

78. *Certhia familiaris montana*. ROCKY MOUNTAIN CREEPER.—Fairly common up to 10,000 feet, breeding between 7,000 and 9,000, occasionally up to timber line.

79. *Sitta carolinensis aculeata*. SLENDER-BILLED NUTHATCH.—Abundant. Breeds commonly in pines from 9,000 feet down to 7,000.

80. *Sitta pygmæa*. PYGMY NUTHATCH.—Abundant. The only really common bird during the winter months. They go up to 9,000 feet to breed and come much lower during the winter.

81. *Parus gambeli*. MOUNTAIN CHICKADEE.—Common. Breeds in May and June, from 9,000 feet up to timber line.

82. *Myadestes townsendii*. TOWNSEND'S SOLITAIRE.—Rare. Took a nest with four fresh eggs on June 7, at an altitude of nearly 10,000 feet.

83. *Merula migratoria propinqua*. WESTERN ROBIN.—Abundant. Arrives the latter part of February, breeding in April, May and June, according to altitude. Common up to 10,000 feet.

84. *Sialia mexicana bairdi*. CHESTNUT-BACKED BLUEBIRD.—Fairly common up to 12,000 feet. Breeds up to nearly 10,000 feet during May and June. Nests usually in deserted Woodpecker's holes or in hollow stumps.

85. *Sialia arctica*. MOUNTAIN BLUEBIRD.—Common. Arrives early in February, breeding in May up to 9,000 feet.

AVIFAUNA OF THE REVILLAGIGEDO ISLANDS.

BY A. W. ANTHONY.

DURING the past summer (1897) a little over a month was spent in exploring the Revillagigedo Islands, lying to the southwest of Cape St. Lucas, Lower California, and as very little is known of the birds of this region I have thought it worth while to put on record my notes taken while there.

Socorro Island, the largest of the group, lies about 240 miles southwest of Cape St. Lucas and about 285 miles to the westward of Maria Madre, the largest of the Tres Marias group, off San Blas.

Clarion Island lies approximately 200 miles to the westward of Socorro and somewhat further south, while San Benedicte is but 35 miles north of Socorro. Rocca Partida (Divided Rock) is

the fourth of the group and is but a high rock having the appearance of a ship under jury masts, and lies 65 miles northwest of Socorro.

The islands are all volcanic in origin and, in general, extremely rough and broken. On San Benedicte is found a heavy growth of coarse grass, wherever there is sufficient soil. But little other vegetation is found on the island. This grass, growing to the height of a man's head, made travel extremely disagreeable, as the barbed seeds penetrated our clothing by thousands and caused us much more trouble than the cactus thickets which we encountered on Clarion later. San Benedicte is a small island about three miles in length with an average width of half a mile.

Socorro Island was roughly estimated to contain 100 square miles, and to rise to a height of 4000 feet at its center, which is an extinct volcano. The greater part of the island is covered by a very dense growth of underbrush, the weather side (north and northwest exposures) being especially thickly covered, making travel, except in favored spots, well nigh impossible. Trees are abundant on the weather side of the island but on the south and east sides they are mostly confined to the cañons, and were smaller than on the northern slopes. They were nowhere seen over forty or fifty feet in height, though usually covering considerable area with their broad spreading branches. Three anchorages were made at Socorro, one on the north side and two on the south coast of the island.

Clarion Island has little in common with the others of the group, either in flora or fauna. It is only about five miles in greatest length by a mile in width, rising about 1500 feet in altitude. A few low trees or shrubs, the largest not over ten feet in height, are scattered along the main plateau, and in a few places reach the level ground that lies between the mesa and the coast on the south side. Nearly the entire flat between the mesa and the beach is covered with a dense growth of cactus (*Platopuntia*) over which has grown a mass of vines. Passage through this belt is only accomplished with diligent and constant use of the bush knife.

A short distance from the beach were found two small shallow ponds which contain water during the rainy season only, but as

the high tides evidently wash over the barriers and flood them with sea water it is doubtful if they are ever otherwise than brackish. At the time of our visit, in May, they had been dry for some months and no water was found anywhere on the island.

As might be expected, from the position and vegetation of Clarion, its birds are quite different from those of Socorro or Benedicte. The only land bird, in fact, that was common to any two islands was the Raven, which was abundant on Clarion and not uncommon on San Benedicte but, strange to say, was not seen on Socorro.

On the afternoon of April 27 we sailed from Cape St. Lucas for San Benedicte. At the Cape we left the last of the Larinæ, the Western Gull being fairly common and one or two Heermann's Gulls being seen.

Puffinus auricularis was not rare, and was seen at times all the way across to San Benedicte, becoming abundant on the morning of the 29th when we approached the island. *P. cuneatus* was also seen at the Cape but none were noted after leaving there until they became abundant near San Benedicte. Boobies and Man-o'-War Birds came off to meet us at daybreak while still some 35 miles from the island and escorted us to our anchorage.

The islands are treated separately for sake of comparison.

San Benedicte Island.

1. *Puffinus auricularis*. EARED SHEARWATER.— Small, scattered colonies were found on top of the island, the burrows being generally in the thick grass, and but few—not over a dozen—in a colony. At the time of our visit most of the burrows contained young that were, in many cases, nearly as large as the adults, but still covered with long plumbeous down, lighter (whitish) on the lower parts. Most of the adults were at sea during the daytime, but a few were found with the smallest young, those but a few days hatched. A single egg was found addled, and is now in the U. S. National Museum. It is pure white like the eggs of the other species of the genus that I have seen.

2. *Puffinus cuneatus*. WEDGE-TAILED SHEARWATER.— Seen about San Benedicte and Socorro Islands, but not common at the latter place. None were seen at Clarion or west of Rocca Partida. Both phases were seen, the sooty plumage outnumbering the light-bellied form about two to one. In a series of about 75 specimens all manner of intergrades can

be found, from those with pure white lower parts, including underwing coverts, to those having gray and sooty-brown plumage. In the upper surface there is very little variation. The species was not breeding to any extent at the time of our visit and but a single egg was secured, which is now in the U. S. National Museum. A more complete paper on the Shearwaters of our southwest coast is contemplated, when the present interesting species will be treated more in detail.

3. *Oceanodroma kaedingi*. KAEDING'S PETREL.—A number were seen at sea off the island as late as June 1. We found no evidence of the nesting of small Petrels on any of the islands of the group. It is possibly accounted for by the presence of vast numbers of large land-crabs that inhabit burrows all over the islands and would very likely destroy eggs and young of such species as *Oceanodroma*.

4. *Phaëthon æthereus*. YELLOW-BILLED TROPIC BIRD.—Common about the cliffs, and at sea, between the islands. They were often seen to enter holes in the ledges, and were usually in pairs, chasing each other about with loud cries that have given them the name of 'Bo-son Bird, the note being a good imitation of a boat-swain's whistle. Many holes were examined but no eggs found.

5. *Sula cyanops*. BLUE-FACED BOOBY.—Common. At the time of our arrival most of the birds were paired and were defending hollows in the sand where they contemplated laying. Only two or three sets were found of one egg each.

6. *Sula brewsteri*. BREWSTER'S BOOBY.—About as common as the preceding species, nesting at the same time. The nests of this species were all made of sticks and coarse grass in a hollow in the sand or rocks. Fresh eggs were found on May 17, in nests that were unfinished on the first of the month, when we first called at the island. It is interesting to compare in this connection the dates on which Mr. Goss found eggs of this species in the Gulf of California (Auk, Vol. V, 1888, 243).

7. *Sula websteri*. WEBSTER'S BOOBY.—By far the most abundant species on the island, nesting in the heavy growth of grass all over the island. Fresh eggs were taken the first of May, and on the 17th the same nests had second sets. A few young were found on the latter date. This species often took the liberty of perching on our heads and shoulders or lit on the rail of the skiff as we pulled ashore.

8. *Fregata aquila*. MAN-O'-WAR BIRD.—A considerable colony was found on the top of the island and several nests were also found at the base of the cliff near the beach. Young birds were fully fledged, many of them flying on May 1, and one or two fresh eggs were taken. On our second visit to the island, May 17, four or five sets were taken, evidently a second laying.

At a considerable distance from the colony a bird was found that was unable to fly, and thinking that it had been recently injured, and must necessarily starve, where food was not easily obtained by even the best of flyers, I killed the cripple and made an examination of its injuries.

One wing was withered and useless,—evidently the bird had never enjoyed its use, though it was fat and its stomach was well filled with flying fish. Those who know the feeding habits of *Fregata* need not be told that all their food is obtained on the wing, and a bird deprived of the use of its wings would speedily starve if not fed by its fellows. The precipitous sides of San Benedicte also made it impossible for a Man-o'-War Bird to gain the top of the island if deprived of its wings. So it was quite evident that the pensioner had never left the island, but had been dependent on the bounty of its fellows all of its life. From its excellent condition it was evident that even in that busy community of thousands some of them found time to feed the unfortunate.

9. *Heteractitis incanus*. WANDERING TATTLER.—Several Tattlers were seen about the rocky shores of the island.

10. *Corvus corax sinuatus*. AMERICAN RAVEN.—Rather common on San Benedicte. During our two weeks stay at Socorro no Ravens were seen, which is a little strange since sheep are abundant and would furnish more food than can possibly be found on the barren rocks of San Benedicte. The fact of our not meeting with the species does not signify that it never occurs, however, for the islands are but 35 miles apart, and the distance could easily be traversed by a bird of such strong flight.

11. *Salpinctes obsoletus*. ROCK WREN.—Abundant. All of my specimens are in worn plumage and are unsatisfactory for comparison with mainland birds, but with the material at hand I see no reason for considering the island birds different from those of the peninsula.

Socorro Island.

On May 3 we left San Benedicte, anchoring the same afternoon on the southwest side of Socorro. The time until the 16th, was spent in exploring this island. No land birds were found that have not been recorded. All of the species are generally distributed, and with the exception of *Micropallas* and perhaps *Buteo* all of the species peculiar to the island could be easily taken in an hour and within a hundred yards of the beach. At the time of our visit all of the land birds except the Doves had long since nested and young, fully fledged, were taken as often as adults. From the appearance of the organs I concluded that the Ground Doves were just beginning to lay. With the exception of *Buteo socorroensis* land birds were remarkably tame.

1. *Larus occidentalis*. WESTERN GULL.—The fragments of a Gull were found on the beach at the southwest end of the island and I am

reasonably sure that they represented an immature bird of the present species.

2. *Sterna fuliginosa*. SOOTY TERN.—A large colony was found nesting on a rock a mile off the southwest point of the island. On May 12, we found most of the eggs hatched and many young were half-fledged. The eggs were single and laid on the bare rock. From the series of skins taken it would seem that 'var. *crissalis* Baird' would eventually have to be recognized. The material is insufficient, however, to warrant a definite conclusion.

3. *Anous stolidus ridgwayi*. RIDGWAY'S NODDY.—A large colony were nesting with the preceding species. Most of the eggs were fresh on May 12. They were laid on the bare rock with no attempt at nest building.

Terns were not seen about any of the other islands of the group.

4. *Puffinus cuneatus*.

5. *Puffinus auricularis*.—Both these Shearwaters were seen at sea about the island. No evidence of their nesting was noted, however.

6. *Oceanodroma kaedingi*. KAEDING'S PETREL.—Common at sea near the island. Apparently migrating.

7. *Phaethon æthereus*. RED-BILLED TROPIC BIRD.—Common at sea and about all outlying rocks.

8. *Sula cyanops*.

9. *Sula brewsteri*.

10. *Sula websteri*.—Boobies were much less abundant about Socorro than at San Benedicte. Quite a colony were gathered about the cliffs on the southwest end of the island, but elsewhere they were only seen in small numbers, as they followed the small fish on which they fed.

11. *Fregata aquila*. MAN-O'-WAR BIRD.—Quite common with the Boobies, following them about the island and robbing them on all occasions.

12. *Ardea herodias*. GREAT BLUE HERON.—Not uncommon. Several were seen at each of our stations.

13. *Nycticorax violaceus*. YELLOW-CROWNED NIGHT HERON.—Quite common all over the island. Fully fledged young were shot May 14. They seemed to be feeding extensively on the land crabs, the shattered remains of which were often seen together with the tracks of this species.

14. *Heteractitis incanus*. WANDERING TATLER.—Occasionally seen all along the shore.

15. *Actitis macularia*. SPOTTED SANDPIPER.—A single bird was seen on the north side of the island May 14.

16. *Zenaidura graysoni*. GRAYSON'S DOVE.—This species did not seem to be at all common, but was perhaps more abundant in the higher parts of the island, which were very difficult of access.

17. *Columbigallina passerina socorroensis*. SOCORRO GROUND DOVE.—Rather common everywhere on the island.

18. *Buteo socorroensis*. SOCORRO RED-TAIL.—Not at all common and very wild.

19. *Micropallas graysoni*. GRAYSON'S ELF OWL.—A single specimen was shot on the south side of the island.
20. *Conurus holochlorus brevipes*. SHORT-FOOTED PAROQUET.—Quite common in several places. None were seen at the west end of the island, but on the north side, as well as near our anchorage on the south coast, we met with several flocks.
21. *Pipilo carmani*. CARMAN'S TOWHEE.—Very common all over the island. They were uniformly confiding and often half a dozen would congregate within a few feet of a person, silently inspecting him with an air of trustful curiosity quite foreign to other species of the genus with which I am familiar.
22. *Compsothlypis graysoni*. GRAYSON'S WARBLER.—Abundant all over the island but especially so in the trees on the north side.
23. *Mimodes graysoni*. GRAYSON'S MIMODES.—More common about the trees, but seen everywhere on the island. Most of our specimens had the feathers of the frontal region and about the bill glued together by some vegetable gum. One shot on May 14, contained in its stomach a large blue lizard over six inches in length. At the time of our visit the season of song was evidently passed, but occasionally a bird would favor us with a short song in the evening or early morning. The notes were soft and full of rich melody, somewhat suggestive of the song of *Harporhynchus rufus* but of superior quality.
24. *Troglodytes insularis*. ISLAND WREN.—Very abundant everywhere, perhaps the most abundant species on the island.

Clarion Island.

1. *Diomedea nigripes*. BLACK-FOOTED ALBATROSS.—The only Albatross noted from south of Cape San Lazaro was seen a short distance from Clarion.
A Jaeger was seen at sea near the island May 29, but the species was not determined.
2. *Puffinus auricularis*. EARED SHEARWATER.—Several colonies were found on the island from which well grown young were taken May 27.
3. *Oceanodroma kaedingi*. KAEDING'S PETREL.—Seen at sea near the island.
4. *Phaëthon æthereus*. RED-BILLED TROPIC BIRD.—Common.
5. *Sula cyanops*. BLUE-FACED BOOBY.—Much more abundant than at the island further east. Nests were found from the beach to the top of the island.
Brewster's booby was not seen west of Rocca Partida, at which point one or two came off to inspect the schooner.
6. *Sula websteri*. WEBSTER'S BOOBY.—Very abundant. The nests of this species were always placed in branches of low shrubby trees on Clarion. Those nesting on San Benedicte, where no trees were found, were content

with a rock or rank bunch of grass, on top of which the nest was built of twigs and coarse grass.

7. *Fregata aquila*. MAN-O'-WAR BIRD.—Abundant.
8. *Ardea herodias*. GREAT BLUE HERON.—One or two seen.
9. *Heteractitis incanus*. WANDERING TATTLER.—Not uncommon.
10. *Charadrius dominicus*, subsp.? A Golden Plover was shot on a coral reef on the south side of the island. The specimen is inaccessible at the present writing and I am uncertain to which race it should be assigned.

Accompanying this species was a large Plover that escaped me, and though seen on one or two subsequent occasions could not be secured.

11. *Arenaria interpres*. TURNSTONE.—Three Turnstones were seen in company with the Plovers above mentioned May 21.

12. *Zenaidura clarionensis*. CLARION ISLAND DOVE.—Very common. On May 19, a fully fledged young bird was taken, and on the 23d, a fresh egg was found in a hollow in the ground from which the parent fluttered upon our approach. As Doves were often seen flying along the cliffs and entering the holes in the lava it is very likely many were nesting in such places.

13. *Speotyto rostrata*. CLARION BURROWING OWL.—Abundant all over the island. At the time of our visit they were usually seen in pairs about the burrows which were often in colonies of a dozen, within a radius or fifty yards. Many burrows were opened and found to extend to a distance of from five to ten feet. They were very similar in all respects to the burrows of our ground Owls in western United States. From the burrows examined but a single set of 4 eggs was taken, the rest being empty. The eggs were not to be distinguished from those of *S. c. hypogæa*.

14. Trochilidæ.—A Hummingbird was reported by one of our party but as it was not secured, nor others seen during our stay, the species is unknown and it can only be regarded as a wanderer.

15. *Corvus corax sinuatus*. AMERICAN RAVEN.—Abundant.

16. *Chelidon erythrogaster*. BARN SWALLOW.—A number of Barn Swallows were seen on May 26, and one was shot; probably migrants.

17. *Troglodytes tanneri*. TANNER'S WREN.—Not uncommon. Seen all over the island. Many young taken between May 19 and 27 were scarcely to be distinguished from the adults. An old nest was found in a thick thorny bush. It was composed of material such as might have been selected by *T. ædon* but the shape of the nest as well as its location might have been the design of a Song Sparrow.