were being sung by a towhee. All the songs in the recording were of the same type or pattern; the songs were distinctly 2-parted and the notes were down-slurred, with the 3 or 4 notes in the first part uttered at the rate of 3.54 per sec, and the 4 to 8 in the second part uttered at the rate of 12.90 per sec. Individual songs contained 8–12 notes (average, 10.7), and averaged 1.46 sec in length (Fig. 2, *A*). Field Sparrows are common in the area where this towhee was recorded.

Field Sparrow songs are subject to considerable variation, and while one rarely finds 2 birds singing identical songs, the various song patterns may be classified in a number of major groups. Goldman (Ph.D. Thesis, Ohio State Univ., 1972), in a study of 197 Field Sparrows, mostly from central Ohio, recognized 40 major song pattern types; the songs of this towhee were of a type he found in 8 of the birds he studied. Other people might recognize a different number of major song pattern types in Field Sparrows; in my studies I have recognized 15 major types, and the songs of this towhee were of a type that I found in about 9% of the birds I studied; 4 songs of this type are shown in Fig. 2(*B–E*).

The songs of this towhee are shorter and contain fewer notes than most Field Sparrow songs; the songs Goldman studied averaged 2.64 sec in length, with an average of 23.20 notes. The final notes in the towhee songs are uttered more slowly than those in most Field Sparrow songs; Goldman found the note rate in the last part of the song to range from 5.9 to 35.7 notes per sec, and averaged 16.97 per sec.

Discussion.—Except for the Mockingbird (*Mimus polyglottos*), mimicry of 1 species by another in wild North American passerines appears to be quite rare. It has been reported in several species, but in only a few cases has the report been supported by audio-spectrographic analyses (e.g., in the House Finch, *Carpodacus mexicanus*, by Baptista, Z. Tierpsychol. 30:266–270, 1972). Most reports of mimicry in passerines (e.g., Snow, Wilson Bull. 86:179–180, 1974; Immelman, *in* Bird Vocalizations, R. A. Hinde, ed., Cambridge Univ. Press, London pp. 61–74, 1974; Nottebohm, Am. Nat. 106: 116–141, 1972; and others) involve species occurring outside this country. In passerines exhibiting local dialects it is generally assumed (and has been demonstrated in several species) that an individual's songs are learned from other birds, but in species that do not exhibit local dialects there is less evidence of the bird's ability to mimic.

The excellent mimicry by these 2 towhees of the songs of another species indicate that this species is at least capable of mimicking other birds, even though data from other sources (e.g., Borror, Condor 77:183–195, 1975) suggest that the song patterns a towhee develops are not greatly affected by what it hears. Both of the areas where these 2 mimicking towhees were recorded contained other towhees, yet their songs were unique; even the "normal" introductions and trills of the Murray bird were unlike those of 4 other towhees I recorded the same day within 1 km of this bird. These mimicking towhees must have had unusual exposure to the species they mimicked, and copied them in developing their own songs.—DONALD J. BORROR, *Dept. of Entomology, Ohio State Univ., Columbus 43210. Accepted 21 May 1976.*

Heat loss from the nest of the Hawaiian honeycreeper, "Amakihi."—The Amakihi, *Loxops v. virens*, is the most adaptable of the endemic Hawaiian honeycreepers, in many instances nesting successfully under conditions which are surprisingly cold for islands within the tropics (Berger, Hawaiian Birdlife. Univ. Press of Hawaii, Honolulu, 1972). One of the factors that might enable them to accomplish this is the construction
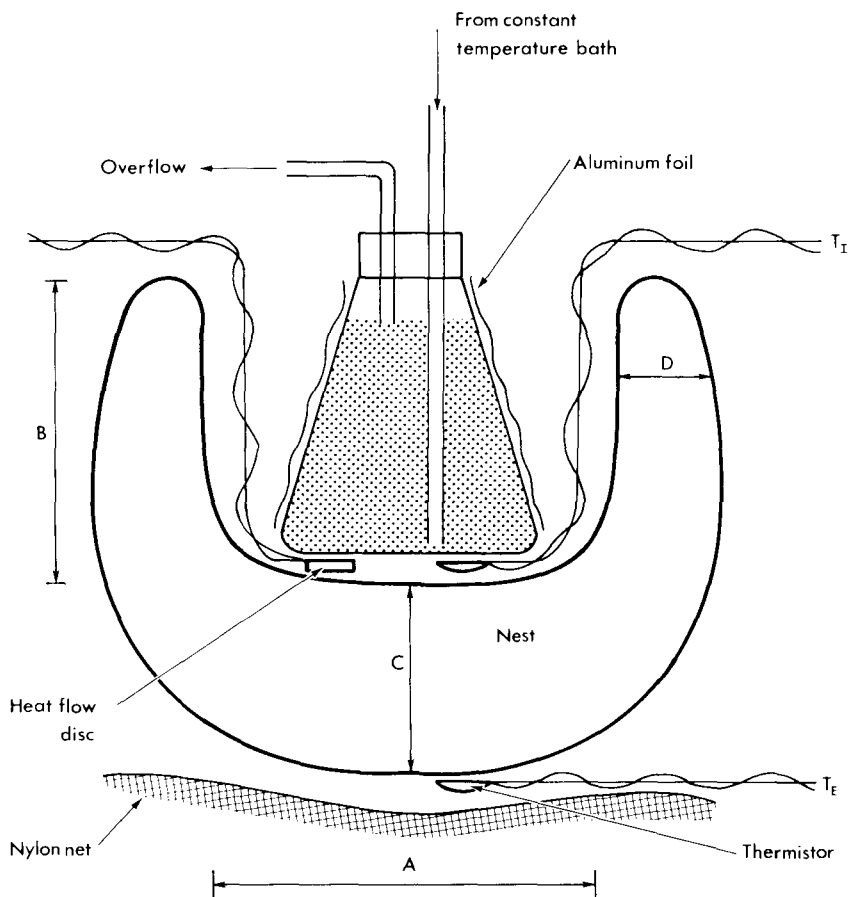
FIG. 1. Experimental arrangement for measuring the thermal conductance of the nest. Letters A–D indicate measured dimensions of nests; T_I and T_E are thermistors for measurements of the temperature difference across the nest wall.

of a well-insulated nest. The purpose of the study reported here was to measure the heat loss from the nest of the Amakihi under carefully controlled conditions.

Four nests were mounted on a wide-mesh nylon net, in an air-conditioned room. The air temperature varied from 23.8°C to 26.1°C on different days, but it did not change more than 0.3°C during any experiment. A 25 ml glass conical flask was inserted into the bowl of the nest, so that the bottom of the flask rested lightly on the floor of the nest (Fig. 1). The area of the flask in contact with the nest (12.5 cm²) was greater than the area of eggs normally in contact with the nest, but it approximated the combined contact area of the eggs and parent bird, or of the nestlings. Interposed between the bottom of the flask and the floor of the nest was a Hatfield heat-flow disc

(J. Physiol. III, 10–11P, 1950), and a Yellow Springs Instrument Company (YSI) thermistor (No. 427). A similar thermistor was used to measure the temperature of the outer surface of the nest (Fig. 1). The sides of the flask were wrapped in aluminum foil to minimize radiant heat exchange between the flask and the nest. Water was circulated through the flask from a thermostatically controlled water bath. The thermistors were connected to a YSI Telethermometer (Model 46 TUC), and the heat-flow was recorded with a Turner microvoltmeter. Measurements of temperature and heat flow were made at intervals of 15 min until consecutive readings of heat flow agreed within 1 μV (approximately 1 W/m² or 0.86 kcal/m².hr). This occurred after 60–75 min. The dimensions of the nest were also recorded.

The results are summarized in Table 1. The temperature inside the nest was approximately equal to the temperature of the interface between the incubated eggs and the nest (Drent, Breeding Biology of Birds, Natl. Acad. Sci., Washington, D.C., 1973), although it varied in the different nests from 35.5°C to 38.3°C depending, in part, upon the thermal insulation of the nest. Heat flow through the nest wall was determined by, inter alia, the temperature difference across the nest wall (T_I-T_E, Fig. 1). The values for heat flow were divided by this difference to provide the figures given in Table 1. These figures have the dimensions of thermal conductance (J. Appl. Physiol. 35:941–961, 1973), and they are the inverse of thermal insulation. The thermal conductance of the nest was clearly influenced by the thickness of the nest wall; the lowest heat flows were recorded from the nests with the thickest walls. However, the relationship is not a simple one because heat is lost circumferentially through the nest as well as by direct radial transfer. The values for thermal conductance are probably rather higher than those that might be obtained from the nest *in situ*, because of the inevitable loss of nest materials during the removal and transport of the nest. It should also be borne in mind that the thermal conductance of the nest will vary with the air movement in the vicinity of the nest. In our study, the air movement was less than 3 m/min. It is interesting that the nest with the lowest thermal conductance (No. 2) was collected at an elevation of approximately 1140 m in the wet Alakai Swamp on the Island of Kauai. The mean annual temperature in this area is 15.7°C.

Unfortunately, there are few data in the literature with which to compare these values; the thermal properties of nests have been little studied (Drent, 1973; Kendeigh, Breeding Biology of Birds, Natl. Acad. Sci., Washington, D.C. 1973; Ricklefs, Avian Energetics, Publ. Nuttall Ornithol. Club, 1974). The most valid comparison that we can make is between the thermal conductance of the nest of the Amakihi, and that of the tissues

TABLE 1

DIMENSIONS AND THERMAL CONDUCTANCE OF 4 NESTS OF THE AMAKIHI

| Nest No. | Dimensions* (mm) | | | | Thermal Conductance | |
	A	B	C	D	(W/m²·°C)	(kcal/m²·h°C)
1	60	32	20	20	5.716	4.915
2	55	44	54	30	2.783	2.393
3	45	36	15	15	4.555	3.917
4	53	28	50	20	3.486	2.998

* See Fig. 1.

and plumage of the adult bird. This comparison revealed that the thermal conductance of the 4 nests varied from 100 to 207% of the minimal conductance of the adult bird in a cold environment (MacMillen, 1974, Condor 76:62–69). As the thermal conductance of birds may very threefold, under different environmental conditions (Dawson and Hudson, Comparative Physiology of Thermoregulation, Vol. 1., Academic Press, New York, 1970), the thermal conductance of the nest and of the bird are of the same order of magnitude. We hope to obtain data on the thermal conductance of nests of other endemic Hawaiian birds, using the same technique, and to relate this information to the distribution and nesting habits of the birds.—G. C. WHITTOW AND A. J. BERGER, *Depts. of Physiology and Zoology, Univ. of Hawaii, Honolulu, 96822. Accepted 16 Apr. 1976.*

Spread of the Great-tailed Grackle in southwestern Louisiana.—The range extension of the Great-tailed Grackle (*Quiscalus mexicanus*) to the north and east was documented by Selander and Giller (Condor 63:29–86, 1961) and updated by Selander et al. (Condor 71:435–436, 1969). They indicated that the species occurred as far east in Louisiana as the Gibbstown-Bell City area of Calcasieu Parish. As recently as 1974, no further expansion eastward had been reported (Lowery, Louisiana Birds, 3rd ed. p. 548, La. State Univ. Press, Baton Rouge, 1974). We present evidence that a disjunct population of Great-tailed Grackles has existed unreported in the rice-growing region of south-central Louisiana for almost 2 decades. This area is more than 100 km ENE of the nearest known nesting sites in Calcasieu Parish (Fig. 1).

From 1960 to 1966, Ortego observed a small colony of Great-tailed Grackles in 2 live oaks (*Quercus virginiana*) near Ville Platte, Evangeline Parish. Local residents considered the noisy and conspicuous grackles to be fairly common summer birds, an indication that the colony had existed for some years. At about the same time, Guillory found a large colony of this species in a grove of live oaks at Mamou, also in Evangeline Parish. That colony existed until 1964.

When the Evangeline Parish colonies were discovered, *Q. mexicanus* was considered conspecific with *Q. major*, the boat-tailed Grackle, and as young birders both Ortego and Guillory identified the birds as Boat-tails. Some might question a retrospective identification of the birds as Great-tails. But no suitable Boat-tail habitat exists in the area, and in Louisiana, the Boat-tails breed only in or near coastal marshes (Lowery 1974). Ortego and Guillory observed the longer-tailed black males displaying on tall structures, and the smaller brown females feeding in nearby fallow rice fields. They both distinctly remembered that the males commonly used a call with "a clear ascending whistle." This provides conclusive evidence that the birds were indeed Great-tailed Grackles, for such a whistle is perhaps the most distinctive call of *Q. mexicanus* (Pratt, Birding 6:217–223, 1974).

Great-tailed Grackles were not reported again in the Louisiana rice country until 6 April 1972 when Pratt found 5 males near Ridge, Lafayette Parish and another male 1 km west of Maurice, Vermilion Parish. James A. Rodgers and Robert S. Kennedy (pers. comm.) sighted a flock of males and females near Kaplan, Vermilion Parish, on 13 May. In May 1973, Philip L. Bruner (pers. comm.) heard the distinctive whistle of a Great-tailed Grackle at Rayne, Acadia Parish. No nests were found in any of these areas.

In 1974, Great-tailed Grackles were again noted in Evangeline Parish. Guillory, Dennis H. Fontenot, and Dwight J. LeBlanc found the birds at LaHaye's Lake near