Notes of Cases of Malaria, with remarks on the most recent methods of dealing with Malaria in Australia.
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do hereby certify that the Thesis attached hereto entitled "Ninety cases of snake bite with remarks on the most recent methods of treating snake bite in "Australia" hatched composed by myself.

Dated this 6th day of March 1893.

J. John Martin, M.B., Ch.B.

Witness:

F. J. Murdoch

Baronet at Law, Melbourne
Notes of Cases of Snake-Bite, with remarks on the most recent methods of treating Snake-Bite in Australia.

Sir Joseph Cheyne in a lecture delivered by him at the Victoria Institute on "The Venomous Snakes of India and the mortality caused by them," said, that the chemistry of snake poison had been studied greatly lately and it was known to be almost virulent poison which might neither be sucked from a bite nor swallowed with impunity. That many antidotes had been reported beneficial but experience showed that so far no physiological antidote toward poison was known. That when the full effect was produced remedies were of little avail; whereas however the poison had interest in small quantities medical treatment might be successful. (British Medical Journal, March 19th 1892, page 620).

In fact Britain and the greater part of Europe, the only poisonous snake met with in the sudden, a variety of Viper, except where in exceptional cases an importation takes in some menagerie or zoological gardens finds a victim as in the case reported by Ericsson (vide Surgery, Vol. 7, page 357). In India we
Among the most venomous snakes, the cobra, krait, elich, kupper, dabra, Russellii or Russell's viper, the hamadryas, The raj-wamps (vide Jaffr-Thanatophidia of India). In Australia the poisonous snakes most commonly met with are, The common Tiger snake (Hypoleophalus curtus) found in New South Wales, Victoria, South Australia, Queensland, Western Australia and Tasman. The Deadly Adder (Acanthophis Anaxanthica) found in New South Wales, Victoria, South Australia and Queensland. The common Black Snake (Pseudechis Porphyriacus) found in New South Wales, Victoria, South Australia and Queensland. The well known Brown Snake (Dilophus Superbus) found in Victoria, New South Wales, South Australia and Western Australia. The large or broad scale Snake or Diamond Snake (Hypoleophalus ventricosus) found in Tasmania, Victoria, New South Wales, South Australia and Western Australia. The other poisonous snakes less commonly met with in Australia are (vide Jaffr.-The Snakes of Australia, Sydney, New South Wales, government printer, 1869): The Grey Snake (Dilophus vitreus) found in New South Wales, Victoria, South Australia and Queensland; Müller's Snake (D. mulleri) found in New South Wales, Queensland; Thr
Perry Island Snake (Diemernia torquata) of Queensland: The orange-bellied brown snake (Pseudechis australis) of Queensland. The Pseudechiis semifasciatus (an unknown species) of Queensland. The scarlet spotted snake (Brachyopsoma diadema) found in New South Wales & Western Australia. The Australian short-tailed snake (Brachyopsophis australis) found in New South Wales & Queensland. Moorfield's snake (Brachyopsophis triate) of Queensland. The Broad-headed snake (Hoplocephalus variogularis) of New South Wales. St. Stephen's landed snake (Hoplocephalus stephensi) of New South Wales. The Pall-head snake (H. pallidiceps) found in New South Wales & Queensland. Goud's snake (Hoplocephalus gouldi) found in New South Wales, South Australia & Western Australia. The Black-bellied snake (Hoplocephalus signatus) found in New South Wales, Victoria & Queensland. Ramsay's snake (Hoplocephalus ramsayi) of New South Wales. The Black-necked snake (Hoplocephalus nippepes) of New South Wales. The Black-baker snake (Hoplocephalus nippeles) found in New South Wales & Queensland. Flinders' snake (H. striata) of South Australia. The Port Lincoln snake (H. spectabilis) of South
Australia: The crowned snake (H. coronatus) found in South Australia.
Western Australia: Western's snake (H. modestus) found in South Australia.
The temporal desert snake (Hoglocephalus temporalis) found in South Australia.
Western Australia: The desert snake (H. minor) found in South Australia.
Western Australia: The black striped snake (Hoglocephalus nigrostriatus) of Queensland.
the hoglocephalus melanotus (a new species) of Queensland.
the Tasmanian whip snake (Hoglocephalus columbiae) of Tasmania.
the clarke's river snake (Tropidechis corincta) of New South Wales.
The red-bellied snake (Pseudechis australis) found in New South Wales.
Queensland: Krefft's snake (Lacophis kreftii) found in New South Wales.
Queensland: The black white-ringed snake (Vermicella annulata) found in New South Wales, Western Australia, Tasmania, South Australia, and Queensland.
The half-ringed snake (Vermicella lunulata) of Queensland.
the north Australian banded snake (Pseudonaja michalici) found in Western Australia and Queensland: Versuvia furina (Furina)
bimaculata) Western Australia:

Schlegel's snake (Dipentis plumosus) of Queensland: the spotted-headed snake (Dipentis olivacea) of Queensland:

Forder's dwarf snake (Caecophis fonderi) of Queensland: Harriett's dwarf snake (Caecophis harriettta) of Queensland:

Blackman's snake (Caecophis blackmani) of Queensland: the ornamented snake (Denisonia ornata) of Queensland.

There are the poisonous snakes of Australia (vide The Snakes of Australia, by Gerard Krynft. Sydney: New South Wales, 1869.). The non-poisonous snakes meet with in Australia are also very numerous, but for the purpose this notice need not here be alluded to.

In recently an infected with poisonous snakes so Australia, anything bearing on the treatment of snake bites must necessarily be of the greatest value & interest. The principal modes of treating snake bites recommended in the past may be briefly alluded to as follows:

1. The ligature— a tourniquet or other form of ligature tied round the limb between the wound & the heart, being removed only for a second or two at a time & then quickly re-applied,
1. Arsenic — does to admit only a very small quantity of the poison.
2. Incision — making five incisions into the seat. The punctures, reflecting the skin if necessary, allows to expose the tissues wherever altered in color & dissecting them out thoroughly.
3. Caustication — with part, by the actual or thermal cautery, caustics, red hot iron, strong nitric acid, a concentrated solution of mercury nitrate, or even exploding gunpowder on the part.
4. Administration stimulants — ammonia, ether, brandy, whiskey, champagne or given freely, even to the patient, making the patient intoxicated.
5. Bleeding, followed by transfusion.
6. Artificial respiration, galvanism.
7. Enforced exercise — running or walking the patient about to keep the respiration fast the elimination of the poison from the system.
8. Exuding the wound.
9. Cupping glasses applied to the besser part & a poultice afterwards applied.
10. Free excision of the part.
11. Arsenic — said to be a specific.
The 'Venjuk pill' of India, a celebrated snake remedy, owes its activity to the arsenic it contains. (Fayer: Arsenotrioda of India).

12. Carboxylic Acid injected into the wound.

13. Lachra's method - or the hypodermic injection of a solution of Permanezantol of Masse (2-3 c.c. of 1 in 10 solution) freshly prepared. The antidote should come into actual contact with the snake poison. Therefore should be injected into the snake punctures as well as elsewhere. This treatment was first recommended by Winter Blyth (Ride: The Analyst, February 28th, 1877, page 264.) and is known as the Lachra's treatment. It has been used successfully by Vincent Richeard (Ride: Landmarks of Snake poison literature, page 109.). The Permanezantol solution may also be applied locally to the part. It is said to be the most efficient. The chemical antidote has been successfully tested by Sir Joseph Fayer and E. Landes Bremner (Ride: Bremner & Fayer: Royal Society Proceedings, 1878: XL: x x vii: page 465.)

14. J. Smith's method - consisting in the hypodermic injection of diger
Potassar (1 part with 6 parts water) — to be used with caution. Also given internally by the mouth — m x 1/2 in. brandy every hour. (Ride Dance: May 6: 1852). Also applied locally to the part.

15. Halford's method — or the hypodermic injection. From M12 to 300 lb. liquid Ammonia Fort. diluted with three times its volume water and repeated according to circumstances. Halford expresses the radical or the large vein. Injects the solution into the vein. Recommended by F. B. Halford, M. R. S., Professor of Physiology in the University of Melbourne. (Ride Treatment of Snakebite, Halford, Staffett & Co., Melbourne, 1869).

Such is shortly a rough outline of the modes of treatment recommended & adopted for snakebite in various parts of the world. Within the last four years Dr. Muller, of Castlem-bal, Victoria, has brought before the notice of the medical profession the use of hypodermic injections of strychnine in snakebite and it is with this method that I shall quote the following cases.
bit printed by this method to remark on the streptomycin treatment.

First in the mode of using streptomycin in snakebite, Mueller, in 1930, recommended its use in Australia using a solution of Nitrate of Streptomycin (18.6 in 240 parts water mixed with a little glycerine): 1/20 are used for an injection. The frequency of repetition is any from 10 to 20 minutes, depending on the symptoms being mild or more threatening. When all symptoms of snake poison have passed, then the streptomycin action shows itself by slight muscular spasms & thus the disentangles the injecting, unless the snake poison shows itself again. Mueller holds that the streptomycin can be used without fear to quantities that would be fatal in the absence of snake poison. The injections may be used in any part of the body, but Mueller injects in the neighborhood of the bitten part or directly upon it. (Vide The Pharmaceutical Journal, June 13, 1891, page 1139).

Streptomycin in connection with snake poison has been experimented with at Calcutta, Dundee, Melbourne and
Drapet, since it is known that the symptoms of snake poisoning point to the most promising antidote. Yet all experimenters from Sir Joseph Fayrer to Dr. Hockstätter (vide works quoted below) after a series of unsuccessful experiments, hopelessly abandoned the task. Finding a physiological antidote for snake poison, Dr. Uhl relax, a country practitioner at the antipoles discovered the antidote, and is reported to have practiced its use with success for some years, when Hockstätter, misled by his experiments rejected it. Both published their results of their researches almost simultaneously, Hockstätter in his "Experimentelle Untersuchungen über Schlangengift," St. Petersburg, 1888; and Uhl in a series of articles in the "Australasian Medical Gazette," (November 1888, p. 124-126; December 1888, p. 68-69; February 1889, p. 124-126; April 1889, p. 179-182; May 1889, p. 209-210). Uhl's theory of the action of snake poison, derived from a careful analysis of the symptoms he observed in his patients, is identical in every particular with that drawn by
From his splendid and exhaustive experiments (quoted below), Unna, fully convinced that he had to deal with pains and paralysis of the motor and sensory nervous centres, and that all symptoms found a ready explanation by the merely functional interruption, injected his antitoxine intradurally freely, boldly venturing with quantities less than an hour's or quantities oftentimes that would have been fatal, but for the antagonism existing between the two poisons.

From the cases cited below, it will be seen that deaths from snake bite in Australia under strychnine treatment are certainly rare. It would appear that in the few fatal cases on record, out of a large number of successful cases, reluctance to proceed to ever larger doses has been one of the main causes of failure. For in some instances from half a grain to a grain of strychnine has been required to turn the scale in favor of the patient. Alcohol, too, in high stage of snake poison, appears to have no stimulating effect at all, but asserts its effect at once after the snake poison has...
been neutralised by the antitoxin. This undoubtedly proves the utter fallacy of the
myths of alchemy in which the belief in a special
chymical property (vide quotation above) that
they had rather a preserving than a
stimulating effect. Another error in
snake-bite treatment - Australian
experiences have shown in the
alleged difference between the
action of the poison of the Viperina and
the Chelonia. It has been strongly
maintained by all the merits
especially by Indian authorities
on the subject, that whereas the
poison of the Chelonia is a mere
poison, that of the Viperina is a
mood poison. The most deadly of
the Australian snakes - the Taipan,
Adder (Acanthophis Antartica)
belongs, as the name implies, to
the Viperina, but its poison yields
readily, as we have stated below,
slight, for the systematist, in the
knife of most poisonous snakes.
To explain the causes of failure in
the experiments on animals referred
for belief, is, in view of the success in
man, scarcely called for. With
regard to dogs or cats, it is very evident
that their molar nerve centres receiv-
Very sufficiently from these we can to both snake poison & Strychnine. They show a greater resistance. The former, for instance, are not unimportant at a stage, when, in case of paralysis, it is all but complete. Whether Strychnine will cope as successfully with the poison of the Indian Viper as with that of Australian snakes remains to be proven. So far, from the cases cited below, where Benjamins has tried the Strychnine treatment in India, the probabilities appear to be in its favor, as one can scarcely doubt that all snake poison acts according to the uniform principle, & that apparent differences are quantitative or the result of concentration in different parts of the motor nerve centers. Certainly from the cases reported below the hypodermic injection of Strychnine, if not antitodal to the poison of Australian Vipers, makes, must be regarded as one of the most successful modes of treating snakebite in Australia, accept brought forward. In nearly all the cases mentioned below, recovery took place in a very short time. Yes,
some of the cases where death resulted from the treatment was not commenced until many hours after the patient was bitten. Very inadequate measures had been previously employed. In some cases, too, it is very questionable whether the song was played to a sufficient extent to ensure a favorable termination.

During the last five years in general hospital practice in Australia, I have had the opportunity of meeting with four cases of snakebite. Three which were cases of patients bitten by Viperus caninus, the fourth by a non-venomous snake. The first two cases occurred when I held the position of assistant surgeon to the Creswick District Hospital, Victoria. The following are the details:

**Case 1**

D. H. male: aged: 34; miner; of Rocky Peak, Victoria, was admitted into the Creswick Hospital on July 9, 1885, at 11 a.m. Suffering from the effects of snakebite. The history of the case was as follows—about 7 a.m. while chopping some wood at the back of his house, he was bitten on the calf of the left leg by a Brown Snake (Dermaphis...
supercilious). His brother tied a ligature below the knee above the bitten part and with a pocket knife made some incisions into the part bitten & then sucked the wound. He then procured a horse & trap brought me his patient into the Hospital, a distance of eight miles & during the trip in gave him about half a quart bottle of whiskey. On the way in the patient vomited two or three times & became very frowzy. Condition on admission — heavy pulse 110, small mire, temperature 99, left leg swollen below the level of the knee, oedema, slight paralytic weakness of all extremities, pupils well dilated, sluggish but sensible to light, heart sounds feeble, respiration shallow. The patient could answer any questions put to him orوش handled, but relapsed again into a condition of stupor. I freely incised the bitten part & forced my about an ounce M.M. with a cupping instrument. At 11.20 a.m. I injected antivenin generally by mouth, then for several minutes 10 of the diurex Strophemin 3 B.P. Repeated the injection at 11.40 a.m. Again at 12:10, when his condition improved considerably, patient becoming less frowzy circulation & respiration better.
Repeated the dose at 12.30. At 1.00 o'clock he again became somnolent. I injected 1/3 mor and repeated this again at 1.30 and again at 2 p.m., having given him in all 55 minims of liquor strychninae. Subsequently, in a little under 3 hours, from the time of administration of the last injection he decidedly improved. I kept him lying quiet in the ward until tea-time at 6 o'clock. He then experienced difficulty in breathing, but this passed off by 9 o'clock. A slight stiffening of the muscles of the legs about 2.30 was the only symptom he had of atrophy. In the morning of the following day the patient was discharged from the Hospital. July 11th. During the time he was in the Hospital the atrophic condition of the muscles was treated in the form of the syrup: Strychn.: M 15, Cn. 3. The snake that had bitten him was killed by another brother of the patient and brought to the Hospital. On the day the patient was discharged it turned out to be of a very sized Brown snake (Dermis angustiaria).

The above case of snake bite which I attended while resident at the Greenwich Hospital...
Hospital was called to — F. T. male: age 41. Steward: 85 Bald Hills, near Creswick, Victoria. The history of the case was as follows: at 3 p.m. on October 4th, 1889, while removing some empty cases in a shed at the back of this store, he was bitten on the commissure of the first and index fingers of his right hand by a Black Fiddler (Pheidole nigerrima). He at once took a timehrift (a small hatchet) and chopped the end of the finger of, about six inches above the bitten part. His wife tied a stout litchiun around his wrist. No stimulants were given him, but he was at once conveyed to the Creswick Hospital, where I admitted him at 4.30 p.m.

Condition on admission: conscious but feeble, mind perfectly clear, pulse 100 small weak, temperature normal, respiration two shallow, regular, slightly dilated but reacting quickly to light, heart sounds distinct but feeble, slight staggering gait. I injected 10 of liquor strychninum B. P. and repeated the dose in 20 minutes, when his condition improved somewhat. In 1 hour patient began to feel better, injected 10 more, and 5 in another 40 minutes, when some slight muscular twitchings about the face caused me to
stop the injections, from the time of the last injection he quickly improved and was discharged from the hospital perfectly well on the following morning. He returned in the afternoon to have the feeling of the finger amputated and had him under supervision for the next 8 days, during which time he exhibited no ill effects from the snake venom or the treatment he had received.

During the next twelvemonth, I was called to the Trang District Hospital, a pastoral district in New South Wales. During this time two cases of snake bite occurred in the district, both of which I had the opportunity of attending. The first was that of a K. R. P. female: age 12. The daughter of the owner of a sheep station in the Riverina district. The girl was bitten by a bush shark (a non-Venomous snake) on the right ankle, while playing with some companions in the kitchen garden adjoining the station homestead, about midday on the 23rd January 1890. A telegraphic message reached me about 10 o'clock and immediately rode out to the station, a distance of 20 miles, arriving there about 3.15 p.m., a little over 3 hours
after the child had been bitten. The snake had been killed by the manager of the station. It turned out to be a non-venomous snake. The relatives had tied a bracelet around the leg & dosed the child with whiskey. On my arrival I found her in a semi- coma state, skin cool & clammy, extremities cold, pupils almost normal & reacting readily to light, pulse 130 & the cardiac irregular. On the ankle I noticed 3 distinct punctures. On learning the history of the case, knowing the terrible fear caused by bites, snakes in this country (either poisonous or non-poisonous) I decided that the girl was suffering from the effects of fright. That there was no snake poison to be dealt with. Beyond a hypodermic injection of morphia and assuring her friends that there was no cause for alarm, I did nothing to her & left her to her own natural condition.

The next case that I had to deal with was that of T. B. male aged 22, boundary rider on the Wa. sheep station. He was admitted into the Town Hospital about 11 a.m. on the 3rd November, 1870, suffering from the effects of snake bite. The history of the case, given by his mate, was as
follows: — about 7 a.m. the same day, while mending some fencing on the station farm, he was bitten by a Tiger snake (Hypodermus Austriacus) on the right leg, 4 inches above the ankle. He knew nothing about the snake, and he did not know the effect of the bite. He had a stick & handkerchief ligature above the bitten part and sewing up the part bitten between his fingers & thumb. He held a piece of flesh with a pocket knife, & then rode with him into town, where I saw him at the Hospital about 11 a.m. Found him in a semicircular condition, pulse fast, irregular & feeble, pupils widely dilated and insensitive, slight delirium below the part bitten. This had been a good deal of commotion during the ride into town, in spite of the ligatures being fairly well applied. On his admission into the Hospital, I applied a tourniquet below the knee removed the handkerchief ligature & injected my 10 I. (20 min.) of linein strychnine.

B. P.: I also applied a strong solution of corrosive sublimate over the bitten part. The strychnine injections were repeated at intervals of 1/4 hour until spasmodic movements of the limbs took place, and the injections were renewed
when these started, until midnight. In all he received about 75 minims of liquor strychninae B.P. in twelve hours. He passed a fairly good night. On the following morning was quite well, with the exception of some pain and tenderness at the seat of the bitten part where the flesh had the epaulets. Kept him in Hospital for three days. The exhibited no most unpainful symptoms. Such is a short outline of cases which come under my own immediate notice. In the last case, the snake was shot in June during the week. It was presented to me by the curator of the Sydney Museum, who informed me by letter that it was a medium-sized male Tiger Snake (Hydrelaps cinctus) of the about four weeks. Only three men were present in reference to the strychnine treatment. The fourth, in the first H.R.P. was of no poison. It was masticated without any treatment whatever. In the last case, strychnine could by no means be credited entirely with bringing about a favorable result, as in all these cases, other prompt rigorous methods were employed, with the object
Reducing the amount of the venom known taken into the system to a minimum.

The following case carefully collected from all known Australian sources, since the introduction of the hypodermic injection of strychnine in Australia as an antidote. Two bites of venemous Australian snakes will give an idea of the result of this treatment. Here for it may be relied upon. In each case that have given the name of the snake man who attended the case the journal in which it was reported:

Case 1. By Francis Pain, M.R.C.S. L.R.C.P. of Allora, Queensland. Male, young athlete, bitten in the right calf by a large Black snake (Pseudechis porphyriacus) at 3:30 p.m. The part bitten was freely cleaned, light burn applied about the wound and ammonia freely used at 7:15 p.m. Dr. Pain states that the patient was collapsed responding to Puri injected hypodermically M X. The last strychnine B. P. which improved the patient's condition considerably. The injections of strychnine were repeated at 8:15 p.m.; 9:30 p.m.; 10 p.m. in doses of M X; M VIII; M VIII respectively. At dawn, patient was sent home, perfectly well, having some slight local pain at the seat of
Case 2. (by J. R. St. George, Queensland Medical Officer, Maryborough District, Queensland.) J. P., male, age 19: bitten on the left leg, between about the ankle, by a Black Widow (Petriechinus Porphyriacus). Patient suffered severe wound of the hand and swelling about the bite. Rushed into the nearest town, 16 miles. Arrived by Dr. Quickely hours after occurrence. Examination: Patient was collapsed, respiration slow, pulse feeble irregular, inclined to sleep. The hand was swollen and petechial eruptions present. Typhus fever was injected: repeated in 20 minutes by a further injection of M.XV. A large quantity of bloodied saline was injected. Patient was vomiting. Vomiting was not relieved. became extremely sleepy. Two further injections of M.XK of 1:9: strychnine were given, which caused patient completely. One hour later M.K of 1:9: strychnine were injected, when objection pnumeanlar spaces were noticed. Slight pulse remaining quite necervent. (Vide Australian Medical Gazette, April, 1890, page 156.)

Case 3. (by H. C. Ball, F. R. C. S. Hennessy, Surgeon to the Maryborough Hospital)
(Queensland.) Miss H., age 13, bitten on the outer side of the right ankle by a large Brown Snake (D emeria australis) at 7 a.m. A rope was fastened around the leg from the ankle to the calf and the skin rode 6 miles to Maryborough, reaching the Hospital at 9 a.m., when she was seen by Dr. Gourd 2 hours after being bitten, who states she was in a nervous exhilarated condition, with slight pain in the lower limbs. Two punctures were plainly visible. The excisions were made across them and the limb placed in warm water, the part bleeding freely. M.XV. 28 c.c. of Peruvian snipe, and 28 c.c. of Tropaeolum were injected. Hypodermic removal of 10 c.c. of whisky was then given and M.X of physostigma injected half hour after the first injection. At 1 p.m., she was discharged from the Hospital. (Vide Australian Medical Gazette, April 1890, page 156).

Case 4. (by H.C. Gurd, F.R.C.S., of Maryborough, Queensland.) Male, aged 22: a Kanaka, bitten about the ankle by a snake (kind unknown as patient unable to speak English), dressing applied above the seat of the bite. Treated by Dr. Gurd by liquor opium and strophnium injected hypodermically. The patient recovered in 2 hours. No stimulants were used in this case. (Vide Australian Medical Gazette, April 1890, page 156).
Case 5. (by H. C. Garth, of Maryborough, Queensland.) W. O. male, age 16; bitten by a whip snake (Oxyrhopus melanops) on the ankle. Patient tied his belt tightly around the leg above the wound when one hour afterwards by Dr. Garth, his symptoms were such as might be caused by fright alone. One injection subcutaneously of My xii. of Liquor Strophantidi favoured him all night. (Vide Australasian Medical Gazette, April, 1890, page 157.)

Case 6. (by T. Bowd, of Gympie, Queensland.) M. J. age 7, black magiostate, bitten by a Brown snake (Dendrelaphis spp.). Halpert's treatment by injecting some Ammonia was tried first, resuscitation taking place, hypodermic injections of Strophantidi were used, also artificial respiration was resorted to for some time, under which treatment patient recovered. (Vide Australasian Medical Gazette, April, 1890, page 157.)

Case 7. (by S. S. Turner, M. B., of Traralgon, Victoria.) J. B. male, bitten by a Tiger snake (Hemiphractus curtus) on the back of the right hand at 12-30 p.m. Patient killed the snake tied a piece of string around the wrist found an incision over the bite.
He then walked 1 mile to neighbouring's house, faint & speech were affected, so that the neighbours thought he had been drinking. On his arrival at neighbour's house a piece of the flesh was sliced & whiskey given him. He was then driven 30 miles to Dr. Thwaites' residence & Thwaites saw him at 5.30 p.m., about 5 hours after being bitten. His condition then was speechless, small teardrop pupils, pulse weak rapid, pupils dilated, face pale. Myx of Liquor Strumelinae were injected & a rapid improvement took place. The ligation (which apparently had been useless) was then removed. At 8.15 p.m. he collapsed altogether. My 20 dig. Stroph. were injected, when he came round. Another collapse at 9.15 p.m. My 15 dig. Stroph. again injected, when slight muscular spasms about the face were exhibited themselves for that time he improved. Stimulants were given occasionally until morning & Dr. Thwaites states that the patient had been dead fairly during his 30 mile ride.

CASE 8. (By Dr. J. Thwaites, M.B. & Fenyman.)
Victoria. A.D. female; age: 13; bitten on the outside of the left leg, midway between the knee and the ankle, by a tiger snake (Oxyrhopus cinctus); at 5:30 p.m. A garter tied above the knee helped somewhat. A piece of flesh cut out of the bite line applied by friends above the knee. Whisky was freely given to patient-various several times. At 10:20 p.m. she was seen by Dr. Thwaites, who describes her condition as pale, cold, and a stare, breathing very loud, indistinct, pupils misaligned. Heart sounds very faint. M.7% of lignor and strychnine were injected hypodermically that applied. In 15 minutes her general condition improved and made a rapid recovery. Stimulants were given in small doses until morning. Dr. Thwaites states that in the strychnine envenomed the snake poison, symptoms of alcoholism began to show themselves. (Kidd, Transactions. 6th Annual Session of the Intercolonial Medical Congress of Australia, Melbourne, 1889, Pp. 945.)

Case 9. (By Dr. D. Perry, 7.P.R.P. 12 of Emmausville, New South Wales). Male; age, 30, Chinese; bitten on the foot by a death adder (Acanthophis antarcticus) at 8 p.m., Nov. 8th; lignitamins applied. Witnessed by Dr. Perry 9 hours after the
occurring, patient was more brind. An injection of M X V I of liquor Stramonium, R.P. given. Condition slightly improved: a further injection of M X given. Result recovery. (Vide Australasian Medical Gazette, November, 1891, page 60: also Australasian Medical Gazette, March, 1891, page 167.)

Case 10. (By J. W. Yeatman, M.R. S. T. of Auburn, South Australia.) M. D. 67: B. 45: Farmer: bitten on the thumb, on April 29. When seen by Dr. Yeatman, 1 hour after being bitten, patient was emaciated. M V I of liquor Stramonium was injected and repeated in 20 minutes again in 30 minutes. In 3 hours he was well enough to return home. Patient had a convulsive fit 3 hours afterwards which lasted one hour. (Vide Australasian Medical Gazette, December, 1890, page 91.)

Case 11. (By R. A. W. Donald, M.B. C.M. of Murrumburrah, Tindal River, Queensland.) M. S. Inspector of Sugar Plantations, in the Tinnamoo River, Queensland, bitten on calf of leg by a large black ant (Pheidole obscurator). Treated by ligation, sec. injection, ammonia, alcohol. Condition not improving. M X V I of liquor Stramonium injected the next hour. M X X move were injected in 1/2 hour. M X X move were injected M X X.
Case 12. (by W. J. A. Ray, M. R. C. S. of Seymour, Victoria.).

J. D. Slaughterman, bitten on the forefinger of the right hand by a Tiger snake (Hydroærophis viridus) which struck him by Dr. Ray about 1/2 hour after the occurrence. Patient was in a coma state. Had attempted to cut the bitten finger off, but had failed. Brandy (3 ounces) had been given him. Dr. Ray injected my x x of Strychnine solution (of Stronger 4v 1 in my 240); at this time he was in a semi-comatose condition, skin cold & pallid, pupils dilated and insensitive to light, pulse 80, unable to rise or walk. Could only be kept awoke by force. 30 minutes after this first injection, my x x was again given. Patient improved. Pulse 120 (remained) between 120 & 108 for 11 hours. My x v morphia solution injected intermittently at intervals of from 45 minutes to 2 hours, as the patient's condition improved. Between 7 & 8 p.m. he relapsed & the strychnin was stopped about 1/2 pain being felt during the next
From London (\(3^\frac{3}{4}\) yards hence, Mr. previously given him). They slight muscular twitchings subsided themselves. Patient made a good recovery. Two doses of seventy were given after treatment was commenced. (Vide The Practitioner, Vol. xii. p. 483, and Australian Medical Gazette, Feb. 1891, page 136.)

Case 13. (By H. T. Forster, M.B. Chir. Resident Medical Officer, Echuca Towns Hospital, Victoria.)

A. C. male: age: 6. bitten by a Death adder (Acanthophis Antechinus) on the night hill, at 3 p.m. Oct. 21. His father had been bitten leg, necrosis around and administering alcohol. Admitted into Hospital 2 hours after occurrence, patient had been vomiting. Condition of swelling, compound, pupils widely dilated, with severely any expectoration light, pulse 86, fine, warm and moist. Postmortem returning mark of punctures. Syrup coffee administered. In 15 minutes patient's condition worse, limb, face pale blue, eyes half closed, extremities cold, pulse imperceptible, respiration feeble. My x 2 diger. Stephennarine B.P. injected artificial respiration applied. Condition improved, discharged well next day. Legs weak for
Two days after. (Vide Australasian Medical Gazette, Feb. 1891, p. 141.)

Case 14. (By H. F. Forbes, M.R.C.S. Eng., Surgeon to the Charlev Tumors Hospital, Queensland.)

M. w. male, age 20, bitten on the left buttock. Admitted into the Charlev Tumors Hospital 2 hours after the occurrence. Condition: stiff, unable to walk, respiration harrassed, pulse slow, pupils dilated, mucus pepper and salt in the eye. Wound had been scratched. 1/2 dram strychnine injected and patient watched for several hours. Remained well. (Vide Australasian Medical Gazette, Feb. 1891, p. 141.)

Case 15. (By C. J. Wether, M.R.C.S. of Tottenham, New South Wales.)

Female, 20, bitten on the outer side of her left thigh by a Black snake (Pseudochis hatipresus) on Jan. 15. Patient complained of weakness and all symptoms of snake poisoning. 1/2 dram strychnine injected, raised her slightly. In 20 minutes 1/2 dram more injected, when she quickly began to recover. (Vide Australasian Medical Gazette, Feb. 1891, p. 141.)

Case 16. (By W. J. R. Ray, M.R.C.S. of Seymour, Victoria.)

Male, age 16, bitten by a snake (species not known). The patient was not seen by Dr. Ray until 7
hours after the commencement when my 1/80
of strychnine solution (1 in 240) were
injected during the next 6 hours, by
which time toxic symptoms developed
which subsided in about 2 hours after
the last injection. Further 8 hours
later patient became cyanosed & in spite of
a further injection of my 1/10 (of the 1 in
240 solution) in 15 minutes, he sank
towards within 2 hours. (Vide Australian
Medical Gazette, Feb: 1891: page 148.)
Case 17. (by James Kingstone M. D. of
Newtown, Sydney, New South Wales).
Dr. B. bitten on the foot toe of the
left foot, by a Tiger Snake (Oxyrhopus
centus) at 7 pm. Dipirene applied,
strain screamed reached. About 10 pm.
she was seen by Dr. Kingstone who
found her cyanosed & almost pulseless.
1/50 of 1/50 of strychnine (Parr Davis 3/10
Kalloeds) was injected. Circulation
after few minutes to a Third injection of
similar strength within 15 minutes.
Circulation improved, slight muscular
stiffness manifested. In 20 minutes
1/50 of strychnine was injected. The
patient was still unconscious. After
which she made an uninterrupted
recovery. (Vide Australian Medical
Gazette, Feb: 1891: page 148. T Australasian
Case 18. (by C. T. Harkein, 11. B. Ch. of Chiltern, Victoria.) Mrs P. bitten by a Brown ant-like (Dinemonis superscissa) on two of the fingers. Ligation applied. Treated by Dr. Harkein with Stephensine injection. Result - recovery. (Vide Australasian Medical Gazette, Feb. 1891, page 148.)

Case 19. (by Archibald Campbell, F.R.C.S. Incorporated of Grafton, New South Wales.) B.C. male; alt. 20; bitten by a Dog whistled (Acanthopus Australis) on the middle finger of the left hand, at 8 a.m., Jan. 15. Ligation applied, wound soaped and dressed, Stephensine administered. Patient then driven 18 miles to Dr. Campbell who saw him about 1 hour after he was bitten. Condition - dry, speechless, vomited, pupils slightly dilated, but reacting to light, pulse fast, skin moist, injured finger swollen. My x/5 of Liquor Stephensine injected 7 p.m. 40 minutes my x 5 more.
Result - recovery. (Vide Australasian Medical Gazette, Feb. 1891; page 148.)


attempts made to cauterize wound. Then by Dr. Wigan about 3 hours after the occurrence. Condition on admission, 

2/5 of pain of strychnine injected into arm. A piece of the calf cut out to dry encircling muscles. Dose of strychnine (1/5 of pain) repeated. Patient quite recovered in 36 hours. (Vide Australasian Medical Gazette, March, 1891, p. 179).


Case 25. (by J. D. Wright, A.H.Q. R.I. F. Crookwell, New South Wales). M. aged 9,
bitten on the finger by a Black Snake.
(Pseudochloporphyraeus). Dijamin applied to finger scarified. Dihxin throughout by Dr. Wright, who injected each arm with 0.5% diaminesthenin: dose repeated in 15 minutes. Result-recovery. (Vide Australasian Medical Gazette, April, 1891, page 211.).


M. L. J., St. Leonard's, Tasmania, bitten on the outer side of the right leg, on March, 11. In three hours from this, the leg was covered with small rashes, semi-enamoured, pain on walking. Diphenyl and ammonia have been used, wound cleansed with clear acid. Diaminesthenin injected at 12.30 p.m. 25th: 6.40 p.m. 30th: 1.10 p.m. 15th. Then, 15 every 1/2 hour until 3.10, at 4.10, 5.10. Then, 15th: at 5.10 p.m. 10th, all symptoms entirely cleared up. Diaminesthenin applied. Result-recovery. (Vide Australasian Medical Gazette, May, 1891, page 224.).

Case 27. (by C. A. W. Hunt, M. B. (Oxon.), Horse Surgeon, Taronga Zoo Hospital, Queensland.)

T. D. male: art. 16 years. Bitten by a Death adder (Acanthophis antarcticus) on the third finger of the left hand, at 5.30. Part of finger removed, fingers racked and

Case 28. (by H. Stokes, MC & EEP of Henry, Victoria.) W.T. male: age: 19; bitten on fingers & thumb of left hand by a tiger Snake (Austrolesapsus carinatus) at 11 a.m. Nov 19 55. Ligatures applied & wound sucked. Patient then taken 50 miles by water & 16 miles by road to nearest doctor, Selby at 1.30 a.m. Nov 20 55 by Dr Stokes, condition snowed, joint affected. 30% pain of strychnine.
injected and stimulants given. Wounds
incised. Vein on lower thigh opened and
blood expressed. Ligatures removed.
Median epigastric vein opened & blood
expressed. $\frac{1}{30}$ grm of strychnine given
hypodermically every hour for 4 hours. Then
again twice at intervals. 3. p.m. pulse
fleble. $\frac{1}{2}$ grm strychnine given. Remained
comatose. (Vide Australasian Medical
Gazette: December 1891: p. 90.)
Case E. (By R. H. R. Bennett, M.R.C.S. I.E.
Durgan to the Cullphoya Hospital,
New South Wales.)
Woman bitten
by a snake, wound noticed ranked.
Some 5 hours afterwards by D. Bennett,
condition semi-comatose, unable to
articulate, limbs flaccid, helpless,
pulse imperceptible, skin moist. M30 of
dilute amylar injected
Repeated within 1 hour: patient getting
worse. M15 of dilute strychnine
injected near wound, causing considerable
improvement in circulation & respiration.
A second injection of M15 dil. strychnine.
Brandy & spirit. Patient improving
slowly. Brandy repeated & patient just
able to sit up. Quite well next morning.
(Vide Australasian Medical Gazette:
January 1892: p. 104.)
Case 30. (By T. Pain, M.R.C.S. I.)
Allora
(Queensland).  P. O. D. male: act. 9. bitten by a Brown snake (Diemenia superciliosa) on the left shin at 5:45 p.m. Wound sterilized, dressed, 10% alcohol applied. Had a convulsive fit while being brought to town. Seen by Dr. Parry at 6:15 p.m. Condition: free from pain, hypostasis, pulse force, 100, pupils contracted, vomiting, NV dry. Stroh injected & battery applied. Dose injection repeated in 15 minutes again in 15 minutes. 7:30 p.m. battery reappplied. Brandy given. Patient encouraged to walk about. Brandy repeated and an occasional walk until 10:30 p.m.

diaphabrotics removed. 11:15 sent home. Patient completely recovered next day.

(Vict. Australasian Medical Gazette, Jan. 1892: p. 114.)

Case 31. (Mr._hello). Dr. Dunwell, M.B. B. Toowoomba, Queensland surgeon. The Toowoomba Hospital (Queensland).

A. 0. male: act. 8. bitten by a Brown snake (Diemenia superciliosa) on the right shin, at 8:30 p.m. Brandy given. Vomited some blood. Seen by Dr. McC. Dunwell at 10:30 p.m. Condition: free pale, pupils widely dilated, reflexes slow, mind clear, dry. 10% IV of diurein injected. B.P. injected: lifetime
applied and wound sutured. In 10 minutes a further injection of M VIII of liquor strychninum given. Patient vomited about 2 ounces of bright red blood. Irregularity of the pulse and the injections of strychninum continued at intervals of 15 minutes, until m 20 had been given. Slight tachycardia, 88 per cent, and appearance of patient exerted, pupils dilated, blood oozing from

nosa. Condition became worse: the hemorrhage increasing. Boy died at 11.45 a.m. (Vide Australasian Medical Gazette: Feb. 1892: p. 120.)

Case 32 - (Dr. C. Marsden, B. A. M. B. M. Medical Superintendent, Prince Alfred Hospital, Sydney, New South Wales.) 3. Mr. M. male. age: 12: admitted into Hospital at 8 a.m. Jan, 4, bitten on the instep by a dog. 6 p.m. right foot at 8 a.m. 90; been vomiting and vomiting. At admission had been applied. Condition on admission:

body: pulse 120, small and rapid, temperature normal, right leg cyanosed, red before the level of the ligation. M VIII of the liquor

strychninum injected, punctured, 2 p.m. thirst and

thirsty, lipotonic. Ligation removed; pulse 100; M VIII

lig. Strychn injected. 4.30 p.m. pulse, 2 and condition apparently improved. Jan.
pain on swallowing. Throat sore. Head slept well during night. Tonsils and pharynx congested. Throat painted with {illegible}. Temperature normal.
5% every 3 hours for throat pain. 1 dr. Glycerin. Acid. Tannic. 3:30 p.m. Gordon
amine. 5% amine. Lachnocurin. Preparation
Co: every hour in water. Pulse 138. 9:45 a.m.
Hypodermically injected round him a little. 7:15 p.m. much worse. Pulse 185. Miller 5 1/2 dr. My. Lig. Stryp. Again injected. 8:30 p.m. Pulse better, temperature 102°. 10:45 p.m. worse. Emaciated. Increased myotic irritability.
12 a.m. T. W. Post mortem examination made 12
hours after death: Livid necrosis
poor, rigor mortis well marked. Post mortem
lividity present on neck, ears, back.
R 23 Dr: Upright slightly dilated. Surface
oily somewhat pale. Bruises on right
Skin: 2 small incisions on right instep
one on great toe of right foot. another
marks: subcutaneous fat cells in
quantity. Viscera in general well filled
stained with bile. Some sub peritoneal
hamorrhages on the undersurface of the
diaphragm. 

Lungs - Right 14.03. Tilt 8.03. Slight pleural effusions on both sides; hyperplastic congestion at both bases; lungs somewhat engorged; some mucous pus in bronchi. 

Kidneys - Right 30.3. Tilt 4.03. Both engorged with blood; capsule slightly edematous. 

Heart - 5.03. Clotted blood in auricles; fluid blood in right ventricle; small dark almost echymoses or vesicular perforation over L.V.

Ventricles: left ventricle muscular thickened; valves slightly thickened at edges; slight adhesions patch at mitral YPS. 

Coronary arteries: myocardium firm.

Spleen: 4.03. Engorged, very friable.

Liver: 34.03. Gall bladder intact.

Engorged. 

Stomach contained 1970 cc. green fluid; mucous membrane engorged with slight hemorrhagic patches throughout. Contents small, normal; lower ileum engorged; the mesenteric glands enlarged. 

Brain: Spinal cord normal to all appearances; vessels engorged throughout. 

Lungs & Trachea mucous membrane very markedly engorged. 

Viole Australasian Medical Gazette; Feb: 1892; page 120.
Case 39. (By T. Pain, M.R.C.S., of Hobart, Tasmania.)

A. A. F. Female, aged 13; bitten on the little finger at dawn. Friends attempted to assist in saving the girl short; foreign matter was removed and poured her a bottle of half

Aqua destillata sleeper in her face; pinching; slipping 10 times by Dr. Pain at 5 p.m. Condition: lips, pulseless, cold, stiff; hemorrhage from nose and mouth. Myx of ligature stroke injected; dose repeated in 15 minutes, to 15 1/2 grain of strychnine being used. Life-tube removed. At this time she was restless tossing about, faint in face. Waxy, small bounding pulse. The hemorrhage had ceased. Died at 8 a.m. from cerebral anemia, presumably the result of the heroic treatment she had received at the hands of her friends. (Vide Australasian Medical Gazette, Feb. 1892: page 138.)

Case 41. (By H. B. Jamieson, M.R.C.S., L.R.C.P., of Wallhalla, Victoria.) Male, bitten by a Tiger snake (Hypoapsalus carinatus) on the wrist. Vomited. (Vomited twice), physicks applied, ammonia given. Seen by a dentist who administered some ammonia & afterwards strychnine; M30 being injected on 15 pints by the mouth. Bromide freely given. Seen by Dr.
Gamble, shows after being bitten: was
tin in a drowsy condition: had slight
convulsions. Recovered. (Vide
Australasian Medical Gazette: March:
1892: page 169.)
Case 35. (by W. R. Hilsheim. M. R. C. S. E. of
Richmond, New South Wales). Male:
aged: 25: bitten on the left thumb at 9
p.m. first by Dr. Hilsheim at 11 p.m.
Condition: happy, happy, unconscious,
sensation hollow, pulse feeble, pupils
dilated. Injections of digisul phrenine
given: 11:30 a.m.: 11:40 a.m.: 11:30 a.m.: 11:20 a.m.
sharp tetanic convulsions on 1st day for
2 hours, which passed by injecting
0.40 of Phos. Bromid. instituted
into the rectum. Recovered. (Vide
Australasian Medical Gazette: March:
1892: page 169.)
Case 36. (by W. R. Hilsheim. M. R. C. S. E. of
Richmond, New South Wales). Female,
bitten on foot. Bitten by Dr. Hilsheim two
hours after the occurrence. Condition: face
pale: unable to walk or stand: respiration
hollow. 0.75 of digisul phrenine were
injected: the ½ hour a further injection
of 0.75. High muscular twitches
showed themselves. Recovered. (Vide
Australasian Medical Gazette: March:
1892: page 170.)
Case 37. (By W. Johnson, M.R.C.S., B.A.,
Arara, Victoria.)---A boy bitten by a
Tiger snake (Hyposophalus cerastes) in
the little finger of his left hand at 4.
m. Feb. 15th. Finger cut off the
next day by husband; locally five
ligatures applied. Treated by Dr. Johnson
at 9.30 p.m. Condition unconscious,
eyes turned out, pupils dilated, pulse
slow and fleshy, respiration shallow.
Haemorrhage from finger had been considerable.
M. X VI liquor strychninae injected. 5
ligatures applied close above finger.
Respiration circulation improving.
½ hour after first injection M. XV
more of liquor strychninae were injected.
The patient came able to stand without
assistance. Encouraged to walk about
later on M. X VI of liquor strychninae
injected. Patient mn conscious and
rational, slight muscular twitching
not noted and watched until morning.
No further unfavourable symptoms.
(Vide Australasian Medical Gazette:
March 1892: page 170.)

Case 38. (By R. N. Welker, M.B., B.Ch.,
Sydney, New South Wales.)---Female; bitten by
a Black snake (Pseudophis parvipes) on the left wrist. Ligatures applied. Hot
salt and water applied to bitten part.
Mr. J. F. Forward (pronounced being bitten. Condition - drowsy, pale, nervous. Had
anaesthetized. Mx x 0.5% Xylocaine. B. P.
injected. Wakes for 4 hours. Sent home
quite well 5 hours afterwards. (Vide
Australasian Medical Gazette, April,
1892, page 198).

Case 39. (by R. H. K. Bennett, M.R.C.S. I. I.
Blythting, New South Wales). M. W.
Bitten on the forearm by a Brown Snake
(Dementia Serpentina). Lissufed:
Wound sucked. Seen fairly firm. United
fairly. When seen by Dr. Bennett 6
hours afterward. The patient was insensible
respiration feeble, pulse much less visible.
Mx x 0.5% Xylocaine. B. P. injected
at once - slight improvement. In 25
minutes the same dose was repeated -
respiration & circulation improved.
Being still drowsy, in 10 minutes a
Further injection of Mx x 0.5% was given
and allowed patient was allowed to
sleep, still being watched. Patient
recovered next day with the exception
some hysteria which lasted for
about a week. (Vide Australasian
Medical Gazette, May, 1892, page
205).

Case 40. (by W. H. Christie, M.R.C.S. I. E.
My Clegou, Victoria). M. W. bitten by a...
The document contains handwritten text that is difficult to transcribe accurately. It appears to discuss medical or scientific topics, including mentions of pain, medical conditions, and treatments. Due to the handwriting style, the text is not clearly legible and requires careful reconstruction.
being bitten. (Vide Australasian Medical Gazette: June 1892: pages 265).

Since the treatment of snake bite in Australia by hypodermic injecting of strychnine, was adopted, it has been tried with some success in India among a class of snakes whose bites are very rare. There are some few more venomous than those of the Australian snakes. Bernis reports several cases of snake bite in India, treated by hypodermic injecting of strychnine, all of which recovered (Vide Bernis: May 28th, 1892). Of these seven cases, four were caused by bites of the "Cobra Cornuta," and the other three cases were patients bitten by the "Bungarus Cotylus." Ferguson, in his "Therapeutics of India," says, of the "Bungarus Cotylus"—"This is the worst of India, next to the Cobra. Of the Bungarus, next to the Cobra, most destructive to human life, though not actually as venomous as some others." Of the "Cobra Cornuta" he says, "It is venomous, but Guinther says it bites as most venomous have proved fatal. This impression I think is very doubtful, one in presence killed a full in 4 minutes, another in two minutes & a dog in about 4 hours." (Ferguson: Therapeutics)
of India.). This statement of Cooper concerning the "Cebus Carinata" is borne out by Barrie, who gives an account (vide Australasian Medical Gazette: Oct. 1892: page 388) of five cases of Cebus Carinata bite, all of which terminated fatally. In the same article, he states he has treated five cases of Cebus bite with Arsenic, all of which recovered.

Vide Australasian Medical Gazette: Oct. 1892: p. 388.). Barrie also records a case of bite from the Sabaria Russellii, which recovered, and to the Antelminilus treatment (Vide Australasian Medical Gazette: November 1892: page 402.).

Such is shortly a brief summary of all cases of snake bite treated by hypodermic injection of Antelminilus, which have been reported in the colonial medical papers. Many cases of snake bite in Australia with the treatment adopted appear from time to time in the lay press, but these stories are not verified, except in cases where there were also notified in the Australian Medical press.

As to the action of snake poison on the system, Muller was first directed to Antelminilus in snake bite cases, that snake bite is not a blood poison, but a
specific nerve poison, that it lowers the functional activity of the motor nerve centres, thereby reducing the volume of motor nerve currents throughout the body, interfering with the normal force transmission from cell to cell as well as from cell to peripheral fibres. The contents that all the signs and symptoms accompanying the poison are explained by this theory. (Vide Australian Medical Journal: Melbourne: Stillwell Co.; May 15, 1881: page 496.) Schieve's views held by Mueller regarding the action of arsenic poison from which he advocated the atropine treatment. The formulations of these views not from experiments made upon animals but from observations made upon patients suffering from arsenic poisoning. T. F. Well (Vide Proceedings of the Royal Society: 1881: Vol. xxxi: Page 338) holds views very similar to Mueller, but Well does not specify the motor and sensory nerve centres or the organs specially affected by the poison. Possibly therefore the name of atropine as an antidote did not occur to Well. Well explains the depressing effect of atropine over the nervous system as an antidote to the poison.
Cerebro-spinal System, (Proc. Roy. Soc. 1881: Vol. xxxii: p. 333). Sir Joseph Fayrer & Lander Bruntin empius the action of the poison to the terminations of the motor nerves (Bruntin & Fayrer: Royal Society Proceedings: 1878: Vol. xxvii: p. 465). Fayrer, Lander Bruntin Wellcome with Smellier short the upper spinous spinous its action is empius stimulation limit & does not act on the blood. (Vide spictes). Well extends its action to the motor. The cerebro-spinal system, while Fayrer & Bruntin single out the motor system, but assume only the terminations of the motor nerves to be affected. Smellier holds that the motor & sensory motor nerve centers are the parts specially affected. Flodderston also regards the disease as a specific nerve poison (Vide his experiments quoted below).

Our utmost difficulty lies in the theory of the lesion being a specific nerve poison affecting the motor & sensory motor nerve centers, is the blood changes which accompany the lesion. Lander Bruntin & others have regarded the change as a blood poison tax the other symptoms merely the result of this. (Vide Halford -
In the edition of the Medical Gazette from Melbourne (1869), it was shown that male poison is not a blood poison. Mueller made some experiments with the poison glands of a Tiger Anteater (Vicela Australiensis) being inserted into a test tube. A drop of the poison was then removed from the mouth of a patient and placed in a test tube. The tube was placed in a bath of water and the poison was removed. In one experiment, the poison was injected into a rabbit, and the animal died in 2 hours with all the symptoms of acute poisoning. Blood was taken from the left ventricle, and when placed in a test tube, it coagulated. The poison was then inserted into the blood of a brown snake (Dermis angustilinea) placed in a test tube containing ammonium.
and other venomous bite or even lower forms of animal life. (Op. cit.)

By far the most elaborate scientific researches in Europe in the subject of the venom of its antidotes are those of Plekhtev, as given in his work—Experimental und Untersuchungen über Schlammgift: St. Petersburg: 1888. His experiments on mice, small children, and the venom of vipers, cobras, etc., were done in Professor Peter's laboratory at the University of Dorpat, under that of Professor Djawajewskow at the Imperial Academy of Sciences, St. Petersburg. In his own private laboratory, the animals (about 200) were kept in hot-humus (so-called thermia) at a uniform temperature. Unlike most previous authors, selecting only domestic animals as subjects, he poured the material mēdica promiscuously into them when under the effect of the poison. Plekhtev chose for his subjects specimens merely very class of the animal kingdom, from the monad up to the higher vertebrates. Instead of empirically searching for an antidote, made the principle...
Action and the organs on which the poison concentrates its fatal action, the first and principal object of this search. Shortly, then, from Fontana's researches, with which now dealing, it may be seen only the lowest forms of animal life—plants, and from one part of their bodies, 0; i.e., of a 2 per cent. solution injected into the heart of an adult frog (Bufo vulgaris) caused an immediate arrest of respiration. Crustacea also were quickly affected, e.g., the shell of 0.1 of a 2 per cent. solution injected under the shell of the tail end of a crayfish produced paralysis of the heart and the whole muscular system, 0 the same effect together with apneustic respiration, was observed in fish. Frogs showed first paralysis of the hind legs, then general motor paralysis with arrest of respiration and circulation. In mammals, the symptoms were almost uniformly the same with which the poison often Vipera caninum produces in man—locally extravasation of serum and swelling; into the cellular tissue, muscular tissue; generally, dyspnoea, paralysis of the hind legs, finally general paralysis, occasionally convulsions accompanied
by blood vessels discharges of hemorrhages from lungs, lungs, nose & bladder, finally ending in death by asphyxia & cardiac heart paralysis. Possess from them several effects. Holt's toxin refers the special effects on special organs & their functions as follows:—

Action on nerve centres — Paralyzing central nervous system, motor reflex action sometimes increased at first, lost with advent of paralysis. The latter commencing in the lowest part of the spinal cord, ascends, involving center after center. With regard to the effect of strychnine, Holt's toxin found that frogs resisted the effects of strychnine when under the influence of the active poison, that the latter arrested within five minutes. Tonic convulsions primarily produced by it. From the fact of barium chloride not causing convulsions in awake poisoned animals as it does in healthy ones, Holt's toxin concludes that curare poison acts by paralyzing the physiologic energy in the hemispheres, of which barium chloride is an irritant poison. Action on peripheral nerves — Motor sphere most affected, paralysing it. Nerves of paralyzed extremities produce corresponding muscular contraction (difference between curare & curare poison). With regard to sensory sphere, experiments
n't exclusive, denervation loss with result of paralysis. Action on muscles—induction currents, producing contraction. Muscle tension not a muscle poison. Action on pupil—irreversibly paralyzed, excess dilatation with complete insensibility to light. Action on the heart—paralysis, but preceded with a short period of stimulation. Clinical features with paralysis of associated centers. By a series of most ingenious experiments, Hotchkiss proves that it proceeds both from central and local centers, hence the regi—the intracardial motor ganglia, that the heart action waxes in diastole or semi-diastole. Action on blood pressure—Hotchkiss theorizes the immediate and sudden fall to paralysis of the N.N. sympathetici, besides, because the reduced heart action and general vasomotor paralysis. The N.N. sympathetici regulating centralizing the portal circulation, the blood rushes into the relaxed arterial vessels, causing immense engorgement 3 draining the rest of the body. Of course, raising the blood pressure in make the ammonia was found most effective, to the beneficial effects. Yet in light cases of poisoning and thus exaggerated. Transfusion raised the blood pressure only as long as it lasted. The blood immediately after it making
into the abdomen. This procedure lasting as long as before. In one of those experiments, foetators, whilst injecting defibrinated blood into the external jugular vein allowed a corresponding quantity to flow out of the external artery. Foetators also infused so far as normal blood from the animal had passed through it, and a drop of the original blood could have been placed. The result was mild, neither the blood pressure being permanently raised, nor the general poisoning symptoms changed.

Action on respiration — invariably depression, apnoea, or finally complete paralysis of the respiratory nerve centres. Very large doses often cause panic, simultaneously paralyse respiration, heart and motor, the blood pressure at once sinks to 0. Action on blood — in a 2 percent solution, it causes a hyperaemia of the tissues of the corpuscles it is dissolved and the haemoglobin is separated from them, but an equal effect is produced in the blood of a poisoned animal. It is noted, however, to take place locally, when the poison is injected in a concentration from 0.001 to contact with the blood. Foetators denies the disintegration of the corpuscles observed by Mitchell (vide Remarks upon the Venoms of these snakes: by
I. Weir Mitchell: page 89: Smithsonian Contributions to Knowledge: 1860. and Halford (Ridg. Halford in
The end of the blood affl. death from snakebite: Stillwell (Knight: wellmen: 1869.) and ascribes this dark fluid
end of the blood merely anoxemia, and not to the corpuscles having lost
the power of taking up oxygen, or as
Stillwell regards it, being prevented from
absorbing it by the dilatation of the pulmonary
capillaries (Ride Australasian Medical
Gazette: February: 1897: page 126.) As
our patients do not die from anoxemia,
yet their blood is both dark, liquid, to
exhustedly show blood, hemoglobin, corpuscles
under the microscope, their diversity
causes for further investigation. Active
mercury—frequently large quantity of
red or white corpuscles, but neither
albumen nor sugar. Venue of fever
neurotic very prominent to them by
intra-vessel injection. Local action
at the place injection or at its
neighborhood—immediately on the
pricking in contact with restless
mental wires, paralysis of the latter
the small pangs into shock in their
course, takes place, followed quickly by
exsanguination. The latter are only exceptionally
due to rupture of capillaries, but blood capillaries penetrate vessels per
dispersia. Froebetion failed to explain this process but points out that changes in the blood vessels & the circulation
encequent m. paralysis m. motor nerves, as well as the action of venin
ings in the latter, call for further study
18.11. (Experimentelle Untersuchungen
Such are the principal results of
F. K. K. isner's most elaborate experiments.
In the main, the conclusions drawn by
him agree with Muller's theory of the
active snake venom. Thus, arrived at by totally different lines of research,
Muller being confronted with results
drawn from venom material often
hypothetically manifested by patients
suffering from snake-bite, F. K. K. isner
by laboratory tests, experimented on
animals. And both agree that snake
poison is a nerve poison, depressing
and with complete action entirely
suspending the function of the motor
vessels & motor nerve centres. But in
the most essential point of view, viz. the deductive proof & practical
application of the theory, F. K. K. isner's
labours are perfectly negative in result,
In he does not state, why, after encountering the undoubted antagonism between snake poison and atheboline, he abandoned the latter as an antidote, but merely concludes (vide the therapeutic part of his work) with the assertion, that, in the present state of science, a physiological antidote cannot even be thought of, even were we not able to remove the perversity of the spinal cord, the intraventricular end of the vesi, the heart, lungs, etc. Hence, evidently atheboline, whoever in it chết on animals, has failed him, and he has fallen into the mistake Morrisan investigators. On the other hand it must be noted that australian snakes, with the exception of the St. Andrews' Asterix — the death adder — are all elaphiines, and that festivus experimental with viper venom only.

In Australia the Bennet-M landsdowne has lately made some experiments with snake poison and atheboline, in order to test the correctness or otherwise of the atheboline treatment. In a paper read before the Royal Society of Queensland: Sept. 19 1890, reported in the proceedings of the Royal Society of Queensland: Vol. VII. p. 8.
Benvenuti gives the results of his experiments. He reported to Kew the Black Snake (Bungarus paradiseicus) made experiments to ascertain what quantity of venom injected would be necessary to kill a full grown guinea-pig. Five experiments were made by Benvenuti to see the effect of hypodermic injections of different quantities of strychnine. Four more experiments were made to determine the effect of the injection of the snake venom and strychnine mixed in different proportions. Benvenuti's results showed that the effect of the snake poison was in no way modified by the amount of strychnine injected. In one case 1/2 grain of snake venom with 40/5 grain of strychnine caused death as quickly as 40/5 grain of strychnine alone, while with 1/20 grain strychnine death came on as soon as if the venom had been doubled. Benvenuti holds that theoretically strychnine should be valueless, seeing that it stimulates finally paralyses the very nerve centres that snake venom paralyses and holds that, if the venom has been a poison one, strychnine is powerless.
avert death. That the effect was due to substances acting together, though having a stimulating or a paralyzing property, would be to show that the ment of one was as strong as if the paralyzing substance were acting alone. And he holds that an antidote to snake poison should be such a substance as could decompose the Venin or emulsion in some way with it to make it impossible that no antidote we know can reach a living constituent of the same time killing the organism. Benevot objects to alcohols, teamannines, aspoless, snakeroot, spermaceti, and sunder I wish you only when it comes into actual contact with the poison itself, and he holds that Theoretically the digitalis groups are the only ones that could be dangerous in some cases. Their action on the muscular substance of the heart resembles the best treatment. A snake bite is treated into the bite mark the poison. (Vide The Australasian Medical Gazette: Nov. 1890: p. 241).

Interesting are Benevot's experiments and he does not deal with the matter on the same lines as Muller or others have done. In Benevot's experiments the snake was administered in two doses only, a dose
ascertained by previous experiment
experiments being fatal to a juvenile pig, but
under the circumstances inadequate to
counteract the effect of the snake poison
and it was administered subcutaneously
with the venom, whenever choleretic or
drug it in Australia present this difficulty.
and give it in much larger doses,
injecting subcutaneously from 10 to 20
minims of the liquid strychnine or
dispersing the dose every 15 minutes
until the paralyzing effect. When such
it is a much more extensive
cells are screened to light. Strychnine
symptoms subside, the quantity
then slowly required for the purpose
depending on the amount of
venom injected by the snake. The
same negative results as Berenof
obtained have been also arrived at
by Sir Joseph Fayrer, Richardo, Weir
lanchell & Fotherington (with unk
quoted above) all of whom tried exposing
with snake venom and strychnine.
Possibly had Berenof used his strychnine
treatment with juvenile pigs under
circumstances most in accordance
with the method under which it is
used with patients suffering from snakebite,
different results would have been arrived at.
In many cases of snake bite in Australia the reliever upon antidotes for poison persons bitten from raising the bite and applying the wound, a mode of treatment, which when combined with the judicious use of hypodermic injections of morphine should generally prove efficacious. As snake venom depresses, naturally some practitioners advocated administration of stimulants, particularly heat stimulants. Adler Brunton is probably one of the best known to use of Dr. 34. 4

(From British Medical Journal: Jan. 31, 1891: p.92.) puts forward an interesting hypothesis based partly upon the fact that snake venom has an extraordinary irritant action on mucous membranes, this last being shown by the effect of injective venom into the stomach of a frog, viz., violent vomiting, which is most unusual in that animal. Adler Brunton suggests that the vomiting which follows 34 to 34 prominent a symptom in cases of snake bite may be due to the venom being exerted by the mucous membrane of the stomach. That as alcohol precipitates the active principle of the venom, the stomach should be crushed out with some form of alcohol. He thus explains the reputed good effects of alcohol in snake bite.
poisoning, i.e., that it coagulates the
Venom & prevents reabsorption, or
erects rapid reabsorption, as he
denies that alcohol has any action on
the motor centres which can prevent
death from the venom, & states that men
bitten, while drunk, have died from the
bite. A possible treatment, therefore,
he suggests the washing out of the stomach
with alcohol & the performance of artificial
respiration to give the poison a chance of
being eliminated, & thinks that we
might combine with these the sub-
estaneous use of strychnine as a
stimulant to the cardiac respiratory
centres. But he at the same time
points out that such excessive use of
alcohol might not be without danger
on account of its strongly irritant
action on the stomach, leading to the
depression of the circulation & heart
failure. (British Medical Journal: Jan.
31st, 1891.) Pilocarpine might also
be used to aid the elimination of
the poison, as this drug stimulates
both skin & kidneys. In fact, outside
of prompt local measures, pilocarpine
and strychnine appear as likely
as any drugs to be useful, though much
Venom has been absorbed. Swan (Vic.)
Journal of Physiology: 1897, Vol. viii, p. 203, showed that the system may gradually become resistant to the action of the venom, just as it may to the action of infective disease, such as anthrax. By injecting small quantities of the venom, he rendered animals immune from the effects of larger doses which rapidly killed other animals not protected by previous inoculation. According to Lander Bruntin (British Medical Journal: Jan. 3, 1891, p. 1), the analogies between snake venom and products (chiefly albumosed) of disease seem as becoming every day more apparent, and it seems highly probable that while studies of snake venom may throw light on the products of disease, a study of the latter may lead to the discovery of an efficient antidote to the former. Possibly an antitoxin to snake venom may be found in the blood serum of the poisons which makes themselves, which, as shown by Fig. 1 (vide Therapeutics of India, page 175) are immune to their own poison.

Useful as undoubtedly the hyperemic injection of strychnia in many cases seems to have shown itself to be, there
And many reasons for despising it as anything but a most antidote to morbidities, generally. In dealing with the suspected cases of malaria in Australia, treated by quinine, we find in our typical cases of malaria comparatively rare, slight malarial symptoms generally being practised early. The symptoms still further masked whenever with fear or relief. We rarely, if ever, have encountered in which the following conditions are all fulfilled: (1) evidence of the previous nature of the attack; (2) wound, whether cut, incised, or in the skin, from讥刺; (3) no alcohol, no fever, and in nearly all of the cases quoted above some form of Quinine had been used, with better or worse results in the quinine treatment. One of the strongest arguments in favor of quinine, Myoglobin, injections of quinine in quinine, is not thrombosis, but clinical, viz.: the fact that of the great tolerance for quinine exhibited by persons suffering from malaria, half again or more of the quinine being taken without previous symptoms showing themselves, and in oft the cases where the treatment, quinelline by hypodermic injections of quinine, hospital, took
frequently from the tenacity with which such doses have been persisted in critical cases, for patients suffering severely from the effects of acute poison require anything to enable (vide above) what would otherwise prove to be death by strychnine forestall their recovery. From cases cited there can be no doubt that patients suffering from so-called chronic arsenic, strychnine, or the initial muscular spasm from a safe dose as follows the day should be discontinued. Hence there should be little or no danger of the strychnine injections being pushed too high, as to cause death by completely denervating the motor nerve cells by over-activation or by causing asphyxia by a long continued tetanie convulsion, rendering respiration impossible. It is very different with strychnine. For in the human body shown recently to exist to induce from the serum cells which strychnine stimulates causing paroxysm of the lower extremities, the blood pressure a quick, to cause either partly to weakened heart action to permit rapidly paralysis of the heart muscle or weakness, the N. N. sympathetics controlling the blood circulation, as pointed out by
Fresh blood (vide above), a danger far more imminent than strychnine can produce, even if passed beyond skin
slices. It may be considered that strychnine hypodermically injected, if not entirely antidotal, is at least
superior to many of the other methods of treating such bleeding referred to by
me in the commencement of this paper, e.g. The method frequently employed of
"sucking the wound" i.e. by means of a soft
mouth piece of glass. Former remarks
that such a form being absorbed by means of
membrane thus practical operation, the
wound is not altogether met with
danger (Fairri's lectures, London,
February, 1884). Then again transfusion
practically little use for fresh
blood (vide milk quoted above) that when
the healthy blood of another animal was
made to flow into an artery of the animal
under experiment, the blood present
course temporarily raised the veins of
the abdomen, driving all the vessels
of the body again within a short time
becoming distended towards their
double their normal size whilst
sharply otherwise took place in nearly every
organ of the abdominal cavity, especially
the intestinal tract. The "Anamnia"
Treatment recommended by Holms (vide infra) is always liable to produce phlegmons, inflammation, intravenously, subcutaneously, independently, without any surgical intervention. The "lacerate" or "pernigraneum" method is generally used by experts with organic matter that is not sterile. This method, which is a salt solution of copper sulfate, is mixed with organic material that is not sterile. J. H. Beale, in his companion text, "The Pharmacology," continues his description from even keeping it in solution in water bottles. His method was not widely accepted until 1869 by S. Richards, where all consider it capable of destroying any bacteria only if brought into intimate contact with it. Edwards, who has most faith in it, admits that it is only effective when the poison has reached the general circulation. On the other hand, the streptomycin injections should not be tried until the poison has reached the general circulation, which should be prevented if possible by quick excision. The part bitten by the streptomycin does not require further treatment to be treated.
poison from its effects. Again
"artificial respiration" frequently resented
by an emulsion with other methods,
is very troublesome to maintain for a
long time, even if it were successful
one could easily have any consciousness
of saving life. Lord Brougham has
shown that strychnine is a strong
stimulant of the heart (vide Brougham
Hale: St. Bartholomew's Hospital
Reports: Vol. xlvii: p. 229), while P.
Rektowitsky found it to have a
remarkable stimulating power
on the respiratory centre. Again
the rubbition of "stimulants" in
an American prison is very questionable
this goes the question. Thus far the
strychnine treatment is affected
by the administration of alcohol,
Newly applied to patients
suffering from snake bite by their
friends. Dr. N. Rheims (vide
Australian Medical Gazette: January:
1883) gives an account of the use of
hypodermic injections of strychnine
in the treatment of acute alcoholism.
He says one may observe in
alcoholics a very vivid excitement
inertia in the spinal cord,
causing a loss of the friendly or
well marked effect of strychnine. In individuals suffering from acute alcoholism this drug may not be given in large doses, to insure success. While in some cases three centigrammes of well diluted strychnine injected by semicientigramme \(\frac{1}{10}\) in the course of two hours sufficed to relieve an attack of delirium tremens, in other instances more is required. To an individual suffering from delirium tremens Mr. Dunm has given hypodermically in 15 hours 7 centigrammes of sulphate of strychnine without real benefit \(\frac{1}{3}\) without accident of strychnine (vide Australasian Medical Gazette: January 1883). If this be so then alcoholism sets in a somewhat similar manner to snake poison in modifying the effect of the strychnine. When modified by the presence of the snake, wine \(\frac{1}{3}\) wine of strychnine has been given twice or thrice without toxic effect, whereas in a case reported (vide Australasian Medical Gazette: also vol. 1892: p. 168) Mr. J. P. Nagel to a patient this, when all symptoms of snake poison had passed away,
produced toxic symptoms of apoplexy. Who, (vide, pharmacy, under apoplexy) Therapeutics - Whittet) having temper the antagonism between chloride and atropine. It astonishingly does he hold the view that he believes that poisoning of the blood are often found and best hope of success in atropine poisoning. If this be correct, then injection of atropine in cases of amphetamine poisoning is contra-indicated. It should be withheld at least until the complete recovery of symptoms of atropine. The use of atropine hypodermically injected may therefore at least be regarded as by far superior to coarse older methods of treating amphetamine. Professor Robert writing in the "Therapeutische Minu" remarks that "Drake venom acts paralyzing Tant unlike chloral." So atropine in the recognized antidote in cases of chloral poisoning, it follows that atropine treatment in amphetamines treatment in snake bite is "contrary to every essential after all", as Robert puts it. Atropine in the form of granules, has been used for some time neurologically by the Hindus as a remedy in snake bite. Odd symptom in snake poisoning - vomiting
20 frequently met with in acute poisoning in Australia, may be specially noted, as treatment seems hitherto to have been suggested for this special symptom. This vomiting is due either to stimulation of the vomiting centre in the medulla or to elimination of the poison by the mucous membrane of the stomach, subsequently irritation of the terminal fibres of the vagi in that viscus. A simple hypothermia is indicated, and appears in relatively large quantities in the stomach. The case of vomit may be partly eliminated in this manner, but the use of the stomach pumps should prove a valuable adjunct to the stomachic treatment and internal administration of perforated urate in H. In troubled forms, might prove some use as a releasing agent. 

Among the cases quoted above where death occurred to a post-mortem examination for causes, very little light was thrown on the subject. In case 32 beyond the congestion of all the organs, there were no other changes which are usual except a thick deposit of mucus in the oesophagus. Had the vomit original ever been examined microscopically some light might have been shed.
On this subject. There are, in the following quotes, indications in many cases, quoted about. This may be due to (1) snake poison & alcohol recklessly given (3) fear. If there was a physiological reaction to the act of smacking the victim be correct, snakebite should be readilyblingsin when fear alcohol have to be treated, for alcohol in excessive doses produces paralysis of the respiratory system or a toxic effect, whilst fear does the same from psychic causes.

As the present feare of snakebite treated by hypodermic injection of snakebite, this will depend on many things — the relative age of the snake & victim; the amount of poison received; the activity & the venom which differs in various species & influences in different genera. Species & varieties in the same individual under varying conditions (temperature, climate, etc.) the situation (on water or land, ease or tension); the time & year (most fatal in warm weather or during the season of reproduction). Under these conditions, treatment a fatal result will usually be evident if the system has received a
Large doses of the acute remedy Staphylinum should not have been given without any of precautions, regimen or precaution in limiting at least a portion of the remedy, especially in the case of children; also where Staphylinum is given only in ordinary doses, the symptoms often being severe and requiring toxic doses of Staphylinum (the latter, also where time has been wasted at first in trying indifferent remedies. Again, where little has been done in the way of vaccination with acute poison, thereby frequently allowing hemorrages to take place, a fatal result is rarely averted for whether these hemorrhages are caused by rupture of capillaries and small veins or whether they take place for diapedesis or limited only to the tissues (vide work quoted above). His experiments show that they quickly follow the complete paralysis of the aplenechiometer that they are usually very extensive. Staphylinum would then be powerless.

Again, delay in applying the treatment—this is frequently encountered in Australia where patients frequently live at distances of thirty or forty miles or more from the nearest medical man, snake poison in quantity is then also besides
The general circulation is hence, it is then very questionable whether the antivenem centers can absorb the venom which must be put upon them by the introduction of the two poisons. Snake venom resists its deadly power again and again after having been subdued by the strychnine treatment, as many of the cases above mentioned show, hence fresh injections are required and although a stomach may pass safely through the ordeal of frequent releases the progress in the case of a child must necessarily be very great. But provided every effort be made to eliminate the snake poison, prior to its absorption by speedy vomiting, if the latter is not endured and ammonia be given to the patient exhaled by violent exercise, only when the toxic symptoms of snake poisoning exhibit themselves, strychnine be injected hypodermically at first, intervals according to the severity of the case, proportionately large doses being injected when there is unmistakable evidence of a large quantity of the snake poison having been absorbed (as many of the cases quoted above show) and conclusively that large toxic doses of strychnine may be administered with perfect impunity to the patient. The very
being (continued until staphylococcus
disease itself) then in most cases of
snake bite met with in Australia
a favourable result may be looked
for. Finally it may be concluded
that in treating persons suffering from
snake bite in Australia in many cases
a strong, healthy adult will recover
from the bite of the most venomous
Australian snakes, provided firm and
prompt measures have been taken
to prevent the absorption into the
system of too much of the poison, but
in the case of delicate persons of children,
especially young infants, the bite of a
venemous Australian snake is very
deadly likely to prove fatal, no matter
what the treatment adopted may be. It
also that a physiological antiserum
to snake poison, applicable to all cases,
has not yet been found; but
that in these cases of snake bite,
in Australia they examine by far
the greatest number, in which such
a quantity of the poison as does
not inevitably kill has been absorbed,
the injection hypodermically of
Staphylococcus will cut short to relieve
the most urgent symptoms. I will
in cases of doubtful poisoning turn
the scale in favor of the patient, and opposed will most in make poisoning, as in other venereal poisoning of great value, also that in cases where other local measures are promptly adopted, such as applying a ligature about the foot, hydrating the bitten part, astrinents will then be able to be successfully with the bite of the most venomous of Australian snakes.