Thesis

In certain cases of Poisoning
hereewith submitted by me
to the Faculty of Medicine,
- Edinburgh University
with a view to obtaining the degree of
- Doctor of Medicine.

I hereby certify that this thesis has been
composed entirely by myself, and is the
outcome of personal treatment and observation
while engaged in private and government
work.

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St Stephen Hotel
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Notes on several forms of Poisoning.

During the ten years of active medical practice in which I have been engaged in the Colony of Natal I have been called on to attend various poisoning cases. Amongst these are special interest are -

Poisonous effects of Snake Bites
Poisoning with fresh Stramonium leaves
Poisoning with fresh Castor oil seeds
Poisoning with large dose of Locaine hydrochlorate and Poisoning with Hyoschinone.

I will confine my remarks to these cases - all of which I attended, or been closely connected with.

Poisoning caused by Snake bites.

Having, since my arrival in the colony, occupied the post of Government Medical officer of one of the largest cocoa estates, and having many plantations under my medical supervision, I am frequently called to attend cases of snake bite. Certainly over a hundred have passed through my hands; (I recollect once treating seven in fourteen days) and of those whom I have seen alive after the accident I have been fortunate enough to lose only one case - that of a child bitten by a puffadder at 10 Am, and brought to me at 5 P.M., ten minutes before her death occurred.

On the other hand I may state that with the exception of two, who in my opinion would have certainly died without treatment, and careful nursing afterwards, I think it possible that all the other surviving cases might have recovered without any treatment at all. Very many of our snakes, though poisonous, are far from deadly. In fact with the exception of the Black Mamba, no specimen so far as I know,
in South Africa, and certainly some in Natal, can be looked on as having the power of causing almost certain death. The puff adder is a bad snake, and I have known several deaths caused by it. Of the Rinkalze or Rinkas (Sefedor haemachates) I have personally had no experience beyond killing a fine specimen 65 inches in length while in Cape Colony; but I may state that when there again, a few months ago, I was informed by several farmers that, though it is one of their common snakes, they had not known of a death amongst the few cases of its bite which had come under their notice. On the other hand, I know of only one authenticated case of recovery from black mamba bite. The snake being killed, no doubt as to its species existed. The treatment I invariably adopt is to scarify thoroughly near the seat of wound. Should the bite be on one of the extremities, I always find a ligature, often accursed with extreme tightness, has been applied before the patient has been seen by me. I insist that the seat of scarification well sucked. Native or Indian friend of the patient are always very willing to do this, and I have known any untoward result therefrom, affecting the oblige one. Meanwhile I have probabilly given brandy or whisky freely, and if Ammonia solution is to be got I freely put it into the seat of scarification. Fifteen drops of an elixir in a wineglass of water every 10 minutes for half an hour is frequently given by me to an adult, in addition to the brandy. Occasionally the stomach refuses to retain stimulant and I then tryly inject it—hypodermically. Dr. Fayrer (in Indian Annals of Medical Science) seems rather to discredit the beneficial effects of Ammonia in snake bite. He states that having mixed it with the
the poison, before injecting the latter into an animal, the fatal result was in no way delayed. A.B. Wood, Jr., in the 1880 edition of his Treatise on Therapeutics, states with regard to Alcohol (Page 127) "In small doses the unlimited use of it, combined with the hypodermic use of ammonia, is the best method of treatment."

One more rule I invariably adopt is to inject a solution of permanganate of potash near the seat of the wound. I have done this empirically. That I have seen it recommended strongly. Moreover, I am certain, and my father, whose 20 years of medical practice in Natal, afforded him a large experience in the treatment of similar cases, would have no objection to it.

I was called about 6 PM on 6th Dec, 1886, to a sugar estate, to see an Indian who was reported as being in a comatose condition. On arriving there an hour later, I found, lying on a stretcher, in an out-house, a well-nourished man, about 30 years of age. All the history I could get from the man was that he had been informed at about 3 PM that this man was found lying at the side of the road drunk, and had been placed in the out-house. Being otherwise engaged, he did not trouble about him for a couple of hours, but, on then seeing him, realized he was in a serious condition, and sent for me. The man's previous health had been good, and he was of regular and temperate habits. I found the skin cold and clammy. He was quite insensible, and the eye reflex was absent. It was difficult to detect the pulse, which was small and weak.
weak and quick, while the breathing was slow and laboured, and slightly stertorous, though regular. The breath had no particular odour.

Serious examination of the head and trunk threw no light on the case, though the abdomen seemed rather pendulous. Vomiting had taken place; but what he had thus got rid of had been mixed with earth and thrown out.

Altogether I was at a loss to account for the condition, and was inclined to attribute it to either sunstroke, vegetable poisoning, or possibly apoplexy. Fortunately the possibility of a bladder stricture (as I supposed) and further examination disclosed, on the dorsum of the right great toe, two tiny cysts not larger in size than a pin's head, and situated about two-thirds of an inch apart. There was neither swelling of the hot foot.

I was now pretty sure of my case, and incised freely, and rubbed in eau de Juci, after which I applied hot water compresses to encourage bleeding.

That the man would soon die seemed a certainty; however, I got a bottle of brandy and tried ineffectually to give him a little by the mouth. Having my hypodermic syringe with me, I injected a good many charges of neat brandy, together with eau de fuci, into the buttocks, and next had beer bottles filled with hot water and placed between his legs and round his body. After watching the case for several hours I found he had not far recovered as to show displeasure at having his face smartly slapped, while his pulse was stronger, though still as rapid. I left instructions to give him warm beef tea and brandy as soon as he could swallow, and also to keep up the warm bottle treatment. To my pleasure I must say surprise, I
found him alive next morning, and though the sickness had returned, he was able occasionally to swallow stimulant by teaspoonfuls. His pulse was rapid but strong, and the temperature under 100°.

The senses were partly recovered; but it was not till next day he was able to state as follows.

On walking through a sugar cane field he trod on a black snake, and though he could not give any opinion as to its length, he described its body as being about an inch in diameter, and its head flat. He felt it strike his toe, and ran as quickly as he could through the tall cane towards the drill for assistance. He recollected nothing more, beyond a great difficulty in breathing, and had evidently just gained the road before becoming insensible.

Whether or not it was a black mamba that he trod on it is impossible to say; but two things point to that, namely, the absence of swelling at seat of injury, (very different from the puff Adder bite) and the extreme rapidity with which the poison took effect.

The after history of the case was interesting. A gangrenous discharge formed round the wounded toe and over the whole of the dorsum of the foot. This was treated with charcoal powders and antiseptics. The constitutional condition was very much affected, and for several weeks I had doubts of his recovery. However he "pulled through" and my only regret was that I had failed to get the snake, or even know its particular species—either of which circumstances would have added largely to my satisfaction.
satisfaction at the result of the case.
Case 2.
The following snakebite, which occurred on one of the estates under my charge, unfortunately had a less happy termination. So rapidly fatal indeed was it that the man was dead before I heard anything of it.
Moonsamy, aged 35 years, a healthy well built Indian, was assisting in clearing bushland on 5th Dec. 1895. A large black mamba, measuring 9 ft 4 in, was disturbed, and after almost escaping, was knocked down by one of the many sticks sent after it by the gang of coolies, working under the charge of Moonsamy. It was beaten till almost dead, and quite powerless. The day was very close and still, the thermometer being 90° in the shade. To show his daring, Moonsamy caught the brute by the tail, and commenced swinging it round his head. His master saw his foolhardy behaviour, and called on him to drop the snake, but just before he did so its head caught on a branch and rebounded on to the buttocks of the coolie. He went off it work at once, and no one knew he had been harmed. In less than 5 minutes however he returned to his master, stating he had felt a slight prick when the snake's head came against him, he had complained of a tight constriction round his abdomen, with tingling all over his body. Two punctures were at once seen, about an inch and a half apart, on the right buttock, and on squeezing, drops of bright blood exuded. The wounds were at once sucked for three or four minutes. There was no swelling as yet at the seat of injury. After being carried into the shade, about 200 yards off, intense retching took place.
place, and a quantity of foamy mucus was brought up. The right eye now exhibited twitching of the lids and lacrimation. He stated his vision was dimmed in that eye—probably the result of the wasting excretion. Soon after, a similar train of symptoms exhibited themselves in the left eye. The buttock was freely incised, and turpentine rubbed in, and five minims of the ammoniac, were given every three minutes internally. The manager had the gall of a puff adder, dissolved in spirits—a remedy he informed me he had used many cases of snake bite with, and the whole of this was drunk by the ladie. I know it is a very common practice amongst the Kafirs, if they manage to kill the snake, that bolts them, that once open, it and drink the gall. The Indian now complained of the constriction feeling about the chest, and his struggles for breath were so violent he had to be held down. About two and a half hours after receiving the injury he seemed to choke, his mouth being full of thick spittle and froth. The local swelling about the buttock was but more than could be accounted for by the mode of treatment.

I tried, at once when I learned the circumstances, to secure the head of the inammar; but a Kafir medicine man had already got it, turned it, and after finely pounding the result, teeth, skull and remains, had mixed it with woodashes as an antidote for future snake bites in his "practice."

I have before stated that certain snake bites produce much more local irritation than others. Of our Natal snakes, most dreaded is...
Photos of cast of foot of native girl four years after Puff Adder bite showing the result of ulceration and necrosis from the injury.
This is the case with the bite of the puff adder. It is a sluggish animal, and often lies motionless till disturbed; hence one more frequently sees wounds inflicted by it on the feet or lower part of the legs, through natives or Indians treading on it. One marked feature which I have very frequently noticed is the rapidity with which swelling of the injured part, or even whole limb, takes place. Again, not only the soft tissues are affected, but occasionally the bones beneath the beat of wound may become and separate with resulting deformity. Whether this is due to the special poison of the puff adder, or to the fact that its teeth are much longer than most other snakes, and probably strike deeper, I cannot say. I am inclined to favour the latter view.

A few months ago I made a plaster cast of the foot of a healthy Kafir girl, aged about 15, who had been bitten by a snake of this species, and of which I attach the photograph. One cannot place much faith on Kafirs, they have no idea of time. However, the history she gave me was as follows. Four years previously she had on a large puff adder, which bit her beneath, and slightly anterior to the outer malleolus of the left foot. Great swelling at once resulted with much local pain. She was "doctored" by her own native "medicine man". The whole nearly proved fatal and for several weeks she was very ill, the pain and swelling of both foot and leg being very great. After many months part of a bone appeared on the surface of the large ulcerating sore about the seat of injury, and for over a year the small pieces of bone were removed. The appearance of the foot well corroborated her story, and even when I made the cast there was a small plough at the original seat of the wound. Besides extensive loss of bone, much contraction of the extensors had taken place, the little toe being placed almost at right angles to the 5th metatarsal bone, or what little there was left of it.
Poisoning with Fresh Atropinum Leaves

I was asked, on the morning of 17th Dec. 1870, by Mrs. S., a friend of mine, who lived three or four hours drive from town, to proceed at once to his house to see two of his children, aged respectively 3 and 4 years, who had been much ill. One, in fact, he thought was dead. They had been out all the previous afternoon, and each brought home a bunch of wildflowers for her parents. The mother remarked how very curious seemed the children seemed to be. They had tea, and went to bed quickly, probably within forty-five minutes of their coming home. After a time they heard the children vomiting, and on going to them were found with the stupid and flushed appearance the, love; but, as the father expressed it, "thought it was only a case of the sun having got at them." Slight convulsions, with purging followed, and, though neither of the children could apparently give a rational answer to questions, and each "looked strange," it was only in the morning, when the younger child had a prolong and very severe convulsion, that the father got alarmed, and galloped into town for me.

On arrival at the house, at about 1 P.M., I found the younger child dead. In fact I was led to think it had actually breathed its last in the early morning, before the father left for one.

The post-mortem appearances were as follow:

The face was dark red in color, the eyes wide open, and the pupils widely dilated. The abdomen was much swollen, and the whole of the trunk had a mottled reddish and purple appearance.

I was anxious to make a post-mortem examination.
but that the parents refused.

Though the day was extremely hot, I do not think the appearance of the body could have had anything to do with decomposition. The other child had vomited a good deal through night, but unfortunately the result had been thrown away. She had been extremely restless, and the brother had had difficulty in preventing her getting out of bed; but when I arrived she was lying in a drowsy condition, but sometimes would, on being pounced, apparently attempt reply to questions, though the answers were rambling. She would immediately relapse into a sound sleep on being left alone.

The pupils were dilated to the utmost. The pulse was not very quick, but feeble. The face presented a dark crimson colour, and the surfage of the body reminded one of a case of scarletina.

I at once suspected Atamomium poisoning, as on going to the house, I had seen many specimens of the plant in full flower - both white and blue. Two branches of these, the little things had brought in the previous evening, stood in flower glasses on the table. While I was there the surviving child passed a motion, and in it I detected five small pieces of Atamomium leaf with the teeth-like projections on the under edge. On examining the vomit which the dead child had thrown up, and which still adhered to the bedclothes, I detected several similar pieces, and in one of her motions, which the brother had placed outside, on a bedsheet, one large and several small pieces of the leaf.
leaf soon at once recognizable.

I must confess that, on making certain of the cause of trouble, I was equally uncertain what course to adopt with the remaining child. The only medications I could procure, without sending into town, were castor oil and laudanum. I got the patient to swallow two teaspoonfuls of the former, with two minims of the latter. She was sick soon after, but I could see no more pieces of leaf in the vomit. The child did not complain of any pain. She only seemed drowsy. When prodded, her conversation during the day was rambling, but occasionally her parents got her to answer questions. She owned to having, along with her younger sister, eaten some of the leaves — how much it was impossible to ascertain.

Within twenty-four hours of the time of my being called, during which period she had swallowed and retained a considerable quantity of beef-tea and brandy, she was much better, and had a comparatively strong and steady pulse. She had still widely dilated pupils, and rambled much in her talk.

Since that day I have never seen the child, but, during a conversation I had lately with her father, he insisted that there lasted, for several weeks after taking the phrenomium, a confusion of ideas, most unnatural to the girl. I note in the 1865 edition of Taylor's Medical Jurisprudence; page 368, the following, which bears on this point: "If, as it more frequently happens, he recovers, the insensibility persists for a day or more, and the
Poisoning by Fresh Castor Oil Seeds

On the afternoon of the 31st Dec 1891 I was asked by a friend to see his only daughter, aged 5 years, who had, he said, been vomiting and purging all day. On visiting the house I found her in bed. The temperature was normal, and she said she felt well, with the exception of a gripping abdominal pain. She had been vomiting; and the face had a anxious expression. On inspecting her pockets I found several whole castor oil seeds, and also a good many small pieces of evidently the same seeds, together with some starch with a trace of blood here and there. The vomit had not been kept, so I could gather nothing from that. She at once owned to having the previous evening, along with a neighbor's child, two years her junior, eaten some seeds of a castor oil tree they were playing on. Altogether I secured eleven seeds, which she had evacuated. I prescribed a mixture of Castor oil, laudanum, and bismuth.
with barley water and milk and soda to be drunk in small quantities and often, and enjoined absolute rest. Having made my way to the house of her little companion, who was also a patient of mine, I found him in practically the same condition—vomiting and purging having taken place; but there had been no blood in his stools, and the abdominal pain was only of an occasional griping nature. I instituted a careful examination of his vomit and feces, both of which had fortunately been kept in an outhouse, and I found five seeds in all, each having returned, in his case, bent swallowed whole. Treating this case exactly as the first, I called again in the evening to find both children better. No evil effects of any description followed, and next day the stools were normal, though still relaxed. I think the parents thought they were helping them both a couple of days in bed and on fluid diet was more of a moral than a physical necessity.

On examining the castor-oil tree in question I found the seeds were not quite ripe, and this I think, in a measure, may account for the comparatively slight effects caused by the quantities of seeds which were swallowed.\end{document}
Poisoning by Hydrochlorate of Cocaine
The following case is of interest to me, first, because it is the only instance of poisoning by this drug that has come under my observation, and, second, because in some respects, the symptoms differ from those usually recorded.

During the early part of 1891 I had under my care, a severe case of acute rheumatism in an otherwise healthy young woman of twenty. She refused to be operated on, and, as a palliative, I ordered her a three percent solution of cocaine hydrochlorate, to be applied as required. At the same time she happened to be taking a tonic, a tablespoonful of which was the prescribed dose.

Towards dusk, and just after tea, she proceeded to her bedroom to get the said tonic, which was to be taken after meals, and placing on the shelf where her medicines were, her attention was directed to a sparring match between two natives, which was going on beneath her window. Reaching for her tonic, and without looking at the bottle, she poured out half an ounce, and swallowed it.

At once she discovered she had taken of the cocaine solution—over seven grains having been in the tablespoonful. She pushed to her mother, who fortunately at once gave her mustard and hot water, and emesis was soon produced. I arrived on the scene within half an hour. The girl was then sitting on the edge of the bed with her head resting on her mother's shoulder; I at once noticed that her face, instead of being pale, was on the contrary, rather flushed. The pupils
pupils appeared slightly dilated. The pulse, thought nearly 100, was not at all feeble. The temperature was 99.6°. Though she said she felt dizzy, she was alarmed about her condition. The, to her, strange anaesthetic condition of the mouth and throat causing her to imagine she would possibly choke. New respiration did not seem to be in any way affected.

On first being called I had taken with me a box of nitrite of amyl capsules, and, with the exception of breaking a couple of doses on a handkerchief, for purposes of inhalation, and keeping her from going to sleep, I did not adopt any other treatment.

After I had been there for half an hour the most marked symptom was a decided tendency to sleep. If left to herself for a few seconds she would fall into a profound slumber, and it required a good deal of toil struggling to rouse her. Then wakening she was perfectly sensible and rational. On attempting to make her walk she would fall, stating her limbs refused to act. She pleaded to be allowed to sleep and after getting her to swallow a pint of warm milk with a dessert spoonful of brandy I yielded to her wish. I had then been with her for over three hours.

Next morning she complained of being very tired, and having a bad headache. This may partially I think be accounted for by the mental strain she had undergone before she had any assurance to hear would follow. Otherwise she was quite herself, and the following day all aftereffects of her overdose were gone.
What amount of the drug had actually been retained after the vomiting, it is impossible to say; probably not much.

Three things I would note: 1st. The pulse was not accelerated beyond that which one would look for in a girl who was anxious about herself. 2nd. The face was rather flushed than otherwise. 3rd. The drowsiness, after a time, was marked.

These three conditions do not correspond with what one would expect to meet in Cocaine poisoning.

J. Dixon Maroll Flink, (Page 568, Forensic Medicine and Toxicology, 1893 edition) quotes a case in which one and one third grains of a Cocaine salt in solution, when injected into the gum of a girl of 19, produced great acceleration of pulse at first too quick to count, afterwards falling to 196 to the minute, while the face became pale.

Other authorities quote cases where the drug caused similar symptoms.

Ringer, (Page 570, 1886 edition) states "Upon the circulation Cocaine acts in two ways; it constricts the vessels, and so increases arterial pressure, while it stimulates the heart."

Again, I have been unable to find any literature which would lead one to suppose that the marked drowsiness, which this patient so strongly exhibited, is a common, or even a rare after-effect of the administration of Cocaine hydrochlorate in large doses.
Poisoning by Strychnine.

For more reasons than one, I took a special interest in the following sad case.

F. D., a German governess, aged 40, had been under my medical care for several years previous to her demise.

My father, on handing over his practice, informed me that this patient had had complete amenorrhea for seven years. She had been treated in Germany, and elsewhere for it, and, as she said, had seldom been out of a doctor's hands.

Knowing that Indian women in this colony, when subjects of amenorrhea, catarrhal quantities of the unripe papaw, (a fact which I have ample proof of) and having grounds for believing the unripe fruit had emmenagogue properties, my father determined to try its effect in this particular case. He accordingly had a decoction prepared from the unripe papaw. I regret I have been unable to find his letter of directions regarding its preparation; but, within the past few days, I had been informed by the chemist who acted under his instructions, that he distinctly remembers first making a tincture, and afterwards a decoction, both of which preparations he submitted to my father for trial in his central hospital. Eventually the decoction (to be taken in wineglassful doses) was preferred, and the patient in question was treated with this preparation.

Within several months the courses returned, and to my knowledge, were regular up to the time of her death.

She was very fond of vinegar, and those with whom...
whom she stayed, and also she herself, surprised me when informing me of the quenctly she was in the habit of taking. Her love for strong black tea, which she took in moderation, was great and I repeatedly warned her against both on occasions when she consulted me for dyspeptic troubles. Gastric ulceration of an acute nature supervened, and for twenty-five days she remained in bed by peptonized enemata, nothing beyond cold water meanwhile crossing her lips.

She consulted me at times about her lungs, she having been treated in Germany for phthisical symptoms. There was flattening beneath the right clavicle, with marked aortie dulness of right apex. The latter affection was not in a condition to cause immediate anxiety, and the gastric trouble eventually became a thing of the past. She began however to be low spirited and subject to fits of depression. Though at times frank, her manner was often distant, and she never seemed to make friends with those around her.

One day she went to her chemist, saying she wished to poison a cat.

She asked for, and obtained twelve grains of strychnine, and signed a statement to the effect that it was to be used for the above purpose.

Having written several letters, in one of which she stated her intention of poisoning herself, she went to dine with friends. They afterwards remarked that an excellent appetite she had, refusing nothing offered her.

Retiring early to her bedroom she folded her clothes neatly on a chair beside the bed, put on a
clear night dress, and it was only next morning when she did not appear, that an entrance to her room was effected.

Remembering in the first place what my father had told me about the return of the catamenia, after a complete absence of seven years, also the lung affection and the ulcerative gastric trouble, I had more particularly to do with, I was most interested in the post-mortem examination performed within twenty hours of death, and at which I was asked to be present.

She lay on her back in bed, her arms by her sides, but slightly bent at the elbows. The fingers were bent and rigid, as if about to claw, while the feet were arched with the toes pointing inward. The expression of face was pleasing, and the eyelids were closed. The whole body was extremely rigid.

On removing the skull cap, the membranes, which were congested, were found to be exceedingly adherent to it. There was flattening of both right and left costae, in the region of the longitudinal fissure, and that was interesting when taken in conjunction with what was known of the woman's melancholic tendency for some time previous to her death.

Examination of the lungs disclosed a small brownish exudate, in the right apex, where a fibrous contraction of the lung substance was present, together with a very much thickened and adherent pleura.

On removing the stomach (the contents of which were kept for further observation)
I was interested to note, near the pyloric end, and on the posterior wall, a large cicatrization, with a good deal of puckering; evidently the seat of ulceration I had previously treated.

On coming to the organs of generation we found she had been menstruating at the time of death. Both ovaries were markedly cystic, especially the right.

The stomach itself was much enlarged and the contents, which were afterwards examined by a government analyst, proved to have knotted up with them a large amount of strychnine.

That no law exists in Natal to prevent the sale of such a drug, provided the purchaser states in writing for what it is wanted, I think far from right.

During the past year a bill has been brought before our legislators dealing with this matter, and for the good and protection of the community at large we hope and trust due deliberation and consideration may lead to the passing of the new act relating to the sale of poisons, which will render it impossible for anyone to purchase any dangerous poison, except in the recommendation of some duly qualified and registered medical practitioners.

George Lindsay Bremner

Doctor of Medicine
L.C.P. St. Andrews
31st March 1896