A Thesis

on

Certain Fatal Cases
which occurred in Paton's Ward during
The Winter Session 1863-64

by

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Respectfully dedicated
to

Professor Laycock.
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On
Certain Fatal Cases.

"Tongues of the dead not lost.
But speaking from death's nest;"
Longfellow. Voices of the Night.

Clinical Study of Cases introduces the Student into an entirely new field of Observation and Research. Up to the time that he enters the Wards, his attention has been drawn to those sciences, which may be termed the handmaids of Medicine. He has been working at Anatomy, Chemistry, and Physiology, these subjects, especially the first two, are now based on well-known facts, and as far as they go have been well nigh perfected. He has been taught things which are, which exist, about which none who have studied them have any doubt; and thus unconsciously he has been led to expect from past experience that the rest of his studies will comprise things as
tangible as the Relations of the Brachial Artery, or the Compound & Qualities of Chlorine.

Probably however the diversities of opinion, which the Study of Physiology has set before him, whether as regards the possibility of certain theories, the interpretation of certain facts, or the truth or falsity of certain experiments, will have induced in him the suspicion that if our knowledge of the Properties & Functions of Living beings in a state of health is much less exact than that of the Relations & Qualities of dead matter, our knowledge of the various changes induced on it by disease, & of the modes of rectifying those changes will be still less exact. If he thus enters on the Study of Clinical Medicine with a kind of expectant scepticism, which while seeking to test all things still ‘hopest all things’, he will be the more likely to avoid on the one hand a blind belief in drugs & drugs alone, & on the other a creed nearly as dangerous, viz. that of leaving all to the ‘vis medicatrix naturae’. Thus choosing the middle path he will seek to aid nature, not to compel her, in the persons of his patients, & where he sees that the Science of Medicine is wanting either in diagnostic or drugs, he will be the more able, as free from all prejudice, to spend himself in its service.
And it is for this very reason that the personal watching of individual cases opens up such a wide field for the student. With the consciousness that every improvement acts directly on the welfare of suffering patients, is conjoined the knowledge that the subject is one which he must study throughout his life, which is open to improvement in all its sections, which must be indebted for its advancement to the individual efforts of Practitioners in Medicine.

I have chosen the 'Fatal Cases' as the subject of my Thesis, because they generally are the most interesting ones, I because the 'Seetio' will declare without doubt the nature of the malady. It is in this way, that a diagnosis is confirmed or falsified, that its errors or oversights are corrected, that we obtain a solution of any phenomena which during the patient's life we were unable to interpret. Had this Thesis been sent in "Sixty years since", there would no doubt have been many an opportunity for correcting a diagnosis, but of late years the Stethoscope and Jermometer, the Microscope and Laryngoscope have so improved our diagnostics, that the 'Seetio' only confirms the previous opinion given on the case.

There is another point of still greater moment as regards these cases, i.e., whether they were
according to all known Pathological rules necessarily fatal. And in close connection with this there lies the question as to the best treatment, whether it be intended to be Curative or merely Palliative.

The chief reason why I have chosen 'Cases' at all for my subject is that a student, who is holding a Hospital Appointment, it is at the same time preparing for examinations, has no time during his four winter to devote in any original researches, and if he desires his Thesis to be anything but a laborious compilation of other men's ideas he must fall back on this subject. Not that I pretend that the views here expressed are all original: the majority are no doubt adopted from Clinical Lectures or Books; but they are at least illustrated by I applied to Original Cases taken by myself, when acting as Clinical Clerk to Prof. Laycock during the past Winter Session.

I will now proceed to report the cases as concisely as possible, giving after each case a short commentary on those points which appear to me to be most worthy of notice.
Case I.

John Drew, Oct. 45, admitted Oct 25th/03 under Dr. Laycock.

History. Has worked in an iron mine for 25 yrs., up to 3 yrs. ago he was quite healthy. He then caught a cold, which was soon cured, but after that he became liable to severe colds, his breath began to get shorter. In June last oedema of the legs and feet supervened, which disappeared in a fortnight under the care of Dr. Haldane, the treatment consisting of free purification. After his recovery he acted for six weeks as a night-watchman, but he then caught a fresh cold, the anasarca returned.

Circ. System. Pulse 92. Soft + irregular. Impulse not perceptible. Dullness normal, but ill-defined. In the normal site of the aper beat both sounds are heard to be normal + tolerably clear. At the subclavicular they are heard more loudly, at the lowest mid-sternum are booming, they are feebly heard at 4th cost. Card. External Jugular Veins are dilated, tortuous + pulsating, but no venous hum is heard. He has had piles 4 years.

Respir. System. Respiration 25 per min. Thorax full + barrel shaped.Expiration prolonged. Sputa, abundant, watery + spumous. Percussion revealed general hyper-resonance before behind, except in the 2 supra-scapular fossa, for 1/2 inch at both sides. Auscultation showed anteriorly on both sides the inspiration to be short + shallow + mixed with fine expiration, which was more abundant on the left than the right side.Expiration was prolonged - generally harsh + mingled with
coarse crepitation & sibilus. Vocal resonance was normal.
Posterior auscultation showed shallow inspirations & harsh
expiration: fine & medium crepitation was heard in the supra-
scapular & scapular regions, but it became coarser towards the
bases: fleeting sibilis are heard generally. Vocal resonance normal.

Digestive Syst. Tongue atonic & indented; dorsum covered with a
white fur, & the tip red. Appetite poor; no pain after eating; bowels
constive. There is a considerable amount of ascites, which prevents
exact percussion of the liver, which however is not probably
enlarged.

Nervous Syst. Sleeps more than is natural. Otherwise normal.

Gen. Visc. Syst. Quantity of urine has diminished during the last
weeks. Dark amber colour: excess of purpurine & of
phosphorus: no albumen.

Integ. Syst. Face & lips turgid & of a livid leaden hue.
Fingers clubbed. Conjunctiva glistening & oedematous & he
has general anaesthesia, extending to the shoulders. His legs
& feet pit deeply. The trunk & arms slightly, in comparison.
He is not quite confined to bed: when in bed he has to be
propped up with pillows to ease his breathing.

Oct 29th. Had hot air bath last night, & sweated slightly. Slept pretty

Tinct. ipec. Zt.


 décoct. Senega ad. Zt.

Summ. Zt. et. dies. To have hot-air bath nightly.
Oct 31st. Did not perspire after the bath last night, & slept badly. Tongue, dry & dark brown. Sputa have changed their character become thick & puriform. They are expectorated in large masses. Bowels not open since admission. Edema of the arms is increased. Pulse 88 irreg. & soft. Omit the mixture.

Rp. Tincturei Digitalis 3fl.

Ag. Cinamomum 3fl.

M. Sumat 3/4 per os.

Nov 2nd. Last evening took 0.5 Ricini 3fl, which purged him. He slept better, & now feels easier though weak. Tongue dry & brown. Pulse 68 & more regular. The anasarca remains the same. The amount of urine passed is generally 3fl. in 24 hours. It contains excess of urea but no albumen. Omit the medicine and resume the former mixture, substituting Ammon. Hydroch. for Soda. Chlor.

Nov 6th. Had a glass of gin last night with the hot-air bath and he consequently sweated a little more. Pulse 76 mod. & intermittent. The sputa are partly espumous & partly purulent. Respiration is more laboured. expectoration is heard universally over the back & the dulness at the bases is increasing. It is more vivid & deeper heavily through the day. Urine is of the same quantity & nonalbuminous. The abdomen now measure 42 inches in girth, having increased 3 in. in 2 days. Edema of the preface & scrotum has come on, the anasarca is increasing. Omit the medicine. Rp. Tincturei Lythri 3fl.

M. Sumat 3/4 per os.
Nov. 8th. Up to this morning he continued in the state described at last report: the amount of urine had not increased. He took a good breakfast and dinner, but in the afternoon dictated a letter. After this he got very drowsy, fluid, and gradually sunk down in the bed, breathing slowly; about every 30 to 60 seconds a respiration was heard and noisy. At 5:20 p.m. he vomited his dinner and died without struggle 5 minutes afterwards.

Sectio. Nov. 10th. 48 hours after death.

Heart. Valves on the left side competent. Right heart was dilated, the tricuspid valve thickened at its edges.

Lungs. Did not collapse on opening the thorax. They appeared to be condensed loaded throughout with a black gritty material, but nowhere was any breaking down of lung tissue found. On microscopical examination this gritty stuff appeared to be contained in the parenchyma of the lung, in many places to be arranged with considerable regularity, around the air vessels. They appeared to consist of particles varying in size from minute molecules to particles of 1000 to 2000 in. in diameter. The bronchi were much inflamed, their mucous membrane ulcerated.

The peritoneum contained a quantity of straw-colored turbid fluid. The liver, kidneys, spleen & intestines were congested but otherwise of normal appearance.
The diagnosis of this case appeared to be plain from the first:
the history pointed to us the lungs & possibly also
the heart & kidneys as the organs implicated that too
in a chronic way.

Physical examination then came to our aid. We found that
the lungs were emphysematous from the hyper-resonance
of the thoracic walls, & the prolonged expiration. The
other signs indicated oedema also of these organs, &
chronic bronchitis on which probably a late acute
attack had supervened. The sputa was bronchitic in
character, I confirmed this opinion, but it gave no
indication of the lesion which was afterwards found.
As the apex beat could not be felt, the cardiac dulness
was ill-defined in consequence of the emphysematous
lung, we could only judge of the position of the heart
by its position where its sounds could best be heard.
This was at the scapulocostal, I indicated some shifting of
the organ towards the median line; this sign too, com-
bined with the booming sounds heard at the sternum,
together with the enlarged, pulsating jugulars pointed
out dilatation of the right cavities of the heart.
So far the theory of the case, as built on the history,
proved correct, but on examining the circulatory
system, we found the urine, although decreased in
quantity & high coloured, to be free from albumen.
tube-casts, so indeed it continued throughout his life. The kidney tubes were free from any organic disease, they were suffering merely from that venous congestion, which necessarily accompanied such disease of the heart and lungs.

The sequence of these morbid changes is also clear: first there was the cold caught 3 years ago, which after that time continually recurred. Then followed the Empysema—the lung tissue no doubt being but more liable to this change from the presence of the Carbohydrate matter [discovered first at the rotation], which must have considerably modified its nutrition. These morbid changes, by obstructing the free access of air to the minute air-vesicles, delayed the circulation through the lung. The Right Ventricle, thus unable to get rid of the blood poured into it with its accustomed rapidity, became dilated: the Auriculo-Ventricular valve then worked no longer efficiently, and regurgitation took place into the Right Auricle and thence into the Cavae. Probably these last changes occurred a little before June 163, when the oedema of the feet first occurred. It is this that was the cause of the pulsating jugulars, the lividity and livid hue of the Countenance, in fact to the General venous congestion of the system, from which arose
the Anaemia, the ascites, the constant drowsiness, the decreased flow of urine, the Hæmorrhoids & Constipation.

Treatment. (1) Hot-air Bath: this was given regularly every night, at first a scanty perspiration followed its use, but this soon ceased, but it appeared in this instance to be quite incompetent to produce that sudorific effect, which has brought it into notice as a remedy in Renal Dipsy. I think we shall not wonder at its failure here, if we recollect that the skin partook of the general venous congestion & that therefore its functions were obstructed in the same way as the same reason as were those of the kidney. Prof. Laycock (in his Clinical Lecture delivered on March 15th 64) spoke of the stimulating effect of heat on the System, illustrating it by the fact that Englishmen during the first year or two in India are often invigorated rather than depressed by the tropical climate. Such a fact, if it held good in all cases, would prove the Hot-air bath to be a useful adjunct in such a case as this, even if it did not produce sweating. During the winter of 1861 I took two or three Turkish Baths, & there I found to my great discomfort that my skin, although its functions were easily excited by exercise, did not
respond so readily to the stimulus of heat. I felt extremely
wretched - violent headache - oppressed breathing - pulse 120
small & weak - I very nearly fainted. I was shampooed
without waiting for the usual perspiration, which however
broke out to my instant relief, before the completion of that
process. This occurred in the first room, with a temperature
of about 112°F, and seems to show that if the system be not
able to relieve itself, when the surrounding temperature
is above its own, by a copious sweat, or the heat of the
body be not kept down to its normal standard or nearly
so by evaporation from its surface, a bath of hot air
would be rather depressing than stimulating. The hot
air bath would always be more easily borne than the
Turkish bath, because the patient's head and face is still
surrounded by air of the natural temperature.

I cannot but compare the action of the bath in this case
to that of it in the case of Williamson, a man who lay in
the same bed in Jan. 184. He had uncomplicated renal
dropsy of 3 or 4 weeks standing, scanty urine, albumen,
& granular tube casts. The bath was used nightly &
indeed copious sweats with excellent effect; the tube casts
& albumen disappeared, the urine rose in quantity &
the anasarca was speedily removed.

Another case in which it proved very beneficial was in that
of Mr. Man Knight, now in Patton's ward with empyema.
he was in H.2. ward in Oct. '93 with lung disease. Edema of the feet and legs, dependent not on any cardiac or renal lesion, but probably on some change in the innervation of the capillary vessels of the foot.

2. The mixture, which was first ordered on Oct. 29th and suspended on Oct. 31st, then with a slight alteration again exhibited on Nov. 2nd and continued until the 6th. This was tonic, expectorant, diaphoretic, diuretic and sedative in its action. We do not find any notable increase of either urine or sweat during its use. This probably depended on the congested state of the secreting organs - the same reason which caused the hot air bath to fail. A change however occurred in the character of the sputa: tough purulent masses began to be expectorated on Oct. 31st in the place of the abundant spumous and watery sputa, showing that the bronchitis was probably becoming convicted. On Nov. 6th we have a note telling us that the spumous expectoration had returned, so the benefit could only have been temporary.

3. Digitalis: ordered on Oct. 31st and continued till Nov. 2nd. It was given in 30 doses three times a day. In the mode of operation of this drug there has been much difference of opinion, but the conclusion which I believe those who have most studied the subject have come, is that it exercises a contractile action on the capillary system of vessels. If the vessels were weak and atonic, it in a state
of passive congestion, it would tend to reduce their calibre
to the normal standard, and to bring up their nutritive funct-
ion to a state of efficiency; if however the vessels were
in their normal state, any further contraction would
and only to arrange that function. In this case the
muscular structure of the heart was suffering like the
rest of the body from venous congestion; the effect of the
drug was to lower the number of beats from 88 to 68,
but at the same time to make them more regular. The
diuretic effect was not noticeable.

4). Tinct. Hydrastis m2 were given night and morning to
stimulate the kidneys. But these organs responded to the
stimulus addressed to them, no better than the skin had done
previously, the amount of urine was not increased. The
action of diuretic medicines in disease is always uncertain: but we may set down the cardiac lesion, here as the
circumstance which prevented the action desired.

5). Co. Ricini: this was given but once—on Nov. 1st. The
patient the next day expressed himself relieved, but said
he felt weaker. It must be remembered that he
had been treated successfully in June last by free
purging. Of course he was at this time much weaker,
yet I think that a hydragogue purgative might have
relieved the most distressing symptoms; the intestine
at any rate would have been freed from any accumu-
-lation of feces or stools, & the drainage of fluid might have relieved for the time the distress caused by the ascetic tannasara.

The immediate cause of death. It will be seen by the measurements on Nov. 4th & 5th that the ascetic fluid was rapidly increasing in quantity, that therefore the descent of the diaphragm was becoming more & more impeded, the ascetic was also increasing & would suggest to us that the pulmonary edema was getting more extensive. The aeration of the blood was therefore becoming more obstructed, the circulation through the lung more delayed. This of course would tend to make the action of the left heart more deficient. The distension of his stomach on Nov. 8th by a good dinner increased the difficulty of respiration. The blood became more & more loaded with carbonic acid, it then acted as a poison on the brain, a heavy stupor became set in. The vomiting was probably the last effort of nature to aid herself, but it was too late, the man died 5 minutes afterwards.

Sectio. We had no reason during life to suspect the extensive carbonization of the lungs, which was found after death, except the fact that he had been an iron miner for 25 years. His having been a healthy man up to 3 years ago would be against the supposition that there was a very large deposit of carbon in his lungs.
His history was his common one of Bronchitis & Emphysema, the Physical Signs showed no other lesion. We had no 'Black-sput,' which proved there was no breaking down of the Lung-structure. It would be an interesting fact to determine, if, to what degree, this deposit of carbon modified the nutrition of the lung-tissue, thus predisposing it to Emphysema.

"Spurious Melanosis of the Lungs." On the Pathology of this disease there has been much difference of opinion: Dr. Thomson & Mr. Guillot appear to be the writers, who have done most for setting it on a foundation of facts. According to an analysis made by Dr. Christieon, the deposited material is pure carbon; microscopical investigation shows it to be deposited in the proper lung-structure; the question requiring settlement is 'How did it get there?'

We must remember that a deposit of carbon occurs universally in the lungs as life goes on: the lungs of a child are of a different colour to those of the old man. Moreover, in cases of this disease we find the apices of the lungs containing most carbon - i.e. where the blood is most stagnant & aeration most incomplete - and Mr. Guillot has often found it in old persons surrounding cutaneous masses. It probably occurs near the blood-
not circulate so vigorously as in other parts of the lung. This extraordinary deposition of carbon is no doubt common among coal-miners, but it does not happen equally in all coal-mines—in some mines not at all; it appears that those engaged at the "stone-wall" where the passages are very small and the air bad are more liable to it than those among the coal proper. Dr. Burnett refers to the fact that the particles of carbon that he has examined do not at all resemble the colour or structure of coal, when viewed under the microscope. The disease is more common in Paris, where the air is pure, than in London or Manchester, where it is so smoky.

I think that we may draw the following inferences fairly from the above facts. That this disease is but the exaggeration of a natural occurrence; that it is much more probable, that the limited amount of carbon in the lungs of a healthy man is deposited there from his blood, than that it is introduced as a foreign material from without: that the extra amount, deposited while the blood circulates least rapidly, confirms this supposition. That the study of the disease amongst colliers has shown that it is more common in badly than in well-ventilated mines—more common in the "stone-wall" mines than in the others more exposed to
Inhalation of coal-dust, those men therefore exposed to the most noxious gases (chiefly compounds of carbon, which would therefore at delay the excretion of carbon) are those who chiefly fall victims to this disease.

"Black Pneumonia" is often the termination of this disease, and this has been one case this winter in Paton's ward. An Irishman called Lynch was under treatment for several weeks; it was evident that the right lung was much consolidated, but he was stout and well and complained of dyspnoea only after exertion. The sputa was scanty and generally mucous and very tenebrous. The case was long a mystery, but one morning a little 'black spit' was found in his spittoon; when examined proved to consist of black particles with some yellow elastic tissue. He afterwards told us he had worked above ground in a colliery for 6 months ten years ago, that about half a-dozen times since he had noticed the sputa to be black. His tale was always confused— even for an Irishman— it was with the utmost difficulty we could get any thing like the truth out of him.

History: With the exception of a kidney attack 3 years ago, he had been a healthy man until the last 12 months. He then caught a cold, and suffered also from severe lumbar pain. He got stronger however as the spring advanced.

His present illness commenced six weeks ago with slight rigors, which occurred two or three times daily, were followed by increased heat. These continued for a week. Pain began to come on after this in each hypochondrium, especially in the left one. A month ago he first noticed a hard swelling in the region of his liver. At the same time the abdomen began to increase in size. He suffered occasional pains shooting through the liver to the back. The abdomen and liver continued increasing in size and the pain in severity.

On the 4th inst. he was obliged to leave off work. On the 6th inst. he first noticed his feet and ankles to be edematous.

During the last month he has lost much flesh. He has always been temperate; has good food and lives in an airy house; his work is hard. There is no history of hereditary disease.

Digestive Syst. Tongue large & glistening. The dorsum in the centre is dry; furrowed longitudinally; outside this it is furrowed, the edges are thick & moist. His appetite remained good until the 3rd inst. He has pain after eating. The stomach becomes distended and distresses him much. There is occasional vomiting, nausea, but no vomiting has yet occurred. The bowels are
costive; he has not passed any blood; he says his stools are light coloured.

The hepatic dulness extends 6 5/8 inches in a vertical direction from a point 1/2 an inch below the right mammilla. Its upper border passes back horizontally from this point towards the umbilica, towards the left in a sloping direction across the sternum, between the junctions of the 5th and 6th costal cartilages. The lower border—modulated & sensitive can be felt in the right lumbar, the umbilical & left hypochondriac regions. One large nodule may be felt close below the Xiphoid cartilage; another in a vertical line with the mammilla.

On auscultation a double rhythmic murmur may be heard over the liver. The 1st sound is short & almost thuddy in character; the 2nd is about twice the length; it is distinctly blowing in character; it begins close after or perhaps even before the cessation of the first sound; the interval is not quite so long as the 2nd sound. They are distinctly synchronous with the heart sounds; & are heard most distinctly close below the left costal cartilages. Pressure with the stethoscope increases their intensity. At the lower border of the liver a crunching sound is heard synchronous with respiration.

The splenic dulness is about twice its normal size. Fluid is present in the peritoneum; it shifts readily; when lying on his back the dulness commences at 5 1/2 in from the umbilica.
on each side. Girth at umbilicus is 34 inches; at 7th costal cartilage it is 35 ½ in.

Circulatory System: Pulse 99; reg. decompressible. Apex-beat is close below the Mamilla, between the 4th and 5th ribs; area of dulness normal in size. Systole loud, rather prolonged; it has a booming character at apex-beat. 1st sound clear; no murmurs. The veins on the abdomen especially over the liver were enlarged; the same was seen in the Lumbar region: the Saphena Veins were slightly enlarged. The Blood contained an excess of white blood-corpuscles.

Respiratory System: Thorax well developed. Respiration 36 per minute. Has had short breath lately, especially after meals. There is 'hepatic' type of breath. Very slight cough.

Anteriorly the resonance generally is high-pitched; on the right side ceases with the line of the Mamilla. On both sides there is clear vesicular breathing, with good vocal resonance; in the left lateral region there is some fine double friction with increased vocal resonance. Posteriorly the resonance is good on both sides, except in the infraspinalar region where it is impaired; in the Rt. Post. Lateral where it is flat. Breathing sounds on the left are normal as far as the lower angle of the Scapula, where they are harsh, & become feebler towards the base; in the left lateral too are heard friction & slight egophony. On the Rt. side they are good, except that fine crepitation exists from lower angle of scapula to the base with increased vocal resonance.
Nervous Syst. Restless at night. Has been inclined to sleep during the day for the past month. He has slight frontal headache. There is occasionally severe pain in the lumbar region, which is increased on stooping or straining. For the last month there has been a continual feeling of un easiness in the liver, but there is generally no actual pain in it, except when touched, or when he jars himself, when the pain shoots through to his back it is very severe. There is no pain in the left shoulder. His left foot is apt to cool quickly. Sensation is normal.


No history of syphilis.

Integumentary Syst. Peculiarly cachectic. Sallow face. Slight icterus of the conjunctiva. Considerable emaciation, the ribs being prominent. The arms flabby & wasted.
There is oedema only of the feet & ankles. Decubitus dorsal.

Treatment. Steak-diet. Lemonade.

Pil. Rhemi Co. \( \frac{1}{x} \) \( \frac{1}{5} \)
Ex. Aloes Co. \( \frac{1}{x} \) \( \frac{1}{5} \)
Ol. Hippia. Rp. \( \frac{1}{y} \) v. \( \frac{7}{2} \) massa in pil \( \frac{1}{6} \) divid.
Sumat pilulas \( \frac{1}{y} \) nocte.

Dec. 10\( \frac{1}{x} \). Pulse full: 80-90. Had one normal stool. Otherwise the same.
Rp. \( \frac{1}{y} \) pot. Taraxaci \( \frac{1}{y} \)
Potass. Iodidi \( \frac{1}{y} \)
Inf. Quassiae \( \frac{1}{y} \).
Sumat \( \frac{1}{y} \) post cibum loco inde.
Dec. 12th. Slept badly. He suffers pain continually in the lumbar region, & in the liver. Pulse 86. The oedema of the feet has disappeared, but there is now some of the integument over the liver, & also in the lumbar region. His urine is of the same quality, except that it now contains a deposit of purpurates & fibrates. Girth at umbilicus = 34 in. at 7/8 costal cart. = 36 in.

Dec. 16th. Sleeps badly; the lumbar pain is generally severe, & he is disturbed much with flatulence, especially after meals. Tongue dry & brown in the centre; bowels pass freely with the pills - stools natural. Pulse 78 - reg. Oedema of the feet has returned. Girth at umbilicus = 34½ in. at the 7/8 costal cart. = 36 in. No albumen or bile- acids in the urine.

Dec. 21st. Remained in much the same state since last report. Slept better last night, as the flatulence has been relieved by a turpentine enema. Pulse 92. Tongue moist & cleaner. The legs are oedematous as far as the knees. Girth at umbilicus = 37¼; at 7/8 cost. cart. = 37 3/4 in.

Ry. O.C. Ruboo m7x
Sdt. Amaryli 1/2 oz. 7th enema nocte infusid.

Dec. 23rd. Since the last report he has been becoming weaker; the pain has been severer & the breathing more obstructed. The oedema by yesterday was much increased; & had spread up the inside of the thighs, he wore an anxious, drawn expression,
the "facies Hippocratica". Towards evening he became very restless and suffered much pain. He became comatose during the night, and today he lies upon his back with his eyes half-closed, taking no notice of anything. The pupils are dilated & equal, the skin is cold & dry; the respiration are slow & occasionally loud & moaning; P. 120. He passes his urine unconsciously. The only movement is a peculiar twitching of the right leg, which is drawn up in bed.

Dec. 27th. He continued in much the same state yesterday; today the coma seems more complete. He lies on his back; the pupils are still contractile; the half-closed eyelids are clogged with viscid mucus. The right leg is no longer jerked as it was. Resp. 24. Pulse 134, smaller & weaker than it was. He is perspiring abundantly. Some urine was examined today, which had percolated through the mattress. Sp.gr. 1.035; alkaline; effervesced on addition of acids. It contained albumen & excess of indigene bume; chlorides decreased.

Dec. 28th. At 11 P.M. yesterday his respiration became loud & was accompanied by loud rattle. This condition gradually increased, but no other change occurred; his pulse reached 140; he died quietly at 7:15 A.M.

Immediately after his death, his urine was drawn off & was afterwards tested by Dr. A. Gallowe, who found in it excess of urea & colouring matter, albumen, but no bile acids.
Sectio 1 p.m. Dec 29 ½. 30 hours after death.

There was a slight icteric hue over the whole body.

Head. Brain weight $\frac{3}{52}$ lb. The superficial veins were pretty much congested, especially posteriorly. The convolutions were numerous but deep, and were slightly flattened. On slicing the brain the number of red points were increased posteriorly. There was no increase of the sub-arachnoid or ventricular fluid, or any other morbid appearance.

Thorax. Heart weight $\frac{3}{8 \frac{3}{8}}$ lb. Right ventricle flabby and pale. The tricuspid valve slightly thickened at its base. Concomitant hypertrophy of the left ventricle: mitral valve thickened and nodulated at its edge, the chordae tendineae thickened. Aortie values competent. The intercoronary one was fenestrated. The Aorta was bile stained, there were a few patches of atheroma.

There were a few adhesions in the right pleura, but none in the left. R. lung weighed $\frac{3}{28}$ lb, L. lung $\frac{3}{24 \frac{3}{4}}$ lb. Both were congested, oedematous & highly pigmented. The bronchial mucous membrane was highly congested, the bronchi filled with frothy mucous.

Abdomen. The Peritoneum contained $\frac{1}{16}$ lb of clear straw-coloured fluid, in which a small quantity of flaky matter floated. The fluid was tested by Dr. A. Gangee, who gave the following report: sp. gr. 1.018; contains per cent 4.5 of...
solid matter, of which 3.7 is organic & the rest inorganic. It is highly congealed by heat; it contains bile-colouring matter, but no bile acids, tyrosin, tencin or sugar.

Intestines: the mucous surface generally pale; transverse colon & rectum below the sigmoid flexure congested: the colon contained tea-coloured stool. There were calciphe plate in the mesenteric & meso-colon.

The liver weighed 7lbs: it was adherent by fibrous bands above with the diaphragm; by the lower surface of the right lobe with the right kidney, which is tilted forwards; by the lobus quadratus & margin of the gall bladder with the pylorus. On the upper surface of the diaphragm the vessels were varicose, on its under surface there were several ecchymoses. In the suspensory ligament were two small masses - one the size of a pittance & the other smaller which appeared to be bunches of varicose veins.

The convex surface of the liver was rough & nodular: the left lobe was almost pink + on its upper surface was a large, elastic, projecting boss. The right lobe was dark purplish, & there was a large boss posteriorly on its outer side, which was covered by adhesions. The portions of the under surface differ in colour in correspondence with the upper surface; the nodulations are best marked on the right lobe, the lobus spigelii & lobus quadratus.

On section: the left lobe was infiltrated with yellowish
Diagram of the Vena Cava Inferior (Section)

A. Canal of the Vein.
B. Cavity of R:\ Auricle.
C. Central Tendon of Diaphragm.
D. Opening for Vena Cava.
E. Calcaneous Valve.
F. Cavity of Thorax.
G. " .. of Abdomen.
masses, from varying from the size of a pin's head to that of a bean: they consisted of pulpy mass, which softened readily under pressure; they gave an irregular feel to the section. The right lobe on section had a comparatively healthy appearance; the cut surface was firm & rather rough, & had a mottled (yellow & purple) appearance. The capsule was circumscribed & firm.

The portal vein contained a soft clot, as did also the division of it, which went to the right lobe: the right hepatic vein was empty, the left one filled branches full of soft clot. The Vena Cava was somewhat contracted by the enlarged lobus Spigelii. On opening the renal of the vein a small calcified plate was found below the opening of the renal veins. There was also a clot, firm below & coated with white stratified fibrin, & extending upwards for 4 inches, where it became continuous with the clot in the left hepatic vein; as it approached the opening of the vein it became soft like that in the hepatic vein. On its removal a few spots of atrophia were visible. The Vena Cava, after receiving the hepatic veins close below the diaphragm took an oblique direction towards its proper opening: after another turn it passed up through this into the right auricle. Thus a sigmoid flexure was formed, which was rendered the more complete by a valve containing a calcareous plate, which projected from the anterior & left sides of the vein.
no. 1. x 320 diam.

no. 2. •••• x 320.
The Spleenic & Sup. Mesenteric veins were healthy & prurient. The Bile & cystic ducts & the Pancreatic duct were prurient. The Gall-bladder contained 3 3/4 of Bile.

The Spleen weighed 3 15/2; it was hypertrophied, moderately firm & not much congested. The pancreas was healthy. The kidneys were pale, but otherwise of normal appearance.

**Microscopical Exam.** A section of the Stare Nodule in the Right Lobe appeared to consist of collections of from 12 to 20 highly refracting cells imbedded in some distinctly fibrous material. (Vide No.1).

The Pyloric masses in the Left Lobe consisted partly of granular masses, which resembled granular tube-casts in shape; and partly of granular cells, some of which only are nucleated. They are generally oval or round; a few only are slightly conolate above. They appeared to be undergoing active division. Free oil globules & healthy hepatic cells were also seen. The cells generally were bile stained (Vide No.2).

Kidney. The tubuli in some parts contained fatty granules instead of the normal epithelium.
This was a case of considerable interest, both because of the probable malignancy of the tumor, and on account of the peculiar sounds which auscultation of the liver revealed. The history told us that a man, who was formerly healthy and temperate, found, after some slight previous disturbance of the system, a large tumor appearing below the ribs on the right side; that this was accompanied by occasional severe pain, that it rapidly increased, it was soon followed by ascites, and edema of the feet. Physical examination showed the hepatic dulness to be much increased, and that a large hard nodulated tumor, painful on pressure, projected from below the right ribs into the cavity of the abdomen. The lungs were compressed & the heart tilted upwards towards the axilla by this tumor. The ascites and edema of the feet pointed to obstruction of the portal vein to the vena cava. Such symptoms indicated without doubt enlargement of the liver, its rapid growth, combined with the patient's cachectic expression, and rapid emaciation, gave to great reason to expect it to be of a malignant nature, therefore fatal. The sounds heard through the liver were not so easy of explanation. They were both easily distinguished as synchronous with the heart-sounds, although neither of them corresponded in equality of length with those.
sounds. The first sound was most probably caused by the transmission of the first sound of the heart, although it was not much above half the length of that sound and differed from it also in character—being more soft and masked. But this is easily accounted for, because the first portion of the systole would scarcely be heard through such a conductor; the sound would not be intense enough until the literal stroke of the heart took place, even then it would be masked and altered when heard through the liver.

The second sound could not be caused by any transmission of the heart sounds, as the first had been, for the simple reason that it was prolonged and blowing, a character of sound, which could not be heard in the cardiac region. The only other sources, from which it could arise, were an aneurism of the abdominal aorta, or else a constriction of the Duct Cava, by an enlarged Lobus Spigelii, or by some cancerous glands. The only reason to prefer the first to the second theory was the character of the sound, which was harsher than venous murmurs generally are. But when reasoning on such a case, I think we are bound to take into consideration the extreme improbability of two such grave diseases as cancer of the liver, and aneurism of the aorta, co-existing in
a patient's abdomen, seeing that there was no other reason for suspecting aneurism, it was right to explain existing phenomena, by those pathological changes which we knew to exist. This long blowing sound then probably arose in the Vena Cava, it was caused by the oneward current of blood passing into the Right Auricle. It probably commenced before the cessation of the first sound but was masked by it. Like the first sound, it was not heard directly the cause of it began to act, but not in fact until the Venous flow had acquired some strength, after the auricle had begun to dilate after its contraction. Although synchronous with the first heart-sound, it was nearly four times its length, beginning before it ending after it. The pause was short & presystolic: it was synchronous therefore with the contraction of the left auricles, when of course the flow of blood in the large veins would be brought to a stop. In the accompanying dia-
gram I have contrasted the Carotids to the Hepatic Sounds.

**Cardiac**

- 1st sound
- Pause
- 2nd sound
- Systole of V. te
- Filling of aur.
- Cont. of auricles so as to distend ventricles.

**Hepatic**

- 1st sound
- 2nd sound
- Pause
- Cont. of auricles and cessation of venous flow
- Systole, exp. stroke of the ventricle
- Blood flowing oneward up the Vena Cava.
The other morbid changes, which were detected, were evidently caused by the hepatic disease. The spleen was enlarged, the peritoneum contained fluid, because of some obstruction to the return of blood through the vena portae. The congestion at the base of the lungs, the feeble breathings, the sputum, showed congestion, oedema of the lungs from incomplete expansion due to obstruction to the descent of the diaphragm. The enlarged saphenous, the oedema of the lower extremities, of the large veins in front of the abdomen, also in the lumbar region were symptoms of partial occlusion, from some cause or other, of the inferior cava.

The state of the urine was one worthy of notice in many respects. The decrease in the quantity was due to the pressure on the inferior cava, preventing the free return of blood from the kidneys; but the venous congestion thus produced was not sufficient, at the time the patient entered the hospital, to induce albuminuria. The excr. of urea would be caused not only by increased destruction of tissues consequent on the influence of the disease on the tissues, but also by its excretion being somewhat delayed from the slow passage of blood through the kidneys. The excr. of indican and purpurin shewed that the kidneys were taking on themselves a vicarious action — viz. that of excreting carbon: and
from this alone we might infer that either the liver, or the lungs, or both of them, were acting insufficiently.

Treatment. In such a case as this treatment of course could only be Palliative, i.e. having the aim of pro-
longing if possible, the patient’s life, or at least of affording him some immunity from pain.

The opium enemata were given to relieve the constipation, an effect partly of the portal congestion, partly on a deficient secretion of bile, & partly on the mechani-
cal pressure of the ascitic fluid on the sigmoid flexure of the colon, and rectum.

The mixture, said Prof. Laycock when lecturing on this case, was not given with the hope of producing a cure. The Taraxacum might have the effect of aiding what remained of healthy liver, in the secretion of bile: the Quassia would act as a John + Stomachic, + to lengthen the patient’s powers of endurance.

Sennaria of Turpentine, Oil of Rue + Oil of Asafoetida, were administered to cause contraction of the intestinal canal, & thus relieve the flatulence which so distressed the patient.

Progress of the Case. Gradually but surely he continued to get worse: it will be seen that the girths over the liver steadily increased, as did also the Ascites. Thus
the pressure on the intestinal canal increased, its functions were more obstructed. The rapidly increasing oedema of the legs also showed that more considerable occlusion of the canal of the vena cava had been taking place. By this means also the kidneys would become more congested, and the excretion of urea be lessened. But no additional symptom was added to those which were already present, until the Dec. 25th, when coma supervened. This change I think most probably due to the occurrence of what is called "uremia". At page 32 I have given the reasons for believing the blood contained a considerable quantity of urea, and the delayed excretion of this principle may have induced its change into carbonate of ammonia, in which form its poisonous action on the system is probably carried on. Albumen was found in the urine on the 27th and 28th, thus throwing the congestion of the kidney to have increased.

The coma continued for 3 days, during which time the pulse rose in rapidity, while it lost in strength. The respiration also was affected. This would account for the congestion of the lungs, the large secretion of mucus into the bronchial tubes. This was the probable final cause of death, for his breathing throughout the whole night of Dec. 27th was accompanied by loud rales.
1. Vein with plate inserted before the flexure had commenced.
2. Vein after the flexure had been formed.
The examination of the body at once confirmed the surgical diagnosis, and furnished us with a precise explanation of the hepatic sounds.

We found that, leaving the hepatic disease out of the question, this man had evidently a constitutional tendency to atheroma of the large vessels, also to calcific deposit in these and other organs. It was also a singular circumstance that the disease was much more developed in the veins than in the arteries. The description of the Vena Cava Inferior has been given fully in the case, and scarcely needs further remark. It is probable that it became so twisted, from the enlarged Right Lobe dragging the hepatic portion of the vein towards the right, the rough calcific plate in the valve is an adequate explanation for the roughness of the second murmur. How this valve was formed appears rather mysterious, the only explanation which offers itself to me is, that the flexure in the vein occurring just where this rigid plate was imbedded, a certain separation necessarily took place between the lower edge of it and the walls of the vein; this portion of the plate would then project into the canal of the vessel, forming a rigid valve. I have endeavoured to explain this diagrammatically in the accompanying sketch: the plate is coloured red, the separated wall of the vein blue.
Dr. Bennett speaking of cancer of the liver says "It may occur in two forms - 1) That of distinct nodules, which have been so well described by Balfour & Parvæ, 2) more or less infiltrated in minute grains throughout the hepatic tissue. The former is by far the most common, and when it presents pro-
jections from the surface of the organ, these constitute the only positive proof during life of its being affected with cancer. In some rare cases I have seen these two forms run into one another." This case appears to come under the latter class: the difference between the hard white definite boss in the right lobe, the soft infiltrated condition in the left was very great. The difference in the microscopical appearances were still greater: a section of the hard nodule bore a strong resemblance to Fig. 405 in Bennet's Clinical Medicine, which is an illustration of a specimen of cirrhotic liver - the cells in Robertson's case appeared however to contain no granular matter to: the pustaceous matter afforded cells, which were doubtless of a can-
cherous nature.

free oil globules were found in considerable number, and this taken with the fact that the kidneys in some parts were in a state of fatty degeneration, + that there existed atrophia of the blood vessels, showed a great tendency to fatty transformation of tissues.

History: Was a healthy man until the last 3 years. Since then he has had occasional paroxysms of pain in the right side, which have not generally been accompanied by vomiting. Eighteen months ago he had a very bad attack, was confined to bed for a fortnight. On Dec. 30th of that year he felt a sharp pain in the right side, & this was accompanied by a slight rigor. He worked on till Jan. 1st, but since that day he has been confined to bed; a cough came on on the 2nd.

He has been an intemperate man for many years; was drunk on Jan. 1st & 2nd, & confesses to have taken three glasses of whiskey daily since. Three weeks ago he received a severe beating from a drover, and has not been well since then.


**Respiratory System.** Respiration 40 per minute.

Percussion gives a good note on the left side, both anteriorly & posteriorly: on the right side in front a good resonance is obtained as far down as the upper border of the 6th rib, but in the axilla only to the lower border of the pectoralis major, & posteriorly to the spine of the scapula. Below these points a dull note is obtained.

Auscultation on the left side reveals loud precious
breathing, mingled with coarse crepitation and sibilus, both in front and behind. The same is heard in front on the right side, except in the inframammary & lateral regions, where harsh tubular breathing, some friction was heard, also bronchophony, which changed into oegophony in the post-lateral region. Posteriorly, harsh juvenile breathing was heard in the supra-scapular region: abundant crepitation with oegophony under the spine of the scapula: and below this point, faint tubular breathing with oegophony.

The sputa were abundant, partly of a rusty & partly of a grass-green colour: it easily separated into two layers: the upper spumous & white, or rustily-coloured, in general: the lower liquid & greenish. On microscopical examination, red blood-corpuscles & white granular cells in great numbers, some tyrosine corpuscles were found in it. Nitric acid instantly coagulated it, giving the mass a light orange tint, but there was no decided play of colours. The Breath had a mercivial factor.

digestive syst. Tongue, moist and indented, covered with a thick white fur, and having some shallow longitudinal fissures. Gum pale: teeth irregular: loaded with tartar. Is of a constive habit, but on Jan 5th he took some 0. P. citrate, & since then has had two or three natural stools daily. Has taken no solid food since Jan 2nd, but taken milk and
Dulness in the hepatic region extends from the upper border of the sixth rib, vertically downwards for 3 inches. The spleenic dulness was normal. No ascites was detected.

Genito-urinary System. No history of syphilis. Urine is of a dark amber color: sp. gr. 1.025; deposit of urates: contains no albumen; chlorides deficient; urea, indican & purpurine in excess. Nitric acid gives a marked play of colours.

Nervous System. Sleeps badly, and dreams a good deal.

Frontal headache. Pain in the right hypochondrium, tenderness in the lumbar region: coughing aggravates the pain, and tenderness.

Integument System. A well built man. Conjunctive and skin have a decidedly icteric tinge. The skin has an oily feel. The acuminatus is diagonal, towards the left side. There is no sweating.

Treatment. Beef tea diet, wine 3 1/2.

Ry. Acid nitric dil 3/4

Acid. hydrochlor. dil 3 1/2

Sp. oem. nitrici 3 ix

Aquae ad 3 1/2.

M. 41 frist, sumat 3 1/2 totius horis.


Aquae ad 3 1/4.

M. 41 frist, sumat 3 1/2 arguti tussi.
Jan. 10th. Slept well, but wandered occasionally. Tongue dry, two-thirds partly covered with sordes. Feels very thirsty. Pulse 118; full, soft. Cough is easier. Respiration 44 per minute. The sputa & the urine remain of the same character as at first.

Jan. 11th. Slept tolerably, but was occasionally noisy. Tongue dry & gumminy; two-thirds covered with sordes. Pulse 120, full & incompressible. Respiration 40. Urine & sputa of the same character.

Auscultation showed in front & pnuemonia breathing with coarse respiration and bronchus on the left side & in the right subclavian & mammmary regions: below the mamma tubular-breathing and bronchophony was heard. In the 3rd lateral regions, the tubular breathing was harsher and there was oesophony. He was too weak to be examined posteriorly. He passed a clay-coloured stool this morning. In the afternoon he was dry-chapped between the shoulders: after this he dosed occasionally-talking loudly in his sleep. Towards evening his respirations increased to 54, & his pulse to 120 per minute. At 8 p.m. he got excited & delirious, and walked about the ward. At 10 p.m. his respirations were accompanied with loud râles, which with the delirium continued till 2:30 a.m. when he died.


Skin icteric: patches of extravasation posteriorly.
Thorax. A small volume of clear fluid was found in the pericardial sac. The coronary veins were much congested; there were firm clots in both ventricles. The pulmonary and aortic were both competent; their edges were frayed. The mitral valve was slightly thickened. There were patches of atheroma in the aorta.

The left lung was adherent towards the posterior part, close to the diaphragm: it was also oedematous and the bronchial mucous membrane was much congested.

The right lung was adherent both below and posteriorly, the strongest adhesions being posteriorly: the middle and lower lobes were coherent, and in a state of grey hepatization: the upper lobe was oedematous. From the adjoining portions of the middle and upper lobe a greenish frothy fluid could be pressed out, and the lung tissue at that point was stained green. The bronchi were much congested, and the mucous membrane velvety: white plastic matter was found moulded into the smaller bronchi.

Abdomen. The liver weighed 5lb. 13oz.: it was very fatty, contained but little blood. There were a few spots of portal congestion. The gall bladder contained three gall-stones + $\frac{1}{3}$ of bile; this separated into two layers; the supernatant being liquid, clear, & slightly coagulable; the lower consisted of an orange-red
flocculent precipitate, which gave the usual play of colours with nitric acid.

The kidneys were flabby, not congested; the capsule was
in some parts firmly adherent.
The spleen was pulpy; the stomach & intestines healthy.
The brain & Spinal Cord were not examined.

The history here told us of some chronic disease, probably of
the liver, existing for 3 years; and of an acute disease, either
of pleura or lungs, of 8 days standing.

On examining the more prominent symptoms, it was found
that the pulse had increased in a ratio of 61 percent
above the normal standard, while the respirations had
increased at a ratio of more than 240 percent. This
alone would inform us that a considerable portion
of the respiratory apparatus was unable to perform its
usual functions.

Physical Examination showed the Breathing apparatus to
be suffering from three separate lesions: (1) Pleurisy on the
right side, from the friction sounds in the inframammary
and right lateral regions (probably the 'red' friction),
from the egophony more posteriorly, which indicated
some liquid effusion in that region: (2) Pneumonic con-
solidation of the lower part of the middle lobes from the
dullness, tubular breathing and bronchophony heard over
Thus; from the red-coloured matter expectorated. [3] Capillary Bronchitis from the crepitation and bubus heard over the rest of both lungs; and from the expectoration, I have spoken of these as three separate lesions; but it is really hard to imagine a pneumonia existing without one, or both of the other diseases in greater or less intensity: if the pneumonia be not confined to the centre of the lung, the pulmonary pleura must share more or less in the excitement, and reversed nutrition of the lung tissue proper; and on the other hand it is still more difficult to conceive the morbid action and its effects, being cut short off at the entrance of the air-cells, while the mucous mem-
brane of the capillary bronchi remains in its normal condition. In this case however each of the lesions were extensive, and even if existing separately would have con-
stituted formidable diseases: the pleuro-pneumonia pre-
vented entirely more than a half of the right lung from performing its functions; and the rest of the pulmonary apparatus, which should have been doing double work, was clogged as it were, by the bronchitis, and prevented, more or less, from doing it.

Further examination showed the liver to be considerably enlarged, but there was no compression of the portal system, as no ascites was discoverable. Combined with this lesion we had anicteric tinge in the skin, t-
bile appearing both in the urine and sputum. This showed that the secretion in the liver was obstructed, or that there was a reabsorption of the biley matter: the blood being loaded more or less with the constituents of bile in excess deposited them in the tissues, or excreted them through other organs. The question arose here, whether there was really a vicious secretion of bile by the biliary membrane of the bronchii, or whether a fistulous opening had been established between the liver and the lower lobe of the right lung. This latter solution was rendered the more probable, from the fact that he had received a severe beating in December, since then had not been quite well. And the known cases of this latter lesion are much more numerous than of the former, a fact of much diagnostic value. As however this question was decided at the 'Sezio,' I will leave its further discussion, until we come to that part of the case.

The urine, besides containing bile, was remarkable in three other ways. There was a deficiency in chlorides, a fact well known now to occur in all pneumonias. There was excess of urea, caused by the destruction of tissue being increased by the inflammatory fever, which was considerable: and there was an excess of indican and purine, which showed, as in the last ease, that
the excretion of carbon from the system by its usual channels was much obstructed.
In forming an opinion as to the issue of this case, the man's dissipating character had first to be taken into account, and then the fact that a chief secretory organ (one too, much engaged in the well-being of the process of digestion) was considerably diseased. The system, thus weakened, was attacked by pleurisy, pneumonia, and bronchitis of such severity as would in a previously healthy man endanger life. Moreover, he had been under no medical treatment for the first ten days, and during that time had had free access to the whiskey bottle. Taking all these things into consideration, it will be seen that the prognosis must necessarily be of a grave character.

Treatmenr. He was put on a supporting diet, with his usual amount of stimulants. I cannot but think that a larger amount would at least have been borne well here, for the man was accustomed to daily potations, and a hospital diet would not agree with him much better than with London draymen, who take such enormous quantities of beer.

The first mixture ordered would act generally on the system as a tonic, it would also have a special effect on the liver. The Kebir Khus would have a diuretic action, and thus might aid nature in her
efforts to resolve the injured lung. The 2nd was a cough mixture; it would tend to loosen the expectoration, to quiet any irritation, and also to promote excretion by the skin.

Progress. We find that in three days the consolidation of the lung had rather increased, if anything; the other physical signs remained the same. The patient was also much weaker, the inflammatory fever had taken on a lower type. As he became weaker, there was of course less power to expand the chest, and the secretion of the blood became of course less perfect. During the night, he had been occasionally noisy, but on the evening of the 11th his head symptoms increased, and he became delirious and violent.

Speaking of delirium in pneumonia, Dr. Watson says: "Delirium is a symptom which very frequently occurs, and a very ugly symptom it is. It is a direct evidence that the pectoral mischief is telling through the circulation of venous blood, upon the brain." It proved here presymptomatic of a fatal issue, as he died at 2:30 A.M. the same night.

Sec. Both old and late atelectasis were found in the pleura; and the consolidated portion of the right lung was seen to be advanced to the state of grey hepatization and this very probably it had to some degree done.
before the man had entered the hospital. It appears to be still an unsettled question, whether or not, recovery can take place in this stage of pneumonia; and physicians certainly differ in a wonderful way about it. Dr. Watson says: "Whether, when the lung has reached this third stage, it is still susceptible of repair is a question, which no one can answer. I should think that recovery from diffuse suppurative of the lung is not possible." (Vol. II. 94). According to Dr. Binnett's view that the formation of pus and then its disintegration must precede the resolution of inflammatory effusion, this stage of the disease, instead of being a necessarily fatal, is the one, which in every case of recovery at least, must be passed through. Dr. Todd, of King's College, took a more moderate view of the subject; he says: "Recovery may take place at any stage of pneumonia. It generally follows red hematization; recovery in this stage of gray hematization is much more slow." And he describes the resolution of the lung to be accomplished by a "fresh effusion, which dissolves the plastic material, with which the cells and air-tubes were previously blocked up." (Clinics, 1845). The white plastic material seen occupying the smaller bronchi in the consolidated lung were very well marked. Perhaps the occurrence of bronchitis, obstructing the passage of air to the smaller bronchi,
might have aided in keeping the secretion there undisturbed, and so letting it form moulés of the tubes. Speaking of the spuita of pneumonia Dr. Todd says: "It is in this thick and viscid mucus, that we sometimes find those little casts of the finer bronchial tubes, which are almost pathonomonically characteristic of this disease."

The examination of the parts showed too that there had been no hepatic abscess, followed by a discharge of pus and biliary fluid into the lung: but we found a considerable part of the right lung, close above the consolidated portion stained green, and from it a spontaneous greenish liquid could be pressed; having the same characters as the expectorated matter. Dr. Watson (Vol. II 59) relates a case of bilious expectoration, almost the very counterpart of this one: jaundice came on during pneumonia, it was followed by the coloured spuita. The only difference was that the liver was apparently healthy, though containing rather less blood and bile than usual. It will be remembered that in this case the liver was very bloodless after death also.

Taking these two cases together, and considering that the stained portion of the lung in Mr. P.'s case was close on the borders of the consolidated portion, and that there was no coloured secretion present at all in the left lung, which was suffering only from bronchitis,
Think we must come to the conclusion that this peculiar expectoration did not have its origin in the secretion of the mucous membrane, but rather in the effused blood and liquor sanguinis in the stained and inflamed portion of the lung. And it is well known that the mucous membranes are generally free from urinary secretions and deposit in jaundice.

An interesting question arises as to whether in these cases the jaundice is merely an accidental occurrence or whether it was caused by the pneumonia. In the case of the theory it would suggest from the fact of his being a free-liver, addicted to alcoholic drinks, that he has far too much carbonaceous material in his system—too much indeed, with his probable exercise, for his liver, and lungs, to excrete: from these causes would arise first the fatty liver; we then have the excretion of carbonic acid greatly increased that suddenly by the pneumonia and bronchitis the bilious matter reabsorbed for excretion by the lungs is not all removed, it collects in the blood, and jaundice results. But in the case related by Dr. Watson there are no grounds at all for supposing that the liver was preparing too much work for the lungs to do, so one cannot reason with the same plausibility. But in regard to all this theory it might very pertinently be asked, 'why, when
pneumonia is such a common disease, are there cases of biliary expectoration so very rare? How, if his reasoning be at all correct, can they form but exception and not the rule?

The only answer, which I think we can give to these questions, is that in most cases, nature will take care to modify the supply according to the requirements, that in fact if the lungs are able to excrete less carbonic acid than usual, the biliary matter will be taken up by the blood in order to be excreted in that form.

I have been hindered by an unforeseen circumstance from adding to the number of these cases, and also from expending more time, and study upon them. I have endeavoured however to show in each commentary the sequence of the morbid changes which occurred in the two first-chronic cases. This was very well marked. In close connection with this topic is that of the mutual interdependence of those organs on which the nutrition of the body depends. We have seen how disease, beginning in the first case in the lungs, and in the second case in the liver, before death affected by one means or other all the chief organs. We find the Blood to be the great agent in these secondary changes, whether from some alteration
in the quality or relative quantity of its constituents, or from the physical laws of hydraulics or hydrostatics, from which as a fluid body it is not exempt. And again we have seen, more especially in the case of the kidneys, how readily a virulent action is taken up: no doubt the other excretory organs too act in analogous ways, but we are unable to estimate that action with the facility and exactitude that we are the changes in the renal secretion. We may judge from these instances how ready is nature to aid in removing disease from the system, though in these cases of course she failed in effecting a cure. And we must learn not only to follow her guidance when she leads the disease to a favourable issue, but also even in Fatal Cases to watch closely any palliative measures she may suggest, and follow them out to the best of our ability.

"Clinical Study is a new field of Observation and Research" and it is apparently a boundless one: the discoveries and theories of one year are upset by those of the next. Facts, if they be facts, will last, and the careful collector of them, though he must "learn to labour and to wait," will still be doing the best of all work for the Science and Art of Medicine.