Observations

on

Spleenic Leucocytæmia

Thesis for the degree of

M.D.

J. Sprott, M.B.
Introduction. In taking up a subject such as Syphilis Diencephalaea, I am conscious of the difficulties to be dealt with, owing to our want of knowledge of the functions of the eye, and the formation of the blood. In consequence of the time at my disposal, my description of the cases will be of a more or less fragmentary nature. However, the subject is an interesting one, and one which, owing to the bad prognosis in cases of the disease, should I think engage more of our attention, if by any means we could restore the patient again to health.

Here taken the trouble of going to different places to see and examine patients for myself, in order that I might have the disease in its different stages.

While I was acting as Assistant Medical Officer at the Bethlem Asylum, out of the 500 patients under my care, I had not notice any that were the subjects of this disease. Among the four clinic characters of mental disease, although several points are shown by, I do not see any term diencephalaea insanity. If it is of the nature of a nervous, we should expect to finish it more of him. I shall divide my thesis into two parts, the first will be devoted to the description of cases, and the second to an account of diencephalaea.
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Case I

General facts. J. L., an engineer aged 51 years, about two years ago had an attack of influenza, for which he was under medical treatment, and from which he recovered without any of the complications with him a feeling of weakness.

After he returned to work, he was allowed to take up duties which were not so hard as what he was accustomed to before he had been taken ill. He seemed to be very slow in gaining strength, and about a year afterwards he commenced to feel that even light work made him very heavy and tired, and his occupation was carried on with more or less difficulty.

The patient is a man of average height, and previous to his attack of influenza weighed 13 stones, but at present he weighs only 9.

About a year ago, he began to complain of a feeling of pain in the left lumbar region; this pain subsequently extended across the abdomen. To sum up, during the past two years especially, his strength has been gradually and steadily failing, and at present he is unfit to follow his occupation, which is that of an engineer in the workshop of the Midland Railway Co. at Derby.
As regards food and drink, he has always been a temperate man, never in any way indulging in excess as regards either. When he was a child, he had an attack of small-pox, and the remains of scars are seen on his face; he has also evidently had enlarged glands in his neck and beneath the jaws. There, as far as he remembers, were removed; and at present there are old cicatrices present at the angle of the jaws and in the sub-maxillary region. Eight years ago, he had an attack of English Cholera, for which he was attended by a medical man. This does not seem to have impaired his health so far as he noticed. These then, the small-pox, the enlarged glands, English Cholera, are the diseases he suffered from, together with the attack of Influenza which he had shortly before his present illness. To summarise what has been said, and to put it as it may be seen at a glance, might I write it thus:

(Approx.)
1844 Small-pox & enlarged glands
1886 English Cholera
1892 Influenza
1893 Present illness.
Surroundings at home never been of a satisfactory character. He has been employed for the past 15 years in the workshops of the Midland Railway Co at Derby; and there is nothing in the way of defective ventilation to be found, neither are they draughty, nor are all likely to impair the health of those engaged in work. Previous to this work, he was employed in large silk mills where his duties were light, and the surroundings could not be found fault with. From these facts I am unable to gather any information that would give any clue to the etiology of his disease.

There are no hereditary tendencies. His grandfather on his father's side, died of an apoplectic seizure and his grandmother of old age. His father died at the age of 50 from natural decay. His mother died at 65 from asthma. He has two brothers and one sister, he himself being the youngest male child. His eldest brother is in America so far as he knows, the other died of some chest complaint, and his sister died in childbed. The patient is a married man and his
wife has had eight pregnancies, and of all these only two children have reached adult life, the sixth and seventh respectively. The first child died at 10 months from convulsions, the second at 1 year and 10 months of congestion of the brain, the third at 3 years of scarlet fever, the fourth pregnancy his wife aborted through a fall on the ice, the fifth she also aborted, came unknown the sixth is alive and is 25 years of age, the seventh is alive and is 20, and the eighth was still-born.

Commenting: I do not think that the family history will throw any light on the patient's present illness; still I think that it is evident there was a great want of vitality in his case, and as a result that he was more open to any special form of disease that might attack him. In his childhood he had small pox, and this may have weakened his vitality for he afterward suffered from enlarged glands in the neck. What the nature of these glands or enlargement were, I could not say. They may have been tuberculosis or the question might arise, might they...
not have been a very early phase of the disease which caused his death?

He was unable to give me any history as to how they began; neither does he remember his parents ever telling him what his medical attendant thought of them. Whether they were the treatment was suitable for either case, for, had it been a thrombophlebitis, engorgement, removal of them may have arrested the disease; and in a child would not be so serious a thing, as to attempt removal of engorged glands in the adult, in whom the loss of blood might not be so well replaced as in a young and

young child. I collected his family history as fully as I could, but I am afraid I can see no hereditary tendency to his disease. A lowered vitality on the part of the patient is all I can deduce from his liability to his previous illnesses, and the want of reform as to self in his progeny. I do not think his wife is at fault; for although she is of a robust nature, she has always been strong and in her present living.

Of his two living children there nothing
to say, except that the younger is at present suffering from syphilis. This, of course, may be owing to the district in which he lives. The patient's mother having had asthma, his brother having died of a chest complaint, and he himself having had enlarged glands in the neck, it is possible that there is a tubercular diathesis.

On examination, he is a man of average height, but it is evident that he is not what he used to be as regards his muscular development. Formerly, he was a man of 15 stones, but at present only weighs about 9, so there is a marked deterioration in his condition.

The muscles of his arms and legs and body generally are very soft and flabby, and very much different from what one would expect in a man who was accustomed to hard bodily work. There is no special set of muscles wasted, it seems to be a general deterioration. His skin is pale and drooping. The general appearance is that of a person who is suffering from profound anaemia. The expression of his face is not that of a person who is suffering from acute pain, temperature is normal but exacerbations sometimes present
Elementary system. The lips present a very
lichen ed appearance, and their mucous membrane
is dry and hard, and cracked in places.
The teeth are very irregular, some are wanting,
and several are in a condition of dental caries.
The gums are swollen and spongy in appearance,
and project over the edges of the teeth; on very
slight irritation they bleed. The tongue is
slightly furrowed, is dry, and flabby in appearance,
and indicated by the teeth. There is a dis-
apparent swelling beneath the mouth, and the
saliva is increased in quantity. On the
right half of the hard palate near the free
margin of the gum, there is a large oval-shaped
ulcer. This ulcer is deep, and has a ragged
edged margin; it is covered by a yellowish
Coating, except in the centre, where it is wanting
and where the part is of a reddish colour;
The ulcer is surrounded by a red area;
a line of hemorrhagic blisters is just in present.
The limbs are slightly reddened, otherwise they
present a normal appearance. His appetite
is bad, and he has very little desire for
food, though there are days in which he
partakes of his food very well. Occasions
from the gums often takes place.
The condition of his mouth occasioned him pain at times, when taking food. He often complained of thirst, for which he used to drink water without feeling it alleviated; but at present, while taking light pats in small quantities, it seems to have left him. After he partakes of food, he is troubled a good deal with flatulence, and a slight feeling of discomfort, sometimes vomiting, has taken place but this has not occurred in many occasions. When he did vomit, it was some time after food, and the vomited matter was bile stained.

Before his present illness his bowels were quite regular, but since he has been troubled more or less with diarrhea. He has had 7 or 8 motions in a day, and this would continue for days when he was not under treatment, but once by means of antitoxins at one time, and by intestinal antiseptics at another, the motions were decreased 3 or 4 in a day, and he improved himself so feeling much better than when he remained untreated for the condition.

On some occasions, the diarrhea would continue for weeks at a time, and then gradually subside, leaving him in a very weak and feeble condition.
During the period he was under treatment, owing I believe to a more careful selection of his diet among other things, his troublesome condition has not recurred to nearly such an extent, though at times it would come on, and was only to a slight extent modified by treatment; but taken on the whole he has certainly improved in this respect. While he had the diarrhoea, he was troubled with nausea, and with Colicky pain in the abdomen; he never complained of any tenesmus. The stools were examined from time to time, and they were rather slimy mucoid, while the diarrhoea lasted, but at this time they were of a semi-solid consistence.

**Character of stools during Diarrhoea.**

During this period the stools were of a yellowish color, and although the bowels were frequently opened, the total quantity of water passed was not great in amount. The odor was slightly offensive, and fibrous threads and masses of undigested food were present. The reaction was acid. Microscopically. By this method, threads of fibrin, fat globules epithelial cells and debris were noted. No blood was found.
In the intervals while the patient was free from diarrhoea the stools were examined, and were found to follow: **Naked eye**: They were 
semisolid in appearance, and of a yellowish white colour, and the amount passed in the day was normal in quantity. The other 
appeared particularly offensive. Preliminary undigested food were present, and the percolation was alkaline. 

**Microscopically** there was nothing noted different from what I saw during the stage of diarrhoea, except that in one or two instances, I noticed that bile pigments were present.

**Abdomen and Haemopoietic System.** On inspection the abdomen was seen to be rather protuberant, and this was more marked on the left side a little to the left of the median line. In the epigastric region there is a depression. On palpation, there is a firm solid mass felt, and it is found to occupy the left hypochondria. 

**Epigastric, umbilical, and left lumbar regions** on percussion there is dulness extending all over the abdomen, and this dulness is continuous with that of the normal splenic area. It extends as high as the seventh rib in the mid-anterior line, and from downwards and inwards and...
emerges from under cover of the ribs, about two inches to the left of the sterno-clavicular joint. It then proceeds more directly downwards, and crosses the median line, lying about one inch to the right of the umbilicus. The bulbus is then found to curve round, and backwards, and is about two and a half inches above the left anterior superior spine. From the 7th rib on the mid-axillary line to the extremity of the sternum is twelve inches. Its greatest breadth at the level of the umbilicus is eight and a half inches. The lumbar under consideration is evidently splenic in nature; the depression which has been mentioned as occurring in the epigastric region, is due to the notch in spleen. The circumference of the abdomen is 33 inches, taken at the level of the umbilicus. I have merely stated the fact that the lumbar is splenic in nature, but in addition to the above facts it is movable, and influenced by respiration to a good extent. Under the heading 'Different Diagnosis', I shall discuss at more length what it is, or what it might be. The sympathetic ganglia along the posterior border of the aorta, mesenteric (Mesenterie concatenata) are enlarged on both sides.
of the neck; there is also an enlargement of the glands at the angle of the jaw, they are about half the size of a cherry. The inguinal glands on both sides are enlarged, those of the right being the larger. Glands in Scarpa’s triangle can be felt. No other glands enlarged.

The blood has been examined microscopically on different occasions, and was found to be very much affected. When drawn from the finger, it was very pale and watery looking.

The corpuscular elements were examined on various occasions — every other day — while he was under treatment. The hematocritometer I used was that of Thomas Zeis.

I shall not however put the results of every examination, as there was very slight change indeed in such short intervals, but I shall give the results of a weekly examination on the 22nd Dec. I made the first examination, and found that the red cells had decreased in number from what they should normally be. There were 3,150,000 reds. The white cells were 2,625 to 1, giving a relative proportion of 1 in 12.

Evidently from this the case was clearly
one of fever and aches. I shall give here a
tabular view of the examinations, and we
shall see the change that took place from
the 22 Dec to 16 Feb 1845.

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<td>Dec 22nd</td>
<td>34.12</td>
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<tr>
<td>Jan 5th</td>
<td>35.14</td>
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<td>Jan 19th</td>
<td>36.17</td>
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<td>Feb 26th</td>
<td>37.23</td>
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<td>Feb 9th</td>
<td>38.30</td>
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<tr>
<td>Feb 16th</td>
<td>39.32</td>
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From these figures it is seen that there was
a gradual of a slow improvement.

The red cells at first numbered 3,150,000, and
now by 16 Feb, they had increased to 3,750,000,
being an increase of 600,000 during nine weeks.
Some of the red cells were noticed to be irregular
in shape, their size varying and some were
smaller than others. The cells formed clumps
in some places rather than points.

Some of the white had a single large nucleus,
while others were multinucleated, their presence being
brought out by the addition of acetic acid.
Some were much larger than others, and a few of the smaller ones approximated nearly in size some of the reds; some presented a granular appearance.

Circulatory system. The patient is subject to palpitation on very slight exertion, and although he is subject to feelings of faintness, he has not fainted on any occasion.

After lying down. On assuming the erect posture, he has a feeling of lassitude.

There is a systolic murmur to be heard in the pulmonary area. The pulse is 90. It is regular, small in volume, and easily compressible. The arterial wall is normal.

Respiratory system. He is troubled with dyspnoea. He is troubled with a spasmodic cough; there is no expectoration.

The exertion he is troubled with dyspnoea.

The respiratory sounds are normal.

Integumentary system. Extending all over the chest, and spreading down to the abdomen, is a yellowish-brown eruption. It is somewhat seedy and raised above the surface. It began in the upper part of the chest as small patches, which have coalesced, and are now extending downward by irregular patches.
Clinically, it has all the characteristics of Measles, fevered off some of the scales, and treated him with Iod. Potas., and then examined them with the microscope, when the spots and any remains of the microscopic fungus were found to be present. I do not know the cause of this eruption, as the patient was very clearly in his habits, and never more fluxed, and his toilet. Probably it arose from some systemic disturbance, or was a result of the respiration. The eruption was clearing up by treating it with a solution of Hyposulphite of Soda.

Urinary System. The urine was acid in reaction, and the quantity passed in 24 hours was normal, or of anything slightly increased. It was of a pale yellow color when passed, and on standing for some time there was a sediment, coming chiefly from white. The specific gravity was 1016. The microscope revealed the presence of uric acid crystals, a few epithelial cells, and a few of a granular cast on one occasion. Although I examined the urine several times, I found no traces of blood.
Reproductive system. A very slack condition of parts is noticed. The urethra is very pendulous. There is a varicocele on the left side; the testicles are not atrophied. There is no sexual desire whatever, and he has never been troubled with precocin.

Nervous System. Sensation as regards heat and cold is normal. There is a feeling of numbness complained of in both lower extremities. His sight is failing, and he now requires the use of glasses in reading. I examined his eyes with the ophthalmoscope but could not detect any haemorrhages. The edges of the optic disc were blunted, and the retinal veins distended and tortuous; there were evidently some of the symptoms of a thrombemic retinitis present. This sensation of haste has somewhat persisted; this was probably owing to an abnormal state of the buccal secretions. Nothing was noticed as regards the motor functions. He was greatly troubled with perspirations. These were not constantly present, but seemed to come and go, and while they were present they would last a few days. They always
took place at night time. During the day he would feel quite well, but when he retired to bed he would perspire most profusely, so that he had often to change his garments. \underline{Cerebral and Mental Functions}. For some time past his mental faculties have been failing. He has noticed that he cannot remember things nearly as well as he did formerly, and he has great difficulty in fixing his attention on things. He used to take great interest in reading but at present to read is wearisome, and he can take no pleasure whatever in any mental exercise. He has been troubled greatly with insomnia, and would lie awake for several hours of the night, and on these occasions he would feel very exhausted the next day; but whenever he obtained a good night's rest he was much brighter. \underline{Locomotor System}. There was tenderness complained of in tapping on the tibiae. There was enlargement of the tibia externum accompanied by tenderness. His joints were slightly enlarged, probably owing to chronic phthisis, but he does not seem to have ever complained of this.
The muscles of his legs were very flabby and much atrophied, and he was often troubled with cramp in his legs.

I shall now take up the differential diagnosis of Leney's anaemia generally and not merely of this one special case.

**Differential diagnosis.** There are a great many conditions in which we get an enlargement of the spleen; and it would be impossible to say that the enlargement was Leney's anaemia or not, without having examined microscopically the character of the blood. To diagnose a splenic tumour is a different thing, and one which we can do without the aid of the microscope. In the following conditions we may get an enlargement of the spleen, or such a condition as might well be reasonably supposed to be a tumour of the spleen, or a condition that might be confounded with Leney's anaemia:

1. Waxy spleen 
2. Malig. tumour of spleen 
3. Syphilis 
4. Tubercle 
5. Wandering spleen 
6. Simple hypertrophy of spleen 
7. Spleenic anaemia 
8. Hodgkin's disease
19

(14) Enlarged left lobe of liver (10) The kidney

(11) Malignant disease of the cartilae and

The stomach (12) Sarcoma tumor (13) Rickets

(14) Sarcoma rectum (15) Tumors of

Supra renal body (16) Leucy (17) Heat poisoning

(18) Anemia (19) Chlorosis (20) Pernicious anemia

and (21) Leucophtoe.

(1) If the growth was very in nature, we
should look for evidence of long-continued
exposure, presence of albumin in urine,
Syphilis. There was no history of syphilis
in this case (2) In carcinoma of ever
it would be irregular in shape, and nodular;
primary carcinoma is rare. From a
sarcomatous mass here other organs rather
than glands are affected (3) Syphilis
fumarate are rare, and the history of the
Care and antisyphilitic treatment, would
reveal the nature of the tumor.

(4) Tuberple. This occurs as an earlier age and
we would get presence of tubercle elsewhere.
Roberts (Practice of medicine 19 edition) says
that tubercle is not recognized clinically.
(5) From a varying often we distinguish it
by the fact that there is no splenic
A dulness in the usual situation, and the characteristic shape and notch show that the organ we are examining is the spleen, and put out of the question another abdominal tumour. The spleen may be enlarged from simple hyperplasia, the result of paro-intestinal disturbances; here the condition of the blood would enable us to decide. In splenic anaemia which is a different disease (Stanley) we get a great enlargement of the spleen, but the relation of colourless to coloured corpuscles determines whether the condition is splenocyt anaemia or not. From Hodgkin's disease it is sometimes difficult to separate it, especially in what might be called border-line cases. In Hodgkin's disease the lymphatics are affected, and the spleen also is usually complicated, but the enlargement never occurs to such an extent as in leukocytes anaemia. In leukocytes anaemia the spleen is affected, the lymphatics and mucous membrane becoming involved in the later stages of the disease. According to Fagge, leukocytes anaemia is distinguished from Hodgkin's disease.
by the following:—The spleen is enlarged from the beginning of the illness; there are no scattered nodules in it, the enlargement consists simply of a hyperplasia of the splenic pulp tissue. The layers of linocytes is very great and is constant. Magnus Hess says that the line should be drawn when the colordens corpuscles average 1 in 20 of the reds, and Bartholomew (Practice of Medicine) says that to constitute true hyperemia the relative proportion should be 1 in 6. From experience however, we know that it is difficult to draw such hard and fast lines. For instance take a case in which the proportion was 1 in 6. Suppose under the influence of treatment the whites decrease, and are 1 in 30. Are we to call the case one of hyperemia as the one period and on the other occasion something else? (9) From left side of liver here we would find the liver enlarged and the dulness of the liver continues with front of the tumour, again the direction of the line of the liver would probably be different from that taken by an enlarged spleen.

(10) From the kidney, here we have the rounded
center of the surface, instead of the sharp anterior border of the spleen. There is an absence of the characteristic notch, and on percussing over the kidney we do not get dulness owing to the presence of the descending colon lying in front of the kidney. 11. Malignant disease of the stomach. Here examine the stool. There might be an cases of white corpuscles, but watch if it is permanent; again the cancer cachexia is different from that of leucocythaemia (12) from an ovarian tumour, by the history of the case, viz. that the tumour began below, and besides a large ovarian tumour would be more central in position (13) from rickets, by those symptoms of that disease, such as the changes in the various bones, and the delay in the eruption of the teeth. 14. Tumour of the omentum. By the situation of the tumour it would be below the margin of the thorax, and would not spread in a definite direction like the spleen, and it would probably be more mobile. 15. Tumour of the suprarenal body. Here we would expect symptoms of Addison's disease.
(16) Leucyto. Here the history of the case, as the absence of fresh vegetables from the diet 17 lead poisoning. In this condition where the patient was very anaemic, and had a dis- coordination of the gums, one might think of leucocythaemia, but the history of the case and the presence of lead in the urine would reveal the nature of the case. (18) Anaemia, possibly in the early stages of leucocythaemia it might be mistaken for anaemia, here examine the blood. (19) Chlorosis. Cases not improving under appropriate treatment call for an examination of the blood, to see if there is any difference in the numerical relationship existing between white and red cells. In chlorosis both cells are deficient. (20) Pernicious Anaemia. Here also the case that do not improve under treatment, we should examine the blood. The bone marrow in this disease does not cause any abnormality of bone, whereas the bone marrow of leucocythaemia seems to have this effect; hence we should not expect to get tenderness over bones as in leucocythaemia.

21 Leucocytes. In many cases such as
pregnancy and glandular affections, and in
many glandular affections, especially pneumonia,
the proportion of white is greatly increased.
However if we examine the leucocytes and
find amoeboid movement quite normal,
then it is not likely the case is leucytocytosis,
for here the amoeboid movement is sluggish
or wanting (Caryoty British Medical Journal
November 10 1849. Also Newman).

Treatment: In a condition like the one
under consideration, there is great need of
firming the patient a nutritious and easily
assimilated diet; for his digestive powers
being very weak, unless we do so, the
patient has no chance whatever of combating
the disease. There is no food whatever
in giving him food, without carefully
considering his weakened condition, for not
only does it afford him no nourishment,
but it must be a source of irritation, a
thing which we by no means desire.
The troublesome diarrhea which exists
is, I am sure, often aggravated by some
foods, and if irritation of lymphatic
tissue increases the colorless corpuscular
elements, allowing the patient to have what he sometimes desires must surely have this effect, and thus his condition instead of being improved is made worse.

For the patient under consideration, the following were among the things which he partook of:—light boiled eggs, eggs beaten up with milk to which was added a small quantity of brandy, cocoa, toast, small quantities of ham, beef tea, soups, and broths, chicken, seal and rabbit, Bengis food and tomatoes. Some weeks when he did not seem so well, he was allowed only Bengis food and beaten up eggs. Of course it may not always be possible for the patient to be supplied with this kind of diet, but I think it should be possible aim at getting something which has the greatest amount of nourishment and which will tax the digestive organs in as small a degree as possible.

Fortunately my patient was able to afford the above things. Some patients seem to have a voracious appetite, but I think this is far from indicating a
normal condition, but it just as morbid a condition as the case, in which the appetite is very poor.

Medical. This man has been treated with potassium iodide, iron and bitter tonics and arsenic, and did not seem to improve with the exhibition of any. I am afraid however that they were not always given in a suitable manner. If the iron was not given with due regard to his condition, it probably was not assimilated, and in the case of arsenic which was continued for a short time only, it was given in what I think was far too small doses.

I treated him with bone marrow. The form in which it was given was simple. I am not sure if there is any difference in the action of it when given this way, or if Calorized or a glycerine extract would not have suited quite as well. However he was ordered to put just bone marrow every day, and to get it from the bones of a young and growing animal. It was given to him in small quantities at first, as he seemed to dislike it slightly. I then
thought that as the twin seemed rather sluggish, I might well add some tonics, for this would not only cover the disagreeable taste of the bone marrow but would have a stimulating effect upon the liver.
For a period of eight weeks then, this man had taken the marrow almost daily.
At first it was given in small quantities of about half an ounce night and morning; this was increased to three daily. By the 2nd week he had one ounce three daily, and from the fourth week on, two ounces three daily. Of course there were days when he did not take as much as the latter quantity, days on which he did not feel so well, or there occasions he sometimes took it once and sometimes not any for the whole day. He never minded taking it for more than a day. As circumstances arose, he was treated with astringents and internal antiscorbutics for his diarrhoea, and for his insomnia he got bromide or paregoric at bed time, 2 drachms, sometimes had the desired effect, and at other times a similar dose would not be sufficient.
When Epsilantium was present, he got capsules (Duncan & Buchan & Co.) containing 8 mms of
terpine and 2 mms of eucalyptus. These
were given with the idea of the terpine
acting as an antiseptic, and the eucalyptus
carving contraction of the spleen. When
haemorrhage took place from the lungs, he got
a month's work consisting of physio of leucine
acid. At page 3 of my thesis I have
given the results of my examination of the blood
from the time he started bone marrow until
the 16th Feb, and I have also given an outline
of the size of the spleen at the commencement
and end of treatment. It will be seen
that the spleen has decreased in size.
From these facts I think there is no doubt
that bone marrow is useful in the treatment
of this affection. In these pages I have not
given the treatment from day to day, as it
was very much the same but thought it
better to give a general indication of the
line of treatment to which he was subjected.
Saturday 16 Feb. was the last occasion on which
I examined his blood. On the following Monday,
I examined the patient. I found him, I am
skeptical, to say I found him suffering from pneumonia of the left lung. His condition gradually got worse from day to day, and he died on the following Friday at 9:15 p.m. Fortunately, I was allowed to make a post-mortem examination, which I did the next day, and I shall give the results below.

**Sección Cadavérica**. The body was emaciated. There were no abnormal dilatations of blood vessels. Death mortis was present.

There was a slight prominence in the left hypochondrium, and slight edema of the lower extremities. On opening into the abdominal cavity, no ascites was found. The spleen was removed from the abdomen with difficulty on account of the numerous adhesions with neighbouring parts.

The measurements were:

- Greater length: 9 3/4 inches
- Breadth: 7
- Thickness: 2 1/4

These measurements were taken with the organ lying on the table. On the opposite page, I shall give an outline of the spleen.
Enlarged Spleen

Prominence

Internal surface

J.L. age 51
Spleenic Leucocytocytosis
faded into the posterior part.

Anterior border. About the junction of the middle and lower thirds of this border, is a well marked notch, fully an inch deep. The vessels at the hilus of the organ were enlarged, the constancy was firmer than normal, and the weight was 3 lbs 4 oz. On cutting into it, no scattered nodules were seen. By the microscope, so far as I could make out, the enlargement was due to a hyperplasia of the normal oval structure.

Commentary. The condition of the organ, coupled with the microscopic examination, the blood, confirms the diagnosis of spleenic hyperplasia. The prominent swelling that have mentioned as occurring on the inner surface of the organ, is probably of the nature of a secondary spleen in a very early stage of development.

Both kidneys were enlarged and pale; the capsule stripped off easily.

Heart. The muscular substance was pale and flabby. In the right auricle, were pale columns of light, quite prominent to notice. Slight aneurysm was present at the orifice of the aorta. The liver was enlarged.
and fatty. The gall bladder was distended with bile. The left lung was in the red hepatisation stage of pneumonia.
Case II

J. J., aged 29, a clerk, was born in York, he is a simple man. Complains of shortness of breath, a pain in his side, and weakness in both his legs. He noticed himself not feeling so well for the past 18 months, and although there have been periods since, during which he felt fairly well, he has been gradually getting worse. He has had to walk 1½ miles to and from his work every day, and on many occasions he got wet and had to sit all day with damp feet, in a small office occupied by two others besides himself, from 10 in the morning till 5 in the evening. He says he feels much better in the cold weather.

Hereditary tendencies: His grandfather (on his father's side) died an old man, cause unknown; his grandmother on the same side is 95 and alive. Patient's father died at 42 from heart disease, and his mother at 32 from consumption. Two of his father's brothers are alive and healthy. He has two brothers dead, aged 4 and 7 respectively; the former of concussion of the brain, the latter of a low fever. Patient is the
Third child, he has two brothers alive and well. Two of his mother's brothers died of consumption. I think in this case we have a distinct history of phthisis on his mother's side. Surroundings at home and work. The patient is in comfortable circumstances, and has always had a sufficient supply of nourishing food; he has been temperate in his habits. Working in a small office all day is by no means conducive to robust health. He has had no prominent illness.

Present Illness. Came on insidiously; the chief thing complained of being shortness of breath and weakness and the pain in his side, of which he speaks comes and goes, and seems to catch him sometimes. General facts. He is a man 5 ft 9 in and weighs 102 1/2 lbs. His muscular system is well developed, and he has a florid complexion, though the latter varies. The expression of his face is not that of a person suffering from a serious illness.

His hands and arms are somewhat puffy. Elementary system. His lips are of a dark red appearance. The teeth are bad, his
gums are swollen and rough in appearance, his tongue is furred, the bowels are not enlarged. There is a peculiar disagreeable sweetish odour in his breath. About a year ago he noticed clots of blood in his mouth on awakening in the mornings, and this has often happened since. He has also been troubled with epistaxis, and this has lasted for three months, taking place on an average every other day. He has no difficulty in swallowing his food, but he takes very little, and what he does take is mostly of a liquid nature, consisting principally of milk and eggs. After meals in the morning he feels inclined to be sick, but this sensation passes off on taking exercise. There is no similar complaint after other meals, although they consist mostly of similar food. He is troubled with flatulence after every thing he takes. His bowels are regular. The liver extends and can be felt below the costal margin.

Hæmopoetic System. The glands on either side of the neck are enlarged. There are chains of glands to be felt in the anterior and posterior triangles of the neck, extending
right down to the clavicles. How long these enlargements have existed, he does not know. Those of the right side are the larger, and possibly that might mean that change took place in them first. The glands vary in size from a cherry to a walnut. They are distinct, free from each other, freely movable, and there is no protrusion of the skin. They are tough and elastic in feeling, though at one place one of them seems rather hard. There is no evidence of suppuration having ever taken place. The thyroid is not enlarged. The glands in the axilla are slightly enlarged, as also are those along the edge of the pectoral muscle. The spleen extends to the anterior axillary line. Microscopic examination of the blood showed that many leucocytes were granular and larger than normal, and some of the reds were irregular in shape. With the Thoma-Zeiss haemacytometer I found 4450 reds and whites in proportion 3:1 in 215.

Circulation System. Pulse is 100, irregular, soft; and the volume is not large. There is no albumin of small vessels.
Diagram representing enlarged spleen.

[Diagram showing anatomical details with labels and numbers.]
Respiration System: He is troubled with a short hacking, and sometimes spasmodic sort of cough; there is no expectoration whatever, but he has a feeling as if there was something to come up. Respirations are 22 per minute.

Integumentary System: The skin is moist and clammy, and he is troubled with flushes of heat and perspirations. There is a good deal of instantaneous pain. Primary System: The urine is acid, there is no albumen, Sp. gr. is 1018.

Reproductive System: There is a poor phthisic and want of tone in the external genitals. Ejaculations slightly enlarged; he has had frequency.

Nervous System: In both lower extremities there is a feeling of numbness, and he sometimes has cramp in the calves of his leg. I do not find any varieties condition of veins present to account for this. The sense of sight, hearing, and smell, are normal. Both pupils are equal and react to light and to accommodation. I did not examine his eyes with the ophthalmoscope. He is troubled with headaches, paresthesia, and insomnia. Motor function: He complains of some difficulty whenever he partakes of solid food, but so far already said this is rare.
The patellar tendon reflexes are slightly exaggerated. Whenever the patient is asked to walk across the floor, he does it in a hesitating manner; the legs are jerked slightly, and the heels are brought to the ground like what one sees in cases of locomotor ataxia. His co-ordination is affected, for, being asked to walk across the floor on a marked line, he is unable to do so. Romberg's sign is also present.

**Provisional diagnosis.** In a case like the one under consideration, I think it is safer to make a provisional diagnosis, as there is a certain amount of uncertainty about it, present, and it is one that would require watching, and repeated examinations, before one would be justified in giving a diagnosis. The case I may mention has been seen by more than one medical man, among whom I might mention Dr. A. G. Barro of Leeds, Dr. Raine, and Dr. A. J. Whiting. Dr. Barron saw the patient in June 1894, and his opinion was that the case was probably tubercular, or one of Gougerot's disease, and he inclined to the latter view, though against it was the fact that the man was by no means anemic. The patient
had gone to Leeds to consult Dr. Barr, but did not care to go into hospital, and he therefore returned to York, and was visited by Dr. Rainio until Nov. 1844. Treatment was then discontinued, and nothing has been done for the condition up to the present. The result has been that he is gradually getting weaker, and can hardly follow his occupation. I examined the patient and took an account of his case, which I have given in the preceding page. Dr. Rainio thinks that the case is now assuming a leukymatous character, and I have a similar opinion.

I carefully examined his blood with the Thoma-Fin k'ana cytometer; counting several squares and then taking the average, I found as I have said before, that the red blood was very slightly diminished in numbers, and the white corpuscles were one might say in normal proportion but if anything they were increased. Now although for the sake of a diagnosis, I should have preferred a greater increase in the whites, for the patient asked it is probably better that such was not found and that the medical man should have to make a provisional diagnosis. The interest of this case lies in its rarity.
They see not have here a case of Leucocythaemia in its early stage of development? This is the stage we should like to find it in, for we shall then have a much better opportunity of combating the disease, and are less likely to have complications to deal with. The examination of the blood did not afford much information, still there was a slight decrease of reds, and excess of whites, and besides, a slight enlargement of the spleen. The epistaxis, and the hemorrhage from the gums, the general weakness, and the glandular enlargements, and the above mentioned facts, are all found in leucocythaemia, and it is on these facts that I base my provisional diagnosis of a borderline case between Tuberculous Disease and Leucocythaemia. On the other hand, there is the diagnosis of tuberculous glands. Certainly, there is a family history of Phthisis, but I do not see that this compels us to regard the condition as tubercular. In tubercular disease we feel the glands at the angle of the jaw, and those in front of the sternum; mastoid affected first. This is influenced by the fact that the infection takes place through the mouth. In the case under consideration, the glands at
The posterior borders of the sternomastoid, are as much enlarged as are those that lie anterior to that muscle. Again there is the history, and character of the glands. There is no history or evidence whatever of consumption having taken place, there is no implication of the skin and the glands are distinct and freely movable. In tubercle, the glands exhibit a peculiar hardness, but here the glands have a tough and elastic feeling. For these reasons I do not regard the case as tubercular and from the examination of the blood and album, I regard it as a Commencing case of Leucemia.

Treatment. The treatment which the man had, was plenty of light nutritious food. Arsenic was the drug used. He was for three months at Rhaye in North Wales, where he went for the good of his health; while here he partook freely of

potatoes, eating 2 days every day. He returned home in very much better spirits, and said he had derived great benefit from his stay at the seaside. Might not System form a very important article of diet in these cases? While he was taking arsenic, his general health improved, but the glandular swelling in his neck never disappeared, and it cannot be said they even decreased in size.
Case III

This was the first case that came under my observation and occurred when I was surgeon on one of the vessels of the British and African Steamship Co running to the West Coast of Africa. The man, shortly after coming on board complained of “fever”. On examination, I found that he had an enlarged spleen, reaching almost to the umbilicus. The patient not being able to speak English well, I was unable to get any satisfactory history from him. What he complained of was weakness and not being able to do his duties. There were epistaxis and haemorrhage from the gums, and a pain in the region of the spleen, accompanied by a dragging sensation. This man had suffered from what was termed fever, and it was an attack of this disease accompanied by an enlarged spleen that I at first took it to be, but I have since doubted if this was the real condition.

Of course the case this man took of himself was not what we would derive, as before I saw him, he with his other companions, lay about the deck at night, and although the weather was fine, he would have been better with something more than the canopy of heaven over him while he slept.
I managed to get a tent erected, and made him as comfortable as circumstances would permit. One morning however when the decks were being washed I was taken down and the place where he had been lying I found all wet, and here I found him shivering. I might say that it was to some of the natives he was being treated in this manner. I got him arranged again under a tent, but four days afterwards he developed pneumonia from which he died. After death I noticed an ulcerated condition of the base penis, and there was evidence of blood having come from the urethra.

No post-mortem examination was made. I relate this case as the symptoms are very much akin to cases of leukemia, and from a clinical examination I am unable to say definitely if it was a case of that disease; if it was, then it was one of malarial origin.
General facts: I.M., aged 32 years, is a man of average size and fair muscular development. For the past three years he has noticed that he has been getting weaker, though he was still able to follow his occupation which was that of a farm labourer. He was admitted to hospital in September '94, and for three months previous to this he felt his health getting worse. At present, there is a pain experienced in the left hypochondrium, this is what he complains of most. The pain is not localized, but shoots across the abdomen, and radiates round to the back; it is more or less constant, and is aggravated by the ingestion of food. A dragging sensation is also experienced. He says he feels worst on cold days. There is no jaundice present. There is a slight fluid over the malar regions. There is no history of his having had any previous illnesses; through an accident however, he lost one of his eyes. He has lately been troubled with 'feels in the head' and sore throat. His temperature is normal, and there have been no purulent swellings. He states that he has been troubled with perspiration at times.
**Alimentary System.** The lips and gums are not particularly anaemic. The tongue is moist and firm, and slightly furred; there is a disagreeable taste experienced in mouth. The tonsils are slightly congested, they are normal in appearance. His appetite is very much increased, and he has a constant desire for food. After partaking of which, he is not satisfied. He is troubled with flatulence, and food causes him discomfort, sometimes amounting to pain. Although he takes his food well he does not gain anything in weight. Abdomen. On inspection it seen to be enlarged, and depression exist at certain parts. On palpation a solid resisting mass is felt, which is quite dull on percussion.

**Haemopoietic System.** The salivary glands are slightly enlarged, as are also those on the thoracic wall; they are movable, spindle shaped, and harder than usual. There is a similar enlargement of the glands in the inguinal and femoral regions. Spleen. This organ is greatly enlarged. On palpation it is felt to be firm in consistency. On percussing it is dull all over. The tumour occupies a great part of the left half of the abdomen.
and extends across it for about 5½ in to the right of the umbilicus. The length of the tumour from its upper limit at the 7½ in.
the mid-axillary line, to its extremity, measures 17 in. The greatest breadth at the level of
the umbilicus, is 11½ in. There is a firm
vibration to be felt over the tumour; it is quite
distinct, slight pressure causes no discomfort,
depth pressure causes pain. The anterior border
can be felt, and has two notches. The circum-
ference of the abdomen, taken at a point 3½ in
above the umbilicus, is 36 in. - 36½ in; at the
level of the umbilicus it is 34 in - 34½ in.

The following is a result of examination by blood:-

<table>
<thead>
<tr>
<th>Date</th>
<th>Size</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1 in</td>
</tr>
<tr>
<td>Nov 26</td>
<td>152.20</td>
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<td>Dec 3</td>
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<td>Dec 29</td>
<td>141.90</td>
<td>1 in</td>
</tr>
<tr>
<td>Jan 27</td>
<td>235.00</td>
<td>1 in</td>
</tr>
<tr>
<td>Feb 18</td>
<td>455.00</td>
<td>1 in</td>
</tr>
</tbody>
</table>

This table shows there has been a great diminution in white.

Circulatory System. The after death is in the fourth
phase. There is no atheroma or arteries.

Respiratory System. He is troubled with a slight cough.
The percussion note is slightly muffled over the right after; over the left inspiration is prolonged. 

Urinary system. Previous to his illness he had difficulty in starting micturition, but lately this has remitted off. The urine is albuminuric.

Reproductive system. There is an absence of sexual desire.

Nervous system. He complains of slight numbness in his lower extremities. His pupils react to light and accommodation. Optic reflexes are normal. He perspires freely at times. His mental faculties are but slightly affected. Diagnosis: From palpation and percussion, the lesion is evidently syphilitic in nature, and from the examination of the blood an eosin of corpuscles found to be present, and the case is therefore one of syphilitic leukenemia.

Treatment. This man has been unsuccessfully treated with narrow furoxone and tincture of bone marrow, but improved greatly under arsenic.

On Sept. 44, he was taking mms. of arsenic three times daily, this was gradually increased, and on Jan. 21, 95 he was having three times XX thins daily.

This produced unpleasant symptoms, it has reduced to mms. X, this was increased and on March 95 he is taking mms. X11 three times daily.
Commentary. Here is a man accustomed to out-door work, and from whom no history of maladies is obtained. What has been the cause of his trouble? From the examination of his lungs, the hectic flush that is present, and from the coughings, tubercle may have something to do with the etiology.

The sputum was enormously enlarged, and the white corpuscles very much increased, and now the former has diminished in size and the white cells are reduced in number. In this man the arsenic was given in large doses, and I think if arsenic is to be of use, it must be furnished till signs of intolerance begin to manifest themselves, as had been done in this case.

This is the history of a man aged 22 years. He is married, his occupation is a miner, and he was admitted to hospital on 21st Jan. 94.

Present illness. He was first troubled with diarrhoea, having 6, 7 and 8 motions in the day; the motions sometimes contained blood. While the diarrhoea lasted, he had pain in the abdomen but there was no tenesmus. After the diarrhoea ceased, the bowel continued to act once or twice in a day and it was about this time he became aware of a swelling in his abdomen.
Previous illness. He has had inflammation of
the lungs; previous to this he was always strong
and healthy. About three years ago, he was
attacked with illness, and on consulting a
medical man, was told it was an attack of ague.
This lasted a week. He never recovered.

General Facts. He is a man of average height, and
weighs 11 stones. At present an opinion has been
deliberately made, but at present it is determined
judging from the appearance of his face, one would
not say he was in robust health, though his face
is fairly coloured; he says that it is sometimes
swollen and puffy in the mornings.

Prescription. There is one history of phthisis.

General Observations. On account of his occupation
being that of a miner, there are not very favourable
Alimentary System. Lips are pink coloured, the
Teeth are bad, the tongue is clean, there is a
disagreeable taste in mouth. His appetite is
not good, and he complains of pains after the
consumption of food, it is sometimes severe and
radiates through to the back; he is also troubled
with flatulence. Abdomen. On inspection there
is noticed a prominence in the left hypochondriac.
Haemopoietic System: In the left half of the abdomen there is a solid, resilient mass, dull on percussion and continuous with the dullness of the normal splenic area. It is evident that it is an enlarged spleen. In front this dullness extends as high as the 6th space, it extends across the middle line far above and below the rectus. It then curves round to the left loin region, extending about 2½ in below the umbilicus.

It is 2½ in below the ribs in the left nipple line.

Examination of blood shows excess of white cells.

Circulatory System: The apex beat is in the 4th space.

Respiratory System: Normal. Heart rate 60. Small quantity of albumen in present. Respiratory system shows no abnormal strain.

Nervous System: There is a feeling of numbness in the legs. The pupils are equal, and react to light and accommodation. Intellect is not as bright as formerly.

Signs: Spleen tympanitic. Treatment: Arcade.

Further reports: Feb 14th since admission temperature varied from 98° to 100°. The higher temperature occurring in the evening. Feb 21st. The number of red bloods is 3,970,000 and white in proportion 3,1 in 1.

No enlarged glands. March 5th. Spleen extends only 5 in. below ribs and to umbilicus, but does not cross.
the middle line. Nature now contains no allumen. 35 of the is 10.18. No hemorrhage in the retina and no after meningitis. March 8th Relative proportion of corporacles were 1 in 25. March 15. Corporacles were 1 in 54. Spleen is 4 in below ratio in left nipple line, it measures 5 in across at costal margin. March 22. Corporacles 1 in 105. April 17th Spleen is 2 9/4 in below ratio in left nipple line. It is 3 in in length and 4 in across at costal margin. April 23 Corporacles 1 in 225. April 24th Spleen is 2 3/4 below ratio in left nipple line. It is 2 3/4 in length and 3 in across at costal margin. The anterior border is felt with difficulty. The patient was discharged from hospital in April, but continued to attend as an out-patient. On the 9th May we put him as an out patient, and examination of his blood proves the proportion of white to reds as 1 in 266. The edge of the spleen is beneath the ribs. The condition of the patient is very much improved and he feels quite well. This patient left 78 attending hospital, and for some time the spleen remained about the same size, but it then began to gradually increase, and by the middle of August it was found to reach nearly to the level of the umbilicus.
He continued in fairly health till September, and had no abdominal pain nor vomiting. His bones ached however, and he was sweating profusely, his appetite was increasing in size. On Oct 8th he complained of having a poor appetite, there was no fever after food, but he was troubled with flatulence. His spleen (see diagram on opposite page) fills nearly the left half of the abdomen from the 7th rib to the mid axillary line it measures 15 in length. It extends 1/4 in to the right of the median line, on palpation it is felt to extend backwards about the 3rd crest.

The femoral glands are enlarged, as are also the thoracic and axillary. Pulse is soft and regular, arteries are not thickened. He has a short cough and expectorates a little. Sleep fairly well. Pupils are dilated. There is no reserve over liver.

But 4 proportion of corpuscles was 1 in 20

Onset of acid crystals and prominent casts present.

Nov 2nd Corpuscles about 1 in 54. On 29 Dec, the temperature rose and reached 102.4 next day. Temperature kept high till Jan 1st 45. He complained of headachs, nausea & diarrhoea, while temperature was elevated. During the last few weeks he has been getting thinner.
January 12th. Corporal went 1 mi 20. 1 mi 27. 1 mi 30.
Feb 2nd. He is weak and dizzy, and has headache. He has a high evening temperature.
Feb 22nd. Corporal 1 mi 11.

I have examined both renewable patients whose cases I have just described. 13. IV and V. I also made notes of their cases at the time. For an account of their condition some months prior to my examination, I am indebted to Dr. H. Sandford of Philadelphia. This allowed me to take the notes from the hospital reports.

Commentary. Here is a man admitted into hospital in Jan 94, and who remains till April, and who improves rapidly on the administration of arsenic. Unfortunately after he left hospital he does not seem to have continued treatment, had he done so he might possibly have been cured; for like other chronic diseases, it is very desirable to continue treatment after a person is apparently cured. The neglected treatment herein, and we find him coming back to hospital near the end of the year, in a similar condition to that in which he was at the beginning.
Part II

I shall now take up Syphilitic Sycosis, and speak of the causes, symptoms, pathology, prognosis, and treatment. What I shall say on the subject has been furnished me by various sources, and from which I have observed from cases seen by myself. Before doing so however, I might say a few words concerning the history of this disease, as it is one which I am sure is of great interest to all who have been connected with the Edinburgh School of Medicine. Diseases of the sperm have been studied from the earliest times, and operations on this organ are mentioned as far back as the writings of Hippocrates; but anatomical and pathological knowledge being at that time in a very crude state, many diseases attributed to this organ had no connection whatever with it, and when the individual who was afflicted with the disease died, verification of the diagnosis by post mortem examinations were for several reasons seldom undertaken. We find no account of a disease called syphilitic sycosis till the present century. The name was given to a condition first described by Prof. Hugh C. Bennett of Edinburgh, an account of which was
published in the Edinburgh Medical Journal of Oct 1845. It was six weeks after this that
Virchow gave the history of another similar
case in the second number for November 1845
of Foreigner's Review. Prof. Bennett attributed
the condition to a suppuration in the blood,
but he distinctly stated that it was suppuration
independent of inflammation. The term leucocytosis
was not from the first given to the case which
Prof. Bennett described, but in June to the
condition at a later period, because he saw
that the term suppuration of the blood, misled
men. The name leucocytosis is a good one,
for as Prof. Bennett says it expresses a simple
fact, and implies no theory. Virchow gave the
name 'leukospermia' to the condition, which means
white blood, but in Dr. Cooper says the blood is
not white, when drawn from the body, but
its several red tinged. All that Virchow did
seem to be, that he stated what was found in
the blood in this condition was not pus cells.
Now in his Cellular Pathology, he says that a
pus cell cannot be distinguished from a
Chromatin corpuscle by any means, except its
mode of origin; if you kind where it came
from you can say what it is, but if you do not know, then you
cannot say definitely whether
that you are in a pus cell, or a columnar corpuscle.
Again Poy Bennett took care to say that there
was no inflammation whatever, primary or
secondary, but that the condition was one of
suppuration of the blood independent of inflammation.
That Bennett in examining the blood said that
the cells presented all the character of pus cells,
and that Vincent, on the contrary, said they
were white corpuscles, cannot give the priority
of the discovery of this disease to the latter;
seeing that the two according to himself cannot
be distinguished, except by their antecedents.
This being the case, Bennett fully described
the disease, and to him must be given the
credit of having discovered it.

I might trace the history of to the present but it
is unnecessary. I shall merely mention some of the
varieties into which it has been divided.

Gissinger calls the condition endemic yellow Legislature,
and it is termed adenon. By some it is divided into
three varieties, the adenon, the lymphatic, and the
lymphogenic, but they are all probably different
stages of the same variety, notwithstanding the
fact that some cells of the lymphocytes are not found in the lymphatic but are found in the other forms. Others mention a fourth variety, in which enlargement of the lymph follicles of the intestine forms the most prominent feature; a fifth, a cutaneous, and a sixth, a tonsillar form, are also mentioned.

Aetiology Among the causes of this disease may be found the following:

1. Depression mental and physical influences
2. Injuries to the skin
3. Defective hygienic conditions
4. Unhealthy
5. Nervous
6. Continuous excitement
7. Small pox
8. Syphilis
9. Intemperance
10. Infection of throat
11. Influenza
12. Intestinal catarrh
13. Pneumonia
14. Uterine disorders
15. Disturbances of pregnancy
16. Dehiscence after parturition
17. Climacteric of women
18. Malaria
19. Typhoid
20. Pneumonia
21. Acute Rheumatism
22. Inanition
23. Exposure to cold or menstruation
Most of the above cases act indirectly. Deficient mental influences cause a lowered nerve vitality, as do bad hygienic conditions. Nervousness may possibly be a cause; it has been traced in a few instances. By nervous, I mean nerve depression faster of thigh mentioned by Virchow, probably acts reflexly through the somatic centres or from the motor nerves. I should regard the condition as one of the complications of influenza, here acting through the nervous system, for of all the systems the nervous (according to Clinton) is one of the most profoundly affected after influenza. I am acquainted with two cases that have followed these diseases, and my friend Dr. Thompson of New York tells me that he has at present a case that has followed it. Intestinal catarrh here irritation of Peyer's patches may form the starting point. Disturbance of sexual organs probably act reflexly through the nervous system. In 21 women 16 had affection of the sexual organs (Lemmen's Cyclopaedia of Medicine).

Dr. Jones found a history of malaria in 30 out of 150 cases; and Lemmen says that out of 124 only 8 or 10 had a history of intermittent fever. The disease occurs twice as often in males.
Bennett says that of 25 cases in which the diagnosis was certain 16 were males and 9 females but
Ehrlich states 36, 31 were females. It occurs at all periods of life, from babies up to 70.
It seems more often in lower classes 3& 60 only & were from higher. Bennett says that it
is most common in adult and advanced life. This is probably due to a decline in the nerve energy.
It is not a disease peculiar to man as
cats, dogs, mice, horses, and swine are also affected.

Symptoms
Enlargement of the abdomen is usually stated to be the first thing noticed, but I doubt if this is true. The disease is very
gradual in its onset, and I think anaemia and increasing debility are the first things that occur. The
anaemia is not always apparent, for I have seen cases that in which there was quite an average
Colour in the face, and looking at the person would by no means give you any Clue to the
disease under which they were suffering.
Sometimes they have a jaundiced appearance, and this may be due to an enlargement of glandular
inactive pressing on the portal vein, or in the bile ducts. They are usually troubled with
hypertension, and diarrhœa is often very troublesome.
After meals they often feel pains; this may be due to an engorged spleen causing pressure on the nerves in its serous covering, or it may be the result of the spleen being pressed on by neighboring organs. The engorgement of the spleen might also cause a dragging on the splenic ligaments, and so produce the pain.

Constipation also exists, but this is said to be the case in an early stage of the disorder, and that diarrhea occurs in the later stages. The diarrhea may be the result of partly digested food irritating the intestinal mucous membrane, for the teeth are often bad and the stomach unable to perform its functions rightly. Then again it might be due to a lymphoid growth; having taken place in the intestines, or to a very condition being present. Of these probably a lymphoid growth is the most likely cause, as in the later stages of the disease, we get the lymphatic tissue affected usually throughout the body. The abdomen is often enlarged, due to flatulence which is present, and to the presence of a splenic tumor. Pain is sometimes present over the sternum and ribs, due to a myelogenous degeneration of the bone.
Probably this occurs only in the later stages of the disease. In the first case I described, there was an enlargement of the xiphisternum accompanied by tenderness.

The blood is very much affected, it is thin and watery looking, and has a deficiency of colouring matter. There is a permanent increase in the number of white cells. The red cells are relatively and absolutely decreased, and the haemoglobin is diminished. Abnormal cells are found in the blood. The red cells run into masses rather than uniform.

In the alemic form, we find the lymphocytes little if any increased, polymuclear cells relatively diminished. Lymphocytes contain fatty looking granules. Nucleated red corpuscles and myelocytes are present. In lymphatic form, here the lymphocytes are increased and myelocytes are absent. The lymphatic variety is said to be more and very malignant.

Malignous form. Most characteristic are the myelocytes. Lymphocytes are diminished, eosinophils increased, neutrophils diminished in later stages. Haemorrhage is another prominent symptom of this disease, taking place from the mucous membranes, epistaxis being the most common.
Does this haemorrhage occur as the result of the state of the blood or of the vessels? Probably both. It is started by the one, and kept up by the other. We have a blocking of the capillaries with leucocytes, and so "degenerative changes in the vessel wall; then the haemorrhage starts, it is then kept up on account of the coagulability of the blood being less. The presence of leucocytes in large numbers, and in what must be a denitized condition, is quite enough to deteriorate the vessel wall. In the British Medical Journal of Nov. 13th 1880, Dr. Cruickshank speaks of a man with enlargement of the lymphatic glands in the axilla, the clavicle, and in right groin, in whom the spleen afterwards became enlarged and whose white cells were in proportion to red as 1 to 6, and whose blood he examined, and found a small proportion only of the cells had amoeboid movement, and what movement they exhibited was very sluggish and ill marked. From this he concludes that the cells were either dead or dying, and if such be the case, may they not easily cause degenerative changes in the vessel wall, and so start the haemorrhage?
Nelmann has also found the white corpuscles very sluggish in this disease. Again another glands in the neck, by impeding the flow of blood through the jugulare, may be a cause of epistaxis, as well as cause dryness and edema of the parts. In the circulatory system there is nothing special to mention, the apex beat may be displaced, and the heart may be irregular in its action. Respiration System Dyspnea is a prominent symptom and often occurs independent of exertion. This may be due to a deficiency of blood for carrying oxygen, or may result from mechanical obstruction by enlarged glands pressing on trachea or bronchi. A very enlarged spleen would also mechanically interfere with respiration. Hemorrhagic cough similar to what occurred in case II that I described, may be due to pressure causes: the lumps are sometimes affected.

Urinary system: Sometimes albumen is found and Bright's disease probably occurs more often than stated. The urine acid is seldom, this may be due to a deficient supply of oxygen, but this is disputed. Reproductive system: Occasional independent of sexual desire is said to occur; I think
This is very rare. Thus is usually an absence of sexual desire and a glutination of genitals. Nervous system here we have headaches and amnesia; sometimes the mental faculties are impaired. Insomnia is often troublesome. Sight is not often affected, but hemorrhages into retina occur. In the British Medical Journal 1865 Vol I pg 398 Dr. Byron Brunelle describes a curious case of being of the Nurse Centers. He found great distention of the vessels of the brain with hemorrhage and extravasation of blood into its substance. Vaso-motor changes. Involvement of the olfactory nerve, and redens may be due to the hypoaemic condition of the blood or to its mechanical obstruction.

Cerebrospinal system. We may have pain and a sense of weakness in the legs. In one of the cases (II) I described there was a certain amount of incoordination. Might not this be due to an invasion of the spinal canal by new growth, which exert pressure on the cord?

Pathology. The pathology of this disease is not yet understood. Many theories are advanced, and will remain till we know more of the function of the spleen, and the formation of the blood.
The organ does not seem to be essential to life, as it has been successfully excised; but in these cases the lymphatics enlarge, and the red marrow of bone becomes of a deeper colour (Lodovici and Stuttm). If 16 floating spleens removed 15 patients recovered. In this disease we have an excess of white cells. Is this a result of the increase in size of the spleen and are the whites formed in it? In the blood of the aflemic rein we have a greater number of white corpuscles than in that of the aflemic artery. Also after meals when the spleen increases in size we have an excess of white corpuscles so that probably the increase is due to an enlargement of the spleen. Billroth says that it is improbable after destruction of the normal structure of lymph glands that they should perform their physiological function. But then in cases of leucocythaemia, the enlargement is said to consist of a simple hyperplasia, why then should this condition not be the cause of the large excess of whites? Of course leucocythaemia may occur without any enlargement of the spleen. Hence these large excesses of whites? Is it not possible that some of the lymphatics inaccessible to examination may be hypertrophied, and thus act as a hidden
cause in producing excess of white? From experiments in known that increase in size of spleen is accompanied by such excess. After section of the spleen occurs Sarchan (Zurischen Cyclopaedia of Medicine Vol 111) observed that the spleen increased in size and the white cells increased in numbers. This change he tells us did not last long, for by the 7th day the corpuscles had fallen to their usual number. Well, supposing that there was some lesion of the splanchine nerves present, then we would get the spleen enlarged, and the corpuscles increased in number, and the cause continuing to act, the spleen would go on increasing, as would also the corpuscles. A time might arrive when the cause cease to act, but by that time the spleen would have taken on a permanent enlargement that neither except treatment would alter. On the other hand, we can cause contraction of spleen by stimulation of the peripheral end of the left splanchine, the central end of region where splanchine intact, and also by stimulation of the central end of a sensory nerve. Stimulation of the medulla also causes contraction of the spleen.

If then, an enlargement of spleen Causes excess of leucocytes, why is there not an excess found in Splenic Anæmia? Is it not possible that there is some
change in the structure of the organ in cases of anemia? The consistence of the organ is much firmer, and cases of anemia observed of it would not account for this. The connective tissue is increased, and the tubercles are thickened, this would account for its firmer consistence. Might not the organ owing to this change and a hypertrophy of its normal structure, produce lymphoid cells which were in a devitalised condition, and unable to form red cells, but pass into leucocytes, and whenever there was a difference between the relation of the cells and the stroma of the organ, we would have the cases of corporules passing into the blood, or as has been suggested a change might take place in the stroma, like what occurs in lymphatic glands, whereby the corporules would be enclosed and retained. The latter change however, has not been seen.

The glands then produce lymphoid cells which are in a devitalised condition, and unable to assimilate the hemoglobin and become red cells, but pass into the circulation as devitalised leucocytes, these lying down by their sluggish movement... All these changes take place in the spleen, but might they not do so as a result of defective nutrition? Might there not be a lesion in the medulla which would be the starting point of the whole process—a ternary thrombic centre in fact. Further investigations will decide
Prognosis. Up to the present the prognosis of this disease has been unpromising. It is usually said to be fatal in from 6 months to 2 years, the average period being 3 years. I think the prognosis would be more favorable if the disease were taken in its early stages, and treatment promptly carried out. When the hemorrhagic diathesis is present, the prognosis is very unpromising, and the greater the proportion of white to red, the worse the prognosis.

Treatment. Various drugs are employed, but few seem to have any beneficial effect. When a disease is characterized by great debility, extreme pallor, the presence of jaundice, dyspnea, and hematemesis, has developed, our chances of doing good are little. Arsenic seems to be the drug that has done most good; it has been used in diseases of the spleen since 1746. Zincum sulphureum. At the meeting of the Clinical Society of London, mentioned the case of a gentleman, whose stomach was laid open for 6 months, and who was losing strength. The spleen extended across the middle line. Red cells were 100,000 whiles 1,000,000 in the cubic millimeter. This man was treated with arsenic, giving 1 min. in Grise taurina. This was increased up to 30 min. In half an hour, he also got 30 litres.
of oxygen by inhalation daily. He was admitted into Grays on Nov 2 92 in chronic condition, and on Dec 19th the reds were 368000 and white 20000
The fever had receded 5 in, Dr. Jayson says he now saw such rapid improvement. Quinine, if there is a history of malaria also produces good results, it may also do good in other cases, on account of its tonic influence on the central nervous system. Iron does not seem to do much good, but Dr. S. MacKenzie in the British Medical Journal of April 29 82 mentions the case of a man with a very enlarged spleen, and in whom the leukocytes were greatly increased, improved on the administration of dissolved iron. The relative proportion of whites was 1 in 7, and after treatment were one in 18 or 19 and the reds rose from 65 to 70 p.c. So do good. The iron must be given so that it may be easily assimilated. Syrup of the iodides of iron, phosphorus, and liver, oil, and crypt, has also been used. In the British Medical Journal 31 Aug 79 Dr. Jones Powell speaks of a man whose health improved under treatment with crypt, and liver oil and Quinine, but in whom no improvement of spleen took place. It should be noted that all these drugs are nerve tonics, as that from the therapeutic action of the drugs, we see that an improvement in the nervous
system produces an improvement in the disease. A transfusion of defibrinated blood has been used, but it is said the cases were not true leucothrombocytopenia. Three cases of Stoll of Würzburg proved fatal, so that it is not to be recommended. Drugs have been injected hypodermically, but with little success. For fever, bloodlettings, and fomentation, citrate of soda and bicarbonate of soda have been used. Abscess sometimes resulted. Fomentation is objected to as being too concentrated, and because of the looseness it contains.

Dr. S. Rumney uses a solution of ammonium acetate, strength 2 per cent., for a 12-hour period. The dose is 1/2 g. per day, to be gradually increased. Chemical, electrical, and mechanical irritation cause constriction of the spleen, but unless the application is constant, the spleen enlarge again. Then there is the treatment of the condition by bone marrow. It is necessary that this should be from a young and growing animal. Cases have been treated with this without any good results, but in the first case I described, I found bone marrow for graft from the butcher's, and there certainly was an improvement in the condition of the patient, and the spleen diminished in size; the white cells from 1 in 12 were reduced to 1 in 82. I think there is no doubt that the improvement was due to the
administration of this substance. In the British medical journal of Dec. 94 Dr. Macpherson Lewis relates the history of a child 17 months, whose spleen was enlarged, extending across middle line, and in whom the spleen after 4 into treatment had receded under cover of the rib. I shall not give an account of this case for some time after I had started my patient on marrow, but after seeing cases treated of splenomegaly treated with fresh marrow. I thought splenomegaly might be treated with fresh marrow.

Lastly, there remains surgical treatment. If we find glands enlarged, hard, and separate, they might be removed; but if they are soft and adherent, removal should not be attempted. I believe the division is not a local one, and such removals do no ultimate good. Inclusion of the spleen has also been done, but owing to the haemorrhage which follows, it is far from being a satisfactory undertaking. Exclusion of a splenomegaly spleen has been done twenty four times with only one recovery (Oates Principles and Practice of Med.) so that surgical treatment for so far
does not hold out much hope.

Many of the cases recorded here by no means seem suitable for surgical interference, owing to the advanced stage of the disease. Dr. Jones says that if the knots are small, one has more hope, but if the normal, no operation should be undertaken.

At present the treatment that seems to produce the best results is the administration of fresh bone marrow, and arsenic in large and increasing doses, treating the various symptoms such as hemorrhage, diarrhoea, and dyspnoe, with astringents and diuretics.

W. T. Jones.
Bibliography

1. Ashley and Wright Diseases in Children
2. Bartholow Practice of the Practice of Medicine
3. Bennett Hughes J. Lancet thalamia 1852
4. " " Principles of Medicine
5. Billroth. Lectures on Inorganic Pathology and Therapeutics
7. Coats Pathology
8. Da Costa Medical Diagnosis
9. Fage's Principles Practice of Medicine
10. Finnich Medical Diagnosis
11. Gibbon and Russell Physical Diagnosis
12. Hamilton OJ Pathology
13. Laneet 1875
14. Landeg and Stanley Physiology
15. Munro J A. American Journal of Medical Science 1875, 1879.
16. Osler Principles and Practice of Medicine
17. Lane’s Dictionary of Medicine ‘94
18. Reynolds System of Medicine Vol V
19. Roberts Frederick T. Theory & Practice of Medicine ‘94
20. Smith Antoine Diseases in Children
21. Taylor Practice B Medicine
22. Virchow Cellular Pathology
23. Zwirius Encyclopedia of Medicine Vol VIII