable difficulty and on admission he was considered to be the subject of phthisis, but the dull areas noted in the lungs accompanied by the other physical signs present led me to think that it was probably a case of new growth. Dysphagia was never a prominent symptom and this perhaps with drew my attention from the oesophagus, but I thought the growth might lie of a sarcomatous nature with subsequent extension to the lungs.
Primary carcinoma of the bladder with secondary deposit in the left suprarenal gland accompanied by bronzing of the skin similar to that noticed in Addison's disease.

Bridget Tunin age 38 years housewife admitted into the Bradford Royal Infirmary November 5th 1878.
Patient was first taken ill eleven weeks ago having as she supposed caught cold, since that time she has been troubled with cough and shortness of breath and has had occasional attacks of haemoptysis. About a fortnight before admission she experienced very severe pain in the side of a stabbing character and since this time she has never been free from pain.
Ten years ago patient underwent the operation of laparotomy for the removal of a compound cystic ovarian tumour, but from that time up to the present illness
She has enjoyed good health.

Eleven weeks ago she got sick through and was afterwards attacked with cough accompanied by pain in the side, the cough and pain continued up to a fortnight ago, when the pain became very severe, preventing sleep at night, coughing rendered it insupportible. Patient also complains of sweating at night, and says she has lost two and a half stone in weight.

No history of phlebitis occurring in the family could be obtained.

On admission, she lies flat in bed, a few dilated veins were noticed situated on the left side of the chest.

The hair is black and the skin of the body generally is dark.

Examination of the chest: Impaired movement of the left side of the chest was quite noticeable, and on palpation a friction rub could be felt below and to the outer side of the left breast, below the angle of the scapula.
the vocal fremitus was absent and
the percussion note here was quite
dull, above this point posteriorly the
note was resonant to the apex.
Anteriorly the percussion note was
resonant. On auscultation over the dull
area, the breath sounds were found
to be absent and immediately above
this the breathing was of a bronchial
character. Below the left breast
friction sounds were heard; but in
other situations the vesicular murmur
was distinctly audible and no signs
of disease could be found in the apex.
The right lung was healthy.
Abdomen. Scar seen on abdomen in
the middle line, no evidence of
recurrence of the tumour.
Heart: normal.

Mince: Clear acid. 1022 and contained
a trace of albumin.

On December the eleventh the signs
had nearly cleared up and patient
was allowed to get up. The cough
was still present though less
So severe and was accompanied by a small quantity of blood-stained sputum. The sputum was examined for the tubercle bacillus with a negative result.

Weight increasing. Patient continued to improve up to December 3rd when she was discharged from the infirmary greatly relieved.

Diagnosis: Tubercular Pleurisy.

On April 11th 1899 patient was re-admitted into the infirmary and the following notes taken:

Patient was an in-patient before Christmas for about a month since this time she has not been well suffering from cough and pain in the left side, she now complains of acute pain in the left hip joint.

Present Condition: General segmentation of the skin is noted which is especially well marked in the pleuras of the joint. No pigment could be seen inside the cheeks.
From the lips, on the abdomen, and back patches of white ordinary skin could be seen which stood out in marked contrast to the general pigmented surface.

She complains of acute shooting pain in the left hip joint which strikes down the front of the thigh. No signs of fulness, or swelling of the joint, were evident, and no signs of abscess could be found; no other joint pains were complained of.

Lungs:—The left lung on respiration was hardly noticed to move, on palpation below the left breast pleural friction could be distinctly felt. Posteriorly the left lung was absolutely dull at the base; the dullness extending as high as a point just below the angle of the scapula; above this point it was resonant until you reached the apex where the note was again impaired.

On auscultation posteriorly the breath
The breath sounds were absent at the base over the dull area but above this point they could be heard. At the apex the respiratory murmur was prolonged. 

In the axillary line and below the left mamma coarse friction sounds were heard. At the apex anteriorly the percussion note was impaired and on auscultation inspiration was somewhat prolonged.

Right Lung: The percussion note at the base posteriorly was impaired and the breath sounds indistinct. Otherwise the right lung was healthy.

Heart: Percussion dulness extends right across the sternum. No signs of vascular disease could be detected.

Abdomen: Site of old operation; on deep palpation in the ovarian region no pain was complained of and no undue resistance could be felt. The left kidney was easily palpable.

April 19th. She still complains of pain.
in the left hip joint, pain most severe at exit of sciatic nerve, but not along the course of the nerve, no thickening of the bone, no hernia, and no distortion or pain over the front of the hip joint was complained of. This pain was a rule most severe at night.

April 21st: Impaired movement on the left side of the chest, all over the front of the chest, and respiratory phonetic can now be heard; the dull area at the base is still quite evident. Sputum frothy and fairly abundant. Yellowish greenish in color.

The pigmentation is marked in flexures of the fingers and toes, and along the furrows in the palms, elbow flexures pigmented. No pointing or weakness has been complained of.

April 23rd: Patient did better suddenly although for a few days she has been decidedly worse.
Post Mortem April 23rd 1879.

Body fairly well nourished. Rigor mortis well marked, the surface of the body generally dark in color, the greater segmentation being present about the groins and axillae.

Thorax. On opening the thorax adhesions were found behind the pericardium and pleural plaques on the left side; the pericardium is round down by firm adhesions to the left pleura, but as the base of the pericardium in front and behind there are as of more recent date.

The pericardium contains one and a half pints of serous fluid, the serous of the pericardium is however smooth without any indications of acute inflammatory condition.

The parietal pericardium presents towards the base two or more white areas of a different nature and quite distinct from the general surface of the membrane. Gently masses of new growth. The visceral pericardium is covered with white
Dense firm carcinoma nodules.
The cavities of the heart contained
blood clot, the valves were competent.
The muscular substance of the heart
was slightly invaded by growth
corresponding to the right auricle.
But in other respects it was healthy.
Right lung was slightly adherent.
It presents externally on its pleural
surface a few small nodules hard
and white of the same nature as
the bronchial gland growth. The lung
generally is adenomatous. Firstly serous
being exuded on pressure it is
homogenous free from deposit internally.
Left lung was found considerably
adherent to the chest wall. The lower
half of the visceral pleura is
covered with dense white thickening
apparently of the same nature as
the right side. The lower lobe
of the lung is disorganised and
infiltrated apparently from infiltrated
growth which has broken down
Bronchial glands slightly enlarged.
A small nodule of growth was found in the wall of the superior vena cava.
Abdomen on opening the abdomen evidence of old peritonitis was noticeable.
Since 3 lbs 14 oz presents externally over the lower portion in front while three nodules slightly raised above the general surface of the organ. Apparently secondary deposits of the same nature, a nodule of growth was also found projecting from the hinder surface of the organ, and a well marked mass of the same nature was found at the neck of the gall bladder. The organ was not tremendously involved the substance generally being friable and showed evidence of fatty change.
A few lymphatic glands in the abdomen were found to be affected notably those at the bifurcation of the aorta.
Right kidney: Capsule somewhat adherent
and surface granular, no deposit of growth.
Left kidney, surface irregular on section a large cyst the size of a marble was found at the upper pole, cortex is thin and surface granular and pale capsule adherent.
The left supra renal body contains a hard nodule of growth. Kidney and supra renal together weigh 6 oz.
No deposits found in spleen, ovaries, adrenals or throughout the intestinal track.

Note by D. Crowley: A most instructive case felt fairly sure of diagnosis of tubercular pleurisy. This admission patient seemed more ill + pigmented. signs left have much increased
supposed tubercular affection of the supra renal, then developed pain down the left leg could find no cause tubercular deposit suggested itself.

Result of Post Mortem: Carcinoma of the pleura with metastatic deposit on pericardium, heart, liver and submaxillae.
Ready on the left side.

Tumours especially the growth was of a cancerous nature. The growth in the pleura was composed of fibrous tissue in great quantity developing clusters of small irregular shaped cells. In the suprarenal body the carcinomatous cells were much larger and of a spheroidal type with a considerable amount of fibrous tissue stroma surrounding them. The appearances here were somewhat similar to those of an early sarcoma of the breast. I will endeavour to reproduce as faithfully as I can the appearances of the sections which I have before me.

Section of renal growth consisting of small cells and dense fibrous tissue showing alveolar arrangement.

Section of growth of left iliac renal at the growing margin, haemorrhage has taken place in the gland tissue.
Case of Primary Malignant Disease of the Brain.

This case was recorded by Dr. William Baller in the lecture November 21st 1885. Page 946.

A. W., a wheelwright aged 43 years, was admitted to the Radcliffe Infirmary on April 11th and died June 11th 1885. His illness commenced towards the latter end of December 1884. He had a shortness of breath, slight difficulty in swallowing and occasional pain of sharp stabbing character over the base of the right lung. The dysphagia increased markedly during the six weeks preceding his admission and was accompanied by rapid loss of flesh and strength; with the exception of a slight injury to the right side of his chest five years ago he had throughout life enjoyed good health. Family history satisfactory. Condition on admission: He was a tall strongly built man with an anxious expression and markedly emaciated.
Temperature and respiration normal. Pulse 72. He had great difficulty in swallowing the smallest portions of solid food.
Right lung expansion diminished; tubular resonant diminished, with almost absolute dullness and distant tubular breathing over the lower half of the lung back and front.
Left lung loud pleural friction heard at the base. On the anterior aspect on inspiration, the circumference of the right half of the thorax one inch below the nipple was three quarters of an inch greater than the opposite side. Remake for longue was passed into the stomach without difficulty and without meeting any obstruction.
On May 15th a month after admission the man had lost one and a half stone in weight. His dysphagia had slightly increased, and his breathing was daily becoming more embarrassed. The dulness on percussion loss of tactile and vocal resonance and
A distant bronchial breathing was more marked and the right half of the thorax an inch below the nipple now measured an inch more than the left. An aspirating needle introduced in the fourth interspace in the axillary line withdrew about half a dram of blood which when examined microscopically exhibited nothing abnormal. From this date the patient steadily lost ground and died on June 1st.

Post mortem. On the under surface of the diaphragm a few small hard white nodules were seen. The right pleural cavity contained about two pints of encapsulated blood tinged serous fluid, the lung itself being pushed upwards and to a great extent collapsed. The pleura lining the lower half of the right side of the thorax, the diaphragm, and a small portion of the pleura on the opposite side of the thorax was enormously thickened, being from a half to three quarters of an inch in thickness, smooth and hard so that on section it resembled
Carriage. The lower part of the aerophagus was slightly thickened and as it passed through the opening in the diaphragm it was no more pressed upon by surrounding thickened tissues as to admit with difficulty the tip of the little finger; its endothelial surface was throughout smooth and healthy.

The glands in the posterior mediastinum and the deep abdominal glands were enlarged and hard. Other organs were examined and found to be healthy.

Stained sections of the thickened glands were composed almost entirely of fibrous tissue scattered throughout which were numerous collections of thickened epithelial cells concentrically arranged in alveolar spaces.

Sections of the abdominal glands exhibited all the characters of cellular degeneration.

Remarks: From the onset it was regarded as a case of Malignant intra thoracic growth. The fact of an aerophagal tube being passed into the stomach without encountering any obstruction suggested...
A growth extensive to and pressing on the thorax. The signs at the right side pointed to pleural effusion. After the introduction of the aspirating needle with a negative result the physical signs were thought to be those of growth in the lung or pleura. The needle probably failed to reach the fluid owing to the extreme thickness of the pleura. The fact that the abdominal and mediastinal glands were the only other structure in which malignant change could be discovered would point to its being a primary epithelial cancer of the pleura. In any case the extreme and uniform thickening of the pleura with the absence of induration would I think make the case worth recording. It might have been a malignant infiltration of a previously thickened pleura. But the fact that only a small portion of the left pleura lining the diaphragm being involved and that in direct continuity with the right traced render this doubtful.
The symptoms occasioned by these growths would appear to be somewhat similar to those already noted and here again to seem the difficulty of distinguishing growths of this nature from tubercular affections and pericardic effusion. These tumours do not grow to form the large masses of the sarcoma and therefore the effects of pressure are not to be expected to the same degree.

In conclusion I would remark that this branch of chest disease offers a large field for original investigation, and I think that intra-thoracic new growths are deserving of more notice than is usually allotted to them in the most recognized text books on medicine. It is in the hope that this thesis will somewhat increase the present literature on this subject, that the notes of the foregoing cases have been placed before your notice.
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