XVIII. PHYSICAL OPTICS OF INVERTEBRATE EYES*

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RESEARCH OBJECTIVES

The dioptrics of the compound eyes of invertebrates may contain a number of structures with dimensions of the order of a wavelength of light. Examples are corneal nipples on the front corneal surface, layers within the cornea and crystalline cone, rhabdomeres, and pigment granules.

We are interested in understanding the effect of such structures on light scattered from and transmitted through the eye, and in understanding what they are doing for the animal.

This work involves: (i) determination of the geometry and electrical properties; (ii) measurements of optical scattering and transmission properties with actual eyes used; (iii) microwave measurements of scaled models; and, (iv) theoretical models.

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