of the University of Hawaii, by an NSF Graduate Fellowship, and by a Mount Holyoke College Faculty Grant to the author.

## LITERATURE CITED

- BARTH, E. K. 1953. Calculation of egg volume based on loss of weight during incubation. Auk 70: 151-159.
- BROWN, W. Y. 1973. The breeding biology of Sooty Terns and Brown Noddies on Manana or Rabbit Island, Oahu, Hawaii. Unpublished Ph.D. dissertation, Honolulu, Univ. of Hawaii.
- CARR, R. H. 1939. The measurement of freshness of unbroken eggs. Poultry Sci. 18: 225-231.
- EVANS, R. M. 1969. Specific gravity of White Pelican eggs. Auk 86: 560-561.
- HAYS, H., AND M. LECROY. 1971. Field criteria for determining incubation stage in eggs of the Common Tern. Wilson Bull. 83: 425-429.

MCNICHOLL, M. K. 1973. Volume of Forster's Tern eggs. Auk 90: 915-917.

- SCHREIBER, R. 1970. Breeding biology of Western Gulls (Larus occidentalis) on San Nicholas Island, California, 1968. Condor 72: 133-140.
- STONEHOUSE, B. 1963. Egg dimensions of some Ascension Island sea-birds. Ibis 103b: 474-479.
- WESTERSKOV, K. 1950. Methods for determining the age of game bird eggs. J. Wildl. Mgmt. 14: 56-67.

WILLIAM Y. BROWN, 23 Hudson Street, Cambridge, Massachusetts 02138. Accepted 13 Dec. 74.

**Body-bobbing woodcocks.**—On 20 November 1974 a solitary American Woodcock (*Philohela minor*) spent the day on the lawn outside my dining room window in Eldora, Cape May County, New Jersey. It fed much of the time. When resting it remained perfectly still, but while walking or probing it constantly rocked its body in a pumping manner. This movement was confined to the antero-posterior plane, with no lateral displacement, and consisted of an oscillation between an elevated rear extreme and a depressed forward one when the bird's body nearly grazed the ground. The rate was 90 cycles per min. A striking part of the antic was that only the body took part—through binoculars I could see that the head and feet acted as if they were divorced from the large intermediate undulating mass. Thus the bird's stance as well as its field of vision remained fixed while the swaying continued.

The woodcock looked somewhat like one of the large dead leaves that had fallen from a nearby catalpa tree (*Catalpa bignonioides*), especially when an occasional breeze caused them to stir. But when the breeze was not blowing, the woodcock's movements made it conspicuous. Conversely, when the bird rested in immobility during the passage of a breeze, it stood out as a rock among adjacent shifting objects.

Pettingill (1936, Mem. Boston Soc. Nat. Hist. 9) describes bobbing in the woodcock exactly as I saw it (pp. 268–269), though he does not mention bobbing while feeding. He reviews reports in the literature that ascribe bobbing, accompanied by foot-stamping and other strenuous physical acts, to attempts to lure earthworms out of their burrows. But he comments that such tactics are (1) unnecessary, as the bird's bill is an efficient extractor, and (2) unlikely, as they imply too much sagacity and foreknowledge of earthworm behavior. He concludes: "I believe that bobbing is a nervous reaction resulting from fear or suspicion. I have observed it particularly in the case of woodcock returning to their nests after they had been flushed off nearly thirty minutes before. Apparently memories of the disturbing experience still persisted. But I have never seen the same birds bob upon returning to their nests after they had left them of their own accord. They always walked directly to them and settled boldly upon the eggs. Although I have watched, with the aid of a flash light, a number of males on their singing fields, I have never seen them bobbing noticeably at any time."

Later (p. 317) Pettingill writes, "It is my belief that incubation is carried on usually, if not entirely, by the female," a remark that would restrict bobbing to that sex only.

My lone observation is sketchy in comparison to Pettingill's definitive study. Nevertheless the woodcock I saw in November was definitely not a female recently flushed from a nest and had no apparent reason to be "nervous" on that or any other account that I could discern. Thus it might just as well have been a male as a female. In any case, it seemed to be bobbing as a part of its life style, just as many other scolopacids habitually teeter, and indeed as wagtails, waterthrushes, and numerous unrelated taxa approximate similar behavior. Why should any or all of those birds expend energy in that manner?

It occurs to me that there may be two categories among teeterers. Those that bob in the open where they can be conspicuous may do so to be recognized by their own or different species, as other birds achieve the same result by flashing semaphoric color patches.

Creatures like the woodcock, abiding mostly in sheltered situations, may teeter and bob to mimic prevailing shifting shadows. Certainly the woodcock is already renowned for its reliance on crypsis while incubating. Similar evolutionary force may have influenced its ambulatory behavior as well. As the woodcock I watched did not discriminate between movements of nearby catalpa leaves and their quiescence, was it consequently performing some automatic act more appropriate to a shadowdappled ambience?—C. BROOKE WORTH, *R.D., Delmont, New Jersey 08314*. Accepted 24 Jan. 75.

**Spread-wing sunbathing by juvenile White-faced Ibis.**—Many species of birds are voluntary sunbathers (Hauser 1957, Wilson Bull. 69: 78), and expose their bodies to the sun to dry the plumage or gain heat. Typical behaviors of sunbathing birds include fluffing the feathers (Morris 1956, Behaviour 9: 75) and spread-wing postures (Clark 1969, Auk 86: 136; Kahl 1971, Auk 88: 715; Cade 1973, Condor 75: 106).

In a large breeding colony of herons and ibises on Grand Island, Barataria Bay, Plaquemines Parish, Louisiana, I watched spread-wing sunbathing by a juvenile White-faced Ibis (*Plegadis chihi*) on seven separate occasions. Between periods of preening, the ibis stood upright, extended one wing downward and the other wing above the body. The undersides of both wings were exposed to the sun (Fig. 1). The body was rotated slightly and the belly region was partially exposed. The ibis maintained this posture for as long as 3 min before withdrawing the wings and resuming preening activities.

Only fledged juvenile White-faced Ibises exhibited this behavior, and only during the relatively cool morning hours, 29°C on one occasion. While spread-wing sunbathing, the juvenile ibis perched on top of black mangrove bushes, maximally exposed to the sun. Both adult and juvenile White-faced Ibis fluffed their plumage