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### Potassium Transport by Kidney Slices of *Lophius americanus*

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The convenience of tissue slice techniques has led to their extensive use in studies on renal transport mechanisms. As a contribution to the question of how significant some of these studies may be for an understanding of renal function in vivo, the transport of K was compared in kidney slices of mammals and of *Lophius americanus*. The latter does not actively secrete K in the urine even after administration of large amounts of KCl (Forster, private communication). Kidney slices from *Lophius* were studied by the method of Mudge (Am. J. Physiol. **167**:206, 1951). The slices were rendered K-deficient by exposure to ice cold saline, and then incubated at 16°C in 95% O<sub>2</sub>, 5% CO<sub>2</sub> for 1 hour in a balanced salt solution (Medium F, see Forster, R. P. and Taggart, J. V., J. Cell. Comp. Physiol. **36**:251, 1950) containing PAH (0.075 mM) and Na acetate (20 mM). In preliminary experiments K and PAH were observed to accumulate in the slices. The K content of the tissue rose from an average of 56 micromoles/gm. before incubation to 87 micromoles/gm. after incubation. This K uptake apparently does not represent the activity of an over-all secretory mechanism directly involved in urine formation. It appears therefore that such slice experiments measure only intracellular accumulation of K, and not its secretion into the lumen of the tubule.

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### Antennal Contact Chemoreception in the Wood Nymph Butterfly, *Cercyonis Pegala*

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The wood nymph butterfly, *Cercyonis pegala*, possesses contact chemoreceptors sensitive at least to sucrose and NaCl on the tarsi of both functional pairs of legs and on the distal part of the proboscis. Earlier tests indicated that no receptors were present on the antennae. This was found to be true, however, only if most of the tarsal receptors were present. If all the tarsal receptors were removed, the insects exhibited clear-cut evidence of antennal reception, dropping the proboscis when the antennal clubs were stimulated with sucrose solution. A quantitative study was made of the relationship between the number of tarsal receptors present and the degree of response on antennal stimulation. The percentage of response rose from about 10% when all the tarsal receptors were present to about 75% when all were removed, with a reasonably direct relationship

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between the number of tarsal receptors removed and the degree of antennal response. These results show that extreme caution is necessary in interpreting negative results in behavioral studies on location of receptors and that electrophysiological methods, which can be used to discover potential receptors, must be supported by tests with living animals to discover the actual behavioral results of stimulation of the receptors.

### **Reactions of the Spider, *Araneus Cavaticus*, To High Intensity Sounds**

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*Araneus cavaticus*, an orb-weaving spider, which is very common under the eaves of the laboratory buildings, responds to high intensity (95-110 db) sounds from about 150 - 2000 c.p.s. by thrusting out the front legs. This reaction has been described previously for other species, and araneologists have generally agreed that it results from stimulation by vibrations of the web in the sound field. This was shown to be false by experiments in which the resonant properties of the webs were altered without affecting the thresholds of response and by tests with spiders removed entirely from their webs and fastened onto wax blocks without affecting the response. Furthermore, when the web itself was vibrated, without airborne sound being present, an entirely different reaction was elicited. The receptors involved are fine hairs on the bodies of the spiders. These are sensitive to air currents, and the passage of a continuous air-current over the body of a spider abolishes the response to sounds. The response seems, therefore, to be the result of the movements of the hairs by the high velocity movements of air particles in the high intensity sound fields. A review of the past work shows that this interpretation resolves the differences between the seemingly contradictory observation made previously. It is probable that sounds of such high intensities have little biological significance for these spiders.

### **Field Studies on Acoustical Behavior of Certain Chironomidae and Culicidae**

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For three successive summers, 1955-57, attempts have been made to use recorded wing sounds and various types of artificial sounds to attract or repel mosquitoes, chiefly *Aedes vexans* and *A. stimulans*, in the field. The results have been uniformly negative for either males or females.