

## THE FUNCTION OF THE ANTENNAE IN *RHODNIUS PROLIXUS*: CONFIRMATORY EXPERIMENTS

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IN a recent paper (Wigglesworth and Gillett, 1934) on the function of the antennae in *Rhodnius prolixus*, we reached the conclusion that, under the conditions of our experiments, the thermal orientation of these insects was affected by the gradient of air temperature around the source of stimulus and not by the radiant heat emitted from it. The evidence for this conclusion was based on the common belief that the radiant heat from a polished glass surface is very much less than that from a dull black surface. But it has been pointed out to us by Dr G. P. Crowden that, over the range of temperatures with which we were concerned, that is not the case: there is scarcely any measurable difference in radiation from these two types of surface. On the other hand, the radiation from aluminium foil is only about one-tenth of that from the surface of glass. We have therefore repeated our experiments, on the same lines as before, offering the insects a choice between a clean glass tube and a tube covered with aluminium foil, both tubes having an equal temperature of between 37 and 39°C. It was at once apparent that the insects responded (from a distance of 4 cm.) with equal readiness to the two tubes. Out of thirteen responses obtained from ten insects, six chose the glass surface and seven chose the metal surface.

Clearly, our earlier conclusion was correct: the insects are responding to air temperature (combined possibly with air movements) and not to radiant heat. The slender antennae stretched towards the source of stimulus are, of course, ill adapted to perceive radiation from a surface. They probably owe their surprising ability to detect slight differences in air temperature to the minute size and consequent minute heat capacity of the sense organs which they carry. Their sensitivity must certainly be very great; for the air temperature (as measured by small thermometers with their bulbs covered with aluminium foil) at 1.5 cm. distance from the metal-covered tube was only 1°C. above the air temperature at 4 cm. distance.

### SUMMARY.

The conclusion, previously arrived at, that *Rhodnius prolixus* responds to the gradient of air temperature around the source of stimulus, and not to radiant heat, was based on false premises; but this conclusion has now been confirmed by further experiments.

### REFERENCE.

WIGGLESWORTH, V. B. and GILLETT, J. D. (1934). *Journ. Exp. Biol.* **11**, 120-39.