

same degree as the mucosa elsewhere when pressure was applied during the injection. Finally, an increase in thickness of the muscular coats at the tubo-uterine junction was present in some animals, particularly in the rabbit.

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I.

Concerning the influence of polarized light on some convulsant drugs: A contribution to photo-pharmacology.

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In connection with a study of the effects of light on the actions of various drugs and poisons, which the author has been carrying on during the last few years—a field of science to which the term “photo-pharmacology” may be appropriately applied—the author made some extremely interesting observations on the influence of polarized light on the pharmacological action of certain drugs on animals, which it is the purpose briefly to describe in this communication.

The influence of light on the effects of certain cerebrally acting convulsant drugs in rats was investigated. The drugs studied in particular were camphor, santonin, and cocain. A number of experiments were also made with solutions of carbolic acid. The above drugs were injected either subcutaneously or intraperitoneally in equivalent doses in white rats, and the onset, severity and duration, etc., of the convulsions were noted under different conditions. Equivalent quantities of a drug per body weight were injected simultaneously into two or more rats. One of the animals was exposed to *polarized* light, while the other was illuminated by a *non-polarized* light of the same intensity, the temperature and other conditions being the same in the two sets of experiments. The source of light used was electric Mazda lamps of 150 or more kilowatts. Polarized light was obtained in some experiments by means of a large Nicol prism, while in

others by the well known physical expedient of allowing rays of light to fall on a pile of glass plates at the proper ("polarizing") angle. The latter method was the more convenient one for the present investigation.

It was found that after injection of camphor (in the form of camphorated oil, U. S. P.), of santonin (in the form of solutions of sodium santoninate), and of cocain hydrochloride, the convulsions came on much more quickly and were of greater violence in the rats exposed to polarized light, than in those rats which were injected with the same quantities of the same drugs and exposed to non-polarized light. In many experiments the animals under polarized light died much sooner than the controls; and indeed some of the control rats survived the effects of the poison. The following protocols will serve as illustrations:

Experiment 1, June 12, 1924.

A. Rat weighing 175 gm.

4:18 P. M. Injected intraperitoneally 1 cc. of camphorated oil and exposed to *polarized light*.

4:25 Violent epileptiform convulsions.

4:30 Died.

B. Rat weighing 165 gm.

4:16 P. M. Injected intraperitoneally with 1 cc. of camphorated oil and exposed to ordinary non-polarized light of same intensity and at the same temperature.

4:28 Slight twitching of jaw muscles.

4:42 Convulsions.

5:00 Still alive.

Experiment 2, June 12, 1924.

A. Rat weighing 210 gm.

Injected 1 cc. of camphor oil intraperitoneally. Exposed to polarized light.

Violent convulsions in 30 minutes.

Dead in one hour.

B. Rat weighing 210 gm.

Injected 1 cc. camphor oil intraperitoneally. Exposed to non-polarized light.

First convulsions noted in 45 minutes.

Rat alive after 2 hours.

Experiment 3, June 17, 1924.

A. Rat weighing 185 gm.

11:28 A. M. Injected 10 mg. cocain hydrochloride (1 per cent solution) intraperitoneally. Exposed to polarized light. Temperature 30.5° C.

11:34 Trembling and weak.

11:36 Collapse.

11:43 Violent convulsions and death.

B. Rat weighing 185 gm.

11:29 A. M. Injected 10 mg. cocain hydrochloride (1 per cent solution) intraperitoneally.

11:37 Slight excitement.

11:45 Apparently normal condition.

12 M. No change.

4:30 P. M. No change.

Next day; recovered.

Similar results were obtained with santonin, and to some extent with solutions of phenol. Most of the above experiments, some fifty in number, were performed in the spring and early summer of 1924. Protracted illness of the author necessitated a temporary discontinuance of the experimentation. It is expected to resume the investigations. The expenses of this research were defrayed in part by a grant from the Rockefeller Institute for Medical Research.

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II.

The influence of polarized light on the action of some ferments:

A contribution to photo-pharmacology.

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E. S. Semmens¹ reported some very interesting observations on the influence of polarized light on the action of diastase. Studying starch granules with a microscope Miss Semmens noted that, when these were illuminated by light passing through a Nicol

¹ Semmens, E. S., *Nature*, 1923, iii, 49.