

SOME ACCOUNT OF THE RECENT EPIDEMIC OF BEER  
POISONING, AS OBSERVED AMONG PATIENTS IN THE  
SALFORD UNION INFIRMARY; WITH REMARKS ON THE  
ETIOLOGY, SYMPTOMATOLOGY, DIAGNOSIS, PROGNOSIS  
AND TREATMENT. Illustrated by CASES.

by

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Alcoholic peripheral neuritis has long been recognised in medicine as an independent disease.

As early as 1789, when the etiology of many nervous disorders was still wrapped in obscurity, Lettsome<sup>(1)</sup> gave a graphic account of the clinical manifestations observed in cases of alcoholic paralysis. Later Jackson of Boston,<sup>(2)</sup> Huss,<sup>(3)</sup> Lancereaux,<sup>(4)</sup> and in our own time Dreschfeld,<sup>(5)</sup> Ross and Bury<sup>(6)</sup> have contributed largely to the literature of the subject.

With regard to the pathology of the disease, Graves<sup>(2)</sup> was the first to record his opinion that the lesion was in the nerves going to the affected muscles, and not, as had been hitherto believed, in the spinal cord itself. To Huss<sup>(loc. cit.)</sup> we are indebted, and later to Lancereaux,<sup>(loc. cit.)</sup> for pointing out the clinical relationship between alcoholic paralysis and that caused by lead, arsenic, and mercury.

It is now a well-established fact that alcoholic peripheral neuritis is a disease confined as a rule to beer-drinkers, as is shown by its predominance in Lancashire and the northern counties where beer is the general beverage, and its comparative rarity in the South and more especially in Scotland, where spirits are more consumed.

Having therefore in view the frequency of the occurrence of the above-mentioned disease in this part of the kingdom, the increase in the number of patients with symptoms of peripheral neuritis admitted to the Salford Union Infirmary in the late summer of last year, was at first attributed by my colleagues and myself to the greater consumption of alcoholic beverages consequent upon "War Fever".

Soon however, the disease began to assume epidemic proportions and it became evident that some other cause, to account for this increase, must be sought for. We had noticed that certain symptoms not usually manifested in sufferers from alcoholic paralysis were exhibited with great regularity, and we

began to ask ourselves whether the cutaneous and other unusual phenomena might not be explained by some accidental toxicity of the beer - beer being confessedly the beverage of these patients.

We were, however, ~~not~~ far from the truth, when Dr E. S. Reynolds<sup>(v)</sup> announced his discovery of the presence of arsenic in certain samples of beer taken from local breweries, and thus threw light upon the hitherto obscure symptoms. This discovery was followed a few days later by Mr Tattersall's<sup>(s)</sup> report that the glucose supplied by a Liverpool firm to several of the large breweries in Manchester and the neighbourhood, was contaminated, to the extent of .095% with arsenious<sup>ous</sup> acid. The contamination of the glucose was due to the use, in its preparation, of sulphuric acid prepared from pyrites and not subsequently dearseniated. The use of this impure acid dated from March 1900, the acid being supplied by one firm of manufacturers. It seems almost incredible, but it is a fact, that this firm on giving evidence before the Royal Commission on Arsenical Poisoning, admitted that they knew that the acid was impure but stated that they were unaware to what use it was to be put.

#### Extent of the Epidemic.

1. Place. Of the large towns, Manchester and Salford suffered most. Two thousand cases were reported from Manchester and 996 from Salford, for the six months ending December 1900.

That the poisoned beer was widespread in its effects is shewn by the reports of cases from Stourbridge, Lichfield, Ilkley, Chester, Leicester etc. The distribution over a wide radius is not remarkable when we take into account the fact that the contaminated glucose was supplied to two hundred firms of brewers in the northern and midland counties, and undoubtedly the disastrous effects of the poison will be felt long after the exciting cause has ceased to act.

2. Time. July 1900 until February 1901. These dates will include the months during which the activity of the poison reached its height and expended itself. The following table

gives the number of cases per mensem admitted to the Infirmary during this period.

July	Aug:	Sept:	Oct:	Nov:	Dec:	Jan:	Feb:	{ Mch:	Apr:	May: }	
9	8	22	28	35	36	19	1	{ 2	1	1 }	= 162.

It will be seen that the greatest incidence of time falls in October, November and December, the average admissions during those three months being a fraction over 1 per diem. This table may with advantage be compared with Tattersall's <sup>(loc. cit.)</sup> table bearing on the same question.

June July Aug: Sept: Oct: Nov: Dec:

16 24 63 61 69 76 --

Quantity of beer consumed. It was, obviously impossible to get any accurate figures on this head. The women never confessed to above two pints a day. A brewer's drayman, a victim of the epidemic, told me that his daily allowance was half a gallon, but that it was easy to get more.

Quality of beer consumed. Beer at 4d. per quart, commonly known as "fo'penny" was that most in use by the class of patients frequenting the Union Infirmary. "Sixpenny" beer was only used by a small minority of patients. Some drank porter or stout.

Age. All persons attacked, were, as might be expected, adults. The accompanying table shews the ages of our patients arranged in decades, from 20 - 60.

	20-30.	30-40.	40-50.	50-60.	over 60
M.	6	19	25	6	1
F.	8	36	39	18	5.

Sex. Observers are at variance with regard to the proportion of males to females attacked in this epidemic.

Reynolds <sup>(loc. cit.)</sup> out of 500 cases had 291 men and 209 women. He adds however that the females were much more severely affected.

Tattersall, out of 996 collected cases had 281 men, 349 women, 366 sex not stated.

West<sup>(4)</sup> (Leicester) had chiefly women as his patients.

At Ilkley no women were affected.

At Chester<sup>(11)</sup> 75% of the patients were women.

"At Heyworth,<sup>(10)</sup> out of 60 or 70 cases only 11 were women".

At the Salford Union Infirmary of 162 patients under observation, 105 were women. As in Dr Reynolds' cases, the women were much more profoundly affected, some of the male patients having chiefly subjective symptoms.

The relative intensity of symptoms in women attacked by the malady under discussion can be explained in several ways.

In the first place the nervous system of women belonging to the class with which we are dealing is more unstable, and for this reason more easily influenced by nerve-irritants, than is the case with men.

Secondly, and this refers more particularly to the chronic alcoholics, women often begin the day with "a long pull", frequently substituting it for more substantial fare: the arsenic in solution in the beer would in such a case be more rapidly and thoroughly absorbed than if it were commingled with food.

And lastly, women lead as a rule, more sedentary lives than men and thus less opportunity for the elimination of the poison, per vias naturales, is afforded them.

Mortality. Among our male patients the mortality was low. Conversely the number of fatal cases among the women was large. The accompanying table gives the number of deaths from peripheral neuritis from January 1900 until June 1901. The total number of cases for the same period of time is also tabulated for comparison.

	Total no of cases.		Deaths.	
	M.6	F.4	M.0	F.0
Jan:-June 1900.	50	78	3	20
June-Dec. 1900	27	27	1	5
Jan:-June 1901				

It will be seen that the proportion of women to men succumbing to the disease was relatively as well as numerically greater.

Previous epidemics. Several epidemics of Arsenical poisoning are on record.

Graves<sup>(loc. cit.)</sup> gives a description of the great "Epidemie de Paris" in 1828, which resulted in the death of 40,000 persons, and which was subsequently found to be due to arsenic<sup>?</sup>. The disorder "began with prickings and pains in the integument of the hands and feet". There was great hyperaesthesia, so that the legs "could not be touched with the bedclothes". Shortly after came "diminution or even abolition of sensation" - and sensibility was lost - the "power of motion declined" and finally complete paralysis occurred. The "stomach and bowels were deranged" but the appetite was good.

Later, recovery of motion and sensation took place. The paralysis was "capricious", disappearing and returning (cf. Casen<sup>10</sup>).

There is no reference in Graves' lecture to pigmentation, nor does he emphasize skin eruptions.

Brouardel<sup>(12)</sup> gives a very full and detailed account of a small epidemic occurring at Havres in 1886, in which 15 persons were attacked by identical and obscure symptoms. After an exhaustive consideration of the possible causes of the outbreak it was conclusively proved by Brouardel and his colleague Pouchet that it was due to arsenical poisoning.

The epidemic of arsenical poisoning at Hyeres in 1888 which resulted from the mistake of a wine merchant who poured a solution of arsenic instead of calcium sulphate into wine casks, and in which 405 persons suffered, has been described by Barthélemy<sup>(13)</sup>. Brouardel also investigated this epidemic, although engaged at the same time with the Havres affair, and was thus able to compare the symptomatology of each.

Brouardel also refers briefly to another epidemic of a similar nature which occurred at St Denis in 1880, the arsenic

in this case being present in bread. There were 268 victims in this outbreak of whom Brouardel <sup>(loc. cit)</sup> saw 55, whose symptoms he states to have been identical with those of patients attacked in the two later epidemics.

Having thus had the unique opportunity of examining cases in three distinct outbreaks Brouardel <sup>(loc. cit)</sup> was enabled to make valuable observations concerning the clinical manifestations of each; these he found to be practically identical. He divided the course of the malady into chronological periods, which of course varied in length and severity according to the quantity of the drug taken and the idiosyncrasy of the individual.

These periods are as follows:

1. Trouble de l'appareil digestif.
2. Catarrh larynge et bronchique;- period dans laquelle pre-dominat les eruptions
3. Trouble de la sensibilité.
4. Paralysies.

Under the first heading he puts vomiting, more or less severe, and constipation, with lacrimation. Under the second, hoarseness, sometimes amounting to aphonia and a troublesome cough. The skin affections took the form of erythema, urticaria, pigmentation, desquamation and shedding of the nails. Intense <sup>4</sup>comyza was also a feature of this stage.

The third period comprised that of sensory disturbances. Neuralgic pains, tenderness, disorders <sup>of sensation</sup> operative in the affected limbs.

The fourth or paralytic stage was characterised by the "step-page" gait "en un mot il steppe", with paresis or paralysis of the extremities, especially the lower ones, and foot drop.

The reflexes. (the patellar tendon reflex was always absent and slow to return. The plantars sluggish. Superficial reflexes obtained.

With a few variations the recent epidemic in <sup>Salford.</sup> Manchester, as I saw it, forms a companion picture to the above description.



I intend therefore to briefly retail its clinical symptoms as they came under my notice in the Salford Union Infirmary during the last months of 1900 and the early part of 1901.

I have illustrated this account by notes on some of the more interesting female cases. I selected women both because they were under my immediate care and also because, being as a rule more susceptible to the poison than the males, they presented more definite clinical symptoms.

#### Symptomatology.

History of the Illness. Many patients gave a history of gastric disturbances and running from eyes and nose as early symptoms. This stage had however in some instances terminated when the patients came under our observation; in many cases however, conjunctivitis was present.

Pain, numbness, tingling and other disorders of sensation were commonly complained of as having been felt for some time previous to admission, followed by more or less loss of power in extremities.

In many cases the mental aberration of the patient precluded the possibility of obtaining an accurate and reliable history.

Almost every patient acknowledged to having drunk more or less beer. Some stated voluntarily that they had given up beer for some weeks as it "made them sick". The beer in every case was supplied by "tied houses" in the Borough: these taverns supplied only beer <sup>manufactured</sup> ~~supplied~~ only by certain breweries whose beer was later proved to be contaminated with arsenious acid.

Aspect of the patient. In a typical case of moderate severity the patient had a somewhat stupid expression and was slow in answering questions. The eyes had a glazed and vacant look and conjunctivitis was present in some cases.

The discoloration of the skin (to be referred to more fully later) was in most cases a most striking symptom.

With the exception of deafness, noted in some cases, the

special senses remained unaffected.

## NERVOUS SYSTEM.

Motor symptoms. Partial paralysis in cases of chronic or sub-acute arsenical poisoning has been noted as an outstanding symptom by chroniclers of former epidemics (vide supra), and Christison<sup>(16)</sup> concludes his remarks on the secondary symptoms of arsenical poisoning with these words "on the whole local palsy is the most frequent of the secondary effects of arsenic". Certainly in the recent epidemic this was found to have been the case.

Extent of the paralysis. In the most severe cases the patient was completely bedridden, being unable to stand or even move a limb. The lower extremities were most affected.

In a less severe case the patient could stand upright with some support, but frequently on making this attempt I have seen the sufferer "give at the knees" and sink on the floor. The attitude on standing was characteristic, a wide base was needed and the patient sometimes stood on the heels, alleging as a reason tenderness in the anterior part of the foot. If an attempt were made to walk the gait was the "high steppage gait"

of authors and the legs were swung in a wide arc so that the dropped foot might clear the ground - To secure balance the patient leaned forward. In cases where there was much anaesthesia the gait resembled that of an ataxic person. ~~where feet and not much "foot drop" the gait resembled that of an ataxic person.~~

In almost every case there was muscular wasting, symmetrical and rapid in the lower extremities and sometimes, but to a less extent, in the forearms. In the legs the gastrocnemii anterior tibials and the long extensors of the toes were more or less affected. In bad cases there was almost complete absence of calf, and I have frequently seen foot-drop so marked that on elevation of the leg to the perpendicular the foot made an almost straight line with the tibia. (cf. Brouardel, loc. cit)

In some cases the thigh muscles were wasted and flabby.

In the upper extremities atrophy of the small muscles of the hands (interossei and muscles forming the thenar and hypothenar eminences) were often affected. Wrist-drop more or less complete

due to affection of the extensors of the wrist, was seen in many cases. The muscles of the fore and upper arm were frequently wasted.

Except in one instance (Case~~XXX~~) the legs were more affected than the arms.

The loss of power varied as a rule in direct proportion to the muscular wasting, and all degrees were exhibited in the fingers and hands, from weakened grip to inability to grasp or hold an object. In a severe case the fingers looked purple and swollen and as if made of india-rubber. The appearance is most characteristic and remains for long after the patient is on the road to recovery.

As power gradually returned it was interesting to observe the awkward movements by which the patient endeavoured to use the hands. Objects were held by approximating the palms, the fingers being useless - a spoon was clutched between the proximal phalanx of the thumb and the second metacarpal bone.

In many cases there was marked inco-ordination of the hands, as evidenced by the inability of the patient to touch the tip of the nose with the finger or to guide a spoon or cup to the mouth with the eyes shut.

In all my cases but two the patellar tendon reflexes were absent. The plantars were either ~~either~~ sluggish or not obtained. The superficial reflexes were not tried in every case but in those tested were present.

The remainder of the voluntary muscles <sup>as</sup> ~~were~~ variously affected. In the more severe cases generalized muscular wasting was observed. In the slighter cases nutrition was fair.

In the worst cases among the women there was complete loss of control of the bladder and rectum due to paralysis of the sphincters. Such patients were often quite unconscious of having defæcated or voided urine and would lie for hours in a filthy condition if not attended to.

Many of those thus affected were mentally deranged. Some however were quite intelligent and were much distressed at

these involuntary evacuations: in such cases the incontinence disappeared as the muscles regained their tone.

Among the male patients, even those with complete paraplegia, control of the bladder and rectum was perfect.

I have not remarked that other observers have emphasized the presence of this very constant symptom, which was noted in a large proportion of our female cases.

Contractures of the knee and hip joints and of the fingers occurred in some cases, the position of the limb being that of extreme flexion. The joints frequently became ankylosed in this position but in a few instances recovery supervened and the affected limbs resumed their normal position.

Sensory symptoms. Pain was a marked feature in most of the cases. It was referred to the calves and feet (insteps and toes) to the fingers and, more rarely, to the forearms. Inter-costal pain was noted occasionally.

The pain was neuralgic in character and variously described as "springeing" "boring", "burning", shooting", "tearing". It was always worst at night and in damp weather. In some cases the nocturnal pain was so agonizing that opium or morphia had to be resorted to.

In most cases there was great tenderness on pressure in the calves, over the insteps and, less frequently, in the forearms and thighs. This tenderness was sometimes so exquisite that light pressure caused the patient to shriek aloud. In other cases it was only elicited on deep pressure.

In most cases tested there was analgesia, most marked in the legs and soles of the feet, into the skin of which a pin could be sunk, sometimes to the depth of a quarter of an inch, without being felt. This insensibility to pain was localized in irregular patches, distributed in various areas of the legs and feet.

Anaesthesia: In many cases there was complete anaesthesia of the soles of the feet, quite distinct from the pseudo-anaesthesia

produced by hyperkeratosis. In several instances I was able to scrape the soles vigorously with a blunt knife with very little annoyance to the patient - in one case the patient declared that she felt absolutely nothing and was unaware that she had been touched.

Complete anaesthesia to light touch over the tibiae was common; stroking with a pin or a pen or with the finger conveying no sensory impression. In cases where anaesthesia was not complete perception of impact was delayed. Although pressure over the nerve trunks at the back of the leg caused pain the skin of this region was generally anaesthetic.

The precision of localising touch was less acute than in health, i.e., patients were frequently unable to say what part of the affected limb was touched and even in one instance (Case 1) a touch on one leg was referred to its fellow (allochiria) Polyaesthesia was noted in a few cases.

Paraesthesia. "Pins and needles" were complained of in every case. Numbness of the feet and hands was a common complaint. The feet were described as feeling enormous, or as if a heavy weight were attached to them. In some cases the feet were not felt at all. One patient told me every day her feet were "in a knot".

Patients who could stand or walk described the ground under them in various ways, such as like "wool", or "india-rubber balls", or "peas" or "water" or "needles".

Some patients complained of "water running down their legs" or of animals walking on them. Most of them said their feet were cold as ice, even when a hot-water bottle was against them and they felt quite warm.

## Cutaneous Phenomena.

Pigmentation. One of the chief diagnostic points as to the presence of arsenic was the pigmentation of the skin. This was present in almost every case under my care to a more or less degree.

In the early days of the epidemic my attention was frequently drawn by the nurses to the exceeding dirty looking skin possessed by many of the patients. Two or three baths on admission, in addition to scrubbing with turpentine, failed to remove much of this apparent dirt and on examination the dingy brownish appearance of the skin was most noticeable.

In some cases the pigmentation was generalised and the skin was of a tint varying from brownish yellow to deep mahogany, the natural seats of increased pigment being deeper than normal in colour - in fact in extreme cases the patient looked like a mulatto.

In other cases there were scattered plaques of pigmentation in different parts of the body - these plaques were of a dirty greenish-brown colour or even black and presented a surface to the touch like that of crocodile skin.

These patches were found most frequently on the anterior chest wall, especially round the nipples, on the abdominal wall and to a less degree on the legs. The sides of the neck were often deeply pigmented as were the popliteal and ante cubital spaces and the <sup>axillae.</sup> ~~aneillar.~~ Indeed the whole appearance of the patient suggested vagabondism.

The face as a rule was not discoloured. In a few cases, however, it was of a deep copper colour, like that of a person who has been exposed to a strong sun. In a few others, isolated brown patches were noticed on the cheeks and forehead.

Pigmentation as the result of the administration of arsenic has been frequently referred to by dermatologists and others. Nielsen in his article on "Melanosis and Keratosis arsenicales"<sup>(7)</sup> gives an exhaustive bibliography of the subject and also describes

several such cases which came under his own immediate notice. He describes well the various shades of discolouration and calls attention to a point which I have frequently noticed among my pigmented patients and which I can no better describe than by likening it to the appearance of the secondary areola in pregnant brunettes. Nielsen describes it as follows: "Throughout the pigmented regions there are scattered numerous spots situated close together about the size of a pin's head of decidedly lighter hue (? normal colour). These are especially marked on the most darkly pigmented parts". I have thought that these "white spots" were really normal skin, appearing as the result of the scattered desquamation of the dark flakes of epidermis.

Barthélemy, in his description of the epidemic at Hyères mentions the occurrence of pigmentation of the skin present in many cases and varying from brown to black. Other recorders of this and similar epidemics do not emphasize pigmentation or indeed any other cutaneous manifestations nor does Barthélemy himself lay much stress upon another noticeable phenomenon in connection with the skin lesions, and associated with pigmentation, viz., desquamation.

Desquamation. Followed on pigmentation or accompanied or even preceded it, and was in many cases very profuse. One patient told me that previous to admission she peeled so extensively that the bed used to be filled with scales. (Case xiv)

The exfoliation of the skin from the trunk and extremities was of two distinct varieties. From the face, neck, arms and fronts of legs it was fine and "branny" in character, the surface looking as if it had been powdered. These fine particles could be removed with ease by gently going over the surface with a razor.

The skin peeling from the chest and abdominal wall and from the sides of the legs and thighs on the other hand was in larger particles and of a dirty greyish colour.

When keratosis (vide infra) of the feet and hands was present the skin came off in large flakes.

Keratosis. A general thickening of the epidermis of the soles and less frequently of the palms was a frequent feature. In some cases the keratosis was slight, in others the pieces of skin were quite  $\frac{1}{8}$  of an inch thick. Barthélemy calls attention to a feature in connection with keratosis plantaris which I have frequently observed, viz., an "erythematous border along the soles which were the seat of diffused keratosis".

Hyperidrosis. "Sweaty toes" was a frequent complaint in many cases. I have not noticed that increased secretion of sweat has any relation to hyperaesthesia, as some observers have supposed. The palms of the hands were also sometimes affected in the same way, but less frequently. No bromidrosis was observed. The hyperidrosis persisted for a long time if present.

Nails. The finger and toe nails were often very much thickened. Shedding of the nails occurred in some cases. The finger nails were occasionally pigmented, a horizontal brown hue alternating with a strip of the normal coloured nail.

Rashes. Of the rashes described by other observers few came under our notice. In only one case was there a definite generalized eruption. Some of the patients exhibited ac<sup>n</sup>iform spots on the face and several had small blisters on the legs. I had no cases of herpes<sup>zoster</sup>~~zoster~~.

Oedema of face, hands and legs occasionally noted.

Erythromelalgia. The "painful red neuralgia" of Weir Mitchell was observed in some cases. The meta-carpo-phalangeal joints of the great toes were most often affected, the skin being red and shiny and the joint acutely painful. Other toe joints and the finger-joints were occasionally attacked. The affection was not necessarily sym<sup>m</sup>metrical.

In other cases there was no joint affection but only intense



redness of the outer border of the foot and of the palmar surfaces of hands and fingers. Sometimes the palms were so red as to look as if stained with red ink. (vide Reynolds op. cit.) and very tender.

Circulatory system. In some cases there was cardiac dilatation accompanied by a soft systolic bruit at the apex. In one or two evidence of an old endocarditis was present. In two cases an attack of acute cardiac dilatation came on suddenly without apparent cause.

Respiratory system. Phthisis pulmonalis was present as a concomitant symptom in six cases, in two there was a fatal termination. Chronic bronchitis was present in several cases. In one case an attack of acute pleurisy accompanied the nervous phenomena.

Gastro-intestinal system.

Sickness and vomiting with or without diarrhoea were not prominent features in our patients, but a history could be obtained in many cases. Those patients who had control of the bladder and rectum were obstinately constipated. Where control was absent the motions were loose, frequent, and offensive. As a rule the appetite was good.

Genito urinary system.

Amenorrhoea was present in a large number of the most severe cases among the women. The return of the menses was generally the forerunner of an improvement of the general condition of the patient. Albuminuria was a fairly constant feature of the worst cases. Sp.gr. varied from 1012 - 1026, the urine giving a cloud of albumen on heating.

Mental condition. In many of the most severe cases the patient suffered from a condition closely resembling typical alcoholic dementia. There was no idea of time or place, answers to such questions as, where are you? what day is this? being vague or

inaccurate. On the other hand many of these patients were apparently intelligent, and a stranger, during a sustained conversation might discover no evidence of mental derangement. Such patients, according to their own story, often went out daily for a walk, usually to the beer-shop, although they were as a matter of fact bedridden and unable to move. Another common delusion was that of having a baby, sometimes two, in bed with them.

Some patients in addition to being demented had outbursts of excitement, becoming so unmanageable that they had to<sup>be</sup> removed temporarily to the Lunatic Pavilion.

Women were chiefly affected. I only saw two male patients who presented any mental symptoms during the epidemic.

Authorities differ as to whether arsenic per se is capable of producing mental disturbances.

Buiz<sup>(18)</sup> states that, in arsenical poisoning, "the mental faculties are unimpaired, the mind remaining clear to the last".

Blyth<sup>(19)</sup> quotes a case reported in the British Medical Journal (Nov. 4th 1876) in which the patient had "loss of memory for recent events, drowsiness and giddiness".

Graves,<sup>(loc. cit.)</sup> describing L'epidémie de Paris, states that "the mind remains unaffected".

Christison<sup>(op. cit.)</sup> states that delirium and stupor may be present in advanced cases, and quotes a case from the Edinburgh Medical and Surgical Journal where delirium and excitement were present in the later stages.

Brouardel,<sup>(op. cit.)</sup> in his report on the Havres epidemic mentions among the less important symptoms "Excitation cérébral et même delire, mais ce phénomène ne semble pas très bien établi".

Orfila<sup>(20)</sup> reports a case in which delirium and excitement were followed by stupor and drowsiness.

Reynolds(loc. cit.) states that in his opinion "arsenic has not much effect on the cerebral cortex".

Niwen<sup>(20)</sup> apparently takes it for granted that arsenious acid in excess affects cerebration, as he states "that the mental condition and the pigmentation were the most marked features among the patients during this (the recent) epidemic".

It may be accepted as a fact that the action of arsenic and of alcohol on certain portions of the nervous system, viz., the peripheral nerves, is identical. It seems therefore justifiable to push the analogy a step further and to assume a similar identical influence with regard to the cerebral cortex.

I have then come to the conclusion, in view of the large number of my female patients who presented mental symptoms, and who at the same time were undoubtedly suffering from arsenical poisoning (as shewn by the cutaneous phenomena) that arsenic produces an effect upon the higher centres similar to that produced by alcohol. I am however willing to grant that in many of these cases the way may have been paved for these mental disturbances by previous indulgence in alcohol.

Temperature. Occasional rises of temperature were noted without any obvious cause. In the fatal cases pyrexia was the rule for some days before death, the temperature varying between 101°F. and 104°F.

Diagnosis. When once the presence of arsenic in certain beers was demonstrated, the difficulties of diagnosis presented by these cases were dissipated, it being quite clear that <sup>the nervous phenomena as well as</sup> the irregular symptoms, such as pigmentation and other cutaneous lesions, could be explained by its activity.

So far as is known there are only three poisons capable of producing the nervous phenomena present in this epidemic - viz. alcohol, arsenic and the organism causing the disease known as beri-beri. (Lead, mercury, the toxins of certain fever-producing organisms also cause paralysis but the absence of history and symptoms pathognomonic of each precluded their consideration).

Alcohol, so far as records go has never produced pigmentation or any skin eruptions, and according to authorities on the subject the vaso-motor and sensory phenomena are much less profound in alcoholic neuritis than in that of arsenical origin. At the same time there is no doubt that many of the victims in this epidemic were suffering from what Kelyuack<sup>(22)</sup> calls a "mixed" variety. In short that previous chronic alcoholism had to be reckoned as an important etiological factor in considering the nervous phenomena in these patients. Certainly it was my experience that a history of "drinking for years" could be obtained from a considerable number of the worst cases among the women.

Beri-beri is an endemic disease and even as such is rare in this country.

Oedema, especially marked over the sternum and tibiae is a very constant feature in this disorder and was present in a large proportion of the cases which I saw at the Richmond Asylum, Dublin, during the epidemic there in 1894. Associated with this localised oedema is cardiac weakness. Neither of these symptoms is constant in arsenical peripheral neuritis. On the other hand the cutaneous phenomena so characteristic of arsenical poisoning are absent in beri-beri.

In spite of the almost overwhelming arguments in favour of the arsenical theory Newall and <sup>Psyche</sup>~~Pythor~~<sup>(loc. cit.)</sup> are quite convinced that the cases of peripheral neuritis occurring at Chester during the latter half of 1900 were beri-beric in origin. They state that oedema and cardiac weakness were almost constant features in their cases and that removal of patients from damp, low-lying dwellings to higher ground resulted in great amelioration of the symptoms. Their arguments are not convincing, they make no attempt to explain the cutaneous phenomena which were present in some of their cases, nor do they appear to have found the micro-organism of beri-beri in the blood of their patients.

It was necessary in some cases of intense pigmentation to consider the question of Addison's Disease. The presence of the motor and sensory disturbances on the one hand and the absence of anorexia and mucous membrane pigmentation on the other served to differentiate the two maladies.

Prognosis. In the slighter cases the prognosis of complete recovery is good. In those where the motor symptoms are severe the immediate prognosis is fair but the prospects of remote recovery not so good. Several of my complete paralytics however got on well under treatment. Others remained in statu quo as regards powers of locomotion while the general condition shewed marked improvement.

Age is an important factor in the prognosis. The younger women, even with profound symptoms rallied in a remarkable manner while those of middle age with apparently less severe manifestations either succumbed or shewed little sign of improvement.

Death in every uncomplicated case was due to cardiac failure and was frequently sudden. It is possible that the arsenic, either alone or in conjunction with alcohol, may affect the cardiac muscle in a manner similar to the toxin of diphtheria. The mode of death is in both cases apparently the same.

Treatment. Complete rest in bed is essential. If the patient is very helpless or emaciated, a water bed is to be recommended. The food must be nutritious and easily digested. In bad cases with a weak, rapid pulse I found stimulants (whiskey) of great benefit, but they must be used with discretion.

As to drugs, I used strychnine, either alone or combined with digitalis. Thirty to forty minims of the Liquor Strychninae either by the mouth or hypodermically according to circumstances, were given in twenty-four hours in five minim doses.

I also tried large doses of Tinct: Ferri <sup>Perchlor</sup> Residii: but the results were not encouraging. The same may be said of iodide of potassium. Sedatives, such as the bromides and chloral hydrate were often necessary in excitable cases. Hypodermic

injections of morphia were frequently required for the neuralgic pains in the legs and feet.

When extreme tenderness of the leg muscles was absent I found massage of these muscles most beneficial. Owing to the small staff of nurses we were unable to have this carried out in every suitable case, but in those in which it was adopted as routine treatment much benefit ensued.

Pathology. The modern view that the lesion of peripheric paralysis is in the nerve-trunks themselves and not, as was formerly supposed in the spinal cord, has been established through the pathological investigations of Dumenil and Lancer-eaux in the earlier part of the century, and later by Dreschfeld, Judson, <sup>Bury</sup> Berry, Ross and Buzzard. Yet one symptom present in a large number of cases during the recent epidemic would seem to point to an accompanying lesion in the cord.

I refer to the incontinence of urine and faeces which was a fairly constant feature in the severe cases among the women, and for which mental hebitude does not seem to offer a sufficient explanation. As the centres for the bladder and rectum are situated in the lower part of the lumbar enlargement a lesion in this region would account for paralysis of these sphincters. A lesion in the cord would also explain the ataxy with which some of the patients were affected. Of the other motor symptoms rapid wasting of the lower extremities could be explained either by disease of the peripheral nerves, or disease of the motor centres of the legs which are situated in the lower part of the cord. The same may be said for the absence of knee jerks.

Another symptom which would point to a central rather than a peripheral lesion was the formation of bed-sores which occurred occasionally.

Gowers<sup>(29)</sup> states that in alcoholic peripheral neuritis, although it is per se a peripheral nerve affection patches of the dis-

seminated sclerosis have been found in the cord occasionally and although I have had no opportunity of investigating the subject, yet in view of this fact and of the symptoms which I have just mentioned I feel I am justified in suggesting that such may have been the case in the recent outbreak.

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## Case I.

A. W. Aet: 54. (M.) F. Admitted 18.viii.00.

History. A moderate beer-drinker. Illness began with running at eyes: then pains and numbness in legs followed by weakness and loss of power.

### Examination.

General appearance. Patient lies helpless in bed in the dorsal decubitus. Answers questions intelligently. No deafness. Some conjunctivitis. Tongue nil. General nutrition poor.

### Nervous system.

Motor symptoms. Patient quite helpless on legs. If put on her feet collapses on the floor. Much wasting of calf muscles. Complete foot-drop. Sphincters paralysed. Wrist-drop. Small muscles of hands atrophied.

Sensory Symptoms. Intense pain in legs and feet: tenderness on pressure in calves. Sensation to touch and pains in legs and soles diminished. "Pins and needles" in fingers and numbness in feet.

### Cutaneous phenomena.

Pigmentation. Slight on admission.

Desquamation not noted.

Blisters on fronts of legs.

No other cutaneous lesion.

Reflexes. Knee jerks not obtained.

Nothing noted in other symptoms except that on admission there was anorexia, and the urine was slightly albuminous.

Subsequent history. The patient improved somewhat and was discharged at her own request.

Diagnosis. Arsenical poisoning.

C A S E I.

Prognosis. Fair as to ultimate recovery.

Treatment. Potassium Iodide.

Strychnine.

Massage.

Rest and <sup>o</sup>n~~x~~urishing diet.

C A S E II.

E. S. Aet. 40 (M) F. Admitted 12/10/00.

History. Onset a week ago with vomiting and running at eyes and nose. Shooting pains in legs preceded gradual loss of power. Had neuralgic headaches. Beer-drinker. Quantity not noted.

Examination.

General appearance. Patient completely without power in legs on admission. Tongue "silvery". No rash. T. normal.

Nervous system.

A. Motor symptoms. Patient completely paralysed in lower extremities. Cannot move legs. Calf muscles wasted. Foot-drop (double and complete). Grip in both hands very poor. Paresis of extensors of wrists. Small muscles of hands wasted. Patient cannot hold a spoon. Inco-ordination of hands.

B. Sensory symptoms. "Pins and needles" in fingers and toes, with numbness of feet. Intense neuralgic pains in legs and feet came on a few days after admission - worse at night. Diminished sensation to touch and pain in fronts of legs and soles - Hyperaesthesia of skin over insteps. Some pain in hands.

Cutaneous symptoms.

Pigmentation. Skin very dark, although patient has light eyes and hair. Patches of pigmentation round nipples and umbilicus and sides of abdomen - these patches irregular owing to desquamation taking place. There is also increased deposit of pigment in the axillae, groins, papliteal spaces and sides of thighs.

C A S E II.

Keratosis. of feet and hands.

Rashes absent.

Oedema of feet and legs when patient was able to be up.

Hyperidrosis of palms and soles.

Erythromelalgia. Palms and fingers very red and tender.

Circulatory and respiratory systems. Nil abnormal.

Genito-urinary system. Amenorrhoea for some months.

Reflexes. Knee jerks not obtained.

Plantars sluggish.

Subsequent History of case. Patient could walk a little  
about ten days after admission.

"Steppage" gait. Said floor felt "like wool." Feet oedematous.

There then developed intense hyperaesthesia of hands, which hung limp and were red and swollen. She could not bear to touch anything. Great increase of hyperidrosis of palms and fingers, which literally "dripped" with sweat. This great pain in hands continued for some weeks and by degrees lessened and patient regained use of hands once more. There was marked tactile anaesthesia for long in legs and feet. Patient discharged (3/1/01) with almost normal gait. Knee-jerks absent. And only slight inco-ordination of hands.

Treatment. Rest.

Massage.

Strychnine.

Morphia for pain.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Good, as to complete recovery.

C A S E I I I.

J. S. Aet. 48. (F). (m). Admitted 15/10/00.

History. Beer-drinker for years. Illness began with diarrhoea a month before admission. No vomiting: no coryza. This was followed by intense pain in legs and feet and subsequently loss of power.

Examination.

General appearance. Patient in a filthy condition; looks most neglected. Cannot move hand or foot. Slow at answering questions. Rather deaf. No eye symptoms. Generalized muscular wasting.

Nervous system.

Motor symptoms. Patient completely paraplegic. Leg and arm muscles (extensors) much wasted. Double complete foot-drop. No wrist drop. Small muscles of hands much atrophied: grip very feeble. Sphincters paralysed.

Sensory symptoms. Intense pain in insteps and calves, causing the patient to cry out at night. Much hyperaesthesia in these regions. There is analgesia in legs and soles and, as well as can be ascertained, complete anaesthesia to light touch.

Cutaneous phenomena.

Pigmentation absent.

Keratosis of soles present.

Hyperidrosis of toes and palmar surfaces of hands and fingers.

Oedema absent on admission.

Erythromelalgia Intense redness of palms.

Rashes Vesicular eruption on legs.

Reflexes Knee jerks and plantars absent.

Circulatory system. Heart sounds feeble: no murmur.

### C A S E III.

Respiratory system Nil.

Genito urinary. Nil.

Mental condition. Patient quite demented: no idea of time or place. <sup>very</sup> ~~Nerves~~ excitable.

Subsequent history of case. A month after admission, patient had visibly wasted, all the muscles becoming much more flabby. Contractions of knee-joints beginning. Several bedsores found, and this notwithstanding constant attention and a water-bed. Legs oedematous and a trace of albumen apparent in the urine. At the beginning of January the patient was much worse. Wasted to a skeleton. Contractions increased. Legs completely flexed on thighs. Mental condition worse. Patient lies in a sort of stupor and only speaks when roused. Marked oedema of face, and puffiness of eyelids: albuminuria. Died 17/1/01. of heart failure.

Diagnosis. "Mixed case." Patient was a chronic alcoholic and the presence of arsenic in the beer probably brought on the acute symptoms common to both terms, as well as causing those peculiar to itself. Probably some cirrhosis of kidneys.

Treatment. Attention to the general condition of the patient was the only thing possible. A water-bed: nutritious fluid food, sedatives for pain, and later strychnine.

#### C A S E IV.

M. W. (W). Aet. 54. Adm. 18/10/00.

History. Admitted with a history of vomiting of some weeks' duration, accompanied by obstinate constipation. Was diagnosed as "malignant disease of pylorus" by an outside practitioner.

Had been drinking for years. "Fourpenny" beer and stout.

Husband died of "drink." Son was a patient in the Infirmary, suffering from "beer poisoning."

#### Examination.

General appearance. Patient lies helpless in bed in the dorsal decubitus. Legs extended and motionless. One is struck at once by the intensely dark colour of this patient's skin. Eyes red and running with a serous discharge. Patient is in a state of semi-stupor but rouses herself to answer questions. Tongue "silvery".

#### Nervous system.

Motor symptoms. Complete paralysis of lower extremities with wasting of gastrocnemii and anterior tibials. Foot-drop almost complete and double. Fore-arms wasted. Extensors of wrist paralysed. Small muscles of both hands atrophied so that patient could not hold an object or feed herself.

Paralysis of sphincters of bladder and rectum, producing incontinence of urine and faeces.

Sensory symptoms. Sensation to touch and pain abolished in soles: diminished in legs. The exact degree of anaesthesia could not be determined, owing to the mental condition of the patient. There were no excruciating neuralgic pains in this case. Some tenderness on pressure was present in calf muscles.



## C A S E IV.

### Cutaneous system.

Pigmentation. The most outstanding features in this case was the extensive, generalized pigmentation. The patient was of a deep mahogany colour which was very noticeable even although she was naturally dark-skinned, as could be inferred from her hair and eyes. The sites of normal pigmentation were almost black. The patient was desquamating in places on admission and dirty brown scales could be removed from around the nipples and from the front of the abdomen. Some time after admission a fine branny desquamation of the entire epidermis began- the scales of the consistency of flour could be removed with a sharp razor.

The face was pigmented in patches- the orbital fissures were surrounded with symmetrical brown circles.

Hyperidrosis- of the feet and hands present. Most noticeable in toes and palmar surfaces of fingers.

Keratosis of soles present.

Rashes etc. Some pustules on fronts of legs.

Oedema Nil.

Reflexes Knee jerks not obtained. Plantars absent.

Circulatory system Nil abnormal.

Respiratory " Some bronchial catarrh.

Other systems Nil abnormal.

Mental Condition. Patient demented on admission. Had no idea of time or place - was very noisy and troublesome at times and very restless at night, constantly getting out of bed (when she was able to stand).

Subsequent History of case. By degrees the patient recovered power in legs: on December 5th was able to stand alone: after this improvement in motor symptoms rapid, but gait remained somewhat ataxic. Desquamation

C A S E IV.

continued and was present when I last saw the patient (June 29th). At this time the patient was up and about - could use hands well - still demented - says she goes out daily for "a pint" - imagines that she has a baby in bed with her - often noisy at night. Incontinence much less, but occasionally she passes urine involuntarily.

Diagnosis. Arsenical Peripheral Neuritis - with ? some element of alcoholism.

Prognosis. Fair as regards ultimate recovery.

Treatment. Rest in bed.  
Nourishing Diet.  
Strychnine.  
Massage.

C A S E V.

F. S. (F) Aet. 27.(m) Admitted 18/10/00.

History. Illness began with vomiting in the morning and diarrhoea and gradual loss of power in arms and legs of some weeks' duration. No rash or "running of the eyes" noted. Intense neuralgic headaches some time previous to admission. Was in the habit of drinking 2 gills of "6d. beer" daily.

Examination.

I. General appearance. Patient fairly nourished in body and face. Limbs absolutely helpless. Answers questions vaguely and slowly. Very deaf. Pupils  $\frac{1}{2}$  dilated. - react to light and convergence sluggishly. No paresis of ocular muscles. Tongue silvery. Corneal reflexes present.

II. Nervous system.

A. Motor symptoms. Absolute loss of power in legs and thighs and in upper extremities with marked muscular wasting. Double, complete foot and wrist-drop. Interossei and thenar and hypothenar eminences almost completely atrophied. Hands absolutely powerless. Requires to be fed.

Muscles of trunk and face not affected.

B. Sensory symptoms. Intense pain on pressure over calf-muscles, causing patient to shriek aloud. Insteps also very hyperaesthetic to light touch. Complete anaesthesia to light touch over fronts of legs and on soles.

Sensation to pain. Diminished in legs - a pin prick producing no discomfort.

Thermal sense perverted, heat described as cold and vice versa.

Delay in perception of impact in legs, feet.-

Precision of tactile localization impaired. e.g. If right leg

touched, patient described sensation as proceeding from a different spot on left.

"Pins and needles" and numbness of hands and feet.

Intense neuralgic pains in feet and legs, keeping patient awake and requiring hypodermics of morphia. Less acute after two or three weeks.

C. ~~Except~~ the auditory sense, special senses not affected.

III. Cutaneous symptoms. Patient blonde. Face normal. Yellowish, brown pigmentation over front of chest, in axillae, groins, popliteal spaces, and over abdominal wall.

No Desquamation.

Pigmentation much less marked than in dark-skinned women.

No Keratosis.

Marked hyperidrosis of palms and soles which were red and shining (acrodynia). Blisters followed by small superficial ulcers over both tibials.

Reflexes. Knee jerks and plantars not obtained.

Respiratory system. Consolidation ~~at~~ apex. ? tuberculosis.

Circulatory system. On admission nil abnormal. A week later sudden attack of acute cardiac dilation with much orthopnoea. Under treatment subsided.

Genito urinary system. Urine nil abnormal. Amenorrhoea during stay in hospital. Leucorrhoea for first few weeks.

Mental Condition. Patient dull and apathetic on admission and slow in answering questions. ? due to deafness. Mind a blank as to what happened previous to admission to hospital. This loss of memory to previous events continued after recovery.

Gastro-intestinal system. Bowels constipated.

Subsequent history of case.

4/12/00. Patient much improved: pains almost gone. Can use hands awkwardly. Cannot walk alone but can do so with support. Gait "high steppage." Throws feet forward. Knee jerks absent. Still foot-drop.

15/12/00. Still cannot stand. Occasional return of neuralgic pains. Sensation returning. Still sweating of feet.

Mental condition better. Less deaf..

9/2/01. Patient much improved as to general condition. Can knit. Leg muscles firmer. Still cannot walk.

25/2/01. Patient much better - has been able to stand with help for some days. To-day can walk a little alone. Knee jerks absent.

Sensation normal in legs.

Still foot-drop.

Looks well and fat.

4/3/01. Discharged, much improved.

Treatment. Iron and strychnine.

Expectorant mixture.

Morphia pills. gr  $\frac{1}{4}$ . o.n

Injections of morphine (~~sulphate~~) (hypo) mv. o. n.

Vaginal douches. Crealin ~~2ss~~ 2j.

~~Sp. ether~~ mxxx. (hypo) )

Inf. strych. hypo m V. ) For cardiac dilatation.

Followed by " " " t.ds.

Later. Massage to legs.

Rest in bed.

Generous diet.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Good, from age of patient.

## C A S E VI.

M. H. (m) Aet. 43. F. Admitted 19/10/00.

History. Patient had been ailing for 8 weeks. Illness began with vomiting and diarrhoea. Had had "tumour" in abdomen for some weeks. Loss of power in legs came on gradually. No history of pains or "pins and needles." Patient is mother of 19 children. Has been drinking for years.

### Examination.

General appearance. Patient looks almost comatose - breathing stertorous - pupils dilated - eyes watery - face blotched. No rash. Skin much discoloured. There is a large swelling in abdomen - symmetrical - fluctuant - dull to percussion. Patient reported to have passed urine involuntarily the night of admission. (The following morning a catheter was passed and eight pints of foul-smelling, alkaline urine were drawn off).

### Nervous system.

Motor symptoms. The lower extremities were completely paralysed, the patient lying like a log in bed. There was a good deal of wasting of leg and thigh muscles which were soft and flabby. The forearm muscles were somewhat atrophied as were those of hands. The patient made no attempt to feed herself or to move the arms or hands. Wrist-drop (double) present. The general nutrition was fair. The face was full and the trunk fairly nourished.

There was complete paralysis of sphincters, ani and vesici. In this case in addition there must have been paralysis of the coat of the bladder, causing retention of urine and passive incontinence.

Sensory symptoms. Sensation to pain and the thermal sense were apparently dulled. Tactile sensation could not be tested. Tenderness on pressure over calf

muscles could be elicited after some days. At first there was no response to external stimuli owing to the almost comatose condition of the patient, due to the absorption of toxins.

Cutaneous phenomena.

Pigmentation. The whole cutis presented a very dark appearance. There were plaques of pigment on chest-wall in front. On the abdominal-wall along thighs and legs. Desquamation, in blackish flakes, was taking place on admission.

Keratosis. Absent.

Hyperidrosis. Present in a slight degree in both ~~palms~~ and soles.

Sacral bed sore present on admission.

No rash noted.

No erytheromelalgia.

Reflexes. Knee-jerks absent. Plantars slow.

Genito-urinary system. Menstrual history not obtained.

Urine. At first alkaline and very offensive - contained some albumen - later improved and became acid - still albuminous - no casts found.

Tenderness on pressure over bladder: retention: catheter needed daily.

Circulatory system. Heart sounds feeble - no murmur or irregularity.

Respiratory " Nil.

Gastro-intestinal system. Appetite fair for fluids. Diarrhoea with incontinence of faeces.

Mental condition. Patient more or less in a state of stupor until death. Did not understand when spoken to, and never spoke except to ask for a drink.

Subsequent History. Patient remained practically in statu quo until her death 29/11/00. On Nov.

1st had a typical uraemic convulsion, followed by a second

next day. Urine decreased in amount. At time of death very little was being passed. Vomiting began a week or two before the end and continued until death. Uraemic fits became frequent and patient died comatose.

Diagnosis. Arsenical Peripheral neuritis attacking an alcoholic subject - the immediate cause of death being toxæmia from the kidney condition.

Prognosis. Bad from the first, owing to the complications.

Treatment. Rest. Irrigation of bladder. Benzoic acid and Buchu - later Digitalis and Strychnine. Pilocarpine.



Case VII.

R. R. Aet: 35(m) Admitted 20.x.00.

History. Drinking for years. (Bottled stout). Illness began a month ago with progressive loss of power in legs. No history of gastric or sensory disturbances.

Examination.

General appearance. Completely paralysed. Skin very dark. Quite demented. Eruption on face. Nutrition poor.

Nervous system.

Motor symptoms. Legs and arms useless and muscles wasted. Hands powerless, has to be fed. Foot drop double and complete. Some wrist drop. Sphincters paralysed.

Sensory symptoms. Tactile sensation could not be tested. Sensation to pain much diminished. No other disorders of sensation on admission.

Cutaneous phenomena.

Pigmentation marked, especially on chest and abdomen. Desquamation proceeding.

Keratosis absent.

Hyperidrosis "

Erythromelalgia absent

Oedema absent

Rashes. Diffuse, ac<sup>n</sup>neiform eruptions over face, especially chin and forehead. Bullous eruption on front of legs.

Cardiac, pulmonary and other systems normal

Reflexes. Knee-jerks absent: plantar reflexes sluggish.

Mental condition. On admission patient was dull and apathetic

and answered questions slowly. She had no idea where she was and could not tell the day of the week or month.

Subsequent History. Under treatment the paralysis of extremities gradually disappeared; as power returned to the feet intense pain was complained of, worse at night and in wet weather - "Pins and needles" were also complained of. When patient could walk she displayed the usual high stepping gait, coming down on the heels first - she stated that the boards felt soft under her feet. The incontinence present on admission gradually ceased and the mental condition improved somewhat. Was still desquamating on discharge, 11/12/00.

Diagnosis. Arsenical poisoning, affecting a system saturated with alcohol.

Prognosis. Of ultimate recovery good.

Treatment. (1) Iron and strychnine, then strychnine alone.  
(2) Rest and massage.  
(3) Opium (for pain).

Morphia " "

### Case VIII.

A. M. (F.) Aet: 54. (W.) Admitted 25.x.00.

History. The condition of patient on admission (vide infra) and the fact that she had no friends precluded the possibility of any reliable history being obtained in this case.

#### Examination.

General appearance. Patient completely helpless on admission, quite deaf; stupid-looking. Pupils  $2/3$  dilated, react to light and convergence. Eyes glassy and staring. Tongue nil. No rash.

#### Nervous system.

A. Motor symptoms Much wasting of calf and anterior tibial muscles, also of muscles of fore arms. Cannot move legs in bed. Small muscles of hands wasted. Marked foot and wrist drop. Patient cannot hold a spoon. Inco-ordination of hands. Trunk muscles also much atrophied. Paralysis of sphincters (vesical and rectal)

B. Sensory symptoms. Exquisite tenderness on pressure over muscular masses of legs and fore-arms. Absolute anaesthesia of soles of feet and fronts of legs, both to pain and touch. No neuralgic pains.

Cutaneous phenomena. Patient a fair skinned woman with light hair. Desquamation going on on admission on chest and legs, dark skin coming off in flakes. Pigmentation had apparently not been extensive, as there were only scattered plaques on legs, thighs and abdominal wall.

Keratosis. Hyperkeratosis of soles.

Hyperidrosis. Marked of palms and soles.

Rashes. Small superficial <sup>2</sup>ulcers on both legs; no other rashes.

Oedema. Slight of feet and ankles.

Erythromelalgia. Absent.

Reflexes. Knee-jerks not obtained.

Plantars sluggish.

Respiratory system. Nil abnormal.

Circulatory system. Rough systolic bruit at apex conducted to left - ? some old-standing endocarditis.

Gastro-intestinal system. Vomited once after admission.  
Constant diarrhoea.

Genito-urinary system. Nil.

Mental Condition. Patient quite demented on admission - later she became very noisy and excitable: continued thus with intervals of drowsiness until some days before her death. The dementia was that of a chronic alcoholic.

Subsequent History of case. As far as the motor and sensory symptoms were concerned the patient shewed no signs of improvement. Emaciation of trunk and limbs progressed and sensation became if anything more ~~ab-~~ <sup>dulled.</sup> ~~tered.~~ There was complete anaesthesia of soles of feet - even vigorous scraping with a blunt knife eliciting no response. On the other hand if the legs or insteps were touched the patient shrieked with pain.

A few days before death the mental condition improved greatly and patient answered questions quite rationally. She also occasionally asked for the bed-pan, shewing that the incontinence may have been due in part to the mental condition. Two days before death slight twitching of hands and arms. Patient died of cardiac failure two months after admission.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Bad from the first, owing to the debilitated condition of the patient.

Treatment. Nourishing fluid food.  
Strychnine and Digitalis.

## Case IX.

A. H. (F.) Aet: 60~~50~~ Admitted 31.x.00.

History. Beer-drinker. Feeling ill for some weeks. No definite account of onset obtained.

### Examination.

General appearance. Patient very dyspnoeic on admission. Could stand. Mental condition clear. Tongue normal. No ocular symptoms. The cardiac condition the most outstanding feature of this case.

### Nervous System.

A. Motor symptoms. Some paresis of legs and less of arms. Calf muscles wasted and flabby. Slight foot-drop. Gait uncertain and stamping. Small muscles of hands atrophied, fingers of both hands <sup>contracted</sup> ~~atrophied~~; due to <sup>shortening</sup> ~~wasting~~ of their extensors, <sup>producing</sup> the "main en grippe". Some wasting of muscles of fore arms. Some wrist-drop.

B. Sensory symptoms. Very little neuralgic pain on admission. Slight tenderness on pressure over calves. Diminished sensation to touch and pain in legs. Soles quite anaesthetic. Patient feels "as if she were walking on wool". Three weeks after admission patient complained of intense pain in legs, feet and hands, necessitating administration of morphia for several nights. This pain, with exacerbations and remissions, continued for nearly six weeks, and then gradually ceased. Numbness of feet and "pins and needles" in fingers and toes.

Cutaneous symptoms. Face very dark. Patches of brownish pigmentation on chest, abdomen, thighs, desquamation in places in dirty brownish scales.

Keratosis. Absent.

Erythromelalgia. Absent.

C A S E IX.

Oedema. Absent.

Rashes Absent.

Hyperidrosis. Absent.

Reflexes. Deep reflexes not obtained.

Superficial " present.

Respiratory system. On admission marked cardiac dilation.

Area of cardiac dulness increased 1" to left of mid clavicular line. The apex beat diffuse and visible in 4th - 6th left interspaces. Much dyspnoea and palpitation. Sounds very feeble. No murmur.

Remaining systems normal.

Subsequent History of case. When the patient had been a few days in hospital there was great alleviation of the cardiac symptoms. In a week or two the neuritis took on a fresh development, there was complete loss of the power of locomotion and intensification of the sensory symptoms. One curious feature in this case was that on some days the patient could stand and walk with support while on others she collapsed at once if got out of bed - Noted by Graves (op. cit.) "paralysis capricious and reappearing." The contractions of the fingers disappeared by degrees and patient regained the use of her hands. She was discharged in February 1901, "much improved."

Treatment. Rest in bed.

Massage.

Morphia and opium for pain.

Strychnine.

Diagnosis. Probably a "mixed case."

Prognosis. The age of the patient made one cautious in giving a prognosis, but she improved so much under treatment the ultimate recovery is hoped for.

C A S E X.

S. B. Aet. 40. F. Admitted 6/11/00.

History. Drank beer to excess. Noticed skin getting darker 3 months ago. One month ago eyes began to run. No gastric disturbances. Some neuralgic pains in legs and "pins and needles" in fingers and toes for some weeks previous to admission, followed by gradual loss of power in legs.

Examination.

General appearance. Patient dark-skinned - fairly nourished. Walks very badly. Eyes running with serous discharge.

Nervous system.

Motor symptoms. Some paresis of leg-muscles. No foot-drop. Calf-muscles rather flabby. Gait ataxic. Arms and hands nil. Sphincters intact.

Sensory symptoms. Intense neuralgic pains in feet and legs. Worse at night and on damp days. Sensation normal to touch and pain. "Pins and needles" in fingers and toes. Feet feel numb.

Cutaneous Phenomena.

Pigmentation. Skin very dark all over. Coming off in dirty black flakes from around nipples and abdominal wall. No other cutaneous phenomena.

Reflexes. Knee-jerks absent. Plantars and superficial reflexes present.

Circulatory system. Some cardiac dilatation on admission. Apex-beat diffuse - in 4th - 6th spaces - most punctuate in 5th space slightly outside nipple-line. Sounds feeble.

Respiratory system. Nil.

Gastro-intestinal system. Appetite good. Bowels very constipated.

C A S E X.

Genito-urinary system.    Urine normal.

Subsequent History.    Patient had an attack of syncope two weeks after admission - very dyspnoeic for some time after. Except for this attack the case did well. Nervous symptoms decreased gradually. Discharged "improved" one month after admission.

Diagnosis.    Arsenical poisoning, affecting principally cardiac muscle.

Prognosis.    Good as regards nervous system.    The prognosis as regards the heart depends on standard of health of health preserved by the patient.

Treatment.    Absolute rest in bed.

Nutritious fluid food.

Strychnine and Digitalis.	)	
	)	
Whisky.	)	for cardiac condition.
	)	
Pil: opii for pain:	)	



C A S E X I.

A. T. S. Aet. 40 (F).(S). Admitted 8/11/00.

History. Worked in a tavern for severn<sup>ly</sup> years. Had a beer allowance of 1 pint daily, which she never exceeded, except at week ends. Illness began with loss of power in legs and arms one month ago. For some time previous to this had vomited in the morning. No diarrhoea. No conjunctivitis.

Examination.

I. General appearance. Patient completely paralysed - lies helplessly in bed in dorsal decubitus. Nutrition poor. Complexion dark. Mind clear.

II. Nervous system.

A. Motor symptoms. Patient can move neither hand nor foot. Calf-muscles very wasted (tenderness on pressure over calves) Double, complete foot-drop. Forearms slightly wasted - complete paralysis of extensors of wrists and atrophy of small muscles of hands. No use in hands. Muscles of trunk and face not affected, but general nutrition below average.

B. Sensory symptoms. Pain on pressure over calf-muscles. Feet feel numb. "Pins and needles" in toes and fingers, Sensation to touch and pain in legs much diminished - to a slighter degree this is present in arms. A pin-prick on legs "feels cold." Touch cannot be located in legs. Two or more points at distance of an inch feel like one. Inco-ordination of the hands.

Special senses not affected.

Cutaneous system. Patient naturally of a dark complexion.

Skin very dark. Some localized patches of pigmentation in axillae, groins, round nipples and over abdomen and thighs. Not desquamating.

C A S E XI.

Hyperidrosis. of hands and feet very marked.

Keratosis. Of soles present.

Erythromelalgia. Great toe joints red and shiny and very tender. Palms red, as are flexor surfaces of fingers.

Rashes. Absent.

Oedema. Absent.

Reflexes. <sup>reflexes</sup> Deep absent.

Circulatory and other systems present no abnormality.

Sphincters paralysed for a few days after admission: then regained their tone.

Amenorrhoea present.

Subsequent History of case. In January patient was much improved. Nutrition better. Could feed herself, although awkwardly. Grip fair. Some keratosis of hands, with marked hyperidrosis. Legs still tender and wasted. No power. Occasional pain in feet at night. Desquamation of blackish skin from abdomen and thighs. Trace of albumen in urine. ? leucorrhoea. In March can knit: legs in statu quo. In June, when I left the Infirmary the menses had returned. The tone of the leg muscles was much improved - the patient could stand alone. Sensation improved, but still below normal. Knee-jerks absent.

Treatment. Rest in bed.

Massage to legs.

Strychnine.

Diagnosis. Arsenical neuritis.

Prognosis. Good as to ultimate recovery, although return of full muscular power may be slow.

C A S E XII.

B. M. Aet. 32. (m). F. Admitted 8/11/00.

History. Employed as a charwoman in different taverns in Salford. Got beer in them all. Illness began six months before admission with vomiting - no diarrhoea - no running at the eyes. Later pins and needles and pain in feet with some difficulty in walking, and later complete paralysis of legs, which improved by degrees.

Examination.

General appearance. Patient can walk. Is fairly well nourished but extremely dark. No eye symptoms. "Steppage" gait. Tongue coated.

Nervous system.

Motor symptoms. Paresis of leg muscles. No marked wasting. Some foot-drop. Hands useless - small muscles much atrophied - cannot feed herself.

Sensory symptoms.

Hyperaesthesia. Intense tenderness on pressure in calves - insteps painful to touch. Neuralgic pains in legs and feet, worse at night.

Anaesthesia. Absent.

Paraesthesia. Pins and needles in toes and fingers. Feet very numb, feels as if walking on wool.

Cutaneous phenomena.

Pigmentation. Intense - generalized - with (face affected with) fine branny desquamation. *face affected.*

Keratosis. Of soles.

Hyperidrosis. Of toes and palms.

Rashes. )  
          ) Not noted.  
Oedema. )

Reflexes. Knee-jerks not obtained. Plantars present.

Heart - Presystolic bruit at apex. Pulse regular. Lungs -  
Nil.

Other systems. Nil abnormal.

Subsequent History. Pains got less - patient improved - in a few weeks could use her hands and feed herself. Discharged improved 1/12/00. Murmur gone. Walking well. Knee-jerks still absent.

Diagnosis. Patient was probably suffering from her second attack of peripheral neuritis, the first "alcoholic" in origin - the second and the more severe being probably "arsenical".

Prognosis. Good, as to ultimate recovery; owing to the age (32) of the patient and the moderate severity of the attack.

Treatment. Rest in bed.  
Massage to legs.  
Strupchnine.

C A S E XIII.

A. F. Aet. 40. F. (m). Admitted 9/11/00.

History. Had been drinking beer in excess for years, (friends' history) "fourpenny." Illness began six weeks ago with loss of power in legs. Has had pins and needles in feet and hands for "five years off and on." No vomiting, diarrhoea or running of eyes.

Examination.

I. General appearance. Patient looks like a chronic drinker - eyes wild and staring. Skin very dark. Nothing else of note.

II. Nervous system.

A. Motor symptoms. General nutrition very poor - legs and arms extremely wasted. No power to move limbs. Complete double wrist and foot-drop. Cannot feed herself or hold any object.

B. Sensory symptoms. Pain on pressure over calf muscles. Not very acute. Sensation to touch, pain etc., could not be satisfactorily tested owing to the mental condition of the patient. Sharp stimulus with a pin however, applied to soles of feet and skin of legs, elicited no response. No hyperaesthesia of skin. No neuralgic pains.

C. Cutaneous phenomena.

Pigmentation. Patient is a dark-haired woman. The skin is the colour seen in the mulatto, except the face, which is copper-red. There is much increase in the usual seats of pigmentation, the skin in the axillae, groins, etc., being almost black. There is patchy desquamation of this black skin, leaving a "stippled" appearance.

Keratosis. Marked - in both feet and hands.

Hyperidrosis. Present in both feet and hands.

Erythromelalgia. Outside of feet, heels, toes red. Fingers and palms also affected.

Oedema.)  
          )  
Rashes.)     None.

D. Reflexes.   Knee-jerks absent: - superficial reflexes present.

E. Circulatory and Respiratory systems.   Nil abnormal.

F. Genito-urinary system.   Amenorrhoea began soon after admission.

Urine.   No albumen: passed involuntarily.

G. Mental Condition.   The patient appeared quite intelligent on admission and it was only on getting into conversation with her that one found she was quite demented. She had no idea of time or place - stated that she went out every morning for a "glass".

Gastro-intestinal system.   Appetite good.   No sickness. Defaecation involuntary.   Stools very loose and offensive.

Subsequent History.   Patient seemed to get gradually worse for some months.   There was progressive wasting of extremities, face and body.   She lay like a log, taking no notice of anyone but answering when spoken to.   Imagined that she had a baby in the bed with her.   Keratosis of feet ceased in a month or so.   The sensory and motor symptoms remained as on admission.   Gradually contractures developed in both knee joints and to a less degree in the hips.   In May slight improvement was perceptible - contractures began to disappear - and patient could move legs - she also began to read magazines etc., which she could hold in her hands, and to feed herself.   The mental condition improved.   Menses returned a little later.   When last seen the patient's condition seemed to allow of a hopeful prognosis.

Diagnosis.   Arsenical peripheral neuritis, added to chronic alcoholism.

Treatment. Acute decubitus in the sacral region necessitated  
a water-bed.

Absolute rest.

Strychnine.

Massage.

C A S E XIV.

M. H. (F). Aet. 31.(m) Admitted. 12/11/00.

History. Diarrhoea but no vomiting some weeks ago accompanied by running at eyes and nose. Afterwards loss of power in legs came on gradually. Beer-drinker - not to excess.

Examination.

General appearance. The discolouration of the skin and the loss of power in the legs are the most noticeable features on inspection of the patient. There is some dyspnoea.

Eyes running.

Nervous system.

Motor symptoms. Patient lies helpless in bed, cannot ~~use~~ move legs - calf-muscles wasted and flabby. Complete double foot-drop. Grip of both hands feeble. Muscles of hands atrophied. Marked wrist-drop. Patient cannot tie or untie strings or pick up a pin or feed herself. Sphincters normal.

Sensory symptoms. Tenderness on pressure over calves. Intense neuralgic pain in feet and legs, worse at night. Anaesthesia of legs and soles. Hyperaesthesia of toes.

Cutaneous symptoms.

Pigmentation. Skin dark - much discolouration in regions of normal pigmentation - and also round nipples - on front of chest and on abdominal wall, where desquamation is proceeding.

Keratosis. )  
                  ) Absent.  
Hyperidrosis.)

Erythromelalgia. Redness and swelling of metacarpo-phalangeal joints of both great toe with shininess of the skin and much pain and tenderness.

Oedema. Of legs - symmetrical. (cardiac).



Reflexes. Knee-jerks absent.

Circulatory system. Signs of cardiac dilatation with dyspnoea and irregular pulse.

Respiratory system. Some bronchial catarrh.

Genito-urinary system. Urine sp. gr. 1015: some albumen: no casts.

Gastro-intestinal system. No vomiting: appetite poor. Constipation on admission. Later diarrhoea.

Subsequent History of case. With digitalis and rest the cardiac condition improved but there was no amelioration of the nervous symptoms and the patient took her discharge four weeks after admission.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Guarded, owing to the implication of the cardiac muscle. Patient may die from sudden or gradual heart failure. On the other hand youth is in her favour.

Treatment. Carbonate of ammonia and Digitalis.

Ether. (for dyspnoea).

Injec: strychnine hypodermic: 1m 100. mv. s.o.s.

Morphia for pain.

Tinct. Iodine for affected joints.

## C A S E XV.

A. P. Aet. 34. (F.). (m) Admitted 14/11/00.

History. Diarrhoea but no vomiting with some running at the eyes and intense neuralgic headache began about nine weeks ago. These symptoms were followed by pains in legs, arms and feet and later by gradual loss of power in extremities. Patient was a moderate beer-drinker.

### Examination.

General appearance. Patient lies in bed in dorsal decubitus, unable to move hand or foot. She has a fairly healthy appearance. There is considerable serous discharge from the eyes - the conjunctivas are inflamed. Voice very husky - there is slight deafness - no paresis of ocular muscles. Pupils  $1/3$  dilated: react to light and convergence. Intelligence unimpaired.

### Nervous system.

Motor symptoms. Complete paralysis of the muscles of legs and forearms with much wasting, especially of latter. Paresis of extensors of toes with inability to flex the foot but only slight foot-drop. No wrist-drop. Atrophy of small muscles of hands with inability to feed herself. No wasting of trunk. <sup>muscles or paralysis of sphincters.</sup> ~~Muscular paralysis of sphincters.~~

Sensory symptoms. Pain and tenderness in calves and over dorsa of feet. Intense neuralgic pain and tenderness in muscles of forearms. Pins and needles in fingers and toes with numbness and a feeling of weight in the feet. Sensa-<sup>n</sup>~~tive~~ to touch and pain diminished in legs. Complete anaesthesia in soles of feet - also analgesia - scraping the soles with a knife to remove the skin eliciting no response. Localization of touch perverted. Neuralgic headaches constant. Occasional shooting pains in epigastrium.

## Cutaneous Phenomena.

Pigmentation. Intense brownish black discolouration of skin at the sides of the neck, in the axillae, in flexures of the thighs and in the popliteal spaces. Brown scaly patches present around the nipples and on the chest-wall and around the umbilicus - in which regions desquamation is commencing.

Rashes. )  
              ) Absent.  
Oedema. )

Keratosis. Very marked on soles.

Hyperidrosis. Of toes and palms.

Erythromelalgia. In both great toe joints

Reflexes. Knee-jerks exaggerated on admission, on right side: absent on left side. Three days after admission both absent. Plantar reflexes absent.

Circulatory and Respiratory systems. Normal.

Genito-urinary system. Amenorrhoea while in hospital.  
Urine nil abnormal.

Gastro-intestinal system. No diarrhoea or vomiting since admission.

Subsequent History of case. Intense pain in legs and arms more especially in the latter, kept the patient awake at night for several weeks after admission. These gradually subsided and towards the end of December had quite disappeared. As the pain subsided sensation in the feet returned. At the beginning of January the patient could walk with assistance and could use her hands - Profuse, fine branny desquamation of the trunk and limbs began some weeks after admission and continued till discharge.  
January 11th 1901 the patient was discharged. She was then walking well - was free of pain; the knee jerks were still

absent; sensation had returned to the feet, where keratosis had disappeared.

Diagnosis. Pure arsenical neuritis.

Prognosis. Good from outset, owing to youth and good constitution of the patient.

Treatment. Rest in bed.

Bromides in early stages.

Iron and Strychnine later.

Opium for pain.

Aperients.

## Case XVI.

E.W.(S.) F. Admitted 14 xi.01.

Drank "fourpenny" beer.

History. Four months previous to admission patient noticed that she was getting gradually much darker in colour. Some weeks later she began to peel": this was so extensive "that the bed was full of skin". There had been no diarrhoea or vomiting. Some time before admission she had pains in her feet but no loss of power, and a "rash" on her face.

The immediate reason for coming to the Hospital was "cough and spit".

### Examination.

A. General appearance. Patient poorly nourished, skin very dark. Nothing else of importance noted. Eyes running.

Gait: a tendency to ataxia.

B. Motor symptoms. Patient could walk and use her hands but the muscles of legs and arms were very much wasted and flabby. Small muscles of hands wasted. Grip poor and ~~me~~co-ordination of hands. No wrist or foot drop but complaint of "weakness all over".

C. Sensory Symptoms. Pain on pressure over calves, no subjective symptoms on admission, but a week later had intense neuralgic pains in legs and feet, needing morphia.

Sensation diminished in legs to pain and touch.

D. Cutaneous Phenomena. Patient very dark all over body with patches of localized deep pigmentation. Face reddish all over with profuse powdery desquamation. There was also free desquamation over whole trunk, legs and abdomen.

Keratoses. Absent

Erytheromelalgia. Absent

Rashes. Giant urticaria of both eyelids appeared shortly after admission, subsided under treatment.

Oedema. None.

Reflexes. Knee-jerks obtained on both sides on admission.  
Disappeared a few weeks later.

Respiratory system. Signs of a cavity at L. apex. No evidence of active mischief.

Circulatory system nil

Other systems nil abnormal, except that amenorrhoea had been present for some time before admission.

Subsequent history. Began to improve shortly after admission. Gait normal. Cough disappeared. On discharge (7. II.01) patient seemed much better. Sensation had returned, except for slight numbness in fingers. Knee-jerks still absent.

Treatment. Rest.

Liberal diet.

Strychnine.

## Case XVII.

E. M. (m.) aet: 35. F. Admitted 16.xi.00.

History. Patient has "been paralysed on left side" since infancy. Had been drinking beer for a year, but not in excess. Loss of power in right side came on 5 months ago. No history of other symptoms obtained.

### Examination.

1. General appearance. Patient dull and stupid-looking. Face copper-red. Tongue "silvery". Right pupil more dilated than left. Both react. No paresis of ocular muscles. No conjunctivitis. Patient almost stone-deaf. Voice hoarse.

### 2. Nervous system

A. Motor symptoms. Left arm and leg paralysed. Muscles atrophied. Friends state that before illness came on patient could walk well, but was slightly lame. L. forearm and arm rather more wasted than right. Hand "clamed"<sup>?</sup>, swollen and discoloured, fingers contracted. Left arm and leg much colder than right and foot and hand bluish in colour.

Muscles of R. calf soft and flabby and much atrophied. Complete foot-drop on both sides but less noticeable on L. side owing to slight rigidity of L. ankle. Wrist-drop of R. hand with wasting of the small muscles. General nutrition poor.

B. Sensory Symptoms. Shooting pains in legs and arms, especially right. Worse at night. No marked hyperaesthesia of hands and feet. Sensation diminished to touch and pain on both sides, but an accurate note impossible owing to the mental condition of the patient.

### 3. Cutaneous phenomena.

a. Pigmentation. Present at sides of neck, axillae, on chest and abdomen, insides of thighs and on legs. Mahogany brown colour. No active desquamation but skin could be removed by

application of turpentine. The face was of the reddish-brown colour so often seen in these cases and there was fine powdery desquamation.

Keratosis of both soles.

Hyperidrosis of palms, fingers and soles.

Erytheromelalgia. No affection of joints, but palms scarlet and soles also after desquamation of skin.

Oedema nil

Superficial ulcers on both skin over tibiae.

Nails dark brown in colour, thickened.

4. Reflexes. Knee jerks absent on both sides. Corneal reflexes present.
5. Respiratory system nil
6. Circulatory " "
7. Genito-urinary " . Urine normal. Amenorrhoea.

Mental condition. Patient very dull and stupid, to some extent the extreme deafness may be answerable for this.

Treatment Strychnine

Massage

Rest

Liberal diet.

Subsequent history of case. Use of hands returned gradually.

26.i.01. Patient could feed herself. Deafness much less. Palms still very red. Distal ends of nails pigmented, new nails normal. Desquamation going on over pigmented areas. Patient cannot stand but the muscles of R. leg are improved in tone. Hoarseness of voice quite gone. Still absence of sensation in legs. A month later menses returned. R. leg and arm much improved. L. arm can be used. L. leg quite powerless owing to the foot being ankylosed in the position of complete talipes equinus. The foot very blue and swollen. The patient was thus quite unable to get about. A few weeks later she took her discharge.

Diagnosis. Arsenical peripheral neuritis complicated by pressure



of an old infantile hemiplegia, probably due to ~~p~~oroncephalus.

Prognosis. The neuritis in combination with this old lesion undoubtedly much increases the gravity of the ultimate prognosis with regard to the usefulness of the limbs of L. side.

Case XVIII.

S. H. (W.) Aet: 28. Adm. 18.xi.00

History. Friends state that patient had been a "tippler" for a few years. Drank beer as a rule. Present illness began four weeks ago with gradual loss of power in limbs. No history of gastric disorder.

Examination.

General appearance. Patient very ill on admission, extremely amaciated and quite helpless. Does not look like a chronic alcoholic. No rash or conjunctivitis. Temperature 101.4°F. Patient dull and slow at answering questions. Tongue "silvery".

Nervous system.

Motor symptoms. Arms and legs wasted and useless. Foot and wrist drop double and complete. Grip very poor. Has to feed, occasionally forcibly. General nutrition of body defective. Paralysis of sphincters of bladder and rectum.

Sensory Symptoms. Some tenderness on pressure over large nerve-trunks in arms and legs. Partial anaesthesia to pain and touch in legs and feet. No hyperaesthesia of skin.

Reflexes. Plantars sluggish. Knee jerks not obtained.

Cutaneous phenomena. "Plaques" of pigment on front of chest, especially round nipples. Also on abdominal wall, where desquamation has begun, and the skin-surface has a stippled appearance. The normal seats of deep pigment are darker than usual as are sides of neck and popliteal spaces. There is also some pigmentation, with desquamation on fronts of legs and the general skin surface is brownish yellow.

Keratosis of soles very marked; none of palms.

Hyperidrosis absent

Erytheromelalgia absent

Oedema absent

Rashes absent.

Circulatory system. Heart sounds very feeble, with weak first sound at apex, no bruit.

Respiratory system, nil abnormal.

Genito-urinary " Urine nil abnormal. Did not menstruate while in hospital.

Mental<sup>Con</sup>dition. Patient dull and apathetic on admission, does not know where she is or when she came; answers simple questions as to her health etc, rationally. Was very restless and excitable for some hours after admission.

Subsequent history of case. Patient went rapidly down-hill and became progressively more emaciated till at death, one month after admission, she was a complete skeleton. Pyrexia continued during illness. Temperature 104°F. at death. Continuous diarrhoea for a week previous to death, which was due to cardiac failure.

Diagnosis. Arsenical poisoning, probably fatal from previous habits of patient.

Treatment. Rest in bed

Abundant fluid diet.

Stimulants (whiskey)

Digitalis and Strychnine.

Case XIX.

M. H. aet: 55. Adm: 21.xi.00.

History. Illness began six weeks ago with vomiting and "running at the eyes"; was constipated. Swelling of the legs at the same time. Drank whiskey chiefly, lately "fourpenny" beer. Three months ago noticed that the skin was getting dark and that limbs were becoming weak.

Examination.

General appearance. Patient dyspnoëic on admission. Could walk a little. Looks ill. Skin dark. Tongue "silvery". Some conjunctivitis. Face puffy.

Nervous system.

Motor symptoms. Patient can walk, but badly, stumbles and lifts feet high. Some wasting of calf muscles. Slight foot drop. Upper extremities normal. Some incoordination of feet, cannot stand with them close together and eyes shut. General nutrition fair. Sphincters intact.

Sensory symptoms. Pain and tenderness in calves. Some pain in feet. "Pins and needles" and sensation of numbness in feet and hands, "ground feels like wool" under the feet. Sensation to touch and pain normal.

Cutaneous phenomena.

Pigmentation. Skin very dark all over, especially at seats of normal pigment, and patches of dark skin peeling off the front of chest and abdomen and legs. Desquamation had evidently been going on for some time.

Keratosis absent

Hyperidrosis of toes present.

Oedema of legs present (cardiac)

Rashes small superficial ulcers on legs.

Erythromelalgia absent.

Circulatory system. Cor irregular, mitral systolic bruit at apex conducted laterally. (No history of rheumatism)

Respiratory system. Some bronchial catarrh.

Genito-urinary " Urine 1012 acid: cloud of albumen on beating.

Subsequent history. Patient discharged in three weeks "improved" because heart became regular. Murmur still heard. Oedema disappeared. Motor symptoms improved.

Diagnosis. Arsenical poisoning, chiefly affecting the cutaneous and circulatory systems.

Treatment. Carbonate of ammonia and digitalis.

Rest in bed.

Purgatives (Jalap)

Sulphuric ether (internally) for breathing.

Case XX.

S. S. aet. 39. Admitted 21.xi.00.

History. Illness began with pains in feet followed by gradually increasing loss of power in the legs, of one month's duration. Previous to this there had been some running at the eyes but no gastric disturbances or headache.

Patient is a moderate beer-drinker.

Examination.

General appearance. The face looks red and blotched and the eyes are running. There is slight deafness. Complete paraplegia. Patient cannot move the legs. Pupils react to light and convergence.

Nervous system.

Motor symptoms. Complete loss of power in the lower extremities with some wasting of the calf muscles. There is foot-drop, but it is not complete. The small muscles of the hands are <sup>wasted</sup> ~~dropped~~ and the patient cannot feed herself. The sphincters are normal.

Sensory symptoms. Neuralgic pains in feet and legs, worse at night. Tenderness on pressure over calves.

"Pins and needles" in feet and fingers.

No anaesthesia noted.

Cutaneous symptoms.

Pigmentation. Generalised darkening of the skin with fine branny desquamation. Face also dark with patches of leucoderma on cheeks.

Keratoses of feet slight

Hyperidrosis of toes and palms of hands.

Erythromelalgia absent

Rashes. Pemphigoid eruption on legs.

Oedema nil

Reflexes. Knee jerks absent. Plantars present.

Circulatory and other systems normal.

Subsequent history of case. Ten days after admission patient could feed herself and could walk with assistance. A week later gait much improved. Knee jerks still absent. Pain in legs gone. Discharged 7.xii.01.

Diagnosis. Aesenical peripheral neuritis, slight case.

Prognosis. of ultimate recovery good, owing both to the mildness of the attack and the comparative youth of the patient.

Treatment. Rest

Good food

Strychnine

Massage.

Case XXI.

R. S. (S.) Aet: 47. Admitted 21.xi.00.

History. Patient lived as a servant in a tavern in Salford. Did not drink beer to excess; allowance two pints daily. Noticed that the skin had been getting darker for some time. No gastric disturbances. Came to hospital because pain and weakness in the legs prevented her from doing her work. Had rheumatic fever some years ago.

Examination.

General appearance. Patient can walk, but with difficulty. Eyes discharging. Tongue silvery. Appears well nourished.

Nervous system.

Motor symptoms. Some paresis of leg muscles, walks badly, putting down heels first first and letting weight go on outer border of foot (due to pain in great toe joint and front of foot) Romberg's <sup>sign</sup> present. Some inco-ordination of hands. Arm and hand muscles normal. Grip good. No foot or wrist drop. Sphincters normal.

Sensory symptoms. Pain and tenderness in calf muscles; also in great toe joints and front of feet. Anæsthesia to light touch and to pain in front of legs, can localize firm pressure.

Cutaneous phenomena.

Pigmentation. Generalized brown discoloration of skin. No desquamation noted.

Rashes. A pustular eruption on face and forehead. No other cutaneous phenomena.

Reflexes. Knee jerks absent.

Circulatory system. Loud blowing systolic bruit at apex, conducted into axillæ (chronic endocarditis) No signs of deficient compensation.

Respiratory system. normal.



Genito-urinary system. Urine gives a cloud of albumen on beating  
Gastro-intestinal system. Obstinate constipation, no vomiting  
or anorexia.

Subsequent history. Patient discharged in three weeks "much  
improved".

Diagnosis. Arsenical peripheral neuritis, with probably an al-  
coholic basis.

Prognosis. Immediate prognosis good.

Remote. If patient continues drinking the chronic endocarditis  
will render this less good than it would otherwise have been.

Treatment. Strychnine and digitalis.

Rest

Massage.

Case XXII.

C. H. F. Aet: 55. Admitted 21.xi.00.

History. Illness began with intense pain in the feet and legs and some "running at the eyes" six weeks ago. Simultaneously the skin of the entire body peeled off in large flakes and then for the first time patient noticed that her skin had become very dark. She "was as fair as a lily" before.

No rheumatic history (vide note on heart). Beer-drinker.

Examination.

General appearance. Patient very dark skinned, face puffy, eyes watery, looks like a chronic alcoholic. Cannot stand. Tongue silvery. General nutrition poor.

Nervous system.

Motor symptoms. Patient has no power in legs. Gastrocnemii much wasted. Partial double foot-drop. Hands ~~not~~ abnormal, except some weakness of grip of both sides.

Sensory symptoms. Intense pain in calves, which are hyperaesthetic on handling, neuralgic pain in feet, worse at night. Tactile sensation absent in legs and soles. Sensation to pain present but response to the stimulus of a pin-prick is slow. She feels the prick but cannot describe the instrument.

Cutaneous phenomena.

Pigmentation. Remains of excessive brown pigmentation on chest and abdomen, white patches of normal skin alternating with dark discoloration simulate leucoderma. Some branny desquamation of trunk.

Keratosis	}	absent
Hyperidrosis		

Oedema of legs present.

Rashes. Pustular rash, rather scanty, on back and front of chest, (has been there for a week or more) Now dying off.

Reflexes. Knee jerks absent.

Circulatory system. Cor irregular. Loud systolic bruit at apex, heard to left and conducted to angle of scapula behind.

Respiratory system normal.

Gastro-intestinal system . Appetite fair. Patient obstinately constipated.

Genito-urinary system. No albumenuria.

Subsequent history. Patient did not improve much while in hospital. Took her discharge on December 3rd "in statu quo".

Diagnosis. The appearance of the patient suggested some alcoholic element in the case, probably the simultaneous action of the two poisons produced the symptoms common to both. The arsenical element in the case is however indisputable as instanced by the cutaneous symptoms.

Prognosis. The cardiac condition would lead to a guarded prognosis being given.

Treatment. Sedatives for pain.

Aperients

Rest in bed.

### Case XXIII.

M. D. F. Aet: 42. (W.) Admitted 25.xii.00.

History. Drinks two glasses of beer daily, has done so for years. Some weeks ago eyes were running and inflamed. No gastric disturbances. <sup>The eye symptoms were</sup> (followed by pain in legs and feet. Two weeks ago loss of power came on suddenly in legs, fell on going upstairs and could not rise again. Had pricking sensation in feet and fingers.

#### Examination.

General appearance. Patient looks well nourished. Face deep copper colour. Some conjunctivitis. Seems stupid and slow at answering questions; deaf. Lies helpless in bed. Tongue "silvery".

#### Nervous system.

Motor symptoms. Complete paralysis of lower extremities, (~~leg muscles~~ <sup>of leg muscles</sup>) but not much wasting (apparent). Slight foot drop. Hand muscles somewhat atrophied. Wrist drop double and complete, cannot use hands. Paralysis of sphincters.

Sensory symptoms. Tenderness on pressure in calves. No neuralgic pains. Anaesthesia to light touch and pin prick in skin over tibiae and in soles, and in fingers.

Polyaesthesia noted in legs. Pins and needles in fingers and toes.

Reflexes. Knee jerks absent.

#### Cutaneous phenomena.

Pigmentation generalized and extreme. Large deposit in axillae, groins, popliteal spaces and over knees, and chest and abdomen. Face coppery red colour. Much fine branny desquamation over face, chest and abdomen.

Keratosis of feet marked (soles and between toes)

Hyperidrosis of toes and fingers.

Erythromelalgia not noted.

No rash, no Oedema.

Nails normal.

Genito-urinary system. Urine = trace albumen.

Circulatory and other systems normal.

Mental condition. Patient was dull and apathetic on admission, improved considerably in a few days.

Subsequent History of case.

9.xii.00. Can now walk very badly. Requires a wide base and has characteristic steppage gait". Feels as if walking on wool. No incontinence. Skin still dark.

15.I.01. Erythromelalgia of palms developed with oedema of backs of hands, especially the left. Face still "peeling", still keratosis of soles.

17.I.01. Patient complains of loss of memory for recent events Neuralgic pains in feet. Hyperidrosis of hands very marked, fingers dripping with sweat.

3.ii.01. Discharged at own request, "improved".

Diagnosis. Pure arsenical neuritis.

Prognosis. As to ultimate recovery good.

Treatment. Tincture of perchloride of iron m.xx. every 4 hours

Pil: Morph: gr.33. o. u. for the pain.

Massage to legs.

Case XXIV.

E. H. Aet: 39. F. (m.) Admitted 29.xi.00.

History. Had diarrhoea and vomiting some weeks before admission with running from the eyes. Intense pain in legs and feet 3 weeks ago with some oedema, followed by loss of power.

Drank "sixpenny" beer.

Examination.

General appearance. Patient very ill on admission. Was very dyspnoeic and unable to move the legs or stand. Some tremors of hands, no eye symptoms.

Motor symptoms. Complete paraplegia. Leg muscles wasted. Double foot-drop. Forearm muscles wasted, wrist drop complete. Small muscles of hands wasted. Hands useless for holding objects, and cannot co-ordinate. Sphincters intact.

Sensory symptoms. Intense neuralgic pains in legs and feet, worse at night. Marked hyperaesthesia over insteps. Anaesthesia of soles and anterior tibial region to touch and pain. "Pins and needles" in soles with feeling of numbness in feet and fingers.

Cutaneous symptoms. Some localized pigmentation in the usual sites with incipient desquamation.

Keratosis not noted.

Hyperidrosis of hands and toes.

Erytheromelalgia. Intense redness of outer sides of feet and palms of hands. Joints not affected.

Oedema of legs (cardiac)

Rashes absent.

Reflexes. Knee jerks not obtained. Other reflexes not noted.

Circulatory system. Considerable cardiac dilatation on admission with urgent dyspnoea.

Pulmonary system. Some rhonchi at bases.

Genito-urinary systems. Urine Sp. gr. 1010. trace albumen.

Other systems nil abnormal.

Subsequent History. The patient gradually improved: the heart returned to its normal condition. By degrees she could stand alone and then walk badly. Pain decreased. Was discharged "improved" 20.xii.00. A few weeks later was admitted to the lunatic wards with slight delirium tremens. Discharged "cured" in fourteen days.

Diagnosis. Probably a "mixed" case, as shewn by the history of chronic drinking and the subsequent mental condition.

Prognosis. Good, of ultimate recovery from arsenical neuritis.

Treatment. Ether (for dyspnoea)

Strychnine.

Massage.

Rest.

Case XXV.

E. L. Aet.: (m.) F. Admitted 28.xi.00.

History. Illness began with diarrhoea and vomiting three weeks ago, followed by intense pain in the legs and feet and a feeling of tiredness. Drank "fourpenny" beer, not to excess.

Examination.

General appearance. Patient fairly nourished. Could walk. No eye symptoms. Tongue silvery. Does not look like an alcoholic.

Nervous system.

Motor symptoms. Patient walks with a somewhat ataxic gait, requires a wide base. No obvious wasting of leg muscles. Very slight double foot drop. Forearm and hand muscles normal. Sphincters intact.

Sensory symptoms. No neuralgia. Tenderness on pressure in calves. Pins and needles and numbness in hands and feet. Tactile anaesthesia and analgesia in legs and soles.

Reflexes. Knee jerks absent.

Cutaneous phenomena.

Erytheromelalgia. Great toe joints intensely painful, red and swollen. Joints of little toes affected to a lesser degree. Outer border of foot bright scarlet.

Hyperidrosis of toes present. No other cutaneous symptoms.

Other systems present no abnormality.

Patient discharged walking well, all other symptoms cured 10.I.01.

Diagnosis. Slight attack of arsenical neuritis.

Treatment. <sup>Salicylate.</sup> Salicyphate of Soda. gr. ~~XX~~ t. d. s

Tinct: Iod: for toes.

Rest.



## Case XXVI.

A. K. (F.) Aet: 45. Admitted 1.xii.00.

History. Six weeks ago illness began with vomiting and purging; this was followed by pain in feet especially at night and "pins and needles" in fingers and toes. Three weeks ago began to feel legs getting weak: their loss of power was progressive until patient could not stand. Drinks beer, but not to excess.

### Examination.

General appearance. Patient a fair complexioned woman of moderately good nutrition. Lower extremities powerless. Tongue silvery. Eyes normal. Temperature 99° F.

### Nervous system.

Motor symptoms. Lower extremities paraplegic. Calf muscles wasted and flabby. Thigh muscles somewhat wasted. Foot drop double and complete. Hands useless. Thenar and hypothenar eminences and interossei much atrophied, moderate wrist drop. Sphincters paralysed.

Sensory symptoms. Tenderness on pressure in calves. Pins and needles in fingers. Insteps hyperaesthetic.

Anaesthesia of legs and soles to touch and pain. Location normal. The anaesthesia and analgesia of soles is so marked that scraping with a knife produces no sensation.

### Cutaneous phenomena.

Pigmentation. No pigmentation of face and body. Some brownish patches on inside of thighs and legs, with desquamation here and there.

Keratosis of soles marked.

Hyperidrosis of toes and fingers.

Erytheromelalgia absent

Oedema "

Rashes "

Circulatory and other systems present no abnormality except that there was some diarrhoea after admission.

Reflexes. Knee jerks absent; plantars absent.

Subsequent history of Case. By degrees power returned to the hands and patient could feed herself one month after admission. Two weeks after admission could stand and walk a little with assistance. Dragged the feet very much. Stated that the ground felt soft under foot. A few weeks later intense pain developed in feet and legs, required morphia at night.

26.I.01. The outer border of feet and little toes noticed to be bright scarlet in colour. Gait improving; hands better. Knee jerks absent.

22.ii.01. Discharged at own request "much improved".

Diagnosis. Arsenical peripheral neuritis.

Prognosis. As to ultimate recovery fair. Not so good as if patient were younger.

Treatment. Rest

Morphia

Strychnine.

Case XXVII.

S. R. Aet: 66 (F.) (W.) Admitted 3.xii.01.

History. Onset three weeks ago with vomiting and running at eyes, one week ago complete loss of power in legs developed suddenly. Drank "sixpenny" and "fourpenny" beer.

Examination. Patient cannot walk or stand. Skin dark. Tongue silvery. Some coryza. Face red and puffy.

Nervous system.

Motor symptoms. Calf muscles flabby and wasted. Legs paralysed. No foot drop. Grip of both hands feeble: some wrist drop. Small muscles of hands atrophied. Can use hands. Sphincters not affected. Slight tremor of hands.

Sensory symptoms. Pins and needles in fingers and toes. Feet feel numb and heavy. Neuralgic pains in toes, worse at night and in wet weather. No anaesthesia.

Cutaneous phenomena.

Pigmentation. Generalized of whole body, desquamation commencing on front of chest, sides of abdomen and legs. Also fine powdery desquamation of face.

Keratosis of soles present

Hyperidrosis of toes " "

Rashes

Erythromelalgia

Oedema

} absent

Cardiac and other systems normal.

Subsequent History. On Jan. 1st the patient could walk with assistance, grip still weak, pains better. Discharged "improved" 2.I.01.

Diagnosis. Arsenical peripheral neuritis.

Prognosis Good as to ultimate recovery.

Treatment. Morphia; Strychnine; Rest in bed; Massage to legs.

## Case XXVIII.

E. D. Aet: 36 (F.) (m.) Admitted 12.xii.00.

History. Has been drinking beer for some years. Illness began with vomiting and diarrhoea some months ago. Has had pains in the legs and feet for more than a month. Seven weeks ago noticed discoloration of the skin. Three weeks ago complete loss of power in legs.

### Examination.

General appearance. Patient quite helpless, cannot walk or stand or move the legs. Face copper red colour (very characteristic) Pupils react to light but not to convergence. (Lauder Brunton's sign)<sup>(14)</sup> Tongue silvery. Voice husky.

### Nervous system.

Motor symptoms. Lower extremities completely paralysed. calf muscles moderately wasted and flabby. Foot drop double and complete. Forearm muscles wasted: extensors of the wrist paralysed, small muscles of hand atrophied. Patient cannot hold an object such as a spoon and has to be fed. Sphincters intact. Muscles of trunk and thighs wasted.

Sensory symptoms. Intense neuralgic pains in legs, worse at night, requiring hypodermic injection of morphia. Tenderness over large nerve trunks in calves, and hyperaesthesia of insteps. Sensation to touch and pain in legs is dulled. A light touch is not felt and a pin prick is felt but causes no inconvenience "Pins and needles" in fingers present. Feet are said to feel numb and cold.

### Cutaneous phenomena.

Pigmentation. Face is a deep copper red and covered with fine desquamation. Sides of the neck, axillas, groins etc are deeply discoloured, round the nipples and round the abdominal wall are dirty brown scales, some of which were removed by

vigorous friction in the bath.

Keratosis of feet present.

Hyperidrosis of toes and palms.

No rash, or acrodynia, or oedema.

Reflexes. Knee jerks absent.

Circulatory system nil abnormal

Respiratory " A few suspicious crackles at both apices.

Genito-urinary " Cloud of albumen in urine. Amenorrhoea for some time previous to admission and since.

Gastro-intestinal system. Patient has nausea and vomiting, especially in the morning.

Mental condition. Patient stupid, slow at answering questions, no loss of memory.

Subsequent history of Case. 2.1.01. Still intense pain in the legs. Can walk a little with assistance. Still sick in the morning (no question of pregnancy) Neuralgic pains in head. A few days later could not walk at all or stand; pains in legs rather worse: face still copper red. Menstruation not returned. The neuralgic pains had periods of exacerbation and remission, some days they were absent, on others the agony was intense, requiring morphia. The right leg and thigh were most affected. Pigmentation by degrees disappeared, and the use returned to the hands.

In March 1901 definite signs of tuberculosis of lungs were noted. Fine moist crepitations at both bases and at L. apex, which did not disappear on coughing. Temperature in the evening raised one or more degrees. Muscles much more wasted. Still feels sick. About this time keratosis of the feet had disappeared and the soles were red and sweating. Sensation normal. Knee jerks absent.

When I saw the patient last (June 29, 1901) she was extremely

emaciated, there was generalised tuberculosis of both lungs, a very troublesome cough had been complained of for some weeks. There was still complete paraplegia; patient could use hands fairly well. Still amenorrhoea.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Bad. The case will probably end fatally owing to the pulmonary involvement.

Treatment. Rest.

Morphia. Bromides. Chloral.

Bismuth and Hydrocyanic acid.

Later, Strychnine.

Case XXIX.

M. K. (F.) Aet:38. Admitted 12.xii.00.

History. Rashes noticed on hands and arms some weeks before admission. No vomiting or diarrhoea. "Running at the eyes" for a week previous to admission. Loss of power in hands and arms and to a less degree in legs and feet came on suddenly two weeks before admission. Beer drinker: chiefly "fourpenny". No note of quantity.

Examination.

1. General appearance. Patient very well nourished. Face a bright copper red colour. Appears intelligent. Pupils nil abnormal. No paresis of ocular muscles. Tongue ~~nil~~.

2. Nervous system.

A. Motor symptoms. Some slight paresis of legs, but can walk a little alone. Gait unsteady. Leg and thigh muscles well developed, but slightly flabby. No apparent wasting. Some paresis of dorsi-flexors of ankles, especially on rt side. Complete paralysis of extensors of wrists. causing double wrist drop. Thenar and hypothenar eminences and interossei markedly wasted. No use in hands. Has to be fed.

B. Sensory symptoms. Pain on pressure of calves very slight. No hyperaesthesia of skin. Sensation of legs, feet and forearms diminished to touch and pain. "Pins and needles" and numbness in hands and feet. Occasional neuralgic pains in face and head.

C. Special senses nil abnormal.

3. Cutaneous symptoms. Face copper red, in a few days covered with a fine branny desquamation, easily removed. Patient dark complexioned. Great increase of pigment in axillae, groins, round nipples. Breast and abdominal wall covered with greenish grey scales, with here and there patches of normal skin showing through where desquamation has taken place. There is also pigmentation over both legs.

Keratosis of soles, and slightly of palms.

Hyperidrosis of feet and hands very marked, especially latter

Erytheromelalgia of hands and fingers well marked. Less so of feet. Hands being bright red on palmar surfaces, with fingers swollen and painful.

Reflexes. Knee jerks not obtained. Plantars sluggish. Superficial reflexes present

Respiratory system Nil abnormal

Circulatory " Nil abnormal

No abnormality detected in the other systems, except that for a few days after admission patient passed urine and faeces involuntarily.

Subsequent history of Case.

19.i.01. Hands more painful and dripping with sweat.

Still pains in head.

Pigmentation less, desquamation free

Eyes running.

5.ii.01. Patient can now feed herself with difficulty. Sensation returned to legs. Walks still with difficulty. Muscles of calves improving.

25.ii.01. Hands still red and painful with considerable wrist drop and hyperidrosis. Knee jerks absent.

13.iii.01. Discharged. Cured.

Treatment. Liq: Strychninae m.v 4tis honis.

Phenacetin

Massage.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Good. Age of patient and absence of complications are in her favour.



Case XXX.

M. G. Aet: 35 (F.) Admitted 2.xii.01.

Comes of respectable people. Drinking for some time.

History. Seven weeks ago patient began to feel weak on her legs and noticed that the power in her hands was less. She states that she has had no beer for four months, "as it did not agree with her lately". Instead of beer she drank rum. Next began to notice pains in legs and "pins and needles" in fingers and toes, and numbness in the feet. Also complained of a bad cough of some weeks' duration. Has been vomiting for some weeks in the morning. No diarrhoea, coryza or rash. Skin getting darker on chest and abdomen for some time.

Examination.

1. General appearance. Patient thin, could walk on admission but exhibited the typical steppage gait. Tongue nil. Eyes normal: no conjunctivitis. Intelligence good. Admission T. 101° F

2. Nervous system.

A. Motor Symptoms. Leg and forearm much wasted and flabby. Some slight weakness of dorsi-flexors of ankles but no marked foot drop. Grip poor. Some wasting of smaller muscles of hands. Cannot feed herself. Moderate wrist drop. General nutrition poor.

B. Sensory symptoms. Neuralgic pains in feet, worse at night. Pain on pressure over calves. Sensation to touch and pain much diminished in legs. Some anaesthesia of soles of feet.

C. Cutaneous phenomena.

a) Pigmentation. The patient appeared very dark skinned. She herself states that she has been getting darker lately. There is excessive deposit of pigment at sides of neck, round the nipples, in the axillae and groins, with dark scales desquamating from legs, breasts and abdomen and generalised fine, branny desquamation. (Had noticed "peeling" for some time)

Keratosis of feet very marked (Hyperkeratosis)

Erytheromelalgia. Palms and soles bright red.

Hyperidrosis of palms and feet.

Rashes absent.

Oedema "

Reflexes. Deep reflexes not obtained.

Respiratory system. On admission patient had signs of acute bronchial catarrh, accompanied by continuous moderate pyrenia. Signs disappeared in a week or two.

Circulatory system nil.

Genito-urinary system. Amenorrhoea for sometime previous to admission. Urine contained trace of albumen.

Gastro-intestinal system. Bowels constipated. No vomiting

Mental condition. Normal on admission

Subsequent history of Case. So far as neuritis was concerned the patient improved considerably after admission. Hands got much better and she was able to be up for a short time daily. About a month after admission however she presented unmistakable signs of pulmonary tuberculosis involving the whole of L. lung and from this time she became progressively thinner. Her mental condition, at first quite normal became impaired. She got excitable and restless and, threatening suicide, was removed to the lunatic pavilion. At the same time the gait improved. There was no pain and she could use her hands in the ordinary way.

A month later (15.ii.01.) she died from exhaustion, having gone steadily down hill since the pulmonary signs became acute. The autopsy revealed acute tuberculosis of both lungs, cirrhotic liver(early stage) congested spleen and kidneys and tuberculous peritonitis.

Diagnosis. Arsenical peripheral neuritis complicated by acute pulmonary and abdominal tuberculosis. The tuberculosis was probably latent and developed rapidly owing to the lessened resistance of the tissues, due to the arsenical poisoning. The mental condition, as the time of its onset indicates, was due to "phthisial mania".

Treatment. Rest.

Strychnine.

Massage.

Pulmonary symptoms treated as they arose.

Case XXXI.

C. D. Aet: (s.) F. Admitted 14.xii.00.

History. Illness began three weeks previous to admission with vomiting, (no diarrhoea) and neuralgic headaches, and subsequently intense pain in the legs and feet, and loss of power. No conjunctivitis. No rash. Patient is a beer drinker.

Examination. Patient a fairly well nourished, apparently healthy woman. She walks badly. Tongue "silvery".

Nervous system.

Motor symptoms. A good deal of paresis of leg muscles with some wasting. Foot drop is marked and double. Muscles of fore arms and hands unaffected. Patient walks with characteristic "steppage" gait. Muscles of trunk unaffected. Sphincters normal.

Sensory symptoms. Intense pain in legs and feet, worse at night. Tenderness on pressure in calves. Intense hyperaesthesia of insteps to touch. Slight diminution of tactile and "pain" sensations. Pins and needles in toes and fingers. Feet slightly numb.

Cutaneous phenomena.

Pigmentation absent.

Keratosis "

Hyperidrosis of toes present.

Oedema of ankles and legs.

Erytheromelalgia absent

Rashes absent.

Reflexes. Knee jerks absent. Plantars present.

Other systems normal.

Subsequent history. A week after admission the pain was much less and walking was improved.

January 11th, 1901 patient discharged "improved".

Diagnosis. ?Arsenical neuritis of a mild variety.

Prognosis. Good, of ultimate recovery.

Treatment. Massage

Rest

Strychnine

Opium.

Case XXXII.

M. B. Aet: 32 (F.) Admitted 14.xii.00.

History. Illness began six weeks ago with diarrhoea and vomiting: previous to this the patient had been quite well. Three weeks ago she noticed that her skin was becoming much darker. She then had some pains in her legs with numbness and pins and needles in hands and feet. She only began to drink beer a short time ago.

Examination.

General appearance. The patient is well nourished and healthy looking. No appearance of chronic alcoholism. There was some weakness of legs but she could walk with assistance. No coryza. Skin looks dark. Tongue "silvery".

Nervous system.

Motor symptoms. There was no marked wasting of the calf muscles, which were somewhat flabby. Some paresis of the extensors of the toes but foot drop was not complete. Patient walks with assistance but with a stamping gait, putting down the heels first. There is no marked wasting of the forearm muscles, but the small muscles of the hand are atrophied and the patient holds objects with difficulty and has trouble in feeding herself. There is also inco-ordination of the hands. The sphincters are intact. The general nutrition is good.

Sensory symptoms. Neuralgic pains in calves, which are tender on pressure. Pins and needles in feet and hands, with numbness of the feet. Sensation to touch and pain natural.

Cutaneous phenomena.

Pigmentation. Sides of neck, axillae, round nipples and flexures of groins and thighs very deeply pigmented.

Keratosis of soles present.

Hyperidrosis of toes and fingers.

Oedema nil

Rashes nil.

Erytheromelalgia. Intense pain in <sup>1st</sup> right metatarso-phalangeal joint, with red and glossy skin and some swelling. Other joints normal.

Reflexes. Knee jerks absent. Plantars sluggish. Superficial reflexes present.

Gastro-intestinal system. Appetite good. No diarrhoea or vomiting since admission. Bowels very constipated. Other systems normal.

Subsequent history of the case. A week after admission there was intense pain in the feet, requiring the administration of morphia. Except for this the patient improved rapidly, power in the legs returned and she could use her hands without awkwardness. Knee jerks did not return but pains in the feet gradually subsided and she was discharged "cured" 11.1.01.

Diagnosis. A mild case of arsenical poisoning with no alcoholic complications.

Prognosis. Good, owing to the youth and good health of the patient and the small quantity of beer consumed.

Treatment. Morphia for pain.

Strychnine.

Massage

Liberal diet.

Aperients.

Case XXXIII.

M. W. Aet: 38. m. F. Admitted 15.xii.00.

History. Patient was in the habit of drinking several pints of "fourpenny" beer daily. One week ago she began to feel that she was getting "weak in the legs". Three days ago she found that her body was covered with a rash. She had had no previous gastric disturbance and no conjunctivitis. No pain in the limbs but "pins and needles" in the hands and feet had been felt for some days.

Examination.

General appearance. Patient is a well nourished woman of dark complexion. She is covered from head to foot with a scarlet eruption. There is some redness of the conjunctiva. Tongue nil. Can walk badly.

Nervous system.

Motor symptoms. There is some slight paresis of the lower extremities, and the patient walks badly with a stamping gait. No foot or wrist drop. No apparent muscular atrophy. Very slight tenderness on pressure over calves. No loss of power in hands.

Sensory symptoms. Except for the "pins and needles" in the extremities and a feeling of numbness in the soles of the feet there were no sensory disturbances in this case.

Cutaneous phenomena. The most noticeable feature in this case was the generalized eruption which affected the face and body. The rash was bright red in colour, and papular in character, the papules being large and flat and separated from one another by a very small area of normal skin. The rash had rather the appearance of a papular syphilide. There was no itching. In less than a week the rash was completely gone, fading first



on the face and leaving some brownish staining behind.

Oedema. Three days after admission very marked oedema of both hands was noted, this disappeared in the course of a week.

There were no other cutaneous phenomena.

Circulatory and other systems presented nothing abnormal.

Subsequent history. The patient progressed well towards recovery and was discharged 12.i.01 "cured".

Treatment. At first rest in bed; when the rash faded - exercise  
During the last few weeks strychnine was given internally.

Diagnosis. Pure arsenical poisoning, with few nervous symptoms.

Prognosis good

Case XXXIV.

K. C. Aet: 58. F. (m.) Admitted 20.xii.00.

History. Drinking beer for years ("fourpenny") Illness began months ago with vomiting in the morning: this had persisted off and on till present time. Noticed that the eyes were running for some time. Three months ago began to have neuralgic pains in feet. Two weeks ago began to notice that the skin of body was getting much darker and that she was "peeling".

Examination. Patient can walk. Looks a typical alcoholic with puffy face and discharging eyes. Is well nourished and intelligent. Tongue silvery. Voice hoarse.

Nervous system.

Motor symptoms. Patient can walk but badly, stamps on the heels. No muscular wasting. No foot or wrist drop. Sphincters intact.

Sensory symptoms. Tenderness in calf muscles on pressure. Feet numb, also fingers. Some pain in legs and insteps, worse at night. Tactile sensation in legs and soles diminished. "Pins and needles" in toes and fingers with numbness in feet.

Cutaneous phenomena.

Pigmentation. Patches of dark brown skin round nipples, on anterior chest wall, on abdominal wall and in iliac fossae. There was also some dark skin in the extensor surfaces of the legs. In most of these patches desquamation was proceeding.

Keratosis of soles present: not of palms.

Hyperidrosis of toes present

No oedema or rashes or erytheromelalgia

Reflexes. Knee jerks not obtained.

Other systems present no abnormality.

Subsequent History of Case. Patient only remained in hospital for ten days, when she was discharged at her own request "improved".

Diagnosis. Slight attack of arsenical poisoning with probably some element of alcoholism.

Treatment. Rest.

Strychnine.

Case XXXV.

E. C. Aet: 40 F. Admitted 26.xii.00.

History. Illness began 3 weeks ago with coryza, followed by pains in legs and numbness in feet. No history of gastric disorder. Beer drinker.

Examination. Patient a well nourished woman with little apparent muscular wasting. Walks badly. Face red and rather puffy. Eyes red. No deafness. Tongue silvery.

Nervous system.

Motor symptoms. Paresis of leg muscles. No wasting. Double almost complete foot drop. No power in hands, wrists "dropped" slightly. No wasting of arm, fore-arm or hand muscles. No paralysis of sphincters.

Sensory symptoms. In this case disorders of sensation affected the hands particularly. There was intense pain in fingers and hands with complete anaesthesia of fingers (probably causing the pseudo paralysis, as there was no muscular wasting) Muscular sense in fingers entirely deficient, patient could not tell what an object was on touching it nor give any details re size, consistency. There was complete anaesthesia in legs, back and front to light touch or a pin prick; the same can be said of the feet except at the outer side and little toe.

Polyaesthesia of legs noted.

Ground feels "soft" on walking.

Pain and tenderness in the insteps.

Cutaneous phenomena.

Pigmentation. Face copper coloured and peeling. No brown discoloration noted elsewhere.

Keratosis. Marked of soles. Hyperkeratosis of palms, the skin being thick and leathery and coming off in large flakes.

Hyperidrosis. Very marked of toes, palms and fingers.

Erytheromelalgia. Toes bright scarlet on extensor surfaces, especially the little toes. Palmar surfaces of hands bright red finger joints red, shining, tender.

Oedema. Ankles oedematous.

Rashes absent

Nails much hypertrophied especially those of great toes and fingers, which were shed. Finger nails pigmented.

Reflexes. Knee jerks absent: Plantars not obtained.

Genito-urinary system. Amenorrhoea during residence in hospital. Previous to illness menstruation regular. Urine slight trace of albumen.

Circulatory and other systems normal

Subsequent history of case. The sensory phenomena which were the outstanding symptoms in this case persisted for several months with exacerbations and remissions. Sometimes the neuralgic pain in the hands became intense, at others it almost disappeared. As the motor symptoms shewed signs of improvement neuralgic pains in the feet became more frequent and morphia had to be resorted to. By degrees pain in hands disappeared entirely and patient regained use of them to some extent, although from the continued anaesthesia of the fingers this did not become perfect.

Four months after admission the gait had improved, pains in the hands and feet had subsided and patient left the hospital.

Diagnosis. Pure arsenical peripheral neuritis.

Prognosis. Fair as regards ultimate recovery, but normal sensation will probably be long in being restored.

Treatment. Rest  
Bromides } for pain.  
Morphia }

Later, strychnine.

Case XXXVI.

M. C. Aet: 37 (S.) Admitted 14.i.01.

History. Usually drank two pints of beer (4d) daily. Illness began three weeks ago with diarrhoea and vomiting. Then pains came on in the legs followed by gradual loss of power. A week ago first noticed that her skin was getting darker.

Examination. Patient a well nourished woman. Can walk badly. Tongue silvery. Eyes running with a serous discharge.

Nervous system.

Motor symptoms. Some paresis of leg muscles. No obvious wasting, walks with a stamping gait with feet wide apart. No in-co-ordination. Moderate foot drop. No paresis of hand muscles but tremors of hands noted. Sphincters normal.

Sensory symptoms. Slight pain in legs and feet. Some tenderness on pressure over calves. No anaesthesia. "Pins and needles" in toes.

Cutaneous phenomena.

Pigmentation. Skin at sides of neck, in axillar, groins and popliteal spaces darker than normal. Face copper colour, some branny desquamation on face and chest.

Keratosis of feet marked.

Hyperidrosis absent

Erytheromelalgia. Left great toe joint very red and inflamed.

Rashes absent

Oedema "

Circulatory and other systems present no abnormality.

Subsequent history of Case. Patient discharged Feb: 1st much improved. Walking well. Pain and swelling of great toe joint subsided.

Diagnosis. Mild attack of arsenical poisoning.

Prognosis. Excellent.

Treatment. Rest; strychnine; Tinct: Iod: for toe joint.

Case XXXVII.

E. S. (F.) Aet: 45. Admitted 14.xii.00.

History. Drank "fourpenny" beer daily. Two months ago vomiting began to occur in the mornings, later pains in hands and feet, with gradual loss of power.

Examination.

General appearance. Patient completely paralysed in both upper and lower extremities. Dull and stupid. Tongue silvery. No eye symptoms. Face copper-coloured. Skin dark.

Nervous system.

Motor symptoms. Complete paralysis of legs with great wasting of calf muscles. Marked foot drop (double) Thigh muscles flabby. Arms and fore-arms thin and wasted. Small muscles of hands wasted and paralysis of extensors of wrist, producing double wrist drop. Paralysis of sphincters. General nutrition poor.

Sensory symptoms. Pain not a marked feature in this case. Slight tenderness on pressure over the muscular masses of limbs. No neuralgic pains. Sensation diminished to touch and pain in legs and arms. Difficult to be accurate owing to mental condition of patient Special senses apparently intact.

Cutaneous symptoms. Face copper red. Skin very dark brown over entire body with patchy desquamation of brownish scales over chest, abdomen, legs and thighs.

Keratosis of feet (slight)

Erytheromelalgia of feet and hands. (palms and soles scarlet+)

Hyperidrosis of feet and hands (moderate)

Nails thickened and pigmented.

No oedema

Small superficial ulcers on extensor aspects of legs.

Reflexes deep absent. Superficial present.

Respiratory system. Signs of chronic bronchitis.

Circulatory system. Nil abnormal.

Mental condition. Dull and apathetic. No memory of time or place.

Other systems normal.

Subsequent history of Case. Patient remained in statu quo, until removed by her friends (5.ii.01). Did not menstruate during residence in hospital. ?Climacteric.

Diagnosis. Arsenical poisoning.

Prognosis. Poor for ultimate recovery, judging from the age of the patient and the want of progress during residence in hospital.

Treatment. Massage

Rest

Good food.

Strychnine.



Case XXXVIII.

M. A. P. (W.) F. aet: 48. Admitted 18.1.01.

History. Drinking beer for years, 2 pints daily. No vomiting or diarrhoea. Illness began with ~~ap~~pins and tingling in hands and feet, followed (six weeks before admission) by loss of power in legs.

Examination.

General appearance. Patient well nourished, eyes running. Face red and blotched. Intelligence much impaired. Tongue silvery. Pupils normal. T<sub>1</sub> normal

Nervous system.

Motor symptoms. No obvious wasting of legs and trunk, but calf muscles soft and flabby. The dorso-flexors of ankles completely paralysed, giving double foot drop and rendering patient powerless to stand or walk. Interossei and other small muscles of hands atrophied, double complete wrist drop, hands quite useless. Left leg contracted at the knee joint, held in semi-flexed position and cannot be extended. Fingers of both hands were contracted. Mammæ wasted. Other muscles in fair condition.

Sensory symptoms. Pain on pressure in calves.

Tenderness in hands and feet but no neuralgic pains. No headache. No sensation in legs or feet to light touch, and very little to pressure with a pointed instrument. "Pins and needles" in fingers and toes. No alteration in localizing power. Some delay in perception of impact.

Reflexes. Knee jerks absent: Plantars absent. Superficial reflexes present. Special senses not affected.

Cutaneous symptoms. Face covered with a copper red blush, with fine branny desquamation taking place. There is an actæiform rash over lower part of the face.

Pigmentation. Patches of black skin round mammae and umbilicus along inside of thighs and legs. Desquamating at parts.

Keratosis present on soles.

Hyperidrosis of soles and palms.

Nails of both fingers and toes much hypertrophied and pigmented at distal portions. New nails appearing below of natural colour.

Erytheromelalgia. Palms and soles bright red.

Circulatory and Respiratory systems nil abnormal.

Genito-urinary system. Amenorrhoea since admission. History of a "flooding" last November. ?abortion. Since then "seen nothing".

Other systems normal.

Subsequent history of Case. 21.ii.01 Sensation still absent in legs and feet. Both knees now contracted and calf muscles wasted. Contractures of fingers disappearing. Grip better but still poor. Feet still completely "dropped". Mental condition improved. There were very few subjective symptoms in this case, the intense neuralgic pains so often present being almost entirely absent.

The patient was practically in statu quo when I last saw her on June 29th except that she had to some extent regained the use of her hands and that she was quite intelligent.

Treatment. <sup>& q.</sup> Strychninee: m̄v. tabs

Massage for legs.

Diagnosis. Arsenical peripheral neuritis.

Prognosis. Fair as to ultimate recovery.



-:- T A B L E O F C A S E S -:-

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Case and date of admission	Age	Sex	Gastric & other early symptoms	Motor Symptoms	Sensory Symptoms	Cutaneous Symptoms	Complications	Reflexes	Diagnosis	Result with DATE of DISCHARGE or DEATH.
1. A. W. 18.VIII.00.	54	F.	Conjunctivitis.	Complete paraplegia. Wasting of calf & hand muscles double foot & wrist drop.	Neuralgic pains in legs & feet Anaesthesia & Paraesthesia in legs, fingers & toes.	Pigmentation (slight) Bullae on legs.	Albumenuria Incontinence of urine and foeces.	Knee-jerks absent.	Arsenical poisoning.	Improved.
2. E. S. 12.X. 00.	40.	F.	History of vomiting & running at the eyes.	Complete paralysis of legs & hands Marked wasting.	Neuralgic pains in legs & feet Anaesthesia.	Generalized pigmentation. Keratosis of soles: oedema of feet & legs. Hyperidrosis of soles & palms. Erythromelalgia. hands.	Amenorrhoea	Knee-jerks absent. Plantars sluggish.	do.	Much improved Discharged 3.II.01.
3. J. S. 15.X. 00.	48.	F.	Diarrhoea	Paraplegia foot drop Wasting Contractures of knees.	Pain intense Analgesia of legs & soles. ?Anaesthesia of legs & soles.	Keratosis of soles Hyperidrosis of soles. Erythromelalgia palms. Vesicular rash on legs.	Incontinence of urine and foeces. Dementia. Albumenuria.	do.	Mixed Case	Died. 17.I.01.
4. M. W. 18.X. 00.	54.	F.	Vomiting constipation conjunctivitis.	Paraplegia wasting of leg & arm muscles. Foot drop: wrist drop.	Anaesthesia	Intense generalized pigmentation. Desquamation. Hyperidrosis) per et Keratosis ) pal Vesicular rash on legs.	Incontinence. Dementia. occasional excitement. Bronchitis.	do.	Arsenical neuritis. 2Alcoholic element.	Improving.
5. F. S. 18.X. 00.	27.	F.	Vomiting diarrhoea deafness.	Paraplegia legs & arms wasted.	Intense pain in legs. Anaesthesia in legs. Analgesia in legs. Allochiria in legs. Polyaesthesia in legs.	Pigmentation. No Keratosis. Hyperidrosis of hands & toes. Small ulcers on legs.	Loss of memory Consolidation R. apex. Cor dilated (acute) Amenorrhoea	do.	Arsenical poisoning	Much improved on discharge 4.III.01.
6. M. H. 19.X. 00.	43.	F.	Vomiting diarrhoea	Paraplegia some wasting of legs: no use in hands	Tenderness in calves: no response to external stimuli.	Generalized pigmentation. Hyperidrosis. Acute decubitus.	Retention of urine: incontinence of foeces. Cystitis. Later Albuminuria. Dementia.	Knee-jerks absent. Plantars slow.	Mixed Case	Died comatose from chronic uroemia 29.XI.00.



CASE <i>and date of admission.</i>	AGE	SEX	GASTRIC & other EARLY SYMPTOMS	MOTOR SYMPTOMS	SENSORY SYMPTOMS	CUTANEOUS SYMPTOMS	COMPLICATIONS	REFLEXES	DIAGNOSIS	RESULT with DATE of DISCHARGE or DEATH.
7. R. R. 20. X. 00.	35	F.	Vomiting diarrhoea	Paraplegia: arms & hands powerless	Analgesia intense pain in legs & feet (later)	Marked generalized pigmentation: rash on face vesicular rash on legs. Desquamation.	Dementia Incontinence of urine & foeces	Knee-jerks absent.	Mixed case	Improved both mentally & physically on discharge. 00. 11. XII. 00.
8. A. M. 25.7.00.	54	F.	- -	Paraplegia: wasting of arm & leg muscles. Inco-ordination of hands	Great tenderness of calves. Anesthesia of legs & soles	Scattered plaques of pigmentation. Hyperkeratosis soles. Hyperhidrosis. Slight oedema of legs. Small ulcers on legs.	Systolic bruit at apex. Incontinence of urine & foeces Dementia with outbursts of excitement.	do.	Arsenical Poisoning	Death 23. XII. 00.
9. A. H. 31. X. 00.	60	F.	- -	Paresis of legs "Main en greffe"	Anaesthesia. Intense pain in legs. Paraesthesia.	Patchy pigmentation with desquamation	Marked cardiac dilation with dysproea	do.	Mixed Case	Discharged. "improved" Feb. 1901.
10. S. B. 6. XI. 00.	40.	F.	Conjunctivitis	Paresis of leg muscles. Gait ataxic.	Neuralgic pains in feet & legs. Paraesthesia.	Generalized pigmentation (marked in axillae, groins, &c.)	Cardiac dilatation.	K.J's abs. Plantars & superficial reflexes present.	Arsenical Neuritis ? alcoholic element	Discharged. "improved" 7. XII. 00.
11. A. T. 8. XI. 00.	40.	F.	Vomiting	Paraplegia Arms & hands helpless.	Tenderness) Paraesthesia) legst. Anesthesia ) arms Analgesia ) arms	Generalized pigmentation. Hyperhidrosis Keratosis Erytheromelalgia.	Incontinence for 1st few days. Amenorrhoea Albuminuria.	K.J's abs.	Arsenical neuritis	Improving.
12. B. M. 8. XI. 00	52.	F.	Vomiting	Paresis of legs wasting slight. Hands useless.	Tenderness and neuralgic pains in legs. Paraesthesia.	Intense generalized pigmentation. Branny desquamation Keratosis. Hyperhidrosis.	Presystolic bruit at apex	Knee-jerks absent. Plantars present.	Arsenical Poisoning following on attack of alcoholic neuritis	Discharged improved 1. XII. 00.
13. A. F. 9. XI. 00.	40.	F.	- -	Complete paraplegia. Double foot & wrist drop: hands useless.	Slight tenderness, no neuralgia.	Generalized pigmentation. Keratosis pa. et pe. Hyperhidrosis pa. et pe. Some erytheromelalgia.	Amenorrhoea Dementia. Incontinence of urine & foeces	Knee-jerks absent. Superficial reflexes present.	Arsenical neuritis on an alcoholic basis.	Improving (29. VII. 01)
14. M. H. 12. XI. 00.	31.	F.	Diarrhoea Conjunctivitis.	Complete paraplegia with wasting & foot drop. Hands affected.	Tenderness in calves, Intense pain in legs. Anesthesia in legs.	Skin dark with localized patches of pigmentation. Desquamation. Erytheromelalgia. Oedema of legs.	Cardiac dilatation. Bronchial catarrh. Albuminuria.	Knee-jerks absent.	Arsenical peripheral neuritis.	Improved on discharge 13. XII. 00.
15. A. P. 14. XI. 00.	34.	F.	do.	Paraplegia with wasting of legs Loss of power in hands	Tenderness in calves. Neuralgic pains in calves. Anesthesia of legs. Analgesia of legs. Analgesia of forearms.	Pigmentation Hyperhidrosis) pa. et Keratosis pa. et Erytheromelalgia:	Deafness. Husky voice Amenorrhoea.	Knee-jerks exaggerated on admission, later absent.	Arsenical peripheral neuritis.	Discharged 2. I. 01. "much improved"



CASE <i>and date of admission</i>	AGE	SEX	GASTRIC & other EARLY SYMPTOMS	MOTOR SYMPTOMS	SENSORY SYMPTOMS	CUTANEOUS SYMPTOMS	COMPLICATIONS	REFLEXES	DIAGNOSIS	RESULT with DATE of DISCHARGE or DEATH.
16. E. W. 14.XI.00.	40	F.	"Rash" on face. Conjunc- tivitis.	Paresis of legs. Muscles wasted. Pare- sis of arms & hands. Gait ataxic.	Tenderness in calves. Neural- gic pains in calves. Anoes- thesia in legs. Analgesia in legs. Paroesthesia.	Generalized pigmen- tation. Face reddish Free desquamation. Giant urticaria of both eyelids.	Cavity L.apex. Amenorrhoea.	Knee-jerks present. on admission, absent later.	Arsenical peripher- al neur- itis.	Discharged 7.II.01. "much improved"
17. E. M. 16.XI.00.	35.	F.	-	Hemiplegia (L) (due to old lesion) Paralysis of R. side wast- ing of muscles of extremities	Intense neural- gic pains in legs. ? Anoesthe- sia. ? Analgesia	Patches of pigmen- tation. Face cop- per red. Keratosis Hyperidrosis. Erytheromelalgia. Nails pigmented & hyperatrophical Small ulcers on legs.	Amenorrhoea. Dementia. Much deafness Voice hoarse.	Knee-jerks absent both sides	do.	Discharged at own request. 25.II.01. Practically in statu quo as regards locomotion. General health improved.
18. S. H. 18.XI.00.	28.	F.	-	Complete para- plegia. Foot & wrist drop: extremities wasted.	Tenderness of calves. Paroesthesia.	Generalized darken- ing, plaques of deep brown. Desquamation Keratosis pa.et pe.	Amenorrhoea Dementia.	Knee-jerks absent.	Arsenical poisoning with alco- holic ele-	Died 17.XII.00.
19. M. H. 21.XI.00	55.	F.	Vomiting Conjunc- tivitis	Paresis of legs & inco- ordination	Tenderness in calves. slight pain in feet. Paroesthesia.	Generalized pigmen- tation. Desquamation Hyperidrosis. Oedema legs.	Cor.irregular V.S. murmur at apex. Bron- chial catarrh. Albumenuria.	-	Arsenical poisoning	Discharged 14.XII.00 "improved"
20. S. S. 21.XI.00.	39.	F.	Conjunc- tivitis.	Complete para- plegia. Slight wasting. Some foot drop. Cannot use hands.	Neuralgic pains in feet & legs. Paroesthesia.	Generalized darken- ing of skin with fine desquamation Keratosis. Hyper- idrosis. Bullae on legs.	Slight deaf- ness	Knee-jerks absent. Plantars present.	do.	Discharged cured 7.XII.00.
21. R. S. 21.XI.00.	47.	F.	-	Paresis of leg muscles. Atax- ia.	Pain & tender- ness in legs. Anoesthesia	Generalized brown discolouration of skin. Pustular rash on face.	Albumenuriae	Knee-jerks absent.	Arsenical poisoning ? Alcohol- ic elem- ent.	Discharged 3.XII.00. "improved"
22. C. H. 21.XI.00.	55.	F.	Conjunc- tivitis	Complete para- plegia. Legs wasted. Par- tial foot drop	Intense pain in feet & calves. Anoesthesia feet & legs.	Patches of pigmen- tation. Desquama- tion. Pastular rash on chest. Oedema of legs.	Cor irregular V.S.murmur at apex.	do.	Arsenical peripher- neuritis. ? alcohol- ic elem- ent.	Discharged at own request. 3.XII.00. statu quo.
23. M. D. 25.XI.00.	42.	F.	Conjunc- tivitis	Complete para- plegia. Slight wasting of legs. No pow- er in hands.	Tenderness in calves. Anoesthesia) in Paroesthesia) legs Polyoesthesia)	Pigmentation gener- alized & extreme. Face copper-red. Desquamation. Keratosis. Hyperidrosis.	Albumenuriae Mental apathy on admission Incontinence of urine & foeces.	Knee-jerks absent.	Arsenical neuritis.	Discharged improved 3.II.01.
24. E. H. 29.XI.00.	39.	F.	Diarrhoea & vomit- ing. Con- junctivi- tis.	Complete para- plegia. Slight Hands useless. Wasting of leg & hand muscles wrist & foot drop.	Intense neural- gic pains c Anoesthesia of legs & feet. Paroesthesia.	Localized patches of pigmentation. Des- quamation. Hyper- idrosis. Erytherom- elalgia. Oedema.	Cardiac dila- tation. Rhonc- tis at bases. Albuminuriae	do.	Mixed case	Discharged improved 20.XII.00.



CASE and date of admission.	AGE	SEX	GASTRIC & other EARLY SYMPTOMS	MOTOR SYMPTOMS	SENSORY SYMPTOMS	CUTANEOUS SYMPTOMS	COMPLICATIONS	REFLEXES	DIAGNOSIS	RESULT with DATE of DISCHARGE or DEATH.
25. E. L. 28.XII. 00.	43.	F.	Diarrhoea & vomit- ing	Paralysis of leg muscles. Gait ataxic. No mus- cular wasting.	Tenderness in calves Anaesthesia ) in Analgesia ) legs Paraesthesia)	Marked erytheromel- algia. Hyperidrosis	-	Knee-jerks absent. of plantar reflex	Slight attack of arsenical neuritis.	Discharged cured 10.I.01.
26. A. K. 1.XII.00.	45.	F.	do.	Paraplegia. Leg & thigh muscles wasted. Hands quite useless. Foot & wrist drop.	Tenderness in calves. Anaesthesia ) legs Analgesia ) & Paraesthesia soles	Remains of pigmen- tation in trunk. Keratoses & hyper- idrosis.	Incontinence of urine and foeces.	Knee-jerks & plantars absent.	Arsenical peripher- al neurit- is.	Discharged 22.II.01. "Much improved".
27. S. R. 3.XII.00.	66.	F.	Vomiting & conjunc- tivitis.	Paraplegia. Leg muscles wasted. Tremors. Hands weak.	Neuralgic pains in toes. Paraesthesia.	Generalized pigmen- tation. Desquamation Keratoses ) of Hyperidrosis ) feet.	-	-	Arsenical poisoning	Discharged improved. 2.I.01
28. E. D. 12.XII. 00.	36.	F.	Vomiting Diarrhoea	Complete para- plegia. Calf muscles wasted Foot drop, wrist drop. No use in hands.	Intense neural- gic pains. Anaes- thesia. Analge- sia. Paraesthe- sia.	Pigmentation patchy Face copper-red. Desquamation. Kera- tosis of feet. Hyperidrosis pa.et pe.	Phthisis pal- monalis. Men- tal dulness. Amenorrhoea. Albumenuria	Knee-jerks absent.	Arsenical peripher- al neurit- is.	29.VI.01. losing ground rapidly
29. M. K. 12.XII.00.	38.	F.	Running at the eyes. Early rashes.	Paresis of legs Little wasting. Complete wrist drop & wasting of hand muscles.	Slight tender- ness in legs. Anaesthesia ) of Analgesia ) (legs Paraesthesia ) forearms & hands. lgia.	Face copper-red. Pigmentation. Des- quamation. Keratoses ) soles & Hyperidrosis ) Erytheromela ) palms.	Incontinence of urine and foeces.	Knee-jerks absent. Plantars sluggish.	do.	Discharged 13.III.01. Cured
30. M. G. 11.XII.00.	35.	F.	Vomiting.	Paresis of legs & hands with muscular wast- ing	Neuralgic pains Tenderness ) Anaesthesia (legs Analgesia ) & Paraesthesia (feet	Pigmentation general- ized. Desquamation. Hyperkeratosis. Ery- theromelalgia.	Acute Bron- chitis. Amen- orrhoea. Al- bumenuria. Later signs of phthisis pulmonalis. Phthisical mania.	Knee-jerks not obtain- ed	Arsenical poisoning Pulmonary tuberculosis	Died 15.II.01.
31. C. D. 14.XII.00.	34.	F.	do.	Paresis of leg muscles. Some wasting. Mark- ed foot drop.	Neuralgic pains in legs. Anaes- thesia, slight in legs. Paraes- thesia in feet & fingers.	Hyperidrosis of toes	-	Knee-jerks absent.	Arsenical neuritis. (mild)	Discharged improved. 11.I.01.
32. M. B. 14.XII.00.	32.	F.	Diarrhoea & vomit- ing	Paresis of leg muscles. Wast- ing of forearm muscles (slight) Paresis of hand muscles.	Neuralgic pains & tenderness in calves. Paraes- thesia.	Localized pigmen- tation. Keratosis. Hyperidrosis. Erytheromelalgia	-	Knee-jerks absent. Plantars slow.	Arsenical neuritis.	Discharged cured 11.I.01.
33. M. W. 15.XII.00.	38.	F.	-	Slight paresis of legs. Ataxic Gait. No obvious wasting.	Paraesthesia. Tenderness of calves.	Extensive papular rash. Oedema of hands.	-	Knee-jerks absent.	Arsenical poisoning.	Discharged cured 12.I.01.



CASE	AGE	SEX	GASTRIC & other EARLY SYMPTOMS.	MOTOR SYMPTOMS	SENSORY SYMPTOMS	CUTANEOUS SYMPTOMS	COMPLICATIONS	REFLEXES	DIAGNOSIS	RESULT with DATE of DISCHARGE or DEATH.
34. K. C. 20.XII.00.	58	F.	Vomiting Conjunctivitis.	Paresis of legs Ataxia.	Tenderness Pains Hyperaesthesia toes. Anaesthesia legs etc. Paraesthesia.	Pigmentation in patches. Keratosis. Hyperidrosis.	-	Knee-jerks absent.	Arsenical poisoning.	Discharged 30.XII.00. Improved.
35. E. C. 26.XII.00.	40.	F.	Coryza	Paresis of leg muscles. Double foot drop. No power in hands.	Hands most affected. Intense pain. Complete Anaesthesia. Paraesthesia Calves tender.	Face copper-coloured. Hyperkeratosis of palms. Keratosis of soles. Erytheromelalgia. Hyperidrosis. Oedema.	Amenorrhoea Albumenuria	do. Plantars absent.	do.	Discharged 30.IV.01. Improved.
36. M. C. 14.I.01.	37.	F.	Diarrhoea Vomiting Conjunctivitis.	Paresis of legs Tremors of hands.	Slight pain and tenderness in legs. Paraesthesia.	Face copper-coloured. Pigmentation (patches). Keratosis. (pe). Erytheromelalgia. Desquamation.	-	Knee-jerks absent.	do.	Discharged cured. 1.II.01.
37. E. S. 14.XII.00.	45.	F.	Vomiting.	Complete paraplegia. Calf muscles wasted. Hands useless.	Slight tenderness legs & arms. Anaesthesia. ? Analgesia ?	Generalized pigmentation. Keratosis (feet). Erytheromelalgia pa.et pe. Hyperidrosis pa.et pe. Nails thickened & pigmented. Vesicular rash on legs.	Incontinence Bronchial catarrh. ?Amenorrhoea Mental apathy.	do.	do.	Discharged in statu quo 5.II.01.
38. M.A.P. 18.I.01.	48.	F.	Conjunctivitis.	Double complete foot drop. Hands useless L. leg contracted. Both hands contracted.	Some tenderness hands & feet. Analgesia hands & feet. Anaesthesia hands & feet. Paraesthesia hands & feet.	Face copper-red. Pigmentation ( patches ) Desquamation. Keratosis.pl. Hyperidrosis pl.et pa. Nails thickened. Erytheromelalgia.	Amenorrhoea Incontinence ( at first )	do. Plantars absent.	do.	In statu quo 29.VI.01.