Competition For Wightman Prize.

Report of Clinical Cases.

By James Pearse.

3 Upper Gilmore Place
Case 1

Patrick Downie.

Acute Myelitis.
Patrick Downie. act 28.

Admitted to workhouse on Friday, March 3rd 1843.

Family History

Personal History

Patient went to India at the age of 6; joined the army at the age of 14; left the army, act 29. Served 4 years in India, 2 years in the River campaign, and the rest of his time in home service. Since leaving the army has worked throughout the county at odd-jobs.

Five years ago he contracted gonorrhea; he denies syphilis, and there are no indications of this.

A much addicted to alcohol and was drinking heavily before onset of present illness.

Married, but lives apart from his wife, who states that he ill-treats her.

Mode of onset of present illness.

On Monday night (27th Feb) patient slept in a very cold bed. On waking on Tuesday morning he felt pain in the small of the back; on attempting to obtain evacuation of the bowels was unable to do so; was able to micturate, went to work as usual. At dinner-time he tried to micturate, but found this impossible; he then went home (Sunday week), as he was wearing his right
foot suddenly gave way, and dragged as he walked. He took his dinner readily, but on attempting to rise formed the right limb dead below the knees and could not get up without support. He remained up till about 8 of the following evening; he was then able to drop himself upstairs, and put himself to bed. He noticed at this time that the right leg was quite cool and unnecessary, that the calf of the right leg was swollen and hard and somewhat numb. The left leg was unaffected. His back had continued painful throughout the day. He has tried in the afternoon and again in the evening to urinate, but has failed. Tuesday night was unable to sleep at all owing to pain in his back which became very severe, and extended down to shoulder. Next morning, on rising patient found that his urine had passed from him unconsciously during the night. He still experienced desire to urinate, but could not relieve himself. Right leg was dead up to the knees, swelling had increased and was harder. Left leg was normal. Patient made his way downstairs. Patient made his way downstairs, and sat up all day, getting a companion to help him when he wished to move about. Urine dribbled away throughout the day. was unable to evacuate the bowels. Face was very red; secrete; took food well, and did not feel constitutionally ill. On going to bed, right foot was quite white; he finished his right leg, and experienced no pain so far as the right
Thursday. noticed that numbness was extending up right thigh, and was commencing in left foot. Now began to experience pain in lower part of abdomen coming on with desire to micturate. In the evening he had to be carried upstairs and undressed. Now the area in rumenibility had extended up the greater part of right thigh, and somewhat above the left knee, and now for the first time motor impairment was noticed in the left leg.

Friday morning. ache in rumenibility had extended up left limb to hip; on right side above knee crest; he had to be dressed and carried downstairs. Came to infirmary in cab about 10 o'clock.

Résumé of onset, as noticed by patient.

Tuesday. pain in back, inability to evacuate bowels. Ability to micturate. Loss of sensation in right foot. Alteration of sensibility of right thigh and spread of motor paralysis, swelling of right leg.

Wednesday night—unconsciousness for one hour.

Wednesday—above symptoms increased.

Thursday—loss of knee sensation in left foot. Increase of condition in right limb. Motor impairment of left limb. Inability to walk.

Motor symptoms developed very suddenly, and before any manifestations of sensory phenomena, which are stated to be usually the first to appear.

There was complete absence of sensory symptoms as well as of neural phenomena, which are stated to be usually the first to appear.
While paralysis developed rapidly in right thigh, on left side the symptoms were comparatively slow in appearing, and here the first symptoms were sensory.

A prominent feature in the case was the severity of the pain in the back, which from the patient's account has been marked. This is important in bearing on the subsequent development of symptoms.

There is no tenderness back, and the patient is not nausea in any way. He is suffering from pain in the back.

There is no history of injury or of strain of back.

**Condition of Nervous System**

March 15

There was slight variation in condition during first day or two, but when symptoms were fully developed were as follows:

**Mind unimpaired. General depression slight.**

**Subjective:** no pain, no heat, no chill, no discoloration.

**Objective:** right leg shows no voluntary movement. On attempt to move leg back, slight muscular contraction occurs at the calves, but is not sufficient for further movement. Abdomen does not move.
Well with forced respiration.

There are jerking movements in both legs, more marked in left.

Skeletal deformity is diminished up to a level corresponding to 6th rib, one more in left than in right.

If two fingers be placed longitudinally, they are felt as one point, but separated by whole length of hand, whereas if they are exactly opposite to one another on the inner or outer side of the hand they are always two, experienced as two points.

Head drawn up to level of 8th rib

Face drawn up over corresponding area.

Pain and tenderness occasionally complained of.

Respiratory condition: There is very rapid respiration.

Spleen felt after slight irritation. Bilaterally palpable; firm.

No oedema.

Nutrition no bedsores. No muscular atrophy.

Definite, plantar and Babinski signs noted on both limbs. No ankle clonus. Hilar pulse and abdominal reflexes not obtained.

Organic reflexes: Complete relaxation; quiescent.

Accommodated closed with ease, great air. Urine and stool free of albumen on stopcock.

Great constipation. Bowels move every 3 or 4 days usual state of fauces.
Patient experiences no sensation when patted in chest, nor when there is an evacuation of the bowels.

**Skins.** Pale slight. On pressure over the abdomen, the patient complained of pain from 2nd to 6th dorsal spine inclusive. Being most marked over the 3rd. On applying a hot sponge, heat is appreciated over the 7th spine, more marked over the 6th, while there is apparent hyperesthesia over the 5th. Patient starting to sweat over the forehead, hands, and soles.

**Shade area shows extent of dimmings of tactile sensation, and loss of heat and pain area.**

Over non-shade areas and limbs, there is some perception of heat and pain, and tactile sense is well marked.

**Upper extremities unaffected.**

**Temperature:** Up all limbs.

9°F was 99.2° on one occasion; at other times did not exceed 99°.
There is no distinct zone of hyperaesthesia which may be taken to mark the upper limit of the region. But if the 11th dorsal vertebra which is continuous at least to the 1st lumbar vertebra of the other side, it is uncertain whether it may be taken to indicate this, the lesion may be placed in the midsacral region.

Such a lesion would involve the centre for epiplastic abdominal reflexes, and preclude their development, and would explain the other symptoms present.

It is difficult to understand how the area above either area joint has partially escaped: but this phenomenon was very distinctly marked.

That the Cervical is a transverse one is shown by the equal involvement of both sides, with reference to all the conducting functions of the cord.

Patient was at once placed upon a waterbed.

Medicinal treatment - Potassium bichromate 5 x, Hydrochloric acid, 5 x, 10 x.

Progress and Care

March 10th

March 11th

Temperature 100.2. Attack of vomiting. Considerable depression. complains greatly of pain, and a feeling of tightness across upper part of abdomen.
March 12th.

Small lesion has developed over left hip.

Considerable improvement, but pain in upper part of abdomen still present. Considerable quantity of fluid in urine.

Today patient is vomiting a good deal, and complains of pain on right side of chest. Towards evening condition became much worse. He faints on every inspiration and sometimes so severely that patient has to be held. On insertion of the slightest pressure causes him to sneeze. When pain is severe he resistance on right side.

Here is source of fever in right arm. This is placed across chest, otherwise occasional jerking movements occur in lumbar spine, the left or on pressure on after every radiating pain is elicited.

9:30 P.M. Pains more severe attacks come on every 3 or 4 min., during which patient cries out, takes left hand across right arm, also pain is thrown into action, and usually right forepart of head and thrown into tonic spasm. Patient frequently endures to cough, but the act in coughable manner much pain.

On touching right hand of forearm it is withdrawn, drawn up, and tendens great pain is elicited.

Both arms now flexed across chest; occasional tremor most in both. Occasional tremor most in muscles
tongue left angle of mouth, and rapid movements really
existing here. Patient responds when spoken to, but
is very depressed.

movements of facial muscles more marked. Right
external oblique muscles, abdominal muscles slightly weak
expiration, and the upright cranium, causes great pain
and marked increase of pain on right side. Cephalalgia
marked increase in cramp like. Both upper jaws involved
and are frequently thrown into violent spasms which seem
to involve all the facial muscles.

Spasm had also commenced in the trunk,
involve left half of body.

 facial spasms off, causes great pain and increase of spasms
Pulse go poor tension. Respiration shallow.

Her whole neck patient has not spoken spontaneously
she can now be touched but has a stated expression.

These symptoms continued with slight remissions
throughout the whole day, the facial twitchings
being not as marked. The mental condition of
the patient became more and more torpid, and from
about 2 P.M. could not be aroused. Respiration
was at times decidedly irregular, and for a short
time in the morning then was marked dyspnea,
so that subject drooled from his mouth, and he had
great difficulty in swallowing meals. Attempts


at coughing were frequent but very feeble, and
terribly occasional pain. Pulse throughout
remained good. The following note was taken at
9.30 P.M.
Patient has been getting more restless, and
more pronounced. Sæsæt hiccoughs have been more
marked. Lately suddenly, now patient showed marked
improvement — opened his eyes, and began to look around
curiously. Rigidity of right arm was entirely about and
it could be placed in any positions: up, down or across moved
was easier on bending it or the side of the chest. Patient then
took a glass of milk, but in left hand, strained it without
difficulty. He moved right arm freely and was able to place
it in any positions. He began to talk spontaneously and
when questioned answered freely — this was able to give
his address of friends and to tell the time. There is dif-
ficulty of coughing, but this is not co-morant and patient
is able to separate into spit. His friends had been
visited yesterday — he states that this has happened
today. There is no recollection of what has occurred in the
past 24 hours.

March 16th

There was some return of symptoms throughout the
night, but patient slept fairly well.

Patient better. Pain still severe. Rise of
temperature in afternoons with great depression.
Severe movements of both legs.
March 17th

Pain still severe. Complained of photophobia. Still occasional facial twitches. In answer evening condition became worse, there were twitches in both arms and right hand; refer was marked by irregular pain was increased. Complained of pain in upper part of back.

March 18th

Very great improvement. Patient states that he feels better than he has done for some days. unable to commence fully but makes no complaint of pain. No twitches. Respiration regular. was able to read throughout the day.

Constricted maintained

March 19th

General condition maintained. Considerable effort put into left hand joint. Condition as before.

March 20th

No marked change. Effusion into joint diminished.

March 21st

Effusion eases away. Composite of three very slow. Movement of toes. Some power in thumb, able to turn over bed, grasp nude head of bed.

March 22nd

Subject feels better. Otherwise as before. Feeble movement of fingers along median nerve. Reflexes flase and greater increase. Sensation and abdominal not obtained.

March 23rd

Reflexes complete. Retention of urine and nausea.

March 24th

Temperature condition as before.
Sothis slight effusion into both knee joints. Patient over his hair航天： one of larger size has developed over

Pleuris, slight oedema of calf muscle not marked.

Back no tenderness.

There is considerable anaesthesia and complete loss of

arthrography over instep and penis. There is

trouble in great toes, dryness nearly the whole of

right half of stomach: 1st swelling is hard but not tender.

Condition as above. Reflexes cop marked.

Walking never seems normal.

Not-swell in last week. Rise of temperature

even afternoon and evening 6-100°-101°

Voluntary motions and sensations as before.

Restlessness occasionally in both limbs at times. Do

seem that limbs have to be forcibly straightened. Effusion

with left knee joint considerable. Return of difficu-

ly in coughing. Large bruise over perium, meas-

uring about 5x5 inches, covered with dark clots, about 1/2

depth at upper part. Patient cannot lie on side, as the

ovaries pain in upper closed region and there is ten-

derness here on pressure. Incontinence of urine

wants does not dribble but is discharged in incontin-

tary stream occasionally.

Return of pain which is very severe, as that at times

patient cannot draw a breath. To-hitching

severe peristalsis, and patient complains of rapid diuresis.

This condition settles down off.
April 21st:
Morphine administered.

April 22nd:
Great depression of speech.

April 23-25th:
Morphine continued.

April 26th:
Morphine discontinued.

April 29th:
Very drowsy. No loss of consciousness. Pain almost absent, but occasional paroxysms of left arm. No twitchings.

May 1st:

May 5th:
Severe twitchings of left arm.

May 6th:

May 7-10th:
Morphine administered.
May 11th

Patient's mind has begun to wander.

Tuesday more marked. When not talking, patient is frequently muttering in an indistinct manner, and it is impossible to understand what he says. When spoken to, he will answer a question usually, but immediately begins to ramble about some other subject. Does not complain of pain. Temperature during last few days has not exceeded 99. The evening it has risen to 102°; there are still frequent hiccoughs on left side. These on left hand are much more marked, while those on right hand are considerable rigidity and often metacarpal.

Wildly delirious in afternoon, cyclic, but being under the impression that other men in the ward wished to injure him. No rigidity of left arm.

Towards evening patient nearly delirious, imagining that things are falling on him and trying to be taken away. Pulse 120, weak, occasionally unequal: goes up to 150 when patient excited.

Hands feel very cold. No Турингион. Patera and flatter reflexes present, not increased.

Redness discharging a large quantity of fluid.

Condition shows little change. cyt. about 5% white obtained Cystokist, containing a large amount of fluid. Bladder will not take more than 2% of fluid which is most irritating to cysto.
May 16th

Mental conditions worse. Patient sent to ward VI.
Continuous talking noises but particularly this whole day.
Condition as yesterday.

May 17th

Lucy delirious, not continuous. Towards evening was
guineas. Stated that she was better.

May 18th

Slight delirium, not noisy. A tender swelling
over left submaxillary region.

Quite quiet

Delirious has returned, but is now of a quiet kind
and not continuous. Letters from her show delirious,
holding up one hand, stating that there are two, one that
he has 3 legs; there is no diplopia, and the right side
nearly numb of fingers held up. Says that he is going to
London tomorrow.

May 19th

Said next that his priest who saw him has found
him new hands and legs. Is extremely happy under this delirium.

Notwithstanding slight increase. Patient quite
conscious, readily recognizes people, will answer
questions.

No marked change. Submaxillary swelling disappears.

Memory seems impaired - eg. States that he has
been in present ward since March, and not sure
what month it is. Delirious persist, eg. he is in t
June 11th

After this the delirium disappeared, and the patient's general condition shows no change. On the 12th he was removed again to ward XXIII. Examination of patient's condition on June 16th.

Temperature: Slight fever; no change.

Sensation: Sensibility diminished below level of 4th rib; localization good.

Temperature area: test below 5th rib. L2-L3.

Pain: Sensation on left limb below right.

Pulse: No right pulse except for an arteriosclerotic aspect over knee and above, posterior

Area not tested below gluteal fold.

Motor: Right hand, slight sensation of toes and plantar muscles; muscles of calf do not act. Slight plantar anesthesia.

There is a slight abstraction of thumb, no abduction. Slight flexion at hip.

Left limb lies in peculiar attitude, being straight inward below knee as total anterior border of tibia looks directly inward.

Movements as in right limb but flexion of knees less marked.

Patient cannot move one leg separately: on attempting to perform
any movement, some motion is always imparted to
offered turn.

Plantar reflexes increased on both sides. Right
patellar considerably increased, left slightly. No clonus.

Ventricles muscle were extreme atrophy, so that
over most prominent part of calf measurement now
increased to 7 1/2 whereas on admission it was 11/4; owing
to definite condition of brain it is impossible to
test the electrical condition. There is no effective
motor control.反射 has diminished in depth,
but extends over whole distance between eyes.

Ventricular condition. Easily recognized as apparatus
is large, opacity the spots some points where skin has
been incised.

Urinary condition. Some incontinence, large deposit
of pus. Bladder seems much contracted and will not
hold more than 2 1/2 of fluid when washed out.

Three instances of feces.

June 18th

Complains much of jerking movements of toe
which are so violent as to prevent sleep.

June 20th

During past day or two has been complaining
sweats of epigastric pain, which is severe or so to
necessitate use of morphine. The area right costal
margin is very hyperesthetic.  

The blisters.
July 1st

Pain continues. General condition shows great depression. Mind quite clear. Portions of food, tongue, host of odors; during past day or two has been some diarrhoea.

Résumé of Course of Care

July 28: onset of paralysis.
March 7: symptoms fully developed.
March 14: joint bedrest.
March 14-15: attack of apparent meningitis.
  18th: improvement
  20th: joint removal.
April 20-22: return of pain and tenderness.
May 4-8th: Bo. 20, 20.

May 16th: onset of paresis.
May 12-15th: mony delirium.
May 26-30th: delirium.
June 15th: improvement in pain, subtle sense.
  Slight motion in athermities. None in trunk.
  Marked atrophy. Bedore very large.
June 18th: return of pain.
July 4th severe rigor and aggravation of pain.
This case presents interesting features as regards its progress, and the development of complications.

The first attack of meningitis was extremely severe while it lasted and no hope was entertained of the patient's recovery. The severity of the pain in the back during the course of the illness may show that there was some early meningeal process which subsequently became more formidable. No epileptic crisis can be traced, as at this time no convulsions developed; the attack must therefore have been due to the same cause which induced the meningitis, or to a spread of the latter process to the meninges. Also, the attack is peculiar in being limited to one half of the cord, there being only slight symptoms of involvement of the left side; while both sides of the base of the brain were affected. Again, the process never passed beyond the stage of irritation - this was manifested by pain, rigidity, spasm, muscular twitching, and exaggeration of reflexes, but there was no subsequent development of paralysis in any of the muscles, face or arm. A further most marked peculiarity in this attack was the suddenness with which all the symptoms disappeared; the patient had not voluntarily moved his right arm for 24 hours, for 12 hours he had been in a
conditions of more or less complete cure, there had been extreme distress prior to the accumulation of mucus in the bronchi, an aggravation symp- toms seemed to be coming on, when the patient suddenly regained consciousness, began to talk rationally, and to move his arms quite freely.

Subsequently to this first attack, there were other less severe attacks of meningitis, and these were somewhat limited to the left side of the head. Hitherto there seems to have been a chronic condition here, as a burning sensation was constantly complained of on the left side of chest, which showed occasional exacerbations.

With regard to the onset of delirium, the most probable explanation seems to be that it was due to reflex absorption from the lesion, which at this time was very foul. The temperature in more like that of pyaemia than of septicemia, the swelling in submaxillary region was of just suspected to be a pyaemic abscess, but suppuration did not follow, and no abscesses were produced throughout the body. The patient at this time was lying in bed for more than 2 months, and no evidence of sepsis was found. The question arises
Whether these symptoms may not have been dependent upon an anomalous form of botulism or botulina. An interesting point in this connection is that soon after the patient had begun taking the iodide, a similar swelling but very tender swelling appeared in the submaxillary regions, dependent probably upon inflammation of the gland.

The temperature throughout showed considerable irregularity, especially during the attacks of meningitis. In the morning it was usually subnormal, and in the early part of the illness stood at most occasions at 97°.

In comparing the present condition of the patient with that shown on admission—there is slight return of movement and some improvement in sensation; but the general system has become profoundly affected—there has been a marked contrast to the well developed muscular appearance of the patient when he came to hospital. The mind is quite clear, but there is great depression of spirits, and vitality is much lowered, so that it is impossible that the case long survives.

* These medicines were stopped on the occurrence of these symptoms.
There does not seem to have been much extension of the process in the spinal cord; intervertebral are unaffected and there is no paralysis of the upper extremities, so that there has been no upward spread. The persistence of the knee reflexes shows that the process cannot have extended for in a downward direction. The muscular atrophy of the lower limbs must therefore be due to non-use, and to general wasting following upon the exhaustion produced by the severity of the complications.

Thus these the case seems to have been one of total transverse myelitis in the midthoracic region, producing interference with all the functions of the cord. Syphilitic and bacillary were soon developed, and the case has been complicated by the occurrence of meningitis and septicaemia.

James R.  
5/7/93.
John Butters
Myelitis

Report of Case
Site of lesion
Comparison with case I.

The notes of this case up till the middle of March have been taken from Dr. Sherington's report; subsequently, they are from my own observations.

Joiner.  Unmarried.

admitted into ward XIX on Nov 22nd 1872.

Family History.

shows no hereditary taint.

Personal History.

Has been a very healthy man.  Contracted gonor.  There is no history or evidence of syphilis.

In May '72 he fell on his side, and suffered for a short time from pain in the back; he states that he fell a little.  He was in no great pain before present illness set in.

Recent Illness.

On Thursday 16th November patient went out to Shettisham to attend a funeral.  He was not exposed in any way to cold, but indulged freely in spirits.  On Saturday 16th November, he felt sudden pain on right side below ribs.

This soon passed off, but recurred again for a short time on Sunday, and on Monday when he returned to Edith.  On Tuesday he was quite well, and able to work; there was no pain.  On Wednesday at midday, he was unable to move, and about the same time his legs became weak, on going home he was unable to move his limbs freely and staggered, not being able to feel the ground well.  On Thursday morning was seen by his medical man, and treated by warm baths and mustard-poultice baths.
As there was no flow of urine, a catheter was used in the evening; and an irrigation of bowels obtained after medicine has been taken. The weakness in the limbs increased on Friday and Saturday; and there was also incontinence of urine which lasted till Monday.

She was admitted into hospital on Sunday, 23rd Nov., 10 days after first symptoms were noticed.

Temperature 99.6. Pulse 100, regular.

Condition of Nervous System.

Subjective: Headache felt in areas of both feet and toes. Right limb feels very cold up to knee, less so up to hip; left limb moderately cold. Face is still over region of right great trochanters.

Spinal Percussion reveals no pain. Hot and cold tests feel normal. The applied to lumbar region feels warm.

Sensibility: Left limb is constantly diminished, but there is no complete anesthesia. Right limb considerable diminution below level of ankle joint; slight, above this level. Abdomen, slight diminution on left side below umbilicus; very slight, on right side.

Motion: There are occasional slight twitchings in both lower limbs. Left hand - movement occurring is considerably impaired, thus the limb can be raised, there is slight flexion
Knee, very slight flexion and extension present, good movements of toes. Right limb there is complete loss of power.

Abdomen: There is no paradox of muscles of abdominal walls.

Reflexes: Plantar responses are increased. There is no increase of either knee jerk; if anything slight diminution. No clonus.


Nausea: Small area of broken skin where plaster was applied. Further no inner signs of injury. No true cellulitis.

Immediate Progress

Initial Phase: Nov 23rd - right side of abdomen is now completely paralysed. Nov 24th - hyperesthesia on right limb from base to clear cut.

Pain Phase: Nov 25 - There is complete analgesia on left side from base to umbilicus downwards.

Temperature Phase: Nov 25 - Sinus of temperature on left side from base to umbilicus downwards. Nov 26th - Complete loss in this area.

Motility: Movement of left ankle lost, of this uncertain. Nov 24th - Tendinous reflexes on knees very frequent. Nov 25th, flaccid ankles and knees; slight flexion at ankle; considerable flexion of toes.

Reflexes: Nov 23rd - Abdominal reflex on right side
Nov 24th - Both planters depressed; also both patellae; ankle clonus now present: in all limbs, left is mon nervous, right abdominal.
organic Reflex. Nov. 23rd - bones, muscles, percutaneous
only slight effect. Nov. 24th - facial incontinence.
Nov. 25th - voluntary evasions. Nov. 27th - control good.

urine drawn off regularly. Nov. 28th - no pus, no phlegm.
Nov. 29th - marked improvement. No eruptions.

Nutrition. Nov. 23rd - skin abrasions and ulcers have healed.

representation of sensation

Abdominal area

Spatular area

Ankle area

Patellar area

representation of motion reflexes
So there is complete paralysis of right lower limb, and more extensive loss of sensibility in the leg than in the right hand, the stress of the process evidently falls on the right half of the cord.

The presence of a well marked abdominal reflex on the right side shows that some of the inhibitory fibers, which prevent the ready production of this in a healthy adult must be cut off, the persistence of these fibers makes it clear that the reflex are concerned in this instance. The abdominal reflex correspond to 9th dorsal and 1st lumbar segments of the cord (Powers); the patellar reflex to 2nd and 3rd lumbar segments. Hence a lesion extending from 9-11 dorsal segments would leave 12 dorsal and 1st lumbar segments to produce the abdominal reflex; would cut off inhibitory fibers controlling patellar and plantar reflexes and allow of their increase; would interfere with passage of motor impulses to limb which commences to leave the cord at the second lumbar segment; would interfere with conduction of sensory impressions from area indicated; would interfere with passage of impulses from brain to bladder and permit retention.

A difficulty, against this localization of the lesion is the absence of any apparent paralysis of the abdominal muscles, for this would allow of innervation of these only through 9th and 10th dorsal nerves.
In the area of cord affected the posture must be more in the lateral than in the posterior regions as while tactile sense is only impaired, the perception of temperature and pain is completely lost, and motor conduction completely arrested.

If the direct pyramidal tract in this case extended as far as the lumbar region, the partial motor impairment of the left limb might be due to a lesion on the right side of the cord involving these fibers before their point of decussation in the cord. But that the motor process must also involve the left side of the cord is shown by an increase in left reflexes and interfere with sexual conduction from right limb. The absence of the abdominal reflexes shows the process to be at a lower level than one would expect if the cord were in its normal condition and if the lesion would have spared this, and also the exaggerated plantar reflectors. The lesion cannot be taken as motor conduction is comparatively arrested.
Further Progress.

Changes in patient's condition were very slow; the more marked changes up till the end of March were as follows:

- Duration.
  - Parasymptoms of right leg had disappeared on 7th March.
  - Bed 14th - slight movement in right thigh muscle.
  - Bed 22nd - slight movement in right toes.
  - Bed 30th - movement in right hip better marked.

- Reflexes.
  - Superficial and deep more marked.
  - Organic reflexes.

- Incontinence.
  - Incontinence gaining set in on bed 16th.
  - Gradually increased so that on 26th 5th series was passed every hour. After this improvement set in and on March 3rd 5th series when the incontinence had almost disappeared. Bowels never acted without an enema and on one or two occasions there was passed incontinence.

- No formation of bed-cous: no muscular atrophy.

On 30th March patient began to get up every day and to walk limply about in a chair.

- Temperature.
  - Morning usually 97° to 98°, evening rarely above 99°, only on one occasion did it reach 100°.

- Treatment.
  - Medicated by the administration of ipecacuanha 5t to 15t on 1st April, latter diminished to 5th. Since 5th May with the object of curing incontinence, ipecacua 5th with aspirin added in dose of 1/5 increased to 5° t.d.s. From 22nd May, 5th and 15th dose of ipecacua 1/10 and 1/10 added.
March 24th

Minute examination of patient's condition now shows:

Left side:
- Left knee - touch is readily perceived and exactly localized. Two points are perceived as one over the whole limb, the widely separated; this less marked on the thigh, and lower inner and anterior than outer aspect.

Right limb - normal except for two points which are appreciated across below the knee.

Pain: tender - tested by pinching with pin and pinching -
- Left limb - lost till about 2 inches above patella; patient can feel that touch is being nodded up but this does not occasion pain, on outer aspect of thigh is not well marked, on inner and anterior aspects is better appreciated but not as on unaffected part. On inner side of thigh extending for about 2 inches from above limb is an area where for the pinching of the skin occasions pain, and at the hand lines occur - a peculiar, refers to corresponding point of opposite limb, which patient attests that produced by blow on same nerve at elbow.
- Right limb - normal.

Temperature lower throughout whole left limb.
- Right limb same as last seen except.

Motion:
- Left limb - complete power of leg and knee. No aductions at ankle. Movements of toes normal.
- Right limb - some power of flexion at hip and knee. Patient states that at times these movements can be
perform perfectly. no movement at ankles. slight movement of toes. attempt at passive movements of both ankles and knees greatly resisted. abduction good. No adduction.

Reflexes: both plantar and patellar reflexes are greatly exaggerated. knee and ankle clonus readily obturated. No abdominal reflex.

Organic Reflexes: urine cannot be retained longer than 1 hour. after this, it dribbles away. It acts as moderate diuretic without effort. Constipation marked, considered control over affliction.

Despite condition being very well nourished, no muscular atrophy; muscle strength to standards of arbitrary joint. no formation of bedsores.

Abdomen: sensation of pain in midline on left side below umbilicus. Rectal reflex, motion, normal

Subsequent to this date there was little marked alteration in patient's condition.

Sensation as above. movement occurs now slightly at left ankle. Ankle clonus is less marked. Urine is passed only about 6 times a day; there is no incontinence.

No reflexes noted elsewhere. He now will sit up, and can stand upright; there is violent shaking at first; this soon passes, as offset by increase in attempting to walk.

No alteration in sensation. movement is now good
June 1st:

in left ankle; elsewhere as before. Reflexes are not so greatly increased, but are still very marked: more on right side than on left. Within the last days, there has been return yac continues, which is complete. Shocking which occurs on standing is much less marked, and patient can walk a step or two if supporting herself on railings etc. Bladder often is more removed than testicles; knee clonus is very evident.

Functions of bladder now good. Patient convalesces, otherwise shows no change, Dept Hospital.

June 20th

**Condition on Admission**

Bladder area - shows excess of temperature since. Degree of shading shows degree of interference with pain sensation.

**Thus general result is**

**Right thigh:** motion has greatly improved, but still more involved. Sensation has been restored. Reflexes are exaggerated.

**Left thigh:** motion is almost perfect. Tactile sensibility is completely restored. Sensibility to pain and temperature are still impaired. Reflexes are increased, but less than on right hand.

A point of interest has been mentioned is that the sensation to pain is much more pronounced over left half of posterior skin, than it is over the right thigh. Patients unable also remains impaired on left side.
involves on the right-side, seems to render it possible that the accident may have produced some strain or injury to the vertebral column.

The case shows a very favourable contrast to case 1, in its subsequent progress, as shown by the early appearance of symptoms of recovery, and the complete absence of the complications which arose in that case.

Case 1 shows a total transverse myelitis, while this case shows a lesion mainly confined to one side of the cord.

[Signature]
Bernard Montague
Injury to Cauda Equina.

Report of Case
Comparison with cases 5 and 7
Relation of Epilepsy to Amnesiosis of Dimroth.
Bernard Montague

Age 47. Married.
Admitted into ward XXIII on February 20th 93
Complained of frequency, micturition with pain;
weakness in lower limbs.

Family History

Satisfactory

Personal History

Has been a very healthy man till first attack of illness. Somewhat addicted to alcohol. No evidence of history of syphilis. At his work used to be exposed to considerable variations of temperature, and frequently had to stand in deep water.

Onset of Illness

On March 4th 1893 after patient had been working at the mine, and was being drawn up, the lake caught on a projection, and he was precipitated 25 yards, falling on an incline on his hips and back. He attempted to rise in order to stop the discharge, but found that he could not move his legs. After the accident he states that both lower limbs were cold and numb, there was complete loss of motion and sensation, there was retention of urine and incontinence of faeces.
He was sent into the Infirmary and was under Professor Amandale's care for 10 weeks. At the end of this time he states that he was able to drag up his legs but not to bear his weight upon them; he was able to urinate but not to retain his urine more than an hour; he was able to defecate but little, and little could not be passed.

In July '94 he was admitted to ward 91 still suffering from an attack of erysipelas - movements of limbs very imperfect. Readmitted in Feb '95 suffering from recurrence of erysipelas.

**Examination of Condition**

Motion: small with emulius, no spastic gait.

Right limb: movements at hip and knee are normal; there is no movement at ankle or at toes. No kink at knee, condition identical in right limb except that there is slight movement at ankle due to contraction of Tibialis Anterior.

Subjective: complains of passing pain in the limbs, extending to the spine. Appreciated swelling at both limbs below knee are frequently very cold. Joints occur below the middle of the leg on the outer side and a joint somewhat lower than this on the inner side, touch is very imperfectly perceived and cannot be localized with any accuracy. Two joints are appressed above.
Sensation to Pain is very slight correspondingly.

Temperature Normal, one above area sensation to cold is almost completely lost occasionally a cold towel is applied to but the perception is much delayed. A warm towel has to be applied for several seconds before heat is experienced. If the towel applied be moderately hot, tactile sense only is affected.

Reflexes: Patellar and Achilles are lost. There is no ankle jerk.

There is some weakness of obstructive kind, but patient walks only occasionally with one control.

Urinary condition: There is continuous incontinence.

Patient is not conscious of the flow of urine till it has reached the point of the penis. Urine contains large deposit of fucus with mucus and phosphates.

Condition of femur. There is some numbness for about 2 inches along the inner border of the thighs, and between the buttocks. The skin of the lower thigh shows complete loss of pain sensations and great diminution of tactile sense. This condition is also present above skin of penis but less markedly. The left testicle is distinctly smaller than the right.

Patient states that it has atrophied during his illness.

Back slight tenderness in lower lumbar region.

No reflex with hot cough test.
He was sent into the Infirmary and was under Professor Ansell's care for 10 weeks - at the end of this time he states that he was able to draw up his legs but not to bear his weight upon them, was able to urinate but not to retain his urine more than an hour, was able to ate and drink little sphincter control.

In July '91 he was admitted to ward xiii owing to attack of erysipela - movements of limbs very impeded. Readmitted in July '92 owing to recurrence of erysipela.

**Examination of Condition**

Motion - walks with waddles, no staggering gait.

Right limb: movements of hip and knee are normal; there is no movement at ankle or in toes.

Left limb: condition as in right limb, except that there is slight movement at ankle due to contractions of Tibialis Anterior.

**Subjective Symptoms:** complains of aching pain in the limbs, extending to the spine, aggravated by walking. Both limbs below knee are frequently very cold.

In the area between the middle of the leg on the outer side and a point somewhat lower than this on the inner side, touch is very imperfectly perceived and cannot be localized with any accuracy. Two points are apprehended on same.
Temperature lower, over the area sensation to touch is almost completely lost, occasionally a cold sensation is appreciated, but the perception is much delayed. A warm test tube has to be applied for several seconds before heat is experienced. If the tube applied be moderately hot, test tube pain only is appreciated.

Refluxes. Plantar Patellar are lost, there is no ankleclonus. There is some weakness of anterior and, but patient only occasionally loses control.

Urinary condition. There is continuous incontinence. Patient is not conscious of the flow of urine till it has reached the point of the penis. Urine contains large deposit of protein with numerous and phosphates.

Condition of sperm. There is some numbers for about 2 inches along the inner border of the thighs, and between the buttocks. In skin of the foreskin there are complete loss of pain sensations and great diminution of tactile sense. This condition is also present along skin of penis but superficially. The left testicle is distinctly smaller than the right.

Patient states that it has atrophied during his illness.

Reflux slight tenderness in lower lumbar region.

No reflex with hot sponge test.
Shaded area shows abnormal condition generation.

**Electrical Reactions:** tested on right limb.
- Paralysis: cause ready contractions in thigh, none below knee. Strong current not complained of.
- Galvanism:
  - Use 15 and to elle give KCC, AEC: greater strength cannot be borne.
Nature of the case.

There has been a certain amount of reaction of degeneration present, as evidenced by the absence of reaction to Faradine. And the altered order of contraction in Abductor Anterior and Soleus.

The motor symptoms present at this time cannot be explained as a lesion of the cord itself. Muscles involved are Peronei, Flexors and Extensors of ankles, Intrinsic muscles of foot. These muscles arise from the 4th and 5th lumbar, and 1st and 2nd sacral segments of the cord. A lesion in this situation would not explain the absence of the knee jerk, and would not account for involvement of muscles in the thigh.

The condition may be explained by a process involving certain fibres of the cauda equina—field would cut off the muscles from their moti-
active centre in the anterior column, comes
prevent the passage of motor impulses, would
interfere with reflex action, either preventing
sparing or motor conduction.

The condition of erection in convex tend
may also be explained by the same motor process.

But the case is peculiar in showing the
extensive involvement of the perineum and
erogenous in too many functions. The area of
perineum corresponds very closely to what is described
as the saddle-shaped area — "Anaesthesia of per-
inineum, perineum, coccyx, rectum, vagina, anus and posterior
surface of anus is produced by a lesion in the
lower part of the spinal cord, in the out of the
verbal segments and comes. If the lesion is higher
up at 5th spinal segment, the anaesthesia ex-
tends further out on the buttocks, and down the
back of the saddle-shaped area." (Kohno, p. 146).

With regard to the original lesion:—
the onset of paralysis was immediate and caused
by the patient falling, as he describes it on his
legs and back. There was no gross lesion either of
twinning or vertebral column, nor the condition
was therefore probably one of compression of the cause
equina and lower part of the cord, producing
complete paraplegia, retention of urine and incontinence of feces.

At the conclusion pains off a degenerative process was left involving the lower segments of the cord and some parts of the cauda equina, thus explaining the present condition of the patient.

The most aggravating symptom in the present case is the occurrence of cystitis: the question arises whether there may not be some connection between the production of this and the marked degree of anaesthesia of the perineum.

It is recognized that in a severe spinal affection, an acute become or an acute cystitis may rapidly develop; similarly if the case be prolonged a chronic become is frequent found, may not a chronic cystitis also arise from interference with trophic control? Nerve fibers concerned in the nutrition of the skin are distributed with sensory nerves, and an area which is anaestheatic is liable to become the seat of a burning under irritation. In this case there is marked anaesthesia over time, perineum, vulva, and may it not be concluded that this condition will also be present on the lower
Well: if so, it is conceivable that urine which normally does not cause irritation, will do so when the surfaces it meets are thin below par, or that under certain conditions without the urine attains any more noxious character, and thus attacks of cystitis are induced. At any rate it is probable that such a condition of lowered nutrition, will much more readily allow of the action of any noxious material introduced by a catheter.

Even if the bladder were unaffected, the urethra is certainly involved, and its lowered tone may allow the passage of germs from the outside which normally cannot travel. In Bowman's case there was well marked induration in the early part of the illness.

In cases 7 and 11 there was similar marked interference with nutrition over perineum and penis, and in both cystitis was a prominent symptom.
In comparing this case with cases I and II - the present one was direct, the result for traumatic. While the condition after the accident much resembled the previous condition in the other cases, the recovery was much more rapid. There is muscular atrophy and some reactions of degeneration, absence of certain phenomena and adduction of fingers.

**Junior Reports**

Patient was treated for erysipelas by the administration of Alum. Benger, Strychnic acid, and salol, and by irritations of bladder. He left hospital with this condition relieved, but with little change in motor symptoms.

*James Pearce*
James McNair.

Disease limited to lateral columns of cord.  Primary Spastic Paraplegia (?)
James McKeir, aged 29.
Cabinet Maker.
Married - 3 children.

It is good.

It states that 7 years ago he had to stop work, owing to what he calls 'general weakness.' No special illness. No history of illness.

It is impossible to get from the patient any definite account of mode of onset.

He states that early in 1892 he had to travel from Glasgow to Edinburgh on a very cold night. He had been quite well previously, but soon noticed that his left leg was beginning to drag, and that he had some difficulty in bending the knee. Subsequently the difficulty in flexion became more troublesome. He continued working till September, when he came to the Infirmary and remained in till October. On leaving he took an attack of gastric catarrh which weakened his liver and prevented his returning to work.

He subsequently remained at home, the condition of the limbs showing no marked change.

Again came to the Infirmary, was admitted.
Examination of
Condition

Notice. Walks with stick in left hand: right foot is placed firmly on the ground, left leg is excepted otherwise the foot being extended so that toes trail on ground, as then brought suddenly forward.

Left limb—movements of hip and knee normal, no movement at ankle, movements of toes deficient.

Right limb, movements of toes deficient, otherwise normal.

Seizures. No subjective symptoms. No interferences with inscriptions of touch, pain, or temperature.

Reflexes. Right limb—plantar upgaleus response exaggerated, ankle clonus present, also knee clonus.

Left limb—as on right, but plantar more, ankle clonus left marked.

Sophic condition. Slight muscular atrophy in leg.

no backache.

Motor condition. Not affected.

Conditions of bladder and rectum not affected.

Sensation. Left limb:

In thigh muscular contraction occurs more readily in vastus externus than in other muscles.

Gastrocnemius & soleus, contractile not well marked.
with their contraction. There is always extension of great toe. Tibialis Anterior and Peronei do not contract well. Extensor Longus Dig. contraction well marked. Extensor Dorsis dig. contraction best marked. Flexor Longus brevis, no contraction. Flexor Longus Hallucis, no contraction, but on stimulating over the muscle, there is marked everture of the great toe. There is no contraction in small muscle of toes.

**Right limb** - response obtained with weaker current than on left limb. Ready contraction in both muscles, and in \textit{Gastrocnemius} Iliacus. No contraction in Flexor of toes or \\textit{Plantaris}. Extensor of great toe occurs on stimulation of Flexor Longus Hallucis. On stimulation over post-tibial nerve there occurs extension of great toe, slight flaring of other toes.

**Galvanic** - on left limb.

\textit{Obturator internus} and \textit{externus} 15 cells. Kc. Acc. 900.

Cannot see; stronger current.


with cathode clamping current the muscle is flared out. Able to draw whole limb up.

\textit{Max. Long. ext.} 10 cells \\textit{short}. 15 cells - on clamping
cathode current there is well marked contraction of extensor tendons; this occurs less marked with A.C. no contraction on opening.

When longer periods productive same result as A.C. long dig., but more marked.

Intercostal muscles digitorum, 15 cells, none.

15 cells - KCl 20C. 40C.

Extensor digitorum, 20 cells - KCl 10C. 40C.

Humero-ulnar muscles no contraction until 25 cells.

Thus, here the flexor muscles fail to react to paradine, whereas a peculiar phenomenon on Galvanic stimulations, but there is no true reaction of degeneration.

The extensor muscles show ready reaction to both forms of current. Their contraction when the KCl are stimulated by Galvanic, which was a very well marked phenomenon, occurs to these are exclusive irritability.
The complete absence of sensory phenomena, the presence of paralysis and wasting of action points to a lesion involving the pyramidal fibres in the cord. The slight wasting of the lips, and degeneration of electrochemical irritability would seem to indicate some involvement of cells in anterior columns.

The patient's condition corresponds very closely to that described as occurring in primary lateral paraplegia (Clews). His age is that at which the disease is commonly manifested.

The symptoms as given by Clews are:

Weakness of the legs, of very gradual development, is the first symptom. It is very common for one leg to become weak before the other... It will generally be found that there is very distinct loss of power in the fingers. The knee jerk is excessive and quick; the cutaneous contraction can be obtained. The foot claw is usually also obtained with ease.... In walking, each leg is hunched forwards as a rigid whole, the toes catching against the ground.... The muscles are usually large and well nourished; but they are not always large, they are sometimes markedly wasted. The electrical irritability is usually
perfectly normal, but in the muscles which present the slight wasting there may be a trifling diminution of irritability... memory phenomena are often entirely absent.

So far, the symptoms described correspond almost precisely with those found in the present case. But there are other points in which the case does not correspond -

1. Characteristic symptoms described in one of又称作"spasm" - the spasm may be such that the limb cannot be flexed by any force that may be applied to it, until the spasm has become less. When flexed the limb is comparatively supple, but if it be then extended, the spasm instantly returns, making the limb rigid, and often completing the extension, just as the blade of a knife opens and under the influence of its spring closes knife stiffness. These symptoms in this marked degree is certainly not present here, and I have never been able to obtain any external stimulus on suddenly extending the leg. But that there is excessive irritability of the extensors is shown by the reaction under electricity. Moreover, the difficulty described in bending the knees, seems not to have been due to weakness of the flexors as to tissue function...
sphere, for the patient describes it as if the joint
had become frozen. The case is yet a comparatively
recent one, and the symptoms which are present
may be taken as indicating the commencement of
a condition, which will afterward manifest this
marked condition of weakness of the spine.

It is also stated that the sphincters are often
affected, and sometimes very early in the course
of the disease. In this case the sphincters are under
perfect control.

In some cases there is described involvement
of the arm and of the trunk. In the present case
the symptoms are entirely confined to the lower
extremities, and it may be considered as too usual
for the involvement of other parts.

Thus there the case may apparently be considered
as one of primary spinal paralysis, in an
early stage, in which there is also slight
extension to the anterior corneal. The simple
weakness of the legs, with excessive rotatory
instability and spasms, is explained by the degenerations of the pyramidal fibres for the legs.

... When this condition is associated with
slight wasting of the legs, the condition exists
Further Progress. Patient left Hospital on July 14th. He was now slightly able to dorsiflex at the left ankle, and had some movement in toes on both limbs. The reflexes were all increased but less markedly than on admission.

This would show that there has been some improvement in his condition, probably due to complete rest in Hospital with absence of exposure to fatigue, cold, etc.

James Pearce