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AN

INAUGURAL DISSERTATION,

ON

Pneumonia

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BY

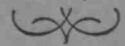
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OF

Clifton Ala

1857

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In obedience to the requirements of the
University of Nashville Tennessee of
Albert Smith of Clifton Wilcox County
Alabama offer to the Medical Professors
of the institution the following Thesis

Pneumonia

In interest and importance whether considered
in a physiological or pathological point of
view, the lungs (if we but except the heart),
are second to no viscera of the whole cavity
of the trunk. Viewed as a whole, they
constitute the largest viscera of the body
and fill the entire cavity of the thorax
except the small portion comprising the
mediastinum with its contents

By anatomists they are described as two conical

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bodies, situated in each side of the chest, embracing the heart and separated from each other by that body and a membranous partition the mediastinum. Externally they are convex being moulded to the internal concavity of the thorax. Internally they are concave receiving the convexity of the heart. They rise superiorly above a level with the first rib and are concave inferiorly, corresponding to the superior convexity of the diaphragm immediately below them. The right lung being the larger is divided into three lobes, by deep fissures extending from the upper and posterior part of the organ downwards and forwards to near the anterior angle of its base. The left lung from the greater intrusion of the heart on the left side of the thorax is the smaller of the two divisions of the organ and is divided

into two lobes. The left lung has the greater length of the two, owing to the greater convexity of the liver on the right side of the abdomen.

"Each lung is retained in its place by its root which is formed by the pulmonary artery, pulmonary veins and bronchial tubes together with the bronchial vessels, and pulmonary plexuses of nerves." In structure the bronchial tubes are similar to the trachea, being composed of cartilaginous and yellow elastic fibrous tissue. And the whole parenchyma of the lungs are composed of the ramifications of the bronchial tubes, which terminate in intercellular passages and air cells, of the ramification of the pulmonary artery and veins, bronchial arteries and veins, lymphatics and nerves." The whole of these structures, being held together by areola fibrous tissue, constitute the parenchyma of the lungs."

The bronchial tubes divide and subdivide until they ramify almost the entire lung becoming smaller and smaller in size with each division until they are lost in a change of structure, and this change of structure constitutes the air cell of the lung. It is, however, a matter of dispute among anatomists as to whether the air cells of the lungs are composed of the terminal extremities of the bronchia or the extensions of the mucous lining of the bronchia or whether they are composed of a tissue independent of either.

The important functions performed by the lungs are matters of equal if not superior interest to that of their structure. A desire to learn the functions, have always been the great incentive to the study of structure. The anatomist only studies the structure of the human body in order that

its physiology may be the more easily understood, for without a knowledge of physiology anatomy would be of ~~no~~ use to any but the surgeon and but little to him. Then as the blood circulates through the various organs and tissues of the body, and fulfils its office ~~by~~ by supplying them with nutritive material and the different secretory organs with the materials necessary for their different secretions, it loses part of its nutritive quality and becomes charged with impurities, consequent upon ~~which~~ the deterioration of the tissues.

Therefore as the nutriment of the blood is consumed in its passage through the system a fresh supply is constantly demanded. This supply is in a great measure received from the food taken in to the stomach, through the process of digestion and absorption.

But it is also necessary to get rid of the impurities with which the system becomes charged by deterioration. And as carbonic acid is one of the most common and most abundant of these impurities, we readily perceive the great necessity of the free and unrestrained action of the lungs in respiration, in as much as it is through the process of respiration through the lungs, that the largest amount of this poisonous gas is exhaled. The aeration or oxygenation or the process through which the blood receives fresh supplies of oxygen from the atmosphere is also another important and interesting function of the lungs.

The right ventricle of the heart discharges dark venous blood through the pulmonary artery, which in its passage through the lungs passes into the capillaries that run in single

layers between the air vessicles, affording to the blood the greatest facility of absorbing the oxygen of the air on both sides of the capillary vessels from the air vessicles on either side of them.

The blood at this point of its circulation is rapidly changed from its dark colour to a bright scarlet red, and is returned back to the left side of the heart through the pulmonary veins to be circulated through the system. Now the oxygen of respired air is always less than in air before it is respired, and the decrease is generally in a ratio proportionate to the increase of carbonic acid.

The quantity of oxygen contained in arterial blood being generally twice the amount of that contained in venous blood. It is a fact known to all, how ignorant soever they may be of physiology, that just so soon as the passage of air into the lungs is entirely obstructed, the functions of life are

are suspended and death ensues as a necessary consequence of such suspension.

It is equally true that the functions of life are suspended when an atmosphere uncombined with oxygen is breathed; and again if an atmosphere charged with carbonic acid is breathed the death of the animal follows speedily.

If then through the action of the lungs the blood not only receives its oxygen, which is essential to the sustenance of life, but also throws off carbonic acid which is destructive to life, it is but reasonable to suppose that, ~~but~~ they who seek a knowledge of medicine, should study with interest the diseases to which this vital organ are subject.

When we consider the functions of the lungs as a respiratory organ merely, we are struck with astonishment that they are not more frequently the subject of disease than they are.

Their labours never cease, from birth until death by day nor by night, but unceasingly they will supplying to man and animals the materials of life. Coming in contact directly with every vicissitude of atmosphere, cold, hot, moist, dry, being exposed to every species of poison that enters the atmosphere, and often with foreign substances that floating in it. And yet they often survive their three score and ten years in a tolerably normal state. It would appear that we might suppose, without being accused of superstition or criminal ignorance, that they possess a vital power of resistance, not yet entirely understood, in contending with the subtillies that beset man's way through life. Though as the human organism is subject to disease, it is no matter of astonishment that the lungs (seeing their functions and their exposed condition) should bear

their part. We propose, therefore, a consideration of that disease of the lungs known as Pneumonia in several of its forms.

Pneumonia, as defined by the books is an inflammation of the parenchyma or spongy tissue of the lungs. As to the history of this disease we think it but reasonable to suppose that it is commensurate with the existence of man.

We have at least no reasonable grounds to believe that it is a disease of modern origin.

There are several varieties of this disease, dependent upon the different parts of the lung involved and the character of the fever attending it.

The disease is more or less severe in proportion to the extent of the parts involved and the intensity of the inflammation. The disease sometimes involves a single lobe of the lung, and when this is the case it is called lobar pneumonia.

Sometimes a single lobule or a number of isolated lobules with intervening sound tissue are involved and the disease is then called lobular pneumonia. But the most common form of the disease is that in which the whole of one lung is to a greater or less extent involved which I suppose may be called single pneumonia as it is called double when both lungs are involved. Sometimes the fever in pneumonia assumes a low typhoid form, and we have then what is called typhoid pneumonia. Again the liver in pneumonia takes on disordered action, and under such circumstances we have bilious pneumonia, and it is the two last named forms of the disease that are, in latitude 32 of Ala alike formidable to the physician and his patient. By those who have had extensive experience in this disease there are said to be three well marked stages 1st that of congestion,

2nd that of well marked inflammation, and 3rd that of suppuration. As far as we have had opportunity to notice the disease, the patient generally labours under some indisposition, for a longer or shorter period, sometimes for several days, but it is by no means unfrequent that the patient has no preliminary symptoms, but is taken with a chill as in ordinary intermittent fever. In many cases it is difficult, if not impossible to discriminate between pneumonia and intermittent fever under twenty or thirty six hours. Generally, however, catarrhal symptoms make their appearance in a few hours after the onset of the disease, and frequently before the chill, but it is after the fever makes its appearance that the patient experiences tightness or stricture about the chest. Head ache, dry cough, restlessness, uneasy sensations and not

unfrequently pain in the region of the lungs. If the pain becomes acute we may infer that the pleura is affected, for it is stated by some writers (Dunghson) that in pure uncomplicated pneumonia we have no pain but a sense of oppression under the sternum. We have never witnessed any case of pneumonia in which there was not at some stage of the disease more or less acute pain.

In many cases the pleuritic effusion is supposed to obscure the sounds of the chest on percussion.

There is generally little or no pain upon pressure of the intercostal spaces. The pulse in the acute form is generally frequent full and hard.

Percussion reveals little or nothing in the first stage of the disease. "The vesicular murmur is said by the writers to be feeble and a crepitant rale is said to be heard like that of passing a lock of hair between the fingers" (Dickson)

The fever remits more or less at some part of the day, generally in the later part of the night or early in the morning, and the cough during this remission is not so troublesome; but as the fever increases with the advance of the day, the cough also increases and becomes more harassing. About the commencement of the second or third day at farthest, the patient begins to expectorate a foamy transparent sputa streaked with red blood. Very soon after this as a general rule, percussion gives a dull sound over some part of the chest, and generally over that part where in the commencement of the disease the pain was most acute. As the inflammation advances the dullness extends until the resonance of one whole side is lost and the vesicular murmur ceases showing that one whole lung is engorged or hepatized.

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We should have stated that the breathing, ^{from} commencement
is always hurried and more or less difficult.

Soon after the vesicular indurgement as a general
rule the sputa assumes a dark rusty colour
and is exceedingly tenacious and sinks in
water. At this stage of the disease the physician
may well fear the prognosis of his case.

Auscultation proving to the practitioner ear that
no air enters the vesicles of the diseased lung
and percussion showing an entire want of
resonance. If the opposite lung be entirely
unaffected as it generally is in cases that
recover it may yield more than a normal
resonance owing to the fact that it has to
perform the whole respiratory functions.

Returning, then, to the position with which we set
out that the lungs furnished to the blood the
necessary oxygen for the healthy nutrition of the

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Tissues of the body, and exhaled the carbonic acid
consequent upon the deterioration of the tissues,
we may I think very justly conclude, that in
any form of lung diseases where a large portion
is involved that the whole economy must necessa-
rily suffer. We need not wonder then when a whole
lung is engorged that the man pants, that the
features assume a dusky or livid appearance, the
countenance anxious and the whole frame enfeebled.
If both lungs are involved to any considerable
extent, the patient will in all probability die,
but he may weather through the disease if but
one side is diseased. Free expectoration of yellow
pus is a favourable indication, but a dark thin
fetid sputa is said to be unfavourable, as it
is an evidence of a depraved condition of the
system. It is said by some writers upon pneumo-
nia, that the patient lies upon the sound side

in the commencement of the disease, to avoid the pain consequent upon pressure and upon the affected side in the more advanced stage of the disease in order that the free dilatation of the sound lung may not be impinged. Others state the position to be constantly upon the back; but these are exceptions to all general rules; no far as we have observed the position in this disease, the patient in the advanced stage takes a position between the side and back, that is to say with the sound side elevated above a level with affected side.

If the patient is to recover, there will be a decline in the intensity of the symptoms. Free expectoration, mixed at first and then entirely of yellowish pus. The tongue cleans off, the pulse becomes less frequent, the breathing less difficult, the vesicular murmur returns, the patient begins to change his position and to rest comfortably on

either side, and we say he is convalescent.

In bilious pneumonia the symptoms are much the same as in the form just described, with the additional signs of biliary derangement. The liver cannot certainly be in a state of inflammation, because there is no acute pain in the region of the liver. It is highly probable that its functions are suspended partially or entirely and the bile which should be secreted from the blood in its passage through the liver is thrown into the system through the general circulation and thus the skin is turned yellow. In short the patient assumes a jaundiced appearance, showing its self not only upon the skin but upon the conjunctiva of the eye and in the secretions.

The perspiration, the urine, the expectoration from the lungs, the serum from the blistered surfaces all assume an intensely yellow color, staining in

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some instances the lining of the patients as yellow as saffron. The tongue is generally coated with a dark brown covering, and the patient is apt to recover slowly. It is said by respectable practitioners of South Alabama, that most persons that have suffered an attack of yellow fever, will, if attacked with pneumonia, have bilious pneumonia, and in every attack of disease whether pneumonia or intermittent fever, the skin becomes yellow, showing that the liver is more liable to disordered action after an attack of yellow fever than before.

The few cases of bilious pneumonia that we have witnessed were in persons who had suffered from yellow fever during the fatal epidemic in Mobile and N. Orleans in the fall of 1853.

In bilious pneumonia there is less blood and less of the rusty coloured matter expectorated than in the common form of the disease. The blood in this

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form of the disease may probably be masked or covered up in the bile thrown off with the sputa

In that form of the disease known by the physicians of the south as typhoid pneumonia, the symptoms are frequently very obscure for a considerable time. The pulmonary symptoms not showing themselves, in many instances for many days after the attack. Ordinarily the patient is attacked with a chill, succeeded by fever which may continue twelve or twenty four hours, but is usually sweat off in twelve hours and is partially restored to health, pursues his ordinary business for a day probably but does not acknowledge himself well, takes quinine but has another chill notwithstanding. He suffers more with the next chill, his physician repeats the quinine in larger doses, but does not prevent the return of the chill

and thus the disease progresses day after day, the fever ceasing to intermit after a few days, but giving no perceptible evidence of a diseased condition of the lungs in many instances under eight or ten days after ^{the} first chill. The patient seldom complains of acute pain in any part of the chest, but has nausea and not unfrequently vomiting. The cough and the whole train of physical symptoms common to pneumonia are set up, but it is very seldom that the expectoration is as great as in the acute form of the disease.

The sputa is but slightly stained with blood and is not so generally characterised by the peculiar rusty colour common to the acute form of pneumonia.

Dr. Wood in his diagnosis of this disease, states that it does not materially differ from the ordinary forms of the disease. A very striking peculiarity

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in this disease he says is in the character of the expectorated matter. Even in the early stages of the disease he says, it is generally bloody and sometimes pure blood. Also that it is more copious. This is high authority certainly; and is not to be contradicted of course by one who is but a tyro in medicine; but it is, notwithstanding very wide of what is true in the disease that the physicians of south Alabama call typhoid pneumonia. In Alabama the disease (so called) prevails epidemically and fatally. The negro population, and particularly those of them that live and labour on the large flat land farms, die by scores during the epidemics that sometimes prevail in that region, in the later part of winter and early spring. And this form of pneumonia is seldom characterized by profuse expectoration and the discharge of blood is but small

as a general rule. The pulse is almost always frequent, and sometimes full; striking a kind of double tick, as a current of water flowing against a wall and returning upon its self.

The tongue assumes an appearance, ^{similar} to that in typhoid fever; is dry, dark and has a red tip and red edges the teeth are sometimes sordid and there is frequently delirium of a low muttering sleepy nature which may continue from day to day until the patient begins to improve or dies. But there is generally no *subcutis tendinum* as in typhoid fever nor red patches on the skin of the whites that are attacked with it. The muscles round the nostrils in many cases are drawn in at ~~each~~ inspiration which is always regarded as an unfavourable indication. The duration of the disease is variable sometimes terminating fatally in a few days and at other times running on for fifteen or twenty days or

over longer. The other ~~the~~ forms of the disease do not continue so long running their course in ten or fifteen days.

Causes. As in many other diseases it is difficult to determine in many instances what the causes are. Doubtless exposure to cold and moisture are among the most frequent. It is said that the disease is more common in cold than in warm climates, but there is reason to believe that a low temperature alone is not sufficient to produce the disease in as much as the disease generally prevails to a greater extent after a warm wet winter.

Treatment. In consulting the book upon the treatment of pneumonia, we find that all of them (Wood, Dunglison, Dickson, Stokes,) commence the treatment of acute pneumonia with general and local bloodletting. That general bleeding is a rational plan of procedure in the acute form of this disease

can scarcely be doubted, when we look to the high authorities by which it is recommended, but farther south it is said to be extremely hazardous and is almost entirely abandoned; and in many parts of the south the physician who would dare to bleed in any form of pneumonia, would be regarded as a reckless experimenter with human life. I believe that it is generally conceded that the loss of blood is not so well borne in the southern as in the more northern latitudes. Local bleeding by scarifying and cupping is a valuable remedy in pneumonia. A mild mucousial purge is generally resorted to, and the calomel is generally continued in small doses one or two grains at intervals of three or four hours. Iastar Emetic is generally administered in combination with the calomel, and to this is frequently added nitrate of potassa and syrup of squills. Some use nitrate of potassa combined with opium, while

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Others object to Opium in any form upon the grounds that it checks the expectoration. The long continued use of tartar uncombined with Opium frequently irritates the bowels to such an extent as to contra-indicate its use. Opoeac is preferred by some to the tartar in the commencement of the disease.

Stimulating applications to the skin over the region of the affected side, blistering &c. are remedies that should never be overlooked, and the blisters may be reapplied through the whole course of the disease.

The stranguary resulting frequently from the continuation of blisters seeming in some instances to act beneficially. But among the greatest of the remedies in this disease among southern physicians, stands, Norwood's tincture of *Veratrum Viride*. The use of this remedy is generally commenced early in the disease, in doses of four or six drops every three hours and increased one or two drops at each dose

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until it begins to produce its effect by reducing
the frequency of the pulse. It seems to exercise a complete
control over the heart's action; reducing the pulse from
one hundred and twenty to seventy beats to the
minute, in a few hours. The reduction in the pulse
may be carried below this, but it is not considered
necessary to reduce the pulse below a natural
standard. The veratrum is used in all forms of
pneumonia, and is supposed by many to be signally
beneficial. In bilious pneumonia, calomel is used
more freely to excite the action of the liver, and
quinine has its place in the treatment ^{of} the various
forms of the disease, except in the advanced
stage of typhoid pneumonia when it ^{is} laid aside.
In typhoid pneumonia, calomel is ^{if} used and in
cases where there is prostration stimulants are resorted to
with great advantage. Opium is also used in this form
of the disease with advantage, but it becomes the

physician to exercise a nice discrimination in ^{the} use of
all remedies in the treatment of this form of the
disease.