

ROGER S. PAYNE, Cornell University. The acoustical localization of prey by the Barn Owl (*Tyto alba*). (15 min.)

Barn owls, (*Tyto alba*) can locate prey in total darkness using hearing alone, with an accuracy of about one degree in the vertical and horizontal planes. Measurements of sound pressure in the region of the owl's eardrum made with a probe tube microphone, while moving a loudspeaker around the owl's head, reveal that for frequencies of sound above 9,000 cps the ear is highly directional. At such frequencies, regions of high and low sensitivity are directed along different paths for the two ears. These are correlated with the asymmetry of owl's ears. By recording cochlear microphonics similar variations are obtained. Experiments with owls trained to strike a concealed loudspeaker show they depend on frequencies above 9,000 cps. The behavior of barn owls flying at prey in complete darkness differs from such behavior in the light. The changes are associated with the ability of the owl to locate prey acoustically. (This research was supported in part by the American Museum of Natural History, Frank M. Chapman fund; the Quartermaster Corps, U. S. Army (DA19-129-QM-1428); and by O.N.R. Contract (#Nonr-3225 (00).)