On

The exudation of blood plasma into

the substance of the lung;

and

on the causes which modify the elementary forms of its organisation, disintegration, and destruction of the texture of the lung itself.

by

William Arthur jun.

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Plan of Thesis

i. Introductory observations.

ii. Short statement of the minute structure and economy of the Lung.

iii. On the Exudation of Blood-plasma into its substance and the causes or conditions which modify the elementary forms of its organisation.

iv. Conditions under which death takes place of the texture of the Lung itself.

v. Conclusion.

—over—
Analytical Outline

1. Introduction
   2. Structure of Lung: essential elements of its constitution; distribution of the bronchial tubes; form and disposition of the pulmonary vessels; arrangement of the pulmonary and systemic blood vessels; histological elements of the substance of the lung.
   3. Exudation of Blood: plasma into substance of the lung. Exudation of blood: plasma an essential condition of inflammation. Proof of the dyscrasia of the blood being the cause of internal local exudations. Influence of dyscrasia in modifying the elementary forms of organization. Analyzing the chronic conditions in 101 cases, forming the groundwork of Therioc- Clarification of those cases formed on the conditions of previous health or disease of the patient. Proof of an existing dyscrasia the cause of those effects (1) the constitutional symptoms, (2) the local exudation, (3) the elementary form of its organization. Tendency of exudation to become organized. Pathology of the granulations seen in a section of diseased lung. Morbid conditions under which the corpuscles of Hugh are formed. Cases in illustration. Influence of tissue on the elementary forms of organization. Formation of the pyrid corpuscles. Fibrous exudation, in human bodies. Of lung. Elementary organization in the form of firm. Morbid accumulation of fat in the lung. Conditions under which it takes place. Cases in illustration. Conditions under...
which the exudation assumes the elementary form of pus. Influence of certain morbid conditions of the blood in causing imperfect organisation of the exuded plasma. Influence of typhus fever in modifying the elementary forms of organisation - question of typhus deposits. Contamination albumenuria during the organisation of exuded plasma - pathological importance of this condition. Organisation of the exudation in the elementary form of cartilage - Case. IV. Conditions under which death takes place of the pulmonary type itself. Cases of gangrene of the lungs. V. Conclusion.

Explanation of Drawings - See page 154
The interest attending the study of healthy anatomy and physiology is only to be equalled if not surpassed by the prosecution of researches in the pathology of disease. Such researches constitute a living record in which the ever-changing phenomena of morbid organisations are described, and day by day a rational pathology is bringing about an accuracy and exactitude in the history of disease.

The importance attached to the structure and functions of any organ has always been in proportion to the necessity of its freedom from disease for the immediate support of life; and accordingly we find that the Brain, the Heart, and the Lungs have each and all of them, a great share of attention from pathologists.
[A] Gordon's anatomical and pathological observations

Page 54.
In the following pages, we propose to direct attention to the subject of the lung. The structure and economy of the lung forms one of the most difficult investigations in anatomy; and before we can arrive at any definite results in regard to its lesions, we must have definite notions of the structure and arrangement of the various parts which constitute its substance.

A lung, like a bone, is a texture which may be considered either by itself or in connection with the parts which usually accompany it. The subsidiary parts may be removed without interfering with the anatomical constitution of the texture, and then we find the lung composed of the ramifications and terminal ends of a hollow tube. It thus resembles a tree from whose trunk branches proceed, dividing into secondary branches in every direction by a definite autonomous division. The subsidiary parts supply it with material for its own nutrition, for the exercise of its peculiar function, and they act as a medium of connection with the component parts. The texture and arrangement of all these
parts which constitute the substance of a lung has led anatomists to consider the organ as a large gland; in regard to its nature and mode of development. The question here involved we cannot discuss. One prominent feature in its formation it is necessary to notice, and that is the exposure of the greatest possible amount of surface within the smallest possible compass to contact with the atmospheric air. Like other glands it is enclosed in an investing membrane of a serous character. Its substance is the ramifications and terminal ends of the bronchial tubes, with their nutrient arteries and veins, the pulmonary artery and pulmonary vein, all united by filamentous muscular tissue. All these enclosed textures are usually understood to form the substance tissue or parenchyma of the lung.

Of these textures, the filamentous muscular or uniting texture is the least of all abundant, and the little which does exist is so very tense, and arranged in layers so delicate, that it is seldom possible to inflate it as in other parts of the body. This anatomical fact explains the existence of that prominent feature in the constitution of the lung which we endeavored to express as peculiar bit;
Its existence is derived by Dr. Addison in Guy's Hospital reports - Vol 1. new series.
and it is a fact of the utmost importance in all explanations of pathological change. The existence of the uniting texture has been doubted, but it is susceptible of microscopic demonstration, so that those who deny its existence altogether may at any time satisfy themselves.

The exposure to the atmospheric air of an extensive surface of the lung is an essential element in its economy. This surface of exposure is found in the bronchial tubes and their terminal ramifications. The notions we entertain regarding the distribution of these tubes, and the conceptions we entertain regarding their termination will materially influence any explanation of their morbid condition. We shall therefore first of all direct our attention to the ultimate structure of the lung as exhibited in the distribution and termination of the bronchial tubes.

In reviewing the theories promulgated upon the air-cells of the lung from the days of Malpighi to the time of Reichersen we find that the accounts have not been varied; they have not partaken of that revolutionary character so common in the records of such researches. "Avant Malpighi, les anatomistes considéraient le parenchyme pulmonaire comme une substance opaquesse
Before the time of Malpighi, anatomists considered the pulmonary parenchyma to be a transparent substance in which the air came into contact with the blood for the purposes of life. Since that time, most anatomists believe that the bronchial tubes terminate in air cells, which constitute the pulmonary vesicles. That these vesicles are arranged in clusters in contact with each other forming lobules, that the terminal air cells of one bronchial tube have no direct communication with those of another, and that they are arranged in sequence to the pleura with the long axes of the lobule perpendicular to the surface of that membrane. It is also stated that the cells are of a definite form, but from the nature of the pulmonary structure, it is evident that the vesicles are capable of assuming any form which various degrees and directions of pressure may impart to them. As a result of this, the form they assume is generally sufficiently well-defined and preserved by the pressure of air within each vesicle, by their contact with each other and by the external pressure on the surface of the pleura. Accordingly, we find them...
assuming more or less of a tetragonal form as represented in Atlas - plate I figures 1 and 3.

Such is a short statement of the form and disposition of the pulmonary vessels which receive the air. We shall now as briefly state what we believe to be the mode of distribution of the bloodvessels, and lastly examine the histological elements of those tissues which enter into the composition of the lobule.

Independent of the bronchial arteries and bronchial veins which preserve a circulation in the lung analogous to that which exists in any other part of the body, the lungs possess the pulmonary arteries and the pulmonary veins which constitute a second circulation more considerable than the former and destined for the proper function of the organ. In consequence of such an arrangement of vessels the lungs are not to be compared with any other organ in the economy. The liver it is true possesses a special venous system peculiar to itself, but it does not possess another system of efficient vessels; there is therefore only one circulation of blood throughout its substance.

The difference between the circulation in the two organs is therefore explained by the existing difference in the mode of connexion of the capillary...
different and efferent vessels. The capillaries of the bronchial and pulmonary vessels form two vast networks which occupy in the lung two places perfectly distinct and limited. The vessels which supply these two networks of capillaries are afferent vessels or arteries which do not anastomose and are consequently independent. The other vessels, namely the veins or efferent vessels have in the contrary numerous communications amongst themselves.

The ramifications of the pulmonary artery are the constant companions of the bronchial tubes. This law, however, is subject to an exception; for the presence of the pulmonary air-vesicles determines a peculiar distribution of the pulmonary system in its varieties. Passing through the lung the artery is united to the bronchial tube by serous and muscular tissue, but with the lobule the arterial trunk is associated. The more intimately in proportion as it gets less and less. The artery then forms a plexus between two air-vesicles, which may extend over several or that in the interior of the lung the exact extent of a plexus cannot be ascertained. On the surface of the lung, however, their extent is more easily determined, and an individual plexus may there be seen.
to spread in some parts over an area of ten or
twelve air-vesicles, anastomosing frequently amongst
themselves and forming a cincture round the cells.
The average size of the vessels which constitute this
cincture is about .01 of a millimetre in diameter.
forming a membranous surface just as the pia-mater
upon the brain, or the periosteum upon bone. The
delicate nature of the capillaries which thus compose
the parietes of the air-vesicles is such that the
density of their in a state of health will not per-
mit more than one blood globule to pass at a
time, and some the plasma only of the blood. Such
an arrangement shows the intimate contact which
is established between the blood and the at-
mospheric air.

The same thus only one current of blood flowing
upon the parietes of the air-vesicle and moving
in a direction centrifugal to the air-tube.
The particles of the pulmonary vein form upon
the border of the air-vesicle and pass out from
its interior in an oblique direction to arrive at
the external surface of the bronchial tube. The
changes that take place in the cincture of the
pulmonary artery which ramifies in the air-
esicle is an increase in the diameter of its parts.
as it approaches to form the venous sacsicles. On the exterior of the bronchial tube they constitute by their union a venous trunk which accompanies the aeral canal on the side opposite to the artery.

The Bronchial vessels are destined for the nutrition of the lung, and in this respect they correspond with the arteries and veins in any other part of the body, but occupy by their capillaries the same spaces in the texture as other capillaries do, except in that portion of the lung destined for the function of oxygenating the blood, a portion which is exclusively occupied by the capillaries of the pulmonary artery. The Bronchial capillaries form a network in the inter-lobular tissue of the lung and are never found within the air vesicles. The bronchial veins form a network in the visceral membrane of the bronchial on which the arrangement of their capillaries is well shown.

On the surface of the pulmonary lobule the bronchial veins may be distinguished from the pulmonary superficial veins by their small size -- by the number of circles which they describe, and by their constant situation on the exterior of the membrane which constitutes the air vesicle.

As regard to the mode of communication
found to exist between the two systems of blood-vessels which we have just described, we state this following as the result of experiments by injection made by M. Rossignol. He found that there exists no direct communication between the bronchial arteries and the pulmonary arteries, but, on the contrary, that numerous communications exist between the pulmonary veins and the bronchial vessels.

1. Dans les injections faîtes par les artères bronchiques, le liquide revenait en abondance par les veins pulmonaires, en bien moindre quantité par les veines bronchiques, et on n'en retrouvait aucune trace dans les rameaux de l'artère pulmonaire.

2. Par les artères pulmonaires, l'injection revenait en entier par les veines correspondantes et jamais par les artères bronchiques.

3. Enfin, l'injection poussée par les veines pulmonaires remplissait tous les autres vaisseaux sanguins du poumon, c'est-à-dire, l'artère pulmonaire, les artères et les veines bronchiques.

The histological elements of the pulmonary lobule now present the last subject for examination.

These elements are found to consist.
1. The proper membrane is best seen in a lung where infection is commencing. On removing the pleura
we find a membrane impermeable to air and
resistant to any distending force, and distinct
from the walls of the air-vesicles. It is a mem-
brane formed of a layer of very fine elastic fibres
intermingled with fibres of cellular tissue.
2. The lining of the bronchi consists of a bed of
vibratile epithelium, of which the cells are in the
form of cones or long pyramidies. 2. A layer of bases-
ment membrane. 3. A plate of longitudinal
fibres, formed by the thickened ends of elastic tissue. 4.
Another layer of irregular circular fibres somewhat resembling
muscular fibres of the membrana propria of the trachea.
The vibratile epithelial cells vary in dimensions
according to the calibre of the air tube which they occu-
py. In the trachea they vary from .06 to .1 of a
millimetre in length. In the smaller divisions of
the air tubes they are not more than .01 or .03 of
a millimetre in length.
The mucous membrane of the bronchial tubes passes into the pulmonary lobule, but it there appears as a transparent layer, thin and without any trace of fibres. The fibres in the tubes run parallel and press closely upon each other. When they are isolated they describe arcs of circles, their borders are obscure and perfectly smooth and they are sometimes broken. Acetic acid has no action upon them.

3. The parietes of the air vesicles are formed:

1. By a network of fibres, which leave between them interlobar spaces. 2. By a transparent membrane in which there is no trace of fibres, but which is reflected over the interlobar network and fills the interlobar spaces.

The fibres are long, elastic and bent upon themselves, exhibiting all the characters of elastic fibres. Acetic acid does not affect them.

On entering the air vesicle the epithelium which in the bronchial tubes had been columnar and ciliated becomes pavement, composed of round or oval cells. The largest of them is not more than .003 to .01 of a millimetre.
The pathological epigenesis of exudation into the substance of the lung has not yet been fully made out. Although constitutional symptoms and physical signs may indicate disordered function and organic change, we have not yet established the various steps in the rise, progress and final result of those exudations on whose presence the disordered function and organic change depends.

"Inflammation of the pulmonary parenchyma" says Andral "is at this day one of the diseases best known," but we know that at this day it is also one of those diseases whose pathology is not well known. "There are many particulars regarding the anatomy of pneumonia on which the researches of authors are confessedly imperfect. The anatomical relations of the exudation, the circumstances under which it is generated, as well as the conditions which modify the changes it undergoes are not yet clearly defined."
lung connected with the exudation of blood-plasma. We propose in the following pages chiefly to direct our attention, illustrating our positions by cases which have come under our own observation in the Edinburgh Royal Infirmary. We shall endeavour to trace the lesion into the ultimate tissue of the organ, and ascertain those circumstances which modify the organization of the exudation, observing its ultimate issue in death, in adding organic mischief or in resolution.

It is impossible always to tell by the naked eye whether or not any given lung is the seat of an exudation, determine it is less possible is to say what is the nature of the exudation without the assistance of the microscope. Blood-plasma exuded into the pulmonary substance is the same, in a pathological point of view, as in any other part of the body, and in whatever organ such a lesion occurs, it must undergo various modifications and changes in relations, depending, in some degree, upon the anatomical structure of the part. So it is with the lung. Under what circumstances are we to regard a lesion in the substance of the lung as the result of inflammatory action, commonly so called? It will be found to be so when the lesion consists of an exudation of blood plasma which becomes organized in various forms, depending upon conditions for the form of organization, some of which it is the object of
(1) Bennett "Treatise on inflammation" page 60.
our thesis to describe. The peculiarity of the structure of the lung, however, modifies in some degree the appearance of the exudation in its substance. The Hépo-Sanguinis is at first exuded in the fluid form, and in this state it invades itself among the elementary structures of the organ, filling up every minute space; and, when it coagulates the tissues of the part are completely blocked up as if with cement. The blood-vessels, and other structures are surrounded by a solid mass in the same manner as the stones in a wall are surrounded by mortar. Hence increased hardness, density, and weight are communicated to such a structure, constituting in the lung those states described as hypatization, sclerosis, and coagulation.

In considering the changes which the coagulated exudation undergoes in the pulmonary substance, we shall find that there is a general tendency in it to become organised, and it is only under certain circumstances that it tends to undergo rapid disintegration or decomposition and to involve the substance of the lung itself in death. These circumstances I shall endeavour to describe.

Like all other morbid processes, the exudation of blood plasma in the lung is most conveniently considered with reference to its stages, which for all practical purposes have been sufficiently well determined by Laennec.

In the first stage no exudation of blood plasma occurs.
Respecting the character presented by a lump in which the first changes produced by the inflammatory process has commenced, there is little difference of opinion. An excess of blood in the part followed by a serious effusion, and a decrease in the firmness of the parenchyma, are allowed by all to be the most distinctive features.

The capillaries in different textures of the body frequently appear to be dilated to a greater or less degree, and to be over filled with blood. This condition of dilatation appears to exist under these circumstances, considered either as (1) inflammatory or (2) as non-inflammatory. Injection of the capillaries exists:

1. as the invariable condition of a part in which an exudation of blood-plasma is about to take place.

2. as the result of deficiency in nervous energy and the consequence of precipitation.

3. In the phenomena of blushing and the vascularity of erectile tissues.

Having determined the existence of these three conditions, a question immediately suggests itself, namely: Is it possible to distinguish congestion in a part about to be the seat of an exudation of blood-plasma, from these other congestion which we have stated to exist? Almost every author on pneumonia maintains that there is no ground of distinction sufficiently well marked.
2. Dict. de medicine et de chirurgie pratique - t. 13 p. 36.
4. Archi generales - t. x.
5. Dict. de med. et chirurgie pratique tom. xvii.
between the engagement of inflammation in its first-stage and those congestion which we have specified. Audoual considers the anatomical characters of the hyperemia as the same in all cases, so that the nature of the morbid serum found on dissection is to be judged of according to the nature of the symptoms during life. Brouil-land, Williams, Hornman and Dechambre are of the same opinion. Chemel, however, attaches more importance to the morbid appearances after death, and promotes his opinion as to the existence or non-existence of inflammation on the presence of softening in the texture of the lung, considering friability of the lung which is one character of pneumonia as a sufficient ground of distinction between it and congestion. But there are conditions of the lung which present all the morbid appearances of pneumonia to the naked eye, as far as consolidation, non-crepitation, and friability are concerned, but during life the physical or constitutional signs of pneumonia not having been revealed, no distinction can be drawn with certainty between the appearances presented and congestion or effused blood. This is more particularly the case in that condition of the lung described as hemor-
chagic hepatitis, and the pneumonia of the dying, a condition which frequently follows surgical operations or where death takes place by way of asphyxia.
(1) See drawing XIV fig 5.
In such cases there is no organised exudation of blood-plasma; there is merely congestion and effusion of blood, which may undergo those changes which effused-blood invariably undergoes. The existence of friability along with the congested appearance is not conclusive, although it adds to the probability of the existence of exudation. Friability of all that leucocyto is a constant consequence of the existence of Typhus fever when no exudation has taken place, as well as of organised exudations of blood-plasma in any part and under any conditions. These are facts which constitute a sufficient ground of fallacy. Under these circumstances it is therefore of importance if microscopic observation or any other mode of research shall be found sufficient to establish a difference between inflammatory and non-inflammatory congestion. The difference, however, has not yet been discovered and if ever it shall be we must search for the distinctive features in a change of the blood itself.

In reviewing the various theories of inflammation and the changes which are described to take place in the blood, it is impossible to do so with the notion that a specific dyscrasia exists which is at once the cause of the constitutional disturbance and of the exudation into the internal organs. The crowding together of the blood corpuscles, and the formation

12. See Dr. Baylie on Aberration and Chorea - p. 15 - as also Dr. Taylor on the Causes of Deformities in 28th vol. of Royal Medical & Chirurgical Society's Transactions - 1845.
formation of a buffy coat has long been supposed as an appearance especially connected with an inflammatory state. To this dyscrasia Piniy has given the name of "Hematitias." It has also been shown by Andral and Bavauret that during inflammation an excess of fibrin exists in the blood and that the proportion is not only increased relatively to the blood-globules and its other constituents, but also as regards the amounts of this fluid in the body. It is also known that the blood is more inclined to adhere or stick to the surrounding parts, and that its corpuscles also possess this property in regard to each other. This increased adhesiveness can only originate in a change of the vital force - (1) of the blood, (2) of the surrounding parts or (3) of both these elements together, and lastly so much in the healthy constitution of the blood affected during the existence of inflammation that some are inclined to consider such diseases as Acute Rheumatism to be dependent on a morbid condition of the blood. (2) From all these circumstances we are convinced, and it shall be our object in this paper to show that during the progress of extensive internal inflammation a dyscrasia of the blood exists - that it is owing to the existence of some such dyscrasia that these exudations appear which are made apparent by the microscope after death, and that the series of changes which take place in a part while exudation of blood-plasma.
has occurred depend for their forms of organisation as much upon the particular dysfunction which exists as upon the stage of development at which the organisation of the exuded plasma has arrived at the period of examination. These positions shall be illustrated by reference to the exudation of blood-plasma in the substance of the lung. The cases in which exudation into the substance of the lung has contributed in no small degree to cause death; or in which no other local lesion was apparent after death to account for the fatal termination of the case have been 101 in number from June 10th 1847 until March 13th 1848. It is true that as far as diagnosis during life could indicate, there have been many more cases of pulmonary disease which have proved fatal, but owing to the imperfect arrangements which exist in "The Royal Infirmary of Edinburgh regarding post mortem examinations only 101 have been inspected after death."

The data supplied by these 101 cases of which we give an analysis of the morbid conditions in the following table has furnished the groundwork of our Thesis.
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Age</th>
<th>Cause of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 3</td>
<td>36</td>
<td>Tubercle of Lungs, Pneumonia of aorta, Hyper trophy of heart</td>
</tr>
<tr>
<td>2</td>
<td>...</td>
<td>39</td>
<td>Tubercle pneumonia, and hepatic congestion</td>
</tr>
<tr>
<td>3</td>
<td>...</td>
<td>19</td>
<td>Tuberculosis, pneumonia, gangrene</td>
</tr>
<tr>
<td>4</td>
<td>...</td>
<td>19</td>
<td>Tuberculous sputum in intestine, peritonitis, lobular pneumonia, prominent deposits in both lungs</td>
</tr>
<tr>
<td>5</td>
<td>21</td>
<td>21</td>
<td>Typhus fever, gangrene of the cavities in lungs, containing clots of blood, great fineness of its texture</td>
</tr>
<tr>
<td>6</td>
<td>21</td>
<td>46</td>
<td>Typhoid fever, pneumonia, gangrene of lungs</td>
</tr>
<tr>
<td>7</td>
<td>22</td>
<td>19</td>
<td>Typhus fever, empyema, edema in spleen, and lungs</td>
</tr>
<tr>
<td>8</td>
<td>22</td>
<td>40</td>
<td>Perforation, secondary deposits in lungs after the separation of a large slough</td>
</tr>
<tr>
<td>9</td>
<td>23</td>
<td>17</td>
<td>Typhus, empyema, diffuse gangrene of lung</td>
</tr>
<tr>
<td>10</td>
<td>July 2</td>
<td>27</td>
<td>Typhus, pneumonia, empyema, edema in lungs, and bronchial glands</td>
</tr>
<tr>
<td>11</td>
<td>27</td>
<td>47</td>
<td>Typhus, pneumonia, empyema, hyper trophy of heart, pneumonia</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>18</td>
<td>Typhus, enlarged and soft spleen, empyema, edema in lungs</td>
</tr>
<tr>
<td>13</td>
<td>5</td>
<td>31</td>
<td>Typhus, empyema, edema in lungs</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>28</td>
<td>Typhus, large spleen containing and empyema, exudation into lungs</td>
</tr>
<tr>
<td>15</td>
<td>13</td>
<td>32</td>
<td>Typhus, empyema, edema in lungs</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>28</td>
<td>Typhus following typhoid fever, empyema, edema in lungs, prominent empyema, edema in lungs</td>
</tr>
<tr>
<td>17</td>
<td>14</td>
<td>32</td>
<td>Typhus, heart, soft, enlarged, flabby, empyema, edema in lungs</td>
</tr>
</tbody>
</table>
July 10. 30. (Typhus) - intestinal glands open and empty - often large exudation into lungs.

19. ? (Typhus) heart flabby - spleen soft - bronchial glands enlarged - exudation into lung.

20. 19. 21. (Syphilis) - pericarditis - pleurisy - pneumonia.

21. 20. 21. 38. (Typhus) exudation of bronchial glands - lobular pneumonia - consolidation of

22. 21. 31. (Typhus) jaundice - consolidation of inferior lobe of right lung -

23. 21. 31. (Typhus) jaundice - consolidation of inferior lobe of right lung - from exudation.

24. 28. 30. (Ill health for two months - swelling of the legs - bleeding gums and exudation) enteritis and exudation - lower lobe of left lung - new from exudation - granular and friable.

25. Aug. 1. 49. (Bright's disease) congested liver - carniified lung.

26. 3. 10. (Typhus) tuberculous exudation into lung and pleura.

27. ? (Brucellosis) whole right lung carniified except upper half of superior or lobe.

28. 6. 20. (Fever) - pneumonia - gangrene.

29. 2. (Tuberculosis) parietal abscess - subcutaneous swellings - fatty liver - lobules of pneumonia.

30. 11. 35. (Bright's disease) fatty liver - exudation into lung.

31. 17. 32. (Typhus) sterile pockering from exudation into spleen - exudation into left lung - pockering and exudations in right.
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Age</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Aug 18</td>
<td>34</td>
<td>(Bright's disease) eczematous - double pneumonia.</td>
</tr>
<tr>
<td>33</td>
<td>19</td>
<td></td>
<td>(Rapid health for three years) pleurisy - condensation into left lung.</td>
</tr>
<tr>
<td>34</td>
<td>21</td>
<td></td>
<td>(Depression of heart with dilatation) pleurisy - pneumonia.</td>
</tr>
<tr>
<td>35</td>
<td>22.37</td>
<td></td>
<td>(Typhus) - softening of brain - gangrene of lung.</td>
</tr>
<tr>
<td>36</td>
<td>23.37</td>
<td></td>
<td>(Typhus) - spleen large and soft - pneumonia of left side.</td>
</tr>
<tr>
<td>37</td>
<td>27.27</td>
<td></td>
<td>(All health) gangrene of lung.</td>
</tr>
<tr>
<td>38</td>
<td>18.58</td>
<td></td>
<td>(Typhus) - spleen large and soft - ulceration of Peyer's glands - erysypelas of upper lobes.</td>
</tr>
<tr>
<td>39</td>
<td>28.6</td>
<td></td>
<td>(Bright) pleurisy - peritonitis - pneumonia.</td>
</tr>
<tr>
<td>40</td>
<td>Sept. 1.38</td>
<td></td>
<td>(Typhus) - condensation and gangrene of lung.</td>
</tr>
<tr>
<td>41</td>
<td>15.18</td>
<td></td>
<td>Pneumonia - erysypelas.</td>
</tr>
<tr>
<td>42</td>
<td>22.51</td>
<td></td>
<td>(Bright) deposit in spleen - contraction of mitral orifice with hypertrophy - oedema of lung with hyperpneumonia.</td>
</tr>
<tr>
<td>43</td>
<td></td>
<td></td>
<td>Softening of cor pulmonale - pneumonia.</td>
</tr>
<tr>
<td>44</td>
<td>Oct. 6.42</td>
<td></td>
<td>(Tuberculosis) gangrene of lung.</td>
</tr>
<tr>
<td>45</td>
<td>12.50</td>
<td></td>
<td>(Gummow kidney) pneumonia.</td>
</tr>
<tr>
<td>46</td>
<td>13.36</td>
<td></td>
<td>(Tuberculosis) grey vitiation - gangrene of lung.</td>
</tr>
<tr>
<td>47</td>
<td>14.31</td>
<td></td>
<td>(Tuberculosis) pneumonia (intemperance).</td>
</tr>
<tr>
<td>48</td>
<td>15.39</td>
<td></td>
<td>(Bright) enlarged spleen and liver - pleurisy - pericarditis - condensation of lung.</td>
</tr>
<tr>
<td>49</td>
<td>20.29</td>
<td></td>
<td>(Fever) light-contained condensation into lung about size of a walnut.</td>
</tr>
<tr>
<td>50</td>
<td>23.58</td>
<td></td>
<td>(Heart disease) condensation of lung.</td>
</tr>
<tr>
<td>51</td>
<td>23.34</td>
<td></td>
<td>(Intemperance) gangrene of lung.</td>
</tr>
</tbody>
</table>
30 Oct 30

(Emphysema) sypholisation into lung.

18 Nov 31

Abcess in abdomen opening into lung.

12 Dec 18

(Fat) sypholisation into lung.

15 Dec 18

(Fat) sypholisation into lung.

19 Dec 18

(Fat) sypholisation into lung.

20 Dec 18

(Fat) sypholisation into lung.
Marble Condition

Date

1547

Secondary.


11. 36 (Fem) pneumonia - grey pleuritis - edema - fluid in pleural cavities.

13. (Typhus) enlarged spleen - pneumonia.

18. (Typhus) enlarged spleen - pneumonia.

1. (Typhus) congealed kidney - deposits in spleen - edema in lungs.

13. (Typhus) congealed kidney - double pneumonia.

10. (Typhus) deposits in spleen - pyocele - edema in lungs.

11. (Typhus) deposits in spleen - pyocele - pneumonia.

16. (Typhus) deposits in spleen - pyocele - edema in lungs - pneumonia in intestines - pleural pneumonia.

16. (Typhus) deposits of right ventricle - enlarged auricles - ventricular enlargement - emphysema - congestion of kidney - pleuritis - right lung.

23. (Typhus) left pleural emphysema - nodules of lungs.

24. (Typhus) incomplete emptying of coughing - regurgitation - concretion of lungs.

1848

35. (Typhus) enlarged and tubercular kidney - enlarged spleen - pneumonia.

29. (Typhus) deposits - oleplastic adhesions - grey exudate - fluid in lungs.

11. (Typhus) above behind the spleen - scirrhous degeneration of phrenic glands - double pneumonia.

13. (Typhus) jaundice - small cell duct in kidney - pneumonia.
Morbid Condtion

1878
88	Sever. 21
(continued from,fleecy, pneumonia, debris in spleen,
expectoration in lungs, confusion of peritonitis, ?
of subserous tissue of stomach)
89. 21. 3 (taffy) fleecy, hypertrophy of lung, gangrenous of
beef ball
90. July 17. (flue) thickening of peritonitis, death of
peritonitis, lobular pneumonia
91. 11. 16. (taffy) Autolysis, prominent infiltration of lungs and
endocarditis
92. 15. 50. (intermixture) squared, sepsis, cysts in kidney with
attachment of structure, paralytic, double pneumonia
93. 14. 22 (taffy) non-recovery of lung, prominent infiltration
94. 21. (taffy) congestion of kidneys, splenic, exudations
expectoration into lungs
95. 23. (taffy) eggerbloc, rounded hypertrophy going on to
suppression, tonsillitis, laryngitis, sterile jaunty, gastritis,
hemoptysis, hypertrophy of lungs
96. 27. 40. large soft, fatty, heart, ovarian cyst, ascites, sue -
pleurisy, pneumonia
97. Oct. 7 19 (taffy) expectoration in lungs
98. 43. 50. (fatty liver) pleurisy, pneumonia
99. 9. 22. (flue) debility, pleurisy, hydrocephalus
100. 10. 20. (cerebral bleeding) pneumonia
101. 13. 34. (flue) Fatty liver, expectoration in lungs
Table II.

A more condensed result of the preceding table may be stated as follows: Exudation in the lungs being present in:

56 cases of fever, (34 of typhus and 22 of continued fever)
13 in which Bright's disease existed
13 were marked by a cachexia, indicated by bad nutrition, interstitial and venous local lesions
6 of heart disease (fatty heart, hypertrophy, stenosis)
4 of tuberculosis
2 of secondary deposits
2 of variola and scarlatina
2 with an other apparent lesion
2 in which disease extended from neighboring parts
1 in with softening of calvaria or astragals.
When we come to regard particular cases it may be found of importance to be able to refer any individual case to one of two classes; accordingly these cases admit of being further subdivided into two classes founded upon the condition of apparent health or disease in which the patient may be when exudation of blood-plasma takes place into the pulmonary parenchyma.

1. Into those cases occurring in persons apparently in good health, or during the course of some other acute disease such as inflammatory fever or typhoid.

2. Into those cases occurring during the progress of some disease of a malignant type, or during habitual indisposition. Under this class we rank Bright's disease, Syphillis Fever, and such like.

In the first class we enumerate 35 cases.
In the second class we enumerate 66 cases = 101.

Some of the cases given in the analysis we shall examine more particularly with reference to the exudation as modified by some one of these causes; but from the whole analysis we may derive some facts relative to the general cause of exudation into the substance of the lung as well as of other organs.

Out of 101 cases of exudation in the lung we find that 56 of these occurred during the progress of Fever. Of these 56 cases 34 occurred during the progress of Typhus and
A particular record of this case will be found at page.

I have found that the local affliction being caused from typhus, and the symptoms being recognised as being consistent with typhoid symptoms, as also the general condition of the patient being consistent with the symptoms of typhoid, the patient has been treated accordingly, having been given medicament against typhus.
and 22 during the course of continued fever or of dyspepsia. In 10 of the cases where the exudation occurred during the progress of Typhus Fever, the lung was the only organ affected. In the remaining 24 the exudation was joined with other organs besides the lungs. In 12 cases the spleen was affected in 9 the spleen, in 5 the intestines, in 4 the liver, in three the pericardium, in 2 the heart was soft and flabby to a marked degree, in one there was gangrene of the toes, in one there was softening of the corpus striatum and in this case the lung was in a state of gangrene; in one there was extensive ulceration of the tonsils, larynx and pharynx demonstrating the operation of tracheotomy which was performed but without success. Next to the lung therefore which was more or less affected in all these cases, the spleen seems to have suffered next in frequency, and the other organs in the order in which we have enumerated them. Out of the 101 cases, 13 had Bright’s disease with exudations into other organs besides the lungs; 13 were marked by a cachetic state of the body as indicated by long ill health, intemperance and various local lesions and exudations into other organs; 6 suffered from heart disease; 4 had tuberculosis; 2 were the subjects of secondary deposits; 2 of Variola & Rubella; in 2 the exudation extended by continuity to contiguity of textures, in one case there was softening of the corpus striatum, and
in 2 cases only there was no exudation except what was found to exist in the lung.

The general universality of the lesions is the most important feature brought out by such an analysis—a feature sufficient of itself to maintain the probability that no immediately existing cause is able to account for such extensive exudation into the most vital and important of the internal organs. In the analysis we have given of the morbid conditions in all the cases, we have stated that pathological state first, and enclosed it within brackets, to which we conceive the most importance is to be attached, as indicating a state of the constitution which may exercise an influence over the development of the exudation, whether in the lung, or in any other organ. Between the existence of the exudation and the presence of any of the morbid conditions of the body, such as Syphilis Venereal, Bright's disease, Dyspepsia, Dyspepsia or Variola we are to recognise the same relations existing, for in all these conditions we have evidence of a dyscrasia existing in the blood.

During Bright's disease we know that a non-elimination of urea is a constant pathological condition—that during its course there is a great liability to exudations of blood-plasma in various internal organs—a liability proportioned in some degree to the amount
(1) By considering the dyspepsia of the blood to be the great cause of
the dyspepsia Fever and of the exudation we are enabled to ex-
plain the occurrence of a series of symptoms which invariably
prove fatal unless they are found to be associated with the
epileptic constitution or with delirium tremens. I refer to the
occurrence of Convulsions of which I witnessed 50 cases in the
Hospital within 21 days during the month of February 1848. None
of these cases were associated with the epileptic constitution,
or any lesion in the kidney, or in none of them was there suppression of the urine, and in
none was there any appearance found after death sufficient
to account for the occurrence of convulsions, but the mode of
death so much resembled that of a person under the influence
of a poison that I could not do away with the notion that
the convulsions were caused by a morbid condition of the blood.)
of contamination which imperfect action of the kidneys causes in the blood— thatthese internal exudations of blood—
plasma can be justly referred to the blood alone.

During the progress of Typhus Fever we know that there
is also a great liability to the occurrence of exudation
in various organs, more especially in the lungs, spleen,
plasma, intestines, liver and pericardium— that the
occurrence of these exudations bears no proportion to
the apparent severity of the Fever, for frequently cases
of intestinal lesions, as well as lesions of the lungs and
spleen are discovered after death when no knowledge
of their presence could have been made from symptoms
existing during life— that no immediately exciting cause
could account for the exudation and lastly, that the
number of parts affected showed the universal nature of
the cause.

These considerations, perhaps, be no better illustrated brought
forward of the association of inflammation or exudation
of blood—plasma with a vitiated condition of the blood,
than that which is afforded by the exudations during
the course of exanthematosus diseases. In the condition
of scarlatina we have an exudation in the throat, 50
suffer from which the faces seem to be especially
susceptible. In Pocka, or Variola, the lungs are the chief seat
of exudation, in Variola the skin and the intestinal canal.
Our responsibility. I did think the
question at every moment. It was simply the
Biblical teaching. I'm sure the prayer to God to
enlighten us from what the Bible teaches. We
stood in it. It was referred to the council, but of
ministers.

Another remedy. No. I'm not hearing of it. It's
another disease.

This may be a subtle one. Causally
in the Thicket. Anodyne in the case. Can you
consider the extraordinary influence a new work.
These facts show that where such exudation into internal organs accompanies such diseases where a morbid condition of the blood evidently exists, the exudation must be ascribed to that universal and constitutional cause. The cases of secondary deposits as well as of tuberculosis in which an unnatural state of the blood exists bear the most direct testimony in favour of this view. The character and amount of organisation which the exudation attains must therefore also be examined in relation to the morbid condition of the blood, and I hope to be able to show that as the blood departs from the healthy standard so will the character of the exudation change. Again if we look to the immediately exciting causes of the exudation into the lung we shall find that they are usually described as those which are also the immediately exciting causes of Bright's disease, of typhoid fever, of measles or of tuberculosis. Inadequate clothing, cold, wet or intertemperance have been looked upon as the common cause of all; but how frequently do exposures to all these tinctures fail in inducing disease, until a change not usually perceived predisposes the individual to modifying agencies. The change is a gradual one commencing in the fluids of the body and brought about under the influence of circumstances prejudicial to health, such as the influence of contusion or of misfortune. The particular change is the system to which we
in the solidogla when oilers hands are unusually well developed, they are frequently the seat of a defect under different conditions of their system.

I think this statement should have in my simply illuminating form and I think that may and need be done better.
would therefore ascribe the occurrence of local exudation appears most probably to consist in a vitiated condition of the blood, from the presence of some morbid matter or from an excess of some natural constituent. That an exudation depending upon such a general cause should locate itself in one organ rather than in another is a question still un

determined. If any explanation can be given the most rational one appears to me to bear some relation to the fact that increased activity of function in an organ renders it more liable to the exudations of blood-plasma in its substance; and as we have already seen that the anatomical constitution of the organ modifies in some degree the exudation in its texture, the tissues of which it is composed may have some affinity for the morbid material in the blood or the natural ingredient which is in excess. In warm climates we know that the activity of function in the liver is increased, and we also know that in warm climates the liver is the organ most frequently by the seat of exudation. In females in whom unusual activity of the generative organs exists, the uterus is frequently found to be the seat of disease, and in circumstances where the functional activity of the lungs is increased we are likely to have exudations of blood-plasma in its substance.

The particular form of organization which the exudation assumes, and the degree of perfection to which it attains,
are also to be referred in a great measure to such a systemic agency as a diseased condition of the blood; and it will be seen to depend more upon the nature of the constitutional evil than upon the particular stage at which the exudation is examined. This circumstance is more particularly seen when we contrast the pulmonary exudations in the various conditions of disease. Thus the exudations during the progress of Typhus Fever, Tubercularis or Brights disease differ in respect of organisation from each other, although the differences are not always as well marked as to enable us to determine by microscopic examination merely, that the specimen presented to us is characteristic of Typhus or Tubercular deposit or of exudation during Brights disease, without also taking into consideration the circumstances under which the deposit occurred.

The explanation we have now given of the general cause of the exudation we shall find to be consistent with the recorded facts of the individual cases, and also with the relative appearances presented by a minute examination of the exudations.

We therefore look upon the morbid condition of the blood as the cause of these effects.

(1) Of the Fever or constitutional symptoms which accompany or precede the forming out of --

(2) The exudation of the Blood Plasma --
I am quite new at this, I am sure I could not explain an opinion of my own unless I had been more at ease. I am not alone turning it as an abstract to the whole history of man, in making body as much as mad. I am making (as all do) that it is easier to write from without than from within, and I wrote this some time afterwards. I am not sure that it is anything which you can finish.

As under this second modifying cause we also include the effect of the particular stage at which the morbid product becomes the subject of observation.
From these observations it is apparent that the notion we entertain of the term "Inflammation" must be fixed by convention alone. The word itself conveys no literal signification consistent with rational pathology, and the meaning we attach to it obliges us to consider under one head all exudations into tissues composed of blood-plasma and depending upon some morbid condition of the blood as the most common cause.

We shall now proceed to consider the organization of the exudation in the lung.

When the first local lesion has occurred, namely, the rupture of the capillaries, accounting for the presence of blood globules in the expectorated as well as in the products of exudation, the more characteristic, appreciable and unmistakable changes take place in the diseased part itself and in its secretion. We have already noticed that the tendency of the exudation is to pass into organisms of a particular form, and we shall find that these organisms formed depend for their characteristic appearances (1) on the nature of the morbid condition of the blood and (2) on the amount of vascularity which the affected part contains. In other words, the character of the new formations will vary with the quality and quantity of the blood.

We are inclined to ascribe much more influence to
These two circumstances in modifying the appearances of the exudation, than we are willing to allow to the power of affinity exercised between the histological elements of the structure and the constituents normal or abnormal of the blood.

When the first change in the exudation takes place, the junctions of the capillary vessels are not suspended, circulation although impeded still goes on in the part, and while effusion of blood-plasma and extravasations of blood are distributed into every minute space imparting a degree of solidity to the tissue, a great portion of the serum is at the same time rapidly absorbed. The quantity of red blood corpuscles extravasated with the blood-plasma varies with the amount of rupture which has taken place in the capillary vessels, and on this circumstance does the redness of the exudation depend, along with the increased amount of capillary injection. By this change, the lungs at first sight would seem to acquire increased hardness, and in point of fact it becomes more dense and rapidly sinks in water. Reflection, however, will show that the term hardening here is merely comparative. A lung so affected is undoubtedly harder and heavier than it was in its previously spongy light and healthy state, in the account of the displacement of air by the solidified exudation. But if the spring be turned into a healthy
11. Remnetus loc. cit. page 54. Anna Andres, '-speaking Dutch, 

depicted burying as Ephraim. 

and then into a hepatised lung it will be found that, whilst the former offers considerable resistance, the latter is friable and readily breaks down, proving that, in point of fact a softening of the tissue has taken place."

According to Landriau, the specific gravity is increased as compared with the healthy lung in the proportion of 1.15 to 1.19 to 1, and the consolidation is generally complete without a vestige of emphysema. The cut surface appears uniformly studded with flat-granular elevations which are easily effaced. The pathology of this granulated appearance is a point not yet determined on by authors on pneumonia. Léonnet considered the granulations to be the air-cells converted into solid gran by the thickening of their parietes and the obliteration of their cavities by a concrete fluid. André considers that pneumonia essentially consists in an inflammation of the pulmonary vesicles, the internal surface of which secretes a liquid at first very mucous-sanguineous and then prevalent. In proportion as the inflammation advanced, the liquid secreted became more thick and viscous, until at length it could not be expelled from the chest where it was lodged and first formed. Accordingly, it accumulated there, obstructed and distended the air-vesicles, and gave origin to the mucinous granulations of which the tissue of the lung, in red hepatisation, appe

(2) Recent research on pathology.


(5) A treatise on the diagnosis and treatment of diseases of the chest - p. 312.


appears specially formed. It has been suggested that the appearances presented in projecting the lump have come to the same conclusion. More recently, however, some have found androïd changes in the view that the "modest alteration is produced by a considerable degree of disarrangement of the various parts of the capillary blood-tide and air-cells, the effect of which is to diminish or obliterate those cavities." Such also is the opinion of Mr. Mann, Dechambre, and others. There is still another view adopted by Williams, namely, that the formations consist of a thin film of air, which has been so remodelled by the deposit of a soft aluminous matter in them as well as from the increased size of the blood-vessels, that their cavities are obliterated. The House of Zurich and Robitonas at Vienna adopt the view first entertained by Androïd, namely, that the formations result from the filling of the air-cells with effused matter. From this review of opinions it appears fully evident that the air-vesicles or the cavity of blood vessels surrounding them, may by particular morbid changes give rise to the appearances in question. What the morbid conditions are remains to be shown. Is it an infiltration of the air-vesicles with an exudation of blood-plasma or is it an accumulated secretion of effused lamina? From my own observation I am inclined to consider that a granulation
1) See Atlas Plate X, fig 3 and 4
2) Related at page 68, see Atlas Plates V and VI
appearance to the naked eye may be produced either by an exudation of blood-plasma from the structure of pulmonary capillaries surrounding the air-vesicle penetrating the thin diaphragmous membrane lining the air-cell, or pressing it together without such rupture; or the appearance may be produced by an accumulated secretion of epithelium without any exudation of blood-plasma into the vesicle; or it may be produced by a combination of all of these conditions. In no two instances is it likely to be caused by the same morbid change, and it will be found that according to the stage at which the exudation has arrived informing the granulation we are likely to have it composed of epithelium or of pus. Dr. Henderson has found them to contain "blood-disks, granules and globular bodies," which he considers to be the cells of the epithelium; and if reference shall now be made to the case of Brennan detailed at page 110 of this paper it will be found that the granulation could be picked out entire and that its contents consisted of pus-like corpuscles, compound granular cells (exudation cells) and blood disks adhering together. "Under a low power (from 10 to 20) it appeared like a large glistening cell with fluid contents or whose outer wall little vascular tufts remained) (1) In the case of Hastings we found the granulations to be composed chiefly of pus."
This was instead forwarded by Gordin.
The microscopic appearance of a lump which is the seat of an exudation of blood-plasma we shall now describe.

The first change which takes place in the fluid exudation appears to be the formation of granules, after coagulation has taken place, so that a Valentin section of the tissue exhibits the pulmonary textures enclosed in a capsule displaying a number of blood-clots included in a nearly amorphous, slightly granulated or striated mass. At first no cells exist other than oval or elongated epithelium and blood-globules; but soon the formation of distinctive cells takes place in the exudation in a form of organisation just described, as peculiar to inflammatory products in any part, by Professor Glesse of Brussels. Describing the alterations of the blood in inflamed parts, he observed that the blood globules lose their pigment and their colour, their nucleus alone remain; these, however, do not remain solitary, but by means of a whitish connecting substance become agglomerated, and form dense, opaque, round groups which contain on an average from 20 to 30 of the smaller bodies, which examined singly are quite bright and transparent. By means of pressure or acetic acid the associated granules break down into the individual bodies; as we see that the capacity is

(2) Drawing IV figs. 3 & Drawing VI figs. 2 & 7.
is merely owing to the association. The associated bodies in the mass have a diameter of 1/50 to 1/60 of a millimeter, the single granules of 1/250 to 1/300 of a millimeter. These associated bodies I have seen in the vessels, so that we have nothing to do with a fluid which transudating through the coats of the vessels is changed into granules." Harris joined his statement that they escape by bursting the capillaries. The idea entertained by Glueck that these compound bodies are formed within the blood vessels does not accord with observation; and from the recent examination of the cases of which I have given an analysis, and in which the lungs were affected with exudations in various stages of development, I shall describe as far as I have seen the conditions under which we have the corpuscles of Glueck formed. That the corpuscle is not formed within the blood vessel is apparent in the exudation of blood-plasma into many textures, and more particularly in the brain, for first we have the exudation coating the vessels exterior to their walls, and secondly we can trace the formation of the corpuscle of Glueck (or the compound granular cell or the exudative corpuscle) through the following stages as described by Vogel and by Bennett.

1. We have the formation of clear-transparent mononucleated cells...
2. We have the formation of cells "with a nucleus & nucleus, differing from pus corpuscles in their large size (the 200° to the 100° of a line) and in having a single nucleus." These are formed in the fluid of extruded excudations, and become gradually filled by minute granules, which at first when only few in number readily admit the nucleus being seen; subsequently, however, they conceal it, and the originally smooth cell membrane becomes puffed, the granular cell appearing as a spherical agglomeration of granules. Subsequently, the cellular wall appears to vanish, the enclosed granules to separate from one another and to fall into irregular heaps, and each individual granular cell to undergo, in a minute scale the very same process which a mass of extruded fibrin undergoes in its conversion into pus-corpuscles. (2)

On this compound granular corpuscles that described by forming the general fact we have found to be formed under the following conditions:

(1) In greatest abundance during the first stage of the esudation, the second stage of pneumonia according to Lamarck

(2) As long as the capillary circulation is going on and before complete stagnation has taken place

(3) When the redness and congestion is the greatest the corpuscles begin to disappear

(4) They disappear altogether as the red softening
1) Drawings I fig: 4 & 5.

2) Drawings XIV fig: 6 + 7 and 1.

(5) They are imperfectly formed or not at all by the
irruptions that occur during the progress of Syphilis.

Other changes are also to be observed besides the formation
of the compound granular cell in the eruption which
takes place in the lung. These changes are to be sought for
in the histological elements of the part itself. The epithelium
becomes changed in appearance. Originally and in health
the epithelium cell lining the cells-vesicles is of an oval
form (1), but soon they decrease in size, become rounded
and lose their transparent appearance, or they become scattered,
and of a more globular form. Two sources of change may
thus be observed in the epithelium: (1) A change in the
character of an individual cell (2) A change of form de-
spending on imperfect development, the cell being thrown
off before it has arrived at maturity. The alterations
perceived in the characters of the individual cells consists in
their assuming a more granulated aspect, and in many
respects approaching in form and appearance to the compound
granular cell. (2) It has been conclusively shown by Reinhardt that
cells
the epithelium are sometimes transformed into compound granular
cells, but that they do not always originate in this is proved
by their great frequency in cerebral softening, where no such
plasmation can apply to their formation.
Appearance in the lung of a Queen, died of Pneumonia at Bridgetown. Firm, tough, fibrinous membranes filled the larger bronchia extending into the smaller.
The change in the form of epithelium depending upon in perfect development is well seen in the cylindrical form of the scale. In place of being a fully formed cylinder it is much diminished in size of an oblong globular form and very often more nucleated. When we examine the spumum of patients in whom an exudation of blood plasma is taking place in the pulmonary substance we may discover the change which we have just now indicated as taking place in the epithelium, independent of the existence of irritation in the larger bronchie. In doing so we have also frequently confirmed the observation of Dr. Remak made in the clinic of Dr. Schönlein, namely that branched binucleated corpuscles are also almost always present, the altered forms of epithelium constituting a part of their microscopic elements. By allowing the spumum to stand a night in cold water we separate these corpuscles from the mucipar amongst which they are tenaciously held. Some are of large size visible to the naked eye others appear as small cylinders dividing dichotomously, the branches diminishing in length and thickness from the original trunk generally there are not more than three or four branches. At the divisions into branches we have frequently a nodulated appearance also visible at the ends of the branches when the corpuscle is broken off at a division. Seen under the microscope they are composed of delicate filaments running parallel to
Atlas, plate XIV fig 6a and y
The long diameter of the cylinder, sometimes we have a granular form of exudation forming the chief part in their composition, closely adherent and in some respects very much resembling the casts of the kidney tubules occasionally formed in urine of patients in whom Bright's disease exists. The granules and granular cells very much resemble the compound granular cell. They are generally however more finely granulated and resemble the altered form of epithelium of which we have just spoken, and when associated with the apparently imperfect, developd cylindrical epithelium there is little doubt of their structure forming a chief part of the constitution of these corcule. Besides altered epithelium, however, the compound granular cell does sometimes form a part of the corcule. In general acetic acid dissolves the cells and sets the granules free, leaving them undissolved; the filaments also are dissolved by this reagent so that the whole mass is rendered transparent observed only by the granules.

Illustration of the formation of the compound granular cell.

Case I—
(Bright's disease) - Softening of corpus orientation - death.
Reputation of left lung from exudation of blood-plasma organised in the form of the compound granular cell.

Kenneth McLean act 45 - a Bootmaker admitted into
ward nos. August 8 in 1847, had been subject to swelling of body for at least twelve months. Had not lately been exposed to cold & had been in the habit of taking whisky but not to excess. Had been in the enjoyment of comparatively good health until within the last month, when he has had some swelling of the body, difficulty of breathing and Cough.

Present Condition: — Face thin, complexion pale and waxy. Bowels regular, skin cool. Obscurity of respiration posterior on the right side on which he habitually lies. Inspiration accompanied by some fine crepitation at the lower part of that side. Percussion slightly impaired. Abdominal rise universal over the chest. Hepatic dulness extends about 1/4 below the 6th rib. Cardiac dulness 2½ inch across. Sounds of the Heart feeble. Deficient in clearness and distinctness. no heat existed. Urine passed about 24 ounces. Feeble acid, with a diffused cloud of sediment which does not readily subside and does not yield to slight heat.


August 10.

Crepitation at the lower part of both lungs but more especially the right. Otherwise there is no urgent symptom.

Oct 13th.

Urine contains albuminous and presents the same
character as on admission, but has for some weeks contained a large admixture of blood. Had a violent convulsion this morning which passed off in a few minutes, having been subject to dizzyines for some days back.

November 12.

Has had constant diarrhea since last report, otherwise there has been no change of symptoms and he died today never having had another convulsion.

Dissection.

Head:—Considerable subarachnoid effusion at different parts of the cerebral hemispheres. A portion of the right corpus striatum was a little softened—rest of the cerebral substance apparently healthy. A microscopic examination of the softened portion of the corpus striatum showed the blood-vessels in a tense state, with extravasated blood around them, and separation organized in the form of composed granular cells which with loose granules existed in great abundance. These cells were not acted upon by acetic acid.

Chest:—Left lung completely condensed in the upper part extending throughout its posterior half. When cut into it presented a dark red surface finely granular and (1) on being squeezed emitted very little fluid. The lower lobe was not condensed and emitted a pretty fluid on being cut into. The right lung was condensed in its superior
The lobe similar to the upper lobe of the left. In its superior lobe the bronchus had these vessels much injected, presenting an appearance of abnormal vascularity, with a copious exudation of mucus. A microscopic examination of the undecayed portions of the lung made upon a thin slice cut out by Nabatius double knife showed that these parts were completely void of air and that their microscopic elements consisted of compound granular capillaries, free granules and small pieces of fat with blood cells in abundance. The fibrous tissue of the lung was distinctly seen, the individual fibers being more or less irregularly separated from each other by the presence of the granules and compound granular cells. The usually empty interstices formed by the fascicles of the pulmonary fibers were also filled by the organized forms of exudation, but the whole could be washed away leaving the fibrous tissue of the lung completely intact. In every part examined the quantity of blood was considerable and was generally coagulated within the vessels.

The action of the heart was slightly inefficient and in one there was a slight apoplect. The aorta itself presented numerous small and dilated appearances of an atherosclerosis nature.

Abdomen: Liver small, but apparently healthy. Kidney's granular - external cuticular substance whitish and increased in extent - medullary substance decreased.
The lower part of the colon was thickened and the mucous membrane extensively ulcerated.

Remarks: In this case Bright's disease of the kidney's is undoubtedly the primary affection and the most important one, for we look upon it as an evidence of a medical condition of the blood, the cause of the edema found to be so universal after death. That edema of blood-plasma existed in the lungs, the brain, and the intestines, we had physical signs and constitutional symptoms during life confirmed by dissection. The occurrence of emulsion of the liver, however, was not of a symptom which could by itself create a suspicion. Yet an emulsion of blood-plasma was going on in the brain, causing the appearance of softening it presented upon examination. The stage of hyperemia and of the formation of compound granular cells along with separate granules constituted the organized elements of the emulsion in the lung along with an increased development of fat. Of the formation of fat in the lung increasing with the amount of disease in the pulmonary tissue. I shall have occasion to notice more at large in a future part of this paper. At present it is enough to connect the two facts together, namely that the complete absence of air in condensed portion of the lung, indicated, that the lung in that part was not performing any of the function of respiration as far at least as the oxygenizing of the blood.
was concerned, and that the fat in the condensed portion was in abnormal abundance. We shall see as we proceed to the right that this is one condition of the development in the lung, namely the suspension of the functions of respiration in the part. From the length of time which this man had suffered, it is evident that exudation of blood-plasma and its reabsorption in the lung had been pretty equally balanced, and it is one of those cases of Bright's disease which shows as all the other cases which I have examined tend to show that there is no deficiency of organization or tendency to imperfect development of cells in the blood-plasma exuded into the tissues during the progress of Bright's disease. In consequence of the nature of the existing dyscrasia the exudation in whatever organ it may take place seems to be characterized by activity and perfection of organization as exhibited or evinced by the general abundance of the compound granular cells.

In the Atlas the appearance of the lung fig. 2 is contrasted with fig. 1, which represents exudation. fig. 2 represents homolapic precipitation in nephrosis. Atlas plate 1.
Before we proceed to consider the disintegration of the exudation in which the compound granular corpuscle forms the chief element of organisation, we shall consider another condition in which the exudation assumes a fibrous form and becomes mingled with the fibrilous corpuscles of Lebert and sometimes with candeate nucleated cells. In this condition of the lesion we have the exudate apparently more or less influenced by the nature of the texture in which it is effused, and accordingly, we find that a lung in which the exuded blood-plasma assumes this form of organisation presents appearances under the microscope which might be denominated cirrhosis. The fibrous meshes of the pulmonary tissue seem to be increased in thickness by the fibrinous exudation becoming organised around the individual fibres. The cut surface of such a lung appears of a bluish tinge, somewhat fibrinous, being accompanied by an increase in the consistence of the part which feels tough and resistent. Such a condition of the lung may either precede the formation of the compound granular cell in the exudation, or both conditions of the exudation may exist at the same time.

The following two cases are intended to illustrate this morbid condition.
Jumil had a bad fear but a man don't worry.
Case II  no. 88 of Analysis - Table i.

(InfiammatoryGeneric) exudation into the substance of the lung - The cavities of the pleura and pericardium - deposit in the spleen - circumscribed peritonitis - ascites of submaximal tissue of the stomach.

Robert Gilmore - aged 13 - Admitted to Ward no. 5 of the Edinburgh Royal Infirmary December 31st 1847 suffering from bilateral symptoms apparently of an inflammatory type. There was nothing worthy of record in his case until about a week after his admission when he complained of pain in the lower part of the left side over the region of the spleen which seemed enlarged. He complained also of cough - Leeches were applied to the side and a blister to the sternum.

January 13.

There is dulness on percussion over the whole of left side - Respiration harsh and in some places bronchial, attended by an expectoration of translucent tenacious sputa - sometimes slightly tinged with blood.

January 16.

The cough has become more troublesome - Expectoration passes and less viscid - Dulness and resistance on percussion over the whole of the left side.

In the vicinity of the great bronchic there is
bronchophony, bronchial breathing and crepitation. The respiration on right side is present.

January 18

...more oppression of respiration. Crepitation not heard on either side. In lower part of the lateral regions on both sides friction can be heard.

January 19

Died this morning at four o'clock.

Dissection.

Chest: Pericardium distended and contained about four ounces of darkish serum in which floated numerous flocculi of lymph. Heart and valves healthy. Left pleura contained a large quantity of serous fluid. Its layers were partially adherent by an abundant yellow expectoration of a softish consistence. The adhesions to the diaphragm however were firm. On the surface of the right pleura over the lower lobe of the lung there were a few small patches of pretty recent lymph. The whole of the left lung with the exception of the apex was much condensed, and in some parts completely void of air so as to sink in water, and generally of a bluish red colour. Satts.

A thin section from the condensed portion made by Valentin's double bladed knife presented a granular...
molecular aspect without reagents—interwoven by fibres generally running in one direction, and sometimes crossed by the filamentous tissue of the lungs enclosing the air-vesicles. These air-vesicles were thus generally obliterated with few exceptions, and that very few globules of air could be detected and few compound granular corpuscles could be seen. Some large cells however, containing granules and nuclei were visible amongst the molecular and fibrous exudation, along with colourless cells (Fig. 3, Plate IV). The whole elements of the exudation presented the general appearance described by Lebert as fibrillar corpuscles enclosed amongst fibrous exudation consisting of a semi-transparent amorphous mass. The fasciculi of fibres composing the pulmonary tissue were well expressed and appeared in abnormal abundance evidently from the fibrous exudation attaching itself side by side with the individual filaments. This was demonstrated by the addition of acetic acid which cleared away the fibrous exudation and left the individual fibres clearly distinguishable. No air was visible under the microscope and generally the tissue was comparatively free from blood. In the fluid exuded from the tissue, some pale nucleated and non-nucleated cells were visible with very few compound
granular corpuscles (fig. 3 - plate III).
Between the root of the left lung and the pericardium a circumscribed quantity of pus was contained apparently in a reflected fold of the pleura. Right lung much congested otherwise under the microscope its tissue appeared healthy.

Abdomen: - Liver appeared normal in size and structure. Between the lower aspect of its left lobe, the stomach and the spleen there existed a circumscribed abscess about the size of an orange containing dirty looking purulent fluid. This was found to communicate with a partially softened mass of tan-yellow colored exudation which had been thrown out into the substance of the spleen, involving about 1/5 or 1/6 of the whole organ. The rest of its substance was soft. The mucous membrane of the stomach was swollen and thrown into protuberances on the posterior surface of the viscus by oedema of the subcutaneous tissue. Other organs healthy.

Remarks: - The extent of the local lesions displayed after death, accompanied and preceded during life by febrile symptoms, much constitutional irritation and physical signs of disease, abundantly testify to the
Yes, but a dynamo can be influenced by light, cold, or by passing strong currents in a system to produce work, just as it may.
existence of a dyspnoea in the blood in the lung to which we wish most of all to direct attention we find the exudation assuming an organised form of a perfect kind that we are inclined to add another modifying cause to the existing dyspnoea whatever that may be. We are inclined to consider that the influence of tissue is in this case apparent in causing the exudation to assume a fibrinous form, so as to associate its elements with the filamentous texture of the lung itself.
February 10th, 1848. In a case of Empyema of the left side of chest, dissected today, the left lung was so much compressed by the fluid exudation within the cavity of the pleura as to render its texture quite impervious to air. In consequence of this, condensation of the lung was quite unfit for the performance of its functions and accordingly respiration and the internalization of blood was altogether carried on by means of the right lung. Examination of the left lung by the microscope presented only a bloodless aspect of the tissue without any appearance of the usual network arrangement of the fibrous texture surrounding the air vesicles. No evidence of any exudation existed.

The right lung was irregularly condensed in portions varying from the size of a bean to a walnut. On section, frothy serous could be squeezed out from some parts and the condensed portions had a fibrous appearance. A Valvular section presented under the lens the interstices between the vesicles larger than usual, as if an increase had taken place in the intervesicular, filamentous texture, constituting a condition of cedema different from the last recorded case. Compound granular corpuscles existed in great abundance among the fibers along with granular exudation in the air.
x

The picture depicted
vessicles (Plate III of Atlas fig. 2). Much hyperemia surrounded the inflamed portions and the blood was coagulated in masses. As I could get no history of this case I merely relate it—in connection with the former one—as illustrating a morbid condition of the lung.

From these cases and observations we perceive that the exudation of blood plasma in the lung may become organised in all the forms which we have now indicated: that the combination of all these elements, namely, an effusion of the colouring matter of the blood and of the blood globules, along with the plasma passing into a more or less granular or fibrinous, exudation constitutes the second stage of pneumonic, the red suppuration of authors or the "renvollissement purulent" of the French. These elements may be again absorbed and the lung may then return to its normal condition. If this does not take place we shall have more serious changes following. The immediate effect of the granular exudation is compression of the surrounding parts, and so long as the exudation is poured out and organised we shall have a more complete stasis of the blood in the capillary vessels takes place, there is incomplete
disturbance exists when much of the texture of the lung is
altered. The effects of impaired respiration and impaired
perfusion become conspicuous, and the existing
hyperemia (whatever that may be) is increased by the
nonartesianization of the blood which passes into the
general circulation from the lungs in a venous state.
When this condition is established the functions of the
brain become disturbed, and in many instances death
takes place by coma. The hyperemia becomes also apparent
in the gallon complexion and almost inevitable condition
of the general surface.
M. Natale Guillet in "Gazette médicale de Paris", No 29, 1847
We come now to consider the elementary organization of the excised plasma in the form of pus corpuscles, and the disintegration of the compound granular cell constituting softening of the pulmonary substance by infiltration of its tissues with granules and pus.

The circumstances under which this exudation assumes its elementary forms of pus are also those which are conducive to the development of fat in the affected portion of the lung. Accordingly we find that the amount of fat in the lung accumulates from the period at which the compound granular cells begin to disintegrate onwards to complete disintegration of the tissues of the lung itself, and this accumulation takes place independently of the contents of the compound granular cell being composed of fat granules. During foetal life the fat contained in the lungs amounts to 10.18 per cent, but after respiration is established, the proportion of fat in the normal condition of the lung never rises to above 6 per cent. (1) When, however, a portion of lung is rendered impermeable to air by disease, the fat accumulates, and becomes in relation to the whole weight of the lung 15.40 or even 50 per cent—according to the amount of pulmonary tissue involved. In this manner the amount of fat in the lung becomes relatively as great as the amount of fat in the liver, which always contains a larger proportion.
When this is true, a significantly increased acetylation is achieved by adjusting the atomic constitution of fat as compared with ingestion of foods of artificial origin. When a disproportion exists between the C of the food with which it is joined, the latter being deficient, fat is formed.

C9 H11 O15 O9.5-8.8

(2) Liebigs: loc. cit.
In the normal state fat is now ascertained to exist in small quantities only as an essential component of the nervous tissue, i.e., in the nerves and brain; and it is only under the following conditions that fat accumulates in the tissues of the body. In every tissue its formation or deposition stands in a definite relation to the respiratory process, depending on the conversion of the carbon of the substances destined for respiration into carbonic acid by its combination with oxygen. The abnormal condition, therefore which causes the deposition of fat in any tissue of the animal body, depends on a disproportion between the quantity of carbon and hydrogen in the food and that of oxygen absorbed by the skin or lungs. In individuals possessing an abnormal tendency to fatness the circulation is out of proportion with the diet; and such persons have in general very small lungs, and when the lung is diminished for the function of respiration by any part of its substance becoming the seat of an exudation, then that part is brought into circumstances analogous with any other tissue of the body subject to the same laws in regard to the deposition of fat. The production of fat is always a consequence of a deficient supply of oxygen, for oxygen is absolutely indispensable for the dissipation of the excess of Carbon and hydrogen in the food; but the volume of air in which respiration goes on does not
970 - water flow

Central Hydro-Electric Board for

Midwest energy and money coming from Central and Western.
under the influence of vegetable and animal life undergo any change, and as the quantity of fat in the tissues increases when the oxygen absorbed by the lungs and skin in a given time does not suffice to convert it into Carbonic acid and water, the elements of the non-nitrogenous constituents of the food, we must look to the condition of the lung itself when respiration has ceased and its volume is explained. The deposition of fat in its own dissipated structure. A certain quantity of fat requires for its conversion into Carbonic acid and water a certain quantity of oxygen; if this is withheld (as it always is to a greater or less extent in the part where exudation of blood plasma has taken place) the fat is not consumed but accumulates, for the blood conveys to the rest of the tissue the elements of fat in the form of Carbonic acid and water, and these elements not being consumed there are deposited in cells in the form of fat. If we look upon the lung therefore as a structure destined for the elimination of fat from the system we look upon the accumulation of fat in its texture during disease, in the same relation that we look upon the non-elimination of urea in disease of the kidneys, or the accumulation of any other product in the system which ought to have been eliminated according to the usual course of organic changes. During fever, more especially...
Must have kept the calpikalis when in formation. The calpikalis and pinata, moreover, all the things taking place for them is good instead that they are not formed at all. Things or any activity.

Vajel - farha, anatom 74.146 - to encouraging.
Thus the amount of swathing and consequent consumption of fat must show that if respiration is not performed by all parts of the lung alike, the elements of fat will not be consumed in those parts where respiration does not go on, but will be deposited as cells of fat to be again absorbed and carried to those parts of the lung where respiration goes on so long as life continues. Of the accumulation of fat in the lungs under the circumstances which we have now attempted to describe we shall have an excellent illustration in the cases we have to describe in the following pages.

Regarding the formation of pus in the expanded blood-plasma it is not yet clearly ascertained whether or not it is an independent organism. According to Vogel it may be formed, either from coagulation rendered solid and from fluid blood-plasma before coagulation. Pus has also been supposed to arise from the breaking up of the compound granular corpuscles. In the coagulation of blood-plasma in the lung, it is apparent in most of our cases that the elementary forms of compound granular cells and pus corpuscles exist together, and, that independently of microscopic observation, it has been an opinion generally entertained, that the several stages of a pneumonics are always developed out of the stage immediately preceding, and that the change always commences in the centre of
The diseased part. However, we may be
see two possible conditions under which the disease may occur.
It must either be an independent organism
a granular cell or blood-clot.

If, however, it is found to possess an independent existence, the circumstances in which it is generated are also those in which the compound granular cell tends to become disintegrated a fact which brings us to conclude that although it may possess an independent existence, yet it may be called into being by the breaking up of the compound granular corpuscle which had enclosed in its structure the nuclei of the

purulent formation. Hence we find that while the

whole of the exudation assumes the form of granular cells or granular masses, the purulent formation finds existence amongst the debris of their destruction although they may be independent and elementary forms of organisation.

In the purulent form of organisation which the exudation may assume, there is first of all observed a

bloodless appearance of the texture, and if blood be at all visible in an unchanged state it is
always coagulated within the vessels. In general, however, all traces of vascularity is gone and a section of the lung where this form of organization has taken place in the exuded blood-plasma, is characterised by a colour-varying from dirty gray or light yellow to a melanotic tint, the shades of colour depending on the amount of vascularity, the amount of pigment whether normally present or the result of disease, as also on the changes which have taken place in the extravasated blood. Making a section through the exudation the divided surfaces become immediately floated over by the purulent fluid, which appears uniformly infiltrated throughout the pulmonic tissues, filling up the air-vesicles and separating the fibers, which by washing or by acetic acid may be rendered free and generally distinct.

There is still another condition of the lung connected with a granular appearance on section which has sometimes been looked upon as a form of gray (1) suppuration, but as it is not the result of the organism of exuded-blood-plasma but of an excessive secretion of mucus the above only notice it in passing and attempt to notice its occurrence as modifying the appearance of the purulent organization in any of the cases which we have to relate.
Case illustrating the organization of the expectated blood-plasma in the form of pus; and the development of fat in the seat of lesion.

Case IV. No. 91 of analysis 2. Plate of drawings Nos. V and VI.

(Arteritis preceding Syphilis) Exudation infiltrating the lower-third of right lung, organized in the form of pus, and surrounded by exudation in the form of compound granules cells.

Owen Hastings, aged 36 admitted December 14th 1847 into the Fever-house of the Edinburgh Royal Infirmary reported to have been 9 days suffering from symptoms of fever. There he had a severe attack of Syphilis fever attended with much delirium for which he had the hair shaved off his head and leeches applied behind the ears, and also the application of a blister over the scalp. His convalescence although protracted appeared to be going on favourably until the 2nd of January 1848 when he complained of pain in the limbs, more especially the right, extending downwards from the knees and attended with stiffness of the joints. There was no swelling of either limb, but the cuticle appeared desquamating by small scales on the anterior aspect of the right foot and leg. There were some circular patches of lividity. There were no spots surrounding the roots of the hairs, nor were the gums erysypelas. Three of the toes were almost quite black, their cuticle
The cuticle was hard and void of sensation throughout the distal phalanges; towards the roots of the toes the cuticle was slightly elevated. Immediately over the centermost aspect of the right ankle joint, there appeared some slight superficial ulceration about the size of a penny piece, as if the result of a violent abrasion. There was no discharge from its surface, but the part appeared dry, hard and scaly.

January 15.

Had a warm bath this afternoon which he was admitted to under my request that he might have with greater facility the warm bath more frequently. Since last report, the swelling of the leg has gone, and the swelling has extended upwards from the roots of the toes towards the knee-joint. There is some superficial ulceration round the root of the little toe, which along with ulcerating surface over the ankle-joint—exudes a serious supernumerous, foetid discharge.

January 22.

Had a violent rigor after leaving the bath tonight, followed by increased heat of surface and general vascular excitement.

January 23.

Considerable chilliness and restlessness requiring rest in bed.
Delirium has abated. There is general weakness of the right leg and foot of an erythematous nature extending upwards to the patella. The right arm is stiff at the elbow-joint, where pain is complained of from the shoulder downwards. There is apparent incapacity to regulate the motions either of the leg or arm by the will, and he lies in bed supporting the right arm in a flexed position over the chest. Pulsation in the right femoral artery is indistinct and smaller when compared with the left—pulsation can scarcely be felt in the popliteal.

January 28th

Much swelling of the arm from the shoulder downwards to the middle of forearm. Much erythematous redness round the elbow-joint extending upwards by the inner aspect of the arm to the axilla. Streaks of a purple hue along the inner aspect of the limb which felt hard like cords. Large vesications exist round the elbow-joint, and the extremity is edematous. The circulation generally both in arm and leg is languid. In the arm the axillary - humeral, and radial arteries have a weaker impulse compared with the same vessels in the left arm. In the leg the right femoral & popliteal arteries are also indistinguishably felt compared with the left. The capillary circulation in the skin of the arm and leg is feeble, as indicated by the length of time which any part takes to regain its redness after pressure has been made upon it.
No albumin. Much sleeplessness, restlessness and vascular spasm towards evening. Heart's action somewhat tumultuous, but no abnormal sound can be detected. Lungs are empty.

January 30

Two of the toes of the left foot have become discoloured at the distal extremity of their plantar aspect. A red blush extends up the leg from the affected toes as happened in the right leg. The pulses in the anterior and posterior tibial arteries of this leg can be distinctly felt. There is observe pain over the anterior surface of the foot increased by pressure. Sulfuraceous desquamation of the articule.

February 1st

Less swelling of the arm. Pulsation perceptible in the arteries of upper & lower extremities. Considerable swelling over the plantar aspect of the ball of great toe of right foot bleeds more, pulse feeble and easily compressed.

February 4th

Since last report there has been constant diaphoresis. Swelling of arm diminishing except a point below the elbow on the external aspect of the arm where fluctuation is perceptible.

February 5th

An opening made over the seat of fluctuation in arm, liberated a collection of dark coloured foetid pus.
The bill of great toe also fluctuates - has become gangrenous. Diarrhoea continues - no excretion of the gangrene. No cough - urine passed feebly - reaction alkaline - density 1.012 - of an opaque light color, depositing a copious white sediment presenting an amorphous appearance under the microscope without any crystalline forms - nitric acid causes much effervescence and renders it more transparent. Heat has a similar effect. Smell intensely ammoniacal.

February 5th - worse.

Diarrhoea continues - complaints of cough - no expectoration.

February 6th -

Had rigors yesterday - much dyspnoea and pain of chest. Complained of - the whole of the right back is dull on percussion. Anteriorly the lower part of chest is also dull. Some crepitation in the infraclavicular fossa of the capsule also in front below the nipple; tympanic respiration with no vesicular - respiratory murmur over the rest of the dull portions. Considerable delirium since the last entry became more difficult and he died tonight.

Dissection: February 10th, 1846.

External appearance: considerable emaciation - scaly appearance of skin in extremities - bloating gangrenous condition of the toes of right foot.
(1) Alter - drawn by his ♥
Cheest: Slight and recent adhesions between the pulmonary and costal pleurae of right side. About a pint of fluid exudation existed within the pleural cavity of that side of a greenish-bluish color, turbid with flakes of lymph in a semi-fluid state. The left side free from adhesions.

The right lung throughout its lower lobe was conicalized, easily broken down, and in section presented a yellowish gray color; the cut surfaces were rapidly floated over by a fluid resembling pus. A microscopic examination of the fluid showed fat-granules and globules in considerable abundance also pus-corpuscles and a very few compound granular cells. (Drawing No VI fig. 1.) A Valentin section of the grayened pus-tissue exhibited no compound granular corpuscles, but the whole tissue appeared infiltrated with pus-corpuscles and small nucleated cells. So completely did the exudation infiltrate the tissue that the mass was almost opaque so that no trace of air-vesicles could be distinguished. (Drawing No VII fig. 2.) Acetic acid brought into view the vestiges of the filamentous arrangement round the pulmonary vesicles, and exhibited the nuclei of the pus-corpuscles. The meshes also of the filamentous pulmonary tissue before obscure were now made distinct, and although much separated by the infiltrated exudation, they were individually entire and by no means broken down. (fig. 6.) No compound granular corpuscles existed in these sections, and no cells other than pus and globules of fat-soluble in ether.
(1) (2) (3) (4) references to fig. 2. Drawing VI.
When fluid taken from a portion of the lung where the purulent exudation seemed to be commencing (fig. 2. Drawing VI) a few compound granular corpuscles could be distinguished (1). Blood-clots (2) also appeared in encapsulated masses, and clear colourless cells (3) were also intermingled with pus (4). Corpuscles of the usual form - some of these pus corpuscles were surrounded by a follicular wall (5) apparently containing fluid amongst which the pus corpuscle could be seen to float, passing from side to side of the cell. A considerable amount of congestion existed around the purulent portion as seen by a section (fig. 4) but no trace of the pulmonary vesicles was seen. The fibres were irregularly arranged and the compound granular-cells were few; and in proportion as a section was taken more and more removed from the purulent exudation the compound granular-corpuscles increased in abundance and assumed a more perfect form. (fig. 7 of Drawing VI) Representing the gradation of perfect development and abundance of that elementary form of exudation.

Surrounding the purulent portion the texture of the lung was friable, gradually passing from the grey colour to the red from which a frothy liquid could be squeezed. The red exudation was not quite void of air, first-mess of a granular appearance on section appeared, the points of organization of the exudation into pus as shown by the microscope - the rest of the lung was much congested.
The left lung somewhat congested, appeared otherwise healthy. Heart firm in texture and healthy.

Condition of arterial trunks: A large soft dark coloured coagulum of blood about a foot and a half long was pulled out of the aorta. This coagulum was partially decolorised in some parts. Microscopically it presented the appearance of coagulated fibrin, the stric being mingled with blood corpuscles and colourless slices about the size of a blood globule. The artery of the right leg was laid open from an osseous ligament downward in which a coagulum of blood existed throughout—varying in thickness as the calibre of the vessel varied. The same appearances were observed in the common iliac of the left side. On the right side however the coagulum ceased, about two inches above the site of the ulceration on the anterior aspect of the foot, where the anterior tibial artery was found contracted, indurated and adherent to the venous conules. The exudation completely obstructed the canal rendering it quite impermeable and microscopically it presented granular matter and granules of fat and cystatie structures (cystatins) as seen at fig no 3 — drawing VI.

Abdomen: Iirca healthy with the exception of slight kidney which presented appearances of fatty degeneration.

Remarks: From the records of that case it appears that
Pyrexia fever was the first state of disease, and that all the other pathological states followed in the chain of events, connected with and in some degree dependent upon the condition which preceded any particular state. The course of the pyrexia fever itself was characterised by the grave nature of its symptoms as well of excitement as of depression, but during its whole progress it was unmarked by any symptoms of a local complication. It was not until encephalitis was advancing, about the 26th or 27th day after the first manifestation of febrile symptoms, and when the constitution seemed recovering from the first effects of the hyperemia that the vascular system showed symptoms local as well as constitutional that the walls of the arteries were undergoing some change. The fact of an exudation having taken place in the cutaneous tibial artery was demonstrated after death, and that the capillary system seemed to participate in the disordered condition of the vessels is shown by the exudation, which in the subcutaneous tissue of the arm became organised in the pellicular form, and which in the toes went on to gangrene, as well as by the early desquamation of the cuticle over all the parts contiguous to the more immediate seats of exudation. To a participation in this change also of the blood, they circulated we are inclined to attribute the exudation.
always.

Shouldn't they say: the well-lit room?

Proudly the janitor, as proud as punch, announced:

'All right, ladies, you're out of here!'

Second last, all.

Supposing someone at lunchtime, on a lunchtime walk

May the sun's sputtering beams

Blitz with its heat and depth

Held on a needle and thread

Bewildering, though to the foremost,

Away they set themselves.
in the lungs, and the relation subsisting between the changes in the bloodvessels themselves, and the prevalent exudations into the several parts, connects all these conditions as the sequences of the Syphus fever, which although it had run its course the coats of the vessels had suffered from the existing dyscrasia. It may be somewhat more difficult to account for the exudation in the lung occurring at once the state of incipient organization. If we look, however, to the great amount of substance involved which in a few hours became at once condensed by evaporation or abundant as by its pressure to preclude the possibility of blood circulating through the part, we observe that its vascular supply being entirely gone, absorption of any portion of the exudation was rendered impossible. The essential conditions for the development of the compound procular cell did therefore, not exist, and in a few hours the exudation became at once organized in the elementary form of pus.

The occurrence of the exudation, its abundance and fluid condition in which it was maintained by the absence of absorption, all exercised their influence upon the form of organization.
(Granular Kidney) - Lower lobe of left lung. The seat of an exudation organised in the elementary form of free increased deposit of fat in the seat of lesion.

Edward Grahame aged 20, a labourer admitted to Ward No. 3, February 25th, 1878, has been in bad health for some time on account of which he has been taking mercury in quantities which have caused ulceration of the fauces and gums. Pulse slow - Bowels constricted - density of urine 1017, rendered turbid by heat and nitric acid. Complains of some cough unaccompanied by expectoration, but there is much pain in the epigastrium and frequent vomiting.

March 8.

Vomiting less frequent and troublesome, and there is an apparent inclination to stoolness. Tongue is dry. Pulse 87, small and weak. Swells in the lips and tongue. Diagnosis of asphyxia is mingled with and obscured by mucous and granular scales in front and right back. Expiration much prolonged and snoring. In left back grossness of respiration is well marked and apparently normal. Resonance on percussion material everywhere. Died
(1) Atlas drawing XV fig 7 - (1)
(2) 
(3) 
(4) 
(5) 
(6) Atlas drawing XV fig 6-9 (after Lebert) in whose atlas we find the following description and plate II fig 7. "Petits vibrios qui se rencontrent souvent dans le pus, et qui n'ont, cependant, aucun caractère spéciifique. Nous les avons rencontrés dernièrement en quantité prodigieuse dans le pus frais de la poussière d'hospital..." - "Physiologie pathologique ou recherches cliniques, expérimentales et microcosmiques par H. Lebert", Atlas, 1875.
March 10, 1848.

The external appearance of the body presented nothing worthy of observation.

Chest: Heart and pericardium healthy.

Lungs, on both sides were much congested. The whole lower lobe and part of the upper lobe of the left lung was condensed, void of air of a yellowish red colour and very friable consistence. A thick, tenacious, and in pressure an oily and prurient-looking fluid flowed over its cut surface. Microscopic observation showed that this fluid was composed chiefly of pus corpuscles. It was sticky when pressed between the fingers and there was considerable turbidity produced by the addition of acetic acid. From these phenomena it appeared that mucous or epithelial cells also formed an inconsiderable portion of the fluid. According under the microscope along with the pus we had various forms of epithelium, apparently thrown off from the basement membrane before they had reached maturity. We had also round forms of epithelium resembling pus, but acetic acid did not divide any part of the cell as it did in the pus corpuscles and at the same time set their nuclei free. Granules of fat and globules of oil existed in abundance soluble in Ether, among which were to be seen little forms of a tadpole form as represented in the drawing XV fig. 4 which might either be the ciliaria described by Lebert or they might be
form of cilia shed from epithelium. This is the only time I ever met with such an appearance and therefore opinion must be suspended until more frequent observations shall furnish data. Fig. 5 shows the effect of acetic acid. The nuclei of these cilia were completely disorganised and filled up by vacuoles. The films tissue by which they are surrounded are regularly distributed so that the individual films were separated from each other by the infiltration of vacuoles and epithelium as also of oil globules and fat granules. No compound granular corporules existed and few blood cor-
purules could be seen. Their nuclei did exist more swollen and apparently undergoing a change. No vascular or air -
jectin of vessels could be seen in the condensed part nor although these appearances prevailed around the seat of vacuolation.

Acetic acid & washing with water rendered the texture of the lung distinct and showed that the films tissue was not broken down.

Abdomen: In this cavity every organ and veins appeared healthy except the kidney. Both were large and had a considerable amount of granular deposit in their cortical substance.

Remarks: The condition of the lung in this case at once shows that the organisation of the epithelium is in the form of cilia.
granular cells cannot exist. How long sedimentation had existed in its subst-
ance cannot with certainty be ascertained, having lived only eight days
after admission and in such a condition as to preclude the hope of obtaining much information from himself. From the state of vascular- and digestion in which the seat of lesion existed we could expect that the sedimentation would be organized in the form of pus.
This state of vascularitiy could only be determined by the microscope
for the variety of colours in the healthy lung modifies its vascular appearance in disease. According under the microscpe an appearance of blood existed in vessels although to the naked eye the section of the lung was a yellowish red colour.

The state of health in which this man appears to have been for some time previous to admission, and the treatment which he appears to have undergone himself, we shall afterwards find in the concluding part of this paper. To be precisely one of those conditions of the constitution in which gangrene of the lung has been a frequent occurrence. Gangrene however had not commenced as shown by the integrity of the pulmonary texture and he appears to have died under the combined influence of cerebral suppression and the amount of texture involved by the sedimentation in the lung, both conditions being referable to the primary affection of the kidneys. The appearance of vibriosis (8) is another feature of interest. If such an appearance amongst the pus and as represented in this drawingfig. 7 are really of the same nature as those described by Seber and
which he found to exist in fresh fins from Hospital gangrene
the condition of the lump in our case is certainly ominous, and
had life been prolonged the condition of gangrene would
in all likelihood have taken place preceded by the generation
of the parasites described.
Case VI no 49 of Analysis. Table 1. Atlas drawing XV. figs. 3-4 & 5.

(Continued from) - Eustachian tube in spleen - Hydropsphalus - Phlegmasia.

in�e into upper lobe of left lung organized in the elementary form of pus mixed with some compacted granular emphysema.

James Smith, aged 25, admitted to one of the fever sheets attached to the Edinburgh Royal Infirmary, January 19, 1845. With symptoms of continued fever without any eruption, much emaciation and mental irritability. He lingered until March, when he died suffering more especially from cerebral disarrangement. No chest symptoms were complained of. It appears that he had always been of weak intellect.

Diagnosis March 9, 1846.

Externally the body presented appearances of the utmost emaciation.

Chest: - Heart and pericardium apparently healthy.

In the right lung there existed a well-defined condensed portion resembling an oesophageal tubercle about the size of a walnut situated at the posterior part of the upper lobe. Under the microscope this formation was entirely hemorrhagic presenting an appearance in every respect similar to that delineated in drawing XIV. figs. 5. The upper lobe of the left lung was condensed in several portions of a brownish or gray color and loaded with a thin brown turbid fluid.
The fluid generally (fig. 5, drawing xv) presented appearances of pus (1) in the greatest abundance, of oil (2) and of compound granular corpuscles in small quantity apparently breaking up, intermixed with masses of coagulated blood corpuscles (4). In some of the more firm portions the fluid showed candid cells and fibrinous forms of organization (5) along with epithelium and blood (6 & 7). The addition of acetic acid showed every element more transparent dissolving the cells of pus, and liberating their nuclei (8). A section of the lung under a low power of about 25 diameters showed (as in fig. 3) circular and unequal injection of vessels. In some parts no blood was seen in vessels in other parts the vascularity was great and the vessels were unequally filled. Such a condition of vascularity under the high power of 250 or 300 diameters showed the pulmonary structure void of air, infiltrated with the cells of pus, oil & a few compound granular corpuscles (fig. 4). The fibers, as in all the cases of imminent infiltration were irregularly arranged & separated from one another by the infiltrated exudate so that no vestiges of the usual pulmonary network could be distinguished. Acetic acid or washing with water showed the integrity of the fibrinous texture.

In other parts the tissue of the lung was healthy.

Abdomen: A patch of ulceration about 1/2 an inch in diameter was placed on the posterior surface of the spleen extending to a depth of three or four lines into its substance. Some smaller
Palate of esophagus occupied various parts of the surface of the organ.
About the middle of the transverse colon the mucous membrane was softened and thickened, of a purple colour, and studded with rufous ulcerations. This lesion extended throughout the whole course of the colon. In the ileum ulceration of various forms and sizes exposed the muscular coat & the mucous membrane where it resisted was frequently thickened by the cicatrices of old ulcerations.

Head: The lateral ventricles of brain contained eight oz. of clear fluid & the septum lucidum was completely destroyed.

Other organs healthy.

Remarks: The universality of lesion presented by this case is not the least important feature it presents, and it has been related chiefly with a view to show the amount of vascularly connected with the organisation of fluid & the compound granular enamel from that expected blood-plasma. Otherwise it presents no features of interest differing from the preceding cases in a pathological point of view.

From all these cases as well as from other observation we may shortly state the condition under which we may expect to find the expenditure of blood-plasma in this being becoming organised in the elementary forms of fies to be the following: —

1°. A sudden excised
1. A sudden and abundant exudation

2. A great amount of tissue involved

3. Diminished vascular... and consequent...

4. Inadequacy of absorption... increasing the...

5. Fluidity of the exudation...

6. Breaking up of the compound granular cell, either...

    liberating the nuclei of pus corpuscles... rendering...

    the exudation more fluid...

7. Stage of the exudation, along with these conditions...
I think what I want to express is my vulnerability and importance.
Having now considered the exudation of blood-plasma in the substance of the lung, as organised in the form of a fibrous or granular exudation, constituting a more or less constricted condition of its fibrous texture, associated in some circumstances with the fibrillar corpuses of Lebert, with conductive corpuses or fibro-plastic cells— as organised by the formation of compound granular cells, and lastly, as organised in the elementary form of cues, we come now to consider the exudation as terminating in a less perfect organisation depending on a specific dyscrasia of the blood, which exercises a modifying influence over the forms which the exudation assumes as seen to the naked eye, and under the microscope in the more elementary parts.

This dyscrasia is associated with the conditions of Typhus fever, with tuberculosis and with cancer. To the first of these conditions, namely that of Typhus fever, we propose to direct attention as modifying the forms of organisation which exudation of blood-plasma assumes during its progress, most particularly with reference to its condition in the lung.

A fluid state of the blood is a characteristic feature in the morbid appearances of Typhus fever, and we have reason to believe that such a condition also exists during life to a greater extent than in health; and that the exudation of its plasma are but little plastic, "of an unsightly, dripping gray, as if mixed with blood." The condition of the blood forever varies with the stage of the fever, or rather the
stage of the fever depends upon and varies with the condition of the blood. During the first stage the blood is generally thick and dark; it coagulates rapidly and forms a soft, large dark coloured clot. When examined at a more advanced period during the progress of the fever it is found to be more fluid of a scarlet colour, and laterally it becomes thin, watery, dark in hue, and ceases to coagulate. The following changes are also ascertained to take place in its constitution. (1) The watery portion of the blood, increasing the intensity of the disease, increases, and not merely are the solid constituents at that period diminished, but also the salts and carbonic acid. Stevens found the chlorate of sodium to be especially diminished. The fibrin has also been found decreased in the blood of typhus fever, and it is found to be decreased in proportion as we examine it at an advanced period of the disease. The following is a summary of these conditions as given by Simeon. "The blood is watery, very poor in fibrin, and of a dark colour. If any clot be formed it is diffusible and soft, and the serum is frequently of a deep yellow or brown red colour partly from the colouring matter of the bile, and partly from dissolved haemato-globulin. It possesses a very peculiar smell."

Hence deficiency in fibrin, in blood corpuscles, and in albumen, with the occasional formation of a salt of ammonia may be looked upon as constituting the phenomenon.
Phenomena of a dyscrasia at once give the cause of the fever. The exudation of blood plasma in any of the organs and a modifying agent in its form of organisation. Under these circumstances it is maintained by many German pathologists and more especially by Vogel and Pastorta of Vienna that during the progress of Typhus fever, "a certain morbid material possessed of peculiar properties, and having a tendency to undergo certain metamorphoses is forced out from the blood into the texture of organs and the tissues of parts. The local lesion seems to consist in an exudation of blood plasma in which are developed imperfect cells, molecular and granular matter. It has been attempted to assign to this deposit occurring during the progress of Typhus fever certain specific characters supposed to be sufficient to distinguish it from other elementary forms of organisation which take place in blood plasma organised under conditions of the body other than Typhus. Of the example of organised exudation said to be characteristic of the Typhus deposit which I have myself seen, a place might as readily have been assigned to them amongst any other defective elementary forms of organisation if the circumstances under which the exudation occurred had not also been taken into consideration.

In tracing the nature and progress of any exudation, we can only examine the effects as they are produced, and it is frequently not until these effects have
excited for some time that we have any opportunity of examining it, when we must in every case take into consideration the condition of disease (co-departure from the standard of health) under which these effects were established. The parts most liable to become the seat of this (so-called) 'syphilmous material,' or in other words the parts most liable to become the seat of the exudation of blood-plasma which undergoes imperfect organisation are the mucous membranes, especially that of the small intestines; but it is also admitted that the substance of organs, as of the lungs, may during the progress of syphilis, become infiltrated with a material closely resembling that found in the small intestines. The frequency with which the intestinal canal becomes the seat of extensive disorganisation during the progress of syphilis in Germany and in France, has afforded abundant opportunities for a close examination into the nature and cause of this disorganising process; and the conclusions which have been most generally arrived at by those German pathologists who have especially studied the subject are to the effect that this morbid process is attributable to the deposition of and subsequent metamorphoses undergone by a peculiar product, which they denominate the 'syphilmous material.' In this country the intestinal lesion has occasionally occurred, and although its occurrence may be rare, yet the exudation of blood-plasma into the substance of the
characterised by imperfect organisation and the deposit of fat in abnormal abundance, has been a most frequent and fatal complication of typhus fever, at all events according to our own observation it has been so in this city during the epidemic of 1846-7 and 8. The commencement of the exudation has been always visible, and when discovered it seldom yielded to the therapeutic agents employed with advantage when exudation of blood plasma has taken place under circumstances other than typhus.

"Of 63 cases of fever in the Edinburgh Infirmary inspected after death between March 1st 1846 and June 30th 1847, the spleen was the organ most frequently found affected; and next to it the spleen the lung was the most frequent seat of exudation. In 15 dissections it presented more or less consolidation from exudation, always differing in general appearances from the characters of hepatisation in idiopathic pneumonitis. It varied in colour from a dirty yellow tint to a brown chocolate colour, existing frequently in masses of irregular but decided outline, and varying in size and resembling very much the deposit in the spleen" (see Atlas Drawings VII and VIII, case of Callender).

Of the 101 cases of Pulmonary Lesion inspected after death between June 2nd 1847 and March 13th 1848 which form the data of this Thesis it will be seen by reference to Table II page 27 that 5 6 were exudations occurring during the
progress of Fever, that 34 of these cases were cases of undoubted
Typhus in which 5 had intestinal as well as pulmonary lesions.

It therefore appears that during the present epidemic
in Edinburgh, while we have had an unusual number
of cases of Typhus Fever with the intestinal lesion as well
described by Dr. Waters in his thesis and confirmed by the gold
medal of the University at the graduation of 1847; yet the
present Edinburgh fever has been especially characterized by
pulmonary complication, a circumstance noticed by Dr. Christian in the
library of medicine article "Fever."

In the intestines the exudation appeared in the solitary and
pyogenic glands of the smaller viscera, in the follicles of the
larger and in the mesenteric glands.

In the texture of the lungs we propose now to examine
the organisation of the exuded blood-plasma as modified
by the existence of Typhus.

In all the cases of Typhus Fever where an existence
of blood-plasma took place the part existed for some time in
the condition of hyperemia, until the coats of the vessels gave
way when as already stated every texture became augmented
by the liberated fluid, and according to the existing
dyspnoea, the former organisation disappeared.

Rokitansky divides the progress of the local lesion
into four stages, considered more especially with reference
1. We have the exudation of blood plasma.
2. We have the characteristic amount of organisation as modified by the existing dyscrasia.
3. We have the softening and the disintegration of this deposit.
4. We have the result of this disintegration in partial death of the involved textures.

These phenomena are apparent in whatever organ the local lesion exists. In the lung we have the various degrees of consolidation according to the state of the blood and the state of disintegration in which the deposit exists. Generally the exudation is of an unusually high specific gravity; but the texture is more friable, and rapidly the whole deposit and involved texture passes into a soft pultaceous mass (drawn in x, xii & xiii). Its colour when the process of disintegration has not commenced is generally of a slate grey or flesh colour, and when the deposit is well marked it is limited by a vascular boundary, forming a line of separation between comparative health and local lesion where all the vital changes take place connected with the laesuring and disintegration of the mass (see drawings vii & viii). The exudation never contains that degree of organisation which it acquires when no such dyscrasia as typhus or tubercle exists. It takes place in the
same manner & holds the same relative parts as the equilibr
ity of blood plasma under the conditions we have already
considered. It fills the air cells and interfaces and
undergoes changes in its organisation depending upon the depo-
osition as exudates under other circumstances etc. Its distinc-
tive feature is the imperfect power of organisation which it displays.
Round, irregular and easily dissolved cells are the highest-
forms of organisation hitherto found in the deposits in the lung,
always associated with numerous molecules and granules,
which become more abundant as the process of softening
advances. More frequently, however, molecular and granular-
matter associated with particles of fat in unusual abundance
are all the morbid changes that can be detected; and
when the lesion is at all extensive or has existed for any
length of time fat is an invariable constituent, and generally
the forms of the compound granular cell are entirely
absent. The granular exudation existing in masses
without being enclosed in a cell wall, if we consider the
formation of the compound granular cell as the highest form
of organisation which any exudation of blood-plasma can
assume, next to encrusting into a texture analogous to other
tissues of the body, and undoubtedly it seems to be the
imperfect and abortive attempts at their organisation
in exudations during syphilis is a feature whose con-
stitency is worthy of observation. That the compound
granular corpuscles is the highest form of organisation afforded evidently by reference to the condition in which it occurs, and it is only in the early stages of typhus that we have any appearance of such organisation. As more frequently however assumes the form of masses or clusters of granules, and as the disease advances, or when the exudations are examined at a later stage then we find that these granules have become still more diffused, mingled with small fociules or granules of fat. This condition of compound granular corpuscle or rather of the granules which ought to compose it affords a marked illustration of the power which the typhus staphylocia exercises in modifying the organisation of the exuded blood plasma.

The period within which exudations seem to take place in which the typhus staphylocia seems to exercise its greatest influence as a modifying agent appears to be between the 1st and the 10th day following from the recovery of my own cases, and when once the exudation takes place under these circumstances it seldom recedes, accounting for the failure of the usual therapeutic agents in modifying the symptoms or in promoting resolution when the exudation is at all extensive. The diagnosis of the presence of exudation in the lung during the progress of typhus, can only be made out with certainty by the stethoscope, constitutional symptoms being generally entirely absent or altogether obscured.
by the condition of fever. The changes which the exudation undergoes are its conversion into imperfect cells, which cannot be recognised independently of their situation and the circumstances under which they are formed, softening or disintegration of the exudation, and frequently accompanied with death of the tissue of the lung itself. The cause of the imperfect organisation we have already stated to be the morbid condition of the blood, as characterised by its deficiency of albumen or fibrin. The deficiency of albumen cannot be without its influence on the process of organisation, and when we connect this deficiency with the facts which we have to record regarding temporary albumenuria occurring during the fever, we may attach some more importance to the modifying influence of such a morbid condition of the blood.
Cases illustrating the modifying influence of the states of
Typhus fever upon the organization of blood-plasma exuded
into the substance of the lung.

Case VII. No. 7. of analysis Tab.1.

Typhus: - resolution into lumps and intestinal follicles
ulceration and softening of spleen.

Alexander Mc Swan, aged 19, an Irish labourer admitted
to one of the sheds (C) attached to the Edinburgh Royal Infirmary,
May 23rd 1847. Had rigors nine days before admission
with headache nausea and vomiting followed by pains in his
chest for which he had venesection performed before admission.

Present condition: - Complaints of cough, with pain in the thoracic
and abdominal regions. He suffers, at the same, from bruises
in these regions sustained in a brawl on the road from
Dumakail to this City.

May 27:

Fever of duration of countenance - thin hot and dry
Tongue dry in centre, moist at edges and fur - Pulse 129.
Skin covered with exanthematosus eruption. Breathing rapid.
Chest all over right side is dull on percussion. Respiration
broad and over the posterior point. Murmurs arise all over the
Anterior and lateral part of right side. Expectoration scanty
and tinged with blood. Bowels open.
May 29.

While expectoration unabated, Countenance anxious, Skin hot and dry. 12. 120. Tongue moist and white. Sputum on percussion can. Enlarged.

June 2.

Has been using diaphoretics and today is sweating profusely. Cough relieved. Tongue moist and preserved. P. 920. Soft. Complaints of pain in right eye, the conjunctiva of which appears vascular and injected.

June 8.

Since last report there has been no material change until last night when he was seized with pain at the lower part of the left chest for which lesches were applied with relief. Breathing accelerated. Pulse 120 of good strength. Lower part of the left side of chest dull on percussion. Respiration over the dull part is nearly absent and slight mucous and roaring in the head above it.

June 18.

Much sickness and disturbance during the past night and has vomited much yellowish bilious looking matter. Respiration rapid. Abdomen acutely tender on pressure and somewhat tympanitic. P. 146 extremely weak. Countenance anxious and pale. Tongue moist and furrowed in center.

June 19.

Feels easier today. Pains of abdomen abate. Pyorrhea.
After administration of an enema last-night, he had much vomiting of bilious fluid, towards morning became weak, and continuing to sink he died without further apparent change.

Dissection: 8.6 hours after death - June 22nd 1847.

External appearances: slight emaciation.

Thorax: Decolorised connective in cavities of heart, blood otherwise fluid. Superior lobe of right lung condensed and oxidised air, sank rapidly in water, was of a pale red colour, smooth section and not granular. Examination under the microscope showed no air and very little blood discs in this dense portion of lung, and the exudation which filled these obliterated the cells and infiltrated the pulmonary texture was of a granular, amorphous appearance and completely free from any compound granular cells. Globules of granules of fat were also present - soluble in Ether. Washing with water and acetic acid showed that the substance of the lung was not broken down. Cavities of the pleura contained about a pint of reddish serum.

Abdomen: On opening the cavity of the pelvis came about a quart of reddish yellow serum containing a few loose flakes of lymph was found. The diaphragmatic surface of the liver and corresponding surface of the diaphragm
were coated with a layer of recent lymph, about an eighth of an inch in thickness, and the inferior convolution of the intestines were free and these coated with lymph. The upper portion of the spleen for about one third of its substance, was taken up and ulcerated and portions remained adherent to the diaphragm on its removal. It formed a large by looking mass moulded into masses in the affected portion and presented a dirty yellow granular deposit in a jellyaceous brownish yellow liquid. In the intestines the patches and solitary glands of Beger were unusually distinct but not elevated. Their mucous surface was slightly transparent and scattered over with translucent dots, for about four inches above the ileo-cacical valve. The isolated glands numerous set together presented dark coloured points in their centres surrounded by an envelope of a yellowish colour; but they were very little elevated. Other organs healthy.

Remarks: From the history of this case it would appear that icterus into the lungs was synchronous, if not somewhat prior to the development of Typhoid symptoms, but that between the 9th and the 18th day both these conditions had undoubtedly existence. During the whole course of the disease however the constitution of the pulse which never fell below 120 indicated that some local conditions existed or were in the course of deposition which acted as a source of vascular excitement.
(concluded) - May 24th 1841: Mary Ann and Ann存活. The patient had
lately been a respiratory difficulty for several days that had
sudden way to local symptoms affecting respiration. Pneumonia led to death. At the examination
nothing was found in Mary's brain or cere
accordingly about the 28th I0-2g. by we were made aware of another local conglutination, namely in the spleen which presented the character of the yolk in deposit as described by Retzius, and was composed chiefly of granular matter. In this respect the microscopic appearance of the same of organization presented by the conglutination in the lungs and of the spleen were the same, differing only in particulars which are the explained by the structure or function of each particular organ. In the lung we had among the elements of conglutination a quantity of fat, a condition which we have explained at page 12 above; the spleen we had none. The state of the spleon in regard to this condition was more advanced compared with the conglutination in the lung. How may this be explained since the symptoms of conglutination in the spleen were the last to be developed?

The converse that it is susceptible of explanation, by considering the conglutination to take place at or about the same period, but that the functional activity of the lungs developed the symptoms of organic arrangement before, while in the spleen it continued in a latent state, no functional disorder being apparent; or if we consider the conglutination in the spleen to have been the most recent, there are concerns that the advanced state of disintegration in which it appeared is to be explained by the anatomical constitution of its texture.
Short or adapting from?
March 23, 2010
Escaration in left lung. Puckering and cicatrices in right lung. Hellebuck puckering from scarification into spleen.

Elizabeth Callender, aged 32, a laundress, admitted August 5, 1847, and was treated in one of the tents at that time pitched behind the Hospital. She has been a woman of irregular habits, and states that she has not been exposed to contagion, and suffered from "spotted fever" during the last epidemic about 3 years ago. Sixteen days ago was seized suddenly with severe febrile symptoms which disappeared in about a week, after a copious perspiration. She continued well until yesterday, the 1st of August, (14 days from last attack) when she became worse and the febricula still continues.

Present condition: Tongue covered with a brown fur. Pulse 88. Skin hot and dry, no eruption. Bowels open and have been tending to diarrhoea for the last six days. Complains much of cough with no expectoration. No dulness of chest on percussion. No sounds over ribs and crepitation are to be heard at the lower part of right side.

August 5:

Much nausea and vomiting. Physical signs in chest continue unchanged.

August 6:

Nausea has abated and there has been much
inclination to sleep since last report. The eyes are suffused and injected, the teeth covered with curdles, some tenderness of the abdomen increased on pressure - some delirium, and the inclination to sleep continues. Appearance of superficial oedema distinct over the body.

Aug. 12.

Eruption of a leathery crust in large patches from usual - teeth covered with sordes. Tongue coated with a dry brown fur - Tenderness of abdomen abolished. P. 110 small, and compressible.

Aug. 15. No fever.

Since last report there has been no material change of symptoms except the slight curative fluid evening.

Dissection. Aug. 17th. 1847.

External appearance. Remains of eruption visible.

 Chest. - The left pleura was slightly adherent by recent patches of yellow exudation which were easily broken through. The inferior lobe of the lung presented two dirty yellowish patches, the larger the size of a five shilling piece, the smaller the size of half a crown (see Figure VII). On section these were found to correspond with two depositions in the parenchyma of the lung (see Figure VIII) very much resembling the deposits in
The spleen described by Rokitansky as typhoid. A microscopic examination showed this deposit to consist of an exceedingly fine molecular matter without any tracey cell formation, intermingled with granules of fat, which ether dissolved and acetic acid rendered the whole more transparent. No compound granular corpuscles could be seen and only a few blood clots. The whole condition was intimately mingled with the pulmonary fibres & fimbriae and obliterated the pulmonary vessels (see drawing No VIII fig 2). In the vascular boundary which defined and separated these deposits from the pulmonary substance the blood-veins were irregularly and unevenly filled with blood. Exudation granules, and flocules of fat existed in abundance, lying with some broken down or imperfectly developed cells. (Drawing No VIII fig 3). The upper lobe of liver being was congested but contained no exudation, yielding on pressure a slightly gritty liquid. The right pleura was adherent throughout by dense chronic adhesions. The lung was puckered in two places, very deeply in the inferior and middle lobe and fully dense to the feel. On section the puckering corresponded to a firm fibrous slate-colored cicatrix of ellipsate shape. The parenchyma surrounding which was of considerable density from an increase of fibrous development.

The heart was healthy but felt soft & flabby.

Abdomen: The spleen presented in its centre a deep atellate puckering corresponding on section to a firm
cicatriz. Externally at the puckered part it was adherent by old bands of lymph to the diaphragm and peritoneum. Other organs healthy.

Remarks: From the history which this woman gave of her complaint previous to admission it appeared pretty evident that she had suffered from an attack of byphus, and that during its relapse when she came into the hospital byphus became developed. Her non-exposure to contagion is improbable considering her occupation.

In connecting the symptoms of local complication with the appearances found after death, it is evident that the querd

-lem in the left leg is the only one to be associated with her last illness, and the two facts, namely the previous existence of spotted fever; and the appearance of old adhesions between the spleen and diaphragm, and of old deposits and cicatrices in the spleen and right leg are worthy of connection. If by "spotted fever" we are to understand byphus, its reported previous existence is improbable, inasmuch as a second attack of undoubted byphus fever, marked by the presence of empyema is an occurrence not yet well authenticated; and in this case the length of the period of immunity between the first and second attacks renders the previous existence of byphus fever still more improbable. It is more consistent to suppose that she suffered from byphus during the
prevailing epedemic three years ago, with the existence of which we are inclined to associate the deposits and cicatrices found in the spleen of right lung. The most frequent deposits in the spleen have been found associated with that organ in its previous existence, as a diverticulum or bony lam. The deposit in the left lung is the sedimentation of plasma where organization has been modified by the present existing parasites of the dysentery. It occurred during the progress of the fever and indicated its presence by increased constitutional disturbance and physical signs between the 16th and 21st day. Its microscopic characters we have described as molecular, amorphous & opaque interspersed with fat & in some parts with exudation granules all which appearances are the effects of the modifying influence of the existing dysentery.
Case IX - No. 29 of Acalculous - Male 51.

Lyphesis - lobula, exudation into lung - subcutaneous swellings - Cynanche parotidea - fatty liver.

Margaret Swedell aged 2. Admitted from the poor's house into the Edinburgh Royal Infirmary July 26th 1847, and died 10 days after. During the whole course of the fever twice admission, there was much dyspnoea accompanied with sobbings, rales in the bronchial tubes, and cough. The skin was covered with an abundant exanthematosus eruption, and about 5 days after admission both sides of the face began to swell, more especially the right which in the region of the parotid gland appeared to be going on to suppuration. The day preceding death it was opened and gave forth a small quantity of an oily fluid in which no pus could be detected. The skin also in several places more especially on the arms, thighs and abdomen presented little wheals or nodules the largest about the size of a hazel nut introduced beneath the skin, which were these nodules was of a purple hue.

Dissection August 2nd 1847.

External appearances: - Two orifices existed into the right parotid, leading to a small cavity which contained a yellowish brown fluid of creamy consistency.
confused of globules of oil and granules of fat. The subcutaneous tissue over the extremities more especially contained a few lumps, the surfaces of which were marked by faint livid discolorations. They conveyed a resistant sensation on pressure, and felt of the size of peas or of a barley corn covered by skin. On cutting down upon them, nothing more was perceptible than comparative condensation of the subcutaneous muscular tissue, which was tinged of a pinkish tinge. Through the microscope nothing like an exudation was visible. Blood clots, globules of fat and muscular tissue occupied the field of view.

James: The vena cava ascends at its entrance into the pericardium contained a firm decolorised clot, but the blood was otherwise fluid. An oval opening existed in the foramen ovale about a line and a half long. The pulmonary pleura of the lower lobe of the right lung presented laterally a thin imperfect coating of recent lymph. The fluid was extended into its cavity. The lung throughout was generally crepitant and condensed masses varying in size from an ordinary to a large sized pea existed in the substance of all its lobes; most numerous in the lowest in somewhat less numbers in the middle and very sparingly in the uppermost lobe. All these masses presented at the pleural surface of the lung, where they were at once recognised by their bluish black colour, and resistant
feet. They were not elevated above the surrounding surface, but
rather very slightly depressed, and the pleural covering them
had its natural glistening aspect excepting only where the
partial coating of lymph existed. In section the great ma-

jority of these masses presented a reddish blue color and
smooth surface. They were not friable but of firm consistence.
A few of them had degenerated into a reddish gray, somewhat-
friable substance, and two or three of them were excavated by
central cavities which were empty and collapsed, very much
resembling the excavations left by the sloughing of a solitary
intestinal follicle. No compound granular corporules could
be detected in any portion of this excudation. The air cells
the seemed to be, chief seat of the exuded material whose ele-

mental form of organization consisted in granules associated
with abundance of fat. The tissue of the surrounding lump presented
natural appearances. The pleural covering of the inferior
lobe of left lung presented on its surface laterally and inferio-

ly over a space the size of a crown piece, a coating of lymph
similar to that on the opposite, and the inferior lobe of the
lung itself contained masses similar in every respect to
those discovered in the right, but did not exceed three or
four in number. Bronchial glands enlarged slightly.

Older liver weighed 14 ozs and of a pale yellow color, and
its ultimate cells were loaded with fat which also
existed free in large quantity.
The spleen healthy. The serotonic glands of a blue colour, not enlarged. Aggregate glands in the spleen had their component vesicles open and empty. Other organs healthy.

Remarks: In this case we have reason to believe that exudation into the lungs was the condition which immediately preceded an extensive exudation into the air-cells themselves expanding the pulmonary vesicles after the manner we have described. In all of them the exudation presented an imperfect degree of organisation, and in a few points integration had taken place to such an extent as to leave a cavity or ulcerated surface in all respects resembling the (so called) typhoid ulcer of the intestines.
John Braman, aged 23, a sailor admitted to the Fever House January 10, 1848, reported there then been 8 days ill. Present condition. Much delirium with an exanthematus eruption all over the body. There's considerable cough and difficulty of breathing, and complete dulness on percussion exists in the left back extending downwards from the spine of the scapula.

January 14.
The delirium has continued unabated since admission, and the dyspnea has been daily increasing. Respiration is now confined almost entirely to the bicipital tubes, and there is much Spinal depression.

January 23.
Since last report there has been no change in physical signs - he continued to sink and died this morning comatose.

Dissection: January 25, 1848.
Chest. - Recent adhesions between the pulmonary and costal pleurae of both sides, on the left-side an exudation of recent lymph existed. Both lungs were much congested.
(1) Group Hospital reports vol I 2nd Series.
The right lung was somewhat condensed in its lower half and very glisty. The left lung, throughout its lower half was of an intensely red colour, and so glisty as to break down under the finger with the utmost ease. Its surface was here and there intermixed with exudations of a whitish appearance which in section presented spots varying in size from a pin head to a barley corn. These exudations (Size 1 x 3, Drawing x) were soft and exuded on pressure a whitish substance resembling pus. They only existed in the lower half of the lung of the left side and not in the apex in which no deposit of any kind could be seen. On section the cut surfaces soon became very red and putrefactive so that these particles of exudation were easily picked out leaving a caps shaped depression in the soft pulmonary substance. Observing them in their natural position when not opened up to they presented an opaque whitish aspect surrounded by a distinct vascular lace, so that they resembled the summit of a pine tree just ripening in maturity. When removed from the lung and viewed through a low power of from 10 to 20 diameters they appeared like large glistening cells with fluid contents on whose outer wall little vascular twigs ramified. They had none of the scaly or appley appearance described by Dr. Addison. Their contents seemed to consist chiefly of free corpuscles, granular exudation and blood-clots adhering together. These corpuscles were imperfectly organised and may be some lef considered
(1) Drawing X, Fig. 2. (1)
(2) ... ... (2)
(3) ... ... (3)
(4) ... ... (4)
as young and altered epithelium. (Fig. 4—Drawing x.) These
elementary constituents were also associated with oil. At the
base of the lower lobe a patch about the size of a half crown was
visible upon the pleura. It was of a dirty grey colour and
surrounded by a dark purple circumference. In making a
section through this patch a gaseous cavity was exposed
about the size of a walnut. The dark purple appearance ex-
tended from the surface through the substance of the lung and
surrounded the section of the cavity. (Drawing x. Fig. 1.)
The cavity itself contained a dirty white granular matter-
like chalky particles which was easily washed out exposing
a living membrane to the cavity which was crossed in some
parts by the glossy tissue of the lung. This partly-obliterated
very feebly adhered. The microscopie appearances of the material
from the gaseous cavity exhibited oil globules and granules
in the form of cells (2), blood-clots (3), exudation cells modified by
the existing hypnomo chyloemia (4). The fluid ejected from
the upper lobe of the left lung was composed chiefly of coagulated
masses of blood (Fig. 5), of nucleated and non-nucleated
transparent cells. (Fig. 5) of exudation cells modified by the
chyloemia (3) (Fig. 5). A Valentin section from the pleura portion
of the lung surrounding the cavity. (Drawing x. Fig 1) showed
altered blood where haematin had coloured the surrounding
parts. The pulmonary fibres were unbroken, exudation masses
and cells imperfectly developed being modified by the existing
chyloemia.
flavours of oil and granules of fat also existed in abundance. Acetic acid generally dissolved the imperfect cells as seen in Fig 2. Drawing xi in which the section is more transparent, some of the imperfect globules cells still exist; however, and there was an appearance of oil globules that are present in abundance which was dissolved by ether.

The bronchial glands were much enlarged varying in size from a bean to a small egg, and slightly melanotic.

Heart—flabbly, with a decolorized clot in the right ventricle—blood otherwise fluid—

Abdomen:—

Liver: somewhat congested—Spleen soft and small—Other organs healthy.

Remarks:—In connection with these two cases which we have last recorded, there are several points deserving of attention.

1. The great amount of fatty matter deposited, more particularly in the last case, a condition we are to connect with the long continued hypoemia, depending in part on the cerebral oppression, as well as on the obstruction offered to the oxygenation of the blood by the amount of tissue involved by the coagulated plasma.

2. The condition of the exudation in its resemblance to
3. The enlargement of the bronchial glands com-
pleting an analogy between this morbid condition of the
lung and the state of the intestines and mesenteric glands
when they become the seat of exudation during the
progress of Typhoid fever.
Margaret Macgregor, aged 15, admitted January 24th, 1848, reported to have been 10 days ill; but from the constant state of excitement and restless delirium in which she continued for four days after admission, no satisfactory statement could be obtained regarding her illness.

Present condition, January 30th. Much decline of countenance. Skin covered with a confluent scaly eruption, considerable dyspnoea which has existed since admission. Coughing can be distinguished in the lower part of both lungs, and in the right breast there is dulness on percussion accompanied with bronchial respiration.

Feb. 1st.

Delirium continues and physical signs of chert remain the same. Urine passed in small quantities, of a dark amber colour. Rendered more transparent by heat, but on the addition of acetic acid a slight muskiness is produced. Specific gravity 1033. Reaction acid. On examination of the microscope no crystals could be detected, but numerous round cells somewhat larger than blood corpuscles and displaying by acetic acid, two or three distinct nuclei. But which could also be seen without such addition although not so distinctly. These were apparently few globules associated with epithelial and granular matter like exudation cells.
Feb 2.

Rube Fever. Urine contains a heavy mucous-looking deposit. pH: 6.1033 - acid, and presenting appearances under the microscope as already described. Sputum fading.

Feb 4.

Large, erupting sores exist throughout the whole of the right back and eruption has returned over the previously full portion. A slough is forming on the scrotum. Countenance still much flushed and the respiration is accompanied by sneezing. No tenderness in pressure over the region of the kidneys, nor has pain been complained of there at any time. Tongue moist, description: previous. Urine is passed in large quantity and on standing a heavy and abundant deposit falls to the bottom of a floculent aspect and yellowish brown colour, leaving the upper part transparent - of a dark mahogany appearance - reaction: acid, pH: 1033 - some ammonia water present - and also cryptate. The kerato-bulbar, corneal and any other discharge from the phentastuminary organs exists.

Feb 12.

Since last report, she has become more feeble and has always part vital in bed & she died this morning.

Dissection:

Exterior appearance: Considerable wasting of the muscles and two sloughs exist over the scrotum.
Spleen weighed 6 ounces was firm in texture & contained no sepulchre. The left kidney appeared healthy, but the right one was much empyema compared with the left & a slight depredation of fat existed in its tube - no marked appearances could be detected in any part of the genito-urinary system.
(b) Zimmermann on the absorption of blood and pus. Medico-chir. Revue. 1844.
Remarks: — This case like the others we have related presents the phenomenon of an imperfectly organised exudation, connected with the lympho-sclerous condition, along with an abnormal amount of fatty matter. The most interesting feature however, is undoubtedly the albuminuric connection apparently with the presence of pus in the urine. The interesting question regarding the absorption of pus at once presents itself, for its presence and not dependent upon disease of the kidneys or from any discharge from the gastro-intestinal system. It had apparently been noted in the lungs and from that time are we to account for its presence in the urine.

The absorption of pus may take place in two ways:

1. As real pus absorbed by the vascular system, a case taking place in the heart of the fool.

2. By the pus-corpules undergoing changes which render it fit for absorption as well as for elimination by the excreting organs. By both of these ways are we inclined to account for the presence of pus in the urine. A passage is obtained for the corpuscles through the pulmonary vessels whence it finds its way to the left ventricle, from which by the blood during the eliminating action of the kidneys it appears in the urine, either as pus or as a crystalline formation from its metamorphosis.

Suggested by this case and in reference generally to the cases of typhus fever connected or not with exudation into any organ I have still another condition to notice and to which I am inclined to attach some importance in reference
to the influence it may possess upon the phenomena of the existing dyspepsia. I refer to the diminution of albumen in the blood, which may be connected with the temporary albumenuria which sometimes exists during the progress of typhus fever, as well as of other symptoms independent of the condition of pneumonia.

Dr. Fuger of Prague has found albumenuria independent of renal disease to exist in 155 out of 600 cases of various acute diseases, and that next to tuberculous the temporary albumenuria occurred most frequently during typhus fever, and next to which in the order of frequency followed infectious fever and pneumonia. That three cases of typhus fever, which proves fatal, the intestinal complications existed in most and the pulmonary in the remaining. He also found his researches show that the albumen appeared in the urine generally from the 16th to the 25th day while the disease was on the increase or at its height. In those who recovered it uniformly declined and disappeared during convalescence. In 9 out of 15 cases of pneumonia it disappeared during recovery. In 6 who died no disease of kidney could be detected.

In 26 cases of typhus fever in which extreme prostration had also taken place in the lungs, I examined the urine in each and found temporary albumenuria to exist in 6, and the following are the symptoms of the urine and stage of the disease at which the albumenuria appeared.
<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
<th>Day of</th>
<th>Day of</th>
<th>Character of</th>
<th>Character of Urine</th>
<th>Result &amp; Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fem.</td>
<td>21</td>
<td>14th</td>
<td>6th 8th</td>
<td>circular,</td>
<td>Coagulable, not transparent acid, sp. gr. 1.028, not coagulable, dens. 1.026</td>
<td>as convalescence advanced, symptoms great and epithelium appeared. Cured</td>
</tr>
<tr>
<td>Fem.</td>
<td>18</td>
<td>14th</td>
<td>6th 8th</td>
<td>penicillent</td>
<td>Coagulable, amber colour, acid, pus in urine</td>
<td>Died, no disease of kidneys, pus in urine from the lungs by absorption.</td>
</tr>
<tr>
<td>Fem.</td>
<td>19</td>
<td>20th</td>
<td>?</td>
<td></td>
<td>Coagulable, yellowish red, acid, dens. 1.026</td>
<td>Eupipela of scalp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28th</td>
<td></td>
<td>not coagulable</td>
<td>Abundant cystatic deposit, died, no examination permitted</td>
</tr>
<tr>
<td>Mab.</td>
<td>21</td>
<td>12th</td>
<td>10th</td>
<td>circular</td>
<td>Coagulable, blood, dens. 1.019,</td>
<td>Abundant cystatic deposit, died, no examination.</td>
</tr>
<tr>
<td>Fem.</td>
<td>27</td>
<td>12th</td>
<td>6th 8th</td>
<td>Scanty</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24th</td>
<td>18th 20th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem.</td>
<td>21</td>
<td>15th 16</td>
<td>20th 10th</td>
<td>mucous, penicillent</td>
<td>Coagulable, Earthy yellow, sp. gr. 1.015, neutral, ten per cent. phosphate</td>
<td>Abundant cystatic deposit, Cured</td>
</tr>
</tbody>
</table>
Of these six cases three recovered and three died, but in all of them with the exception of one (whose case is recorded at p. 115) the albumen disappeared and in none had we any evidence of renal disease. In them the albumen appeared in an average about the 16" day of the typhus fever and about the 6" or 7" day after evolution had occurred in the lungs. The average density of the urine appears to have been about 1020 at the time of communicability. The disappearance of the albumen always to have been followed by a more or less abundant crystalline deposit when the average density seems to have diminished.

Dr. Lüger from his observations concludes that the presence of albumen in the urine along with a fibrinous or prominent evolution into the coryza is in consequence of these evolutions becoming absorbed and eliminated again as albumen by the kidneys. There is a degree of inconsistency however about such an explanation when we find that the albumen is invariably present in the urine during the forming out of formation, i.e. formation of the evolution in whatever organ it may take place, and that during the resolution of this evolution the albumen is absent at the very time when that evolution is being reabsorbed into the current of the circulation and its place is supplied by an abundant crystalline deposit in the urine. From our own observation we should be inclined to regard the existence of albumen in the urine connected with renal affection as
a symptom or part of the constitutional disease. Its development in the form of an exudation in the pulmonary substance, for instance, constituting according to its elementary forms of organization those conditions which in this Thiers we have attempted to describe.

Its existence, sometimes along with an excessive elimination of urine, in the urine during typhus fever, constituting a part of the phenomenon in the existing dyspepsia. In short its existence in the urine along with local exudations of various kinds, as well as during diseases where apparently no such exudation takes place, must lead us to conclude that the albumenuria is a part of the disease, and its disappearance during convalescence, still more favours such an opinion. We know further that in every disease there is a greater or less alteration in the state of the secretions, and probably if more extensive investigations were made into the nature of the various secreted materials during acute diseases we should gradually find phenomena compatible with those conditions of disease in which albumen is deficient in the blood, and that it is eliminated by those organs and tissues where changes in the blood take place during the processes of secretion and nutrition, such for example as by the glandular structures where it might either constitute an organized exudation as in the lungs, or be eliminated along with the superfluous eliminated by the gland as in the urine secreted by the kidney. We do not find such a condition in every case
but neither do we find tubercle in every organ although tuberculosis is undoubtedly a constitutional disease; neither do we find cancer in every organ although a constitutional disease; neither do we find edema in every organ nor always in any organ during typhoid fever. Although a hyperemia evidently exists we therefore conclude that temporary abnormallities are the more likely in proportion to the duration and severity of the constitutional symptoms, the nature of the existing hyperemia, extent of local lesion, such as the amount of being involved by edema as well as on the functional activity of those organs where the blood undergoes a change for the purposes of life.

All these cases of edema into the substance of the body occurring during the progress of typhoid fever which we have recorded are characterized by one feature, namely imperfect organisms of the exuded blood plasma, but independent of this I have not found in any case characteristic cells which any time might be denominated genuine typhoid cells, according to the classification of Robsectsky. In the case of Bannayan (case it is true we had, along with a great deposition of fat, some large imperfectly developed cells containing many nuclei, but these I am inclined to look upon as modification of the edema cell depending upon the particular hyperemia. It is generally in the mesenteric glands that the most perfect and highest degree of organisation in the cell is said to take place.
constituting the genuine by-products deposit of phthisis; and therefore it is that from this very localisation it is inclined
to doubt the existence of specific characters in the cell.

It is sufficient to know that in all the cases an evacuation of blood-plasma occurred in the lungs during
the course of undoubted phthisis jener-, an evacuation which in every case was marked by the absence of the perfect-
compound granular cell and of perfect-fus, but always
presented imperfectly organised forms, granular masses, molecular
granular and fatty matter, characters sufficient of themselves
to distinguish such evacuations occurring in phthisic fuses from
the usual forms of organisation as we have seen in Bright's
dis ease or inflammatory fuses, where we have the most-
perfectly organised evacuations existing. Certain it is, therefore,
as these cases abundantly testify, that the existence of phthisic
fuses modifies the evacuation of blood-plasma in whatever
organ that evacuation may take place.
The last form of organisation we have to notice which our epuration of blood plasma assumes is one which is of rare occurrence, in the Human species at least. It is seen in the formation of Cantilegious manes in the lung of which I have a single case to detail in illustration. In the museum of our University there is preserved and beautifully injected the lung of a dog extensively infiltrated with a deposit of a cantilegious nature existing in large nodules apparently ornamented by healthy pulmonary tissue. The dog had evident symptoms of a dyspnoea existing as well from the nature of the epuration as from the universality of its existence in the long skeleton itself. All the bones throughout every part of their surface, with the exception of those parts subject to friction as at the joints or where the action of muscles co-agonemous exercised most influence were the seat of an epuration apparently organised as bone beneath the pleuritium, traversing the hemerian canals and even appearing in the medullary canal itself or seen by a longitudinal section of the long bones. The epuration was in the form of little granular masses and tubules co-small papules.
Case XII. Drawing XV figs. 1-2.

Gangrene of superior extremity—Cartilageous and chalky formations in the lung.

January 8 - 1848. At the dissection of a female aged 65, who died from the effect of gangrene of the left superior extremity, there was found in the left lung five hardened masses varying in size from a small pea to a nodule the size of a pistachio (Drawing XV). The smallest of these masses appeared to be a tubercle. It was soft, of a yellowish white colour, enclosing in its centre a darker opalescent. Under the microscope it appeared to consist entirely of granules distinct from each other, a few corpuscles containing two or three of these granules as contents of the cell which was generally of an irregular form, and in some instances very much resembled pus from the granulated aspect presented.

Another mass appeared like a nodule of cartilage. It was enclosed in a cyst to which it seemed adherent by blood vessels. It was muscular and when cut by the knife it cut like cartilage, disclosing a small triangular cavity in its interior filled by about two drops of fluid of flocculent consistence and chiefly composed of blood corpuscles floating in a clear fluid. The lining membrane of the cyst in contact with the nodule was lined by epithelium and was highly vascular. It seemed to be surrounded by healthy pulmonary tissue, if we except melanosis. This was the case with all the masses, all of them were surrounded by
healthy limb, so that they appeared to be harmless foreign bodies and if once tubercular they had now lost their malignant type, having become latent and insidious. In this mass the microscopic disclosed cartilage cells (Drawing XV fig. 2) surrounded by fibrous tissue. These cells were not affected by acetic acid, and were easily put out of their relative position by the slightest pressure. Having ascertained the identity of this mass with cartilage, the question comes to be "How came cartilage there if tubercle once existed?" It is not improbable that cartilage presenting such an appearance in the mass at one time enclosed a tubercular cavity — for it has been found and stated by Loris (15) that when the spongiosa is long standing the membrane investing the cavity is dense, almost-keratinized, transparent, semi-cartilaginous, about a quarter of a line thick & generally itself lined with a second membrane. It is therefore possible that such a cavity, once existing in our case, may have contracted upon itself until it has assumed the shape, size and general aspect which we have now described.

A cartilaginous tumour developing itself in a gland is rare and its mode of epigenesis is not yet explained. The most probable explanation of its existence is the one we have now given, and the chances are in favour of the persistence of tubercle since one of the little masses present at all the appearance of a tubercle, both microscopically and to the naked eye. The other cutaneous masses
were not uniformly hard, but varied in consistence in different parts, and in some of the softer portions the character of cuticle were in them also apparent. The harder parts consisted of chalky particles, quite amorphous, breaking down under pressure in water, rendering it turbid and white. In all the cutaneous masses numerous crystals of cholestrine were found, bearing testimony to the advanced age of the mortal product. The structure of the lung surrounding each of the masses although healthy in general appearance was much condensed in the immediate vicinity of the mass with here and there a considerable quantity of specious melomotic deposit (black pigmentary matter) arranged in irregular masses and composed of a number of minute granules aggregated together. The present abundance of this deposit is another proof of the old formation of the ulcerated masses.

Referring to the researches of Lachert on Tuberculosis, we find that the most important element of the interior of a pulmonary ulcer is an organised membrane, pyogenic. This membrane is intimately connected with minute blood vessels with the subjacent pulmonary tissue and presents a redish, velvety-like vascular appearance. Under the microscope it presents an assemblage of capillary vessels apparently connected with the subjacent pulmonary vessels. The substance of the membrane presents an indistinct fibrinous structure with a
quantity of small globules between the fibres. In the predominance of fibrous tissue and the small degree of vascular, this structure sometimes assumes a cartilaginous appearance. In this way we consider the organisation of the exudation has taken place in the case we have described and we consider this case a most perfect illustration of the healing of uterine botry by calcaneous transformation as well as by the exudation and organisation of blood plasma in the way we have described effecting cicatrization of the cavity.

Such are the forms of organisation and the anatomical relations that exudated bloods plasma may assume in any case, and from the cases related it must be apparent that according to the morbid condition of the blood to the organisation of this exuded material, and that of all morbid conditions that of pythus fever exercises the greatest modifying influence. In the remainder of this paper we shall also have an opportunity of noticing its influence in bringing about death of the pulmonary tissue itself as well as disintegration of the exudation.
The proper tissue of the lung either in their growth or in their destruction. The only lesions which we invariably find to exist in the substance of the lung itself are rupture of blood-vessels, and generally also a violation of continuity in the lining membrane of the air-cells with a separation of the individual fibres from one another as a consequence of infiltration by the organised forms of exudation. There is therefore no physical reason existing, why these temporary forms originating in the exudation should not by their re-absorption leave the proper texture of the lung comparatively uninjured. It is not, therefore, the amount of texture destroyed in the lung which is the cause of death, but it is the amount of texture which for the time being is rendered unfit for the exercise of those functions essential to life and which if suspended for a time necessarily cause death.

We have already considered the transition and degeneration of the compound granular cell, as well as of the fine corpuscles; we have seen how all the modified forms in which the exudation becomes organised are dis-integrated and pass into a softened mass; it now remains for us shortly to notice the relation which these changes bear to the排出 matter eliminated by the organs and channels of secretion and excretion.

It is now well known that the periods of resolution are marked by changes in the stomach and in the urine.
By the spuita the crude material of the softened exudation is eliminated.

By the urine the elimination is effected through a variety of metamorphosis of the molecular portion of the exudation re-absorbed into the circulation.

Schonlein has shown in the hospital La Charité of Berlin that the disappearance of dullness in pneumonia is followed by a modified state of the urine, which contains a large amount of molecular fibrin. It is highly congealable by heat. We have also already noticed the researches of M. Füger, as well as recorded our own observations regarding the appearance of temporary albuminuric during Typhus with exudation in the lungs. Zimmermann also has noticed congealability of the urine from the presence of fibrin dissolved in it after the pus has been absorbed. In the case of M. Füger's page, we noticed the appearance of pus in the urine during the whole period of the disintegration of the imperfectly organized exudation which occurred during the course of Typhus fever.

From all these observations therefore it must be concluded that the molecules of the broken up exudation, such as the nuclei of pus-corpuscles and granular cells after circulating in the blood are ultimately eliminated in part by the kidney, mending their exit from the system by the urine sometimes entire, and developed in a more or less perfect form of granula, sometimes in a state of solution; and thus the morbid appearances in the
urine vary much, being sometime crystalline, sometimes prismatic, sometimes granular, sometimes fibrinous. We have already stated our opinion regarding the relation of albumenurea to the period of resolution, and said that it is always followed by a crystal deposit synchronous with the period of resolution.
tendency which the blood-plasma displays to become organised in forms varying with the conditions of disease; it now remains for us to consider the tendency which the exudate displays to become rapidly disintegrated, involving in its destruction the tissue of the lung itself.

We have already seen that during organisation of the exuded plasma the tissue of the lung itself remains unimpaired, so that all the exudate may be washed away leaving the filamentous tissue perfect as to the form of its individual fibres. The breaking up into fragments, and disintegration of these filaments constitute the condition of GANGRENE in which every histological element becomes changed. Neither blood, fibrin, nor epithelium can be seen, and the whole mass is converted into an amorphous granular character, of a yellowish brown or black colour—enimixed with drops of fat. The rarity, invariable fatality, and apparently mysterious character of pulmonary gangrene has attained for it a melancholy interest whenever it occurred and accordingly since Laennec directed attention to its peculiar character, pathologists of the greatest ability have at intervals contributed records of the disease.

Notwithstanding the researches of Abbeau (1822) of Servier—of Schneider Van der Kalck (1826) of Bright (1827) of Cunot-Algier, 1833 of Buschau (1836) and of Charpie (1841) it is still a disease at all times difficult to diagnose, and its existence is often unknown until the disgusting appearances after death
Proclaim a condition which general symptoms during life failed to 
disclose or hardly ever led to a suspicion. The diagnostic symp-
toms usually recorded are derived from the expression of the concom-
taneous becoming small pinched and contracted, haggard, gaty, 
miserable and death-like. Eyes sunken and void of lustre, 
patient feeble, languid and squeamish, with vomiting 
from time to time and betraying indifference to all external 
objects, all of which symptoms may or may not be associated 
with a disgusting pesty, the breath, but which when it is present 
may be considered conclusive. Not one of all these symptoms, however 
being manifest themselves and yet the condition of gangrene 
may exist. From the recorded cases, therefore, as well as 
from the cases which I have seen in working out the subject 
of this paper—all of which are noticed in the analysis, it 
may be of importance to know the conditions of disease in 
which pulmonary gangrene occurred. The determining causes 
are still acknowledged to be unknown and considering the rarity 
of the disease the facts connected with the occurrence of 15 
recent cases added to the records of those autopsies we have 
examined, might in some degree to advance the pathology of 
the disease.

The evacuation of blood plasma terminating by gangrene of the 
lung is by all authors considered as one of the least frequent 
terminations. Nagi and others record one case and Lennec 
is reported to have seen only 6 or 8 cases during the whole
course of his practice. That emaciation of blood-plasma, however, does sometime terminate in Gangrene is clearly shown both by constitutional symptoms and physical signs during life confirmed by the state of the surrounding parts after death.

The viscosity and often sudden mode of its attack, the sudden remarkable and fatal collapse which accompanies, show at the same time that no local condition had been suspected to account for the presence of gangrene. The extent to which the destruction takes place also varies much. In all we have the formation of a slough, its liquefaction and the establishment of a cavity sometimes we have nearly the whole of a lung going at once into gangrene (Cameron). At other times we have only a small portion in the centre of an emaciated (Premnan). Sometimes we have a line of separation attempted to be formed (Cameron); at other times we have no attempt made to limit the extent of the destruction, and this latter chilnsea condition is generally found associated with cases in which some psychosis exist as in Leigh's fever.
At 15 cases recorded by Buskain - 15 were Mauires.
At 3 Van der Kolk
1. was a maniac
2. a peculiar condition of the body.

At 6 Dr. Girard
1. Mentally deranged lesion in brain.
2. Bright's disease - Measles
1. Variola
1. Typhus
4. Typhus
3. Fever - type of which is not stated.
1. All Healthy - Measles
1. Tuberculosis
1. In Blood
1. lesion in Brain.

3. 9 Cases in all

As a final result of these cases we find that they may be clasped in these divisions:

1. Cases connected and influenced by lesions in the nervous centers, causing diminished nervous energy. Under this class we include the insane. = = 19

2. As connected and influenced by the presence of some disease, such as Typhus, Variola, Tuberculosis = 19

3. As connected and influenced by arterial obstructions caused by pressure upon the entire mass of the affected
Experiments—linked to influence as the resulting to sporting facts and from ones among farmers.
Sporadic on the surface caused with factors of farming F. D.

(1) Guislain - Gaz. Med.: 1838 - no. xxviii
part, so as to suspend all nervous energy & cause total absence of circulation in the part. Under this head we may place the simple cases resulting from external injury. = 1.

The following cases are designed to illustrate these conditions.

The frequency with which lesions of the lung coexist and succeed to disease of the Brain renders it at once apparent that the condition of the lung is materially affected by the energy of the nervous influence. In the cases recorded by cerebral and Bright, diseases of the lung, frequent, going on to gangrene were often the immediate cause of death in patients suffering from central disease; and it was also observed that the tendency to gangrene preceding inflammation of the lung was promoted by the actual existence of disease in the brain. Cruickshank has also directed attention to the frequency of Gangrene of the lungs in epileptic subjects and it has been remarked that the insane are particularly prone to this disease, more especially when their bodily health has suffered, or, what is in Maniacs, a greatly depressed state of the Animal functions precedes to unmediate nervous excitement. (1) under all these conditions the state of the atmosphere appears to have also some influence, warm and sultry weather appearing to favour its development.
Case XIII no 35 of Analysis - Feb. 1

Softening of right corpus striatum - opacitation into lung
and Gangrene.

Joseph Paraphon aged 57 admitted into one of the Germs
pitched behind the Royal Infirmary for the reception of fever patients,
July 20th 1847, complained of pain in head and shoulders which
had continued for some days (7 or 8) before admission. Had
no rigors, nor general pains nor any other symptoms of fever
besides those mentioned, although reported to have been exposed
to the contagion of Typhus.

Present Condition: Complains much of headache and pro-
nurtion. Skin rather covered with a petechial eruption about
the head and shoulders. Has slight cough and much mucous
phlegm. Expectoration free from blood. No pain nor uneasiness
in the chest. Tongue white and furred. Bowels open from
medicine. Piles 86 g of good strength.

Feb. 23

Had rigors this morning, followed by great pro-
nurtion of strength.

Feb. 25

Considerable nausea and vomiting of much
bileous looking matter - skin hot and dry - eruption
gone - Tongue foul and loaded - Bowels constipated no
abdominal tenderness
July 26. Perspires slightly and feels generally better.

August 9.

Since last report she has always seemed drowsy and infatuated, taking little or no food, and been occasionally troubled with diarrhoea.

Aug 13.

No apparent change since the 9th until today. There is complete paralysis of the left side, but sensation continues in the paralysed extremities. The mouth is drawn to the right side, and the tongue on protrusion tends to the same side. Tongue foul, breath congealed - inclines to stiper aromatics of no pain - ordered a blister to head.

Aug 14th.

A disagreeable fetid odor is diffused around the body. Blister have been well opened by medicament. Blister has risen well otherwise there has been no change of symptoms.

Aug 22.

Since last report there has been no apparent change of symptoms as regards their nature - protrusion has increased - expectoration of fetid mucus - prurient eruptions has been pretty copious and the smell and fluid today especially stomach -

Dissection. 48 hours after death.

External appearances were marked by great -
Chest: The pulmonary and costal pleura of left side were unmisally adherent to a grayish suprple, apparently not of recent duration. The superior lobes of the left lung hepatized of a greenish color in the upper part passing into yellow color below. On section the tissue was soft and fleshy, in some parts perfectly liquefied, emitting a fetid smell. The whole texture was broken up yielding in pressing a dirty yellowish prevalent looking fluid. Under the microscope the fluid from the soft sloughy part presented a substance of fat soluble in ether, a great amount of granular matter mingled with fragments of threads of fibrin. Texture No perfect cells existed and the blood clots were to all appearances undergoing a change as was best observed in the more firm part of the exudation surrounding the sloughy part. The section in this part presented a yellowish tone, in some parts black evident from putrefaction with the changed blood. When blood clots existed in masses they were much swollen and mixed with granular matter and fat.

Right lung and membranes healthy. Heart healthy.

Abdomen:

Viscera healthy. Kidneys apparently free from disease.

Head:

A slight layer of putty serum in
Cavity of subarachnoid. A few of the outer-superior convolutions filled up with extrarachnoid effusion. About 3 in. of serum in each lateral ventricle. Choroid plexus on both sides contained small serum cysts the size of a small pea. Right corpus striatum softened throughout, becoming slightly broken up on being permitted to a gentle stream of water. It contained numerous confluent granular corporules of large size. The left contained none.

Remarks: It is worthy of notice that a tendency to cerebral affection existed in this woman's family. Her daughter was a patient in the Hospital at the same time suffering from fever, and she remained in all appearance ill long after the febrile symptoms had subsided, and was at last dismissed in a state of apparent idioicity. During convalescence she also suffered from evaporation into the substance of the lungs, as indicated by the constitutional symptoms and physical signs. The uneasy sensations in the head of the patient herself were during the first symptoms complained of, but it could not be ascertained whether or not she ever suffered from any affection of the brain as indicated by disorder of its functions at any previous period of her life. The pain of the head was a prominent symptom throughout her illness, and during the period of her
apparent state of cornealence, the slowy encrease tendency always indicate continued disordered function in the brain by diminished nervous energy, but it was only during the last few days of her existence that the cerebral lesion had reached its height. It was during this period that we believe the lung began to undergo the sarcomatous degeneration which we have described. As far as constitutional disturbance and physical signs could indicate, it is apparent that some affection of the chest preceded the more urgent symptoms depending upon the cerebral lesion, although we know that its invasion was secondary to the infequent symptoms of cerebral disease. The general symptoms also indicated softening and incipient resolution of the fucation into the lung, a disintegration which being once established, the diminution of nervous energy as the result of cerebral softening would necessarily have a marked influence in accelerating its death along with the tissue of the lung itself. Accordingly as we approach the observing facts we find every histological element disappar and the debris of textures in manner forms constitute the mitric microscopic appearances. It was doubtfull at first whether or not cyphosis ever existed. On admission there was no exception of a petechial character, bloody and not presentary the general appearances of that eruption which we have been accustomed to see in cases of ulcerated syphons genit.
It resembled more the purple petechiae with which most of these miserable creatures are overspread, especially about the breast, shoulders and arms. Five days after admission no traces of it remained. We are not therefore warranted in supposing the existence of any Syphils depression in third case.
Case XIV No 14 of Analysis - 1854 - xii

Symptoms - Eruption into lungs: Gangrenous condition of the inferior lobe of the left lung surrounded by suppuration - Gangrene of the superior lobe of the right.

Alonzo C. Converse, aged 30, admitted to one of the tents connected with the hospital August 17, 1847. She is reported to have been confined to bed for 14 days, but is quite unable to give any account of herself.

Present Condition: Much delirium. Countenance of a person of great anxiety and terror. The labour under the hallucination that she is immediately to be put to death. Pupils are much dilated and the constancy stare wildly about. She is restless - always sits up in bed and makes repeated attempts to get out - thin hot, dry and covered with an abundant eruption, irregularly and thickly set over all the body, not elevated, and disappearing on pressure to a small point. Inspiration labored and accompanied by coarse and large respiration. Suppurative ulcers are present all over the anterior aspect of the chest, especially of the left side.

Augst 20

Depression has been much relieved by the application of a blister. Delirium with constipation. Countenance is blanched, expressive of great anxiety and terror.
Aug 22.

Dyspnoea has increased. Respiration is accompanied with much mucus rattling in the larger bronchial tubes. The cough occurs at intervals with violence, and the sputum expectorated into any vessel empties feeling but not quite gone.

Aug 23.

Wil not rest in bed without restraint, stools frequent, liquid, and slightly tinged with blood.

Aug 28.

There has been no material change since last report—stools are still liquid and bloody but not so frequent.

A hacking noise in the anterior and upper part of right chest accompanies the respiratory efforts.

Aug 29.

Apparantly more feeble today—answers questions with difficulty—refuses to lie down in bed. Towards evening sudden pronouncement of strength and difficulty of breathing came on, and death died about 11 O'CLOCK P.M.

Dissection:

Chest: The pleura on left side were covered throughout with patches and masses of recently exudated lymph, some of the latter nearly half an inch thick. The upper lobe of lung contained inferior deposits of irregular shape, generally
about as large as a small pea of oval angular shape and of a bright yellow colour, soft and yielding on pressure a
pumulent-looking fluid. Between these deposits the texture of
the lung was affected with a reddish or yellowish discolouration. The
deposits were more dense inferiorly and the apex was compar-
atively free. The inferior lobe was also depositized and densely
studded throughout with similar yellowish deposits. In its
centre was a gaseous cavity about the size of a pigeon egg
containing a brownish yellow opaque and fetid fluid. The
upper lobe of right lung was occupied with exudation. Exter-
nally it presented two large dark brown spots, which on section
disclosed a large gaseous cavity, from which a thick
yellowish brown opaque fluid escaped. The lining walls were
soft pulpy and of a brownish black colour. The external
membrane of their section presented a rim of pumulent yellow
exudation about half a line in thickness. The inferior lobe
were depositized and studded with deposits similar to those
in the upper lobe (see drawing X11 showing a section through
the gaseous cavity of right lung). A microscopic examina-
tion of these deposits showed that they were composed
chiefly of well-developed cells very much like those in
different stages of development as well as of numerous
granules and globules of fat. The more vascular boundary
of the cavity contained exudation granules in masses
along with large globules of fat soluble in ether.
The fluid from the cavity itself consisted of threads of fibrin and numerous imperfect cells along with granular fatty matter.

Abdomen:

Liver: encapsulated of an ochre yellow colour, and extending inferior to about 3 inches below marking the false ribs on the right side.

Remarks: This is a case of undoubted Syphilis, hence, terminating fatally by gangrene, softening of the lungs in 28 days. From the imperfect previous history of the case it is impossible to afford the commencement of the pulmonary complication. That complication into the lung existed was apparent by the constitutional symptoms and physical signs during life, and the expression of consternation is exactly that described and assigned by authors to pulmonary gangrene. That the termination in gangrene was influenced by the existing dyspnoea is also probable. The freedom of every other organ from disease as indicated by lung fluid and the existence of an evaporation in the lung renders it probable that the syphilitic condition would at once exercise its modifying influence upon that part already undergoing mortise change. Accordingly we find the whole tissue soft, broken down and putrefied. No cells however could be distinguished in any part examined under the microscope, which could be considered at all resembling those syphilitic material cells described by
Robidansky. We had the granular condition however, mingled with imperfect pus cells in different stages of development and globules of fat soluble in ether. The granular condensation existed in masses and, as we have already seen in all our cases of Typhus fever, appeared there no tendency to become surrounded by a cell wall to form the compound granular cell.

Case XV. Drawing XIII represents a section of a lung from the body of a private patient of Dr. Robert Paterson of Leith who has kindly furnished me with a history of the case to the following effect, that the patient during an attack of Typhus fever began to suffer from pulmonary irritation. Never the less, the capsules seemed normal. And further, when an apparition of the chest symptoms came on from which he died with symptoms of pulmonary gangrene indicated more particularly by the factor of the breath.

On dissection in presence of Dr. Alison and Paterson we found the apex of the upper lobe of right lung in a state of gangrene, and the substance of the lung itself, throughout that lobe, was densely infiltrated with a granular exudate. An apparent filling the air cells and very much resembling the general appearance of military tuberculosis.
existed in any other part of either lung, nor indeed of the body, and the previous to the fever the patient was in the enjoyment of good health.

A microscopic examination showed the exudation to be composed of imperfect cells, and a small quantity of fatty granular exudation, all which appearances were modifications of the fluid plasma influenced by the symptoms dyspnea.

Case XVI  No. 57 of Analysis.  Drawings.  IX

Empyema of Lung preceded by ill health.


Seven weeks ago, almost immediately after her marriage was seized with feverish symptoms, without any special complication.  Does not remember of having suffered from pain at night or short time, but about 4 weeks ago was seized with these symptoms accompanied with much dyspnea.  Pain was general over the chest, aggravated by inspiration.  Expectoration putrid and bloody.  In the enjoyment of good health previously, not subject to cough.  Catarrh never present a fortnight after this beginning of illness, & never been since.  Has had severe night sweats & has lost appetite and strength.

Present condition:  Much emaciation, and extreme
Jynchronization temperature of surface elevated. Pulse quick, small.

Hectic flush, strongly marked. Respiration accelerated.

Suffer much from pain of chest, but does not indicate any special irritation. Expectoration copious, not tenacious, yellow. 

And 22.

Whole chest expands imperfectly. Inspiration arrested by pain. Percussion of left back dull, absolute dullness below the scapula towards spine but not to lateral regions. Respiration rapid, quite shallow, with grunting, marked resonance.

Augt 26 - Died without much change of physical signs.

Dissection:

Chest: about half a pint of fluid exudation with pleura of left side with slight adherences.

Lower lobe of left lung dense, of a gray color, and granular appearance on surface, being followed out into a number of cavities some of them immediately adjacent to pleura from the size of a barley corn to a large pea containing matter of a dirty green color, thick consistence and strong solid odour - some early broken down, but the portions not in the immediate neighborhood of the cavity were firmer than the rest. Upper lobe health.

Posterior part of upper lobe of right lung presented in section.
innumerable irregular cavities the largest of which contained clear serous fluid. Some had a grayish appearance and some were filled with condensed pulmonary tissue of the same friable consistency and gray aspect. None of the cavities were limited by a membrane. The microscopic appearances were similar to those of the other cases, except that the fat was in much greater abundance and some compound promonular cells existed in the densest part. (fig. 764.) The organ was healthy-looking kidneys in the abdomen, which were slightly prominent.

In conclusion, I shall not trespass farther on their time by indulging in a formal or lengthened conclusion, more especially as I have already pointed out the peculiarities of each individual case, from which it is sufficiently evident, that with extensive lesions a degeneration of the blood exists either from alteration in its normal constituents or from the presence of morbid material; that such morbid conditions of the blood exercises a great influence in modifying the elementary forms of organisation of the Equine plasma, the growth in forms varying with the disease. This tendency of which is to become organised, and this disorganised.
least of all to die or to involve the texture of the lung itself in death; but that during the progress of dyspnoea fevers the exudations of blood and plasma in the lung assume a low type of organisation. In assigning such importance to the condition of the blood, I have not at the same time neglected to observe the influence of contiguous tissue upon the elementary forms which the exudation assumes; that any amount of texture may be involved, and that the inter-respiratory tissue as well as the air-cells are seat of the exudation. An exudation or deposition of fat in the lung I have also attempted to explain, and have shown, that that it is a morbid condition by no means uncommon; that it is found in conditions of obstruction to the respiratory process, and that it continues to accumulate until the death of the exudation and of the pulmonary texture; that pulmonary gangrene along with death of exudation is connected and influenced by lesions in the nervous centres; by the dyspaedia which exists in dyspnoea fever, variola and tuberculosis; by arterial obstruction caused by pressure upon the entire mass of the affected part, so as to suspend all nervous energy, causing total absence of circulation in the part.
Explanation of the Drawings
The observations of which the following represent the microscopic appear-
ances were all of them made by one of Berkeley's micro-
copes & with a power of 250 diameters unless otherwise 
mentioned  

[Signature]
**Fig. 1.** Section from the pleural surface of the lung of a cat showing the pulmonary vessels (after Rossignol)

**Fig. 2.** Mode of termination of a bronchial tube in the lung of a dog (after Rossignol)

**Fig. 3.** Human pulmonary vessels (Rainey)

**Fig. 4.** Paveement epithelium from the mucous membrane of the small bronchi—nucleus & nucleoli well preserved in some (after Lebret)

**Fig. 5.** Intermediate forms of epithelium between the pavement, cylindrical and vibratile (After Lebret).

**Murbid Conditions—**

**Drawing ii**

**Fig. 1.** Appearance of lung in the case of Kenneth McLean—page 4564

**Fig. 2.** Appearance of lung in hemorhagic hepatisation or pulmonary infarction

**Fig. 3.** Valentin section of the lung of McLean— Compound granular corpuscles & granules amongst the fibers and filling the air cells—fibrils intact

**Fig. 4.** Blood clots and colorless corpuscles from the air in selectée lung—

**Fig. 5.** (a) Compound granular corpuscles—(b) colorless cells, (c) oil or fat—(d) blood clots—(e) granules from the fluid in lung of McLean—
Fig. 1. Section of lung in case of empyema - page 57. 58. 59. Emphysema in the lobules.

Fig. 2. Valentin section - compound granular corpuscles and granules filling the air cells. & intermingled with the fibres. (Cisterna?)

Fig. 1. Section of lung in case of empyema - page 52 to 56

Fig. 2. Valentin section of same showing fibrinous exudation & fibroplastic cells with pyroid corpuscles and colourless corpuscles. (Cisterna?)

Fig. 3. Pyroid corpuscles, colourless cells & granules from fluid

Case of Queen Hastings - page 67 et seq?

Fig. 1. Purulent infiltration.

Fig. 2. Purulent infiltration bounded by red suppuration.

Case of Hastings’s case

Fig. 1. Pus and oil globules from fluid of purgy part.

Fig. 2. Organised forms in fluid as it begins to pass from the red to the grey.

1. Very few compound granular cells.
3. Colourless cells.
4. Pus corpuscles of the usual form. The pus cells move from side to side.
Fig. 3. peeled deposit from the exudation which destroyed the anterior tribial artery composed of oil, crystals and granules.

Fig. 4. section showing the fibrous pulmonary texture separated very much, but not destroyed, intermixed with the exudation consisting of blood in masses, pus cells, and oil globules and fat granules.

Fig. 5. Valentin section from gray portion of lung. No compound granular cells—every interspace filled with pus cells and oil fibers much separated, but unbroken—no blood.

Fig. 6. Effect of acetie acid in bringing the vestiges of the form of air vesicles into view—exhibiting foot corpuscles and filaments of the filamentous texture—no compound granular cells.

Fig. 7. Gradations in the form of the compound granular cell in passing from the gray to the red part. The pus and colorless cells existed most abundantly in the gray portion; the compound granular cells increased in abundance as a section was taken farther and farther from the gray part.
Fig. 1. Section of lung in the case of Callender - Page 101

The section passes through one of the deposits at (a) showing the pyedation to extend about 1/4 an inch down into substance of the lung.

Fig. 2. Microscopic appearance of the pyedation in the form of fine granules and oil droplets.

Fig. 3. Microscopic appearances in the non vascular parts - oil, granular pyedation, blood & imperfect cells.

Fig. 1-2. Gangrene of lung in case of Adland page 149.

Fig. 1. Diffuse broken down masses.

Fig. 2. Oil, pus, granular exudation & broken down fibers from the part.

Fig. 3. Section showing part of the lung going into gangrene.

Fig. 4. Microscopic appearances of oil, pus, blood, fibers & granules.

Fig. 1. Lung in the case of Stannan page 110 et seq. Condition of Gangrene. Exudation modified by existence of typhus fever.

Fig. 2. Exudation from gangrenous cervix.

1. Oil globules & granules

2. Fins like cells

3. Blood

4. Granular cells modified by the typhus dyspepsia (Rickets deplor?)
The whole of figure 2 is interspersed with broken down fibres.

Fig. 3. The millet-seed shaped bodies. The natural size and magnified about 10 diameters.

Fig. 4. Contents of these bodies consisting of oil, granules, masses and fine cells with blood.

Fig. 5. Elementary forms of the fluid from the upper lobe of left lung.

1. Granulated masses of blood.
2. Transparent cells.
3. Exudation modified by degeneration of fibrin.

Drawing x 11.

Fig. 1. Valvular section from the pleural portion of lung surrounding the panzerous cavity in the case of Brannan — Altered blood colouring the parts, all the vitellus still unbroken, imperfectly developed exudation existing in masses. Exudation modified by the fibrinous jaundice. (Fibrinous deposit)

Fig. 2. Effect of acetic acid — Cells generally destroyed — appearances of oil in globules & granules were dissolved by ether.

Drawing x 111.

Gangrene of Lung in Case of Camen — June 19th et seq. (Fibrinous Jaundice)
A section from the lung of a private patient of Dr. Robert Paterson of Leith, described at page 148. (Syphils, exudation & gangrene)

Fig. 1. Sputum consisting of modified epithelium & blood.
Fig. 2. Fluid from the lung in the case of Mr. Grigor—page 113—consisting of oil in globules & granules—exudation masses modified by the syphils & fibrinous exudation.
Fig. 3. Appearance of the pus-like cells in same case.
Fig. 4. Appearance of kidney tubules of same case.
Fig. 5. Appearance of lung in case of hemorrhagic emphysema.
Fig. 6. Appearance of Tina sputum where exudation has taken place.
Fig. 7. Acetic acid in the same.
Fig. 8. Appearance in the urine in case of Mr. Grigor:
1. pus-like cells
2. epithelium.
Fig. 9. Deposit said to be syphils taken from the mesenteric glands.
Fig. 10. Effect of acetic acid on the same.
Fig. 1. Caseating gumules in lung. See page 126.
Fig. 2. Section showing caseate cells.
Fig. 3. Appearance of Lung in the case of Smith. Page 82, showing irregular vasculature & injection of vessels. Page 25.
Fig. 4. Section of some under the usual high power. Perfect infiltration by pus, oil, & compound granular cells.
Fig. 5. Elementary forms seen in the fluid.
Fig. 6. Valentine section in the case of Graham. Page 77. Complete infiltration by oil, & pus.
Fig. 7. Fluid from same.
   1. Pus.
   2. Various forms of Shitadiium.
   3. Vibrions?
Fig. 8. Effect of Acetic acid.
Fig. 9. Vibrions after Lebart.