

rate, without actually examining their burrows during the winter months to ascertain their presence, I never saw one of these birds, as far as I can remember, sitting in front of these at such times, and I have lived where they were very common, and would certainly have noticed one occasionally if actually about. . . . These birds are diurnal in their habits, and may be seen sitting in front of their burrows at any hour of the day. When not unduly molested, they are not at all shy, and usually allow one to approach them near enough to observe their curious antics. Their long slender legs give them rather a comical look, a sort of top-heavy appearance, and they are proverbially polite, being sure to bow to you as you pass by. Should you circle around them, they will keep you constantly in view, and, if this is kept up, it sometimes seems as if they were in danger of twisting their heads off in attempting to keep you in sight. If you venture too close, they will rise and fly a short distance, and generally settle down near the mouth of another burrow close by, uttering at the same time a chattering sort of note, and repeat the bowing performance. Occasionally, when disturbed, they alight on a small sage bush, probably to get a better view of the surroundings.

"They hunt their prey mostly in the early evening and throughout the night, more rarely during the day-time. As soon as the sun goes down they become exceedingly active, and especially so during the breeding season. At such times they are always busy hunting food, and go and come constantly, and they may often be seen hovering suspended in the air, like the sparrow-hawk, locating their prey, or darting down noiselessly and swiftly, and grasping it with their talons without arresting their flight an instant. The actual amount of food a pair of these birds require to bring up their numerous family, generally averaging eight or nine, is something enormous. Each owl will eat fully its own weight in twenty-four hours, if it can get it. . . . As nearly all the food used by them consists of noxious vermin, it readily appears what an immensely beneficial bird the burrowing owl is, considered from an economic point of view, and deserving of the fullest protection.

"In southern California the burrowing owl commences laying about the beginning of April; in Oregon, Washington, and Idaho, rarely before the fifteenth of the month, and usually about the latter part of it; in Kansas and northern Texas, it begins about the same time; in Utah, fresh eggs have been found as late as June 15, and at Fort Collins, Colorado, on July 1.

"Although incubation does not appear to begin until the clutch is nearly completed, I have always found one of the parents at home, even if there was but a single egg in the nest. The old bird is courageous in the defence of its domicile, and, as a rule, will not leave it, although the way may be left clear for it to do so. Backing up to the extreme end of its burrow, it will strike with beak and claws in defence of its nest. Frequently, when within a foot or two of the nest proper, and before it was yet visible, the occupant made a rattling noise, produced by the rapid movement of its mandibles, which sounded very much like the warning of the rattlesnake when disturbed; this would easily impose on the average investigator, and, proceeding out of the burrow somewhat muffled and subdued, it is very similar indeed to the rattle of the latter."

There are 146 species described in the volume. Illustrations of the eggs of 94 of these are given on 12 beautifully colored lithographic plates. In looking over them, it is noticeable that, while the eggs of game birds and birds of prey are variously speckled and mottled, those of doves, pigeons, and owls are uniformly white. The last generally nest in holes in trees or similar places and are not conspicuous by reason of this color. The eggs of doves and pigeons, while placed in open nests, are screened by the parent birds, which are protectively colored. Grouse and other game birds generally lay their eggs on the ground, where their mottling prevents their being conspicuous; white birds of prey have similarly marked eggs, which may be considered as protectively colored also. The book contains a great mass of interesting information which will be welcomed both by ornithologists and the ordinary lover of birds. One cannot but regret that the index

Publications Received at Editor's Office.

- CANADIAN GEOLOGICAL SURVEY. Annual Report for 1888-89. Ottawa: S. E. Dawson. 8°. Paper.
 COMMISSIONER OF FISH AND FISHERIES. Report on the Establishment of Fish-cultural Stations. Washington: Government. 4°. Paper. 88 p. Ill.
 HAY, O. P. On the Breeding Habits, Eggs and Young of Certain Snakes. Washington: Government. 8°. Paper. 13 p.
 — On the Ejection of Blood from the Eyes of Horned Toads. Washington: Government. 8°. Paper. 9 p.
 HOWARD, L. O. Insects of the Sub family Eneyninae with Branched Antennae. Washington: Government. 8°. Paper. 9 p.
 STEJNEGER, LEONHARD. Two Additions to the Japanese Avifauna. Washington: Government. 8°. Paper. 3 p.
 TORREY, BRADFORD. The Foot-Path Way. Boston: Houghton, Mifflin & Co. 12°. 245 p. \$1.25.
 U. S. NAVAL OBSERVATORY. Meteorological Observations and Results, 1888. Washington: Government. 4°. Paper. 60 p.
 — Magnetic Observations, 1891. Washington: Government. 4°. Paper. 100 p.

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is so defective. The authorities quoted from or referred to are frequently mentioned, but there are innumerable cases where they are not. It thus becomes an impossibility to ascertain from the index whose work has been and whose has not been referred to.

The second title mentioned in our heading pertains to a paper of quite a different character from the foregoing. The first is a bulletin in itself, the second is an excerpt from the annual report of the U. S. National Museum for 1890: the one treats of special features in the life of birds, the other discusses in general and particular the characters of a small group. In this monograph on humming birds the author, Mr. Robert Ridgway, gives an interesting account of these wonderful little creatures. Among the many subjects discussed, we find an account of the early history of the literature of the group; remarks on the geographical distribution of the species; mention of their habits, manner of flight, migrations, intelligence, nests and eggs, food, variations, etc. The last 70 pages are devoted to descriptions of the species occurring in the United States, seventeen in all, of which illustrations are given of all but five. There are many other figures, some of which are original and others copied from Gould's "Monograph of the Trochilidae."

The family is essentially one of the New World, not a single species being known outside of its bounds. Their diminutive size and brilliant coloration have made them favorites with ornithologists, and, as in the case of every other well-studied group, innumerable genera and species have been made. Dr. Coues refers to this fact, and notices that it was carried to such length that it finally reached "the farcical and scandalous extreme of some 350 genera for few more than 400 known species." In size the species vary from about $8\frac{1}{2}$ inches long to only $2\frac{1}{2}$ inches. Notwithstanding their smallness, they are capable of the most rapid flight, and some perform journeys of 2,000 miles in their semi-annual migrations. On the west coast the highest latitude attained is in Alaska, about 61° , by the rufous-backed hummer, which is found

in winter in Mexico, more than 2,000 miles to the southward of its summer station. In the eastern United States the common ruby-throat ranges in summer as far north as 57° , and in winter is not known to occur north of southern Florida (latitude 29°), while its most southern limit is on the Isthmus of Panama, only 8° north of the equator. Species are most numerous in mountainous countries where there is great diversity of soil and productions within small areas. The State of Ecuador has 100 species within its borders, more than one-half not occurring elsewhere. Mr. Ridgway says regarding their geographical distribution: "Their centre of abundance is among the northern Andes, between the parallels of 10° north and south of the equator, from which region they gradually diminish in numbers both to the northward and southward, but much more rapidly toward the extensive lowlands of the eastern portion of the continent. The northern limit of their abundance may be approximately given as the Tropic of Cancer, beyond which but few of the fifty Mexican species extend, while only eighteen of them have been detected across the boundary line in the equally mountainous portions of the south-western United States, including the semi-tropical Rio Grande Valley. Small as this number may appear, the south-western portion of the Union may be considered richly endowed compared with the vast valley of the Mississippi and the Atlantic water-shed, a region of unsurpassed fertility and luxuriant vegetation, yet which throughout its whole extent, even including the peninsula of Florida, possesses only a single species of humming bird!"

The usefulness of this monograph would be greatly increased by the addition of a table of contents and an index. Neither of these is present in the excerpt, a though they are probably provided for in the report from which it is taken. One must turn page after page to find remarks upon any special subject. Notwithstanding this, however, readers must be grateful to Mr. Ridgway for the work he has done.

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First inserted June 19, 1891. No response to date.

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