We were therefore led to conclude that the rabbit practises physiological refection to a very marked degree, between one third and one half of the stomach contents normally being of fæcal origin. This observation has an important bearing on the interpretation of results of metabolism experiments in the rabbit.

I look forward with much interest to the publication of Dr. Madsen's further observations.

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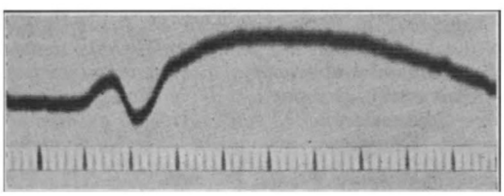
Owls and Infra-Red Radiation

IN a paper published in 1934, F. L. Vanderplank[1] records certain observations which are interpreted as showing that the tawny owl, *Strix aluco* L., is able to perceive infra-red rays visually, and thus to see in total darkness the small animals on which it preys.

To test this possibility we have carried out the following experiments on the eye of a tawny owl.

(1) In the intact animal (under urethane anæsthetic) we recorded, with an oscillograph and suitable amplifying system, the retinal potential produced in response to stimulation by white light, using an electric bulb as source. There is a large and clearly marked response, as in other animals.



RETINAL RESPONSE OF THE DARK-ADAPTED EYE OF THE TAWNY OWL TO SUDDEN ILLUMINATION OF APPROXIMATELY SIX FOOT-CANDLES.

Electrodes on the cornea and in the mouth. 1 cm. = 150 microvolts. Time, 0·02 sec. intervals.

No potential could be detected, even with the highest possible amplification, in response to stimulation by infra-red radiation from a large black body at 40°–400° C. close to the eye.

(2) We placed the eye of a tawny owl, immediately after removal from the animal, between a source of infra-red rays and a sensitive Moll thermopile. The sclerotic and retina were removed, so that the cornea, lens and humours were in the path of the rays. When the eye was interposed, we could detect no response from the thermopile, and if any transmission occurred it was less than 0·5 per cent.

We obtained consistently negative results in both experiments, using a black radiating body as source at temperatures from 40° C to about 400° C. Transmission through the mammalian eye[2] practically ceases for wave-lengths longer than 15,000 A., and we conclude that the eye of the tawny owl, like that of other animals that have been examined, is opaque to long infra-red rays. Even if the retina should be sensitive to long infra-red rays, none can reach it in the undamaged eye.

Our experiments lend no support to the view that the owl can see a small animal in darkness by its own infra-red radiation.

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Specificity of the Evocator in *Hydra*

TISSUE from *Hydra viridis* boiled in water for ½–1 minute and implanted into the blastocœle of *Triton* gastrulæ evocates the formation of neural tissue and in some cases neural tubes[1].

Thirty years ago, Browne[2] observed that the implantation of peristome tissue, or the material of a regenerating hydranth, or tissue from a bud in *Hydra viridis* resulted in the outgrowth of a new hydranth. Grafts of tissue from other regions of the *Hydra* body and wounds gave negative results. These results were confirmed by Rand, Bovard and Minnich[3] for *Hydra oligactis* (*fusca*).

Child[4] has produced supernumerary hydranths in another hydrozoan, *Corymorpha*, by lacerations and by the grafting of various regions of the stem. Santos[5] has produced supernumerary heads in planarians by the implantation of cephalic ganglion region. Supernumerary heads have developed in planarians following such diverse stimuli as laceration, faradic stimulation and cautery[6].

In view of the reactions of *Corymorpha* and of the planarians, and since *Hydra* is known to possess an extremely high regenerative potency, it was believed that supernumerary hydranths could be produced by some means other than the transplantation of the tissues noted by Browne (*loc. cit.*). The techniques which had yielded successful results on planarians were used on *Hydra oligactis*.

A toothpick, the tip of which had been sharpened to a very fine point, was dipped into 70 or 80 per cent ethyl alcohol and the tip was then applied to the tissue of the mid-region of individuals of *Hydra*. In others, the tissue in the same region was lacerated with a finely pointed cataract knife, and in a third group a heated micro-cautery needle was lightly touched to the *Hydra* tissue. Supernumerary hydranths did not develop in any of the 150 treated animals which continued to live after the injury without any apparent ill-effects.

Why *Hydra* should react only to a specific stimulus is not clear to me. Other agents which have been used successfully on other forms will be tried on *Hydra*.

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April 21.

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