University of Glasgow.

Thesis for the Degree of M. D.

Clinical Notes with Remarks.

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Contents.

Adder Bite (Pelias berus)

On Monday, about 1 p.m. on August 11th., 1884, while W. H., aged 16 years, was vaulting a fence on his moor he fell to the ground, and was bitten by an adder ~~which he disturbed~~ on the inner side of the second phalanx of the index finger of the right hand. The bite had the appearance of a small pin puncture, and the patient said that a little blood oozed from it after being bitten. The patient was keenly alive to the dangerous nature of his accident, and at once made for home as quick as his strength could allow him. After walking about a quarter of a mile he reached the ploughman's house on the estate, which took him about a quarter of an hour to do so. On the way, he felt a feeling of weariness coming over him, then gradually becoming faint, sick, and uneasy over the pit of the stomach, with frequent vomiting of a bilious nature. The ploughman's wife thought that he was the worse of drink — as he was walking with such a slow unsteady gait, and vomiting —, but on ascertaining what had happened, she at once took him into the house, put him to bed, and sent for medical aid. In the interval she applied a bandage — a broad ribbon — over the wrist, and gave him a little whisky.

I arrived to the patients aid about two hours (3 p.m.)

after being bitten, and found him in a state of collapse. The extremities were cold and pale; forehead and hands bathed in cold perspiration; there was great nervous depression, with sense of impending death; respiration was hurried; pulse weak and rapid rising from 120 to 130; restlessness and anxiety very distressing; distressing bilious vomiting, and diarrhoea accompanied with great pain. The faeces were dark in colour, watery, and of a most offensive odour. The distressing vomiting and diarrhoea ceased at 5 p.m. (4 hours after being bitten), but the stomach and bowels did not assume their normal quiescent state until twelve hours afterwards.

The treatment, until the stage of collapse had passed off, was stimulants (whisky) which was given with an unsparing hand, frequent draughts of milk, hot water bottles to the feet, and fomentations to the abdomen. The ligature was compressed tighter; puncture enlarged, which I made to bleed freely by sucking it, and then applied fuming Nitric Acid to the wound. At 6 p.m. the patient was able to walk with assistance to a phaeton and was driven a distance of 2½ miles, to his uncle's residence, where he was staying, and was at once put to bed.

For the safety of the circulation of the hand, which was

now much swollen and ecchymosed, I removed the ligature at 7 p.m., and at 10 p.m. the swelling had gradually reached the elbow. On Tuesday morning it reached the axilla, and the lymphatics in that region were enlarged and painful. On Wednesday morning the arm was much more swollen, and the swelling now embraced the right half of the thorax — from the centre of the sternum to the spine, and was of a dark livid hue. On Wednesday night the swelling became less, and by the following Wednesday it had almost disappeared after passing through the different stages of ecchymosis.

The local treatment consisted of carbolic dressings to the wound, evaporating lotions to the swelling — Goulard's extract, and 4 ore-shot, and hot fomentations to the painful and swollen lymphatics. The food consisted of a plain nutritious diet, but for the first three days, milk and lime water, and beeftea were given. The bowels were kept regular, and the kidneys and skin active. No albumen was detected in the urine during the illness. In a fortnight after the bite he was able to move about his room, but was not quite convalescent until six months afterwards, on account of the nervous weakness and debility from which he suffered.

(Liq. Plumbi Subacet. dil.)

The following is the daily register of the temperatures

and pulse for the first 4 days after the bite. Viz.

1884.

August 11th.- 10.30 p.m. . . . . T 99.8 / P. 90

" 12th.- 8.30 a.m. T 99.2 / P. 90 . 6 p.m. T 98.8 / P. 90

" 13th.- 9. a.m. T 98.6 / P. 90 . . . .

" 14th.- 10. a.m. T 99 / P. 86 . 5 p.m. T 99.4 / P. 86.

Case II I am indebted to Dr Y. H. Rutherford, in the parish of Loth, Sutherlandshire for the brief notes of the following case which occurred in his practice thirteen years ago:- "A little girl, about five years of age, while playing with other children in a park thick with whins, felt as if pricked by a whin stab in one of her feet. She immediately felt sick, weak, and confused, and had to be carried home by her playmates. The parents, not thinking there was anything wrong, put the poor child to bed, and six hours afterwards on becoming alarmed by her peculiar symptoms, sent for medical aid. On arrival there was little chance of doing anything for the patient as she was in a comatose state; limb swollen up to body, with mottled livid discoloration of the skin. The mottled appearance rapidly extended over the body. The usual remedies were tried, but she succumbed

four hours after arriving, and 10 hours after being bitten."

Remarks. It is seldom or ever that we read detailed accounts of cases of adder bites (Pelias berus) in our numerous text-books, and Journals, which occur in the British Isles, and I therefore consider that the above two cases are not without interest, as showing clearly that under favourable conditions the adder-bite may prove fatal, as it did in Dr. Rutherford's case, and would have done so in mine had it not been for the timely aid which was rendered.

Case I. Occurred on a beautiful and warm August day, and the bite inflicted was by an adder, strong and active, about two feet in length, and in fifteen minutes afterwards W.R. a strong healthy lad, was in a prostrated condition owing to the active neurotic action of the poison, and had to be assisted into the ploughman's cottage. The ploughman's wife soon afterwards applied a ligature (a rather remarkable ~~thing~~ thing for an illiterate woman to do, but she saw it done-when at service to cattle, where possible, when bitten by adders, and she thought it might do good in this case), but notwithstanding this, shortly afterwards the enlarging of the

wound, sucking it, and burning it with fuming nitric acid, the echidnin or viperin, the active principle of the poison had already entered the system, and was exercising its potent depressing influence on the nerve centres and heart.
The vomiting and diarrhoea seemed to be an act of nature to rid the system of the poison, and the milk given seemed to be an excellent medium to assist those. The whisky was given in ℥iv doses every 10 minutes for the first hour after my arrival, afterwards it was given at longer intervals, and at 5 p. m. it was withdrawn altogether.
The only other thing worthy of notice is the ligature above the wrist. On my arrival to the patient there was no swelling above the ligature, but I further tightened it, and when all symptoms of shock had passed off, and for the safety of the hand, I untied the ligature at 4 p. m.; but no further constitutional disturbance resulted from this, except local, which manifested itself as already described. until the following Wednesday morning.
On analysis of the clinical symptoms of this case, it clearly shows that there were two poisons at work

~~primary~~ and secondary, or constitutional and local—, and the following chemical analysis bears this out—the viper by Prince Louis-Lucien Bonaparte made in 1843; the rattle-snake poison by Professor Weir Mitchell, which for convenience sake, I shall tabulate:—

Viper Poison	Rattlesnake Poison
Echidnin or viperin the active principle; a yellow colouring matter; a substance soluble in alcohol; albumen or mucus fatty matter; chlorides and phosphates.	An albuminoid body, crotalin the active principle coagulating with heat; a colouring matter, and an undetermined substance both soluble in alcohol; a trace of fatty matter; chlorides and phosphates.

The viperin acts as the active principle, and when mixed with blood darkens it in colour, and arrests coagulation, and produces similar nervous symptoms as already described; the secondary or local symptoms are apparently produced by the yellow colouring matter, and the remaining substances.

So much has been said and written concerning the efficacy of Permanganate of Potash as an antidote for snake-poison, and having complied with the ~~notwithstanding our stringent~~ regulations regarding ~~British laws against~~ vivisection. I procured last summer 2 adders, and several rabbits and put it to the test by making the 3 following experiments

in the interest of science and humanity.

Experiment I (July 9th 1884). – 10 a.m. The adder was made to bite the upper lip of the rabbit, and at 10·30 a.m. it was quite comatose. At 11 a.m. the head and neck were much swollen, and at 12 the animal was dead. No injection of Permanganate of Potash was made.

Experiment II (July 11th 1884). 2 p.m. Rabbit bitten by same adder on right hind paw; ligature applied 2 minutes afterwards, and 10 minims of 5 % solution of Permanganate of Potash injected into the bite. In 15 minutes afterwards symptoms of poisoning set in, and at 6 p.m. the rabbit was dead.

Experiment III (July 16th 1884) 10 a.m. Rabbit bitten by same adder on left front paw; ligature applied 5 minutes afterwards, and 10 minims of 5 % solution of Permanganate of Potash injected into the bite. At 10·30 a.m. symptoms of poisoning showed themselves, the animal was becoming insensible and passing into a comatose state. At 11 p.m. other 10 minims of solution were injected into the flank of the rabbit resulting in no good. at 12 noon 10 minims were injected into the areolar tissue of the neck, but the animal died at 1 p.m.

These few experiments were carried out in warm weather with strong and healthy rabbits, and while

strong and healthy adder - the latter was caught in the neighbourhood only a few days previous to the esepriments - and have impressed me with the fact that Permanganate of Potash is not a physiological antidote. Had I continued the esepreriments and used stimulants alone - say ammonia hypodermically it is quite possible that the rabbits would survive, as after being bitten they passed gradually into a comatose state, and required nursing.

~~By the way during~~ Last summer when tending to my bees I frequently got stung by them, and on 4 occasions I injected into the sting 2 minims of 5% solution of Permanganate of Potash, and my esepriencee of the antidote has been that - the cure was worse than the disease.

I may be considered cruel and my esepriments unealled for, but after 6 years residence in the Highlands, I can espress an opinion authoritatively that the esepriencee angler and sportsman - no matter how careful he may be in trying to kill his fish and game outright - causes more suffering than the outside world are aware of, and would be a sufficient reason in the eyes and minds of sentimental anti-vivisectionists to get such manly sports as fishing and shooting abolished, if our

legislators would be foolish enough to consider [illegible]

On looking over the literature of this important, and interesting subject, I observed that Sir Joseph Fayrer has experimented largely with the more deadly snake poisons on different animals, and has used Permanganate of Potash as a physiological antidote which proved futile. Dr. Badaloni made several interesting experiments with the Pelias berus on rabbits, and used Permanganate of Potash as an antidote. In his remarks on the experiments, he says; (Lancet, May 5th. 1883, p. 769). "In the first observation two grammes of the antidote were injected, and the animal died in about an hour. Similarly in the second, where death did not occur the temperature went continuously down as low as 34.3° C. In the third, without any solution of the permanganate having been injected, the temperature fell to 36.1°, and in the sequel the active powers of the poison was weak and unable to produce death. In the fourth, while it is an important point that the notable lowering of the temperature was the effect of the poison of two vipers, five grammes of the antidote were injected without obtaining any benefit. On the contrary, the temperature was reduced to 34.5° an hour and a half after the injection [illegible]

the last gramme of permanganate of potash neutralised the action of viper-poison, the temperature of the wounded animal, instead of going down, ought after its application, if not to rise, at least to remain stationary; not therefore to fall as far as from 39.8° to 34.5°, or through five degrees and three-tenths. Thus the cases that did not end fatally presented a constant lowering of bodily temperature, which, in spite of the injection of the antidote, continued decreasing until death seemed impending."

It is worthy of remark that Dr Badaloni made his experements late in Autumn and in the beginning of winter. — from Sept. 15th to Nov. 12th, Lancet May 5th. 1883. p. 768-9) — when the adder would have lost much of it power, and no doubt the cause by which three of the rabbits recovered even though Permanganate of Potash was used.

Dr Walls who has investigated the subject makes the following remarks (Indian Snake Poison p. 129): "As it was found that potassium permanganate does destroy the poison, steps were taken to see if it would be of any use in the treatment of animals suffering from snake-bite. It was found, by experiment, that a considerable quantity of potassium permanganate, dissolved in a weak saline solution, could be

injected into the circulation of an animal without producing any immediate effect. A dog, suffering from cobra-poisoning, had a cannula placed in its saphena vein; a solution of potash was injected, but, though a large quantity was cautiously and gradually introduced into the circulation, and though at the same time life was prolonged by artificial respiration, in no way was the least benefit to be perceived from the remedy. The reason is obvious. It is quite true that potassium permanganate destroys the active agent of cobra-poison by oxidising it; but, when introduced into the blood, it of course commences oxidising indifferently all the organic matter with which it comes into contact, but it has no power of selecting one organic substance for oxidation rather than another. The oxidising power of the permanganate is, therefore exerted on the constituents of the blood generally, instead of being reserved for the cobra-poison in it alone; so, if cobra-poison be dissolved in an org solution, and the permanganate be added before injection, the poison suffers little, if any, diminution in strength, for oxidation has taken place chiefly at the expense of the other organic matter. Thus, it would be necessary to destroy all the constituents of the blood by oxidation before all the poison in

it could be destroyed too. If a substance could be found having the power of oxidation, with a special affinity of exercising it on snake-poison, the problem of the treatment of snake-bite would be solved, but potassium permanganate has not the special power."
And further he says. "I may be asked why, if metallic salts, tannic acid, hydrate of potash, and permanganate of potash, destroy snake-poison, should not these substances be used in preference to excision. The reply is obvious. If we could know the exact position of the poison, and if there were only one deposit, we might probably succeed in destroying it by injection. But to remove the poison deposited by the bite of a snake required a most intelligent observation, guided by eye, sight, and judgment, but an injection of a chemical agent must be, to a great extent, made by guess-work, and the solution, instead of following the poison, takes the line of least resistance in the tissues, often leading it far from the poison."
The valuable labours of such observers as Drs Richards, Wall, Mitchell, Brunton, and Sir Joseph Fayrer, agree in proving that Permanganate of Potash is powerless as a physiological antidote, like all others that have been tried and have failed to do any

good. Dr Lacerda Rio Janeiro says "As to the idea of finding a physiological antidote for snake-poison I entirely agree that it is Utopia"; and Sir Joseph Fayrer says: "The result of my experience is that, so far, no physiological antidote to snake-virus is known, and that, when the full effect on the respiratory centres is produced, remedies are of little, if any, avail; albeit, when the poison has entered in small quantities, treatment may be of service in general principles!"

But Permanganate of Potash is a chemical antidote as proved by the experiments on the rabbit and guinea pig made by Sir Joseph Fayrer and Dr Brunton in 1878. When a B.P. solution of Permanganate of Potash was mixed with the cobra-poison and injected, no symptoms whatever were produced, and the animals, though kept under observation for some weeks, remained quite unaffected by the poison.

In the "Scottish People" of May 19th. 1888, the following extract appeared from the "Indian Daily News" (Calcutta)

"A number of snakes, principally cobras, were sent to Dr Vincet Richards for experiment. Dr Richards took out one of the cobras with the object of getting some of its poison in a watch-glass, which he had ready for the purpose. He held the snake in his

right hand, and was moving his left hand in front of it, when the snake bit him severely on the fore-finger of the left hand. Dr. Richards, fortunately for himself, preserved his presence of mind; he killed the snake, and with a knife laid the finger open to the bone above the wound, and applied permanganate of potash; he then applied a ligature to the finger and another to the forearm, and drove off for medical advice. Dr. Macleod and Sir Benjamin Simpson re-opened the wound and thoroughly cauterised it with nitric acid. Ordinary dressings were then put on. More than two months have passed since the accident, and Dr. Richards is doing well."

Dr. Richards is one of the specialists that I have quoted above, and it seems strange that if such a case were true, it should find its way into the lay papers before our medical journals. On analysing this extract, we observe that much valuable time has been lost, (1) by killing the cobra; (2) by cutting down on the bite; (3) applying a ligature. From the teaching of modern physiology, when we consider that the time taken up by the blood performing a complete circuit through the heart and blood vessels ranges from 16 to 30 seconds, and the rapid absorption by the lymphatic system as proved by hypodermic use of drugs we

may well wonder how Dr Richards got the length of applying a ligature, when the bite was from the deadly cobra, whose effects are so rapid and poisonous to the nerve centres.

If the accident did occur, it must have been a very imperfect bite and by a sickly cobra - But unless I see or hear of this case being confirmed in our Medical Journals, I shall put it aside as untruthful.

Should it be my lot to treat adder bites I would adopt the following method until our treatment is improved upon. Viz.

(1) Apply a ligature if possible immediately after the bite open the puncture, and apply freely a 5% solution of Permanganate of Potash:

(2) give stimulants by the mouth or hypodermically, and large draughts of milk;- the latter I have found most useful in assisting to eliminate the poison, and make the vomiting and diarrhoea easier, if present -;

(3) Keep the temperature of body up, and soothe colic by hot water bottles and fumentation. I would avoid giving sedatives to relieve colic if present, as I fear it would only be introducing another poison into the system. I would combat the colic by fomentations or mustard poultices.

(4) Locally, before untying the ligature I would use wet cupping, by opening one or more veins near the ligature, if I could find them, and drain away as much of the venous and effused blood as possible. If this would not prevent the swelling it should at least relieve the often painful and dangerous symptoms. Had I done this in my case, I am sure I would have saved my patient much suffering and inconvenience, which I believe was caused, as I have already said, from the secondary effects of the poison, whatever that may be;

(5) Ordinary dressings to the wound;

(6) Nutritious food, tonics and gentle exercise, sea bathing to support the strength.

Strangulated Hernia.

At 8 a.m. on June 25th 1886, I was summoned to see a poor widow, Mrs Mc D. aged 47 years, who was in great distress with vomiting and severe pain over the abdomen. She attributed her suffering to the eating of some stuffing of a duck the previous evening. Believing her story to be the correct one, I prescribed a dose of laxative medicine and expected to hear of her speedy relief soon afterwards. About noon to my surprise, I was informed that Mrs Mc was worse; her sufferings arising from a "lump in the groin, and she was very sorry that she had deceived me in the morning.

I was soon again in attendance, and found that she was suffering from a femoral hernia on the right side; it was about the size of a hen's egg hard, and painful to the touch, especially if taxis were tried. I put her under chloroform and tried taxis most diligently but failed to reduce the hernia. After the elapse of two hours, I again put her under chloroform, and tried taxis, but with a negative result. I at once proceeded to operate in the usual way, and when I got to the sac and opened it, I found the bowel of a dark livid hue. I next made a slight nick on the

upper part of the stricture, and by using gentle pressure the bowel suddenly returned to my great relief with the usual characteristic gurgling sound. The wound was drawn together with silver sutures, antiseptics applied, and the whole kept in position with a pad and bandage.

Her bowels were moved on the 7th day after the operation, and during that time her food consisted of milk only. A one grain opium pill was given night and morning until the seventh day. After the seventh day the food was more generous, but liquid and semi-liquid, and a fortnight after the operation she was allowed to take what she pleased.

Twenty four hours after the operation the highest temperature registered was 102.5°. This on investigation I attributed to a dietetic error through giving the patient by mistake a piece of orange, and some preserved beef tea, as the tenderness on pressure around the wound was very slight, and could hardly account for it. I shall tabulate the temperatures for the first fortnight after the operation, viz,

1886

June 25th. 11 p.m. 99.5°. . . . . .

" 26th morning 100.8°. . evening 102.5°

" 27th morning 101.2°. evening 100.6°.

June 28th. evening 101.27. . . . .
" 29th morning 99.37. . . . .
" 30th morning 98.97 . . . .
July 1st " 98.67 . . . .
" 2nd " 98.67 . . . .
" 3rd. " 99.17 . . . .
" 4th " 98.67 . . . .
" 5th " 98.67 . . . .
" 6th " 98.67 . . . .
" 7th " 98.67 . . . .

She made an exceellent recovery, and was able to move about the house on the 18th day, the weak part however, being supported by a truss which she has been wearing as a support and preventative since.

If this operation was performed in a hospital it would create but little interest, as there would be a staff and accommodation to meet the requirements of the case; but the condition of matters was exactly the reverse of this, as I had to undertake the operation alone with the assistance of two women. An unenviable position, for the time being, for any surgeon to face, and one which many a surgeon would shrink to undertake, but rather allow his patient to die than stake his

reputation in the face of ignorant critics (and the majority of the population of this district must have been ~~mine~~), who always ~~look~~ in such desperate circumstances for success.

But time and living in a district geographically remote from any centre, and where it is impossible to receive help from ~~any~~ neighbouring parish medical brother, made country practitioners daring in cases of emergency, and they often undertake operations which city practitioners would never dream of. As time in my case was the all important factor, it would only be tampering with fate to trifle with it in the least degree, and it was therefore risky on the one hand to send for my nearest medical brother who might not be easily got, and on the other, it would have taken from 36 to 40 hours before the patient could be relieved by sending her to a hospital, and it was therefore on these grounds that I undertook to operate alone, and fortunately with a satisfactory result. How is it that the mortality is so great in cases of operation for strangulated hernia in our hospitals where there is every modern comfort, and highest surgical skill?. I believe it is due to the waste of time in trying useless nostrums after an honest attempt

at taxis has been used, and to faint heartedness or fear of public opinion with many practitioners by which valuable time is lost before sending their patients to hospitals instead of doing the operation themselves.

Pseudo-Hypertrophic Muscular Paralysis.

As opportunities for making clinical observations in cases of pseudo-hypertrophic muscular paralysis are rare, and of making examinations of the tissues after death are still rarer, I thought it would be of some interest to bring under the notice of the medical faculty a case which was under my care.

As Dr Middleton has devoted much time and study to the subject, he very readily introduced the case for me by bringing it under the notice of the "Glasgow Medico-Chirurgical Society," and the following is the report thereon, extracted from the "Glasgow Medical Journal for June," 1888. :-

"Specimens of the muscles and microscopic sections of the muscular tissue from a case of pseudo-hypertrophic muscular paralysis were shown. The case was under the care of Dr Macewell, Tobermory, who kindly forwarded the parts removed at the post-mortem for examination, and gave the following history:- "The patient, an illegitimate boy, 14 years of age, of whose family history practically nothing was known, had suffered from this disease for at least 6 years. When first seen, in 1881, he was able to walk, with marked talipes equinus, and he took his food well. By the end of that year he could no longer walk, but he was able to raise himself from the sitting posture (in characteristic fashion) and to stand for a short time with the support of a chair. The muscular weakness gradually progressed, so that by the end of another year he was quite unable to raise himself or to stand, even when supported. There was well marked right lateral curvature of the spine and talipes equinus, and the calves of the legs, especially the right, were much hypertrophied, while otherwise the body was much emaciated. He could finger slowly the holes of a tin whistle, and produce a few sounds. The

muscles of mastication and deglutition were weak, and his food required to be fluid or semi-fluid. He could feed himself, however, even to the end, but he took such a long time to his meals, even with liquid food, that he had to be fed like a child. He could not turn himself in bed. There was absence of the knee-jerk and no ankle clonus. The plantar reflex was very feeble. Sensation was normal. Articulation was distinct, but slow. The mental condition was quite normal, and the boy fairly intelligent. The heart's sounds were rather feeble, as was also the respiratory murmur. The bladder and bowels were normal. Signs of puberty were being developed. His history during the last five years of his life was that of progressive enfeeblement, but he died rather suddenly in December, 1887, from exhaustive diarrhœa, after two days' illness.

"The post-mortem examination was obtained with difficulty, and was necessarily incomplete, the contents of the thorax and of the abdomen not having been examined. The body was very anæmic and emaciated, being almost devoid of adipose tissue in the usual situations. There was great diminution in size of all the muscles except the gastrocnemii. The following measurements were taken:-

	Right.	Left.
Calf,	10½ inches	9½ inches
Thigh,	9¾ "	9 "
Forearm,	6 "	6 "
Round deltoid,	6½ "	6½ "

"The muscles were soft and pale, resembling young veal. The

brain and its membranes appeared healthy to the naked eye, as did also the spinal cord."

"The brain, the spinal cord, the sciatic nerve, and parts of various muscles were forwarded to me for examination. Sections of the brain showed nothing abnormal to the naked eye. The cord was unfortunately spoiled before the bottle in which it was sent was opened. The part immediately below the medulla, however, and the medulla were examined microscopically without anything abnormal being discovered. Sections of the sciatic nerve were also normal. The muscles presented the characteristic fatty infiltration in a most pronounced degree. The muscles most affected were the deep muscles of the back, the right gluteus maximus, and the left gastrocnemius, while the left sterno-mastoid, and the right gastrocnemius showed less of this change. Variation in thickness of the muscular fibres and increase of connective tissue were also noted, but dichotomous division of the muscular fibres and coagulation necrosis were not well marked in any of the specimens examined, not even in the muscles least affected.

"In the absence of a more complete examination of the cord in this case, it could hardly be said to affect the opinion now generally held, that pseudo-hypertrophic paralysis is a disease of myopathic origin. In view

of a suggestion thrown out in a previous paper on this subject, and the coagulation necrosis might be the initial stage in the disappearance of the muscle fibres, the muscular sections were examined with care, but the almost complete absence of this necrosis in the muscles least fatty seemed to show that that was a hypothesis which could not be sustained.

"The Chairman (Dr Robertson) said that here we had probably a formation of fibrous tissue, and afterwards the fatty matter becomes deposited as a secondary condition in the midst of the interstitial tissue, and ~~has~~ as has been remarked already, crushing out and causing atrophy of the muscular fibres. In examining these muscles during life one finds irregular hard lumps, but by and bye these become soft and the muscles atrophy from the formation and deposit of fatty matter. He thought that the increased formation of fibrous tissue was almost an essential part of the morbid condition.

"Dr Middleton replied."

I do not know the nature of Dr Middleton's reply, but from his notes on the case: "In the absence of a more complete examination of the cord in this case, it could hardly be said to affect the opinion now generally held, that pseudo-hypertrophic paralysis is a disease

of myopathic origin", he seems still to adhere to the view formed of the disease which I give in full. "My own observations and an examination of the cases hitherto recorded, lead me therefore to the conclusion that no alteration of pathological significance has been met with in the nervous system. The lesions said to have been observed are either accidental conditions, or not characteristic of this affection. There is even less indications of disease in the nerves and cords than one would expect to be the secondary result of the pronounced muscular degeneration. The conclusion to which we are driven is that the disease is primarily one of the muscular tissue. That it is of a congenital nature is indicated by the disease being one of early life, and by its more-or-less hereditary character; but I cannot discover any basis for speculation as to the immediate seat of this inherent vice. The malformations met with in two instances in the cord are interesting as indicating a tendency to congenital malformation. The cause of death in almost all instances, so far as I have seen, has been some affection of the lungs, generally of a phthisical nature. This may be accounted for to some extent by impaired respiration due to diminished muscular power" ("Glasgow Medical Journal" for August, 1884).

Is Antipyrine a prophylactic and a cure for Sea-Sickness.

The announcement of an "infallible remedy" for sea-sickness ought to prove tidings of joy to a great many people, who in the pursuit of business or of pleasure, are compelled to experience this tribulation. The latest cure is an artificial alkaloid named Antipyrine, which was extracted from coal tar some 4 years ago, by Dr. Knorr of Erlangen. It was first brought to the notice of the French Academy of Medicine, in 1884, by M. Ossian-Bonnet, who said that in most cases 15 to 30 grains are sufficient, and in the most violent cases of sea-sickness about 48 grains in 2 doses served within an hour to completely remove the mal de mer. Later on M. Dupuy declared that he tried the remedy on a number of passengers on board Trans-atlantic ocean steamers, and that none who carried out his directions (by taking from 15 to 48 grains in divided doses on 3 successive days before embarking, and upon each of the first 3 days of the voyage) were at all affected by a malady to which his countrymen are peculiarly subject. These two observers are therefore prepared to claim for antipyrine all the virtues of a prophylactic and a cure, its merits in this respect being akin to those of quinine against ague or M. Pasteur's attenuated virus against the poison of a

mad dog. Unfortunately, however, the same kind of claim has been made over and over again for a score of other remedies, with no lasting result. Bromide of Potassium, Chlorodyne, Chloral, chloroform, nitrite of amyl, & cocaine raised great expectations, as also did the cumbersome ice-bag. Opium, Prussic acid, Champagne, and saline waters sometimes mitigate the vomiting. Brandy, the unfailing resource of a more robust sort of sufferer, may be recommended in great prostraction, and it certainly proved of immense service in my case, though the general experience of sea-going surgeons is that alcohol in any form is not only useless, but even aggravates the sickness. Swinging couches, chairs, &c. have been tried without much benefit. Hot water at the feet is no doubt of some use, though mainly because it causes sleep, and with sleep there is a temporary escape from the distressing giddiness & nausea which are the most aggravating accompaniments of the trouble.

The truth is that all these so called preventatives for sea-sickness must be more or less empirical since the actual cause of sea-sickness is still unknown, though its symptoms are unfortunately, only too well known. The giddiness, nausea, and sinking at the stomach which ensue soon after the ship begins to roll, and develop into intense sickness and retching

have been experienced by most voyageurs, and even have been experienced to a slight extent by myself, though a fair seaman when crossing stormy sounds in open boats.

The advocates of the latest remedy for, and preventative against sea-sickness has not shown that their patients were necessarily subjected to it, or that they would not have escaped (as was the case with my patients husband who was never sea-sick in his life) had they omitted swallowing the antipyrine. Nor have they demonstrated that on those particular voyages they would have been seized, it being a matter of familiar observation that individuals who, one voyage, will be in all the throes of sea-sickness, will on the next (as was truely the case with my patient) when the conditions are infinitely more conducive to it entirely escape, on the return voyage.

For the short time that antipyrine has been introduced to the profession as a therapeutic agent, its action appears to rest on its sound clinical experience in reducing the temperature of phthisis, scarlatina, acute bronchitis by dilating the cutaneous vessels, and increasing radiation. It has also proved most beneficial in whooping cough* and migraine.

Observations and increased clinical experience

* I am at present trying the drug in several cases, and it appears to cut short the paroxysms, and diminish their number, and often gives a calm and refreshing sleep if given at bedtime in doses from one to five grains to young children, who bear it well, if pure.

are required as to its action in many of the other diseases for which it has been vaunted; but as a remedy for sea-sickness, the most recent observations made by many observers have unfortunately not confirmed the experiences of Ossian-Bonnet and Dupuy, as the following solitary and typical case of mine will show, viz,

Mrs. C. sailed from the River Mersey on 25th. Feby. last in company with her delicate husband to Buenos Ayres, S. America, and returned again by the end of May. As the sea-voyage was for the benefit of her husband's health, she wished to be prepared to undertake the duties of nurse if required; but knowing too well her peculiar idiosyncrasy for sea-sickness, even when the sea is so smooth that it is impossible for any of the ordinary causes of the malady to be in operation, she took for 4 days previous to sailing, and for a week afterwards, 20 grains of Antipyrine per diem in 5 grain doses. But scarcely was Mrs C. at the mouth of the Mersey when her dreaded enemy seized her, and for 28 days until the voyage ended, the sickness, retching, and vomiting were intense, and at one time life seemed to be on the wane. Every kind of liquid food was tried, but was rejected, except toast water which was retained, for 3 days

only. Brandy was only given when greatly prostrated, and it usually gave relief. She had a fortnight or more on terra-firma, and during that time she took her food as well as possible (although her appetite was not great) to fortify her for the dreaded return voyage. But scarcely had the steamer got under way again when the sickness returned, and continued for a week afterwards; then it left her, and for the remaining 3 weeks until the steamer arrived in the Clyde, she took her food well and enjoyed excellent health without any trace of sea-sickness.

The voyage both going and returning was considered good, but the rolling of the steamer on the return one was greater on account of the head winds.

Antipyrine was not taken on the return voyage as Mrs B. had lost all faith in it after leaving the Mersey, yet she enjoyed, without taking any drug, immunity from the previous awful sea-sickness.

Ascaris Lumbricoides.

As the life history of the Ascaris Lumbricoides is not well known the following record of several families and their water supply for domestic purposes - cooking drinking - may be of some interest in trying to establish it.

During the last twenty years many changes have taken place in the staff of the Rhu - na - Gall Lighthouse in the Sound of Mo., and for the last twelve years of that time I have received a history direct from the keepers themselves, which is as follows. :-

A. came to the Lighthouse in 1873 and left in 1885; he had eight of a family, and they were all affected with the round worm when young. Santonine followed by castor oil always removed them and gave temporary relief. A. had three assistants during his time at the Lighthouse, and their families were all affected with the round worm.

B. came in 1885 and left in 1886; he had nine of a family, and during his stay, his two youngest children passed many round worms. The elder of the two was very pale, emaciated with short cough. Nothing could be traced wrong with the lungs. Santonine disclosed the cause by the passing of several round worms, and when followed by tonics

he ~~always~~ improved in health.

C. came to Lighthouse in 1885 and is still there. He has four of a family, and since coming the youngest three have passed many round worms, two of whom passed once three each after santonine. D. came on 2nd December 1886, and is still there. He has six of a family, and his two youngest children passed the round worm in the February following. The cause of all this mischief pointed strongly to the water supply which I shall now describe.

The water rises from a spring at the base of a steep hill and flows into an enclosed reservoir, well built with stone and lime, and cemented in the inside, and protected by a locked door. The overflow is carried in a pipe to the sea-shore, and the water for the station is carried in leaden pipes a distance of 40 yards. The water is abundant and to the naked eye, it is pure, clear, and sparkling. As a set off to put the matter to the ~~test~~ I made the keepers at the station consisting of two families (C. and D.) cease using the spring-water for domestic purposes — cooking and drinking — and made them use rain water instead, collected into tanks from the slate roofs of their houses. While this water was being used, from Feby. 188

to 7 Feby. 1888. no worms were complained of, and the children previously affected improved greatly in health. Since the latter period (7 Feby. 1888.) the spring water filtered was used occasionally by the families, with the result that since June set in, the youngest child of each family, aged 3 and 3½ years respectively, took suddenly ill, but not simultaneously — temperatures ranging from 102°7. to 103°6. with usual symptoms of worms, and D's child had convulsions. If I did not know the past history of the water supply of the station, I might have been led astray in my treatment, especially with D's child, his symptoms being of an obscure and deceptive character simulating brain disease, but I gave santonine and calomel, followed by compound liquorice powder which relieved each of the children of their alarming and dangerous symptoms in a few hours afterwards by the expulsion of round worms.

I made particular inquires about the health of the families previous to their coming to the Rhu-na-Gall Lighthouse, and the parents said that none of the children were ever affected with the round worm; and several of the families used rain water, the cause being that the water from

the usual source – springs, burns &c.— was either scarce, impure, or mineral.

Last summer I sent four samples of water at different periods to Dr Geo. S. Middleton, Glasgow who very kindly undertook to examine them microscopically for the ova of the round worm, and to ensure success he enlisted the assistance of Dr Coats and Mr Fullerton. The result was that two of the samples gave negative results, while in the other two nematodes, trematodes, rotifera and infusorians were found, but they could not distinguish either ascaris lumbricoids or its ova and Mr Fullerton in his report said that even were ova found it would be impossible to tell those from the ova of, say, the earth worm.

The food supply seemed to be above all suspicion, and the question naturally arises what is the cause of the round worm? It appears to be caused by the water supply which I base on the following experiments and observations, Viz.,

1st. For the last twelve years I have the direct history from the keepers themselves that many of their children were affected with the round worm, and from hereasay the children of their predecessors were similarly affected;

2nd. That C's and D's family, who were badly affected, enjoyed immunity from the round worm for a year (from 7 feby. 1887 to 7 feby 1888). while using rain water collected from the roof of their house, and the members of their family affected improved in health;

3rd. That since 7 feby. 1888 to June 9th. C's and D's youngest child have each passed a round worm apparently caused by using occasionally the spring water filtered. (The filters have charcoal blocks, and it is quite possible that when cleaning the filters, some water unfiltered would be collected at the bottom and used, to account for the worms);

4th. Although Dr. Middleton's report of the samples of water sent him proved negative concerning the round worm or its ova, yet the fact of nematodes &c. being present showed that it was not pure.

If the above be a correct view, how then does the water become contaminated to produce the worm?

On examining the surroundings of the well, there appears to be no source of contamination. sheep and occasionally a stray cow, rabbits, and a few fowls graze and feed on the hillside around the well, but as it is built over, and protected by a locked-door it is almost impossible for the faeces to be carried by the rain and percolate into it the reservoir,

yet nematodes &c, were found at the bottom of the well, showing that some source of contamination exists. There are no pigs at the station, and it is impossible for the ova from the children attacted to find their way into the reservoir.
On reviewing the literature of this subject it appears that we are still ignorant as to the precise mode in which the young gain access to the human body; but Cobbold says that Hering, Mosler, Davaine and others suppose that these worms are reared in a direct manner by swallowing the ova, which, from Leuckarts observations is not yet proved.
Leuckart obtained his negative results by the administration of ripe ova to dogs, swine, and mice.
It would appear therefore from experiments & observations that if the ova do not suffice that they must pass through some other host before developing in the human intestine.
This is also the opinion of Cobbold. If this be so, it would appear that this metamorphisis in my case takes place in the reservoir and the most likely intermediary hosts would be insect-larvæ- Gammari, Entomostraca, &c.
I hope that before another year elapses that by joining a pipe directly with the spring (which always gives a constant and abundant supply of water), and by careful filtration to abolish the round worm

from this station; and if I succeed as I have partly done so already I shall be the means of relieving much suffering, anxiety, and expense to those who are at present at this station, and to their successors should they adopt my instructions.