LIGON, J. S. 1961. New Mexico birds and where to find them. University of New Mexico Press, Albuquerque.

MOORE, J. 1981. The ecology of the acanthocephalan (*Plagiorhynchus cylindraceus*) in the isopod (*Armadillidium vulgare*) and the Starling (*Sturnus vulgaris*). Ph.D. dissertation, University of New Mexico, Albuquerque.

———. 1983. Responses of an avian predator and its isopod prey to an acanthocephalan parasite. Ecology 64:1000–1015.

SMITH, D. G. 1975. Breeding range expansion of the Starling in Utah. Great Basin Nat. 35:419–424.

WESTERTERP, K. 1973. The energy budget of the nestling Starling *Sturnus vulgaris*, a field study. Ardea 61:137–158.

JANICE MOORE, *Biology Department, University of New Mexico, Albuquerque, New Mexico 87131.* Current address: *Department of Zoology and Entomology, Colorado State University, Fort Collins, Colorado 80523.* Received 10 Feb 1983; accepted 20 Feb. 1984.

A Portable Candler for Determining Fertility and Development of Birds' Eggs.— In most studies of nesting birds, percent fertility is not recorded and unhatched eggs are often assumed to contain dead embryos. Furthermore, it is sometimes desirable to know the stages of embryonic development to estimate laying or hatching dates.

Weller (J. Wildl. Manage. 20:111–113, 1956) discussed various unsatisfactory methods of determining fertility and recorded the development of duck embryos using the cardboard mailing tube devised by Evans (J. Wildl. Manage. 15:101–103, 1951). Also, Hanson (J. Wildl. Manage. 18:191–198, 1954) designed a battery-operated field candler, but expressed some doubt as to its use on dark, heavily-marked eggs. Since we found the cardboard mailing tube unsatisfactory for candling the often heavily-marked eggs of the

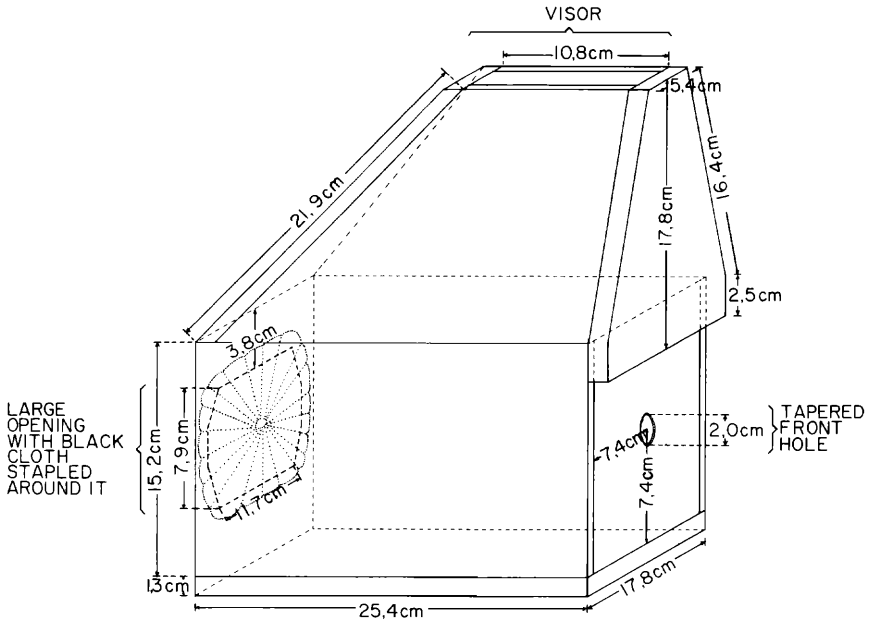

FIGURE 1. A portable candler constructed of 1.3 cm plywood for determining fertility and development of birds' eggs.

American Kestrel (*Falco sparverius*), we designed a candler requiring only sunlight to determine the fertility of kestrel eggs, as well as those of several other avian species.

The candler, depicted in Fig. 1, was constructed of 1.3 cm plywood. The front hole was tapered on the outside to facilitate light penetration into the egg. Dark green cloth tape was applied to all seams and black cloth was stapled in a ruffled manner to the large opening to minimize light penetration into the candler.

To candle, the egg held in one hand was inserted through the large clothed hole and the blunt end held firmly up to the small hole. The latter opening was directed towards the sun and the fertility and stage of embryonic development determined by peering through the top visor. Light penetration into the candler was minimized by keeping the face tightly against the visor. To accommodate different egg sizes, interchangeable front hole plates could be used.

The candler was 100% efficient in our efforts to determine the fertility and stage of embryo development of 56 kestrel eggs in the field. Light conditions were not sufficient, however, on heavily overcast days, but holding a 6-volt flashlight to the outside hole rectified this situation.

We were also able to candle the eggs of the following species: Domestic Chicken (*Gallus domesticus*), European Starling (*Sturnus vulgaris*), Northern Flicker (*Colaptes auratus*), Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), and Tree Swallow (*Tachycineta bicolor*). We were unable to candle the heavily-marked cinnamon eggs of the Peregrine Falcon (*Falco peregrinus*), the thick-shelled (but not heavily marked) eggs of the Red-tailed (*Buteo jamaicensis*) and Rough-legged hawks (*B. lagopus*), and the highly cryptic eggs of the Killdeer (*Charadrius vociferus*).—STEFAN T. SOBKOWIAK, *Dept. of Renewable Resources, Macdonald Campus of McGill University, Ste. Anne de Bellevue, P.Q., Canada, H9X 1C0;* and DAVID M. BIRD, *Macdonald Raptor Research Centre, Macdonald Campus of McGill University, Ste. Anne de Bellevue, P.Q., Canada, H9X 1C0.* Received 21 Mar. 1983; accepted 24 Jan. 1984.

The Use of the Tremolo Call During Mobbing by the Common Loon.—We report here an observation of predator mobbing by the Common Loon (*Gavia immer*). The behavior was in response to an unusual attack by a coyote (*Canis latrans*), and illustrates a previously unreported function of the tremolo vocalization of the loon.

The incident occurred on 11 August 1980, beginning about 14:05 on Snowshoe Lake, in north central Maine. Observations were made with 7 × 35 binoculars and 30 × spotting scopes. The loon vocalizations were not tape recorded, but notes were taken regarding changes in tremolo call type. (See Barklow, Condor 81:53–64, 1979, for a discussion of tremolo call types and the contexts in which the call is given.)

In late summer Common Loons spend much of their time in small flocks alternating feeding with bouts of intraspecific displays. A component of these displays involves swimming in single file followed by a shift to swimming abreast (rank formation). When the coyote first appeared 10 adult loons were swimming in rank about 300 m north of the coyote's position on the south shore of the lake. We first sighted the coyote as it came out of the woods. It appeared to be hunting near the edge of the water when it stopped, lifted its head and looked out in the direction of the loons. The coyote maintained this position for approximately 30 sec, then entered the water (14:08) and began swimming to the east of the loons. When it was within 100 m, one of the loons gave a type 2 tremolo. The coyote immediately lifted its head and swam toward the loons. As it approached, the loons were giving type 1 and type 2 tremolos, but they maintained their positions and made no attempt to flee. The coyote passed 10 m in front of the first 5 loons on the left (east) side of the rank. The sixth bird swam in an erect posture, towards the coyote. When they were within 2 m of each other the coyote, with its mouth open, lunged at the loon. It appeared to come within a few centimeters of catching the bird. The loon escaped by running for about 10 m on the surface while giving type 3 tremolos; it then dove. The loon surfaced a few meters from where it dove, and continued the type 3 tremolos. After