Sobar Pneumonia

A Thesis
submitted for the Degree of M.D.

by

Daniel Rees Davies, M.B., B.M. 1883.
Lobar Pneumonia

I have chosen this disease as the subject for my thesis on account of its frequent occurrence in practice, and also because many changes have been made in its etiology since I was a student.

When I attended the class of Practice of Physic under the late Sir J. Grainger Stewart, this complaint was included under Disease of the Lung, but now it is mostly classed under Infection Disease.

Peter in his book on Medicine places it under Infection Diseases, and so do Dwin and Ritchie in their Manual of practice, but Dr. Bye Smith in his article on Pneumonia in Allbutt's Medicine still places it under Disease of the Lung.

Definition - Lobar or Acute Pneumonia.

Pneumonia is a febrile disease running a short course with a special form of acute inflammation of one or both lungs. (Allbutt's Medicine, 1870, p. 92.)
An infectious disease characterized by inflammation of the lungs, toxaemia of varying severity, and a fever that terminates absolutely by crisis.
Ose's Medicine page 108.

Acute lobar pneumonia is essentially a disease of the lung alveoli, and the most prominent feature is an exudation of fibrin, from which the name exogenous pneumonia is derived.

The fact that the diplococcus is frequently present in the normal sputum, and consequently in the lung, points to the existence of other contributing causes. It is probable that certain conditions of the body, such as exposure to cold, or a preceding attack of influenzæ, may give rise to the specific microbe, and enable it to overcome the resistance of the tissues. (Cont. Pathology p. 163.)

Pneumonia is to be regarded as one of the acute specific fevers, in which the infective agent has a local seat. The fever has a triennial periodicity, and consistently with this there is an
antitoxin produced, which has the power of conferring immunity. Coat, Path. p. 376. Immunity has been produced in rabbits in various ways, as by injection of the toxins, and the blood-serum is stated to confer immunity on other animals. The blood-serum of patients who have recovered from pneumonia is also said to confer immunity on rabbits.

An exceedingly interesting fact is that the sputum of healthy persons frequently contains the capsule locusus. The secretion of the mouth in such persons when inoculated subcutaneously in rabbits produces the regular form of disease—Sputum Sepsis tica. Coat, Path. p. 376.

Causation. Acute lobar pneumonia for long, both popularly and medically, had been supposed to be an effect of exposure to cold, but some observers were dissatisfied with this view of its etiology. Cases occurred where no such exposure could be traced, but it
had been observed that the disease sometimes occurred epidemically, and was occasionally contracted by hospital patients lying in beds adjacent to those occupied by pneumonia cases. Further the sudden onset and definite course of the illness conformed to the type of an acute infective fever. It was thus suspected by some that it might in reality be due to a specific infection. Friedländer was the first contributor in 1882-1883 to the modern view of its etiology. He found in the bronchial contents and in sections of pneumatic lung, cocci adherent usually in pairs and possessed of a definitely contoured capsule which was faintly but distinctly stained.

Coats in his work on Pathology, page 346, state that pneumonia is caused by virulent pathogenic bacteria, but the same microbes is not always the infective agent. In some cases of secondary pneumonia the ordinary pyogenic micrococci have been found
but in proper primary cases one or other of two distinct forms can in the great majority of cases be detected. These are the *Diplococcus* of Frankel and the *Pneumococcus* of Friedländer. Wächselebnann found in 83 cases, the former 54, and the latter 6 times. This *Diplococcus* when found in the animal body is surrounded by a capsule, but in culture it loses this.

**Bacteriology** - as I have already mentioned, the first contributor to the modern view of these pneumonias was Friedländer.

In 1881 Sternberg & Pasteur discovered a *micrococcus*, and in April 1884 A. Frankel determined that this same organism (the *coccus* of *sputum septicaemia*) was the most frequent in acute pneumonia.

Another organism described by Friedländer in November 1883 which is now known as the *pneumo-bacillus*. Subsequent investigations of
Frankel, and Weichselbaum showed that in a very large proportion of cases of croupous pneumonia the diplococcus is present. (Cited, p. 110.) The most extensive investigations on the whole question were those of Weichselbaum, published in 1886. He examined 129 cases of the disease and included not only acute croupous pneumonia, but tubular and septic pneumonias. From them he isolated four groups of organisms.

1. Diplococcus pneumoniae. This he described as an oval or lancelet-formed coccus.

2. Streptococcus pneumoniae. This was less common than the last, was rounder, and formed longer and more twisted chains, but on the whole presented similar characters. It was more vigorous in its growth and could grow below 20°C. though it preferred a temperature of 37°C.


4. Bacillus pneumoniae. This was
a short rod-shaped organism, which
must be classed among the bacilli.
Weichselbaum, however, was of opinion
that it was identical with Freudentalder's
pneumococcus.

Of these organisms, the diplococcus
was by far the most frequent—it
occurred in all forms of pneumonia.
Next in frequency was the streptococcus
pneumoniae, and lastly the bacillus
pneumoniae. - Inoculation experiments
were also performed by Weichselbaum
with each of the three characteristic cocci
he isolated. The diplococcus pneumo-
noniae, and the streptococcus pneu-
moniae both gave pathogenic effects of
a similar kind in certain animals.
Tunis & Ritchie, Pathology, page 206.

Its general result of these
earlier observations was to establish
the occurrence in connection with
pneumonia of two series of organisms:
1. Freudenthal's pneumococcus, which
is recognized to be identical with
the cocci of sputum septicaemia.
with Weichselbaum's diplocoecus pneuma-
conic, and probably also with strepto-
coecus pneumoniae.

2 Friedländer's pneumo-coecus, now
known as Friedländer's pneumo-
coecus, which is almost certainly
the same as the coecus pneumoniae
of Weichselbaum.

Fraenkel's Pneumocoecus. This organism
occurs in the form of small oval coeci,
about 1 μ in longest diameter, arranged
generally in pairs (diplocoecus) but also
in chains of four to ten. Its free ends
are often pointed like a lanceet, hence
the term diplocoecus lanceolatus has
also been applied to it. These coeci
have round them a capsule which
is rather broader than the body of
the coecus, and has a sharply defined
external margin. It is the organism
of by far the most frequent occurrence
in true eunymous pneumonia.

Friedländer's pneumo-coecus, this
organism somewhat resembles,
Fraenkel's pneumo-coecus in appearance.
and arrangement, and in the presence of a capsule. The form is more of a short rod shape, and it has blunt rounded ends. It is also rather broader than Fränkel's pneumococci. It is now usually classed amongst the bacilli. The capsule has the same general characters as that of Fränkel's organism.

Fränkel's organism is much less frequently present in pneumonia than Fränkel's, sometimes it is associated with the latter--very rarely it occurs alone. Tinn & Ritchie's Bacteriology, page 208.

I have inserted a rough sketch of the pneumococci, Fränkel and Friedländer's pneumobacillus.

\[ \text{Friedländer's pneumococcus} \]

\[ \text{Fränkel's pneumobacillus} \]
The Pathology of Lobar Pneumonia.

As disease is an acute inflammation, and as the lung alveoli possess merely a single layer of pavement epithelium which is soon desquamated, the inflammation resembles that of serous, rather than of mucous membranes. We have a fibrinous exudation, and though this occurs primarily and mainly in the alveoli, the fibrine generally extends to the finer bronchi, forming casts of them. (Coat, Pathology, page 764.)

Pneumonia is divisible into several stages.

1. Engorgement - active inflammatory hyperemia, the lung capillaries are highly injected, and there is an expulsion of serous fluid into the air vessels, the lung is of a dark red colour, inelastic to the touch, called splanchnization. The serous fluid contains leucocytes and red corpuscles.

As the alveoli are filled with serous fluid, the air bubbling in and out among the fluid during respiration,
produces the fine exudation which is the osseous layer of this step. On section a quantity of reddish serum escapes, and the tissue does not exude under the knife so much as in the natural state.

2nd Stage - Red hepatisation. In this stage we have fibrin in the alveoli. In consequence a coagulum occupies the lumina of the vessels and infundibula, instead of the mixture of porous fluid and air present in the first stage. The solidified lung is a much better conductor of sounds than a lung filled with air; hence we hear the sounds of the trachea and bronchi much more distinctly than usual.

As lung retains its red colour, and it does not exude under the knife or finger, and it sinks in water, no air being any longer contained in the vessels. — On close examination the cut surface has a coarse granular appearance. — These granulations are undoubtedly the plugs of fibrin with
corpuscles which fill the air vessels.

The finer bronchial tubes when laid open are generally found to contain casts of soft fibrous, as if the exudation had overflowed from the alveoli into them.

Its appearance is the lump is like liver, hence the name, hepatisation.

3rd Stage. - Grey hepatisation, in this stage the white corpuscles preponderate and swarm into the alveoli, and destend them more and more. - From the presence of the additional material in the vessels, the capillaries are emptied, and anaemia of the tissue produced.

Its colour of the tissues is changed to grey.

Coat Pathology page 176.

It retains the firm character, and the granular appearance of the previous stage, but its colour is grey. - This process of the lump intermixed with the white colour of the cells, gives a marbled appearance. - The grey colour is most likely a post-mortem appearance, as it is possible to inject the vessels after death.

Resolution. The lump returns to its
normal condition. The cells and fibrin in the air vesicles undergo fatty degeneration, and the pleura often. The fatty degeneration and disintegration of both cells and fibrin result in the conversion of the exudation into an emulsion which fills the alveoli, and having a yellow or yellowish-brown turbid appearance resembles pus in its naked-eye appearance. \textit{Coots, Pathology}, page 757.

This lung is still solid, sinks in water, but its firmness is gone; its surface is pale, yellowish, or greyish red, and a greyish dirty fluid oozes out. The tissue is very soft, and tears under manipulation. In removing such a lung from the body, unless care is taken, the pressure of the fingers may rupture the tissue, and so the fresh or emulsion flows into the cavity; it may give rise to the appearance of abscesses in the midst of the lung. Its emulsion is disposed of, partly by expectoration, but chiefly by absorption. \textit{Coots, Pathology}, page 757.
It may sometimes be disposed of in four or five days from the crisis.

Acute fibrinous exudation of the pleura is a terminable form of pneumonia which is rarely met with as compared with the fatal form in acute pneumonia. It is termed acute fibrinous effusion of the pleura. It is due to the release of chyle into the pleural cavity, and is characterized by the presence of a white, fibrinous exudate, which is sometimes of considerable thickness. The pleural fluid is rarely, if ever, a serous exudate, but is often a mixture of blood and serous fluid. The pleural cavity is filled with this fluid, and the lung is displaced posteriorly. The lung is usually collapsed and adherent to the chest wall. The symptoms are those of pleurisy, with the addition of dyspnea, cough, and pain in the back and shoulders. The treatment is generally conservative, with the use of analgesics and anti-inflammatory agents. The prognosis is generally favorable, with a cure rate of about 80%. However, in severe cases, the lung may become necrotic and the pleural cavity may become infected, leading to a more serious outcome. 

The chronic form of pneumonia is characterized by the persistence of symptoms for a longer period of time, with the progression of the disease from the acute to the chronic stage. The symptoms are similar to those of acute pneumonia, with the addition of chronic cough, sputum production, and fever. The treatment is generally similar to that of acute pneumonia, with the use of antibiotics and anti-inflammatory agents. The prognosis is generally favorable, with a cure rate of about 70%. However, in severe cases, the lung may become necrotic and the pleural cavity may become infected, leading to a more serious outcome. 

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purulent, and we have an empyema.
In these cases the inflammation may extend to the pericardium.
After puncturing we may see adhesion of
the pleura.
Secondary changes in the organs of the
body are produced by pneumonia,
such as enlargement of spleen, or
enlargement of liver.
Herpes of the lips is probably due to
the action of the toxins on the nerve
concerned. Coats' Pathology, page 761.
Weichselbaum quoted in Coats' Pathy, p. 761.

Leyp
In some cases of pneumonia, the
connective tissue of the mediastinum
and subpleural tissue are the seat of
inflammatory edema, which may
expand to the loose tissue between the
cardiacus and trachea, up to the retro-
pharyngeal tissue, the soft palate, the
tonsils, and even to the major vessels,
this inflammation assumes a phleg-
monicous character. This probably occurs
by the propagation of the specific microbe
in these loose tissues.

Clinical features and symptoms.

Primary pneumonia usually sets in very suddenly. The first thing the patient usually complains of is chilliness and shivering. The rigor may be more or less prolonged. He feels very weak, and complains of a headache, sometimes accompanied by vomiting. His skin is hot and dry, his pulse quick, and he complains of thirst. The temperature rises abruptly and rapidly on the first day, and is generally about 103° to 104° and rises to 105° or higher. The maximum is generally reached on the 2nd or 3rd day. Cases have been known to recover after a temperature of 107°. The tongue is white and coated. There is frequently an eruption upon the face, most commonly on the upper lip (herpes labialis). The patient sometimes at the beginning of the attack feels a sharp pain in his side, usually referred to the front of the scapula, an inch
or so outside the nipple. The pain on respiration makes the patient breathe shallow and hurried, with dyspnoea. The patient is afraid to cough for fear of increasing the pain in his side.

The appearance of the patient's face is anxious, and there is generally a redness on one or both cheeks. When he breathes his ribs rise and are seen to move very quickly, and altogether the patient seems to be in great distress. His cough is usually very troublesome, being short and hacking, and often of a spasmodic character. It is much worse if he sits up, or breathes deeply, and generally causes him much distress. His sputum is characteristic; it is abundant, not very frothy. It is very viscid and will adhere to the vessel even when it is turned upside down. It is of a rusty colour when very abundant, but it is more like prune juice, sometimes like greengages. These latter two are held to be of grave significance.

Under the microscope, the sputum shows
abundant blood-dieses, a few leucocytes, and minute casts of the smallest bowel.
Hair, also traces present structureless mucous with a few small air-bubbles.
When treated with appropriate staining, the pneumovacens or diploevacens
of Frankel is revealed.
The rusty sputum is distinctively pneumonic.
The Pulse rate is generally from 90 to 120 per minute, but may be above
this. At first it is strong, full, and incompressible, but afterwards weak,
small, and yielding. It is sometimes intermittent and irregular.

"The smallness of the pulse is probably due partly to diminished cardiac
power, and partly to the diminished amount of blood which is propelled
from the left ventricle owing to the overloading of the right cardiac cavity,
which results from the obstructed circulation in the lungs." Summit's
The pulse-respiration ratio is reversed.
for while the respiration may be 20 to 50 per minute, the pulse may be only 90 to 120. — This is important in diagnosis.

The urine is scanty, light coloured, and acid with a deposit of hyaline or colour. — There is generally some albumin present in pneumonia in varying amount in different cases.

Physical signs.— The earliest physical signs of acute lobar pneumonia are generally discoverable within 48 hours of the invasion of the disease. They often appear within 12 to 24 hours. Occasionally when the local lesion is deeply seated, nothing abnormal can be detected until the 3rd or 4th day.

One of the first sounds we hear is crepitation. — Of this Dr. C. J. B. Williams says it is like hair being rubbed between the fingers close to the ear.

Crepitation is caused by air passing through fluid, and making a series of creakles, which are transmitted to the ear through a hepatised lump.
Afterwards as the disease advances, we have tubular breathing, and dulness. Complete solidification of the lung is shown by bronchial breathing, trochee, and increased vocal fremitus. "Pneumonia is always accompanied by pleurisy, so a pleuritic rub will almost always be heard early in the attack, most often to the outer side of the nipple or near the angle of the clavicle. Allbutt's text. Vol. 5. page 103.

When the crisis arrives, the dulness gives place to resonance; the rales of expirations is often heard, and rales take the place of tubular breathing. "When resolution is very rapid, rales of expiration may be absent." (Hilson. Cited in Brown's Med. text. page 879.)

**Diagnosis.** - Pneumonia is easily recognized in the majority of cases. The right lung is more commonly affected than the left, and generally in its lower lobe. In double pneumonia one lung is generally involved before the other.
In children, pleurisy with effusion may be mistaken for it (Schei's discouraged from page 132).

This may occur in the microscopical pneumonia, in those complicated chronic affections, and in the disease as met with in children, the aged, and drunkards.

In diabetes, Bright's disease, chronic heart disease, pulmonary phthisis, and cancer, a recent pneumonia ends the same, and is frequently overlooked. The temperature in these cases should guide us, especially if there is cough. The absence of expectoration and of pulmonary symptoms may make the diagnosis difficult.

In children there are two special sources of error.

1. It may be masked by cerebral symptoms, and mistaken for meningitis.

2. Pleurisy with effusion. The breathing may be intensely tubular, and tactile fremitus may be present. The aspiratory needle is sometimes required to
decide the question. (Cilci's text, pp. 133.) In the old, and debilitated the quiet may be vicious. We should make careful examination in doubtful cases. In chronic alcoholism, cerebral symptoms may predominate, and mask the local process. It may occur in the form of violent mania.

When we find a patient with a rapid pulse, rapid respiration, and fever, it should always excite our suspicion of inflammation of the lung. (Cilci's text, page 133.)

Cerebro-spinal meningitis is also apt to be mistaken for pneumonia. From typhoid fever, it can be diagnosed by means of Widell's reaction. We must also diagnose it from pulmonary congestion, severe bronchitis, broncho-pneumonia, acute phthisis. These may be variously combined, and we should remember that...
the disease is not always fatal.

Prognosis.—Pneumonia is the most fatal of all acute diseases. The older are more likely to die, but the young to recover. (Sturges, quoted in Olear's med., p. 152.) It is more fatal to the negro than to the white race.

Previous habits and conditions of life have a good deal to do with the protracted. Individuals who are debilitated from sickness, hard drinkers, and robust-looking labourers between 45- and 60 years of age, whose organs show signs of wear and tear, and who have weakened their reserve power by excesses in alcohol, are more likely to have an unfavourable result. (Olear's med., p. 152.) There are very few fatal cases in robust, healthy adults.

Certain complications and terminations are particularly serious. Pericarditis is probably always fatal. Endocarditis is extremely grave, more so than pericarditis.
The fatal result may be due to gradual toxaemia, or to mechanical interference with respiration and circulation. (Cochrane Med. p. 132.)

As toxaemia is not at all proportioned to the degree of lung involved, a severe and fatal toxaemia may develop with the consolidation of only a small part of one lung.

The question of individual resistance seems to be the most important one. A very slight or complete absence of leucocytes is regarded as unfavourable. Death from direct interference with the function of respiration is rare. It may happen in extensive double pneumonia, but even with the involvement of a very large section of both lungs, recovery may take place.

The condition of the heart is very important, for quite as many die from this, as from the infection. Its heart weakness may be due to 1st specific action of the poison, 2nd to the prolonged fever, 3rd over-
Distention of the right chambers. The pulse is not always a safe guide, since it may be full, soft, and not very rapid within a few hours of a fatal termination, even in cases without pronounced tachycardia. (Chap. III.)

"A pulse which in the adult is persistently over 120, and in the child 140, is of importance in the disease." (Burn's Dict. Medicine, p. 88.)

After 30 the mortality increases considerably, and the disease is exceedingly fatal in old people.

Pneumonia is more fatal in females than males, the mortality being in the proportion of 3 to 1.

Pregnancy renders the disease more dangerous.

The prognosis is very grave in those who have been injured by the long continued abuse of alcohol, the mortality being according to Hess from 20 to 25 per cent. (Burn's Dict. Medicine, p. 88.)

When delirium is marked, and occurs late in the disease, it is very grave.
Tremors and chilching at the bed clothes are also very serious signs.
A dry brown tongue is very unfavourable especially when associated with only a moderate degree of pyrexia.

Complications. We may have Empyema, Pericarditis, when this is complicated with double pneumonia it is most often fatal.
Ulcerative endocarditis
Meningitis, pneumonia diploceci were found in the lymph at the base of the brain. Allbutt's med vol. page 106.
Ulcerative osteitis is described by Dr. Brisbane, and other writers.

Epistaxis
Farcindie, more often observed when right lung affected.
Bronchitis, is also a complication especially in the aged and young children.
Relapse after pneumonia very rarely occurs. - Dr. Lye-Smith says he has

Treatment

In an ordinary case of pneumonia, the patient should be kept in bed in a large and well-ventilated room, the temperature of which should be about 60° to 62° Fahr. A plentiful supply of fresh air is most important, and he should not have too much clothing on the bed. If the patient is in a position to afford it, two nurses should be obtained, one for the night, and the other for the day. The body should be sparged about twice a day with cold or tepid water. Great care should be taken in doing this— a part of the body should only be done at a time, so as not to weary, or expose the patient too much. If he complains of feeling exhausted, or is suffering much pain, he may be turned on the side, and then afterwards on the other. He should be kept as quiet as possible and not be unnecessarily disturbed.
His thirst may be quenched by sipping toast water, barley water, or if he prefers it, he may have cold water. This latter is much recommended by some physicians. In an ordinary case there is no need for much medicinal treatment. At the outset, it is a good plan to give a purge. I generally give a dose of Colonel at the beginning, afterwards I give a mixture containing Spirit Quina, Ammon Acid, Ammon Carb. or Sp. Ammon. Brom. and Sp. Alc. Dil. This produces perspiration, relieves the hot skin, and makes the patient less restless. If the cough is very troublesome, Green-hawk, Vin. and Tincture of Hyoscyamus may be added. In a strong and phthisic country patient, Antistot is very useful, as it reduces the fulness of the pulse. It is recommended by Dr. H. Robert in his book on medicine. He gives 1/4 to 1/2 Dram every four hours.

The pain which accompanies pneumonia...
varies in severity, but it may be relieved by warm poultices, or cold applications such as an ice-bag. Some practitioners prefer cold applications, but I have generally found relief from warm poultices. Some patients object to cold applications, so we have to consider their prejudices, and also those of their friends.

A patient whom I attended two years ago was treated by means of cold sponging. He was over 60 years of age. His temperature on the second day of his illness rose to 104° to 105°. His breathing was 40 per minute, and he was unconscious. All covering was removed from him with the exception of a sheet. His body was sponged over with cold water a part at a time, two or three times in the 24 hours. Cold was also applied to his head by means of an ice-bag. After consciousness returned a mixture containing liquor. Salicylat was given him, of which he took a
dose every four hours. This reduced his temperature, and as he was still very restless, and delirious, a mixture containing Potass. Bromid. was given him at night. - His pulse was very quick, feeble, and easily compressible so half an ounce of whisky was given him every four hours.

On the 5th day from the commencement of his illness, there was a considerable improvement, the temperature having fallen to 100°. The pulse slower and stronger, his breathing slower and much easier, and he was able to sleep at intervals. His diet consisted of milk and soda-water, beef-tea or Valentine's meat juice, and occasionally an egg beaten up in milk.

On the 7th day, he was much better, his temperature being below 100°. After this he continued to improve, and in a fortnight's time was convalescent.

Carbonate of Ammonia. This drug is most useful in pneumonia: It
acts on the heart, and also on the respiratory centre. It also makes the sputum thinner and less viscid. It is generally given in four or five grain doses in combination with Syrup of Sarsaparilla, a somewhat sweetening preparation, in order to hide its pungency.

According to Dr. Lander Brunton it stimulates the respiratory centre (Lander Brunton's Pharmacology page 645.)

When in a case of unilateral or extensive pneumonia bronchitis affects the healthy lung or the healthy part of one, Carbamate of Ammonia is then perhaps most usefully useful. (Allbutt's Medicine, Vol. V. page 127.)

**strychnine.** This drug is very useful in some cases. It is an efficient stimulus of the centres in the bulb, and is most valuable in cases of failure of the heart's action, when alcohol seems useless or even mischievous to the patient. Five drops of liquid strychnine may be given and repeated should occasion arise. It is much more useful
given in one or two full doses, than in smaller ones frequently administered. Allbutt's med. Vol V. page 127.

Strychnine is a tremendous stimulant to the respiratory centre (Cander Bruntna's Action of medicines, page 282.) He records a case where a patient had ceased breathing involuntarily, who was relieved by the hypodermic injection of strychnine - His breathing was easier. (Cander Bruntna's Action of medicines page 281.)

Böeber in his book on medicine page 287 recommends strychnine hypodermically of the heart be taken in dose of 1/60 to 1/20 of grain, or if the heart be very feeble 1/20 to 1/12 grain every three or four hours.

Digitalis. - There are various opinions as to the use of this drug - Böeber rarely uses it, unless the heart's action becomes very rapid, or unless there is a sudden onset of cardiac weakness, indicated by a very quick and irregular pulse. It may then be given freely, 15 or 20 gr., every 2 hours, until 2 draehms have
been given, or digitalis may be administered hypodermically from 1/20 - 1/50 grain. (Dyer’s medicine, p. 137)

Digitalis acts as a cardiac tonic, but should not be pushed, as it then causes the pulse to become quickened (Lander Bruntin’s clinical med. p. 518.)

Dephlogisticus acts more upon the heart and less on the vessels than digitalis does. (L. Bruntin’s clin. med. p. 214.)

If Bright’s disease should exist as well, digitalis might cause an attack to give way, and cause hemorrhage. (E. B. A. and p. 218.)

Dr. Aye-Smith in Allbutt’s med. Vol. V page 129 says, that his own experience of digitalis has been disappointing, and that his disappointment is shared by many physicians who have used it since Frank recommended it 50 years ago. Its experiment of Dr. Bruntin and Cash (E. Bartholomew’s med. reports 1841) indicates that the effect of digitalis on the heart is greatly weakened by pyrexia.

Dr. Petrean of Bucharest report, a
remarkable low percentage of deaths in pneumonia treated with large doses of the powdered leaves or of the infusion of digitalis. (cullen's med. and surg. page 127).

**Oxygen gas.** This is useful in cases of pneumonia, if one lung only is nearly consolidated, the patient breathing with the other lung, and when one can at each respiration give him half as much oxygen again as he would ordinarily get. (Lander Brunton's Aetiology, page 283.) On the other hand, BeRe in his book on medicine page 137, says that it is doubtful whether the inhalation of oxygen in pneumonia is really beneficial. But oxygen is really most serviceable when one lung is clearing up, and the other beginning to solidify. Dr. Lander Brunton mentions the case of a patient who was librarian at St. Bartholomew's Hospital, and who was kept alive by means of oxygen. He was in a condition of stupor for nearly a fortnight: he inhaled oxygen for nearly
a fortnight, 10 minutes at a time whenever his nails got blue. (Lauder
Brunton's action of med. p. 263.)
In a case I attended last year in Boston
I found the patient derived very great
benefit from the inhalation of oxygen.
After convalescence she had a slight
relaxation, and dyspnea reappeared.
On resuming the inhalation of oxygen
her breathing soon became easier and
quieter. She believed so much in its
efficacy, that she did not feel satisfied
unless there was a cylinder of oxygen
at hand, so that she might use it, if
necessary.
Dr. Ope Smith says, "that when dyspnea
is urgent, and the patient apparently
dying of cyanosis, the inhalation of oxygen
is a rational mode of treatment; it
sometimes proves remarkably useful.
It seems never to do harm, and it is a
matter of surprise that its effects are
not more uniformly, and obviously
beneficial" (Alburt's medicine Vol. 11.
page 127.).
Saline injections hypodermically have been advocated. Olies says he has seen it doing good in helping to tide over a critical period of cardiac depression. As much as a couple of pints may be allowed to run beneath the skin by gravity, a rubber bag and either a large hypodermic, or a suitable sized respirator needle being used. The injection may be made in the flanks or the thighs. (Olies Medicine page 137.)

Opium has been forbidden lest its use should increase expectorations, diminish respiratory efforts, and lead to fatal coma. When there is much extensive consolidation, so much bronchitis, when the patient is becoming livid, and the expectoration scanty, it would be bad practice to give this drug. (Allbutt's Lectures Vol IV page 128.)

In delirium, an opiate may sometimes be given when all other means fail in quieting the patient, but this should only be done however as a last resource.
and when pain is marked where it is felt, and is quite exquisitely, it is so that this is marked accurately, but not the specific place or the precise area where the pain is felt. It is likely that the pain is more pronounced in the area where it is felt, indicating a greater intensity or frequency of pain in that region.

The pain in the area of the hand and arm is described as being felt in a specific region of the body, where the pain is more concentrated. This area may be associated with an underlying condition or injury, and the pain may be felt more frequently or intensely in that region.

The description of the pain in the arm and hand suggests that it may be related to a specific event or activity, such as a fall or injury. The pain may be felt differently in the arm and hand, and the description highlights the importance of identifying the specific area where the pain is felt, as it may provide important information for diagnosis and treatment.
congestion of the surface, and dilatation of the right ventricle, as shown by epigastric palpation and pulsation of the great veins, our object is not to lower the arterial blood-pressure, but to relieve the over-pressure in the right side of the heart and the systemic veins. The withdrawal of ten to twelve ounces of blood under such circumstances is a rational procedure, and in practice is often successful in tiding over a dangerous period of the disease.


Ocher, in his book on Medicine, page 137, says, "To bleed at the very onset in robust healthy individuals, in whom the disease set in with great intensity and high fever is, I believe, a good practice." I have seen instances in which it was beneficial in relieving the pain and dyspnoea, reducing the temperature, and allaying cerebral symptoms. I have not had many cases of pneumonia in very strong subjects, so have not had occasion to bleed them, but I quite
agree with Dr. O'ye-Smith and Dr. Askin in the above views, and should not hesitate to bleed, in similar circumstances. Emetics, such as Antimonial Wine and Specimen air, in full doses, etc, in emptying the stomach, also for rid of accumulated bronchial secretion, and produce deep, and efficient respiratory effort. - It is a useful method in children, but often disappointing in adults. - (Chol. med. Vol 5 p. 147) Alcohol is beneficial in the majority of cases of pneumonia. - In moderate doses it diminishes slightly the temperature, increases the appetite, obviates the tendency to heart weakness, is a conservator of energy, being itself consumed in supplying heat in place of the body tissues. - Two or three ounces of good whisky in 24 hours should be given in ordinary cases. (O'ye-Smth med. p. 218) In cases of secondary pneumonia, and in primary cases occurring in later life with few exceptions, alcohol is indicated and in all cases when the pulse is
irregular or very rapid, and the first sound of the heart weak. Half an ounce every four hours is suitable for an uncomplicated case of pneumonia in a patient over 50 years of age. From six to eight ounces in 24 hours are needed in severe cases with feeble circulation, and as much as twelve ounces when the patient's symptoms seem to demand it, and his state to improve under the remedy. When we find that any form of alcohol causes excitement and discomfort without strengthening the pulse, it is best to omit it for a time, and to rely upon a strong beef tea and Physic. Albert's book. Vol. V. page 126.

Pilocarpine. - Soderberg recommends pilocarpin in the treatment of acute pneumonia. He reports ten cases of acute pneumonia, six of them in children, who all recovered, and the duration of the disease was considerably reduced from 7 to 11 days, to 4 or 6 days. He gave the drug internally in a watery
Solution, and in some cases administered at the same time Alked, Digitals, or Sephyrines when these appeared to be necessary. - Convulsion and caloric stimulants were used, but no symptoms of collapse were observed, so he concludes, the treatment free from danger. Castell's "New Book of Treatment" 1899, page 170.

Antitoxin - Antitoxin serum experiments are increasing in number. Monroe, in "J. M. Journal" Feb. 16th 1898.

Boyd's experiments that unless the injection was used early, it was of little use.

De Berti considered that a later injection, even to 4th or 5th day, if given in adequate amount and intra-venous by might produce good effect.

"New Book of Treatment" 1899, page 17.

D. Oster says there is no specific treatment for pneumonia. - We may reasonably hope that a remedy will soon be forthcoming to neutralize the poison. Oster's text, page 138.

Antipneumonic serum is still in the
Trial test. - The Klempner brothers, and Washburn and others have reported favorable results. The serum was injected into the subcutaneous tissues. Washburn recommends as a dose 20 c.c. and thinks it is well to make an injection twice a day until the patient is convalescent. The serum appears to be harmless. Delafield, p. 133.

Epsom salts and Carbolic Acid are used as sprays in the sick rooms to act as antiseptics. They are useful as preventives for other people, but I do not know that they have much effect on the patient.

Treatment of pyrexia by the cold bath. This method has been more employed abroad than in this country. The plan followed by Professor Ingersoll is as follows. When the temperature reaches 104° Fahr., the patient should be placed in a bath at a temperature of 60° Fahr. and kept there from seven to twenty-five minutes, according to the effect on the temperature. The pulse must be
carefully watched, and stimulants be administered both before, during, and after the bath. If necessary, the temperature of the water must be gradually reduced to 42° Fahr. The cooling process usually continues for about a quarter of an hour after removal from the bath. This treatment should be employed before symptom of heart failure, so as to diminish the injury to the heart caused by the pyrexia. When there is marked asthenia, great caution should be used, and the propriety of employing it then is probably doubtful. (Graud's Disch. medicine, page 883.)

Another method for reducing the pyrexia is by the cold pack by means of a wet sheet, the application of ice-bags to the spine, and by splashing the surface of the body with cold water. This treatment is less effectual than the bath, and often causes more distress to the patient.

Ipecac, is another antipyretic which is much used by some practitioners. If used, it should be given in doses of from 50 to 60 grains daily. It is
apt to cause rigidity in the ears, and also to upset the stomach.

Antipyrin, Antifebrin, and Phenacetin have been thoroughly tried in pneumonias, and the general opinion at present is against their employment.

Ipecac has produced good results in some cases, but it is a very expensive drug.

During convalescence, the patient generally requires a stimulant. This may be given either in the form of wine, whisky, or beer, according to the preference shown by the individual.

Platinum has been much recommended of late as a food during convalescence. I know some practitioners who have had very good results from it.

The patient's mouth and gums should be kept cleansed until he has completely recovered.

In conclusion, I must say that considering that the infectious nature of pneumonia is now an established
fact, we must hope that soon an antitoxic serum, will be discovered which will be as beneficial in the treatment of pneumonia, as antitoxin has proved in the case of diphtheria.


Thereby certify that this Thesis has been composed by myself

Dr. Davies.