Cases submitted for Nightingale Prize competition 1927.

Cases of the following were dealt with:

1. Köhler's syndrome — a sequel of encephalitis lethargica
2. Sarcoma of fever — misdiagnosed as chronic rheumatism
3. Primary liver-celled carcinoma with wide glandular spread
4. Myelogenous leukaemia — a case seen in remission
5. Multiple hereditary telangiectases

Cases described were miners of Ward 32 in R.D. 8 during Spring term 1927. They have been used by permission of Professor Gulland.
First Case.

Name: James Barry.
Age: 12
Occupation: At School.
Birthplace: Portobello.
Address: 7 Nassaay Place, Portobello.
Admitted: 26th January 1927.
Case Taken: 27 January 1927.
Complaint: (i) Increasing obesity. (ii) Noisy breathing.

History: In July 1926 the boy went “off colour.” He was nervous and easily excited. His limbs became tremulous, and his general restlessness occasioned him continual reproof at school. Sleep was elusive during the night, but there was drowsiness and apathy in the day time. He usually remained awake all night until 6 or 7 a.m. and would then fall into a deep and conve-like sleep, with stertorous breathing. Previously healthy and bright, and intellectual beyond his years, he now became stupid and slow of thought. The boy was admitted to the Hospital for Sick Children, where susceptibility lethargica was diagnosed, and where he remained for eight weeks without improvement. After leaving the hospital, continuous heavy breathing developed and the boy became a victim to involuntary movement: writhing and wriggling. He returned to the Sick Children’s Hospital for a fortnight (March 1926) again with no satisfactory result. The heavy breathing persisted, but after September 1926 it lost its continuity and came in attacks. “Turns” or fainting attacks then became the most marked feature of the case. Several of these would occur in the 24 hours—sometimes several in a single day. In a typical attack, the patient would be nauseated and palpitating, and would wake for a chair. If standing upright he would invariably
fall, and, grasping something in the falling, would remain unconscious for a few moments. Occasionally in falling he would utter a piercing cry. There was never acontinu- 
of faces or urine. Sometimes he would thresh his head, 
but was usually caught in a bystanders arms before 
reaching the ground. He seemed to have become, first red in 
the face, then livid, his muscles remaining rigid for a 
few seconds before finally relaxing. As the body lay 
loose there, the limbs would twitch gently. His tongue was 
never bitten. This whole phase used to last for about five 
seconds, to be followed by a few minutes of coma with 
heavy breathing. Milder attacks also occurred and lasted 
for about thirty seconds, with fixed gaze, stator, slight 
muscle twitch in limbs, but no loss of consciousness.

In December 1925, the boy was admitted to Ward 32, R.I.E, where he remained for a month. He 
had no fainting attacks while in hospital. All that we 
found there was slight deafness in both ears, attacks of 
dyspnea, and deep reflexes slightly exaggerated on both 
sides. He was discharged on 30th December 1925 as a 
post eutablish.

After discharge, patient continued to 

improve, and remained free from fainting attacks. The 
heavy breathing persisted, however, and breathlessness 
followed the slightest exertion. In the summer of 1926, 
the boy began to grow rather fat. As his height was not 
increasing, and the obesity steadily progressed, his 
mother became alarmed and brought him to Professor 
Galland on 26th January 1924. On that date he was 
readmitted to Ward 32.

Previous states: Measles at an. 7.2. Whooping cough @ an. 12.12. 

Broncho pneumonia @ an. 2 years, accompanied by 
encephalitis. At 5 years, the boy was struck by a motor car, and sustained 
a cut on the right temple—there was no loss of consciousness.
and no subsequent cerebral symptoms. No history of epilepsy was obtained.

Surroundings: Light airy flat at home. Plenty of open air exercise. Regular, sufficient food.

Family: Father and mother both alive and healthy. Two sisters (one 19, and one 15) respectively, alive and well. No family history of epilepsy.

On: The boy is bright and answers questions intelligently. The examination emotions are rather easily aroused. There is no obvious mental impairment or lethargy. He conducts a voluminous correspondence, and his presence in the ward is actively cheerful.

Height: 3 ft. 10 in. (Average for 1 ft.)
Weight: 6 stone 2 lb. (Normal: 5 stone 9)

Development and musculature are rather poor. The fat generally over the body is increased, but there is a relative increase over the breasts and buttocks. The boy's figure is that of a rather plump little girl. The face is fat and the expression jovial, and the eyes twinkle cheerfully. Over the right temple is a scar - the result of the motor accident 8 years ago.


Respiratory System: Heavy breathing. Deep sleep. No cough. Respiration 10 per minute, increasing greatly in rate on any nervous stimulus. In the attacks of "heavy breathing" there is a marked increase in the respiratory rate - up to 30 or 40. Though each respiration appears to lose nothing in intensity. In these attacks there is no alteration in the pulse rate and no cyanosis. On inspiration and expiration (during these attacks) there is a scrutiny respiration in the upper air passages. When checked sharply in an attack for being noisy, the child will breathe more quietly, but the respiratory rate
does not immediately slow. Similarly, if the attention is
distracted, the startle disappears, but the respiratory rate
remains altered for some time. Nasal, Pharynx or Larynx are
normal.

The chest is well-formed and movements are adequate.
There is no increase in vocal fremitus; the chest expansion
is good and equal on both sides. Percussion note is resonant
throughout. Breath sounds are clear where alveolar and free
from accompaniments. There is no increase or decrease in
vocal resonance.

Alimentary: There are no subjective phenomena. Appetite is good. No
Symptoms: dysphagia, diarrhoea, or constipation.

The lips are full, blooded and healthy. Teeth are in good
condition and gums are healthy. Tongue is moist, red,and clean, and there is no inflammation in the fauces.

Abdomen: There is a considerable increase in
the subcutaneous abdominal fat. No prominence,
retraction, or flaccidity. Abdomen moves freely in
respiration. No pain tenderness, rigidity or fluctuation
is present. There is no enlargement of liver or spleen.
Stomach shows no distention. Neither kidney is
palpable.

Sugar Tolerance: 150 grams of glucose is taken
without glycosuria occurring. The vomiting caused
in attempts to ingest larger amounts of sugar forbid
the recording of further results.

Circulatory: Dyspnoea.

System: Pulse 80. No thickening of arterial walls. Slight sinus
arhythmia. Tense is not high but is well sustained.

Blood Pressure: Systolic 95 Diastolic 85 mm. Hg.
Heart: Affer beat is visible in V\textsuperscript{1} inter-space, internal
to nipple line. No abnormal pulsation. Affer beat
also palpable in S\textsuperscript{3} inter-space — fairly forcible and
sharp. No thrill. Superficial dullness normal. Right heart border 4 inches from midst of middle line, left border 3 inches to left of middle line. \( \frac{3}{4} : 3 \).
Both sounds are pure at all areas.

**Hematopoetic System.** No enlarged glands. No enlargement of spleen or thyroid.

**Blood.**
- RBC: 5 million
- Hemoglobin: 90 per cent.
- Colour Index: 0.9
- White count: 6 thousand

Wassermann reaction is negative.

**Urinary System.** No subjective phenomena.
- Urine: Average amount 40-50 g. per day
- Colour pale lemon
- Reaction acid
- Specific Grav. 1010
- Excretion of urine: No albumin, pus, blood, sugar, osmole.
- No casts.

**Reproductive System.** No subjective phenomena.
- External genitals are small and infantile. The testes are small (size of peas) but are completely descended and firm in consistence.

**Nervous System.** Intelligence fairly good. Emotions easily aroused. Memory not very good for recent events (since beginning of illness in 1924). Sleep now adequate & peaceful.
- Speech good.
- Cranial nerves: Slight deafness equally in both ears.
- Other cranial nerves normal. Oculo-sphincter reflex present. No exophthalmos or sweating.
- Motor function are all normal except the respiratory, for disturbance in which see under Respiratory System. Superficial reflexes present, but in no way increased.
Planta reflexes flexor. Deep reflexes slightly increased on both sides. No ankle or knee clonus. Measurement of the basal temperature normal. Sensory functions unaffected.

Clinical and laboratory examination of the spinal fluid was in all respects negative.

Locomotor. No subjective phenomena.

System. No enlargement of hands or feet. No muscle weakness.

Integumentary. Subcutaneous fat is everywhere increased, especially in the mammary, and, to a less extent, in the buttocks. No thickening or pigmentation of skin.

Diagnosis. The increasing obesity, gynecomastia, low temperature, and blood pressure, genital inanity, high sugar tolerance all immediately suggest the juvenile form of hypopituitarism — the so-called Fröhlich's syndrome.

There is no evidence from radioscopic examination, of tumour in the hypophyseal region and the C.S.F. examination is negative in all respects, so we may assume that the hypophyseal condition is the result of an attack of (epidemic) encephalitis.

Treatment. Thyroid extract — gr. V daily.

Liquor hypophysis — ice. daily.

Progress. As long as the child was under observation (a period of 4 weeks) there was no change at all in the weight. Under education, the respiratory clonus was becoming controlled, but there was no diminution in the
attacks of spasmatic tachypnoea. The temperature remained subnormal throughout the child's stay in hospital.

**Commentary.** Two main features are here worthy of comment:—
1. The hypophyseal condition and the respiratory abnormality.
2. The hypophyseal condition:— as is usual in Frohlich's syndrome, whatever be the cause, the symptoms are curiously mixed, and can be classified in two groups according as they depend on (a) the anterior (b) the posterior lobe of the pituitary.

<table>
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<tr>
<th>Anterior Gland</th>
<th>Posterior Gland</th>
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<tr>
<td>1. Low temperature</td>
<td>1. Low blood pressure</td>
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<td>2. Regression of skeletal growth</td>
<td>2. High sugar tolerance</td>
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<tr>
<td>3. Genital infantility</td>
<td>3. Increased fat deposit</td>
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Both lobes of the pituitary are thus involved and the functions of both lobes are depressed. In the X-ray plate the sella turcica is clearly outlined and there is no shadow to suggest a growth. The Wassermann (Blood + CSF) is negative so the cause of the condition is not gummatus (even if that were to be expected). We may take it that there has been at an attack of encephalitis lethargica from the history of litherapy, insomnia, fainting attacks, etc. and apparently we have here to add Frohlich's syndrome to the ever-growing list of that disease's sequelae. The pathology of encephalitis lethargica is not absolutely defined, but the main feature seems to be hyperaemia followed by multiple localized haemorrhages. The largest of these haemorrhages are usually subdural, but

*One other case has been recorded by F.M. B. Allen: B.M. 12.2.27.*
it is not easy to credit that one of these could cause such pressure on the pituitary gland so seriously to transfer its function. More easily is it to assume the latest theory of certain pituitary disorders. It has been suggested that the function of the pituitary is controlled by, or at least correlated with, the diencephalon, by association fibres, and that pituitary deficiency depends on destruction of these fibres. No great credulity is essential for believing that a small haemorrhage, such as occurs in encephalitis, may have destroyed these controlling fibres to some extent, and so impeded the functioning of the gland itself.

3. Respiratory anomalies - the respiratory rhythm is seen to be subject to attacks of tachypnoea and of stertor. Since the stertor is not invariable, and can be eliminated by otherwise interesting the patient, we may assume that it is in the nature of a tic, grafted upon the primary and pre-existent tachypnoea. Since there is no alteration in the pulse-rate, no thoracic distress during the attack, apparently the disorder depends on the nervous mechanism of the respiratory function. That the condition is organic cannot certainly be decided. Respiratory anomalies are however comparatively common after encephalitis, and they do not usually improve - finally disappear as do the respiratory manifestations of hysteria. This fact points to an organic lesion. Where then lies this lesion?

1) Minnemeyer & Snyders found that injection of pituitrin lessened the amplitude of respiration, so it is conceivable that pituitary deficiency might cause an increase in the amplitude. Unfortunately for this hypothesis, respiratory disorder is not uncommon after encephalitis, while pituitary involvement of
noticeable degree is rare.

3) The pyramidal tract is probably not the site of the lesion, since it is not conceivable that respiratory fibers alone should be involved, and we have no other motor phenomena of an abnormal nature.

4) The respiratory centre itself is unlikely to have been affected—we have not here the slow, shallow, gasping respiration of bulbar paralysis.

5) The efferent pathways cannot be excluded as a possible site of the respiratory lesion, as the only other possibility—and a possibility which falls into line with the suggested cause of the pituitary condition—

6) Damage to the long cortico-pontine fibers—rubber fibers which are believed to function as our conscious and voluntary control over respiration. It is not possible, from the clinical evidence, to be more definite, but removal of cerebral control over respiration, if it were the cause of the tachypnoea, would be pleasantly analogous to the removal of higher control which was suggested as the cause of the pituitary deficiency, and this also might easily be caused by one of the small haemorrhages of the third, 

lethargica.
Second Case.

Name: George Heming.
Age: 63.
Address: 66 Kingscable Road, Lusitgow.
Occupation: Shoemaker.
Admitted: 33rd March 1927.
Case Taken: 28th March 1927.

Complaint: Swelling in right knee.

History: The condition started in May 1926 with a hard swelling on the inside of the right knee, which caused slight pain on movement, but which was less when the leg was at rest during the night. The swelling increased in size, and became more and more painful, until in November the man found movement impossible, both as regards the pain incurred on any movement, and also on account of actual mechanical difficulty in movement. He thus had to take completely to bed. Just before admission to the infirmary, the man was awakened one night by sudden acute pain in the right knee, which made him cry out in agony. This pain remained with only slight abatement until morning when it became a good deal easier. Since then there has been a continual pain in the knee shooting down sometimes into the leg, and rendering the slightest movement out of the question. No other joint has given any trouble. No history of accident to the leg.

Previous: Scarlet fever, measles, and typhoid, all in childhood.
The structure of the kendō stance is fluid and dynamic. The kendō stance is a reflection of the principles of motion and balance, rooted in the tradition of the samurai. It is a position of readiness, allowing for swift and powerful strikes.

The kendō stance is characterized by a certain posture that emphasizes the practitioner's intention and focus. The right foot is often slightly forward, creating a sense of forward momentum. The left foot is further back, providing stability and balance.

The arms are kept close to the body, with the right hand (dominant hand) in a position to strike, while the left hand is slightly raised to protect the face from incoming attacks. This stance is not only a means of protection but also a display of the practitioner's strength and discipline.

The kendō stance is more than just a physical position; it is a microcosm of the larger martial arts philosophy, embodying the values of discipline, focus, and the continuous pursuit of improvement. It is a living representation of the samurai code of bushido, which values honor, duty, and respect above all else.
adequately once daily. Patient for some time has been troubled with painful ankles, but has had no bleeding from them.

Tongue clean, teeth artificial, gums healthy. Nothing to note in head. All organs apparently normal in size.

Respiratory System. There are no subjective phenomena.

Chest healthy, and adequately expanded. Percussion note is everywhere resonant. Breath sounds are everywhere abnormal and unaccompanied. Vocal resonance of cavities are neither increased nor diminished.

Circulatory System. No subjective phenomena.

Pulse 120, regular, full, well maintained. Considerable thickening of arterial walls.

Heart appears normal in size. Sounds closed at all areas.

Roentgen. Left Right Knee.

Examinable.-- X-Ray of the right knee indicates a certain amount of absorption of compact bone at lower end of femur, with a transverse fracture through the lower end of its shaft.

(see over).

There are no symptoms referable to any other system and no objective phenomena were found to justify recording.

The blood Wassermann is negative.
Diagnosis: Before X-ray examination, the gradual swelling and increasing disability suggested to patient's medical attendant the mono-articular form of chronic rheumatism, and this diagnosis he remained adhered until, 10 months later, the sudden attack of acute pain overturned this diagnosis. Even in hospital, no definite diagnosis could be made until radioscopic examination had been carried out. After this, there could be no question. The fracture now demonstrated, through the lower end of the femur, sustained in bed, after
a long and gradual swelling of the knee, justified a diagnosis only of pathological fracture. This is supported by the rauvied appearance of the shadow of the lower femur. The diameter of the bone has been slightly increased, and there is some reaction proximal to the fracture, but there is no sign of a surface growth. Probably therefore the bone has been the site of a central growth, gradually absorbing the cancellous bone, and spreading to increase the thickness of the femur to undermine its stability.

Treatment. — It was decided that such a tumour, being almost certainly malignant (either epithelial sarcoma or central osteo-sarcoma) must be removed by operation, and the right inferior extremity was removed by operation on the 4th of April. Examination of the femur subsequently showed a tumour with the typical structure of the osteo-sarcoma. The man recovered his progress since has been quite satisfactory.

Prognosis. — The growth of the tumour has been slow; patient has reached the age when sarcoma to lose to some extent their leptomeningeal malignancy; the osteo-sarcoma (unless of round-celled type) is not the most malignant of tumours; and finally there is no sign of pulmonary metastasis. We therefore rest assured that there is every chance of amputation having effected a "cure."

Commentary. — The only excuse for introducing what is largely a surgical case, is that the diagnosis here rests entirely in the province of pure medicine. The following points, however, are of interest.
There is every justification for mistaking a joint swelling in a middle aged man for a chronic rheumatoid condition (though a full X-ray investigation cannot be carried out in all cases of rheumatism) yet when sudden pain occurs in such a swelling, with complete loss of function, fracture through a tumour should be immediately suspected — even if no other signs of fracture are present. The case demonstrates how those other signs may be quite hidden by the swelling and edema of the limb.

This fracture in cases of bone tumour would appear to be really to patient's advantage — since it alone leads to a correct diagnosis.
Third Case

Name: John Johnstone
Age: 48
Address: Mayfield, Belmont, Redding
Occupation: Cashier
Admitted: 15th March 1929
Case Taken: 11th March 1929

History: In July 1926, patient noticed, just below the left ear, a slight swelling which was quite painless. Some weeks later he noticed similar swellings on the right side of the neck. Swellings then developed in both axillae, later on both groins. There also appeared, about 6 months prior to commencement, on the neck, one or two small nodules on the skin of the abdomen. Within the last few weeks the swelling on the right side of the neck has greatly increased, involved the skin, burst, and now discharges a thin clear fluid. The man feels a tightness in the chest and has great difficulty in eating—he has at times the sensation that he is inhaling his food rather than swallowing it. He has been gradually losing weight—how much he does not know. He has always been constipated, and has had to take medicame (castor, salk, vegetable pills) two or three times weekly. He has no appetite now but has never had any abdominal pain, dyspepsia, or vomiting. Recently an irritating cough has developed, and the man spits a little yellowish phlegm. At frequent intervals his nasal passages have become completely blocked, becoming patent again after a copious discharge from the nose. He feels that there is in his posterior maras something which prevents him from getting his nose clear. He has had no palpitation, or swelling of the
ankles, but recently there has been marked dyspnea on exertion. The toulens have given no trouble.

Previous Health. Threatened with pulmonary tuberculosis when 28 years of age, but recovered apparently perfect health. Appendectomy at age 30. Cardiac disease has never troubled patient till now. He has suffered from nasal catarrh for some years.

Family Health. Married. No family. Father (68) & mother (62) both alive and well. 6 brothers and sisters alive and well. 1 brother and 1 sister died in infancy - cause unknown. He has no knowledge of any relative suffering from a trouble in any way similar to his own.

On. The man is pale but there is no appearance of emaciation; wasting. The expression is very anxious, and the features appear twisted by reason of the large mass of glands on the right side of the neck.

Pulse. 120.
Temperature. 99.
Respiration. 22.
Height. 5 ft. 3 in.
Weight. 9 st. 4 lbs.

Hematopoietic System. The lymph glands all over the body are enlarged. On the left side of the neck is a mass of small discrete hard swellings not attached to the skin, and freely movable over the underlying tissues. There is no inflammation of the overlying skin. On the right side of the neck is a firm swelling the size of a grape fruit. It is firmly attached to the skin, and from a small round orifice in the latter a lymph-like exudate can be expressed, though there is no sign.
of fluctuation in the swelling. The edges of the breach in the surface are indurated, but there is no surrounding area of inflammation. This large swelling on the right side can be well-some difficulty moved over the deeper structures of the neck.

In the right axillary fold lies a firm non-fluctuating round swelling as large as a tennis ball, which has not involved the skin in its growth and which is not attached to the deeper axillary structures.

The glands in the left axilla and in both groins are definitely and visibly enlarged, but to a less extent than the above. In the skin of the abdomen are several discreet hard nodules, the largest being the size of a pea. Two of these lie apparently in the skin, but the others are freely moveable under it.

The tonsils are neither enlarged nor inflamed. The spleen is not enlarged.

**Blood count:**

- Red corpuscles: 3,5-10,000.
- Haemoglobin: 49 per cent.
- Colour Index: 0.4.
- White cells: 13,000.
- Polymorph: 70 percent.
- Large lymph: 25 percent.
- Small do. 25 percent.

Wassermann reaction of blood is weak positive.

One of the nodules on the skin of the abdomen was excised and examined - for report on the tissue, see progress notes infra.

**Respiratory System:**

Cough: Thick yellow sputum. Dyspnoea on exertion.

Examination of nose and throat revealed nothing structurally abnormal. The chest is well-formed and
Respiratory Rate: 22.

Palpation: Expansion adequate. Vocal fremitus nowhere increased or diminished. Percussion reveals an irregular area of dullness posteriorly extending in places to a maximum distance of three inches to right and left of the spine. Breath sounds here are faint but alveolar. Vocal resonance is diminished. There are no accompanying Elsewhere the percussion note is resonant, the breath sounds alveolar and unaccompanied and the vocal resonance neither increased nor diminished.

X-ray: No calcified glands are visible in the neck. One or two are present in the chest. There is a small patch of "infibulated lung tissue" just above the right diaphragm.

Circulatory System: Orthopnea.

Pulse 120: not very strong, but well sustained, and regular in time and force. No undue thickening of arterial wall. Blood pressure: S. 120 D. 100.

Heart: Aper beat is visible and palpable in the V6 interface about 3 inches from the middle line. No thrill, no enlargement of right heart. Heart = 7 in. Both sounds pure at all areas.


Tongue is moist and coated with yellow fur. Teeth are all artificial. gums healthy. No tonsillar enlargement, but posterior wall of pharynx is swollen and rather inflamed.

Abdomen: moves freely with respiration. Appendectomy scar (gastroscopic incision) is visible in right lower region. - also a few firm nodules in and under the skin (see lymphatic system above). On palpation, there is no
tenderness or rigidity. Appendectomy scar herniates slightly on cough impulse. Neither kidney is palpable. The lower edge of the liver, smooth and rather rounded, is palpable on a line passing about an inch above the umbilicus. Spleen is not palpable. Discussion confirms the presence of considerable hepatic enlargement, and the normal size of the spleen.

Nervous System: No subjective symptoms nor abnormal objective phenomena.

Urinary System: No subjective phenomena. Neither kidney is palpable. The lemon coloured urine is acid and has a specific gravity of 1012. There is a deposit of uric acid, but no abnormal chemical constituents are present.

Treatment: Arsenic salicylate 10 minims t.i.d. after food. Chloral hydrate 10 grains nightly.

Progress: 16 M. 24. Felt as if "Something had burst in his throat." Shat up a good deal of thin white fluid.
19 M. 24. Died quietly in sleep at 3 o'clock.

Temperature chart. etc.
Examination of the hard nodule lying subcutaneously in the abdominal wall was excised under local anaesthesia and the following report of microscopic examination was received:

"Excised lymph gland consists of rapidly growing cellular tissue of a malignant nature. There is ample evidence of metasis. In some places the cell membrane strongly suggest that the primary seat has been in the liver."

Diagnosis: The general lymphatic enlargement suggests the following possibilities:

1. Lymphadenoma
2. Lymphatic leukaemia
3. Malignancy
4. In view of the weak positive Wassermann, syphilis is possible
5. Tuberculosis

Tuberculosis and syphilis: That the condition is tuberculous might be considered in view of the history of susceptibility.
to tuberculosis, but it is unlikely that tuberculosis would affect the various groups of glands so rapidly. Syphilis and tuberculosis, however, must both give way before the other three possibilities in view of the great degree of liver enlargement. Enlarged lymph glands with enlarged liver are found notably in Hodgkin's disease, leukemia, and nephrosis.

The discreet nature of the glandular swellings and the rapidity of their growth suggested lymphadenous, and there was nothing in the blood picture to rule this out. The man was not observed over a sufficiently long period of time to permit of observing whether his temperature curve was Poliomyelitis in type. The skin nodules too, gave us no clue, since cases of Lymphadenous cutis have been described.

Against leukemia was the blood count, leukemia is possible with a white count of 13,000, however, and "leukemia cutis" (comparable with Lymphadenous cutis) is an established entity. A disturbing occurrence (not mentioned in the case record above) was the finding on one occasion of three myelocytes in the blood film. This was no possibility of the accidental changing of the film with that of another case, and the presence of these cells is still unexplained. Later attempts to demonstrate myelocytes failed.

The one phenomenon which rendered leukemia and lymphadenous unlikely (the not impossible) and left the field to malignant disease was that, while the liver had greatly enlarged, the spleen had remained normal in size. One was, therefore, not greatly surprised when the lymph gland, except for diagnostic purposes, was found to consist of rapidly growing malignant tissue, extremely suggested of liver called carcinoma.
that an autopsy was inescapably refused by the relatives, but from the findings clinical findings we can build a fairly correct picture of the progress of the disease. A tumour has formed as the result of rapid division of cells in some part of the liver. Growth of the tumour has been rapid and the liver has increased in size to a great extent. Meanwhile, by lymphatic permeation (with or without lymphatic embolism) the tumour cells have grown through the diaphragm in columns along the mediastinum to involve the adenoid tissue of pharynx and larynx, and also the glands of neck and axilla. Judging from the extensive enlargement of the regional glands there has also been a lymphatic spread down through the lymphatic system of abdomen—through probably both retroperitoneal channels and lymph pathways of peritoneum. The nodules in the skin of abdomen may have resulted from embolism, but more usual is a permeating spread along subcutaneous lymphatics into the fine threads like lymph vessels of the skin. Had Post mortem examination been granted it is not unlikely that enlarged glands would have been found everywhere—pelvis, retroperitoneal tissue, nodules on peritoneum, mediastinum (judging from the posterior dulness on percussing the thorax), lung roots, and, judging from the thoracic symptoms and the X-ray picture—even in the lungs.

Although the liver is presumably replaced to some extent at least by tumour growth, yet the only symptoms referable to the alimentary canal are anaemia and constipation—no ascites or jaundice. These must therefore have been left functioning at least that
of the liver which presents symptoms of insufficiency.

The discharge in the posterior pharyngeal wall has been due to the breaking down of malignant glandular tissue which has outgrown its blood supply and receded from malnutrition.

Death has not been due to the primary liver growth. There were no symptoms of profound toxæemia which would have preceded death had the latter been due to septic absorption from those tumour masses which had broken down and discharged. Also, there was no terminal thoracic distress to suggest that death was due to pressure of enlarged mediastinal glands on the airways. Death occurred quietly in sleep, with some elevation of pulse rate, so we may assume that the disease has terminated by involvement of the vital nerve pathways of the mediastinum.
Fourth Case.

Name: John Anderson

Age: 47 years.

Occupation: Clerk in laundry.

Birthplace: Edinburgh.

Address: 104 Saughtonhall Drive, Edinburgh.

Admitted: 22nd February 1927.

Examination: 23rd February 1927.

Complaint: Weakness, giddiness, dyspepsia, heaviness in abdomen.

Duration: Six months at least.

History. The man was in perfectly good health until the end of August 1926. During this month, even after a fortnight's holiday of rest and recreation, he began to feel run down — was rather irritable and easily fatigued. This progressed and became accompanied by weakness in the legs and giddiness on exertion or effort of thought. There was dyspnoea on walking with any speed, or up the easiest slope, and there was an irritating and fatigueing pain in the small of the back — dull and grasping in character. Patient's abdomen has always been slightly protuberant, but since September this structural characteristic has become more and more evident, and there has been a dragging sensation in the abdomen which occasioned a good deal of worry. These symptoms have progressed steadily till now and the man has lost two stones in weight since September. The colour has always been fairly high. He has had this winter a marked susceptibility to cold, and night sweats have been common. (Probably his tendency to a feeling of chill has led to him feeling on blankets at night.) Appetite is excellent. There has been no diarrhoea, constipation, dyspepsia, vomiting or cough.
Measles in childhood. No trouble since except a rare slight nasal catarrh.

Surroundings: Patient lives in a four-roomed house with wife and three children. Works in a light airy office in Pentland (near) at Raeburn. Meals are regular—breakfast, lunch, tea, and supper. Food is wholesome and abundant. Tobacco—2-3 ounces of a medium mixture in the week, with an occasional cigarette. Alcohol—1 glass of beer occasionally—twice a week at work—vino spirits.

Father d. at 68—cause unknown.
Mother d. at 74—" "
One brother and one sister alive and healthy. Patient is married. His wife is in good health and there are three healthy children of the marriage.

Physical: The man is rotund, rather thin, and wears a cheerful expression, but his conjunctival and buccal mucous membranes are paler than his complexion would lead an observer to believe. He appears to be fairly intelligent, but gives a poor history—is not very interested in himself. Development and muscularity are pretty good, but there is not much subcutaneous fat.

Pulse: 84.
Temperature: 99.
Respiration: 20.

Dental: Teeth are mostly artificial and the few that remain are free from caries. Gums are healthy but rather pale. Lips are full and well coloured. Mucous membrane is rather pale. There is no tonsilar enlargement or facial inflammation.

Abdomen: moves freely on respiration. Musculature is good, but there is very little fat present. The abdomen protrudes noticeably, and is specially prominent on the left.
side, this prominence giving the abdomen a top-sided appearance. There is no tenderness or guarding of muscles. Lower edge is felt one inch below costal margin—a firm sharp smooth edge. The spleen fills the whole left abdomen (is not felt is easily palpable) passing well down into the left side fossa. It comes within an inch of the median plane of the body, but at no level does it encroach on the right side. Neither kidney is palpable. On percussion, the above enlargement of liver and spleen is confirmed.

Circulatory System: Dyspnoea and weakness. Pulse 94. Fairly strong and well-sustained. Regular in time and force. No thickening of the arterial walls. Heart—Viey beat visible—well surrounded—in 3rd interspace. Internals to palpable line. In this position it is palpable also, fairly strong, and 3½ inches to left of middle line. There is no thrill. No abnormal pulsation. The left border is located on percussion 3½ inches to left of median plane, and right border one inch to the right of mid-line—1:30. Both sounds are closed at all areas, but there is a slight accentuation of the aortic second.

Respiratory System: Dyspnoea. No cough. Chest moves freely on inspiration. There are a few resonant spots scattered over the chest wall. The chest expansion is good. There is a dull spot with diminished vocal resonance, at the left apex, but the sounds are everywhere vesicular, and unaccompanied. Throughout the chest, with the exception of the left apex, the percussion note is resonant; the vocal resonance and fremitus are neither increased nor diminished.

Urinary System: No subjective phenomena.
there is acid and lemon yellow in colour, with a specific gravity of about 1010, and a deposit of mucus. These are no abnormal constituents.

Nervous System: No subjective phenomena except easy fatigue.

The knee jerks and other reflexes are healthy. Neither increased nor diminished, and there is no loss of muscle strength. The optic disc is perfectly healthy, and there are no other abnormal phenomena—no ankle or knee clonus and no Babinski.

Thrombocytes: No enlarged glands. Spleen enlarged down to left diaphragm. Its constriction fossa, but does not cross middle line (side supra).

Liver is also enlarged.

Blood count:

Hb: 60 per cent.
PBC: 3,600,000.

Colour Index: 0.8

White cells: 20,000.

Thin films were obtained without any difficulty—these seemed to be no increased viscosity of the blood. The stained films had the features of a secondary anaemia of slight degree, and several nucleated reds were seen (normoblast).

Differential count:

\[
\begin{array}{c}
\text{Granular series - 76.5 per cent} \\
\text{Large lymphocytes - 6 per cent} \\
\text{Lymphocytes - 24} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Monocytes 29 per cent} \\
\text{Pleocytes 8.5%} \\
\text{Neutrophils 51} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Neutrophils 51} \\
\text{Lymphocytes 24} \\
\text{Transitional lymphocytes - 6 per cent} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Neutrophils 51} \\
\text{Lymphocytes 24} \\
\text{Transitional lymphocytes - 6 per cent} \\
\end{array}
\]
Treatment: Light Diet, rest, etc.

Squen arsenaics 0/1/3 three daily, increasing by one unit every three days — patient on discharge was receiving 0/1/3 t.i.d. and no symptoms of poisoning had appeared.

In February 1st, 600 milligrammes of radium were applied to the spleen.

Progress:

1 VII 24. Feels very well. Spleen 1" from middle line.

4 VII 24. 600 mg of radium to spleen. Spleen 2 1/2 inches from middle line.

16 VII 24. Spleen 2 1/2 inches from middle line.


Patient has not yet reported (1 VIII 24) since date of discharge.

Blood:

<table>
<thead>
<tr>
<th>Date</th>
<th>R.B.C. (per cu. mm)</th>
<th>Hb. %</th>
<th>E.S.</th>
<th>M. B. per cu. mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 I 24</td>
<td>3,600,000</td>
<td>60</td>
<td>0.8</td>
<td>200</td>
</tr>
<tr>
<td>28 I 24</td>
<td>3,700,000</td>
<td>60</td>
<td>0.8</td>
<td>300</td>
</tr>
<tr>
<td>14 II 24</td>
<td>3,980,000</td>
<td>50</td>
<td>0.4</td>
<td>230</td>
</tr>
<tr>
<td>16 II 24</td>
<td>4,200,000</td>
<td>55</td>
<td>0.7</td>
<td>150</td>
</tr>
</tbody>
</table>

White:

<table>
<thead>
<tr>
<th>Date</th>
<th>W.B.C.</th>
<th>Myeloblasts</th>
<th>Myelocytes</th>
<th>Lymphs</th>
<th>Gran.</th>
<th>Eos.</th>
<th>Bas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 I 24</td>
<td>20,000</td>
<td>3</td>
<td>30.5</td>
<td>56</td>
<td>2</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>29 I 24</td>
<td>11,000</td>
<td>2</td>
<td>5</td>
<td>55</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>14 II 24</td>
<td>13,000</td>
<td>3</td>
<td>14</td>
<td>72</td>
<td>2</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>16 II 24</td>
<td>10,000</td>
<td>1</td>
<td>8</td>
<td>60</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
W.B.C. differential count — could.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lymphocytes</th>
<th>Large</th>
<th>Small</th>
<th>Transitional</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.1.24</td>
<td>12</td>
<td>2</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>30.1.24</td>
<td>34</td>
<td>11</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>4.11.24</td>
<td>8.5</td>
<td>1</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>11.11.24</td>
<td>24</td>
<td>3</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>16.11.24</td>
<td>19</td>
<td>3</td>
<td>11</td>
<td>5</td>
</tr>
</tbody>
</table>

Diagnosis: The one feature which dominates the clinical picture in this case is the splenic enlargement. The considerable size of the spleen having been determined, the next step was naturally investigation of the blood picture. The actual white count was not very high — 20,000 — but approximately one fifth of all the white cells were large myelocytes. A diagnosis of chronic myelogenous leukaemia thus presented itself, and was rendered conclusive by the finding of nucleolated rods in the proportion of 1 normoblast per 100 white cells. (200 normoblasts per cu. mm).

Prognosis: The duration of life in chronic myelogenous leukaemia varies enormously, but in the average mild case it is about 4 or 5 years. In the case under present consideration, no prognosis will be justified until patient, after several months, is re-examined to determine what effect the radium therapy has had on the spleen.

Commentary: When patient came first under observation, the disease had been present apparently for not less than 6 months. Bearing this fact in mind let us consider the blood picture which he presented and try to correlate it with the size of the spleen — which is often a convenient help in assessing the progress of the disease —.
The face value of this table must be modified in the light of the following: The number of myeloblasts is not reliable, but can be taken as a very fair minimum.

It will be noticed on referring to the table on previous page (30) that the percentage of transitional leucocytes is high. In one case, transitional leucocytes comprise 11 per cent of the whole white count. In no case does the proportion of transitional leucocytes to lymphocytes fall short of 1:3, and in only one case is it less than 1:4. The reason for this is that the line of demarcation between transitional leucocyte (a type of lymphocyte with indented nucleus) and myeloblast (the precursor of the myelocyte and ancestor of the granular leucocyte) is very indefinite. Both these cells have indented or horse shoe nuclei and basophil protoplasms, so that only which had well defined - albeit few - eosinophilic granules, were included among the myeloblasts. The result of this is that the recorded myeloblast count is lower than it should really be, while the transitional leucocyte count is on pages higher. From this follows a corresponding variation in the proportion of granular leucocytes to lymphocytes.

A noticeable feature of the blood count is the comparatively large percentage of lymphocytes - 3.5 to 3.7 (numerical average 2.1 - in no great significance) - the whole leucoblastic mechanism is affected.

The great variation in all divisions of the cell count almost from day to day - as seen in nearly all cases of this disease - the number of baso-phil polymorphs.
is not great in this case — never more than 2 per cent of the white cells — it is commonly a good deal higher in myelogenous leukaemia.

In the red cell count, the only conclusion we can draw from the tables are negative — that the anaemia does not vary proportionately to and synchronously with the white cell count, and the number of normoblasts has apparently no relation to the degree of anaemia.

The blood changes can be finally summarised thus:

1. Increase (not very marked) in number of all white cells.
2. Presence of myeloocytes and myeloblasts.
3. Presence of unclefted reds.

The changes in the blood picture and the general good health of the patient are not comparable with the great size of the spleen. We must therefore come to the conclusion that the disease is at present in a state of remission. Patient’s clinical condition improved markedly on entry into hospital. Was this improvement merely a continuation of progress commenced before admission?

1. W.B.C. on admission = 30,000, on 24.7.24 = 11,000.
2. Myeloocytes on admission = 20.5% e = on 24.7.24 = 5% (laboratory).
3. Spleen on admission 1” from midline = on 11.7.24 (before admission) = 2”.

No such immediate improvement is seen in R.B.C. but the anaemia is of course secondary to the change in the white cells, and immediate progress is not therefore inferred. None of these three phenomena would in itself be of value, but on the accumulated evidence of the three we are justified probably in assuming that patient on admission to hospital was
approaching the nadir of a curve in the progress of his disease — was reaching the optimum level of a remission. Almost undoubtedly the spleen has increased greatly in size to cope with a marrow activity much greater than that shown while patient was under observation. This enlarged spleen has met the body’s demands for white cell destruction, and has now permitted a remission in which the only conclusive evidence of the disease is the presence of normoblasts. Having thus performed its duty, the hypertrophied spleen is itself now undergoing involution until a recrudescence of the abnormal marrow activity shall necessitate again wholesale leucocyte destruction.
Fifth Case

Name: John Johnston.
Age: 40.
Address: 2 North bowmore Place, Edinburgh.
Occupation: Joiner.
Admitted: 27th January 1927.
Case taken: 25th January 1927.


History: Since birth, small red spots the size of pinheads have been present on the man's face - on the cheeks and at the corners of the mouth. At puberty, these spots became darker and farther more fiery in appearance, and at the age of twenty, epistaxis first commenced. The bleeding would start spontaneously and would last for anything from a few minutes to several hours, recurring at irregular intervals of weeks or months. The man at this time began to be troubled with continuous cough, for which, the speculum was sometimes bloodstained and which often inaugurated an epistaxis. The doctor suspected tuberculosis but could find no sign of a chest lesion. At this time also, patient found that after washing or shaving, the towel was continuously bloodstained - the blood coming presumably from the spots on the face. Haemorrhoids also appeared about 20 years ago. They caused considerable pain and discomfort, but rarely that this condition has continued and progressed during the last twenty years, but became really alarming in 1925. A severe epistaxis lasting 2 or 3 hours would then appear every twelve weeks or even oftener. The appetite was poor and there was severe diarrhea for about 12 months. Haemorrhoids in that year caused a lot of trouble, but, though almost continuously painful, they rarely bled, and there was seldom blood in the
stock or on the clothing. In any exercise during the first two years, there has been palpitation (trembling in the chest) and these attacks of palpitation have been accompanied by dyspnoea. Since 1925 there has been an improvement. For two months now there has been continued daily epis to last for an hour or more and resistant to all forms of treatment— even to packing with gauge and perichondre of iron. Epistaxis sometime occurs during the night, and the blood lost during sleep is swallowed, to result in anaemia on the morrow. The appetite is fairly good, but the man is greatly troubled with flatulence. There is never any abdominal pain and the only vomitting that has occurred, took place about 2 years ago— only food was vomitted and there was no haematemesis. Patient's habit during the past year has been constipated, but by regular use of salts and cascara he has generally achieved one motion daily. There has been no bleeding from the bowel (apart from haemorrhage from the piles) but apparently the stools have occasionally been very dark in hue. During the past two years months, palpitation and dyspnoea have invariably been associated with the slightest exertion. Sleep has been inadequate on account of a disturbing throbbing in both ears. Headaches have not been a recent feature. Until a few months ago the man was a constant victim to severe frontal pains but these were always relieved by epistaxis and have been discontinued since epistaxis became a daily occurence. There has been no loss of weight and no obvious muscle weakness.

Previous. Mast. @ 40. 10 years. For health since 46. 20
Health. wide history supra.
Surroundings. Works (as a joiner) in an atmosphere of sawdust. Home conditions are light and well aired. Meals regular (breakfast, dinner, tea, supper) and substantial. Non-smoker, and total abstainer from alcohol.

Family History:

Great-grandfather (Marshall by name) § 3.\[1\]

Grandfather

Grandfather (Marshall)

d. 64. had bleeding spot on face

Mother - same symptom no patient but worst severe.
d. 56 "P.A."

Grandmother (Marshall)

d. 86, by name unknown relationship to patient was Epistaxis and spots on face.

Father (P. B. in partnership)
d. 61, high B.P.

No history of bleeding

Sister

Spots on face Patient

but less bleeding than patient

Daughter (10)

Weekly but no spots of Epistaxis

Son (14)

One spot on face bleeds easily after coughing or blow

In addition to the direct heredity as above, one male cousin of the mother's suffers from Epistaxis, spots on face, and gastric pain with vomiting of blood.

On examination, minute red spots - the largest three millimeters, in diameter - on the cheeks and about the corners of the mouth, and on the tongue. The conjunctival mucous membrane is pale. The face is thin and poorly nourished and wears a troubled expression. There is no obvious edema on the face, and apart from a certain sailness, there is no pigmentation.

Respiratory

Palpitation Dyspnoea. Epistaxis

System

Note: Mr. J. S. Fraser examined the nose for any nasal obstruction and of a possibly tuberculous nature v submitted the following report: -
The nasal septum is irregular and the middle turbinals, are congested and enlarged. There are areas of telangiectasia and dilated vessels on both sides of the septum. Cocaine and adrenalin solution was applied and the dilated vessels cut through with the electric cautery. Strips of gauge were inserted being removed for removal later. The efficacy of this treatment is doubted in this case.

Respiration. Regular, deep, silent. The chest leads towards the barrel-shaped in type, but expansion is fairly good. Vocal fremitus is in general weak, but it is increased at the right apex. The percussion note is hyperresonant on both sides, except at the right apex again, where there is some dullness. The superficial cardiac dullness is decreased. On auscultation the breath sounds are alveolar throughout, and faint (except at the right apex). There are no accommodations.

Spitting. No tubercle bacilli found after repeated examination. Polymorphs, mononuclear, and a few eosinophil cells. Staphylococcus albus (? contamination?) pseudomococcus & diptheroids. Macrococcus catarhalis, scanty.

X-ray of chest: Considerable fibrosis. Irregular shadows at right apex.

Circulatory System:


Pulse 100. Strong but poorly maintained; irregular in time and force. Slight internal thickening.

Blood Pressure 128. D. 34.


**System**

**Heart-Lung.** Spina bifida. Mucosa.

Pinhead spots are present on mucous membrane of lips and tongue. They are very numerous on the hard palate. Teeth good. Gums look healthy but bleed easily on pressure. Soreness healthy and free from red spots.

**Abdomen.** Abdomen is fairly muscular but has very little subcutaneous fat. Move freely on respiration. No audible prominence or retraction. No pain, tenderness, or guarding of muscles. Vessels border of stomach, percussed 2 inches above umbilicus. No enlargement of liver or spleen. Neither kidney is palpable.

**Respiratory.** There are external and internal piles, and the latter bleed easily on palpation. The便前十 test for blood in the stool is almost invariably positive.

**Renal.** No subjective phenomena. Neither kidney is palpable. Urine is lemon with a specific gravity of 1012; acid in reaction. It has a deposit of mucous. Neither blood nor any other abnormal chemical constituent is present.

An microscopic examination of the centrifugalised urine only a few uric acid crystals and a few transitional epithelial cells were seen—no blood cells.

**Nervous.**

Headaches formerly—relieved by epistaxis.

**Cranial nerves.** Pupils are slightly uneven, left a trifle smaller than the right, and react sluggish to light and to accommodation. No other abnormal phenomena were found referable to the cranial nerves. Cervical sympathetic normal. Organio reflexes healthy. Superficial reflexes normal, neither increased nor decreased.
Hematocrit: 65%. General weakness.

System:

Conjunctival, mucous membranes pale. Enlarged lymphatic glands. No enlargement of tonsils, liver, spleen, or thyroid.

Blood:
Reds 2,050,000. Hgb. 18. Colour index 0.45.
Whites 5,700. Differential granules 80 percent.
Mononuclears 20 percent.

Examination of the stained film showed an advanced secondary anaemia—cells poorly filled—almost vacuolated in some cases—and small. Polychromatophilia in a few instances but no punctate basophilic. No nucleated reds and no abnormal white corpuscles.

Blood Wassermann negative.

Coagulation time: The coagulation time of the first drop in three minutes, falling with successive drops to one minute—thus.

Coagulation chart

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(see Progress overleaf.)
30th Jan.: Nose examined and vessels of septum cauterised & blanched.
1st Feb.: Considerable epistaxis for two days. Slight leuc. Feels weak.
5th Feb.: Leuc. 10° for 5 days. Very weak. Piles bleeding.

R.B.C. - 3,800,000. Hb 18. C.P. 0.4. W.B.C. 8,000.

5th Feb.: Received transfusion - 16 oz. of extrated blood.
11th Feb.: Temperature settled. Feels better. R.B.C. 3,300,000.

Hb 30       C.P. 0.5       L.B.C. 4,200.

13th Feb.: Piles injected & pure phenol.
19th Feb.: Piles injected & pure phenol. Temperature again
sinking. Loose good deal of blood by bowel.

Pulse 180 in past week, but no fibrillation found on
electric cardiac examination. R.B.C. 2,800,000.

Hb 40       E.S. 0.9       L.B.C. 9,000.

5th March.: Much better. Looks well. Colour rather. Epistaxis
rare. R.B.C. - 3,200,000. Hb 30. C.P. 0.8.

L.B.C. - 6,000.

Diagnosis: The unifying factor here has been the concurrent
chest condition. The patient's own doctor has apparently
coupled the epistaxis with this and attached the label of
tuberculosis.

There is no blood change, glandular or spleen
enlargement to suggest a blood disorder.

Hæmophilia is ruled out by the following reasons:
(i) All patients report a steady increase in the
(ii) In hæmophilia, bleeding would have started much earlier.
(iii) The coagulation curve of the blood approximately very
     closely to that of the normal health - in hæmophilia, the
     coagulation time would have been initially higher, with
     no tendency to fall rapidly. Apparently, therefore, the
     cause of the epistaxis is local, so that opinion is
     confirmed, by the report of those examining. The case
     is now seen to be one of that hereditary form of epistaxis
     which has been called

     Hereditary Multiple Hæmorrhages

S. M. Wieland (1928), Giesel (1916) and others have
also recorded cases of the condition, and from their
reports the following features appear to be essential:

1. Familial and hereditary nature of the condition.
2. Remission of bleeding at or shortly after puberty.
3. Distribution of spots about nasal and buccal cavities
   mainly.

These three conditions are all satisfied in the case.

Under present consideration.

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Commentary: Patient's primary symptom - epistaxis - has been
due to a number of "red spots" situated on the nasal
and buccal mucous membranes. There has been no
microscopic examination of these spots possible, but
they are conjunctival, and have the appearance of
the naked eye of the conjunctival capillary haem-
angione. That is, we assume that each spot is

a tumour composed of groups of capillary vessels
containing fluid blood, the capillaries being of unequal size, and their extremely delicate walls consisting of little more than endothelium—supported by a scanty stroma of connective tissue" (Hettle).

From such delicate vessels haemorrhage is easy. The only question is—why should they want till after puberty before causing trouble? Patient states that at puberty the spots on the face got redder & more angry looking, and apparently we can only fall back on the usual explanation—that the blood changes in the tumour, or changes in the supporting structure of the tumour—are in some way dependent on the endocrine disturbances at puberty.

3. The distribution of the telangiectases was as follows:
   i. on skin of face, especially around the mouth.
   ii. in nasal cavity—on both sides of septum.
   iii. in buccal cavity—lip, tongue, and hard palate.
   iv. perhaps on mucous membranes of intestine—to judge from the history of melena. The presence of bleeding piles renders this point dubious.

The history has apparently established the deposition of telangiectases in this case—the a commonly affected organ in other cases and families recorded. Blood was never demonstrated in patient's urine, the searched for repeatedly.

3. The advanced degree of anaemia is due of course to repeated epistaxis. The great improvement after transfusion is readily noticed.

1. The arterial, mitral, and carotid pulses—soft, following—must of necessity be haemic in the light of the following:
   i. softness of the pulses.
   ii. absence of much cardiac hypertrophy.
   iii. No symptoms (except headache) of circulatory insufficiency.
(iv) Comparatively soft state of vessel walls.
(v) No history of rheumatic fever or syphilis. Eupnoea in resp.
The polypusation, dyspnoea, headache are probably therefore also referable to the anaemia — tho' it is not easy to see why the headache should be relieved by epistaxis.

The only feature which is difficult to account for in this way is the "water hammer pulse"—what looks on the surface like a water hammer pulse. A comforting point is that though there is a considerable difference between systolic and diastolic pressures yet the former is only 128. Our water hammer pulse thus resolves itself into merely a low diastolic pressure.

As this improved considerably with the improvement in the blood picture, we may conclude that the anemia in the blood pressure depends also on the anaemia.

3. From a consideration of the disease, we gather that it is hereditary and familial. It has occurred in each of at least 4 generations of patient's family tree — in males and females indiscriminately. More than one member of a generation may be affected, and certain members appear to escape. The hereditary nature of the disease is of much vaquier type than that found in haemophilia.

4. Consideration of treatment. Patient's marked improvement — measured by the blood counts — seems to justify the logical treatment carried out.

A. Exudation of bleeding centres — cautery excision of naevi (and carbolication of piles).
B. Transfusion to relieve symptoms almost fatal.
C. Provision of material for new blood (anaemia).
D. Stimulation of the blood forming centre — naevi.

For completion of this logical scheme we ought to turn our attention to the hereditary element of the disease. For example — patient's
own son has spots on his face. Should not his nose be examined now, at puberty, and again at the
first sign of epistaxis (if any should occur), and by any
bleeding be eradicated. If the boy is lost
sight of now, there seems a real danger that if
symptoms appear later in life, they may lead to a
wrong diagnosis (if the his grandmother with "Pennion
Anaemia) or at least a late diagnosis after a long
period of the misery and inefficiency which accompany
Anaemia.