

have classical ethological critical periods has provided convincing evidence that unitary detectors are probably the basic elements of releasers. As a result, the entrenched Gestalt notion of releasers is finally being relinquished.

While physiologists have been steadily imposing order on the visual system, the auditory system has successfully retained its traditional entropy. Debate still rages even over how animals hear and distinguish sounds of different frequencies. In the past three years, however, great progress has been made toward relating the auditory system and behavior. The book under review reflects that progress and the enthusiasm it has engendered. By juxtaposing the latest work on innate recognition of human speech sounds, for example, with experiments on the mechanisms by which birds and bats extract their species-specific information from the surrounding cacophony, it mirrors the growing realization that general, unitary auditory feature detectors exist and almost certainly underlie auditory releasers. These conceptual structures, fashioned from the generalizations of classical ethology and the visual system, have proved enormously useful in directing recent auditory research. The excellent contributions of Peter Marler and Mark Konishi to the volume, for instance, foreshadow the substantial advances each has subsequently published. Marler and Peters recently identified the unitary auditory feature that triggers song learning in swamp sparrows (*Science* **198**, 519 [1977]), and Knudsen, Konishi, and Pettingrew have just discovered a map of the auditory world in the owl brain that parallels the visual system projection right down to the overrepresented fovea (*Science* **198**, 1278 [1977]). The several papers Bullock includes on human speech recognition substantially extend the pioneering work of Peter Eimas and his collaborators (*Science* **171**, 303 [1971]) on that increasingly fascinating subject. The group report organized by J. A. Simmons on bat echolocation surely represents, too, the best available review of evolution's most impressive attempt to push auditory feature detectors and information processing to theoretical limits. The surprising success of this volume of what is basically conference proceedings arises from the increasingly centripetal interaction of physiologists and ethologists—of data, observation, and theory—in investigating the auditory system.

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