

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
Cmo	3482	788	226				
			3-3-80				

Government {1899} of Madras. PUBLIC.

Recd.

Regd.

} 1899.

Enclosures

Spare copies

G.O., No. 1282, 14th November 1899.

NOVEMBER.

Snake-venom antidotes.

Communicating to the Accountant-General letter from the Surgeon-General forwarding a detailed statement of expenditure incurred by Captain R. H. Elliot, I.M.S., in connection with his experiments for the discovery of —.

GOVERNMENT OF MADRAS.

PUBLIC DEPARTMENT.

Read—again the following paper:—

G.O., Mis. No. 553, Public, dated 18th April 1898.

Read—the following papers:—

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Madras, 5th March 1898, No. 215.

I have the honour to forward, for the favourable consideration of Government, the accompanying letter from Surgeon-Captain R. H. Elliot, my Secretary, applying for a grant of Rs. 600 to cover the expenditure for a fresh series of experiments in connection with a cure for snake-poisoning which he is now setting on foot.

2. This officer has already carried out, at his own expense, some most important and instructive investigations, which proved that the use of strychnine as an antidote to cobra poison was a myth and even highly dangerous.

3. He gives in his letter a list of all the original investigations he has undertaken during the six years he has served in India, and it is most desirable, in the interests of science, that he should be encouraged as much as possible in the prosecution of this good and useful work.

4. As shown by him, his request is not without a precedent, and as the amount asked for is very small, I strongly support his application for the sanction of Government.

5. The work will be done in his spare hours.

ENCLOSURE.

From Surgeon-Captain R. H. ELLIOT, Secretary, Surgeon-General with the Government of Madras, to the Surgeon-General with the Government of Madras, dated 28th February 1898.

I have the honour to inform you that I am now setting on foot a fresh series of experiments in connection with a cure for snake-poisoning.

I need not remind you that Fraser in England, Calmette in France, and other workers in various parts of the world have been busy the last few years in work of a similar kind, and you are also well aware that the natural facilities for such investigations in India are far in excess of those at the disposal of the European workers.

The Government of India has shown its appreciation of such work by helping Fraser to obtain supplies of venom. Under the circumstances, I would venture to ask you to forward, with your favourable support, this my application for a grant in aid of my research.

I calculate that a grant of Rs. 600 would enable me to do a year's vigorous, and I venture to hope, useful work.

It would cover the cost of purchase and feeding of animals, erection of a suitable shed for inoculation, &c., purchase of instruments and pay of assistants.

A full and accurate account of expenditure would be furnished by me.

In submitting such a request, it is perhaps right that I should remind you that this is the sixth series of original investigations I have undertaken during the six years I have served in India, viz:—

- (1) Experiments of bullet wounds of the abdomen in 1892 and 1893.
- (2) Experiments on strychnine as an antidote for cobra poison in 1894.
- (3) Experiments on strychnine as an antidote for datura krait and echis poisoning in 1895.
- (4) Experiments on the inoculability of Madura foot for ascertaining if it is mutually inoculable between animals and men in 1897.
- (5) Experiments with Fraser's antivenin and also with Calmette's.
- (6) The present series—

It is hardly necessary to tell you that these investigations, which have been outside the pale of my official duties and done in my spare time, have put me to considerable expense, the only return for which has been the knowledge that I was working in the interests of science and for the benefit of my fellow creatures.

I am aware that the present is a time of financial stress, but the sum I ask for is so small and the possible advantages so great, that I believe they will appeal to the large sympathies of Government.

The work will be done in my spare hours and will in no way interfere with my legitimate duties.

OFFICIAL MEMORANDUM No. 743.

The Surgeon-General is requested to obtain and submit to Government copies of any papers or reports by Surgeon-Captain Elliot which contain the results of his previous experiments.

19th March 1898.

(Signed) G. STOKES,
Chief Secretary.

From Surgeon-Major-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Trivandrum, 28th March 1898, No. 273.

With reference to your memorandum No. 743, Public, dated the 19th March 1898, I have the honour to forward a copy of the report by Surgeon-Captain Elliot on the sample of wet antivenin sent out by Professor Fraser of Edinburgh.

2. I also enclose four notes by him on strychnine as an antidote to snake-poison.

3. Surgeon-Captain Elliot reports that he regrets that he is unable for various reasons to forward copies of his other papers.

ENCLOSURE.

Report on sample of Professor Fraser's antivenin.

Four monkeys were taken on January 31st, 1896. Monkey No. 1 received one drop of cobra poison. About two hours later he appeared to be ill, and it was thought that his eyelids were drooping and that he was showing the malaise of cobra poison.

He, however, improved and seemed quite well two hours later, and again four hours later still he was apparently well.

Twenty-four hours after the first injection he was found to present well-marked signs of snake-poisoning, viz., drooping lids, disinclination for food and general malaise.

Forty-eight hours after the injection the monkey was much better, but at the seat of inoculation there was a swelling as big as a small orange, and from the puncture mark a sanguineous fluid exuded.

Seventy-two hours after the injection monkey nearly well; swelling as before.

It was not originally intended to use *monkey No. 1*, as he had been partly rendered immune to snake-poison on a previous occasion as the following will show. The notes refer to this same monkey:—

Experiments on a monkey with a view to produce immunisation against cobra venom, by the repeated inoculation of small but increasing doses of cobra venom.

August	9th	hypodermic injection of 1/100 gr. of cobra poison.		
"	22nd	"	1/100	"
"	30th	"	1/90	"
September	10th	"	1/80	"
"	16th	"	1/80	"
"	24th	"	1/75	"
October	5th	"	1/75	"
"	11th	"	1/60	"

N.B.—One drop of cobra poison = 1/10 grain or thereabouts.

During the earlier experiments the animal showed well marked signs of cobraism, but these were practically absent in the later ones, seeming to show that an immunity was becoming acquired. On the night previous to that arranged for the tests with antivenin, two monkeys died and therefore this partly immunised animal was brought in to act as the control monkey, under the idea that any immunity he had acquired had now passed off.

On January 31st, 1896, monkey No. 2 received one drop of cobra poison.

Thirty minutes later, he received an injection of 10CC of antivenin.

Again 30	"	"	"	of 5CC of	"
" 30	"	"	"	of 5CC of	"
" 30	"	"	"	of 5CC of	"

The animal now showed signs of cobraism, and 80 minutes later was given another 5CC of antivenin. For some time its fate seemed doubtful, but it gradually recovered, and the same evening appeared quite well. The next morning the animal was in its usual good health.

Forty-eight hours after the first injection animal seems well, the place of the cobra injection is marked by a large bluish swelling, which looks as if it might slough.

Seventy-two hours after the first injection as in previous note.

On January 31st, 1896, monkey No. 3 received one drop of cobra poison.

Thirty minutes after this 5CC of antivenin were injected as before into the subcutaneous tissue. This was followed at 30 minutes intervals by the injection of three doses of 2½CC each, and again 80 minutes later by a similar dose. The animal appeared very ill soon after the poison was injected, but was thought a little better a few hours later. Even before the experiments began it was unwell and it died the same night.

On January 31st, 1896, monkey No. 4 received one drop of cobra poison.

Thirty minutes later it received 1CC of antivenin (this being nearer the dose for its body weight but still a large dose for it), and at 30 minutes intervals it received three doses each of a ½CC. Like monkey No. 2 this animal for some time appeared to be running into cobraism, and also appeared to receive benefit from the antivenin. He got much better in a few hours and next morning was in his usual health, as far as I could judge.

Forty-eight hours after the first injection animal seems well, local features as in monkey No. 2; so also 72 hours after first injection. This animal died on February 21st.

The poison used in the above experiments was extracted by me with every care from a large cobra seemingly in very excellent health. The glands were dissected out and the poison was then expressed drop by drop. Two watch glasses were taken and into each four drops of poison were carefully measured. The glasses were then carefully put away and labelled. Six days later the poison in the glass was dissolved in 20 minims of water and the total quantity very carefully divided evenly between the monkeys Nos. 1, 2, 3 and 4 in the above experiments.

In order to control the antivenin, a large pie-dog was taken and into its subcutaneous tissue were injected doses of the same strength as those given to monkey No. 1, and at the same intervals as that animal received his injections.

The dog became decidedly sick and suffered from slight fits of shivering, but recovered in a few hours and went away quite well the next day.

The antivenin had a peculiar and very offensive smell, but did not produce any ill results at the seat of inoculation in any of the animals on which it was used.

Series II.—In order to control the above experiments and to show whether the monkey No. 1 was really immune or not, a second series of experiments was made on February 6th in the presence of Surgeon-Major Dymott and Surgeon-Captains Giffard, Palk and Robertson.

Monkey No. 1 of the first series was taken, together with two fresh monkeys of larger size than himself.

Into each of these animals was injected 1 drop of cobra poison. This poison was that taken from the same cobra as the poison previously used in the first set of experiments. It was in fact the poison I have referred to in the last page as being put into one glass and unused at the time of series No. 1.

Like the poison of No. 1 series it was dissolved in 20 drops of water. Five drops of the solution were then injected into each of the three animals above referred to (into the subcutaneous tissue of the abdomen in the two fresh ones and into the thigh of the previously experimented on animal; the latter course was necessary as in the site of the old injection in this monkey, there was a huge raw surface left by the local action of the previous dose of cobra poison).

The two fresh animals died of typical cobraism. The first lived in all 90 minutes after the cobra injection and the second lived 150 minutes. The discrepancy in time may be explained by the fact that the first animal only weighed 3 lb., while the second weighed 5 lb. They were both heavier, however, than the monkeys of series No. 1 which only scaled about 2 to 3 lb.

While the other two animals were thus dying the previously protected animal (No. 1 of series 1) though he had received the same dose of cobra venom, never showed a sign of malaise and was removed to his quarters in good health, more than 3 hours after his inoculation with the poison.

On February 7th this animal showed signs of cobraism, from which he would probably have recovered but for the fact that on February 8th the slough separated from his abdomen and his intestines escaped through the aperture so left. He died on the night of February 8th.

The conclusion from these experiments seems unavoidable that—

(a) Two out of the three monkeys were saved by antivenene, while the life of the fourth was prolonged by the same remedy. As this animal was sickly before the inoculation experiment began, it seems likely that it may have died from other causes.

(b) The previous injections of small doses of snake poison protected monkey No. 1 of series 1 in both inoculations. The test of two injections of cobra virus at so short an interval was, however, too severe.

(c) The antivenene at least did no harm, although it certainly smelt very foul. (The liquid antivenene was used throughout.)

(d) The dose above that necessary as laid down by Professor Fraser did not seem to materially alter the result, since the animal with a dose not much more than sufficient to protect made as good a recovery as the animal with ten times that dose.

Order—Mis. No. 553, Public, dated 18th April 1898.

A grant of Rs. 600 is sanctioned to enable Surgeon-Captain Elliot to continue his experiments for the discovery of a remedy against snake venom.

2. A detailed statement of expenditure should be submitted to Government through the Surgeon-General, at the end of the current official year, together with a full report on the experiments made.

(True Extract.)

(Signed) A. T. ARUNDEL,
Chief Secretary.

To the Surgeon-General.
" Accountant-General.

G.O., Mis. No. 141, Public, dated 3rd February 1899.

Read—the following telegram from the Secretary to the Government of India, Home Department, to the Chief Secretary to the Government of Madras, dated Calcutta, 31st January 1899:—

Number 151 Medical. Secretary of State has suggested that Professor Fraser might advise expert officers concerning further prosecution snake-venom enquiries during his stay in India in connection with Plague Commission. Government of India understand Captain R. H. Elliot, I.M.S., Madras, has studied snake-venom problems. Would Madras Government like to send Elliot to Bombay for instruction by Professor Fraser?

Order—Mis. No. 141, Public, dated 3rd February 1899.

The following telegram will be forwarded to the Government of India, Home Department:—

54. Your telegram 151, thirty-first January. This Government will be glad to send Elliot to Bombay for instruction by Professor Fraser. Please wire when he should go and for what period."

2. The Surgeon-General will warn Captain Elliot, I.M.S., to hold himself in readiness to proceed to Bombay on receipt of further orders, and will make arrangements for the temporary charge of the duties of the office of District Medical and Sanitary Officer, Nilgiris, during the short period of Captain Elliot's absence.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

To the Surgeon-General.

G.O., No. 166, Public, dated 9th February 1899.

Read—the following letter from Surgeon-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Madras, 6th February 1899, No. 139:—

With reference to paragraph 2 of G.O., No. 141, Public, dated the 3rd February 1899, I have the honour to state that Captain Elliot has been warned to hold himself in readiness to proceed to Bombay and the General Officer Commanding, Southern District, has been requested, with reference to paragraph 173, Army Regulations, India, Volume VI, to nominate a Military Medical officer to conduct Captain Elliot's duties during his absence in addition to his own.

Order—Mis. No. 166, Public, dated 9th February 1899.

Recorded.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

G.O., Mis. No. 198, Public, dated 16th February 1899.

Read—the following telegram from the Secretary to the Government of India, Home Department, to the Chief Secretary to the Government of Madras, dated Calcutta, 14th February 1899:—

Number 207 Medical. Your telegram number 54, dated third. Please send Elliot to Bombay for instruction by Professor Fraser. He should go at once and report arrival to Professor Fraser. Government of India cannot say how long it would be useful for him to remain with Professor Fraser but presumably period would be short.

Order—Mis. No. 198, Public, dated 16th February 1899.

Communicated to the Surgeon-General, with reference to G.O., Mis. No. 141, Public, dated 3rd February 1899.

2. Captain Elliot should be directed by telegram to proceed forthwith to Bombay.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

To the Surgeon-General.

Copy to the Accountant-General.

G.O., Mis. No. 808, Public, dated 20th July 1899.

Read—the following telegram from the Secretary to the Government of India, Home Department, to the Chief Secretary to the Government of Madras, dated Simla, 18th July 1899:—

Number 1193 Medical. Please direct Captain Elliot, I.M.S., to submit, as early as possible, a report on instructions he received from Professor Fraser regarding antidotes against snake-poisoning.

Order—Mis. No. 808, Public, dated 20th July 1899.

Communicated to the Surgeon-General, who will be requested to obtain and submit the required report.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

To the Surgeon-General.

G.O., Nos. 874, 875, Public, dated 8th August 1899.

Read—the following letter from Surgeon-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Camp, Ootacamund, 7th August 1899, No. T. 8/431:—

With reference to G.O., Mis. No. 808, Public, dated the 20th July 1899, I have the honour to subjoin the report submitted by Captain Elliot, I.M.S.:—

"In accordance with telegraphic orders from the Government of Madras, I proceeded to Bombay and met Professor Fraser there on February 20th. Professor Fraser asked me a number of questions as to the lines on which I proposed to conduct future investigations.

"He told me, after about an hour's talk, that he thought it was a waste of time to keep me in Bombay, or words to that effect, as he was satisfied with the lines on which I was working, and thought I should get valuable results; he further told me that it was his wish to get me put on special duty for research, and that he would make a recommendation accordingly. The hints he gave me were mostly of minor character, though, of course, very valuable; they, however, referred to matters of detail such as the care that should be exercised in weighing both the doses of poison and the animals experimented on. He also propounded to me a theory of his, with reference to the existence of an antidote in snake venom, which was a separate compound from the lethal one; he asked me to work on this subject; he also desired me to manufacture antidote locally.

"May I venture to say here that in my opinion, as I told Professor Fraser, the first and most important item for experiment is to concentrate the antidote; this is of much more importance than a small immediate local supply, the weak points of the antidotes now before the profession are, to my mind, (i) that they are too dilute for the purpose, requiring large injection and (ii) that it is doubtful how long they will retain their efficacy in a climate like India. I have refrained from detailing my own lines for work, as they have not been called for but will do so without delay if so ordered."

Order—Mis. No. 874, Public, dated 8th August 1899.

The report will be forwarded to the Government of India.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

Letter—No. 875, Public, dated Ootacamund, 8th August 1899, to the Secretary to the Government of India, Home Department.

With reference to your telegram No. 1193, dated 18th July 1899, I am directed to forward a copy of a letter from the Surgeon-General, No. T.-8/431, dated 7th August 1899, submitting Captain Elliot's report on the instructions he received from Professor Fraser regarding antidotes against snake-poisoning.

(Signed) G. STOKES,
Chief Secretary.

G.O., Mis. Nos. 1027, 1028, Public, dated 12th September 1899.

Read—the following papers:—

Telegram from the Secretary to the Government of India, Home Department, to the Chief Secretary to the Government of Madras, dated Simla, 19th August 1899, No. 1396, Medical.

Your letter 875, dated 8th, regarding antidotes against snake-poisoning. Government India would like to receive as quickly as possible an account by Captain Elliot of work he has done and the results at which he has arrived as they wish to be in possession of full information before addressing Secretary of State.

Endt. No. 2117.

Referred to the Surgeon-General, with the request that he will obtain and submit the required information with the least possible delay.

21st August 1899.

(Signed) G. STOKES,
Chief Secretary.

From Surgeon-General C. SIBTHORPE, C.B., F.R.C.P.I., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Camp, Ootacamund, 10th September 1899, No. T.-8/543.

With reference to your endorsement No. 2117, Public, dated the 21st August 1899, herewith returned with its annexure, I have the honour to forward the accompanying report from Captain R. H. Elliot, I.M.S., regarding antidotes against snake-poisoning.

ENCLOSURE.

From Captain R. H. ELLIOT, I.M.S., Coonoor, the Nilgiris, to the Secretary, Surgeon-General with the Government of Madras, dated 4th September 1899.

In accordance with the instructions conveyed in the Government of India telegram No. 1396, Medical, regarding antidotes to snake-poisoning, and in pursuance of my Minute III on that telegram, addressed to you and dated Coimbatore, 29th August 1899, I have the honour to report as follows.

2. Early in 1894, it was brought to my notice that the "medical mind" in India was very far from definitely made up as to the value of strychnia as an antidote to snake poison. I accordingly conducted two series of experiments on this subject: the first of these related to the value of strychnia as an antidote to cobra poison, while the second dealt with the antidotal value of the same drug against Krait Daboia and Echis poison. I have the honour to forward herewith copies of these two papers. I regret that the former is soiled, but it is the only copy that I possess.

3. The conclusions arrived at in these papers were that strychnia was of no value as an antidote, and that it was open to question whether it was not even an additional danger to a snake-bitten patient. My conclusions were accepted by the Surgeon-General with the Government of Madras, and I think I may say also by the whole of the medical profession in this presidency. I also received communications from medical men and scientists in other parts of India, in Great Britain and on the Continent, expressing their agreement with my opinions on this subject. The

Surgeon-General with the Government of Madras forwarded the original papers to his Government, by whom they were sent on to the Government of India (*vide* letter from Surgeon-General, Madras, No. 59, dated 29th January 1895, to the Honourable the Chief Secretary to Government, Public Department; *vide* also Madras Government Order thereon, No. 115, dated 13th February 1895).

4. Subsequently to this I published other short papers bearing on the same subject. These papers showed conclusively, on the evidence of the medical men concerned, that in a certain number of cases at least strychnia, which has been employed as an antidote, had actually caused the patients' deaths.

5. Besides experimenting with strychnia I made trial of some of the numerous native remedies which were brought me. I quickly came to the conclusion, however, that to experiment with these was a mere waste of time, and I turned my attention to the possibility of obtaining an antivenin either from the poison itself or from the blood of an immunised animal. I subjected the poison to various temperatures and manipulated it in other ways; as I shall have occasion to state later on, this method of experimenting is one which Professor Fraser regards as fraught with great promise. My results at that time, however, were negative, largely due to want of proper apparatus. I also succeeded in bringing a monkey to a high state of immunisation by administering subcutaneously small and gradually increasing doses of cobra poison. Further I independently made the discovery that many animals were capable of consuming large doses of snake poison without apparently suffering thereby. While I was thus stumbling in the near neighbourhood of important discoveries I read, for the first time, Professor Calmette's and Professor Fraser's important papers confirming me in the accuracy of my discoveries and going a great deal further. I wrote to both of these gentlemen, obtained specimens of their antidotes, and experimented with them on living animals principally monkeys and dogs. These experiments were conducted before a number of my brother Medical officers. From Calmette I received a fluid which for some reason or other was a total disappointment, for although given in large doses it proved utterly inefficacious. With Professor Fraser's antitoxin, matters were far otherwise; not the least doubt was left either on my mind or on the minds of the other medical men who witnessed my experiments, that the animals treated with the antidote were saved thereby. There was, however, this disadvantage that large doses of the remedy were needed even for small animals.

6. I regret that I am unable to obtain copies of the papers which I wrote from time to time on the above subjects; they were, however, far too fragmentary to satisfy me, and I determined to go into the matter thoroughly. Unfortunately one thing or another has hitherto prevented me from so doing. The principal causes of delay have been the pressure of other work, indifferent health, the heavy expense that such experiments entail, and the difficulty of obtaining snake poison, snake serum, &c., in sufficiently large quantities. In 1898 the Government of Madras generously placed at my disposal a fund of Rs. 600 to meet all necessary expenses in connection with my researches. I at once endeavoured to make arrangements to obtain a large number of snakes. Every effort I made ended, however, in failure, very few snakes were forthcoming, and the prices demanded for these were exorbitant. I am uncertain what the cause of this difficulty was, but suspect that it was either an objection on the part of the snake charmers to the wholesale sacrifice of the sacred reptiles, or that they hoped by waiting to force me to give their prices. Eventually I got over the difficulty by employing an East Indian medical student, who spoke Tamil fluently, to obtain supplies for me. The snake charmers apparently failed to connect him with my researches, for at the end of 1898 he had obtained a very valuable stock of poison, bile, &c., for me.

7. I was about to commence a series of experiments with this stock when I was ordered by the Government of Madras, at the instance of the Government of India, to meet Professor Fraser in Bombay. Professor Fraser, who was then leaving for England, asked me for my stock of poison, stating that he would pay the cost of its collection, so that the Government of Madras would not be the losers; he also informed me that the Government of India had expressed a wish that the medical officers should render him all assistance in their power; I accordingly gave him all the poison, &c., which I had obtained and started afresh to collect for myself. I have again accumulated a valuable stock of poison with which I hope shortly to commence a series of experiments, so far as the leisure time at my disposal will allow me to do so.

8. I gather from the tenor of the Government of India telegram that it may not be out of place for me to give an outline of the lines on which I propose to work, and I therefore venture so to do.

(1) It has always appeared to me that the antidotal substance is probably capable of much greater concentration than has hitherto been obtained. The subject is fraught with many difficulties, and is of so technical a nature and so full of possibilities that I trust I may be excused from entering further into it here.

(2) Intimately blended with the above problem are the allied questions (1) of the dessication and portability of the antidote, and (2) of the form in which the antidote will longest retain its properties.

(3) There is a point of no ordinary interest which I broached to Professor Fraser in Bombay, and which he cordially advised me to follow up. Briefly it is as follows: it is known that the poison glands of a serpent secrete venomous matter from comparatively, if not entirely, non-venomous matter present in the blood. It has also been observed that snake poison, when absorbed by the various parts of the alimentary canal, or through other epithelial surfaces, is comparatively innocuous. Without entering into detail, I may say that I have formulated tentatively the theory that these two processes are the converse of each other; in other words, the snake poison in being absorbed through an epithelial surface undergoes a change the reverse of that which it underwent during secretion.

(4) I am however far from rejecting, without further experiment, the opinions of those able observers who consider that the action of the digestive secretions is at the bottom of the protection from snake-poisoning when the venom is swallowed. This raises the important question of the antidotal action of bile, another question on which I desire to experiment.

(5) Professor Fraser suggested to me, during my interview with him in Bombay, that in snake poison several distinct substances exist, some of these being lethal in their action, while another or others are antidotal. This again is an obscure subject which demands elucidation.

(6) Professor Fraser urged upon me the advisability of undertaking experiments for the preparation of an antivenin locally.

9. I beg with all submission to state my opinion that what may appear to be theoretical and purely scientific points in this subject are in reality of the very greatest importance. The subject is still in its infancy, and the most satisfactory practical results will in the long run be obtained quickest by such work as enables us to understand clearly the scientific aspects of the question. It is for this reason that I have laid so much stress in my programme on matters which at first sight may appear to be interesting rather than lucrative, when looked at from the point of view of the Government purse and the public health.

10. Professor Fraser has kindly expressed his willingness to allow me to continue my experiments in his own laboratory in Edinburgh any time that I am at home.

11. It only remains for me to express my regret that circumstances, over which I had no control, prevented me from submitting this report at an earlier date.

Order—Mis. No. 1027, Public, dated 12th September 1899.

Captain Elliot's report will be forwarded to the Government of India.

(True Extract.)

(Signed) G. STOKES,
Chief Secretary.

Letter—Mis. No. 1028, Public, dated Ootacamund, 12th September 1899, to the Secretary to the Government of India, Home Department.

With reference to your telegram No. 1396, Medical, dated 19th August 1899, I am directed to forward a copy of a letter (with two pamphlets) from Captain R. H. Elliot, I.M.S., dated the 4th September 1899, containing an account of the work he has done and the results he has arrived at, in regard to antidotes against snake-poisoning.

(Signed) G. STOKES,
Chief Secretary.

READ—also the following paper:—

From Surgeon-General D. SINCLAIR, M.B., C.S.I., I.M.S., Surgeon-General with the Government of Madras, to the Chief Secretary to Government, dated Madras, 31st October 1899, No. 324.

In continuation of my predecessor's letter No. T-8/543, dated the 10th September 1899, I have the honour to forward herewith a detailed statement of expenditure submitted by Captain R. H. Elliot, I.M.S., in compliance with paragraph 2 of G.O., No. 553, Public, of 18th April 1898. He says that the delay in the submission of the document has been unavoidable.

ENCLOSURES I to V.

Five receipts for salary paid to Mr. P. P. Pinto from time to time for 13 months, 1st July 1898 to 31st July 1899, Rs. 260.

ENCLOSURE VI.

Statement of petty cash expenditure from 3rd July 1898 to 16th September 1899 amounting to Rs. 169-5-0.

ORDER—No. 1282, Public, dated 14th November 1899.

Communicated to the Accountant-General.

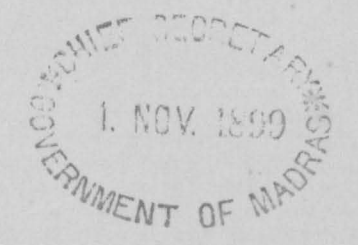
(True Extract.)

G. STOKES,
Chief Secretary.

To the Accountant-General (with enclosures in original.)
" Surgeon-General.
Copy to Surgeon-Captain Elliot, I.M.S.

Public (1897) Department.

CURRENT No. 3065



Prints: Salary - 18 mos July/98
to July/99 - Rs 260 -
for which Voucher No 2 -
Petty Cash Statement Rs 169/6
against Rs 168/14, Apparently
this leaves Rs 10/7/0 due to
Captain Elliott ? -
Order

From
Surgeon General D. Sinclair,
M.D., C.S.I., and,
Surgeon General with the Govt.
of Madras.

No. 32k.

Dated 31st October 1898.

Received 31-11-99

Registered 6

Enclosures

Spare copies

Ret 1/11/98

SUBJECT.

Forwarding a detailed Statement
of Expenditure submitted by
Captain R.H. Elliot, M.D., in
compliance with para 2 of
G.O. No 553, Public, of
18th April 1898.

Ret. Please put up the
back papers in No 60802/98
as also No 115795 Pub
Ret 1/11/98

[$\frac{G}{24}$]
1,000-25-3-99

1,000-25-3-99

Public..... DEPARTMENT.

Snake-Venom & its Antidote.

H. M.

C. No. 3065 From the Surgeon-General, No. 324, dated 31-10 1899.

..... 189

99 99 99 ? 99 ? 99 189 .

189 .

G.O.	No. <i>71</i>	Department.	Date.
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G.O.	No.	Department.	Date.

Public

In G.O. 553 d/18-4-98 Govt. sanctioned the grant of Rs. 600 to Surgeon-Capt Elliott, I.M.S., to enable that officer to continue experiments for the discovery of a remedy against snake-venom. Captain Elliott was at the same time ordered to submit to Govt. at the end of 1898-99 a detailed statement of his expenditure from the grant.

3. Dr. Elliott has already reported ^{on} ~~in~~ his experiments and the results arrived at. His report has been forwarded to the Govt. of India for submission to the Secretary of State.

4. The statement shows Rs.260 paid as salary

G.O.1027/8 Pub., d/12-9-99.

salary to a Mr. Pinto for 13 months from July 1898 to July 1899, inclusive, but in what capacity Mr. Pinto was employed is not ^{stated} ~~stated~~. A further sum of Rs. 169-5-0 is shown, in the statement to have been disbursed for animals, chemicals &c &c against Rs. 158-14-0 drawn, apparently, from Binny & Co. Whether the difference, Rs. 10-7-0, is still due to Dr. Elliott from the Accountant-General or whether, the whole sum of Rs. 600 having been drawn by the Doctor and deposited with Binny & Co., a sum of Rs. 170-11 should be now refunded to the Accountant-General by Dr. Elliott cannot be ascertained from the statement and the Surgeon-General makes no ^{comment} ~~comment~~ on the subject. It is submitted that the Statement may be communicated to the Accountant-General, unless it is thought that a clearer statement should be called for from Dr. Elliott, in which case an endorsement in these terms may go to the Surgeon-General. ^{A draft} ~~Alternative~~ disposal ^{is} ~~is~~ submitted for orders as to which, if either, may issue.

Please see separate sheet.

MA 13.11.29

MA 8/11/99
MA 10/11/99
MA 11/11/99

80/553 Pub of 18.4.98 = "a" of C No 910 - Encl. thereon, C No 123
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C. No. 3065 From the S.G.

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189 .
189 .
189 .

Order No. 1282 of 14.11.99
S.G.

MA 15.11.99 Comm^d to the Accountant General.

To the A.G. (with Encl. in orig. affixed has been ptd.)
" " S.G.

MA 9/11/99
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Copy to Surgeon Capt Elliott. J.M.S.
Despd. 27-11-99

Issue 14/11/99

Alternative signed

Pass Clk. Number this before sending to Pass 14/11/99

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DATED

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LETTER OF GOVERNMENT.

STATEMENT WITH DITTO.

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