so that the operator may bend over the board without resting against it. The board is leveled, but no special attempt is made to see that it is perfectly level each time a measurement is taken.

A reference line is drawn on each plane-table sheet toward magnetic north. The direction of the "hooting" of the owl is determined with the sound reflectors by rotating the sound reflectors on the drawing boards until maximum intensity and clarity of the "hooting" is heard. A line, which represents the direction from the station to the owl, is drawn along the straightedge on the plane-table sheet. At each plane-table station the angle from which the "hooting" sound is directed is plotted. Lines are drawn through the plotted angles from the base line, and the intersection of the two lines reveals the exact position of the owl during vocalization.

Direct counting of all individuals and census by sampling in this study area are impractical because of the nature of the area and the behavioral characteristics of the Barred Owl. This species hunts mostly by night and prefers to nest in a hollow in a tree. It is consistent in its attachment to its chosen nesting site (A. C. Bent, 1938. Life histories of North American birds of prey. Part 2. Dover Publications, Inc., New York, N. Y., p. 183.) The nocturnal habits of the owl and the fact that the courtship of the Barred Owl consists mainly of loud, spectacular vocal efforts, which are emitted by both sexes, are utilized in this sampling technique. The sampling is done at weekly intervals and the sampling period is from 1 to 3 o'clock AM. Certain assumptions are made using this procedure. They are: (1) that each owl within the study area will make its presence known by its characteristic "hooting" notes; (2) that the owls will not move either into or out of the study area, nor within the study area during each of the 2-hour sampling periods; and (3) that the "hooting" sound from any particular location represents one owl rather than several birds together.

Within the latitude of these assumptions, it is probably possible to determine the home ranges of the owls and fluctuations in the number of owls from time to time. Such probability is greatly increased by the nesting site constancy of the species, and by the great number of samples taken.—RONDAL E. BELL, *Millsaps College, Jackson, Mississippi, 23 January 1964.*

Black-legged Kittiwake in West Virginia.—Early in the morning of 25 October 1963, a telephone call was received from the local State Road Commission Office informing me that a large bird had been hit by a worker's car that morning. The specimen was at the commission garage. The bird proved to be a Black-legged Kittiwake (*Rissa tridactyla tridactyla*). The identification has been verified by George M. Sutton, and Maurice Brooks assured me that this is the first positive West Virginia record supported by a specimen. This bird was killed on U. S. Route 52 near Dunlow, about 25 miles south of Wayne, in Wayne County. The only other West Virginia record is a sight record of two birds observed on the Ohio River in Wood County by Earle A. Brooks about 1902 (Brooks, M. G., 1944. Checklist of West Virginia birds. *W. Va. Agricultural Experiment Station Bull.* 316).

In the fresh specimen the bill was black, the iris was brown, the legs were black, the skull was ossified, and the bird was slightly fat. The region of the kidneys and gonads was so badly crushed that determination of the sex was impossible. Dr. Sutton, however, called it an immature bird, probably a female.

Dr. Sutton supplied the following description: "Some scapulars strongly tinged with brownish and tipped with grayish white: these are, I believe, of the outgoing juvenal plumage. Dark parts: region in front of, and almost surrounding, eye; spot on auriculars; hind neck; lesser wing coverts and areas on outer webs of scapulars and tertials; alula,

primary coverts, and primaries; tail tip. All these dark parts are noticeably blacker than in a male specimen in the University of Oklahoma collection (UOMZ 3735). Hallux more noticeable in West Virginia specimen than in Oklahoma specimen but not very noticeable in either." Measurements: wing, 295 (chord), 301 (flattened); tail, 125; exposed culmen, 34; tarsus, 34.

It is interesting to note the occurrence of this species in the neighboring states of Ohio and Kentucky. For Kentucky, Burt L. Monroe and Burt L. Monroe, Jr. (1961. *Kentucky Warbler*, 37:32) list one bird seen on the Ohio River at Louisville on 6 November 1960 (Wiley, Summers). For Ohio, Borror (1950. *Ohio J. Sci.*, 50:20) lists a bird taken at Buckeye Lake (now in the Ohio State Museum) on 7 November 1925; Williams (1950. Birds of the Cleveland Region. *Cleveland Mus. of Nat. History Bull.* No. 2) lists its status as "rare and accidental winter visitor," and gives three records: Winslow, three specimens in Cleveland Harbor (prior to 1880); Spare, one bird at White City, 3 November 1944; Piskac et al., one bird on the lake front, 71st Street, 21 December 1947.

The specimen, prepared by Lloyd F. Kiff, is in the Marshall University Collection, No. 116A-1/190.—RALPH M. EDEBURN, *Department of Zoology, Marshall University, Huntington, West Virginia, 12 March 1964.*

Black Swifts nesting in a limestone cave in Colorado.—On 7 July 1962, Gary Spurling and I flushed about six Black Swifts (*Cypseloides niger*) from a small cave at about 9,700 feet elevation, high up on the south side of the 1,500-foot-deep canyon of the South Fork of the White River, some 10 miles upstream from the South Fork Campground, Garfield County, Colorado.

The cave, in the thin-bedded limestone at the base of the Dyer member of the Chaffee formation of Devonian age, was the source of a torrential stream, about 10 feet wide and several inches deep, which cascaded from an opening about 10 feet wide by 15 feet high down a steep, largely treeless tributary gulch of the South Fork canyon. The passage, the floor of which was mostly covered by shallow water, extended horizontally southward into the canyon wall to a point about 80 feet from the entrance, where it was blocked by a mass of collapsed rock.

We found two nests, composed of damp moss or similar vegetable matter, in the twilight zone in niches in the west wall about 10 feet above the floor. One nest was about 20 feet from the cave entrance and the other about 40 feet from it. We did not have time to verify the identity of the nests by examining their contents, but they appeared essentially identical to Black Swift nests described and photographed by Knorr (1961. The geographical and ecological distribution of the Black Swift in Colorado. *Wilson Bull.*, 73:155–170) elsewhere in the Colorado Rockies; and this cave was only 17 miles northwest of the Dead Horse Creek nesting area discovered by Knorr.

To my knowledge, this is the only record of the nesting or roosting of the Black Swift in a limestone solution cave. However, the choice of this site should not be regarded as anomalous, since it included all the physical factors—water, high relief, inaccessibility, darkness, and unobstructed flyways—found by Knorr (loc. cit.:167–169) to characterize nest sites of the species. These cave nests were not so high above ground as is usual for surface nests, but this disadvantage was offset by the excellent overhead protection, awkward approach for predators, and invisibility of the nests from outside the cave.

Absence of previous records from caves may be attributed to the rarity of solution caves which spill water from sizable entrances directly onto steep slopes far above erosion base levels. The only similarly situated stream caves known to me are below the North Rim of