For Dr. Chirstion.

Essay

on

Pleurosy

By William P. Warburton.
On
Pleurisy

When I selected Pleurisy as the subject of my Thesis, it was my intention that the greater part of it should have been composed of such notes and observations as a careful study of the cases which fell under my observation would suggest. Circumstances have however interfered to prevent me carrying out this idea in the manner proposed. On one case only have I been able to bestow the observation and study, sufficient to justify me in producing it here for the purpose of exemplifying and confirming previous statements. To originality therefore my theme has no pretensions,
I have but availed myself of the
disquisitions of others, and moulded
their observations to my own purposes.

Pleurisy, or Pleuritis, is the name
given to inflammation of the Pleura,
or serous membrane investing the
lungs and lining the thoracic cavity.
It may be either acute, or chronic. It
may be chronic from the first, or
it may supervene on the acute
inflammation.

Acute Pleurisy is anatomically
signified by subserous, vascular in-
jection of arborescent and capillary
varieties, which raises the membrane
and penetrates its substance, while its
surface loses its natural moisture
and smoothness, it becomes no longer
elastic and its transparency and Con-
sistency have disappeared.

Under special circumstances the
inflammation may proceed so far
as to become totally destroyed by gangrene.
The subpleural tissue is injected, softened and oedematous, or in some rare cases, it may be infiltrated with pus. The pleural sac contains solid, liquid, or gaseous products. The solid material consists of exudation matter, this is lymph which, when first deposited upon the free surface of the pleura, is soft and of a greyish white colour. It contains fibrin and soon becomes more consistent and shows marks of organization. Red dots may be seen, at first few in number, but at length becoming numerous and uniting, they arrange themselves in the form of reddish streaks, which running along the surface of the effused, become tubular and form slender vascular canals, which communicate with the vessels of the pleura and keep up a regular supply of blood to the newly formed membrane. This vascularization
goes on very rapidly, as shown by the experiments of Andral, made by injecting acetic acid into the pleurae of rabbits, when he sometimes found at the end of nineteen hours soft and thin false membranes traversed by numerous anastomosing red lines. It has also frequently been met with in post mortem examinations of the bodies of persons dying from other causes a few days after an attack of pleurisy.

Without however advancing to organization the exudation may become absorbed, or there may occur secondarily in its substance calcification or pseudo-ossification, and pus, tubercle and melanic matter may form within it. The fluid contents consist of water holding in suspension what, on microscopic examination proves to be exudation corpuscles, epithelium and often blood discs and
pus cells. Any one of these products may exist in sufficient quantity to be without any difficulty distinguished by the naked eye—flakes of albumino-fibrinous matter, and pus may be present in all proportions. The quantity of albumen in solution varies from 31 to 77 per cent, and fibrin is likewise commonly found in a state of solution. The contents of the sac, perfectly fluid when first seen, subsequently gelatinize from fibrin coagulation.

It is very rare for the fluid, in simple pleurisy, to be solely purulent, and when no communication exists between the cavity of the pleura and the external air, the fluid contents are always inodorous. At least the only exceptions that I have seen noticed were open to much objection.

Sometimes air or gas is found in the cavity of the inflamed pleura,
either alone, or with a liquid—more commonly the latter. The presence of this gas or air may be accounted for by rupture of some of the air vesicles of the lungs, or by secretion from the pleura—not unfrequently the latter.

In simple idiopathic pleurisy one side only suffers, but occurring secondarily to other affections, as tuberculous disease and Bright's disease of the kidneys, both pleurae may be attacked simultaneously, and the inflammation may spread over a greater or a less extent of the membrane, and in some instances it may be small and circumscribed.

Pleurisy has been divided into certain anatomical stages, each distinguished more or less by their difference in physical signs. These stages are called, the dry, the plastic, the effusive and the absorptive.

In the Dry Stage the pleura is
congested, and no longer lubricated with its natural moisture, its shining appearance has disappeared. In the plastic stage false membranes form, varying in extent; sometimes very limited, sometimes covering the whole lung, and lining the intercostal surface. In the effusive stage sero-purulent fluids are present, varying in amount or proportion, and colour. In some instances clear, transparent, and watery; in others turbid or whitish, and again in some, tinged with or altogether consisting of blood. As the amount of fluid increases, so does the pressure on the lung. It gradually loses its power of taking in air, till at length it is pressed into the form of a thin cake and occupies so small a space, that it seems almost to have disappeared—indeed in some cases it has been described as such. On section it looks almost
like muscle, and is said to be "Car-nified." It is of such density as to readily sink in water.

In the Absorptive Stage the morbid products are absorbed by the lymphatics, and removed, and the lung gradually regains its elasticity, now that the pressure exerted by the fluid has been removed, or, where it has been long maintained, and where the false membranes have been organized so as to form a constituent part of the body, it remains more or less condensed.

The lungs remaining in this condition—the adventitious membrane preventing their expansion, the ribs must approach the lung to fill up the void that would otherwise exist between them: so that on measuring the side on which the fluid existed, it will be found to be the narrower of the
two, the lung on the affected side may indeed continue to be so compressed, as to almost cease to take part in the respiration. Absorption failing in the acute disease, or secretion continuing, the disease becomes chronic. This is frequently seen in cancer, Phthisis and Brights disease of the kidneys. Under such circumstances the fluid is generally purulent and in some cases subcutaneous abscesses may form, resulting in fistula, and keep ing up a daily discharge for months and even years.

These stages as I have said are distinguished by physical signs and into a description of these I shall now enter.

In the dry stage the affected side does not expand so readily as the other. This can generally be readily distinguished by the eye, or by measuring with a tape, and thus com-
paring the sides. Percussion does not distinguish one side from the other, but auscultation shows the breathing on the affected side to be weak, jerking and irregular, while that on the sound side is exaggerated. Often the friction sound may be heard about the infra-mammary region, and also the infra-axillary and in rare cases over the whole side.

In the Plastic Exudation Stage, the movement of the chest and respiratory continue of the same character. Friction has increased so as to be perceptible to the hand and the clearness on percussion, has diminished according to the amount of exudation. This dulness sometimes comes on as soon as twelve hours after the first symptoms. The resonance of the voice is not affected.

In the Effusive Stage (without dilatation), the irregular movements
of the chest gradually disappear, as does also expansion and elevation of its upper and lower part, and the infra mammary and infra axillary regions, become more or less bulged. The intercostal muscles do not move on inspiration, like those of the sound side, and wherever fluid has accumulated to any amount, vocal vibration has disappeared, but above the fluid it may still be heard, and wherever the fluid exists in quantity sufficient to separate the opposing surfaces the friction sound can be longer heard, but in parts above the level of the effusion it may continue undiminished. Pain still continues to interfere with the action of the chest on its affected side, the deficient expansion and retraction being proved by measuring it. As the amount of fluid increases there is a proportionate increase of dulness. At
first so small as to require the
nicest ear to distinguish it, at
length it becomes evident to the most
uneducated.

In addition to what can be made
out by the ear, much assistance is
given by the greater amount of re-
sistance experienced by the fingers in
the dull portions, indeed so great is it
sometimes that a very short time
suffices to make the finger rather
painful. By varying the position
of the patient, the clear and dull
parts can be readily made out. When
erect the dull part is lower, and
when lying on the back the clear
sounds are heard in front. This is
due to gravitation of the fluid, the
clear sounds being always heard a-
bove except where adhesions prevent
the fluid gravitating to the most
dependent parts.

In some rare instances where the
lower lobe of the lung becomes compressed and lessened in size, the area of dulness may diminish, while the amount of fluid has increased.

On auscultation we find the voice still bronchial and tubular, but beside this, it is trembling, quavering, cracked and discordant, and heard chiefly at the upper part of the affected; this modification so difficult to describe, has been compared by Laennec to the beating of a goat, and called oegophony. He says that he has discovered it when there were only a few ounces of fluid in the chest. It appears in full force, during the period of gravitation, disappearing as a general rule, when the fluid has increased much in quantity, and returning again when it has been reduced to a thin layer. Some instances occur, where it remains,
in spite of the abundant accumulation as shown by Andral and Walsh. Auscultation has also shown that respiratory murmurs, absent where the fluid is most abundant, or weak where it exists in small quantity, become exaggerated and bronchial in the upper part of the lung, where it is absent, and the respiration becomes more and more puerile on the sound side - the sound lung having to perform not only its own work but also all or almost all that of the compressed one.

The heart sounds are intensified through the fluid, and condensed lung, and this is especially seen when the effusion is on the right side, and sometimes its movement causes succession and fluctuation of the fluid. The expudation generally goes on rapidly, so much so that in a couple of days the cavity may be filled.
Effusive Stage (with dilatation and thoracic displacement). The side of
the chest which contains the fluid
is now evidently larger than the op-
posite one; the ribs and cartilages
appear as they would during a deep
inspiration; the intercostal spaces
are pushed forwards and brought
to a level with the ribs; the pleural
sac bulged out above the clavicles; the
diaphragm pushed down, and some-
times the heart is displaced. This
dilatation is more common in old
chronic cases than in the earlier
periods of the acute disease, although
it may come on in a short time.
One can easily make out that the
side is dilating, by measuring it
and comparing it with the other, al-
ways bearing in mind however, that
right-handed persons have the right-
side half an inch or so larger than
the left, but that left handed persons
have their sides equal though sometimes the left may be the larger. The thoracic surface feels smooth, the vocal thrill has disappeared, and fluctuation may be detected by the fingers in the intercostal spaces.

On auscultation the egophony has disappeared or has merged into a faint or distant Bronchophony, or the bronchial tubes may be so compressed themselves that even their vibration cannot be heard. Respiratory sounds have totally disappeared, except close to the spine or at the apex of the lung, and in these regions they have a harsh bronchial, or even slightly blowing character. Friction sound as a general rule is no longer heard and the heart's sounds are almost startlingly distinct. A dull percussion note is heard extending over the whole side of the thorax, extending sometimes even above the clavicle and encroaching on the opposite side of
the chest. The heart is not unfrequenty pushed aside, and if the fluid is in
the left side the hearts beat may be felt
and heard to the right of the Sternum,
sometimes as much as three inches. This
displacement is sometimes rendered
permanent by the formation of adhesion,
but in most cases the heart resumes
its position, on the absorption of the
fluid.

The stage of absorption is effected
with two different results, as to the size
and form of the chest. It may retain
its natural position, or sink inwards.
Hence these two results have been termed
absorption with retraction and absorp-
tion without retraction.

In Absorption Without Retraction,
the enlargement gradually disappears,
the hollows between the ribs become
more and more distinct, friction sound
and vocal thrill return, and for a
brief period oegophony may be heard.
but the vocal resonance quickly becomes bronchophonic or may be null. The respiration sounds gradually restored remain for a long time weak and harsh, or bronchial. Dulness on percussion gradually disappears, but the time it takes to do so varies very much. It may be weeks or we may have to count months, owing to want of expansion, and accumulation of false membranes. The heart returns to its natural position sometimes very rapidly.

When Retraction occurs it may be either general or partial, much more frequently the latter, and according to M. Woillez, partial retraction is much more frequent in front, on the right, and behind on the left side. While retraction is going on a compensatory hypertrophy is commonly in progress in the sound lung, to enable it the more readily to perform its
additional labours; and persons thus affected have the appearance of being inclined toward the affected side, even when they try and hold themselves upright. To the naked eye the side appears narrower and shrunken. All its dimensions are contracted, and it measures in circumference an inch or more, less than the sound side. The shoulder of that side is lower than the other; the ribs are drawn close together, and sometimes there is lateral curvature of the spine, and the heart remains permanently displaced, or returns to its natural position. Percussion sound is dull, with marked resistance, and on auscultation, the respiratory sounds are found to be more or less suppressed at the base, while at the apex they are weak and blowing, and months will elapse after retraction has commenced ere the respiration will be restored to any extent. Friction
sound may or may not be heard, and the voice resounds with morbid intensity especially at the central parts of the side.

Symptoms of Acute Pleurisy. The general signs are rigors, pain in the chest, increased frequency of breathing, dry proeia, cough, difficulty or impossibility of assuming certain postures, and fever--very similar to Pneumonia or even Pericarditis but by auscultation the difference may be made out.

The rigors may or may not precede the pain or "stitch" in the side. They are seldom strongly marked, and seldom so severe as those which usher in Pneumonia. Sometimes they precede by a few hours, the local pain, and are followed by heat, generally moderate in amount.

But the pain, or as it is more commonly called the stitch, in the side, is one of the most striking and important signs of the disease. "Point de côté"
is the name given to it by the French, and Latin Medical Writers named the disease after the pain "Morbus Lateris." It is dragging and shooting in character, and feels as if some sharp stabbing instrument were driven in each time the patient moves, inspires deeply, or has pressure applied to the part, and varying in severity from a sensation of mere annoyance, to agonizing pain. It is most commonly felt below the nipple, in the part corresponding with the lateral attachment of the diaphragm. Occasionally it is felt in the shoulder; in the axilla; beneath the clavicle; along the sternum, and sometimes over the whole of one side of the thorax. Andral has observed the pain to prevail along the cartilaginous borders of the false ribs, when the inflammation has attacked the pleura covering the upper surface of the diaphragm and that in such cases the pain often affects the hypo-
chondrium even extending as far as the flank and simulating Peritonitis. Cruvedier observes, that he has known the pain to affect the loins, and simulate Lumbago. It is felt generally in inspiration more than in expiration, though in rare instances it may be solely in the latter. It may be persistent, temporary, or intermittent; it sometimes totally disappears, more commonly remits on the occurrence of effusion, and there are even some cases of Pleurisy unattended with pain from the first to the last.

Respiration, while there is still pain and especially at the commencement is considerably embarrassed, it is increased in frequency and often interrupted and jerking, but the number of respiration, rarely, if ever exceeds one-third of the number of the heart's pulsations, and assumption of the sitting posture causes the proportion of the respirations to be greater, than
it is while the patient is recumbent.

When effusion has taken place it is as one would suppose, likely to aggravate the dyspnoea, and it will do so more or less, according to the amount of the effusion and the time it has been in forming, and thus giving the other lung a longer or shorter time to adapt itself to the extra amount of work it is called upon to perform. Occasional cases have occurred, however, where the effusion has been sufficient to fill the whole of the affected side, and still the subjects of it were entirely free from dyspnoea. Such cases have been recorded by Andrall, Dr. Watson and other writers. Cough exists in most cases but it seldom occurs in paroxysms. It is dry, unless there be coexisting Bronchitis, short, small, frequent, half-suppressed, and as it were ineffe ctual. If complicated with Bronchitis or Pneumonia mucus is expectorated - frothy in the former
case, and rust coloured in the latter.

Much has been said and written about the "decubitus" or mode of lying in bed, and there is much difference of opinion about it. The following is, I believe, the right description and one about which most writers are agreed. At first the patient lies on the sound side or on his back, though in some instances, they may lie on the affected side. Sometimes he cannot breathe unless he assumes the sitting posture. After effusion has occurred he cannot lie on the sound side, on account of the dyspnoea - but commonly on the back, on the affected side, or more commonly still he lies in what Anders called a diagonal position; but cases not unfrequently occur, in which any posture may be assumed without increase of dyspnoea.

The general symptoms are those of febrile inflammation. The pulse is
hard and quick, and the older phy-
sicians laid much stress, on the qual-
ity in their endeavours to distinguish
Pleurisy from Pneumonia; the pulse
in the latter being softer. The skin
is hot and dry, at first becoming moist
at the period of effusion, and the
cheeks are flushed; there is anxiety
and restlessness, and the urine, as
in all inflammatory affections, is
scanty and deep coloured, of high
specific gravity, strong odour, and may
be for a time albuminous; the chlorides
are decreased, but frequently to a small
extent only - thus distinguished from
the urine of Pneumonia in which they
are very deficient or absent. In rare
instances fibrin is present, and, often
at the period of convalescence, opalates
are found, but this is of no importance
as a diagnostic sign. There is an ex-
cess of fibrin in the blood.

The prognosis is favourable as un-
unfavourable terminations in simple and uncomplicated cases of Pleurisy are exceedingly rare, and even where other diseases coexist, they are not often the immediate cause of death. In some cases, Pleurisy may be said to prolong life, as in Phthisis where adhesions are thus formed, preventing the escape of tubercular abscesses, into the pleural cavity.

Symptoms of Chronic Pleurisy.

Chronic Pleurisy presents itself in three forms.

First, with retraction of the side.

Second, with permanent dilatation of the side, from a collection of sero-albuminuous, or purulent fluid.

Third, with permanent fistulous opening in the pleura, and purulent discharge.

In the first case the general health is as a rule below the average, the individ
ual is emaciated, loses appetite, feels fatigue on slight exertion; the breathing is short, and there is frequent pain in the side. Sometimes the hypertrophy of the sound lung supplies the deficiency of the affected one, and in such instances the difficulty of breathing may not be present, or it may be so slight as to be scarcely noticed.

In the second there is persistent distension, the symptoms are more prominent, the patient lies generally on the back, or the affected side, or in the diagonal posture of Landal. In many cases pain is not felt from the first, in a still greater number it may be present at the outset, but soon disappears and when pain does occur afterwards, it is generally due to some intercurrent acute, inflammatory, action arising. The respiration is hurried, in some cases, being upwards of fifty in the minute, cough is frequent, either dry, or attended...
with expectoration, varying much in quantity and in most cases clear, but in some muco-purulent. In not a few instances there is no cough at all. Edema of the affected side is frequent, and the opposite lung becomes hypertrophous and emphysematous. There is more or less of febrile action of a hectic type, with the skin hot and dry. The pulse is generally small, and often rather sharp, seldom under 80, and in some instances reaching as high as 160. Loss of appetite combines with sleeplessness in producing emaciation.

The terminations are recovery by absorption, or through evacuation of the fluid by the bronchi or parietes, or death by slow asthenia.

The third result is that of fistula, and through this there is a constant drain of purulent fluid, on account of which the side becomes more and more retracted, while the sound side
becomes correspondingly hypertrophied. In most instances it gives ease and relief to the patient, and in a few, life is prolonged without much apparent suffering, but death in the majority of cases is the slow result.

The fistulous opening is most commonly parietal, and sometimes it is pulmonary, but occasionally these two conditions may be combined. Collections of pus in other parts, sometimes work their way up to the thorax or vice versa.

Empyema is the name given to a collection of pus in the thorax. Like acute Pleurisy it is more common in males than in females but to a still greater extent. One explanation that acute pleurisy is more common in males than in females, is that they are more exposed, but I do not know of any explanation accounting for the greater frequency of Empyema. The
side most frequently affected with either form of Pleurisy is the left.

The Diagnosis of Pleurisy.

During the dry period, Pleurisy may be readily confounded with Pleurodynia or Intercostal Neuralgia. At first the friction sound is not always present, and even when it is, the jerking rhythm of Pleurodynia, or neuralgic respiration so closely resembles the grazing variety of that sound, that the difficulty instead of being diminished is rather increased. When either of these affections is accompanied with cough or Bronchitis it is always best to defer giving a decisive opinion, for a few hours, till the friction sound has been fully established, and the presence of exudation shall have placed the matter beyond a doubt.

In the plastic stage, it may be distinguished from plastic Pericarditis by the rhythm of the friction sound, as
in the latter case the friction coincides with the heart's beat.

Friction in the peritoneum is difficult to distinguish from a similar sound in the lower part of the pleura; indeed in many instances, it is impossible to distinguish between them. In both the rhythm is respiratory and the only distinguishing character is the locality.

The following are the distinguishing characteristics between Pleurisy and Lung Solidification.

First as to their history. In Pleurisy the dulness is preceded by sharp pains and a dry cough, or perhaps no cough at all, and the crepitation, and rust colored sputa which precede the dulness of Pneumonia are not present, but sometimes the history is very confused, or there is not any.

Secondly as to the physical signs. A solidified lung does not distend the
cavity, while pleuritic effusion frequently does. This is made out by the physical signs already described in the effusive stage.

In Pneumonia, the vocal resonance is high-pitched, metallic, coarse, strongly and sniffingly bronchophonic, while in pleuritic effusion it is either null, oegophonic, or strongly or weakly bronchophonic. The vocal thrill is increased in consolidation of the lung, decreased in pleuritic effusion. Again a person having one solid lung is indifferent as to posture, while one suffering from pleuritic effusion in one pleura, usually lies on or towards that side, and lastly Pneumonia more frequently attacks the right lung, while as before said, the left lung is more obnoxious to attacks of Pleurisy.

A much enlarged liver extends upward, is distinguished by non-protrusion of the lower intercostal spaces, clear percus-
sion sound superiorly, and by a tota-
ably full amount of respiration, audible
at the posterior base of the chest. The
dulness does not alter with position, and
in enlarged liver the interlobular fissure
maintains its natural relationship
with the middle line of the body, while
in a liver pushed down by pleuritic ef-
fusion, it becomes placed at an unnatu-
tural angle to it. Deep inspiration in-
creases the area of percussion sound
inferiorly, and also that of vocal frem-
itus when there is hepatic enlargement,
but exerts no influence where the cause
is pleuritic effusion.

The spleen becoming enlarged, some-
times pushes the heart up but not a-
side; there is no distension of the inter-
costal spaces, and the respiration of the
posterior base of the lung, is but slight-
ly affected. It extends far into the lum-
bar region and down the abdomen.

Tubercele generally commences at the
upper part of the lung. The dulness is never so absolute as in pleuritic effusion.
In tubercle the heart, if displaced, is carried upwards while in pleuritic effusion it is pushed towards the right side generally, and on mensuration the side affected with tubercle is found to be smaller.

In the stage of retraction, Pleurisy may be confounded with tubercle, or Infiltrated Cancer, but when tubercle diminishes the measurements of the side, it does so mainly superiorly; while in Pleurisy it does so inferiorly. In tubercle, both lungs are affected. In Chronic Pleurisy, one is sound and also hypertrophied, and the distinctive signs of softening in the tuberculous lung, are of course not present in Pleurisy. In infiltrated cancer there is less amount of deepening, and narrowing of the intercostal spaces, greater respiratory play, less irregularity of surface,
greater amount of respiratory sound; the shoulder, scapula and spine in their natural position; absence of friction, peculiar expectoration, greater severity of the local symptoms, and the history of the case.

The causes of Pleurisy are very various. Exposure to cold is by far the most common. It however often occurs secondarily from mechanical violence, a splintered bone causing irritation, or a penetrating wound externally letting in air, or a perforating ulcer opening out from a tuberculous lung. In cancer of the female breast, it may by pressure on the pleura set up irritation, and during the progress of continued fever, it may and often does set in.

Treatment. As a general rule severe measures are not required, but there are many cases in which general bloodletting is beneficial, and every
one allows that pain in the side, or
difficulty of breathing, are relieved by
it, In abstracting blood, we must be
guided by the urgency of the symp-
toms and the patient's strength, and
if the pain returns, local bloodletting
may be resorted to, or alone used in weak
subjects.

Mercury should be employed after
the more acute stage is passed but is
not pushed to such an extent as to
produce ptomainism. Small doses of Cal-
omele and opium are given, a grain
and a half of the former, to the size
of a grain of the latter, or more if
the pain continues severe, or Blue pill
or a pill composed of
R. Ptl. Calomel. Co. quīr
Pulveris Scillae gr. j
Pulveris Digitalis gr. j
Misc.

One pill to be taken twice daily. Or
Mercury in the form of inunction.
This treatment appears to check the
effusion of coagulable lymph, and it
certainly hastens the removal of the pro-
duct, when it has occurred, that is, when
the more acute stage has passed, but
the administration of Iodide of Potas-
sium, or the salts of Potash is preferable,
especially the former, in five grains
or two or three times a day. The salts of
Potash used are generally the Acetate
and Bicarbonate, which act as elim-
inating diuretics. We may however com-
bine the remedies, and in some cases
Blue Pill has a diuretic action.

Tartar Emetic in small doses, so as
to produce a slight nauseant effect,
has been employed by physicians of
experience and found by them to pro-
duce very beneficial results.

Blisters will act most efficiently
when the more acute symptoms have
passed away, but are injurious if
used too early. They should be large,
and a succession of them applied.
while the diuretics above mentioned, and the Iodide of Potassium continue to be administered.

The diet should be antiphlogistic and if there is much effusion drink should be abstained from, as enough will be taken with the saline diuretics employed.

When the effusion is very considerable and is exercising great pressure on the heart, or lungs, thus giving rise to breathlessness, paracentesis is advisable, and is now much more frequently employed than formerly, especially on the Continent by Trousseau, who does it even in acute pleurisy before the febrile symptoms have subsided. In performing the operation, we are guided chiefly by the dyspnoea, but also by the state of the patient's strength, and in a great degree by the feebleness of the heart's action. If there is much dyspnoea associated with a weak and feeble pulse,
the operation is advisable. The great objection to it in acute Pleurisy, and certainly a powerful one, is that such cases generally get well, when the ordinary means are employed, but it sometimes proves fatal in debilitated persons.

The treatment of Chronic Pleurisy, does not differ much from that of acute Pleurisy, after the acute stage is past. The use of blisters, and stimulating remedies should be continued for some time and in combination with the internal administration of Soda of Potassium and Potash and its salts. The diet should be generous, but non-stimulating, and when there is any evidence of wasting, or failing strength, quinine, iron and Cod liver oil will be found very valuable auxiliaries. When however there is satisfactory evidence, or a strong impression of the effusion having become purulent, the sooner it is evacuated the better, and also when
all remedies have failed in producing any beneficial effect on the effusion. The operation for evacuating the fluid, or paracentesis as it is called, enjoys an ancient reputation, as it was employed by Hippocrates, and his rule was, never to do it before the fiftieth day after the first appearance of the symptoms. Being regarded as hazardous it afterwards fell into disuse, but the danger was due to the then imperfect means of arriving at a diagnosis. Even in 1836, at a discussion before the French Academy, on its use in Chronic Pleurisy, a majority of the members opposed it. Since that time, with the improvement in our methods of diagnosis, a very great change of opinion has been wrought, and the operation may now be regarded as of comparatively frequent occurrence. The instrument employed may be an ordinary trochar and cannula, as the introduction of a little air
is not likely to do harm, or if any, very little. But to prevent the introduction of air various apparatus have been devised, and generally of a more or less complicated nature. About the best of these is Bowditch's syringe, which is fixed to a trochar, and is especially useful when there is much difficulty in abstracting the fluid.

The trochar should be introduced at a dependent part of the chest, between the sixth and seventh ribs, or if the effusion is great, between the seventh and eighth. Drs. Brady and Bowditch of America, advise opening below the angle of the scapula. The fluid should be evacuated by degrees, and the whole of it should not be let out at one time, especially in a debilitated subject, where such a proceeding is apt to be followed by dangerous syncope. It is safer and the after results are in every way more satisfactory, when the fluid has
been withdrawn from time to time, and in smaller quantities. There is a difference of opinion as to whether the orifice ought to be closed after the canula has been withdrawn. If the fluid is purulent leave it open, and even advise a free incision, through the parietes, but if the fluid is serous, close the orifice carefully. In chronic cases the operation may require to be repeated, but in acute cases one operation generally suffices. With a low vital condition of the circulation, in some cases of Acute Pleurisy, the operation should be had recourse to, before any very urgent symptoms have manifested themselves. We should not in such cases temporise with ordinary remedies, for they often will not act before some fluid is withdrawn.

By way of conclusion I shall here record some notes of a case of Acute Pleurisy which at the opening of the present session, was brought into the
Royal Infirmary. Dr. Warburton Begbie, in whose wards the case was treated, has kindly allowed me to avail myself of these notes and make the present use of them. I deem the case an interesting one, and capable of bearing out many of the statements set forth in this paper. That the progress of the case may be clearly marked I shall set it down in the form of a diary.

October 8th, 1864.

Walter Stevenson, a young lad aged nineteen, and by occupation a weaver, was admitted this day into Ward IV of the Royal Infirmary. The history that the patient gave was that, about a month prior to his admission, he felt a stitch in his left side. He had not been exposed in any way, and was therefore unable to account for its cause. Slight at first, the stitch gradually became more and more painful, and for the last eight days prevented him doing any work.
His breathing had by that time become very difficult; a deep breath, or a cough, very much aggravating the pain, so that he had to keep to his bed.

On admission there was great difficulty of respiration, and anxiety of countenance. The skin was hot, the face slightly flushed, the pulse and respirations frequent, and the urine scanty and high coloured.

On Inspection there was a visible bulging of the left side, and on inspiration the right side alone was seen to move. The intercostal muscles of the left not coming into play. The heart could be seen to beat to the right of the sternum.

On Palpation the right side could be felt to rise under the hand, but the left remained motionless.

Percussion elicited a dull humoral sound, all over the front, and back of the side, and encroaching on the mediastinum. The sense of resistance,
experienced by the fingers, was very considerable; while on the right side, the percussion sounds were normal.

On auscultation no friction sounds could be heard over any part of the chest, and the breathing on the left side was very faint and confined to the bronchi, while on the right, the breath sounds were puerile. The vocal thrill over the left side was oegophonic.

The lung was compressed backwards, and the heart was displaced three inches to the right of the sternum.

On counting the Pulse and respirations, the former was found to number 130 beats in the minute, and were very feeble in character, while the latter were more urgent had the symptoms become, so urgent had the symptoms become, that it was deemed necessary to have recourse to the operation of paracentesis, and this was immediately performed, Bowditches syringe being employed for the purpose, and the puncture made
between the 5th and 6th ribs at their angles. Eighteen ounces of fluid were removed, when it ceased to flow, evidently from some pleuritic adhesions, interrupting its exit. Immediate relief followed the operation. The difficulty of inspiration was much lessened, and also diminished in frequency, having fallen to 30 half an hour after the tapping. The position of the heart had also visibly changed, the apex being seen and felt to be an inch nearer the sternum.

A fly blister was ordered to be applied to the left side of the chest, and a pill of Massae Pil: Hydrarg: gr. iv Pulv. Scillae gr. j.

To be taken every evening, at bed time, also five grains of Iodide of Potassium, three times a day.

The fluid taken from the chest was examined and found to have a specific gravity of 1022 - to be highly
+See end of essay.
albuminous and to contain 5.25 grains of chlorides to the ounce.

9th.

He was much better, the pulse below 100, and the respirations 30. The amount of urine passed was very small, being only twelve ounces. It was found to have a specific gravity of 1031, an acid reaction, to contain a large quantity of chlorides and a copious precipitate of urates. The amount of chlorides and ura was carefully ascertained, during the succeeding three weeks, but for the greater facility of comparison, I have arranged the result of each day's examination in a tabular form and to that I refer.+

10th, 11th and 12th.

He continued to improve and on the 13th was able to lie on the right side, which he could not do previously. The pulse was 94 and the respirations had risen.
to 40, due to the change of position. The heart was still pulsating to the right of the sternum, the amount of urine passed was 60 ounces, five times the amount passed on the 9th, 10th and 11th. The specific gravity had fallen from 1031 to 1015. Upwards of 180 grains of Chlorides were passed, and the uric acid had increased enormously, having risen from 19.68 grain of yesterday to 183.72 grains. The urates had almost disappeared.

The blistered surface was ordered to be dressed with mercurial ointment.

14th

Respiration had fallen to 36, but the pulse continued at 96, and was still very weak. Chlorides 223.745 grains. Urea 166 grains.

15th

Pulse very weak. Chlorides 328.125 grains. Urea 32.775 grains. Urates not perceptible. No albumen, but there is a precipitate of phosphates. Four ounces of sherry ordered.
16th

Pulse and respirations had fallen in number: the former to 80, the latter to 28. Urine 70 ounces. Specific gravity 1015.

17th

Urine 48 ounces, specific gravity 1019.

19th

Pulse 92 and gaining strength. Respiration 28. There was a slightpector indicative of Mercury in the breath and the gums were becoming affected, the mercurial ointment and pills were therefore discontinued.

20th

Pulse 90. Respiration 24. There was still peculiar breathing on the right side, but the oesophony on the left was diminishing.

22nd

There was much improvement in the chest sounds, the dulness had disappeared very much on the front and
back, but was still considerable on
the side of the chest. The Chlorides
had fallen from 237.5 grains to 85 grain
and the area for the past week had
varied from 10 to 30 grains was 87.48 grain
24th.

The urine which had amounted to
40 ounces the day previous and for the
past week had ranged from 38 to 56 ounce,
had fallen to 25 ounces. The chlorides
had increased to 109.25 grains and
the area had again fallen to 11 grains.
25th.

The heart beat to the left of the
sternum, almost in its natural po-
sition, and the breath sounds were
becoming very distinct; but the side
of the chest compared with the back
and front was still very dull. The
patient complained of a slight pain
in the side. Urine 39 ounces, specific gra-
ity 1024.
27th

Much improved though the pulse was still weak. Urine had again fallen to 25 ounces. Specific gravity 1.024.
To produce a diuretic action. Ordered.

By

Spiritus Aetheris Petrosi 3fl
Finaurae Perichloridi 3fl

A tea spoonful to be taken three times a day.

That afternoon the patient walked down the ward, and sat up for several hours.

28th

Urine 40 ounces, Specific gravity 1.015, Chlorides 17.5 grains, Urea 87.48 grains.

29th

Urea 87.48 grains.

30th

Allowed to sit up a few hours everyday.

November 5th.

A blister applied.
Patient put on bleak diet.

10 1/2

Still dull on the side, less so in the front and least on the back of the chest. Breathing, still oegophonic at lower part of lung, though fast disappearing. The vocal thrill returning to its normal state, being quite normal at the apex. Slight friction heard between the lower angle of the scapula and the spinal column.

The following week the patient left the Infirmary. His respiration little improved, though there was slight retraction of the side.

From the treatment adopted in the foregoing case, and the results arrived at, it can be fairly inferred, that in certain acute cases where there is much dyspnoea associated with a weak and feeble state of the pulse, paracentesis may be resorted to with great benefit and ease to the patient.
<table>
<thead>
<tr>
<th>Date</th>
<th>Pulse</th>
<th>Respiration</th>
<th>Amount</th>
<th>Specific Gravity</th>
<th>Chloride</th>
<th>Chlorides Total</th>
<th>Urea</th>
<th>Urea Total</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>8th</td>
<td>130</td>
<td>40</td>
<td>12</td>
<td>1031</td>
<td>2.625</td>
<td>31.700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th</td>
<td>90</td>
<td>30</td>
<td>12</td>
<td>1031</td>
<td>2.187</td>
<td>26.244</td>
<td></td>
<td></td>
<td>Acid. Large precipitate of urates. Acid.</td>
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<tr>
<td>10th</td>
<td>96</td>
<td>36</td>
<td>12</td>
<td>1035</td>
<td>2.625</td>
<td>31.700</td>
<td>1.090</td>
<td></td>
<td>Acid. Large precipitate of urates.</td>
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<tr>
<td>11th</td>
<td>30</td>
<td>1031</td>
<td>5.600</td>
<td>168.00</td>
<td>6.560</td>
<td>19.880</td>
<td></td>
<td></td>
<td>Acid. Urates disappearing.</td>
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<tr>
<td>14th</td>
<td>96</td>
<td>36</td>
<td>75</td>
<td>1015</td>
<td>4.375</td>
<td>328.125</td>
<td>4.375</td>
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<td>15th</td>
<td>80</td>
<td>28</td>
<td>76</td>
<td>1015</td>
<td>3.500</td>
<td>266.000</td>
<td>8.750</td>
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</tr>
<tr>
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<td>84</td>
<td>28</td>
<td>40</td>
<td>1022</td>
<td>5.250</td>
<td>210.000</td>
<td>8.750</td>
<td></td>
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</tr>
<tr>
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<td>92</td>
<td>28</td>
<td>56</td>
<td>1022</td>
<td>5.250</td>
<td>294.000</td>
<td>2.187</td>
<td></td>
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</tr>
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<td>21st</td>
<td>92</td>
<td>22</td>
<td>40</td>
<td>1025</td>
<td>2.125</td>
<td>85.000</td>
<td>2.1870</td>
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<tr>
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<td>21</td>
<td>42</td>
<td>1021</td>
<td>6.560</td>
<td>262.50</td>
<td>2.187</td>
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<td>1019</td>
<td>4.375</td>
<td>17.500</td>
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<tr>
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<td>1018</td>
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<td>8.748</td>
<td>2.1870</td>
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