Some notes on cases treated in
26th XXVI of R Royal Infmary Session 1896-97
presented in competition for the "Wightman Prize in Clinical Medicine" by C. C. Bradfield.

July 6th 1897.
E. J. Baskett
In His Lane
Hermitage Gardens
Edinburgh.
Two cases exhibiting some features characteristic of a postpartum consequent to a softening associated with gonorrheal arthritis - so called "gonorrheal rheumatism."

Case 1. James Nolan (28) a labourer and professional football player was admitted on Jan. 22nd 1897, complaining of pains and swelling in some of the larger joints which had then lasted ten weeks. Symptoms noted as he complained of severe pain in his right ankle towards the end of 1896. Four weeks after the appearance of a purulent genital discharge and one week after, he had ceased to notice any genital discharge. During the six weeks subsequent to this, a most similar painful condition developed in the following joints in order: right hip, left hip, right shoulder, right lateral, left shoulder and right heel, in which the pain attained its maximum severity. He also suffered from stiffness and some pain in the lumbar and cervical regions of the spine. In all the joints, the pain was a "bull bear" character very acute, continuous i.e. not varying in intensity nor shifting about when present in any joint. The pain was aggravated by pressure and by movement.

When admitted the skin over the greater trochanter was flushed; the flushed area was very sharply defined from the general pallor of the rest of the face. The right anterior knee were somewhat swollen and painful. The other joints which had been affected were only slightly painful, stiff, and showed no evidence of thickening of the synovial membrane. When questioned, the patient admitted gonorrhoea a fortnight before the joint pains, and had treated with gynco-sulphate injections. Subsequently pain and swelling reappeared in the right knee and right shoulder, but on Feb 25th was free from all symptoms. On Feb 14th there was a renewal of the genital discharge together with a recurrence of the former condition in the right knee, right shoulder and spine. During this exacerbation he was treated with injections of gynco-sulphate and internally, albumina, strychnina, and ammoniates at once in combination with potassium iodide. The discharge appeared in a little over two weeks and the joint conditions gradually subsided again, the rest of maximum severity lasted about a month, this exacerbation at one time being in the right knee, at another in the left or again in the right shoulder. Till the discharge passed it recovered on Feb. 14th. After this date the improvement was rapid but with
occasional slight exacerbations of pain in one or other of the joints. Pain had altogether disappeared on Feb. 23rd, and on March 4th he was discharged with only slight stiffness in his lower extremities.

Cassett. James Johnston (17) a waiter was admitted on Jan. 27th 1897. He has acquired gonorrhea almost two years before. The urethra was red and tender and a grip was noticed. On Feb. 4th a discharge was noticed on the testicles. On the last occasion on which he noticed any discharge, was about a month before the onset of the joint-affected. Three weeks before admission he was seized with acute pain in the left hip joint at the same time he was also fevered and sweated considerability. Three days later pain came on in knee and ankle of the same limb. He did not notice any swelling but the affected joints were very tender to pressure. The joint was supposed to be rheumatic and unaccompanied treated with salicylates and rest in Hospital.

When examined his face was thin, pinched and his cheeks very much flushed but the flushed area sharply marked off from the paler skin. The left ankle was slightly painful tense and movement performed with difficulty. The left knee was kept in a partially flexed position, the joint contained a small amount of fluid and was tender. The left hip was somewhat swollen, tender and movement with difficulty. As in the case of Soman the past of the greatest severity of the condition did not remain stationary but fluctuated. In turn each of the three joints would be the most painful and move or both of the others merely stiff or only slightly painful on movement. In this case the duration of the left hip became much more acute than had been the case in any of the joints of Soman. On Feb. 28th the hip was very severely painful throbbing, considerably swollen but there was no redness fluctuation could be made out and the temperature which had been gone up for a few days was returned. The knees and ankles at this time were practically free from pain. The condition of the hip failed to improve; the pain became less intense but the joint much more swollen and fluctuation very well marked. The condition ultimately became such that he was removed to Professor Arantale's wards for surgical treatment on March 23rd. The treatment adopted was
to the cure of the gonorrhoea. At first injections of urea sulphate and barley of
convulsive sublimate were administered. Internally the same substances were
given as in the former case with the addition of
salicylates was administered in large doses during the whole time he was in
the ward with very appreciable benefit.

Both patients are young men whose family and personal history
presents nothing of note beyond what is directly related to their present condition.
It appears that gonorrhoea arising from an attack of gonorrhoeal urethritis and abdominal
infections has been neglected and in one of them
earlier attacks has led to the development of a very chronic gleet. In the case of Dolan the authoritic
considerations outlined as an acute attack of gonorrhoeal urethritis and abdominal
infections on the other hand the condition has been of a very chronic nature. Outside
the hospital both cases had been ineffectually treated with salicylates.

The diagnosis of arthritis consequent on gonorrhoeal infection was suggested
by the sharp limitation of the gleeted areas on the faces of both patients. On
interrogation Dolan once confessed to gonorrhoea, but in Johnstone's case it
was not till the condition had failed to yield to salicylates and the diagnosis
was justified that a history of genital disease was drawn from him. This
difficulty in obtaining a history of gonorrhoeal infection might be encountered
under circumstances where leading questions are impossible. In such a juncture
the failure of salicylates would have to be relied on as diagnostic, the presence of
gonorrhoeal urethritis or vaginitis assumed and treatment adapted accordingly.
Possibly absorption of the products of other soft processes having their seat in the
mucous membrane of the genito-urinary tract may give rise to similar
joint conditions.

In both Dolan and Johnstone the affection was limited to the larger joints—in
Dolan only the left ankle, the elbows and wrists escaped; but further in
Johnstone the intervertebral, the occipito-atlantoide and the sternoclavicular
joints were affected.

As regards the diagnosis gout was ruled out of the question from the localization,
age and history of the patients, the nature of attack and the absence of any gastric
or other characteristic symptoms. The temperature, absence of perspiration, the
presence of very definite areas of flushing on the face, the absence of nervousness over the
points affected and the involvement of the vertebral, occipito-atlanto-axial, and the sterno-clavicular joints were against acute rheumatism. So, now as proved the existence of gonorrhea was obtained, the diagnosis was no longer doubtful.

In Dolan the temperature remained slightly above normal throughout varying between 98° and 100°. In Johnstone, however, the range of temperature has been higher, rarely falling below 99° between which and 102° it has remained pretty constant. Below one occasion 103° was reached and 103° on two other occasions. In Dolan, the maximum temperature was 100.2° and was only attained on two occasions. The higher range of temperature in the case of Johnstone appeared to be due to subcutaneous changes in the hip joint.

The pulse in Dolan varied from 60 to 110 per minute, in Johnstone the frequency was greater being from 90 to 120.

Blood estimations were only made in the case of Dolan until his arthritic conditions had been cured. In Johnstone however the examination of the blood showed none began anemia, the estimation being: Hb. 80%, Hb. 7.1%, N.B. 3,000, W.B.C. 3,000, B.P. 289,070. Altogether he was more poorly nourished than Dolan. He was younger, the gonorrheic lesion in his case lasting longer and he had evidently much power of resistance to the lowering effects of disease.

The treatment pursued was merely that of curing the gonorrhea and relying on the disappearance of the joint conditions as soon as that was accomplished. The means adopted were: the usual local and internal antiseptic remedies. In Dolan this treatment was entirely successful but in the case of Johnstone it was considerably less satisfactory. The hip joint proving very troublesome so that ultimately surgical interference was deemed advisable.

In both cases the extraordinary obstinacy of the condition was well illustrated as was also the tendency to relapse, both characteristics being more pronounced in the case of Johnstone who has been subjected to a more prolonged influence of the gonorrhea and who was in a less robust state of body. In both cases also, a marked feature of the arthritis was the manner in which the worst of the most acute pain would shift about from one of the affected joints to another; one joint would be very painful with the accompanying swelling, etc. and the other merely stiff or painful only on movement.

In neither case could the gonorrhea be demonstrated in the rectal biopsy and the fluid in the joints was not examined.
Three cases of mediastinal tumour—two of mesothrium, one of pleura.

Case I. Thomas Neil (45) a baker was admitted on Nov. 14, 1876. The family history presents nothing bearing on his illness. Personally he has been a very abstemious in regard to alcohol and tobacco. There was no history or evidence of syphilis. He was called for a good deal of exertion such as that necessary to carry sacks of flour weighing two and a half hundredweights for a considerable distance and most infrequently upstairs. The making of dough he says "felt very severely on his chest."

Nine months ago he began to experience at irregular intervals sharp shooting pains shooting down the left arm, from the axillary region to the elbow, and also about once a month a sharp gnawing pain in the thorax. The pain in the thorax was limited to a small area just above and internal to the left nipple. These pains persisted for six months, were worse at certain times, absent when resting, and never disturbed his sleep. During the same time he suffered from dyspnoea and palpitation on climbing stairs and on one occasion he fainted after having carried a sack of flour. Nine months ago the pains became more constant and persistent, and now he was at work; they were also more frequent, present while at rest. He had to give up his work at this time. Since he gave up work the pain has gradually lessened and ultimately disappeared on the third day after admission.

On examination the mediastinum showed a distinct bulging, which was also palpable, and situated immediately to the left of the sternum over the region of the second and third costal cartilages, the area being two and a half inches in diameter. Palpation was also visible in the suprasternal and supraclavicular region. There was an exaggeration of the palpation normally present over the right carotid artery. The aorta beat was palpable over an area one inch in diameter in the left sixth intercostal space and in the
murmury line. The impulse was definite, recounting strong and there was a thrill, over
the prominence in the precordial area. The palpation palpable was recognizably more forceful
than that at the apex; it was expanded in nature and accompanied by a palpable thrill
of a soft thrum character. The area of cardiac dulness was enlarged diameter and
enlarged, the left border being three quarters of an inch external to the nipple and the apex
in the ninth space. Far and a quarter inches from the midsternal line. In all the
valvular areas a harsh, heavy, systolic murmur followed by a damped aortic sound
was audible. This murmur was also audible all over the chest in front and behind
and no less as almost to obscure the breath sounds. The same systolic murmur
was also heard in the carotids and femoral arteries but not in the radial artery. The
area of maximum intensity of the murmur was over the prominence in the precordial region.

The pulse in the right radial was unaffected, regular in time and character,
expansion moderate, height quickly attained, and delayed at the summit; full
rhythm, moderately compressible and tenorsis mediumis. On the left side the actual
expansion was the same but there was a slight
retard in the attainment of the maximum
expansion. The vessel walls were not thickened.

The respiratory alimentary and oesophageal
were quite healthy. There was no dysphonia resulting
from pressure on the trachea, bronchi or esophagus.

No change in the voice had been observed. There were no abnormal breath sounds such as would arise
from pressure on the bronchi. The sympathetic involvement of the pupils was not
interfered with. There was no dysphagia.

Case.

Robert Kingland (30) a cattle butcher, was admitted on Aug. 28th 1896.
His family history was good. He had not indulged excessively in alcohol and denied
smoking had any general disease.

For ten years or so he has suffered from what he describes as a dry cough which was
exited by a tickling sensation loose of phlegm at the level of the cribriform plates.
This cough has developed gradually without known reason. He never has any other
symptoms besides from bronchitis or other chest complaint. There was no asthma
caused by organic allergic conditions but independent of these. Dyspnea in the back was the only
circumstance that was attributed to an attachment as tension to make the compliance.
In Sept. 1895 while in Queensland, Australia, he began to suffer from a shooting pain across the upper part of the thorax. This pain was described as at rest but brought on by exercise such as rising from a chair or walking or manual labour of any kind. When present the pain was of an ache, chiefly striking nature. It had been noted for several months and occasionally when difficulty in breathing occurred, from palpitation or pain, after six weeks after the onset of the pain an irregularity in the heart was noticed. A swelling appeared towards the upper part of the sternum in about a week this had increased to quite a marked projection. As the swelling grew the pain gradually lessened and ultimately disappeared; the cough and fever still remained.

Professor Lincoln states that a rounded swelling two inches in diameter below and to the left of the epigastric muscle. This swelling extended over the manubrium to the second space and over edge of the Costal Cartilage, the apex of the apex in relation to the fourth space for four inches from the middle line. There was some flattening over the projecting part of the sternum. The manubrium of the cardiac impulse was felt in the fourth left intercostal space one inch and a half inches from the mid-sternal line. It was firm and was accompanied by a thrill. Palpation of the swelling over the manubrium showed this to be especially responsible. There was one third here, but there was a second which was not so responsible. The swelling also had a feeling of fluctuation. There was a dull area in the left infraclavicular region extending over the first rib and space and also over the inner end of the second rib and space and becoming continuous with the tuberosity over the prominence. The right border of the heart was one inch from the costal line. The left border, just outside the middle and four and a half inches from the mid-lung of the sternum. The first sound in the aortic area was replaced by a soft furrowing murmurs which was propagated to the inner end of the brachial but no further. The second sound was accentuated and thumping. Over the swelling...
there was a soft systolic murmur – it was faint. The second sound was accentuated. In the other areas there was nothing abnormal. The pulse in both right and left radial arteries was broad and strong. No other characteristic. There were some thickening of the vessel walls. The other symptoms were quite healthy.

Cassettier. Thomas Hitchcock (36) an insurance officer was admitted March 20th 1897.

His family history was good. Regarding himself there was a history of alcoholism and a very definite history of syphilis. Twenty-three years ago he had a disease which was followed by loss of hair and a sore throat; when he married nine years ago his wife had a miscarriage – the three subsequent children have been healthy. From Feb. 14th to May 11th 1896 he was treated in West for intra-thoracic tumour.

Eighteen months ago he experienced a sudden pain in the region of the left nipple. Occasional illness connected with his asthma had been away from work for a time; when he restarted work he had to give it up on account of a cough caused by a tickling sensation which he felt in the region of the epiglottal space. About this time his face began to swell. For the condition he was sent to the West Riding Infirmary, Huddersfield, for a period of six weeks. On resuming work he had again it ceased on account of the swelling of his face and arms. He had then also the sensation of a lump in the throat, present in the gullet and over which he felt sore when he passed the act of swallowing. The act of swallowing caused pain of a grating character, breaking along the right border of the sternum, and sometimes shooting through to the back. When leaning forward or to raise he felt a sensation like being gripped by the throat and at the same time his face became flushed and swollen. If he lay on his right side he had pain of the same kind as that experienced during swallowing. These symptoms persisted and he was treated in West from Jan. 14th to May 29th 1896.

The condition steadily improves under potassium iodide. The swelling of face disappeared in a week and the pain and difficulty in swallowing more slowly. He was discharged on May 29th free from any symptoms of intra thoracic pressure. Since that time he had no recurrence of the condition till a week before re-admission.

On admission a week ago he had a pain in right side just below the nipples. The pain passes through to the back and was increased if he lay on his back side. Therefore
or two previous to this morning he had noticed that the superficial veins in the upper part of his body were unduly prominent. When readmitted on March 11, 1897, he was free from pain but there still remained the distention of the veins. He had no subjective circulatory symptoms. The face was somewhat cyanosed. The superficial veins of front of chest, arms, neck, and upper extremities were markedly distended. In those at front of neck the veins were flowing backward in those of front of chest forward.

There was no cyanosis of the tongue nor was there any cyanosis beyond that of face and arms. The pulses on both sides was similar and without significance. The vessel walls were somewhat thickened.

The inspection of the precordium was negative. The aorta beat was visible as a slight diffuse pulsation below and external to the nipple and just on the left side of the fifth intercostal space, the maximum being half an inch internal to the nipple. There was a very slight beating less than that of a femoral pulse over the full area in upper part of the chest; there was no pulsation elsewhere.

The upper border of the heart could not be percussed because of a dullness extending from below clavicles on either side of middle line for a distance of two inches. The right border of the heart was at the margin of sternum, the left passed through the nipple and the apex was just in the fifth interspace in the middle line.

In the esophagus the first sound was weak and entirely replaced by a soft high-pitched sound. The second sound was biphasic and relatively accentuated. The breath was not propagated into the neck, there were no signs of atonics in the pulse. In the pulmonary area the first sound was weak the second relatively louder. The sounds in the cardiac and the friction areas were weak but pure.

Beyond a slight tachycardia of the left puls, there was nothing abnormal in the other systems.
In the first case the physical signs, viz. the dulness, punctum, and expansive nature of the tumour, the delay in the attainment of the maximum expansion, "flush" in the C.J. radial artery, the C.J. cystic duct, the greater force of the impulsive palpable over the tumour compared with that of a benign, and the prompt thrill all pointed to aneurism of the transverse portion of the arcade of the cistern. In this particular instance the result of muscular over-action. In a mediastinal tumour of the aorta which was rare, present and especially in a case of aneurism of the transverse portion of the arcade, the entire absence of pressure symptoms other than the angina pain, was noteworthy. There was an oppression, an asthme, no involvement of the sympathetic nerves of the C.J. recurrent carotid or vagal nerve.

In the second case the physical signs of aneurism were in some respects even more marked. The tumour had invaded the trachea and came to the front of the chest, so that pulsation could be felt within it. There was also a distinct shock with the second sound. The cough was not the result of pressure on the C.J. recurrent carotid nerve for the vocal cords were healthy, it appeared to be due to pressure on the trachea.

In the third case the only indication pointing to aneurism was the position of the full area and the faint cystic reflux near it. But the thrill was not propagated. The impulsive palpable over the tumour was fainter than that of a benign. Aneurism of some sufficient to press on superior vena caval cord and oechea it would have given much more definite evidence that it was an aneurism. The tumour was evidently old and the long period during which it had existed was against malignant growth. The decision with which the condition was relieved by potassium iodide in conjunction with the very definite history of cystic reflux and the fact that the tumour was cystic in nature and its position that it was developed in relation to the mediastinal glands. In all three cases the heart was displaced forward C.J.

In the first case and second case the treatment was only the palliative and consisted mainly of rest in bed, combined with potassium and potassium iodide. The most very case had the effect of alleviating the pain and distress. In the third case the special value of potassium iodide as a curative and diagnostick agent was well brought out.

The prognosis in the first two cases was not immediately favourable but ultimately was certainly so especially in the case of Thiersi's and in the patient's case the case with which the condition was relieved by the administration of potassium iodide was altogether favourable.
The combination of aortic incompetence with encroopy
A case of spastic paraplegia secondary to paralysis of the spine.

Henry Bonilla, a grave and quiet eighteen-year-old, was admitted on Jan. 15th, 1897.

As far as could be ascertained, his family history was good. His father and mother were both alive and well. He was the eldest of a family of fifteen, twelve of whom were alive and healthy, three died in infancy from common causes, and one infant brother suffered from "knock-knee." The configuration of his feet was pronounced, but of the ordinary kind; no relative had suffered from spinal disease, and he was aware of many instances of spinal trouble in childhood. He suffered from measles and scarlet fever. At the age of ten he fractured the left femur. He was a foot-talker. There was no reason to suspect anything.

When fourteen years old, as a messenger boy, he had to carry heavy loads, using his right arm and shoulder for the purpose. His employer, his mother, and others at home noticed the gradual appearance of a projection in the right ilio-femoral region, which was in 1874. The first observable abnormal subjective sensations more than twelve months after he was aware of the spinal condition, when towards the end of 1875, he began to have occasional sharp pains and a feeling of weakness in the region of the back. He only suffered in this way when making special or prolonged exertions with the arms. Towards the end of February or the beginning of March, 1876, he was on three nights and after the pains appeared in the affected region of the spine, he noticed that there was a slight stiffness and at times a feeling of numbness in the leg. These sensations were at first irregular in nature, being present at different times. Progressive insidiously those sensory phenomena became more and more evident and continuous. When definitely established, together with tingling sensations which subsequently appeared especially in the back, these sensory phenomena were always worse in the morning and at other times when he moved his limbs after a period of rest. He had no sensations of heat or cold, no pain in the limb and no yet there were no signs of any paresis.

Before the end of the month he was aware of slight jarring and tremors whenever he made a voluntary movement of the limb. Later the movements began to catch the ground and he stumbled a good deal in consequence. The condition progressed to training the limb along the ground, when going upstairs having to stoop with the right leg and drag the left, and in mounting a horse he was
unable to lift the left leg into the position.

In April he noticed that the right leg was stiff and less readily moved after he had remained in one position for any length of time; it was also stiff in the morning. A month later the condition had progressed so rapidly that both limbs were equally affected. Within two or three weeks from the appearance of the stiffness in the right leg, he was unable to walk any distance in consequence of the knees knocking together and because the hemiplegic leg in being brought forward was jerked forward and inward so as to cross the other leg and trip him up.

Almost from the appearance of the parasthesia in the left leg, he had been aware of jerks and twitches in that limb. Similar conditions developed in the right leg and when both limbs were equally affected the jerks and twitches had become more frequent. These irregular twitchings and jerks were present when the limbs were at rest and due to no apparent cause. They were very markedly exaggerated by any effort at voluntary movement. Barrow continued at his work which consisted mainly of sitting till the end of June at which time he was no longer able to climb into the carriage which he drove.

In June he noticed that he was able to sit without any appearance of the fact in words or fact that he was unable to retain his hands in it.

After leaving his work he took to bed and for a week or so he was able to sit up and with assistance could make some attempt to cross the room; but if he attempted to walk his knees became flexed, he at once fell, he had no control over his knees and only attempted to walk by placing the thighs on the pelvis. After the first week or so the rigidity of the limbs became such that he was no longer able to make any attempt at walking and any attempt to get out of bed set up painful afferentic coarse twitchings in the limbs. He said that this lasted some time as rigidity of his father's utmost effort was insufficient to flex the knee, at three times passive flexion of the knee was readily made but he himself could not voluntarily do so.

Some weeks later, the limbs which his hands had regained the normal posture assumed a crooked position the left being placed over the right. The afferentic twitchings had also increased in frequency and were elicited by slighter causes and communicated from one limb to the other. The terminal sensations in
the bowels grew less marked. There was pain and discomfort at the point of pressure below the navel. A sensation of constriction was present in the upper abdominal and lower thoracic region between the xiphoid process and the umbilicus.

With the advancement of the pain, in some difficulty in urination occurred. At times it was difficult to start the stream and at other times, while conscious of the desire to urinate, there was inability to retain the urine during the time that urination preparation was being made so that on these occasions there was incontinence. The bowels had been constipated, unconscious defaecation had occurred but not often.

When auscultation examination of the thorax showed it to be somewhat enlarged in area and with the left costal cartilages somewhat more prominent than the right. There was dulness or dulness not firm of the second to the seventh dorsal spines being devoted to the right so as to lie quite close to the vertebro-lumbar border of the scapula. At times into the loan region there was therefore a marked rounded prominence. The abdominal concavity was absent.

The lower limbs were entirely beyond voluntary control. They were in the position above described. The muscles of the anterior abdominal wall were tightly contracted and hard on palpation. Micturition and defaecation both occurred unanimously.

Pain was only felt at the site of pressure between the curved ribs. There was no peristalsis. Sensibility to touch, to heat and colds, and to pain was very greatly impaired as far as the trunk as the level of the xiphisternum. In the legs there sensitivity to touch was more nearly absolutely abolished than in the thoracic. Up to the same level there was bilateral impairment of pain. the prick of a pin was only appreciated as kind in many places and also there appreciating the irritation was diminished or delayed. Sensibility to heat and colds was greatly affected sometimes regarded as touch and sometimes confused. Tenderness was not recognized. The sensibilities of the trunk above the level of the anus and of the lower limbs were quite perfect.

The plantar reflex was present. The cremasteric reflex was present and irritation of the skin of the abdominal and inguinal region produced partial erection of the penis. The abdominal and the epigastric reflexes could not be elicited.

The girth path was increased in both sides. There was bilateral ankle clonus - the lower of one limb was communicated to the other.
Particular emphasis was also attained. Voluntary action of the lower limbs was impossible. The electrical reactions of the muscles could not be satisfactorily tested because the weakest current set up rhythmic tremors and the rigidity of the muscles rendered the results fallacious. The muscles were not worked.

A hot friction applied over the spine was felt as far above the deformity but only as far below; the application did not cause any pain. The spine was not tender on percussion.

The case, therefore, as far as can be ascertained, there was no myelographic. The symptoms were due to the circulation system was already. The respiratory system was only affected as regards the exhaustion of the respirator would.

The case of ischadic paraplejia secondary to disease of the vertebrae was very interesting from the nature of its onset course and the symptoms manifested. The sensory and motor disturbances were very definite in their character and enable one to determine the localization of the lesion with tolerable certainty.

The case, however, was definitely first in its incidence and had occurred for over a year before the effects of its presence began to manifest themselves in the progressive impairment of the spinal cord function. The chain of phenomena from the first appearance of paraesthesia to the complete cutting off of all cortical control over the lower half of the body were consequent sternal compression at the cord. The clear antecedence of the symptoms of the middle dorsal vertebrae justifies it being considered as the primary factor in the compression which subsequently resulted from the pressure exercised by the accumulation of carciom products or by thickening of the bone.

As regards the nervous phenomena further, apart from the spinal anesthesia there were of a certain which affected, at least so far as the upper part only the lesion was concerned, some definite information.

The cord was impaired in its conductors and in its central functions. The conductors function were impaired in an extreme degree, both as regards to effrent and afferent impulses. The central functions were in a state of abnormal excitability.

The muscles were not cut off from the cord by any peripheral lesion, nor by any impaction of the lower nerves within the cord. The impairment was
central to the anterior cervical cells for the non-discriminative in the bulk of the muscles. Inflammation of the anterior nerve roots with their motor and sensory collaterals, the anterior cervical cells and anterior nerve roots, was equally necessary for the persistence of the afferent irritability. For the same reasons, exposure of inflammation of the end-artery was excluded from being the pathological basis of the condition. Inflammation would have required involvement of the anterior cervical cells with atrophy and sclerosis of the muscles. The only lesion which would account for the muscular conditions was one of the afferent neurones by which the conduction from the sensory to motor controlling centres was affected.

The impairment of sensibility to heat, touch and pain was extreme or kept upon the genito-urinary system, above the region supplied partly by the first and partly by the second dorsal segments. On the left side the sensibility to irritation was practically abolished. The interruption of the posterior columns is indicated above the level of the ninth dorsal segment.

The reflex mechanisms of the bladder and rectum showed gradual impairment of the voluntary element normally present. At first while conscious of the desire to urinate he had difficulty in accomplishing the act; i.e., there was inability not to restrain but to execute the action of the bladder. This condition giving support to the idea that the bladder muscle consists of two parts, a part acting as an extensor of the bladder and a part acting as a contractile of the bladder, and that coordinated action is necessary for the perfect performance of urination. The coordination was upset by the cutting off of the central volitional element in urination; the sensory fibres conveying the upward message of urination proceeded in this case to act for a longer time than the fibres conveying to the spinal centres motor impulses. When full action of this urination was made unconsciously, not in a constant dribble but only after a certain quantity had accumulated in the bladder. The bladder was not emptied, so that the bladder was filled up in purely reflex way, as indicated by urine taking place as soon as the sensory impulses were of sufficient strength to act the motor cells off. A similar condition persisted in regard to the rectum. The sphincter ani was not relaxed but made an distinct pressure on the finger when inserted into the anus. The function had lost the volitional element and became
The muscular phenomena afforded some evidence of the downward extent of the lesion. The muscular reflexes depended on the integrity of the cord as high as the second lumbar segment were unimpaired, but there was in addition one impairment of the anal sphincter function of the segment of the cord of this level. The posterior root and the anterior root reflexes could not be elicited. These reflexes were related to the regions of the cord corresponding respectively to the extent of the fourth to the second dorsal segments, and the seventh to the eleventh dorsal segments. In addition, the sphincter contraction around the upper abdominal region, the typically contracted almost to the sides the abdominal muscles, and the absence of weakness of the muscles of the abdominal wall indicated that the posterior and cutaneous nerve root connections were responsible for the non-reactability of the muscles of the anterior abdominal wall. The condition of the abdominal muscles made the determination of the downward extent of lesion doubtful. The sensory phenomena showed definitely that the upward extent was not higher than the third lumbar segment. In downward extent the cord was certainly involved above the level of the second lumbar segment.

As regards life the prognosis was not unfavourable as long as the bladder remained free from spasticity and unless some inflammatory condition of the cord caused rapid upward extension of the lesion. The slow onset of the condition and its very chronic nature made life of recovery impossible. The only chance of recovery lay in an attempt to remove the supraphysiological pressure by surgical interference. The chronic condition but failed to alleviate the condition. In particular cases of the condition of the cord in the dorsal region below the level of the sixth vertebrae seems to have been made at any rate what the exact conditions revealed by the operation were cannot be ascertained.
A case of lesion of the aortic valves complicated by the presence of aneurysm of the innominate, right common carotid and left subclavian arteries.

John Cannon (56) labourer was admitted on Nov 11th 1896. He knew nothing of his family history. He had greatly exceeded in regard to alcohol, having indulged freely in “near” spirits. He had been much exposed to inclement weather and bad sanitary conditions. On account of the irregular nature of his employment he had at times been subjected to uncooked muscular excisions. His health he described as having always been good. He had not suffered from rheumatism, nor from any specific fever. Syphilitic infection was denied, but specific catarrh of the nose and the enlarged and hard condition of the palpable glands were evidence to the contrary.

For some weeks before admission he had been unable to work on account of bronchitis and cardiac symptoms, which he attributed both resulting from excessive exposure. Coughing and asthma he said had caused dyspnoea and palpitation. He had also suffered from palpitation when lying in bed, and from dizziness—but not faintness—on occasion. He had slept but little and that little had been disturbed by dreams. Headache had also troubled him but otherwise he had been free from pain. The fever had been moderate and especially there had been a puffiness under his eyes for some days before admission. He had also noticed his face getting redder in colour. The above conditions persisted on admission. The peculiar swell of the face was more marked on the left side. In addition to slight oedema of the face there was a little oedema behind the external auditory.

There was an urgency of respiration. The apex beat displaced down and out was twelve inches below and two inches to left of nipple, and felt as a soft rising to the maximum bump in the fifth space half an inch below and one inch anterior to nipple. Very slight pulsation was visible in the second right space close to the sternum; the impulse felt here was more feeble than that at apex. The internal end of right clavicle and the adjacent portion of the manubrium were displaced forward in the region of the sterno-clavicular articulation. On both sides, in touch there was violent pulsation. On the right side above clavicle and appearing from below inner head of sterno-mastoid an expansive pulsatile tumour about one inch in diameter was palpable and the impulse felt was more forcible than that
at apex. On palpation, just above and parallel to the clavicle, behind the site of the sternum, and extending a little further out there was noticed a pulsation, which on palpation was expansible but the impulse was not more forcible than that at apex. The expansion was accompanied by a distinct systolic thrill. Palpation was also evident behind arched angles of jaw and along the course of the facial arteries.

The heart considerably hypertrophies and pales, as a whole was displaced somewhat downwards and to the right. The upper border was at the upper border of the third and central cartilage, but not definite on the sternum because of an area of roughness in the upper sternal region. The right border was two fingers from the midsternal line, and superiorly merged with a roughness ascending upwards from and along upper border of second rib towards clavicle. The left border became continuous with the fall area extending over the region corresponding with the inner rib and a half of clavicle and the inner portion of the first to second ribs. The apex was one and three quarters fingers external to and towards a half fingers below the nipple. The longest diameter of the cardiac dullness from left border to right border was nine fingers.

A double aortic bruit, was audible in the central area, the systolic portion being somewhat rough, the diastolic soft blowing and in length equal to the systolic. Over the sternum and also towards the base both sounds were more audible, especially the diastolic which in these areas was also the longer of the two. The systolic bruit in the aortic area was rough, it was also audible in the carotid, femoral and anterior arteries. In the aortic area the diastolic bruit was soft and blowing, it was propagated with intensity to both lower ends of the sternum. Both murmurs were distinctly audible in the second right intercostal space close to the sternum over the pulse area there.

The pulse on palpation was typically that of aortic regurgitation, regular in time and in character, the expansion quickly attained and as quickly lost without delay at the summit. Stylographographic tracings showed in the right radial pulse a delay in the upstroke which was absent on the left side.
As the right side of the neck the veins were evident beyond the normal, but there was no extension; the smaller vessels in the cervical and upper cervical region were somewhat distended. There was no such condition on the left side.

The other symptoms presented nothing of note beyond the presence of some emphysema and slight bronchitis. The liver was very slightly if at all enlarged. Nothing pointing evidently to anæmia had occurred. There was no change in the voice, nor abnormal condition of the pupils nor of deglutition; indeed there were no indications of pressure arising from the anæmic condition at the root of the neck beyond the slight purple prominence of the veins in the right side.

Accompanying the definite nature of the physical signs the diagnosis presented no difficulty. The presence of anæmic incompetence was clearly shown by the nature of the pulse, the anæmic bruit; the headache, sleeplessness and dreams; capillary pulsation was also observed in the fingers, nails and on the forehead after irritation. That the renal anæmic incompetence was not due to atrophy of the aortic orifice was clearly proved by the absence of any delay in the attainment of the maximum expansion of the pulse in the basilic arterial. The anæmic bruit was probably the result of arteriolar spasm, tension and some degree of obliteration of the aorta, the latter condition being indicated by the presence of the pulsation and dulness to the right of the sternum in the second intercostal. The changes in the aorta and great vessels together with the cardiac hypertrophy and dilatation has been to some displacement of the heart downwards and outwards.

The peculiar rumour in the right carotid triangle because of its position and localised character, its protruding from below inner ear of ophryostomod, its expansile nature, the anæmic upstroke which was greater than that felt aroas and the absence of the aortic sounds was presumably an anæmia in connection with the right common carotid at its origin, or slightly above its origin from the innominate artery. Considering the fact that anæmic incompetence was also similarly affected the dilatation seemed probably situated at the origin.

The displacement forwards of the sternum and clavicle and aching posterior of the sternum, spine sterni on the right side, the dulness in that region and the fact that both aortic anæmia, especially the aortic, were easily indicated an anæmia of the innominate artery. The delay in the upstroke of the pulse of the right radial artery.
also pointed to this condition and the extension of the weakness as far out to the possible involvement of the subclavian artery also. The condition therefore appears to be affecting all the great vessels in the right side.

The position of the localized expansile tumour above and parallel to clavicle, and extending from beneath clavicular head of sternum-mastoidis in a little way, the presence of a distinct systolic thrill with the impulse, the presence of a loud systolic bruit, were sufficiently diagnostic of a like condition affecting the left subclavian artery in its third part.

The combination of aortic incompetence with these aneurismatic conditions at the root of the neck is of interest, especially demonstrating the progressive effects of increased internal strain on the cardio-vascular system when that system has been physiologically and functionally weakened by atheromous sclerotic changes. Further, the combined conditions emphasize the necessity for a proper caution in the use of cardiac tonics.

That the incompetence of the aortic valve was antecedent to and its direct consequence to a material extent responsible for the development of the aneurisms seems a justified conclusion from the following considerations. The patient had a definite history of syphilis at least he presented strong evidence of having suffered syphilitic infection, he had a definite history of alcoholism, in whom called for excessive muscular exertion and unweakened arteries, he had been much exposed to inclement weather all of which agencies are possible factors in the production of arterio-sclerosis as a general condition. Further, at his age (56) degenerative changes in the arterial walls were to be expected, the walls of all the palpable arteries were thickened. There was no history of rheumatism, nor of any infective condition likely to be followed by endocarditis, which would account for the lesion of the aortic valve. It seemed probable that the semilunar flaps had become incompetent either in consequence of contraction and calcification of the involvement of their tissue in the general arterio-sclerosis, or that the segment emaciated undermine some degree of fibrous change had given way under the abnormal arterial pressure resulting from the loss of the physiological elasticity of the artery walls. This abnormal arterial tension, consequent on the increased resistance to the outflow and arising from the
thickened condition of the vessel walls generally would be at its height in the aorta where the point of the organ would be susceptible to the same lesions plus yes and as a consequence there would ultimately come way. No longer both of these possible factors were at work in this case so that the degenerative changes in the segments themselves and the abnormal hypertension to which the segments were subjected alone play a part in the causation of the lesion. Further the interstitial changes in the aortic wall has lead to some distention of the lumen of that vessel. If this distention occurred early it would contribute to the ultimate failure of the vessel by virtue of greatly increasing the pressure in it and by tending to distort the aortic orifice.

With aortic regurgitation established that increased action of the heart necessary for the attainment of compensatory hypertrophy was called forth. The overaction of the heart was still further increased by the frequent stimulation with alcohol. The aortic root muscular atrium 5 which gives irregular nature of the calibers was subjected required still greater efforts from the left ventricle, and through the muscular contractile simultaneous adjustment to the resistance to the outflow from the aorta at already abnormal tension in that vessel was raising yet higher.

Under all these various conditions involving increased pumping power by the heart a large volume of blood under abnormally high pressure was projected into the great vessels and there had been deprival of the healthy resiliency of their walls, their walls were rigid and the pressure conditions were such as to still further augment the interstitial changes. The walls unable to recoil yielded little by little to the pressure within, the quicksp inbound ultimately resulting in the development of aneurysmal dilatations in the portions most favorable.

The removal of the maximum degree of distention from the aorta itself is noteworthy and probably to be accounted for by the fact that the regurgitation acted as the protection of the aorta from the pressure within itself. For although the pressure during systole would be highest immediately above the aortic orifice yet at this point the pressure would also be shortest duration; possibly also the long persistency of the attherosclerotic condition has lead to the degeneration of surface protective plates in the middle portion of the dilated aorta. The great vessels were less favourably situated as regards the relief afforded by regurgitation and in this case the constant factor of peripheral resistance was at its maximum. The force played by the resistance to outflow
appeared the demonstration some extent by the greater degree of the condition on the right side where in a right-handed man the blood pressure effects arising from muscular effort would be more potent than on the left side.

Thus while previous to the establishment of regurgitation the maximum intensity of the internal pressure was directed on to the semilunar valves, at the point with least capacity for resistance and most capacity for compensation should breakdown occur by the mere establishment of regurgitation, the maximum intensity of that pressure was removed to the great vessels, and as it were distributed, but on account of the potency of the other concurrent factors the cardiovascular system derived no benefit from the pressure being distributed and again at the rea of maximum intensity of pressure breakdown took place this time in the form of aneurismal dilatation.

In uncomplicated aortic insufficiency, the case is sometimes referred to as a situation in which the direct compensation is insufficient to call forth compensating hypertrophy of the left ventricle and therefore contraindicates the administration of diuretics which would tend to produce hypertrophy beyond the needs and thereby render the cardiac output inefficient, and consequently deteriorate in the quality of the cardiac work. In this case not only did these considerations weigh but the weakened condition of the vessel walls still further indicated the probability of a more increasing already dangerous intra-arterial pressure, for any such increase would surely have been attended by aggravation of the aneurismal condition.

The immediate prognosis was good unless some unforeseen incident arose to cause rupture, fulminant, or failure of heart. The ultimate prognosis was unfavorable. The condition at the root of the aorta was beyond surgical interference.

The treatment adopted was rest, slight diet and potassium iodide, really only palliative treatment the curative being beyond cure which could only be affected by obliteration of the aneurism, involving a contingency not likely to arise.