Gymnotus carapo for all essential features, though there is a marked difference in pulse shape and frequencies.

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Cambridge. Oct. 2.

[1] Regnart, H. C., *J. Mar. Biol. Assoc.*, **17**, 415 (1930–31).

Factors in the Attractiveness of Bodies for Mosquitoes

The greater part of Canada, particularly the northern forest and subarctic regions, is infested during the summer months by many species of *Aëdes* mosquitoes. Following two years of laboratory investigation of the factors which attract mosquitoes to an animal body, an opportunity was given by the Defence Research Board and the Division of Entomology, Department of Agriculture, to study the responses of the female mosquitoes in the field, both in Ontario and in the interior of Labrador. For this purpose two stainless-steel tanks, each containing 100 lb. of water, were set up 6 ft. apart in a forest glade. They were electrically heated to a constant temperature of 98° F., clothed in a felt shirt and black crepe jerkin, and so shaped and mounted that they resembled dummy men; on occasion a head was added with an orifice for the exhalation of gases.

As a measure of the comparative attractancy of the two robots, the number of landings made by mosquitoes in a given period of time (either 1 or 2 minutes) was counted in a system of replicates. Since position error was insignificant, both normally being equally attractive, any change in the condition of one robot was reflected by the differing attractiveness with respect to the other. The species involved were *A. intrudens* and *A. trichurus* in Ontario, and *A. punctor*, *A. pionips* and *A. communis* in Labrador; no significant interspecific differences could be detected in the results.

It was found that, at air temperatures above 60° F., a robot with moistened clothing attracted two to four times as many mosquitoes as one with dry clothing. At cooler temperatures, and particularly at high humidities, the results were the reverse; the dry clothing attracted up to twice as many mosquitoes as the moist, despite the fact that the temperature of the surface of the dry clothing proved to be 1–3° F. lower than that of the moist.

At air temperatures from 57° to 74° F., the tank of water that was kept at body temperature was found to attract more than three times as many mosquitoes as a tank containing cool water (48°–64° F.). Here the only clothing was a crepe jerkin, and the surface temperature of the clothing of the warm robot was 14°–17° F. higher than that of the cool one. When the tanks were clothed in a felt shirt under the jerkin, there was only slight difference in the numbers of mosquitoes attracted to each, since the difference in surface temperature of the clothing was no more than 4° F. When the clothing was moistened, the warm robot was nearly twice as attractive as the cool one.

Clothing soaked in water that had been saturated with carbon dioxide gas was found to be no more attractive than normal wet clothing. However, a jerkin which had been employed to dry the sweat from the bodies of two men proved to be almost twice as attractive as a clean jerkin of equal moisture content.

When carbon dioxide was passed through the head orifice at a rate equivalent to normal exhalation in the human, achieved by using a 10 per cent carbon dioxide mixture at 2 litres a minute, the attractiveness of both head and body was raised by 50 per cent. When air alone was passed at the same speed, it was no greater than when nothing was exhaled. When 100 per cent carbon dioxide was employed, the attractiveness of the body was doubled and that of the head was tripled. The vapours of ether and of petrol were found to be significantly attractive when emitted in air by this method, whereas the vapour of chloroform was significantly repellent.

White clothing proved to be much less attractive than black at all light intensities, only one-quarter to one-tenth as many mosquitoes alighting on it. Light shades of red or blue attracted less than half as many mosquitoes as the dark shades. Green was less attractive than red or blue. Blue was slightly less attractive than red when dark shades were compared, whereas light blue was slightly more attractive than pink. Luminescent satins proved to be significantly less attractive than their ordinary counterparts in every case of the six pairs of matched colours studied.

So far as texture was concerned, satins were less attractive than broadcloths or crepes. Clothing of woven nylon was found to be considerably less attractive than cotton shirts and drill trousers.

Full details of these findings are being published elsewhere.

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Competition between Skin Follicles in Sheep

In sheep, the density and fineness of the fleece are closely correlated. The denser fleeces are finer and shorter. This leads to the suggestion that the quantity of fibre formed by a follicle is to a large extent governed by the number of follicles which are close to it, and therefore to the concept that adjacent follicles compete with each other for a limited amount of fibre substrate. Evidence in support of this hypothesis can be deduced from several very different aspects of the growth of the fleece.

Several workers have shown that in domesticated breeds of sheep the first follicles to be initiated (the primaries) are arranged in groups of three. The central member is initiated about a week before the laterals, which are at first located very close to the central. Dry[1] has shown that the tips of fibres have varied shapes, and Fraser, Ross and Wright[2] that the central follicle forms a fibre with a sickle-shaped tip curl, whereas the lateral follicles form fibres with regularly curled tips. This difference of shape of the tip can be explained in terms of competition between follicles.

Wool fibres are regularly crimped (waved), and Barker *et al.*[3] have shown that the number of crimps formed along a fibre is a function of time rather than a function of fibre size. Approximately a week is required to form one crimp, that is, to curve a fibre through 180°. Since the rate of curvature is constant, a regular shape of crimp will occur if the fibre growth-rate is constant, whereas if the fibre growth-rate varies during the formation of a crimp, the shape of the crimp