A mirror and pole device for examining high nests.—Studies of the reproductive success of canopy-nesting birds are often inconvenient, uncomfortable, and unsafe because of the frequent need to climb to nests. To aid in a study of the nesting success of the Mississippi Kite (*Ictinia misisippiensis*) I constructed a simple mirror and pole apparatus with which I was able to inspect the contents of nests as high as 50 feet above ground. Although such devices have evidently been used by many workers (Dixon *et al.*, *Condor*, **59:** 156-165, 1957; Skutch, *Auk*, **81:** 5-25, 1964), I have found no published descriptions. The apparatus here described is easily made, reasonable in cost, minimizes disturbance of the birds, should be useful with many species, and is similar to the camera apparatus used by Dunstan (*Loon*, **40:** 115-117, 1968) to photograph the contents of eagle nests.

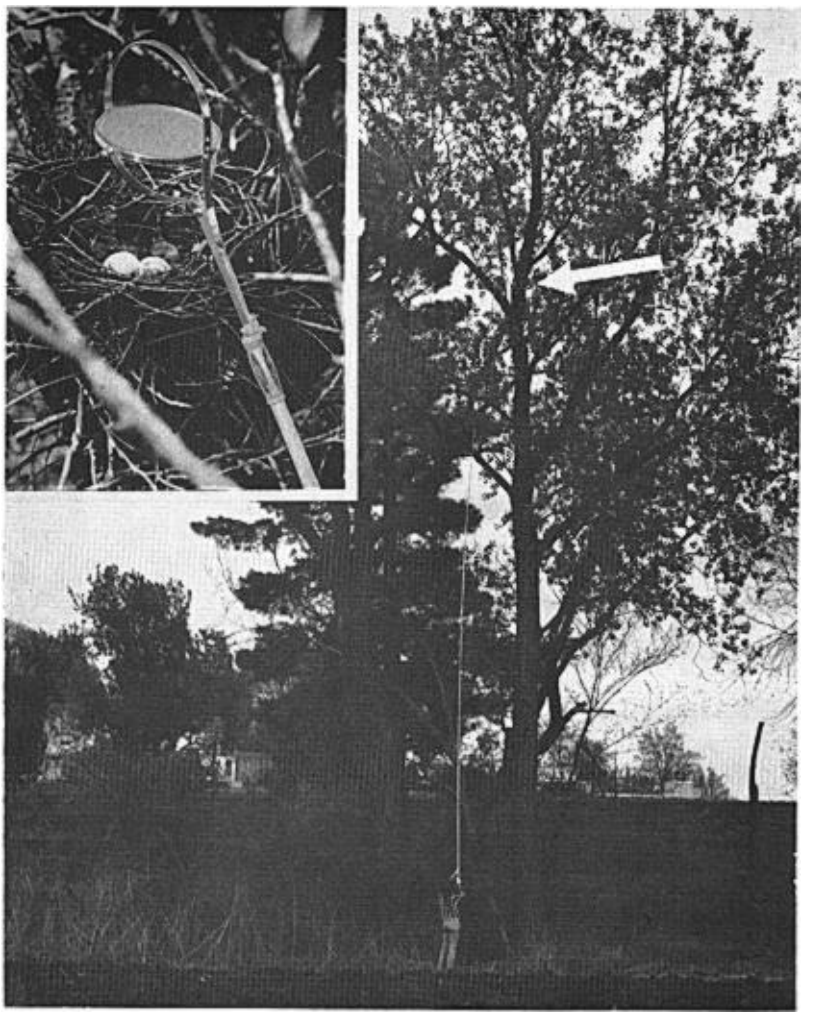

FIGURE 1. Apparatus in use at a nest 45 feet above the ground, and (inset) view of the mirror at a nest.

The pole apparatus is comprised of a telescoping unit and additional six-foot sections that can be added when needed. A small make-up mirror is secured to the telescoping unit (Fig. 1) consisting of one section each of 3/4, 7/8 and 1-inch aluminum tubing. The two sections of smaller diameter are 12 feet long, the largest approximately 6 feet. The three diameters of tubing provide easy extension when the pole is held vertically, but the fit is not so loose that excessive sway occurs. Final, full extension of the telescoping unit must be done when the pole is vertical, or nearly so. Therefore, the outermost section can be no longer than one can conveniently reach when sliding the middle section upward through the outermost section.

Holes approximately 1/8 inch in diameter are drilled at two-foot intervals through the inner two sections of pole, and one hole is drilled two inches from the upper end of the outer section. The extended sections are secured by inserting either kilt pins (which look like over-sized safety pins and can be purchased in many sewing supply shops) or wire clips (formed into the shape of large safety pins) through overlapping holes of two sections. Accidental extension during transportation is prevented by inserting a pin or clip through one extra hole drilled near the bottom of each section. A rubber crutch tip is placed on the lower end of the outermost section to prevent the accumulation of soil in the pole, and to keep the inner pole sections from slipping through the bottom of the outer section. A rubber bicycle handlebar grip with a hole in the rounded end, fitted on the top end of the innermost section, holds the mirror on the pole.

The telescoping portion of the apparatus when used alone provides access to nests as far above the ground as 39 feet. If more height is required, I used as many as three additional 6-foot sections of 1-inch diameter tubing secured to the telescoping portion of the pole, or to each other, by a one-foot coupling of 3/4-inch steel electrical conduit that fits perfectly into the 1-inch aluminum tubing. I permanently bolted a coupling into one end of each 6-foot non-telescoping section of tubing. The cost of sufficient conduit and aluminum stock to construct the pole is about $15.00.

The mirrors used are either 5½ or 6 inches in diameter, and are supported by metal brackets fashioned from their original holders. The mirror itself is actually a metal rim surrounding two pieces of glass, one of which produces a magnified image that I never found useful. Many kinds of make-up mirrors are available in drug and variety stores, but the best brackets can be made from those originally designed to be suspended from the neck of the user.

The mirror bracket shown before and after modification in Figure 2 was the sturdiest that I used, and is available for $6.50 from the Metaltex Corp., 225 Fifth Ave., New York, N. Y. 10010 (model 301pm). The curved lower ends of the vertical bars are bent together, and extra nuts are added to both ends of the screw near the lower end of the bars. The long looping bar is twisted 90 degrees and secured to the rim of the mirror by one short screw at the upper end, and another screw through one of three holes drilled in the bar about 4 inches above the 90 degree twist. The angle of the mirror can be altered drastically by placing the lower screw through a different hole in the looped bar. A mirror bracket similar to the one described but made of heavy wire is also available. Other brackets originally designed to be used with a stand-up base (these are easiest to purchase) can be used, but they are much less durable.

At a nest I first held the pole in a horizontal position and extended and fastened the innermost 12-foot section. The pole was then lifted to the vertical after which final extension could be made and 6-foot extensions added. The pole could be extended completely while holding it vertically if all sections but the innermost were short enough to permit the user to reach above them.

I found it convenient to direct the pole into limb forks which helped steady and guide it, and it was impossible to avoid occasional snagging of the mirror bracket on limbs. However, extrication was usually not difficult if the bracket was securely anchored to the pole.

The pole is strong, light, somewhat flexible, and quite easy to control when extended. If necessary, I could observe reflections in the mirror through binoculars held in one hand while I manipulated the pole with the other hand.

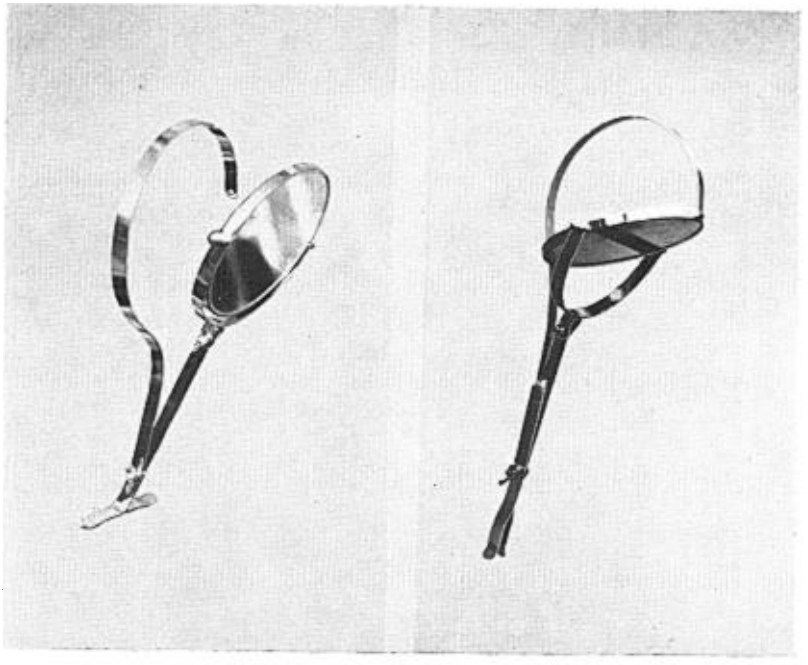

FIGURE 2. The most useful mirror bracket before (left) and after (right) modification. See text for manufacturer.

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An inexpensive cylindrical blind for observing and photographing birds.—For several years I have been using a cylindrical blind to observe and photograph birds. This design has several advantages over the commonly used square blinds supported at the corners by poles sunk into the ground (see Pettingill, *Ornithology in Laboratory and Field*, Minneapolis, Minn., Burgess Publ. Co., 1970), including total cost.

The frame consists of one 15-foot long piece of 5-foot high welded wire fencing. This fencing has a mesh of 2 x 4 inches, costs about $.35 per foot, and can be obtained at many retail lumber companies or hardware stores. In setting up the frame, I overlap the ends about two feet and wire them together. For future reference, I mark the amount of overlap desired by wrapping several pieces of the colored wire, used to seal plastic garbage bags, onto the frame. The blind will resist wind best if two or three mist net poles are forced into the ground and wired to the inside of the frame. Wires should not protrude, thus possibly catching on the blind cover as it is pulled down over the frame. Observation ports of any size can be cut at convenient places around the blind with a wire-cutting pliers. An entryway at the back measures 28 x 14 inches. After filing smooth the severed wire stubs, entry and emergence are not difficult. The entrance hole begins 16 inches from the top and bottom of the fencing. The smaller the opening, the stronger the frame.