

present in animals dying from the effects of subcutaneous injections of this venom. We have also emphasised the fact that, in experiments carried out by dropping venom on the exposed medulla oblongata, we have failed to kill animals through the respiratory centre with their motor nerve-ends still undamaged. In this respect, we have shown that *Enhydrina* venom differs in its action from *Cobra* venom. It would therefore appear that, in poisoning with *Enhydrina* venom, motor nerve-end paresis plays a much greater part than it does in cobraism. It is not difficult to suppose that a blunting of the motor nerve-end mechanism, even though far from absolute, may seriously add to the embarrassment of a centre which has already been directly and gravely enfeebled. We hope to return to this and other points in a future communication.

In conclusion, we desire to express our sense of indebtedness to the India Office, to the Government of India, and last, but by no means least, to the Madras Government, for the assistance and facilities which they have given us in the carrying out of this research.

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“On the Action of the Venom of *Bungarus caeruleus* (the Common Krait).” By Major R. H. ELLIOT,\* I.M.S., W. C. SILLAR, M.B., B.Sc., Lecturer on Experimental Pharmacology, Senior Assistant in the Materia Medica Department, University of Edinburgh, and GEORGE S. CARMICHAEL, M.B., Ch.B., Assistant in the Materia Medica Department, University of Edinburgh. Communicated by Sir THOMAS R. FRASER, M.D., F.R.S. Received May 12,—Read June 9, 1904.

(From the Pharmacology Laboratory of the University of Edinburgh.)

(Abstract.)

The only previously recorded work known to us on this subject was performed by Captain L. Rogers, I.M.S., and his results were published at the beginning of the present year.

Experiments were performed by us in the Pharmacological Laboratory of the University of Edinburgh with the following results:—

I. We determined the minimum-lethal dose of the dried venom for frogs and small mammals, rats and rabbits only being chosen, as our stock of the venom was very limited. We found that the M.L.D. for the frog was about 0·0005 of a gramme per kilo., for the rat 0·001 gramme per kilo., and for the rabbit the remarkably low dose of 0·00008 gramme per kilo.

\* On special duty for Snake-venom research, under the orders of the Secretary of State for India.

II. We found that Calmette's anti-venomous serum in quantities sufficient to protect rats against ten minimum-lethal doses of Cobra venom, in the same quantities was quite powerless to protect these animals from similar doses of Krait venom.

III. We studied the condition of various nerve terminals, both in animals that die after poisoning by Krait venom and in nerve muscle preparations from the frog, and found that the integrity of these nerve ends was invariably involved at a comparatively early stage in the poison.

IV. The blood was carefully examined and no evidence of ante-mortem clotting or intravascular hæmolysis was discovered.

V. We examined the action of Krait venom when its solution was perfused through the isolated vessels and heart, respectively, of the frog. We found that this venom, while resembling in action that of Cobra venom, differs greatly in the degree of constriction of vessels and enhancement of ventricular contraction produced. Cobra venom exercises an action in these directions many times greater than that of Krait venom. Cardio-plethysmographic tracings are shown.

VI. Studying the manner in which the vital functions of mammals (rabbits, cats, and dogs) were influenced when exposed to the action of this venom, we show by means of kymographic and plethysmographic tracings that the vaso-motor centre is strongly affected, a suspension of the activity of this centre, as shown by the great splanchnic dilatation, rapidly ensuing after its transient stimulation. There are also indications of a feeble cardio-inhibitory action. The experiments and illustrative tracings likewise show that death is brought about by destroying the activity of the respiratory centre.

VII. From these results the conclusion may be arrived at that while the symptoms produced by Krait poisoning are similar to those of Cobra poisoning, they differ so much in relative degree as to render it doubtful if they can properly be spoken of as identical.

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