

abstinence on the two succeeding days. Indications of similar behavior appear in the few other consecutive record days. This suggests that there may be normal physiological accumulations and deficiencies which are balanced by subsequent decreases and increases in the food intake. It may also suggest an explanation for the apparent tendency among animals to eat sparingly sometimes and to gorge themselves at other times when food is abundant.

The average daily consumption of food during the period of observation, when the thermometer ranged from 15 to 70 degrees above zero Fahrenheit, was 24.8 grams or 20.9% of the presumed normal body weight of 113.8 grams. The single-meal average consumption of 7.9 grams was 6.9% of the same body weight. The average number of calories per day was 43.6. The average number of calories per gram of body weight per day was .383 calories.

It may be of interest to note that the caloric consumption of this hawk, whose activity was slight (compared with that of a normal bird of the same species), amounted to nearly twelve times the .032 calories per gram of body weight per day consumed by a human being whose relative activity may be considered analogous.—LEONARD WING and ANNE HINSHAW WING, 205 Prospect Street, New Haven, Connecticut, April 18, 1939.

Starlings Arrive in Utah.—Thirteen Starlings (*Sturnus vulgaris*) were discovered feeding with a flock of Brewer Blackbirds about the corrals on the Jeremy ranch, in Salt Lake County, by Mr. Thayer Evans, February 26, 1939. Mr. Evans killed one of the birds for identification, mounted it, and presented it to the University of Utah. I observed these birds on several occasions thereafter. Their attitude was decidedly like that of a meadowlark rather than that of a blackbird. The short tail, quick wing beat, and long glides to alight, are characters that differentiate them when in a flock of Brewer blackbirds.—C. W. LOCKERBIE, Salt Lake City, Utah, April 15, 1939.

A Pacific Kittiwake Comes Inland.—On February 16, 1939, during my absence from the city, Alva Oakes, of the Oregon Audubon Society, called at my office and left a very good written description of a gull-like bird he had found apparently sick on a sandbar on the south bank of the Columbia River in Multnomah County, Oregon. Two days later, Mr. Oakes again called and repeated his description of the bird that he had picked up and carefully examined. When I told him that I believed he had seen a Pacific Kittiwake, a species not before recorded in Oregon from any other than seashore localities, he returned to the Columbia River and found the bird dead at the exact spot where he had seen it before. The area is overrun with house cats, dogs, and small boys, but the bird had not been molested in any way; thus *Rissa tridactyla pollicaris* has been added to the birds of the Portland, Oregon, area. On being dissected, it was found to be an adult male in much emaciated condition.—STANLEY G. JEWETT, Portland, Oregon, March 22, 1939.

Geographic Variation in the Fork-tailed Petrel.—Recent acquisition by the Museum of Vertebrate Zoology of two series of specimens representing the species *Oceanodroma furcata*, one series from the southern limit, the other from near the northern limit of its range, demonstrates the existence of a readily appreciable geographical variation. The differences seen between northern and southern populations seem sufficient to warrant the use of separate names to indicate them.

The Fork-tailed Petrel was first formally named by Gmelin in 1789 as *Procellaria furcata*, based on an English description published four years before by Pennant in his Arctic Zoology. Both these authors indicate the icy waters between Asia and America as the bird's range, and Pennant, in the descriptive part of his Zoology, records the sighting of these petrels northeast of "Kamtschatka" on Cook's voyage to that region. It is therefore clear that the type locality for the name *furcata* is Bering Sea; this name is thus to be used for the northwestern population.

In reviewing the literature, the only old name we have found, that is seemingly useable for the now newly discerned southern form of the Fork-tail, is *plumbea*. This was allegedly a manuscript name, proposed by Peale and listed by him (U. S. Explor. Exped., vol. 8, Mamm. and Ornith., 1848, p. 292) as if a synonym of *Thalassidroma furcata* (Gmelin). The description given in the text applies quite as well to one race as the other. But this fact does not, in our judgement, preclude its resuscitation, when we take into account the circumstance that the only specimens Peale had before him "were obtained on the coast of Oregon." We therefore use Peale's name for the southeastern race, defining it as follows.

Oceanodroma furcata plumbea, new subspecies, though old name (Peale's).
Southern Fork-tailed Petrel.

Type.—Not known to be extant, if, indeed, ever designated; but before us is one of two "cotypes" contained in the United States National Museum, namely, no. 15461. The specimen is old, soiled, rag-

ged, taken down from a mount evidently long on exhibition. The only tag on it is of recent origin; written upon it in the handwriting of Charles W. Richmond, beside the number, are the following data: "Thalassidroma plumbea Peale. | Oregon. T. R. Peale. || Cotype!" Cassin, reporting in 1858 more fully on the "Mammalogy and Ornithology" of the U. S. Exploring Expedition, says (pp. 405, 406) that, on April 29, 1840, when in sight of the coast of Oregon (=Washington, close off Cape Flattery according to Wilkes, vol. 4, 1845, p. 296), one of the party, Dr. Charles Pickering, recorded encountering great numbers of the "Gray *Thalassidroma*," and "several specimens were taken with a hook and line." Thus we are provided with exact knowledge of place and date of capture of the type series of *plumbea*.

Diagnosis.—Similar to *Oceanodroma furcata furcata* but smaller, especially in length of wing and tail; general coloration darker (grayer or more plumbeous, less ashy or bluish); throat, lower abdomen, and crissum contrasting less with middle region of underparts by being wholly or in part grayer than in *furcata*.

Geographic range.—Breeds scatteringly on islands from coast of Humboldt County, northern California, north to Alexander Archipelago, on southern coast of Alaska just short of Cross Sound. We have breeding season series from near Trinidad, Humboldt County, California, and from near Sitka, Alaska. A hiatus in breeding range apparently exists between *plumbea* and *furcata* on the Alaskan coast between Cross Sound and the easternmost of the Aleutian Islands, whence (Akun Id., Akutan Id., Egg Id., Sanak Id.) come most of the specimens of *furcata* we have examined.

Measurements in millimeters

		Wing	Tail	Tarsus	Middle toe without claw	Culmen
Coast of Calif. May-August <i>plumbea</i>	2 ♂	143.1 (141.6-144.6)	79.5 (75.4-83.6)	25.6 (24.8-26.4)	22.5 (22.0-22.9)	14.1 (13.9-14.3)
	5 ♀	149.3 (146.2-154.8)	87.7 (85.2-89.8)	25.9 (25.6-26.2)	22.7 (21.9-23.9)	14.4 (14.2-14.8)
Sitka, Alaska July <i>plumbea</i>	11 ♂	151.4 (145.3-155.9)	86.5 (82.4-91.3)	26.2 (25.4-27.0)	22.5 (21.3-23.4)	14.6 (13.9-15.2)
	10 ♀	153.2 (149.9-156.1)	88.5 (82.6-96.5)	25.7 (24.4-27.5)	22.8 (21.3-24.0)	14.6 (13.9-15.3)
Aleutian Ids. June-August <i>furcata</i>	12 ♂	159.0 (154.7-165.0)	89.8 (82.3-96.0)	27.2 (25.5-28.6)	23.0 (21.6-24.5)	15.1 (14.4-16.1)
	15 ♀	159.6 (152.8-165.8)	93.2 (83.3-100.4)	27.3 (26.8-27.8)	23.8 (21.7-25.2)	14.9 (14.3-15.6)

Remarks.—In seeking information concerning a possible type specimen for Peale's name *plumbea*, we first looked in Witmer Stone's (1899) list of bird types in the Philadelphia Academy of Natural Sciences—without result. Then appeal was made to Mr. Wharton Huber, of the Philadelphia Academy, who could say only that, if there ever was a type there, it might have gone with other known types to P. T. Barnum, whose museum in Boston was subsequently burned. Enquiry of Dr. Herbert Friedmann, Curator of Birds in the U. S. National Museum, brought the information that no single specimen there has ever been designated as type, but that there are two of Peale's birds there that are marked "cotype"; one of these he kindly forwarded for our examination.

In the accompanying table of measurements, only specimens that were fairly certainly on or near their nesting grounds are included. McGregor (Condor, vol. 8, 1906, p. 117), collector of most of our northern material, mentions finding downy young in the Aleutian Islands on July 30; August-taken birds, therefore, had probably wandered little if at all from their breeding sites. However, the few specimens taken in September and October are omitted, as even "resident" petrels may wander considerable distances after nesting. It will be noted that a gradual decrease in size from the Aleutian Islands southward is indicated. The Sitka birds are more or less intermediate between *furcata* and *plumbea*, but average closer to the latter. Their coloration, likewise, is intermediate; some are nearly as light as *furcata* from the Aleutian Islands, others are dark like *plumbea* from the California coast. The average, however, is more nearly the color tone of the southern race.

There are at hand six specimens taken in Alaska in late September and October which are not included in the table of measurements. Of these, two from Unalaska Island and three labeled as from Russian Mission near the mouth of the Yukon River are clearly referable to *furcata*, though their coloration approaches that of the average of the Sitka specimens. A single specimen, taken September 18, 1908, in Prince William Sound has measurements and coloration agreeing in general with those of the southern race.

A female from Sanak Island, which lies somewhat east of the other Aleutian Islands from which the Museum of Vertebrate Zoology has specimens, approaches closely to *plumbea* in color, though its

measurements are clearly those of the northern race. The date of capture, June 30, indicates that it was probably on its breeding grounds, though there is a possibility of its being a non-breeding wanderer. One other individual deserves mention. This is a specimen shot in August in San Pedro Bay, California, by "Lorquin" (probably E. F. Lorquin, zoologist of San Francisco) and obtained by J. G. Cooper in exchange; Cooper's label bears no date nor sex indication. This bird, which constitutes one of the southernmost published records for the California coast, was probably a vagrant. It belongs to the southern race, though approaching *furcata* slightly in both size and coloration.

How far the petrels of this species from each breeding colony wander from season to season remains yet to be determined. It is to be expected that individuals return year after year to the islet on which they were raised, or at least to some nearby place; the geographic trends that are the subject of this paper bear out this hypothesis. By application of the banding method it would be possible to learn whether wandering birds eventually breed in a colony far distant from that in which they were raised, and also how general an interchange of individuals may occur from year to year between neighboring colonies. The ease with which the birds can be captured while nesting should make such a study practicable.—J. GRINNELL and FREDERICK H. TEST, *Museum of Vertebrate Zoology, Berkeley, California, November 28, 1938.*

Mountain Bluebirds Hovering.—While hunting jack rabbits at Cannon, Solano County, California, on February 13, 1939, I was much interested to observe Mountain Bluebirds (*Sialia currucoides*) hovering in the air in one spot in such manner as do Sparrow Hawks and White-tailed Kites. From fifteen to eighteen birds thus hovered at one time, legs dangling, tail spread and pointing downwards, and eyes searching the ground below. They were of course feeding and appeared successful in recovering their prey at each drop to the ground. These drops were from elevations of from ten to fifteen feet. They were not rapid plunges or dives such as made by hawks or falcons, but gentle flutters to the ground, where they alighted and snatched the prey with the bill.

Being inquisitive as to what attracted these birds, I took one specimen and found in the stomach three whole black ground beetles (*Amara insignis*) and a cricket (*Gryllus assimilis*). There were also many fragments representing other individuals of these same species, and segments of other beetles, mostly Carabidae, and of orthopterans. These insect identifications were made by E. Gorton Linsley of the Division of Entomology, University of California.—EMERSON A. STONER, *Benicia, California, March 22, 1939.*

Observations on the Reproductive Behavior of Great Blue Herons.—While visiting some nesting colonies of shore birds on the islands off the coast of the Arkansas Migratory Waterfowl Refuge near Austwell, Texas, I had the opportunity of witnessing a pair of Great Blue Herons in the act of copulation. The blistering hot sun and the ever present grackles made it dangerous for the birds to leave their nests unguarded for a single minute, so I concealed myself in the brush to cause as little disturbance as possible. Nests were numerous, on the ground, beneath bushes, in stunted trees, anywhere that an overhanging leaf or branch afforded a little shade during even a portion of the day. One nest in particular had commanded my attention because of its peculiar position in the very top of a dense growth of prickly pear. Upon it sat a female Great Blue Heron (*Ardea herodias*).

While thus hidden, I could observe the undisturbed birds at rest on their nests. Of particular interest was the method by which the male and female egrets and herons exchanged places on their nests. Usually the female remained on the nest until the male was flapping directly overhead, and then the sitting bird left and its mate took its place. When the male blue heron came upwind and hovered directly over its sitting mate, I expected the female to leave and the male to replace her. To my surprise, the male slowly settled down facing the same direction as the female with feet clasping the edge of the nest close to the female's neck. With wings slowly flapping to maintain his balance, the male flexed his legs and lowered his body to meet the now rising female. In this position the act of copulation took place, after which the male flew away and the female settled down to protect her eggs.

Now that I have had time to think over the observation, I am wondering whether this is the usual manner of copulation for the long-legged wading birds, or whether the hot sun and the presence of the grackles made this method necessary.—F. WALLACE TABER, *Texas Agricultural and Mechanical College, College Station, Texas, May 8, 1939.*

Notes on the Salt-feeding Habits of the Red Crossbill.—During the latter part of July and August of 1938, crossbills (*Loxia curvirostra*) were found abundantly in flocks in the higher portions of Crater Lake National Park, Oregon. The increase of this species at this time in the rim area of the