Pneumonia

its

Pathology and Treatment.

by

WILLIAM CARTER
{1. "Pneumonia numbers among its victims."
13. "Usually precedes severe attacks."
15. "A sort of whistling sound."

11. The cause of pneumonia generally undiscoverable.
15. Bronchoscopy indicates condensation. Is it not often natural in right apex?
17. The region of dull percussion in pleurisy depends on posture. seldom.
from condensation by pleurisy, whether entire lung condensed by pneumonia?

34. Personal experience as to Decongestion in Pneumonia.

41. Memorial cure much more permanent than remission cure. Degree.
Pneumonia

Pneumonia and peripneumony are names given to parenchymatous inflammation of the pulmonary structures, and among others amongst its writers the illustrious names of Hippocrates, Aristarchus, and Celsius. At that early period in the history of medicine, all acute diseases of the thoracic bursa, accompanied by pain, were termed pneumonias; those in which pain was a prominent symptom, were called pleurisies, but these pathologically distinct lesions, were just as often called pneumonias as pneumonias. The distinguished pathologists Balsaloe and Morgagni, were the first to attempt the separation of these two morbid affections, but unfortunately they laid down no special rules for their distinction during life, and even fuller illustration as he was for his writings upon thoracic diseases "expresses his belief that the term pleurisy ought with propriety be applied to every case of the disease." Again he says "under the title of pneumonias, or pneumonia inflammation, I mean to comprehend the whole of the inflammation affecting either the bursa or the thorax, or the membrane lining the internal surface of that cavity.
for he thon do our diagnostics serve to ascertain ex-
actly, the seat of the disease, nor does the difference in
the seat of the disease, exhibit any considerable varia-
tion in the state of the symptoms, nor lead to any differ-
ence in the method of cure. "Pneumonic inflammation
never varies in its seat, seems to me to be always
known, and distinguished by the following sym-
ptoms. Heat, difficult breathing, cough, and pain
in some part of the thorax." And until a very re-
cent period in the history of the Medical Art, this
state of matters remained unaltered, and the
consequence was that the diagnosis of diseases
of the chest, was anything but satisfactory. Medical
men at that time judged as to the exis-
tence, or non existence of inflammation, and
other morbid changes going on within the thorax,
principally by the general symptoms which these
states excited, but as to the special Structure
affected, they were quite ignorant. Cullen's de-
finite for et of pneumonic, was fever, dyspnea,
pain, and cough, but these symptoms though they
valuable in themselves, are no more characteristic
of pneumonic than they are of several other pul-
monary disorders, such as bronchitis pleurisy.
And it was not until the brilliant discovery of the
electroscope by Laennec, that matters became
altogether changed, and physicians were en-
abled to distinguish with accuracy, the diff-
ent morbid affections of the thoracic organs.
Now we can tell in the great majority of cases the actual state of matters within the thoracic cavity, at least as well as if they were seen by the naked eye.

In the illustration, French pathologists Thomez and Audret have by their laborious research tended greatly to advance the true pathology of pneumonia. There are three very well marked stages of pneumonia, viz., (1) stage of congested, (2) stage of red suppuration, and (3) stage of grey suppuration.

1 Stage of Congestion. If we examine along while in this stage, we shall find it intensely gorged with blood, and of a deep red color. It does not exsanguinate under the finger, as healthy lung does, it is considerably heavier, feels more resistant to the touch, and retains to a partial extent, the impression of the finger. If incisions are made into it, bloody serum will be seen to flow from it, containing numerous air bubbles. The lung thus cut into, will present various shades of color ranging from a dark red to a chocolate color.

If the substance of the lung be well rinsed with water, while in this congested state, its natural appearance will be restored. Its color, however, often varies greatly in intensity, depending to a great extent upon the amount of blood contained in its substance. In the lungs of coal-miners, and aged people, the appearance of the lung is often characteristically black, from the excessive
amount of carbonaceous matter deposited, and in
the lungs of children, the color is intensely red. Al-
though the pulmonary structure contains much less
air than natural, and a larger amount of fluid,
at still floats if placed in water. A very peculiar
and characteristic change takes place in the lung,
as a result of the inflammatory engorgement, and
that is, a great diminution of cohesion, inasmuch
as the slightest handling, tears the lung with the
greatest readiness. André was the first to draw
attention to this remarkable feature, and was fol-
lowed by Chmel. André, for a long time maintained
that this diminution of cohesion on the part of the
engorged lung, was the best conclusive proof for
distinguishing inflammatory engorgements from
mechanical hyperemia, but numerous subse-
cquent observations caused him to alter his op-
inion, and along with Sormeş, referred this
remarkable change, to the great amount of blood
contained in the lung. The term splenization
has been given to this peculiar condition. Dr. B.
Williams of London maintains that "both inflam-
atory and mechanical engorgements tend to diminish
the cohesion of the parenchyma, more than the mere
increase of liquid in it, can explain." The situation
however in many cases of the engorgement, and the
history of the whole case, will render important
aid in arriving at an accurate diagnosis.

II. Stage of Red Hepatization. If the implanted
lung does not end in resolution, it passes into a further stage of inflammatory development. To descendent stage. Greater effusion has taken place in the parenchyma of the organ. Resinoid structure of it is quite solid from effusion. It crepitates no longer under pressure, being no longer spongy. It possesses the consistency of the Liver, and when cut with a knife presents the same physical appearance as when the Liver is similarly treated, hence the origin of the term hepatisation. Its degree of cohesion is also diminished so that a small amount of squeezing reduces it to a pulp. It appears to be larger than natural, from its containing much a large amount of esculid matter, and this is particularly seen when the thorax is opened. The lung does not collapse on the entrance of air as it does when that organ is healthy. The mucus of the pleura indicated upon the substance of the lung, is often observed, especially when that organ is highly congested. The lung is not so intensely red as in the first stage, and varies from a pinkish red to a darker hue. When the surface of the hepatised lung is gently scraped with a common scalpel, the lacerated surface examined with a pocket-lens, numerous granulated points of a somewhat lighter color than the rest of the cut surface will be observed. They are somewhat elevated, can be isolated without much difficulty. Samnee considered them to be
The air vesicles became clogged up with exuded matter, and the "air-cell" is converted into semi-solid granules, by the thickening of their parietes, and by the obliteration of their cavities, by a "concrete fluid." Very often, however, this so-called granular appearance is absent altogether. This fact is noticed by Andral, but repudiated by Lane. The author considers the granular appearance quite peculiar to suppuration. Andral is said to have been the first to refer this granular appearance to the air vesicles, and in this opinion he was followed by Lane and Louis. He describes the inflammation in pneumonia as occupying the air vesicles, the internal surface of which secretes a serous fluid which accumulating so as to fill their cavities, produces the "granular appearance in question." F. Watson of London states that "these granulations are air vesicles clogged up, and thickened by the inflammation."

3. Pregnancy. The morbid process still progressing passes into the third stage, which consists of diffusion: suppuration of the pulmonary tissue. The insufficiency of the lung is still acute at first, but the color of it has changed from a light red to a yellowish grey. The granular appearance formerly alluded to are now no longer of the same color. Their incisions are made into its insufficiency, so escape of prominent matter takes place, as long-
as the lung is in a diseased condition, but after it has begun to soften, a copious flow of pus ensues. Simple pressure likewise causes pus to burst the lung to make its escape, and the lung is so flexible that a cavity is left by doing so. Precipitate empyema is said to lead very rarely to diffused abscess. Why, no explanation has yet been given. The general opinion, however, of pathologists of the present time, is that pneumonia ending in abscess is rare. M'Lean says he saw it only once, and in that case the cause of the abscess in the lung was the lodgement of a musket ball for six years. Audat also considered it a rare occurrence. Lannee on the other hand, states that he saw it twice within two years within one year, but Audat is inclined to throw some doubt upon it. It has been averred that tubercular abscesses are liable to be mistaken for abscesses, and in order to avoid such a mistake, Lannee has endeavoured to lay down a general rule, for distinguishing these two conditions from each other. He says: "Tubercular abscesses are to be distinguished from abscesses by their containing tubercles, also by the existence of the same in other parts of the lung." Abscess as a result of pneumonia is my rule, indeed, and cannot be considered as a natural.
sequence. All observers agree that it is more frequently seen as a result of severe surgical wounds, the pyaemic matter being secreted in other parts of the system, and deposited in the lung, as in phlebitis, empyema, and pyaemia-gangrene. It is not as rare as an occurrence in connection with pneumonia, as abscess-like abscess it may occur quite independent of pneumonia. Laennec considers gangrene following pneumonia as a very rare result indeed and considers it to be quite idio-pathic-like Hospital-gangrene. Various causes may lead to gangrene, the inflammation may have become dense, as to pull the lung at one end. The inhalation of irritating gases, as well as mechanical injuries, may lead to the death of the lung. Then the pulmonary substance becomes gangrenous, it presents a dirty-grayish color, and possesses a musty, horrid odour, and this is its most characteristic sign. So much is this the case, that if merely smelling the patient's breath, you can easily recognize a gangrenous lung during life. It has been stated that a lung may become gangrenous, if it be so compressed, as to prevent the entrance of air, as occurs frequently in large pleuritic effusions.

Part of Lung Affected in Pneumonia

The French pathologists, Morgagni, Bomare,
and Traube, maintained, that the inflammation is more frequently seated in the apices, than in the bases of the lung, and aver that these conclusions are based upon post-mortem examinations; while on the other hand Lamennais, Coudrelle, and Chomel, who include cases of recovery in their conclusions, maintain that it is much more commonly met with in the base, than in the apex. The principal reason, however, of this great discrepancy of opinion is, that inflammation of the upper lobes is far more frequently fatal than inflammation of the lower lobes. Do that in post-mortem examinations, the apices of the lungs will be found to be more frequently affected, than the bases of the lung, as might be expected. Coudrelle, out of 88 cases, found the base to be affected 47 times, the apex 30 times, and the whole lung at once 11 times. The lung most frequently affected.

A pneumonia may be single or double, partial or general. Statistics prove that pneumonia occurring on the right side is much more frequently found, than a pneumonia on the left. Coudrelle has collected together one hundred and fifty one cases of pneumonia, under treatment at La Charite Hospital, Paris, and also fifty nine cases collected from different authors, two hundred and ten in all, and of these there were one hundred and twenty one, off
ecting the right side, fifty eight affecting the left, and twenty five where a double pneumonia existed. We were also of uncertain site. From this it follows, that a pneumonia on the right side, is twice more frequently met with, than on the left.

Cancers of Pneumonia. Like other inflammatory diseases, pneumonia is very prevalent in moist and cold climates. The exciting cause are very insidious, and varied, and some play a more important part than cold. That such is the case, is strongly corroborated by the fact of its occurring more frequently, and with greater severity in moist and cold than in dry and warmer seasons. It is recorded that in one of the wards in La Charite Hospital, Paris, during a period of five years, eighty one cases occurred, between the months of February, and August, and only sixteen during the remaining months, and of two hundred and forty three cases treated in the Edinburgh New Town Dispensary within a period of three years, and of the three, sixty one and seven occurred between the months of September and December, one hundred and four, between December and March, ninety four between March and June, and sixty eight between June and September. Sudden exposure of the surface of the heated body to cold, is another very common exciting cause. It has been said to occur epidemically, which Laurence Tintius is due to
deliterious and poisonous materials, floating in the air, entering the circulation, and operating injuriously upon the pulmonary apparatus. Those who have had previous attacks of pneumonia are proportionally more liable to similar attacks than others. Caudal refers to a case, where it occurred sixteen times, within eleven years, and Rush, in instances another, where it occurred twenty-eight times. Interculeosis is the most common exciting cause, and it is an acknowledged fact, that during the progress of a Thiere pneumonics (to a limited extent at least) to not unlikely to intervene. A broken down, and debilitated constitution equally predisposes for attacks of pneumonia. Men have been said too, to be more liable to its attacks than women, but this is easily explained by the fact that men, as a general rule, are more frequently exposed to cold, damp, and the numerous exciting causes alluded to above. But in the great majority of cases, the causes of pneumonia cannot be discovered at all. [I wrote for influenza."

The Seat of the Pneumonia.

Barrows and antagonistic have been the opinions expressed as to the seat of the inflammation. Some pathologists strongly assert that it is seated in the bronchi, and air sacs, others that it is seated in the interstitial tissue connecting the parenchyma, while a third class maintain that it begins seat in the whole pulmonary structure. TH. B. Hill.
James of London, maintains that the inflammation has its seat "in the pleura of several and sublimuous tissue surrounding and uniting the minute extremities of the brain", and that in those cases where the bronchid or examination were similarly affected, it was strictly speaking rather a bronchitis, occurring in combination with these a part of the pneumonia. He maintains that the above assertion is founded on numerous and carefully performed experiments, and dissections of the lung in various stages of pneumonia, and in all of them he found such appearance, as to warrant him in holding that the capillary system is the essential seat of the inflammation, and not any other part of the pulmonary apparatus. Dr. Watson says, "I hold that in pneumonia, all the texture composing the pulmonary substance in the part inflamed are involved in the inflammatory process."

The physical signs of pneumonia. These vary greatly according to the stage of the infected action going on in the interior of the chest. If we apply our ear, with or without the aid of a stethoscope, to the chest, when the lung is in the state of engorgement, we shall hear a very peculiar and characteristic sound, mingling with the ordinary vesicular sound, something, although at first, but not concealing it. It is a peculiar crackling sound, and has been termed minute crepitation, analogous...
to the sound produced, when one rubs a lock of hair
between the finger and thumb, close to the ear. It has
also been termed crepitant rhonchi by Simmner
and considered by him as pathognomic of the stage
of engorgeinent. It is heard in a limited portion
of the chest at first, but very soon may be readily
detected over the entire thoracic surface. As the
process increases in intensity, the minute
crepitation soon becomes so well-marked
that the ordinary vesicular murmur is abolished.
The part where the fine crepitation is heard at
first, is generally situated opposite the lower mar-
gin of the pectoral muscle, or near the lower
border of the scapula. This is just about opposite
the inferior border of the lung (which are most
generally affected in the first instance). As long
as the ordinary vesicular murmurs is heard, in
combination with the minute crepitation, we infer
that the pneumonia is still in the first stage but
on the other hand, when the natural respiratory
murmur is abolished, and its place taken by the
minute crepitation, we know that the inflam-
mation exhibits a tendency to pass into the stage of
hepatization. If the inflammation however, is
about to end in resolution, the fine crepitation
becomes and less and less marked, and the respir-
atory murmurs more distinct, till at least the cre-
pitating sound entirely disappears, and its place
taken by the natural vesicular murmurs.
Many discussions have taken place with regards to the cause of this fine crepitation. But the generally received opinion is, that it is caused by the passage of air through liquid film, the formation and bursting of bubbles of air, as they pass along the bronchi. There can be no doubt, that it has its seat in the ultimate bronchi, and air-bubbles formed in states, that the pulmonary tissue contains fibers, as well as air, and that the intersturation of these fine produced-bubbles of air of minute fines. Dr. C.R. Williams has formed a different opinion upon this point, he holds that the enlarged blood vessels, and interstitial oedema, compress the minute bronchi, obstruct them, and that these tubes are lined with a viscid secretion, which causes them to stick together, and that it is consequent of the separation of their adhering states by little junctures of air, now and again, that gives rise to the characteristic sound. At this period of the inflammation too, the lungs begin to be somewhat drier on percussion, and if the disease be extensive, and limited to one lung only, the corresponding one will attempt to make up for the loss of function on the part of the other lung, as is very commonly seen in the case of double organs, and priority inspiration becomes established. Then the inflammation passes into the second stage, we hear no longer the minute crepitation, for the natural viscidular emanation
but an entirely new sound catches our ear. It has the character of a sort of whistling sound, similar to that produced by blowing through a tube, and it is sometimes so loud as to resemble a whistle. It is termed bronchial respiration, and its physical cause is very obvious. In the natural state of parts, we never hear the air passing in and out along the bronchi, as it is very probably obstructed by the healthy septicular membrane, coming from the spongy lung, surrounding the bronchi, but the spongy structure of the lung being now converted into a solid mass, it conducts the sound of the air passing in and out from the bronchi to the surface of the chest, and hence bronchial respiration is heard. A very peculiar resonance of the voice is also heard in combination with the bronchial respiration. The sound of the voice of the patient passes down the spongy bronchi, and is conveyed to the ear of the listener through the expanded lung. The tone of the voice is modified. The words heard are indistinctly muttered; the voice appears to be quite changed from the natural voice. This is termed a bronchophony. The facility with which these bronchial sounds may be heard, depends to a great extent upon the seat and extent of the inflammation. They are most distinctly heard, when the inflammation is seated in the apex, or near the roots of the lung, as they are heard with greater readiness, when the membrane of bronchi is irritated in the region of the hilus, when the inflammation has its seat in the
lungs, they may not be heard at all. If the hepatitisation has proceeded so far, as to prevent the lungs from expanding, bronchial breathing may not be heard, but still broncho-phonic may be in existence. At this stage of the disease, dulness on percussion will be found, but its extent will vary much, depending as it does on various circumstances. If the lung be completely hepatitisated, and comes close up to the chest, the dulness will be very marked, but if a thin piece of lung permeable to air, should supervene between the hepatitisated lung and the chest, the percussive note will be proportionally diminished. When the inflammation has reached this stage, it may do one of two things, it may end in resolution, or it may pass into the third stage. If the lung is about to pass into resolution, the greatest possible expectoration begins to be heard, very faintly at first, but soon increasing in intensity, as the bronchial voice, broncho-phonic begins to disappear. Soon the natural respiratory murmurs begin to be heard mixed with the crepant sounds, and as the pulmonary structure becomes more permeable to air, this increases as that diminishes, and the healthy state of the lung, is thus gradually restored. When the lung has passed into the third stage, we have in addition to dulness on percussion, a mucus rattle heard at the roots of the lung, and with the elevation of this sign, it has been doubted how much of the auscultation can enable us to state, whether the
lung has really passed into the third stage of rot. The only positive proof of this occurring is, when the pulmonary substance becomes broken down, and the frontal matter has been evacuated. In that case a gurgling sound will be heard in the corresponding point, and when the evacuation of the liquid has taken place, lassomous respiration will be heard.

Phenomena of Resolution. When the lung is about to pass into resolution, the various and pathological distinct signs, which had been present during the existence of the morbid action, begin to reappear, exactly in the reverse order they began. If the lung had passed no farther than the stage of engorgement, the signs of resolution begin to make their appearance, by the normal respiratory murmurs, again making its appearance, mixed however with the crepitant phonemes of lassomous. As the lung passes rapidly into complete recovery, the minute crepitation soon disappears altogether, and its place taken by the natural respiratory murmurs. If the lung has passed into the second stage, the signs of resolution will be somewhat different: the spot where no sound was heard but bronchial breathing and broncho pneumo, minute crepitation begins to appear, at first in a limited spot, but soon extending over that part of the lung, that was in a hepaticized condition. It is heard at first only at the end of each inspiration, and as it increases in fineness, the bronchial breath-
ing, and bronchophony begins to be less distinct, and finally disappears, and in a short time, depending however on the rapidity of the pulmonary absorption the crepitation itself becomes abolished, and the lung resumes its healthy condition. The crepitation of resolution differs from that of incipient pneumonia in its tubules being much larger and moist, and being heard during the whole of the inspiration partly during expiration, but in incipient pneumonia the first part of the inspiration is free of the crepitation is heard only at the end, and is dry, fine and dry in character. The expectoration also becomes changed in character, being less viscid, and more bronchitic looking.

The Symptoms of Pneumonia.

These are pain, cough, expectoration and pyrexia. Pain when it does occur is an early symptom, and varies much in its intensity. It is often little complained of, uneasy sensations however may be present, but as a general rule, there is seldom much pain complained of, unless the pneumonia is complicated to some extent with pleurisy. According to some observers a pneumonia without some amount of pleurisy is rare. According to Lushdall there is never pain without some implication of the pleura, and he affirms that in all those cases where pain accompanied the pneumonia on examination of the pleura after death, the pleura was found to be covered with layers of coagulable lymph.
and that, in close cases where pain was marked by abscess, the pleura on examination was found to be quite healthy. Samee on the other hand, affirms, that pain is often present in the form of a sharp stitch, where no pleuery is in existence. The seat of the pain, as generally complained of, is situated in front of the chest, below either mamma or sternum, and often below either scapula, or it may be situated in any part of the thoracic cavity. It is aggravated by cough, pressure on the intercostal spaces, percussion on the affected side, or by the respiratory movements. Much has been written about the deities of the patient in pneumonia, but it is generally admitted that the most common and convenient position is oblique cough. How the cough is very persistent, the pain is greatly aggravated, and even a feeling of pain is caused, when none is otherwise present. The cough is generally dry at first, or merely accompanied by a catarrhal expectoration, but it is soon followed by a peculiar and characteristic expectoration. It is sometimes very trivial, so much so, that the patient does not even complain of it.

The Dryness. The intensity of this symptom varies greatly. In some cases it is very trivial. In other cases it occurs in a very aggravated form, such as in Commonly seen in obstructive bronchitis, and pleurisy, far more frequently than in pneumonia. A double pneumonia greatly aggravates
the dyspnœa. It sometimes occurs in such an aggr.
aveled form, as to bring the life of the patient into peril,
and so grave in its results, as to render the poor invalid
quite unable to lie down, but compels him to assume
the erect position, as this relieves the dyspnœa most read-
ily. When the dyspnœa has reached its height, the pa-
ient often becomes quite pale in color, or intensely red;
his nostrils become dilated from the expansive, portentous
act of the alae nasi; his shoulders become elevated, the whole of
the muscles concerned in the respiratory function, come
to be placed in the strain. When these latter symptoms
are present in a very aggravated form, it is probable
that some degree of bronchitis is present. As a general
rule, the dyspnœa bears a certain relation to the
intensity of the inflammation, but exceptions
to this general statement do occur, for example a pa-
tient with a considerable portion of his lung in a he-
patized condition, may complain of his breathing,
while another with only a very limited portion
of his lung affected, may be reduced to the great-
est point and danger, so that it is quite possible
to find the dyspnœa bearing very little relation to the
intensity of the inflammation. When the upper lobes are
affected, the dyspnœa is said to be greater, than when
the lower ones are affected. Dr. William Gardner of
London states that "the dyspnœa of pure pneumonic, or
more acceleration of the respiration, without any of the heaving
or straining inspiration observed in bronchitis, in cases where
the two are combined"
The expectoration, after a short time, the cough, which at first was simply dry, or catarrhal in character, comes accompanied by an expectoration of a very characteristic appearance. It is the most diagnostic sign of the disease. It consists of a transparent sanguineous, moist, or colored sputum, which adheres so closely to the sides of the bowl in which it is contained, that the mere movement of it will not cause it to detach itself from the bottom. The characteristic purplish color of the sputum is particularly well seen in the strong, robust, while in those of an enfeebled, and in weak, asthmatic constitution, it affords us very little satisfactory information. At first the expectoration may be very slight indeed, and consist only of bronchial mucus, but after the disease has been in existence for several days, the purplish colored sputum makes its appearance. On examination by the microscope, the sputum will be found to be composed chiefly of mucus, epithelium, blood corpuscles, and oil globules. In an early stage, it is said, the citrate also detected in it, along with chloride of lime. The color of the expectoration differs from that of bronchitis. In the latter the sputum is simply tinged—hence blood, whereas in pneumonia, we have the mucus, and the blood intimately mingled together, so as to produce the peculiar purplish color of the sputum. The characteristic color of the sputum is simply caused by the mingling together of the mucus, and blood cells, this proportion to the amount of blood contained in the sputum, so the
party color will be more developed. As long as the expectoration can readily be expelled from the bronch, it is contained in it, it is said that we may safely infer that the inflammation is still in the first stage, but that when the expectoration has acquired such tenacity as to resist all attempts to remove it from the bronch, the pneumonia may probably be said to be in the second stage. The expectoration, when the lung is about to resolve, becomes to a certain extent changed in character, being much less viscid and purty, and almost like the expectoration of common catarrh, but in other cases, where the pneumonia is evidently making no progress towards recovery, the purty color may continue to the end. It is not uncommon to find a pneumonia passing into consolidation, accompanied by any expectoration. During an attack of pneumonia, it is not an unusual thing to find the patient at one time expectorating freely, and at other times, ceasing altogether. This occurs most commonly in fatal cases; reduced principally to the increased tenacity of the expectorated matter, and to the inability of the patient to expectorate, from absolute want of power, and not from cessation of the secretion. In consequence of this, the patient is asphyxiated by the accumulation of the spuus in the air passages. It sometimes happens, that in those cases where the pneumonia has passed into an advanced stage, we find the expectoration of the consistence of water, of a plum-pared color, and with regard to this curious fact, Audubon has asserted that on examination
after death, of the bodies of those who had died, and
in whom had existed this particular symptom,
he found the lung far advanced into the third stage,
and the inference he draws from this is, that in
cases, where this peculiar expectoration ex-
ists, we may safely affirm, that the lung is in the
third stage. Sometimes prominent matter is ex-
pectorated; and, when this occurs, the chances of
a favourable termination, are few, and when extre-
me or severe gangrene has set in, it will inevitably prove
fatal, but still there are cases on record, where
the lung has recovered itself, even after gangrene
has supervened.

Pyrexia. In pneumonia, as well as in other in-
flammatory diseases, we have pyrexia, to a greater
or less extent, often certain premonitory symptoms pre-
cede its supervention, such as great mental
depression, and languor, with pain in the back, or
disturbance of the bowels, etc. Immediately
following the shivering fit, with which these febrile
diseases come on, we have great heat of skin de-
veloped, a quick pulse, great thirst, headache,
constipation, scanty and highly colored urine, and
the usual phenomena following; and rigor. The pyrexia
is often very intense, especially in the plethorics.

The State of the Liver in Pneumonia.
The pathological condition of the liver in pneu-
monia has of late attracted considerable atten-
tion. It is healthy when, after being aerubated
with nitric acid, be treated with nitrate of silver, a dense precipitate of chloride of silver will be thrown down, showing the presence of a considerable amount of chlorides. In pneumonia, they often become remarkably diminished in quantity. Before reparation has occurred, the amount of chlorides is more or less deficient, but when the lung parenchyma becomes completely reepithelialized, they disappear altogether. But when the lung has been greatly restored, they gradually make their appearance again, and continue to increase as resolution advances. Dr. Bache in speaking of these days says, "There is no reason to believe that the absence of chlorides is due to any change in the urine, during the stage of reparation, depends upon a determination of the salt to the inflamed lung; and that when parenchyma occurs, its force of attraction causes, and whatever salt has been retained in the lung is reabsorbed."

Complications of Pneumonia. In the great majority of cases, it is seldom we meet with a pure and simple case of pneumonia, the inflammation generally not limiting itself to the lung substance proper, but involving the investing membrane also. Lundy has called this co-existence pleuro-pneumonia, but pneumonia may be found existing alone, without any pleurisy. In these cases the pleurisy is generally so slight, that it has no influence on the subsequent course of the disease.
commonly figured as incidental, not essential to the disease. It is commonly found, too, that in those cases where the pulmonary inflammation is slight, the fever is influenced by the same circumstances. Bronchitis is the most common pulmonary complication, and why it should be so is easily explained; the inflammation not limiting itself to the part primarily affected, but extending to the bronchial tubes by mere continuity of tissue. Pneumonia often attacks patients labouring under phthisis, both in the early and advanced stages. It is said to be most generally not a cause, but often spontaneously cured; and in many cases the symptoms resembling those of phthisis, under which the patient is labouring, it happens that the attention of the physician is both drawn from the pneumonia altogether, and is prevented from having recourse to remediable measures for the arrestment of the disease. Andral states that a pneumonia occurring during a phthisical attack, often proves rapidly fatal, and coming on as it unfortunately does not seldom at a latent form, during the existence of the phthisical state; fatal results too often ensue. Surgical writers have repeatedly noticed the intervention of pneumonia after amputations, and dangerous wounds, and also inflammation of the gastro-enteric mucous membrane.

The Diagnosis of Pneumonia.

The combination of the physical signs, along
with the other general symptoms afford us the most valuable service in arriving at an accurate diagnosis. Of all the symptoms formerly alluded to, the most characteristic, and most worthy of the character of the expectoration. When the expectorated purulent sputum is found, there cannot be much doubt as to the existence of a pneumonia. Still on the other hand it not seldom occurs, that a pneumonia may be in existence, years through its entire course, with out the shadow of an expectoration. At other times, the purplish color of the sputum may disappear, and a bronchitic appearance take its place, so that in many cases, it is by no means an easy task to recognize the existence of a pneumonia. Simply from the character of the expectorated matters, much more valuable and diagnostic feature than the character of the sputum, is the presence of the minute crepitation in combination with the other physical signs. If this is found to be present, it will afford us no inconsiderable assistance in coming to an accurate conclusion. Lacaze considered it the minute crepitation as almost pathognomonic, maintained that it was invariably present from the invasion of the disease, that it existed no where else, except in the disease of the lungs, and pulmonary apoplexy, two diseases, which are easily distinguished by their own peculiar signs and symptoms. I had stated that he has frequently found the crepitant rhonchus present...
sent as bronchitis. The presence of the crepitant phonoechus is assuredly the most important physical sign in pneumonia, as it enables us to ascertain the exact morbous condition under which the lung is laboosing and enables the physician to adopt efficient measures for the arrestment of the disease, much sooner and much more successfully than some time later. A pneumo-phrenoechus may simulate other diseases, pleurisy for example, but in the great majority of cases it is easily distinguished from it by bartons important morbous sounds. In pleurisy, on percussion, we elicite a dull sound, so we do in pneumonia, but the dullness of pleurisy differs from that of pneumonia in being made dependent to a great extent, upon the position of the patient, for example, if he be placed in the erect position, the dullness will be found to be erect; in the dependant parts if he be placed in the pneumcent position, the anterior parts will be found to be resonant on percussion, and the parts behind quite dull. In pneumonia the dullness is not in the least influenced by the position of the patient. In pleurisy, when a large effusion has taken place into the pleural cavity, there is a total absence of respiratory sound, and more fine crepitant phonoechus present, such as we find in pneumonia. There is also present in this state of matters, a peculiar morbous sound termed bronch to eegophony, which is quite pathognomonic of pleurisy it entirely absent in pneu-
What if an extra layer be hospitals,?
Ironically, but in chronic cases, it is by no means so easy a task to recognize the particular morbid condition of the lung, as some imagine. "Attention to the history of the case, and a careful examination of the physical signs, and general symptoms, will in most cases lead us to an accurate diagnosis. "In example you may find a patient, who has been ill for a considerable time, and on examination, you find dulness on percussion, all over the lung, and total absence of inspiration, with a few of the signs common to pneumonia, and pleurisy, and you may be in doubt whether this is a case of pneumonia or pleurisy, but it is only by an attentive consideration of the history of the case, and attention to the general and physical signs, that we can arrive at an accurate diagnosis. An extensively hepatized lung, may simulate a large pleuritic effusion, but the presence of loud and distinct broncho-phoney will be heard in the one, but not in the other. There is a case on record, where the lung yielded a dull sound on percussion, over the whole of the right side, and where bronchial breathing and broncho-phoney were distinctly heard, but on inspection, it was found to be an extensive pleurisy of the right side; the pleural cavity was full of serum and lined by a dense false membrane, with the lung compressed against the spinal column.
in the chest, where the physical signs were heard, the very important diagnostic feature is pointing to the displacement of the lungs, which is never seen in the case of a consolidated lung. Owing to a pleuritic effusion, it is by no means an uncommon thing to find the heart displaced towards the right side, and its pulsations recognized in the right of the sternum, whereas in pneumonia we always find the heart beating in its normal position, provided the heart has not been displaced from some other morbid cause, and quite independent of the pneumonia. Very often the liver is found considerably out of place, occupying a much lower position than usual, owing to the pleuritic effusion pressing upon the diaphragm, and also causing a bulging out of the falciform. Where the effusion is copious, the whole of the intercostal spaces begin to bulge out, while in pneumonia such appearances are never seen. Bronchitis likewise is sometimes mistaken for pneumonia, and it is only to be recognized by its own peculiar physical signs. In bronchitis, you have no crepitate, bronchitis, nor dullness on percussion, and in addition the expectoration presents quite a distinctive character. J. Starks has attempted to show that the state of the countenance in pneumonia, bronchitis, and pleurisy is diagnostic feature, and is more to be relied on.
than the physical signs. The state that in pleurisy the face is flushed, and the lips are flared, or their appearance is not altered from health. In bronchitis the parts of the face are usually colored, and the lips are more or less of a livid color, according to the extent and severity of the bronchitis. The physical of pneumonia is an intermediate shade of fleshly red. But these appearances fail too often to enable us to place in diagnostic balance upon them. Extensive pulmonary phlegm may to a certain extent, stimulate a pneumonia, but the we have dulness or percussion complete absence of respiratory sounds. But in history absence of fever, Xanthomatosous will be sufficient to distinguish it in most cases. Edema of the lung may also be a premonition to pneumonia, but the physical signs general symptoms will sufficiently indicate the morbid state in question.

The Prognosis.

The prospect of being able to give a favourable or unfavourable prognosis, depends on various circumstances, such as the duration, its slight, age of the patient, its extent, and occurring any complication of some other malady. The duration of the disease will form a most important feature in arriving at an accurate and correct prognosis. The fact of the pneumonia being in the first stage, will render
The prognosis is correspondingly more favourable than if it had reached the stage of red hepatisation, or still more so, than if it had passed into the third stage or grey hepatisation. The seat of the disease (whether the upper or the lower lobes are affected) makes a most important difference. Thus the inflammation has its seat in the upper lobes, its mortality is proportionally greater, than when it is limited to the lower lobes, and this is the main reason, as formerly mentioned, why three pathologists who based their conclusions, upon post-mortem examinations, avowed that the inflammation was far more frequently met with in the apex, than in the base, for the simple reason, that when it attacked the spires, it was much more fatal, and consequently post-mortem examinations furnished the larger proportion, where the apex was affected.

The age of the patient influences the prognosis in its small degree. In old debilitated, worn out subjects, who have been exposed to all the hardships of a life of privation, the prognosis will be by no means favourable, as the lung possesses a great tendency in these cases, to pass into gangrene. The extent of the pneumonitis ought to be taken into consideration (Previous). In double pneumonitis, the prognosis will be less favourable, than when only one lung is affected. The inflammation may be very slight in these cases and yet it may lead to very unfavourable results; and a very limited portion of the lung may be suffering, and yet
Serious results may ensue, while no other cells a whole lung may be differing, and yet hardly any inconvenience may be complained of by the patient. Pneumonia, too, as not unusually happens, may occur as a complication of some other malady, and when this does take place, the case becomes a more anxious one than it otherwise would be. As a complication of the syphilis, pneumonia not infrequently occurs with, and is unfortunately very often of a latent character. When it occurs during the insomnerial state, it generally proves fatal. When it attacks the young, especially those of a debilitated constitution, who have been ill fed and nourished, and weakened by previous disease, the prognosis is anything but favorable. The character of the sputum may afford some valuable assistance in forming our prognosis, but it should not be forgotten, that we may have a pneumonia passing through its entire course, without any trace of an expectation. If the sputum has been expectious for some time, but suddenly becomes scanty and difficult to expectorate, we Anger ill of the ultimate result, as it is very probable that the sputum have begun to accumulate in the air passages from the inability of the patient to expectorate. When the expectoration begins to have a dirty brown or yellowish green color, to contain some amount of pus, we know that the lung is probably passing, or has passed into the
Third stage, and especially when the breath has begun to possess a gangrenous odour, our prognosis is pared into absolute certainty. But the prognosis should never be given hastily, for many a case of pneumonia has gone on for some time, very favourably, until some untoward symptom has occurred, which has carried off the patient.

The law therefore never consider the patient altogether out of danger, long as the disease lasts.

Treatment: The three great remedies, which experience has shown to be most efficacious in the treatment of pneumonia, are: Suidas, Tartar Emetic, and Ceromet.

Suidas. This is a very ancient therapeutic agent used in the treatment of acute inflammatory disease of the chest. It is a diaphoretic means of the greatest kind, and ought never to be had recourse to, unless the urgency of the case demands it. It is one of the three curative agents. Which, in the hands of physicians, is all-powerful. Formerly, when judiciously employed, it attended with the finest results, when rashly employed, or carried to excess, and assuredly the physician, who will holds his hands, from the employment of the laurate, when the urgency of the case demands it, is just as much to blame, if not more so, than him, who proceeds to the laurate, when it is other wise contraindicated. But certainly, it would be for him right, to bleed in all cases of pneumonia, any more than it would do to treat every case.
X Share the amount
of bronchitis, for example with depressants, and
resembles the acumen of the scientific physician,
for in order to do his duty towards his patient, and
 conscience towards himself, he must be able
to discriminate between those cases, in which
surgical section is required, and those where a dif-
ferent plan of treatment is indicated. There are
several very important things to be taken into con-
ideration, as to the advisability or non-advisability
of having recourse to debility, such as the stage
of the pneumonia, the constitution of the patient,
the presence of complications. Although I have had
very limited experience, indeed of the treatment
of pneumonia by blood letting, still I shall endeav-
our to point out those cases, in which I would
consider myself justified in having recourse
to the lancet, and also those cases, where I would
refrain from its employment. I have no time
to enter upon the blood letting controversy, whether
the type of fever has changed or not, but will only
attempt to point out those cases, which I would
consider as adapted for surgical section, or the con-
descend.

Blood letting is considered by the most experi-
enced and competent authorities on the subject, as a very service-
able remedy in acute pneumonia, when employed
early, and before the acute stage has passed off,
and before there are any evident signs of he-
patization having taken place, but if from care-
For examination of the physical signs, we are sure that condensation has occurred, the employment of the lancet must be withheld, and recourse had to other remediable measures, hereafter to be mentioned. But in those cases where the inflammation is of recent origin, and where the local and constitutional symptoms indicate the presence of a chronic case of pneumonia, conjoined with high inflammatory fever, a hot spine, hard, indurated, pain in the chest, and great dyspnoea, and all this occurring too, in a strong and robust patient, I would not hesitate to employ the lancet, to a limited extent at least. In those cases however, where the early stage of the pneumonia has passed away, and there is an impaired state of the constitution, being essentially an astatic or wasting form of the disease, I would refrain from using the lancet. In this regard to the extent to which you may safely carry depurative, much difference of opinion has existed. The older physicians laid it down as a rule, that it should be continued, till specific was produced, irrespective of the stage of the pneumonia. Others on the other hand exposed the danger of this procedure. I recommend that it should be practiced only till a decided change upon the pain, the pulse, and dyspnoea, was produced, or if this did not appear, till specific was administered. The practice generally followed now, is to allow the blood to flow, till some manifest change, to be made upon
The symptoms of the disease. To produce a salutary effect the bleeding ought to be regulated, not by the amount of blood removed, but by the effects produced on the constitution of the patient. It is almost incredible the amount of blood which has been removed from the patient, as much as twenty or eighty ounces have been abstracted. It is not unusually happens, that a single bleeding does not arrest the morbid action, and in these cases a second depletion to be rendered necessary, if the pain, oppression, and hard pulse should recur. The effects of the bleeding are, first to reduce the force of the heart and general circulation. The heart being thus lowered by the venae cavae, a proportionally less amount of blood is sent through the inflamed organ, and it follows that the more blood is sent through the inflamed lung, the greater will be the pain, and oppression, and the greater probability of an inflammatory taking place, into the pericardial structure. The less work the lung, while in this morbid state, has to perform the better, and for this purpose we try to diminish the amount of blood passing through it, and if we succeed, we act in the same way, as in the treatment of inflamed joints—we enforce rest, and thus both the local, and constitutional symptoms are relieved. It has also been the practice to repeat the bleeding, as long as the physical signs indicate the presence of engorgement, and it has been maintained, that by doing so,
we diminish the chance of injury to the pulmonary apparatus. But at some time arrives, when if depletion be resorted to, it will not only be quite useless, but absolutely mischievous. When the lung has passed into the stage of red hepatisation, and when by means of physical signs, we recognise dullness on percussion, and a brace of respiratory murmurs its place being taken by bronchial breathing and bronchophony, as indicating that the vascular structure has been obliterated by ulceration, by having recourse to depletion, we cannot expect to produce any curative effect upon the consolidated lung. Still on the other hand bleeding may be of considerable service, in diminishing the amount of blood passing through the inflamed lung, by preventing the inflammatory process from passing into the third stage, and greatly lessening the extent of the dyspnoea. Many writers approve the use of depletion altogether, and when consolidation has occurred, believing that it interposes greatly with the creative process. Cullen, Hales, Cauldwell, Tomlins and licenza recommend its use during the second stage, and when the red hepatisation has occurred, whenever the dyspnoea, cough, pain, or any other urgent symptoms require it. But it very often happens, that while the lung is still in this advanced state, bleeding reduces the patient to strength so much, that he becomes quite unable to expectorate the desired mucous
which has accumulated in the air passages.

Local Bloodletting. Besides general depletion, in certain cases, we have also recourse to local measures. Local bloodletting however, is but a Subsidiary measure to general depletion, in the treatment of pneumonia. In less severe cases where a general bleeding would be contraindicated, as in old and debilitated subjects, or where the pneumonia is of an adynamic form, local depletion by means of lancing or cupping, may with considerable advantage be had recourse to. The amount of blood abstracted should always bear a certain relation to the circumstances of the case. In young children, it would not be safe to have recourse to general bloodletting, a few lances being quite equal to its attraction. When pain be a symptom greatly complained of, by the side from the extension of the inflammation to the pleura, the application of a few lances will do a world of good.

Syrupometric. As a Subsidiary measure to bloodletting, both general & local, Syrupometric is probably our most efficacious, and salutary remedy, in the treatment of acute inflammatory diseases of the chest. It is generally considered as best adapted for the stage of congestion. It was for a long time employed in nauseating and emetic doses, in diseases of the chest, but to manifest and acknowledged power in subduing inflammatory diseases, quite independent of its physiological effects, is of modern date.
To Dr. Burney of Bristol, and Pasori of Genoa we owe the discovery of this hitherto unknown physiological fact. Prior to this it was supposed, that unless the antimony produced its physiological effects, such as nausea, vomiting, purging, or diaphoretic, its curative effect did not take place. When the Tartar Emetic is first administered, it generally produces some degree of nausea, but this commonly subsides off with its continued administration. A very important point to be kept in remembrance in the administration of the remedy, is the production of what has been termed a tolerance of the remedy, that is, an insusceptibility on the part of the stomach to its emetick and purgative effects. Some patients bear its administration remarkably well, and possess not the slightest tendency to vomiting, while others have nausea and painful vomiting before a tolerance is effected. If the physiological action of the antimony should be very marked, it will become necessary to have recourse to some measures for allaying the irritability of the stomach and bowels. These diarrhea vomiting are very severe, a few drops of the Brimarete of Morphia, or the mixture of Opium, added to each dose, will have a very marked effect in checking it. And in those cases, where the vomiting becomes very painful, and persistent, the addition of a drop of

Hydrocyanic acid, to each dose of the medicine, has often produced a wonderful amount of good, and effected a tolerance of the remedy; but if in spite of all these measures, the vomiting should still continue, it would be decidedly prepiable to discontinue the medicine altogether. Lawrence states that "although copious purging, and frequent vomiting, are by no means desirable, on account of the debility and mortal irritation of the intestinal canal, which they may occasion, I have obtained remarkable cases in cases in which such evacuations had been very copious! For adults it may be judiciously given in doses, varying from half a grain to two grains, in combination with the big ammoniac acetate, repeated every four or five hours, according to the urgency of the symptoms. Under this form of treatment, very often the symptoms are modified a marked improvement within a very short time.

If there should be any recurrence of the symptoms, a renewal of the treatment is to be had recourse to.

Colonel. When the inflammation is no longer in the stage of engorgement, but has passed into the stage of desaturation, i.e., when it loses its phlegmonic effects, and we have these Carcinoma Cancer, we have recourse to Mercury. Like Antimony, it is employed as an antiphlogistic measure, and as secondary to blood letting. It is therefore
the effect are most beneficially seen, when it is administered, as to bring on slight salivation, but its curative effects are often produced, sometime before its physiological action is induced. In the instance of the, its operation is very gradual, but its therapeutic effects, when once produced, are much more permanent. It is especially adapted for the advanced stage of the disease. Opium is generally combined with it, to prevent its action on the alimentary canal. The opinion has been started, to have the effect of acting as an anodyne, in relieving the pain, and cough, and as a sedative, in subduing that nervous irritability, so often following the free use of bloodletting, and mercury. Colchicum is the former, while mercury is generally prescribed, in acute inflammatory diseases of the chest. Some have recommended the free use of colchicum in purgative doses, as having the power of producing a very salutary effect, by clearing the mucous membrane of the bowels, from all impurities, and thereby opening the absorptions for the specific effects of the remedy. In these cases, from to twenty grains are usually given, after having had recourse to the laudanum, but as a continual purgative action, is not to be wished for, opium is generally combined with the after doses. It is administered with the physiological effects of the remedy are produced. It is generally administered in
Adges of a few grains repeated every two hours.

Others have recommended it in larger doses in preference to the smaller ones, namely from two to twelve grains three or four times a day. In those cases where the bowels are markedly irritable, and the diarrhoea present, and pericystic, hydrochloric acid or acetic acid has often been substituted for calomel, with marked benefit, in combination with Dover's powder.

Counter irritants. As a general rule, the employment of blisters in the early stage of pneumonia is not contraindicated. When had recourse to at the beginning of the inflammatory attack, they produce no good, and only add to the sufferings of the patient. They have a tendency likewise to aggravate the inflammation, and to form an obstacle in our way if we wish to make a physical examination of the chest, to enable us to ascertain exactly the state of matters within the chest. The application of blisters to the back, or some other distant part, has been recommended by some authors, but in this country, we seldom resort to the application of blisters upon any other part body but the chest, and not until the acute stage has been removed by other measures. When the skin is no longer burning, the desquamation, ulcer, or the oppression in the chest very marked, the application of a large blister will do a wonder-
Peratives. With regard to the employment of irritatives in pneumonia, great difference of opinion exists, some employing them as simple cathartics, to open the bowels, and also to act upon the heart and great blood vessels through their irritative action. To bring about this, they are given to a general depleting effect. They have also been considered as likely to have the tendency of checking the expectoration, and bringing on an inflammatory action in the alimentary canal. For this reason they should be cautiously administered. In the great majority of cases, all that is required, is a gentle opening of the bowels, and this can be done by having recourse to any of the gentle cathartics, which produce all that is required, without any of the risk, which may follow the employment of the ordinary cathartics.

Diet and Regimen. In ordinary cases of pneumonia, where the patient is of a deficient habit of body, the antiphlogistic diet should be strictly enjoined. Solid food of all kinds should be abstained from, and only meallaginous drinks, farmaceoceos food, or beef tea, should be administered. These may given either cold or hot, according to the wish of the patient. The antiphlogistic diet however, will not be found equally serviceable in all cases. It has been found in actual experience, that those who have been accustomed to the immoderate use of alcoholic stimu
plants, if treated in the usual manner, the mortality will be considerably increased, but if a moderate amount of stimulants are allowed it will become remarkably lessened. When a return to convalescence is reached, milk or cheese broth, or light puddings may be given with considerable advantage, and when the patient has almost reached the standard of usual health, a return to the usual diet, may be gradually resorted to. When a gangrenous condition, or extensive suppurations, has supervened, with manifest signs of collapse and thinness, strong broths and stimulants are indicated. The apartment in which the patient is confined during treatment, should be well ventilated, but to get the free free draught.

The temperature should be always, never much above 93°, to 95° F., great care must be taken to prevent exposure of the body to accidental colds.

William Carter
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