THE
ACADEMY OF NATURAL SCIENCES
OF PHILADELPHIA
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MONOGRAPHS
Number 6

RESULTS OF
THE FIFTH GEORGE VANDERBILT EXPEDITION (1941)

(BAHAMAS, CARIBBEAN SEA, PANAMA,
GALÁPAGOS ARCHIPELAGO AND
MEXICAN PACIFIC ISLANDS)

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CONTENTS

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MEXICAN PACIFIC ISLANDS)

INTRODUCTION AND ITINERARY

BY GEORGE VANDERBILT
Leader of the Expedition

INTRODUCTION

The plans for this expedition commenced taking concrete shape some six months before its inauguration. I had just returned from the Hawaiian Islands, after making a collection of fishes from tide-pools in that region, and also a short expedition to Bird Island. While plans had been made for some time by the Academy for a much more extensive expedition, the international situation at the close of 1940 made it necessary to limit the scope to areas close at hand which had not been exhaustively collected, and the Darién region of Panamá was one of these. It has been my experience, through nine years of field work, that those places which are most difficult of access and most arduous to work are those which yield the most important collections, and hence the Cerro del Sapo of Darién seemed a desirable objective. As finally planned other important objectives were: Little Inagua in the Bahamas, Old Providence and St. Andrews Islands in the Caribbean, and Clipperton, Revilla Gigedo, Tres Marias and Guadalupe Islands in the Pacific. The Galápagos group was included for marine work, although it had been visited by us on a previous expedition at a different time of the year when the water was much warmer.

The execution of the plans was made possible by the courtesy and cooperation of the governments of the Bahama Islands and of Jamaica, and of the Republics of Colombia, Panamá and Ecuador, and of the United States of Mexico.

The ship utilized was my own schooner *Pioneer,* Captain Walter Hart, master. The *Pioneer* is 172 feet long of 327 tons; she is steel-hulled, an excellent sea-boat and able to take any kind of weather. The personnel of the expedition included myself as leader, Mrs. Vanderbilt as staff photographer, Mr. and Mrs. Samuel B. Jones, III, as guests, William B. Gray, in charge of fish collections, and Dawson Feathers, ornithologist. I take this opportunity to thank them one and all for their unflagging efforts in enlarging the collections, in spite of the many difficult and trying conditions under which we were forced to work.

The *Pioneer* had been fitted with many special aids for collecting, including iron stages which could be lowered over the side for night work with undersea lights, and an oversized refrigerator to freeze bird specimens

until they could be skinned. The latter permitted the preparation of specimens subsequently while the vessel was at sea.

Through Mr. William Schroeder, Business Manager of the Oceanographic Institution at Woods Hole, Massachusetts, the Academy received permission to take some trawls from their stock, and Mr. R. A. McLean of the Academy's staff was sent to Woods Hole to complete these arrangements. Two thirty-five foot otter trawls and two fourteen foot beam trawls were obtained. This equipment was later replaced by the expedition. Through this arrangement we were able to secure these nets, which otherwise would not have been possible in the time available. Dr. Leslie A. Stauber, of Port Norris, New Jersey, presented the expedition with a bottom dredge which he had obtained for personal use, and the Oceanological Society, associated with the Academy, also donated a similar piece of equipment.

In summarizing the results, along with some successes certain failures in basic plans should be admitted. Scheduled collecting at Clipperton Island was impossible, due to the failure of both generators. With several hundred unskinned bird specimens in the refrigerator it was necessary to abandon plans for reaching Clipperton and run for Acapulco, Mexico, with all haste. Another failure was registered at the Revilla Gigedo group, as a heavy gale was encountered and it was impossible to get ashore.

Possibly the most difficult task was the problem of reaching the summit of the Cerro del Sapo, Darién. First an aerial survey of the area was made out of Balboa, and a plan formulated. A certain high beach was noted as affording the shortest possible route to the peak, but exploration on foot developed the fact that the mountain was unreachable from this side, and a new approach over a much longer route had to be made from Garachiné Point. Trails were hewn out of solid jungle all the way, and a base camp was finally established on the shoulder of the mountain. This may smooth the way for other collectors in this region.

The collections secured were very largely birds, fishes, and certain marine invertebrates, reports upon which are contained in the present volume. All the collections secured have been added to the Academy series.

Acknowledgments

The sincere appreciation of the Academy of Natural Sciences of Philadelphia and of the leader and other members of the expedition is extended to the following for official permits, and their cooperation and courtesy, which made the work of the expedition possible.

The Department of State of the United States of America.

The American Embassies at London, Mexico City, Panamá and Bogotá, and the American Legation at Quito.

His Excellency the Governor of the Bahamas.
His Excellency the Governor of Jamaica.
The Office of Colonial Secretary of the Bahamas.
The Foreign Office of His Britannic Majesty's Government.
The Foreign Office of the Republic of Panamá.
The Foreign Office of the Republic of Colombia.
The Foreign Office of the Republic of Ecuador.
The Ministry of National Defense of the Republic of Ecuador.
The Foreign Office of the United States of Mexico.
The Department of Forests and Game of the United States of Mexico.

Numerous individual officials of the various governmental departments above mentioned, as well as embassy, legation, consular and port officers were most gracious and helpful, and by their interest and courtesy made possible activities which without their assistance would have been difficult, if not impossible. Our obligations to these various representatives are deep and sincere.

[The Academy of Natural Sciences of Philadelphia desires to express its sincere appreciation to Mr. and Mrs. George Vanderbilt for their energies and financial support which made the Fifth George Vanderbilt Expedition possible, and also for the necessary funds to cover the entire publication expense of the present report.

Charles M. B. Cadwalader
President]

ITINERARY

March 4-14, 1941.	Bahamas. Marine work in Gulf Stream and off Great Abaco, West Caicos Island and Providenciales.
March 18-19, 1941.	Beacon Key, off Serranilla Bank.
March 20-21, 1941.	Southwest Key, Serrana Bank.
March 22-23, 1941.	Roncador Key, Roncador Bank.
March 24-26, 1941.	Providencia (Old Providence) Island.
March 27-29, 1941.	San Andrés (St. Andrews) Island.
March 31, 1941.	Courtown and Albuquerque Keys.
April 1-10, 1941.	Canal Zone—passage of Panama Canal.
April 11-14, 1941.	Balboa, Canal Zone.
April 15-17, 1941.	Playa Muerto, Pacific side, Panamá.
April 17-May 9, 1941.	Based at Garachiné Point, Gulf of San Miguel, Panamá. Shore and land work carried on at Santelmo Bay, Rey Island, Perlas Group, Piñas Bay, and Ensenada Honda. Darién work on the Cerro del Sapo carried on during this period.

May 10, 1941.	Ensenada Honda, Pedro González, Perlas Group.
May 11-12, 1941.	Saboga Island, Perlas Group.
May 13-28, 1941.	At sea between Panamá and the Galápagos.
May 24-25, 1941.	Malpelo Island.
May 28-29, 1941.	Abingdon Island, Galápagos.
May 30, 1941.	Bindloe Island, Galápagos.
May 31, 1941.	James Bay, James Island, Galápagos.
June 1, 1941.	Aeolian Bay, South Seymour Island, Galápagos.
June 2, 1941.	Chatham Island, Galápagos.
June 3, 1941.	Gardner Bay, Hood Island, Galápagos.
June 4, 1941.	Floreana Island, Galápagos.
June 5-7, 1941.	Tagus Cove, Albemarle Island, Galápagos.
June 8-17, 1941.	At sea between the Galápagos and Acapulco, Mexico.
June 17-26, 1941.	Acapulco, Mexico.
June 27-29, 1941.	At sea between Acapulco, Mexico and Socorro Island, Revilla Gigedo Group.
June 30-July 2, 1941.	Off Socorro Island, Revilla Gigedo Group.
July 3, 1941.	At sea between Socorro Island and Cleofas Island, Tres Marias Group.
July 4, 1941.	Off Cleofas and Maria Magdalena Islands, Tres Marias Group.
July 5-9, 1941.	Mazatlán, Mexico.
July 10-18, 1941.	Maria Madre Island, Tres Marias Group.
July 18-19, 1941.	Isabel Island.
July 20-23, 1941.	At sea between Isabel Island and Guadalupe Island.
July 24-26, 1941.	Guadalupe Island.
July 27, 1941.	At sea between Guadalupe Island and San Pedro, California.
July 28, 1941.	Arrival at San Pedro, California.

Field Notes on Special Areas

The important observations, to which references on following pages are here given, have been extracted from the note-books of the expedition, and

have been assembled for their value in interpreting the collections secured, and also for the assistance they may furnish future zoologists working in the same areas. (Ed.)

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West Caicos, pp. 7, 63.

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Mt. Sapo, Darién, pp. 24-26.
Piñas Bay, Darién, p. 254. (Marine station no. 5.)
Santelmo Bay, Rey Island, Perlas Group, p. 237. (Marine station no. 4.)
Ensenada Honda, Pedro González Island, Perlas Group, p. 256. (Marine station no. 6.)
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Bindloe Island, pp. 308-309. (Marine station no. 12.)
James Bay, James Island, pp. 313-314. (Marine station no. 13.)
Aeolian Bay, South Seymour Island, p. 341. (Marine station no. 14.)
Chatham Island, p. 342. (Marine station no. 15.)

PACIFIC OCEAN

MEXICO AND MEXICAN PACIFIC ISLANDS

THE BIRDS

by JAMES BOND and RODOLPHE MEYER DE SCHAUENSEE
Department of Birds, The Academy of Natural Sciences of Philadelphia

A. SOME BIRDS OF THE SOUTHERN BAHAMA ISLANDS

The first islands on which bird collections were made by the Vanderbilts on their 1941 expedition were Little Inagua, West Caicos, and Providenciales situated in the southern Bahamas. These islands were virtually unknown from an ornithological standpoint. They were visited in 1930 by Dr. Paul Bartsch of the United States National Museum, but no report on the birds obtained has yet been published. The Caicos Islands were explored by Cory's collectors many years ago, but no birds were recorded from Providenciales.

Specimens were obtained by the Academy's expedition at Little Inagua on March 8 and 9, 1941. Dawson Feathers, Vanderbilt's collector, writes that this island is extremely low, attaining a height of not more than 50 feet above sea level. It is covered with a dense growth of " cacti, yuccas, and thorny creepers." As in the case of Great Inagua, a considerable number of wild donkeys exist on Little Inagua. No human habitation was apparent.

The expedition was ashore on West Caicos on March 10 and 11. The vegetation is quite similar to that on Little Inagua, but the island attains a height of approximately 100 feet. Inland were found two large lakes of brackish water, each covering some four to six square miles. One of these was very shallow, the other was in places from six to ten feet in depth. Both were crossed by an ancient causeway, on which were the remains of a narrow gauge railway. There had obviously been a salt works here many years ago. Again no signs of human habitation was noted.

On March 12, 13, and 14, Providenciales was investigated. The island is considerably higher than the previous two (about 300 feet) and vegetation was found to be more luxuriant. In places trees attained a height of some twenty feet. Some tidewater inlets, bordered by mangroves, were noted and an effort was made to penetrate into the interior by means of these, unfortunately without success.

The avifauna of the Bahama Islands is by no means rich, the Inagua and Caicos Islands not excepted. It is therefore not surprising that few species were encountered. Nevertheless, a number of the birds that were collected are of considerable ornithological interest.

Annotated List

Phaëthon species

What were presumably Yellow-billed Tropic-birds (*Ph. lepturus catesbyi*) were noted at Providenciales.

Pelecanus occidentalis subspecies

Brown Pelicans were seen at Providenciales, but no specimens were collected. They are probably referable to the nominate form, which is widely distributed among the Greater Antilles.

Ardea herodias subspecies

One observed on West Caicos, another on Providenciales.

Nyroca affinis (Eyton)

Three ducks (apparently this species) were flushed from a lake on West Caicos.

Pandion haliaetus ridgwayi Maynard

♀, o; Little Inagua.

The Bahaman Osprey was also noted on West Caicos and Providenciales. A nest was found on Little Inagua.

Haematopus ostralegus prattii Maynard

♂, o; Little Inagua.

The two specimens collected are typical of this race, which has the distal portion of the bill, decidedly thicker, less blade-like, than in *appliatus* of the mainland coast.

Charadrius wilsonia wilsonia Ord

♂, ♀; Little Inagua.

These two skins are indistinguishable from a series in the Academy's collection from the coast of the southeastern United States.

" Plover " were also observed on West Caicos.

Erolia minutilla (Vieillot)

o; West Caicos.

Columba leucocephala Linnaeus

A " pigeon ", presumably this species, was seen on Little Inagua.

Columbigallina passerina exigua Riley

2 ♂; Little Inagua. 2 ♂, 4 ♀, o; West Caicos. 2 ♂; Providenciales.

We find that specimens from the Inagua, Caicos, and Turk Islands are virtually indistinguishable from those from Mona Island near Puerto Rico, the type locality of *exigua* (cf. Bond, Proc. Acad. Nat. Sci., Phila., vol. 94, 1942, p. 95).

Wing measurements (in millimeters) of the above series are as follows: ♂ Little Inagua, 80 (2); West Caicos, 77.25-78.25; Providenciales, 77.5-78.75. ♀ West Caicos, 77.5-80.5.

Calliphlox evelynae salita (Greenway)

3 o; West Caicos (1), Providenciales (2).

These specimens are apparently females. They are more extensively white below (i.e. on the posterior under parts) than females from Great Inagua and Little Inagua, a difference pointed out by Greenway when he described *salita*.

Calliphlox evelynae lyrura (Gould)

♂, 2 ♀; Little Inagua.

All three examples are beautiful adult specimens. Both sexes agree perfectly with recently collected specimens from Great Inagua, and show no approach to *salita*. The purple frontal band in the male is very broad, extending well back onto the fore-part of the pileum.

The genus "*Nesophlox*" Ridgway has been recently merged with *Calliphlox* Boie (cf. Todd, Ann. Carnegie Mus., vol. 29, 1942, p. 357).

Megaceryle alcyon alcyon (Linnaeus)

Seen on Providenciales.

Mimus species

Mockingbirds were noted on Little Inagua and on Providenciales. They could have been either of two species, *M. polyglottos* or *M. gundlachii*.

Polioptila caerulea caerulea (Linnaeus)

♂, ♀; Little Inagua.

Both these specimens, in addition to two from Great Inagua, have wings that measure 49 to 50 mm. The wings of two New Providence examples in the American Museum of Natural History measure 45.5 and 47 mm., respectively, while that of a specimen from Little Abaco, in the same institution, measures 49 mm. The majority of gnatcatchers examined from the eastern United States have wings of over 50 mm.

This species is a common winter resident in western Cuba, but the status of continental individuals in the Bahamas during this season remains to be determined.

Vireo crassirostris crassirostris Bryant

♂, ♀; Little Inagua.

The gonads in both sexes were somewhat enlarged. The testes in the male measured 6 mm. This vireo was also found on Providenciales.

Coereba bahamensis bahamensis (Reichenbach)

Feathers writes that on Little Inagua "Coerebas were quite numerous, possibly numbering more than all the other species combined." On West

Caicos he found them "not as numerous as on Little Inagua," while on Providenciales he states that they were "quite uncommon."

Dendroica petechia gundlachi Baird

2 ♂, 3 ♀; West Caicos. ♂; o, Providenciales.

It has recently been pointed out that Bahaman Golden Warblers are indistinguishable in series from the Cuban *gundlachi* (cf. Bond, Proc. Acad. Nat. Sci. Phila., vol. 94, 1942, pp. 101-102).

Only two of the above males show a trace of rufous on the pileum. This species was also found on Little Inagua.

Dendroica discolor discolor (Vieillot)

♀; Providenciales.

Dendroica palmarum palmarum (Gmelin)

♂, ♀; Little Inagua. 3 o; Providenciales.

Considering the amount of collecting that has been done in the West Indies, the eastern race of the Palm Warbler (*D. p. hypochrysea* Ridgway) must be considered a very rare, if not accidental, winter resident in this region, whence it is known definitely only from Cuba.

Tiaris bicolor bicolor (Linnaeus)

♂; West Caicos.

B. The Birds of the Islands of Old Providence and St. Andrews, and of the Keys in the Southwestern Caribbean Outside the 100 Fathom Line

During the latter half of March 1941, the Vanderbilts visited Old Providence and St. Andrews in addition to a number of small keys in the West Caribbean, many of which had previously been unknown ornithologically.

The first point touched was Beacon Key, which lies 200 miles south of Jamaica. Beacon Key, the largest of the Seranilla Keys, is a few hundred yards in length and about a hundred yards wide. It is covered with samphire grass and other halophilus growth. On March 19 a landing was effected on this islet by swimming ashore from the yacht's launch. Fishermen with their families were living there for the purpose of catching turtles as well as gathering tern eggs and guano.

The days of March 20 and 21 were spent exploring the Serrana Keys about 100 miles to the south. These are stated to be much like the preceding.

Sailing in a southerly direction the *Pioneer* next stopped at Roncador Key, an islet of coral formation about 60 miles south of the Serrana Keys. Conditions here were similar to those of the two groups previously visited, except that the islet was found to be more rocky.

After spending March 22 and 23 on Roncador, the *Pioneer* sailed for Old Providence, about 90 miles to the westward. Old Providence is a beautiful volcanic island about 4½ miles in diameter with a maximum altitude of 1190 feet. It is covered with brush and low trees and there are several small streams. Collecting was carried on from March 24 to 26 but the higher elevations were not visited.

The expedition thence proceeded to St. Andrews, some 60 miles to the southward, where specimens were taken from March 27 to 29. Here the vegetation was found to be similar to that of Old Providence, but no streams were noted. St. Andrews is 7 miles long and only 1½ miles wide, and is much lower than Old Providence, the hills attaining an altitude of a little less than 350 feet.*

Next visited were the Courtown Keys, tiny islets about 20 miles southeast of St. Andrews supporting some low brush and a few palms; and later (March 31) the Albuquerque Keys, some 30 miles to the southeast.

The latter consist of two low, circular islets, one 200 yards in diameter and the other about half this size. They are well covered with low brush and there are a few coconut palms. A number of migrant birds from North America were encountered, in addition to what was presumably a resident land bird (*Anthracothorax p. hendersoni*).

Thus Vanderbilt touched at virtually all the keys in the western Caribbean outside the 100 fathom line, and through his perseverance acquired a valuable collection of birds. The North American migrants are of particular interest and show not only that the islands lie on one of the principle migration routes, but also that they are situated at or near the southern limits of the winter ranges of a number of North American land birds.

We are greatly indebted to the Colombian government which granted Vanderbilt permission to collect on Old Providence and St. Andrews and on other small keys under its jurisdiction.

Account of the Avifauna

The avifauna of Old Providence and St. Andrews is predominantly West Indian and these islands might well be considered as part of that region. Every genus that inhabits the islands also occurs in the Antilles, although none of the characteristic West Indian genera is present. Of the 14 species of land birds indigenous to Old Providence and St. Andrews, two are endemic, eleven inhabit the Antilles, while the remaining one, a hummingbird, is a representative of a widespread Central American species. At least nine of the West Indian species inhabit other islands off the Central or South American coast.

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* For a more detailed account of Old Providence and St. Andrews, see Pilsbry, Proc. Acad. Nat. Sci. Phila., vol. 82, 1930, pp. 247-261.

Van Rossem states that " the major part of the avifauna of Cozumel " is of Antillean origin (Bull. Mus. Comp. Zool., vol. 77, 1934, p. 390) but, as correctly pointed out by Salvin, the affinities of the birds of this and other islands near the coast of Central America " are largely on the side of those of the mainland " (Ibis, 1890, p. 92). Cozumel, for instance, possesses some 20 genera of birds not found in the West Indies, and a number of the more remarkable resident species of this island, such as *Melanoptila glabrirostris* and *Toxostoma guttatum*, are of Mexican origin. A race of the West Indian *Spindalis zena* occurs here but is rare and it is likely that its arrival on Cozumel was comparatively recent (cf. Griscom, Amer. Mus. Novit., no. 236, 1926, pp. 5-13). Incidentally, all West Indian birds found on the islands off the northern coast of South America and eastern coast of Central America are merely subspecifically distinct from their Antillean relatives. Only in exceptional instances have these been able to obtain (or maintain) a foothold on the mainland, owing doubtless to increased competition. Their occurrence on islands extralimital to the West Indies proper may be due to the effect of hurricanes. It is, moreover, well known that a number of North American warblers, which winter commonly in the West Indies, and on islands off the east coast of Central America, are rare or completely lacking during this season on the mainland of Central America. Doubtless these birds too have found conditions more favorable on the islands.

Old Providence and St. Andrews are remarkable in possessing at least 15 endemic forms of birds, including two distinct species (*Mimus magnirostris* and *Vireo caribaeus*). Of these, five are confined to Old Providence, and eight to St. Andrews, while the remaining two are found on Old Providence and St. Andrews. In addition, a hummingbird (*Anthracothorax prevostii hendersoni*) is known only from these islands and the Albuquerque and Mosquito Keys.

In addition to Vanderbilt's collection the Academy possesses a few birds taken by Dr. William L. Abbott on St. Andrews, May 1, 1887. Among these is the type of *Coccyzus minor abbotti* Stone.

In March 1933, Mr. James Greenway, who accompanied the tenth Allison V. Armour Expedition, collected on Old Providence and St. Andrews. The birds obtained are in the collection of the Museum of Comparative Zoology at Cambridge, Mass. No report on this collection, apart from the description of the Old Providence Golden Warbler, has been published. We wish to thank Mr. James Peters, Curator of Birds at the Museum of Comparative Zoology, for permission to indicate the forms taken by this expedition.

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GREENWAY, JAMES Jr. 1933. A new name for the golden warbler of Old Providence Island. Proc. New Engl. Zool. Club, vol. 13, pp. 63-64! (An error in pagination has occurred in this publication).

BOND, JAMES and RODOLPHE MEYER DE SCHAUENSEE. 1942. Results of the Fifth George Vanderbilt Expedition. Part 1.—Description of a new species of Vireo from St. Andrews Island, Colombia. Not. Naturae, no. 96, pp. 1-2.

The following list includes all the birds known to occur in the area here treated.

Annotated List

Puffinus lherminieri lherminieri Lesson

Taken on Old Providence by Henderson.

Sula dactylatra dactylatra Lesson

Found nesting on Beacon Key (Serranilla Keys) by the Vanderbilt Expedition, but no specimens taken.

Sula leucogaster leucogaster (Boddaert)

Found nesting on Beacon Key by the Vanderbilt Expedition.

Sula sula sula (Linnaeus)

Taken on Old Providence and St. Andrews by Henderson and on the latter island by Abbott. Feathers writes that on Roncador Key the same

oceanic birds were found that were noted on the Serrana and Serranilla Keys and " perhaps also the Red-footed Booby " (*S. sula*). Abbott secured an immature specimen of this species off the " Serania (= Serranilla) reef " April 30, 1887.

Fregata magnificens rothschildi Mathews

Taken on Old Providence and St. Andrews by Henderson, and found nesting on Beacon Key by Vanderbilt.

Ardea herodias subspecies

One seen at the Serrana Keys by the Vanderbilt Expedition was probably a migrant from North America.

Hydranassa tricolor ruficollis (Gosse)

Taken on Old Providence and St. Andrews by Henderson.

Florida caerulea (Linnaeus)

Taken on Old Providence by Henderson, and reported as having been seen on St. Andrews by the Pinchot Expedition.

Butorides virescens virescens (Linnaeus)

A specimen taken by Vanderbilt on Old Providence, March 28, is a fully adult male with a wing of 171 mm. It matches birds from the eastern United States in having the sides of the head and neck purple-maroon, rather than chestnut with but little purple wash as in *maculatus* of the West Indies.

We agree with Todd (Ann. Carnegie Mus., 7, 1911, pp. 410-11) that there is no constant difference in size between these two races. For example, an adult male before us from Barbados, identical in color with the " smaller " race *maculatus,* has a wing of no less than 185 mm.

We have little doubt that the northern form will prove to be a common winter resident in the Greater Antilles and on other islands in the western Caribbean.

Butorides virescens maculatus (Boddaert)

Henderson secured three immature specimens of this heron on St. Andrews and an adult male on Old Providence. We are informed by Mr. Colin C. Sanborn of the Field Museum of Natural History that these examples " are very chestnut with but a little purple wash, so must be *maculatus* as labelled."

Peters has identified an immature female taken on the Corn Islands as " unquestionably " referable to *maculatus.*

Falco peregrinus anatum Bonaparte

A female was taken on Roncador Key (March 23) by Feathers, who says that he saw another individual on this islet, one at the Serranilla Keys, and

two at the Serrana Keys. The species is also known from the Morant and Pedro Keys south of Jamaica.

Feathers writes us that he saw what he thought was a Sparrow Hawk, presumably *Falco s. sparverius*, at the Albuquerque Keys.

Charadrius hiaticula semipalmatus Bonaparte

Taken by Vanderbilt at the Serrana Bank (March 20).

Actitis macularia (Linnaeus)

Collected on Old Providence and St. Andrews by Henderson.

Crocethia alba (Pallas)

Taken by Vanderbilt at the Serrana Bank (March 20).

Sterna fuscata fuscata Linnaeus

A specimen was collected at St. Andrews by Abbott and another at the Serrana Bank by Vanderbilt (March 20).

Columba leucocephala Linnaeus

Taken on Old Providence by Henderson and on St. Andrews by Vanderbilt.

The two males secured by Vanderbilt on St. Andrews have the fore-part of the hind neck dusky, glossed with green. There is no trace of a maroon tinge.

This pigeon is subject to migratory movements concerning which little is known. It ranges widely through the West Indies, with the exception of the more southern of the Lesser Antilles, and is also found on islands off the coast of Central America and perhaps on the north coast of Honduras proper.

Zenaida asiatica asiatica (Linnaeus)

Collected on Old Providence by Henderson and by the Pinchot Expedition, and on St. Andrews by Vanderbilt.

Leptotila jamaicensis neoxena (Cory)

Confined to St. Andrews, whence taken by Henderson and Vanderbilt. This interesting dove can readily be distinguished from the other races of this species (viz. *jamaicensis, collaris,* and *gaumeri*) by its grayish olive-brown upper parts and by having the metallic gloss of the feathers of the hind neck and sides of neck much less reddish purple. The St. Andrews race has hitherto been known only from one male and five females. Vanderbilt obtained a fine series, comprising seven adult males, one adult female, and one questionably labelled as an immature female. The immature specimen has the glossy area of the hind neck much reduced in extent and the feathers of the nape are violet. The inner remiges and greater wing-coverts are narrowly margined with buffy. The breast and sides are darker than in the adults and are washed with buffy. The adult female has the

breast duller, less clear vinaceous, than the males. The adults had the feet " reddish ", whereas those of the immature were " flesh-color." The bill in all specimens was noted as " black ", the eyelids as " reddish " in the adults, " pale pink " in the immature specimen. Testes of the males were recorded as measuring from 8-11 mm.

Other representatives of this species are found in Jamaica (*jamaicensis*), Grand Cayman (*collaris*) and in Yucatán, including Cozumel and other islands off the coast of Yucatán (*gaumeri*).

Coccyzus minor abbotti Stone

Confined to Old Providence and St. Andrews. Secured on the former by Henderson and by the Armour and Pinchot expeditions, and on St Andrews by Abbott.

The type in the Academy's collection resembles the Greater Antillean *nesiotes* (Cabanis and Heine), but the bill is definitely longer and the posterior under parts paler. Compared with the nominate form from South America, including the islands of Trinidad and Aruba, the bill in *abbotti* is slightly longer and the throat darker, more ochraceous. This cuckoo is very different from *continentalis* van Rossem, of which we have four specimens from Utila Island, Honduras. The last mentioned race is much smaller and darker both above and below than *abbotti*. The plumage of the Bay Islands birds is as dark as in a female from Dominica (*dominicae* Shelley), but the Dominican example is somewhat grayer above. *C. m. cozumelae* van Rossem, of Cozumel Island, is obviously nearest *continentalis*, since it is described as a very dark, small race. It can have no close relationship with the pale races from the Greater Antilles.

Anthracothorax prevostii hendersoni (Cory)

Taken on Old Providence by all collectors and on St. Andrews by Abbott, the Armour and Pinchot expeditions, and by Vanderbilt. Also collected by Vanderbilt on Albuquerque Key and recorded by Simon from " le Banc des Mosquitos " (Hist. Nat. Troch., 1921, p. 276).

Vanderbilt secured a fine series of this hummingbird, including four adult males and three females from St. Andrews, two males and one female from Old Providence, and a male from Albuquerque Key. In addition, the Academy has a male taken on Old Providence by Henderson (from the collection of Cory and Boucard), and a male taken on St. Andrews by Abbott. Examination of these specimens indicates there is but one species of hummingbird and in fact one race inhabiting these islands and that *A. nigricollis pinchoti* Wetmore (Proc. Biol. Soc. Wash., 43, 1930, p. 7), described from St. Andrews, is a synonym of *A. p. hendersoni*. The males show considerable variation in the color of the under parts. The specimen collected on Old Providence by Henderson is virtually identical with *nigricollis* (Vieillot). The other males from this island approach *gracilirostris*

Ridgway, but have the middle of the abdomen very dark violet or blackish. Males with the least amount of black on the under parts we believe to be immature, as is indicated by the presence of pale tips to the rectrices. A male (A. N. S. P. 150967) from the same island is near *gracilirostris* but has the chest more extensively violet and the middle of the abdomen blackish. Incidentally, *gracilirostris* shows an approach to *hendersoni* in having a shorter bill and less compact black throat patch than the more northern *prevostii*. Females from Old Providence and St. Andrews have the outer rectrices broadly tipped with white as in *prevostii* and *gracilirostris*, the Central American races, not narrowly tipped with white as in *nigricollis*.

It seems apparent that we are dealing with an unstable population somewhat intermediate between *nigricollis* and *prevostii*, but nearer the latter rather than the former as stated by Simon (Rev. Française d'Ornit., 1, 1909, p. 9). To make the matter more complicated, there is a hummingbird in northern South America described by Cory as a race of *prevostii* (*A. p. viridicordatus*). Very little is known about this bird of which we have examined a series (5 ♂, 2 ♀) in the American Museum of Natural History from "San Felix," Cumaná, Venezuela. Typical *nigricollis* also occurs in Cumaná, but quite possibly in a different environment. Todd records the two species from Guarico, Venezuela (cf. Todd, Ann. Carnegie Mus., vol. 29, 1942, pp. 294-295).

It is of interest to note that females of *viridicordatus* have the outer rectices broadly tipped with white as in *hendersoni* and *prevostii* but unlike the female of *nigricollis*. Males of *viridicordatus*, unlike those of *hendersoni*, show little variation. They differ from adults of *hendersoni* in having only a slight bluish tinge to the under parts and very little black on the breast.

Megaceryle alcyon alcyon (Linnaeus)

Collected on St. Andrews by Henderson and by Vanderbilt (March 28).

Sphyrapicus varius varius (Linnaeus)

Taken by Henderson on St. Andrews, which is near the southernmost limit of its winter range. There is only one record from as far south as Panama (Chiriquí) and none from South America.

Tyrannus tyrannus (Linnaeus)

Secured by Henderson on Old Providence. It is noteworthy that *Tyrannus dominicensis*, found virtually throughout the West Indies, is not known from Old Providence or St. Andrews. It should be expected to occur on migration and perhaps even as a summer resident.

Contopus virens (Linnaeus)

Taken by Vanderbilt on St. Andrews (March 28), and on Albuquerque Key (March 31).

Elaenia martinica cinerescens Ridgway

Secured on Old Providence by all collectors, and on St. Andrews by Henderson, Greenway, and Vanderbilt. It was seen on St. Andrews by the Pinchot Expedition.

An Antillean species found on a number of islands extralimital to the West Indies, viz. Cozumel (*E. m. remota*), Chinchorro Key, off the coast of Quintana Roo, and Halfmoon Key, British Honduras (*E. m. chinchorrensis*), Old Providence and St. Andrews (*E. m. cinerescens*), and the Dutch islands in the south Caribbean (*E. m. riisii*).

This flycatcher favors small islands and appears unable to compete with the closely allied and widespread species *E. flavogaster*, which doubtless accounts for its absence from the mainland.

Hirundo rustica erythrogaster Boddaert

"Considerable numbers" seen on Old Providence and St. Andrews by the Pinchot Expedition (April 24 and 27).

Petrochelidon pyrrhonota pyrrhonota (Vieillot)

A female was taken at the Serrana Bank, March 21, by Vanderbilt. This swallow migrates south to the Argentine.

Mimus magnirostris Cory

This fine species is confined to St. Andrews, whence it has been taken by all collectors. It seems to be most nearly related to *M. gilvus* from which it differs mainly in being larger, the bill in particular being extraordinarily heavy.

Dumetella carolinensis (Linnaeus)

Taken by Henderson on St. Andrews, which is near the southernmost limit of its winter range.

Vireo caribaeus Bond and de Schauensee

Confined to St. Andrews, where it was collected by Henderson, Greenway, and Vanderbilt. This interesting vireo, which was but recently described (Not. Naturae, no. 96, 1942, p. 1), had for long been misidentified as the northern White-eyed Vireo (*V. griseus*). Actually the bird more closely resembles *V. huttoni* and *V. pallens*. The last mentioned vireo is found only in mangrove swamps on the Pacific coast of Central America. The St. Andrews bird differs from *pallens* in being even whiter below, and the bill is darker and slenderer. *V. crassirostris* has, together with numerous other insular birds, a larger bill than its mainland relatives.

The inter-relationship of vireos, of the subgenus *Vireo*, from the West Indies and other Caribbean islands is most puzzling. *V. caribaeus* was perhaps derived from *V. pallens*, and *V. crassirostris* from *V. ochraceus*.

Vireo crassirostris approximans Ridgway

Confined to Old Providence, whence it has been obtained by Benedict and Nye, Henderson, and by the Pinchot Expedition. This race is very near typical *crassirostris* (Bryant) of the Bahama and Cayman Islands. The Thick-billed Vireo is closely related to the Central American *V. ochraceus,* which is found on the Caribbean coast of Nicaragua.

Vireo olivaceus olivaceus (Linnaeus)

The Red-eyed Vireo was collected by Vanderbilt on Albuquerque Key, March 31.

Vireo altiloquus grandior (Ridgway)

Confined to Old Providence, at least as a breeding bird. Taken by Benedict and Nye (early April), Henderson (March 3-17), and by the Pinchot Expedition (April 23-24). The species is only a summer resident in the Bahamas, Cuba, and Jamaica, departing for South America in early autumn and reappearing on these islands in March.

Vireo altiloquus canescens (Cory)

Confined to St. Andrews, whence taken by Henderson (Feb. 14-16) and by the Pinchot Expedition (April 27). The early dates on which Henderson obtained this vireo indicate that the bird is resident.

The Black-whiskered Vireo (*V. altiloquus*) is a characteristic West Indian species, found virtually throughout this region, except on Grand Cayman, where it is replaced by a race of the Central American *V. magister.* Outside the West Indies proper, the species is known to nest only on Old Providence and St. Andrews and in southern Florida. A record of its breeding in Trinidad requires confirmation (Belcher and Smooker, Ibis, 1937, pp. 513-514). A record from Cozumel Island (May) presumably pertains to a transient individual, since this island is known to be inhabited by the closely related *V. magister* (Salvin, Ibis, 1888, p. 253).

Coereba bahamensis tricolor (Ridgway)

Confined to Old Providence, whence collected by Benedict and Nye, Henderson, and by the Armour and Pinchot expeditions.

Coereba bahamensis oblita Griscom

Confined to St. Andrews, whence taken by all collectors. The bananaquits of Old Providence and St. Andrews belong to a group found elsewhere in the Bahamas (*C. b. bahamensis*), Cayman Islands (*C. b. sharpei*), and on Cozumel and Holbox Island off the coast of Yucatán (*C. b. caboti*).

Mniotilta varia (Linnaeus)

Obtained at St. Andrews by Henderson and Vanderbilt (March 29).

Protonotaria citrea (Boddaert)

Secured on Albuquerque Key by Vanderbilt, March 31.

Vermivora peregrina (Wilson)

Two collected on Albuquerque Key by Vanderbilt, March 31.

Parula americana pusilla (Wilson)

Taken on Old Providence by Henderson. This is at the southernmost extremity of its winter range, the species being unknown from South America.

Dendroica petechia armouri Greenway

Confined to Old Providence, whence secured by the Pinchot and Armour expeditions. This Golden Warbler was probably derived from Jamaica.

Dendroica petechia flavida Cory

Confined to St. Andrews, whence taken by Henderson and by the Armour and Pinchot expeditions. We agree with Hellmayr in uniting the "Mangrove Warblers" with the "Golden Warblers" (Birds of the Americas, pt. 13, 1935, p. 374, footnote), and also with Aldrich who considers the "Yellow Warblers" and "Golden Warblers" conspecific (Auk, 1942, pp. 447-449).

Dendroica tigrina (Gmelin)

Collected on Old Providence by Vanderbilt, March 26. Except for a record from Tobago, this is the southernmost record of the Cape May Warbler.

Dendroica coronata (Linnaeus)

Taken on Old Providence by Henderson. Near the southern limit of its winter range. This warbler is recorded as an abundant winter resident on the Corn Islands (Peters).

Dendroica cerulea (Wilson)

Taken on Albuquerque Key by Vanderbilt, March 31. The Cerulean Warbler winters as far south as Bolivia.

Dendroica palmarum palmarum (Gmelin)

Secured on Old Providence by Henderson. The southernmost record of the species.

Seiurus noveboracensis notabilis Ridgway

Taken on Old Providence and St. Andrews by Henderson. This species was seen on the former island by the Pinchot Expedition. These records may pertain to the recently described *limnaeus* McCabe and Miller.

Seiurus motacilla (Vieillot)

Taken on Old Providence by Henderson.

Seiurus aurocapillus (Linnaeus)

Taken on Old Providence by Henderson.

Geothlypis trichas brachidactyla (Swainson)

Collected on Albuquerque Key by Vanderbilt. Near the southern limit of the winter range of this species. *Seiurus motacilla, S. aurocapillus,* and *Geothlypis trichas* have been recorded in South America only from northern Colombia.

Setophaga ruticilla (Linnaeus)

Seven taken on Albuquerque Key by Vanderbilt, March 31.

Icterus leucopteryx lawrencii Cory

Confined to St. Andrews. The species is found elsewhere only in Jamaica and on Grand Cayman. It is of interest to note that *lawrencii* is intermediate in color between the Jamaican and Grand Cayman races.

This oriole appears to be fairly common on St. Andrews, since all collectors have obtained it. Very different is the status of the beautiful race from Grand Cayman, which is one of the really rare birds of the West Indies.

Mr. Feathers states (in a letter) that he saw "a flock of grackles" on Old Providence. Unfortunately he was unable to obtain a specimen. Grackles (*Holoquiscalus lugubris guadeloupensis*) have recently extended their range among the northern Lesser Antilles, apparently to some extent as the result of hurricanes, and it is not inconceivable that they should have reached Old Providence. Those seen may prove to belong to the Jamaican or one of the Cayman Island forms of *Holoquiscalus niger,* or to a form of *Cassidix mexicanus,* the widespread continental grackle. We think it possible, however, that the birds seen were anis (*Crotophaga ani*), which inhabit the Corn Islands. There is, however, no record of any of these birds from Old Providence or St. Andrews.

Tiaris bicolor grandior (Cory)

Confined to Old Providence and St. Andrews. The species ranges widely through the West Indies, with the notable exception of Cuba, the Isle of Pines, and Cayman Islands. It is also found in northern Venezuela and Colombia, but not on the mainland of Central America.

This finch was taken by Henderson and by the Armour and Pinchot expeditions on both Old Providence and St. Andrews. Vanderbilt secured it on St. Andrews, and the Academy possesses a specimen taken on Old Providence by Dillon Ripley, January 1, 1937, while en route to New Guinea with the Denison-Crockett South Pacific Expedition.

Spiza americana (Gmelin)

Collected on Old Providence by Henderson and on Albuquerque Key by Vanderbilt (six specimens, March 31).

C. Birds Collected in Darién, Panama

A large collection of birds was obtained by the Vanderbilts in eastern Darién during April and May 1941. This comprises as many as 171 species, including many rarities. The specimens were taken on Mt. Sapo and in the vicinity of Cape Garachiné, in addition to other neighboring localities on the Pacific slope.

The following account of the expedition, which serves as an introduction to this paper, is by George Vanderbilt. We feel that it will prove of considerable value to future workers in this region.

"While the *Pioneer* was laid up in Panama, I made a preliminary aerial survey of the Sapo region to try to determine the best way to attack the problem of climbing the mountain. From this survey, which was only partially successful due to bad flying weather, we found the shortest route to the mountain, and when the *Pioneer* was ready to go we headed for this place. After some scouting we were able to locate the valley we were searching for, and to drop anchor in an unprotected roadstead off a sand beach known by the unprepossessing name of Death Beach. There was a small shack which proved to be deserted though it showed signs of recent habitation. Two days were spent in reconnaissance of the coast between Death Beach and Garachiné. I was hopeful that some Indians would put in an appearance, which they would surely have done had there been any in that region, and that through them we could contact a local chieftain and obtain porters for the trip.

"After two days at Death Beach it became obvious that no Indians were in the area. We also discovered that there were three high peaks in the Sapo range, the tops of which we had not been able to see during our aerial survey, and that while we had picked the right valley as far as reaching the range was concerned, the actual peak of Cerro Sapo was much farther up the coast and to attempt to reach it on foot would mean a very tedious journey, if indeed it could be accomplished at all. In Balboa we had employed a man named Bennett as interpreter, and I sent him and Feathers in the fast launch to visit Garachiné and try to get some information. Meanwhile, we further scouted the coast and discovered a beach with a small valley behind it which led straight up to the Cerro Sapo, only three miles away. However, from this point the mountain was absolutely sheer and unscalable.

"Information brought back by Feathers and Bennett convinced me that an attempt to climb Mount Sapo from Garachiné was our only chance. Thus we moved the *Pioneer* up to that place, and spent many long hours in palavers with the local citizenry in an attempt to glean some reliable information. It appeared at first that we would not be able to secure porters

except at an exorbitant rate, and that none of them had ever been into the highlands at all.

Finally, with the aid of a few gifts, we reached working terms. We found one man, a Señor Piñeda, who claimed to have actually climbed Sapo, and he was put in charge of the bearers. He declared that he knew a place where we could establish a base camp within one day's march of the summit and at a good altitude, but that it would take four days to reach this place.

" It was obvious that the bulk of our bird collection would have to come from the lowlands, as Feathers would not be able to handle very many birds daily up on the mountain. Aboard the *Pioneer,* on the other hand, an unlimited number of bird specimens could be kept frozen indefinitely. Consequently, I decided to send Feathers and Bennett ahead with eight bearers.

" Our own collecting centered at first around Garachiné Point, which is rather desolate in appearance, being covered with the giant but bare Cuipo trees. At this time of the year the rains had not started, though they threatened daily, and the creek-beds were dry. In a few weeks we were to see a startling change as the gray-brown of the point turned to a luxuriant green with the advent of the rains. We made one excursion up the Sambú River, reaching a point just below the town of Sabalo, where we had excellent collecting in a deserted banana plantation.

" Two days before I was to leave for the mountain, the natives having expressed great desire for some fresh fish, we ran over to Galera, in the Perlas group, and did some collecting and fishing there and at Santelmo Bay, Rey Island. Next day we returned, stopping en route at San José Bank. While travelling to and from these points we spent our time preparing the necessary food and equipment for our inland trip.

" The following morning Mr. Jones and I set off with eleven bearers and enough food for the four of us for a week at the base camp. Mrs. Vanderbilt was left in charge of the lowland collecting, to be assisted by Bill Gray and Mrs. Jones. We carried a Very pistol and several colored flares for signalling from the base camp, if it should prove possible, in case of emergency.

" The first day's march was easy and extremely pleasant. We followed the San Antonio River into the interior. Though there was little or no water in this river at Garachiné, farther up there was plenty of crystal clear water which became cooler and cooler and assured us a constant supply of good drinking water. The stream looked for all the world like an Adirondack trout stream, and indeed, there were mountain mullet in it that went better than twelve inches. By two o'clock we reached a small flat next to the river and the men refused to go farther. We bathed and fished and thoroughly enjoyed having enough water for a change, then set about

making camp. Mr. Jones was in favor of dispensing with our little tent and sleeping under the stars, but I insisted on setting it up and it was well that we did so, for a tremendous rainstorm came down soon after we had the tent up, and lasted over two hours. Hastily built shelters were improvised for the porters by using some extra ponchos we had brought along.

" Next morning after a swim and breakfast we got the camp down and were underway about eight. A few minutes' walk brought us to the place where the stream divided, and here it was that the trail turned and went practically straight up. The men filled their goatskins and gourds, with much talk of the hard time to come. There was great dissension when we filled the empty canvas bucket, for no one wanted to take on the additional weight. We finally got one of the men to take it, but before half an hour had elapsed discovered that he had dumped all the water out!

" The climb was very steep indeed, through heavy rain forest, until we reached the summit of a ridge. Occasionally we thought we could see the black mass of Sapo itself towering up above us. Not knowing just how far we had to go, we pushed the men all we could. It was with great joy that at eleven o'clock we heard a shot not far off. Mr. Jones and I immediately emptied our revolvers in reply, but heard no answering shot. However, we pushed on with the hope that perhaps the men had been wrong and that the base camp was close at hand.

" Before long we came to what was obviously a night's camp, and our hearts fell, for the fire was cold, but at this point we heard shouting and pushed on in great haste up the hill. A few minutes later we walked into the base camp itself, to be greeted joyously by Feathers and Bennett.

" The camp was situated on the ridge at an altitude of about three thousand feet. The men had been busy since their arrival in erecting several lean-tos of palm fronds and were still at work on this. Feathers reported that the camp was generally encased in fog and that not only was it impossible to dry the skins, but the light was so bad even at noon that it was hard to see well enough to skin birds. It had taken two days just to make the small clearing in which the shelters and tent stood, as the forest trees were gigantic and could not be felled with machetes. As soon as we had set up our tent, eaten, and unloaded the food supplies, we set to work with all hands to finish the shelters, clear away trees, etc., to make the camp more livable. Luckily I had brought an axe. This proved to be far and away the most valuable piece of equipment we had, and seldom was it out of use. By late afternoon we had cleared away enough trees to enable us to see not only Garachiné, but also the *Pioneer,* looking like a tiny matchstick in the distance.

" Once the men realized that they were looking at their home town there was always a squabble over who should have the axe next, and we had

soon made a formidable clearing. The men would often sit for hours looking down through what we called the 'gap', and talking excitedly about this place and that. I think this served better than any other single thing to keep them in good spirits during the time spent there. We finally cut a swath of trees on both sides of the ridge, which appeared as a landmark even from the *Pioneer*. For the first time sunshine came into the camp occasionally, and collecting became much easier as you could see the birds across the clearing and follow them up. At night, we were able to signal to the *Pioneer* if the clouds didn't close in too low.

"On the day after our arrival we had planned to attempt to climb Sapo, but rain and fog decided us against this. Two hours collecting gave us as many specimens as could readily be handled, and we continued our felling of trees. Incidentally, I should mention that at this altitude the nights are really cold and one works up a tremendous appetite. We had four large meals a day, at the hours of 6 a. m., 11 a. m., 3 p. m., and 7:30 p. m. Since there was no water at this camp, two men made two trips daily far down the ridge to a river known as the Jesusito.

"By the end of the second day in camp it had become obvious to all of us that four men were more of a hindrance than a help, except for the work of clearing and properly establishing the camp. Bird collecting was not difficult, but there were only two places to go, either up or down the narrow ridge. Four men consumed more water than could be brought to camp daily, as we had not sufficient containers for transporting it. It was decided, therefore, that after the summit had been climbed two of us should return to the *Pioneer* to supervise the work there.

"Before our arrival Feathers had sent Señor Piñeda and one other man to cut a trail up the side of Mount Sapo, and they had returned after eight hours with word that it was cut. On the second day Feathers and I proceeded some distance along this trail, consumed with curiosity to get a view of the peak and see how far off it was. We were elated to discover that not ten minutes walk from camp, after a climb of perhaps two hundred feet, we were in the sub-tropical forest. There were stunted trees, covered with moss, completely different vegetation, and we saw many new birds. Though we had our guns, we were unable to collect any of these as unfortunately the ridge here narrowed to a width of four feet, and dropped off sheer on both sides for as far as one could see through the forest below. We continued along the ridge for some distance but its greatest width was only six or seven feet, and it sheered off on both sides all the way. A false step would have been a serious matter! We obtained a splendid view of Sapo's peak and determined to try it next day rain or shine.

"Accordingly, on the morning of Sunday, April 27, we set out to make the climb, taking Señor Piñeda as guide, and three bearers with cameras,

etc. After traversing several little ups and downs on the ridge, we came to the bottom of the final climb in half an hour. The actual ascent was very steep indeed, necessitating handholds at all points. After some time we came into the real stunted forest where progress can be made only over the roots, or, sometimes, through the branches of the trees, where the ground is anywhere from five to thirty feet below. Conditions were just like those encountered in Sumatra. We reached the summit a little over an hour after leaving the base camp. The summit itself proved to be completely overgrown with heavy brush, small trees, and roots. We set to work at once to clear it, which was accomplished in about three hours. The largest tree was left standing as a landmark, and proved later to be visible even from the *Pioneer*. Unfortunately, though we cleared so that we could get a view, and built a large signal fire, the clouds never left the summit, which cannot be more than fifty feet square.

" Everything was covered with biting ants and several of us were forced to shed our clothes more than once to get rid of them. The whole time it was impossible to sit down or rest because of these pests. We left a record of our visit in a bottle tied to the largest tree left standing, and after collecting a basket full of orchids, we quitted the summit about 2:15 p. m. in a driving rainstorm. The descent required more time than the ascent, and we arrived back in camp about four.

" Mr. Jones and I left for the *Pioneer* early in the morning, taking one porter with us, and leaving the other extra men to follow behind. With no men to worry about we made fast time, stopping at the river to bathe and change, and allowing ourselves no other stop whatever. We reached Garachiné at 12:15, a record which not even the native runners were able to equal later on. We judged the distance to be somewhere between fifteen and eighteen miles as the trail goes.

" We found the work progressing excellently in the lowlands. Feathers, in base camp, arranged for two fast runners to carry out his birds each day, so that in this way he was able to collect a maximum of specimens without having to worry about skinning them. Finally, after fifteen days in the interior, he sent word that he was coming out. We met Feathers and Bennett far up the river and proceeded out with them. En route, Feathers suffered an accident when trying to force a swollen shell into his gun by tapping it with a stick. The shell exploded and the metal casing of the shell gashed his arm rather badly. It severed a vein but we were able to stop the bleeding eventually and to dress it satisfactorily.

" Due to the long delay which we suffered in Balboa before starting on this expedition, I had been very much afraid of the outcome of the trip, as the rains were due. I feel that we were extremely lucky that they held off long enough to enable us to reach our objective and to collect there. It should also be mentioned that at the time we departed from Darién the

bearers had already left us in toto, and that it was impossible to get men to work any more, as it was past time for them to plant their rice, a labor which they are obliged by the government to do.

"I wish to express my appreciation for the kindness and assistance of Señor Correa, Corregidor of Garachiné, without whose assistance we should not have received the excellent co-operation which we did from the inhabitants, and to Señor Nazario Piñeda, our head guide, who is an excellent man for whom we all conceived a very strong affection and without whose aid we really could not have gone far."

Annotated List

Tinamus major castaneiceps Salvadori

Two adult females were collected on Mt. Sapo. Both were noted as "laying" (April 21, May 4). They differ considerably in color and markings. One is more olive above with the black barrings narrower, and the flanks are less ochraceous than in the second specimen.

Crypturellus soui panamensis (Carriker)

Garachiné.

Mareca americana (Gmelin)

Apparently the second known specimen of the Baldpate from the Republic of Panama and the southernmost record of the species. It was collected by Mr. Karl Curtis, January 15, 1938, at Pecora. Pecora is in southern Panama, approximately 20 miles east of the Canal Zone.

Nomonyx dominicus (Linnaeus)

This resident species was also collected at Pecora, January 2, 1938, by Mr. Karl Curtis and presented to the Vanderbilts.

Ictinia plumbea (Gmelin)

Taken on Mt. Sapo, April 27. The species is said by Griscom to be migratory.

Buteo magnirostris ruficauda (Sclater and Salvin)

Garachiné.

Penelope purpurascens aequatorialis Salvadori

Mt. Sapo (3000 ft.).

Columba nigrirostris Sclater

Mt. Sapo.

Columba cayennensis pallidicrissa Chubb

Mt. Sapo.

Columbigallina talpacoti rufipennis (Bonaparte)

Garachiné.

Leptotila verreauxi verreauxi (Bonaparte)

Garachiné.

Leptotila cassini cassini (Lawrence)

Garachiné.

Oreopeleia violacea albiventer Lawrence

A single specimen (♀) of this quail-dove was obtained on Mt. Sapo. Griscom states that it is "very rare" in Panama.

Oreopeleia goldmani (Nelson)

This rare and beautiful quail-dove has been known only from the Subtropical Zone of eastern Darién. Two fine adult males were taken on Mt. Sapo by Vanderbilt.

The Academy recently acquired an immature female from the Rio Juradó, Chocó, Colombia. Mr. Ludlow Griscom has examined the latter specimen and agrees with us that it is the young of this species. It was collected in the Tropical Zone at an elevation of only 300 feet.

Ara chloroptera Gray

Mt. Sapo.

Brotogeris jugularis jugularis (Müller)

Seven specimens of this paroquet were collected at Garachiné.

Pionopsitta haematotis coccineicollaris (Lawrence)

Mt. Sapo (3000 ft.).

This parrot is closely related to the Central American *haematotis* (Sclater and Salvin) but is very different from the South American *pulchra* Berlepsch, of which we have a good series from western Colombia.

We must disagree with Peters who would consider the latter conspecific with *haematotis* (Check-list of the Birds of the World, vol. 3, 1937, p. 21), although these parrots are clearly representative. Incidentally, we have a male and a female of *coccineicollaris* from the Rio Juradó, Colombia, which can in no respect be regarded as intermediate between *coccineicollaris* and *pulchra*, although they were taken very near the range of the latter. Adults of *P. pulchra* differ chiefly from those of *coccineicollaris* in having the entire sides of the head red, a golden rather than red band across the fore neck and upper chest, no red patch on the sides, and a red humeral spot (which is yellow in the immature), not found in *coccineicollaris*.

The large series (24 ♂, 12 ♀) of *coccineicollaris* before us shows considerable color variation, particularly in regard to the amount of red on the fore neck and upper chest. In the males this usually forms a well-defined collar, but in females is either absent or merely indicated by a few red or reddish feathers. Not one specimen shows even a trace of a red humeral

patch. One male and three females lack the red patch on the sides, while in another male this is barely discernible. The two Colombian specimens have the red side patch, but the red collar is indistinct, even in the male. The sexes in *pulchra* (of which we have five males and four females) evidently do not differ in color.

Specimens of *coccineicollaris* in our collection are from Mt. Sapo (Darién) and from the Rio Juradó (Colombia). Those of *pulchra* are from the Rio Jurubidá, Rio Baudó, and the middle Rio Atrato (Colombia).

Piaya cayana incincta Griscom

Garachiné.

Nyctidromus albicollis albicollis (Gmelin)

Garachiné.

A female was flushed from her eggs on May 7.

Caprimulgus rufus minimus Griscom and Greenway

Garachiné.

The wing of a male measures 170 mm.; that of an unsexed specimen 175.5 mm.

Androdon aequatorialis Gould

A single male of this rare hummingbird was collected on Mt. Sapo (3000 ft.). The Academy also has a male taken on Mt. Pirri (5300 ft.) in 1938 by Oliver Pearson. The species has hitherto been known in Panama only from Mt. Tacarcuna. Our two Panama skins differ considerably *inter se*. The Mt. Sapo individual has the fore part of the pileum reddish bronze, the Mt. Pirri bird only a slight trace of this color on the crown. The latter example is broadly streaked with dusky below, whereas the Mt. Sapo specimen has the throat profusely but narrowly streaked with dusky, the remainder of the under parts indistinctly streaked. Neither has the nape " dark blue ", said to be diagnostic of males of this species.

Phaethornis guy coruscus Bangs

Mt. Sapo (3000 ft.).

Phaethornis superciliosus cassini Lawrence

Mt. Sapo.

Polyerata amabilis (Gould)

Garachiné.

Lepidopyga caeruleogularis subspecies

Garachiné, Rio Sambú.

The three taken cannot be identified subspecifically. They come from a region between the ranges of *caeruleogularis* (Gould) and *confinis* Griscom. The latter has been recorded only from Permé on the Caribbean coast of Darién.

Saucerottia edward crosbyi Griscom

Garachiné.

Goethalsia bella Nelson

Mt. Sapo (3000 ft.).

The most noteworthy character of this rare hummingbird is its under tail-coverts, these consisting of long and stiff, decurved, plumelike feathers. The above specimen is evidently a female and agrees well with an example in the Academy's collection taken 15 miles south of Mt. Pirri. In his original description Nelson states that the under parts of the female are " nearly uniform " ochraceous-buff, but in the two females before us the chin and throat are much darker, more ochraceous than the breast and abdomen.

The Academy also possesses what is apparently an adult male of this species, taken by Oliver Pearson on the summit of Mt. Pirri at an altitude of 5300 feet. This specimen, which agrees well with Nelson's description of the type, has a wing of 53 mm. as compared with 48.5 and 49 mm. for the supposed females. There appears to be little if any difference in the bills of the two sexes.

Damophila julie panamensis Berlepsch

Garachiné.

Apparently one of the common species at Garachiné, since as many as 14 were taken. This hummingbird was previously known in Darién only from Cana and Permé. Its abundance may be seasonal.

Thalurania colombica fannyi (Delattre and Bourcier)

Mt. Sapo (3000 ft.).

Most of the specimens taken agree with examples from Permé and Obaldia (Panama) in the Academy's collection. Two fine adult males, however, lack any trace of the purple band at the posterior edge of the crown. Females show no bluish scapular patch, which is said to be diagnostic of *subtropicalis* Griscom.

Chalybura buffoni buffoni (Lesson)

Garachiné.

Todd points out that Panama birds agree with Lesson's original description of *buffoni*. Therefore *micans* Bangs and Barbour must be regarded as a synonym of *buffoni* (cf. Todd, Ann. Carnegie Mus., vol. 29, 1942, pp. 331-332).

Heliothryx barroti (Bourcier and Mulsant)

Garachiné.

Heliomaster longirostris longirostris (Audebert and Vieillot)

Garachiné.

We follow Todd who considers *stewartae* not separable from the nominate race (Ann. Carnegie Mus., vol. 29, 1942, p. 356). Vanderbilt obtained two specimens of this species, which was previously known in Darién only from Obaldia.

On May 10 the Vanderbilts stopped at Pedro González (Pearl Islands, Panama), where they secured a few hummingbirds including *Phaethornis anthophila hyalina* Bangs and *Amazilia edward margaritarum* (Griscom).

Trogon strigilatus chionurus Sclater and Salvin

Garachiné.

Trogon melanurus macrourus Gould

Garachiné.

Specimens of *massena* from Panama in the Academy's collection have the wing-coverts white, finely vermiculated with black. Vanderbilt's specimens of *melanurus* have decidedly wider and coarser black bars on these feathers.

Momotus subrufescens reconditus Nelson

Garachiné.

Notharchus macrorhynchos hyperrhynchus (Sclater)

Garachiné.

Now considered a race of *macrorhynchus* of Guiana. Sassi recently referred Costa Rican birds to this race rather than to *dysoni* (cf. Temminckia, vol. 4, 1939, p. 160). A female from Eden, Nicaragua, is virtually indistinguishable from our Garachiné specimens.

Notharchus pectoralis (Gray)

Mt. Sapo.

Notharchus tectus subtectus (Sclater)

Garachiné.

Nystalus radiatus (Sclater)

Garachiné.

We have no central Colombian specimens of this species.

Malacoptila panamensis panamensis Cassin

Garachiné.

Monasa morphoeus pallescens Cassin

Garachiné.

Capito maculicoronatus pirrensis Nelson

Mt. Sapo.

Ramphastos sulphuratus brevicarinatus Gould

Garachiné.

Selenidera spectabilis Cassin

Mt. Sapo.

A rare species in Panama, according to Griscom. Vanderbilt obtained four males and three females.

Piculus callopterus (Lawrence)

Mt. Sapo.

A rare woodpecker, known only from Panama.

Centurus pucherani pucherani (Malherbe)

Rio Sambú.

Veniliornis kirkii cecilii (Malherbe)

Garachiné.

Celeus loricatus mentalis Cassin

Garachiné.

Phloeoceastes melanoleucos malherbii (Gray)

Garachiné.

Picumnus olivaceus flavotinctus Ridgway

Garachiné.

Griscom gives the range of this form as southwest Costa Rica east along the Pacific coast (in arid tropics) to the Rio Chepó, and indicates that it is replaced by the nominate race in "extreme eastern Darien" (Griscom, Bull. Mus. Comp. Zool., vol. 78, no. 3, 1935, p. 332). The above specimen is, however, virtually indistinguishable from males in the Academy's collection from Costa Rica (El General) and the Canal Zone, as is likewise a male taken 15 miles south of Mt. Pirri at an elevation of 5000 feet, virtually on the Colombian boundary. All of these skins have the fore part of the pileum orange-yellow, whereas in two "Bogotá" specimens (*olivaceus*) the streaks are darker and redder. In his key to the subspecies of *P. olivaceus*, Ridgway states that the crown in *olivaceus* is "streaked with orange-red" as is the case with our two Bogotá skins (cf. Ridgway, U. S. Nat. Mus., Bull. 50, pt. 6, 1914, pp. 303-304).

Cymbilaimus lineatus fasciatus (Ridgway)

Garachiné, Rio Sambú.

Taraba major obscurus Zimmer

Garachiné.

Thamnophilus nigriceps Sclater

Garachiné.

Thamnophilus punctatus atrinucha Salvin and Godman

Garachiné.

Dysithamnus mentalis suffusus Nelson

Mt. Sapo (3000 ft.).

Myrmotherula brachyura ignota Griscom

Garachiné.

Myrmotherula surinamensis pacifica Hellmayr

Garachiné.

The posterior under parts in females from the Rio Baudó, Chocó, are less whitish than Panama examples; thus the lower parts are more uniform. In males there is no difference.

Myrmotherula fulviventris Lawrence

Garachiné and Mt. Sapo.

Myrmotherula axillaris albigula Lawrence

Garachiné, and three miles southeast of Mt. Sapo.

Herpsilochmus rufimarginatus exiguus Nelson

Garachiné and Mt. Sapo (3000 ft.).

This antbird has been collected only twice previously, according to Griscom (l.c., p. 334). Vanderbilt's five specimens closely resemble in color "*flaviventris*" Carriker (= *frater*) from Bolivia and Peru but are smaller. Two females (?) are somewhat more golden brown, less olive, above than females from Bolivia and Peru. The wings of the Panama birds measure: ♂, 49.5-50.5, ♀, ?, 49-50 mm. Six specimens (3 ♂, 3 ♀) of *frater* have wings of 51-55.5 mm. The bills of the above specimens are approximately the same in length.

Microrhopias boucardi consobrina (Sclater)

Garachiné.

Cercomacra tyrannina rufiventris (Lawrence)

Garachiné.

Cercomacra nigricans Sclater

Garachiné.

Gymnocichla nudiceps nudiceps (Cassin)

Garachiné.

A not quite fully adult male has the pileum bare, except for the center of the crown.

Myrmeciza maculifer cassini (Ridgway)

A male and female were collected at Garachiné. The male is darker both above and below than a male from Murindo, Antioquia, Colombia.

The latter agrees well with an example from Jaraquiel, Dept. Bolivar, Colombia. Both have the throat darker than the rest of the under parts which are more uniformly slate-gray in the Garachiné bird. A good series of males of this species from western Colombia have the throat black (most specimens) in striking contrast with the breast, unlike examples from western Ecuador, which show no definite line of demarcation between the black and the dark slate-gray. A critical revision of *M. maculifer*, based on adequate material, will probably show that there are more than two recognizable races of this species.

We follow Griscom (l.c., p. 335) in not considering *maculifer* conspecific with *exsul*.

Formicarius analis panamensis Ridgway

Mt. Sapo.

Hylophylax naevioides naevioides (Lafresnaye)

Garachiné.

Pittasoma michleri michleri Cassin

3 miles southwest of Mt. Sapo.

Xenerpestes minlosi Berlepsch

Garachiné.

This is perhaps the most interesting bird found by the Vanderbilts in Darién (cf. de Schauensee, Proc. Acad. Nat. Sci. Phila., vol. 93, 1941, p. 317). The one specimen taken (of undetermined sex) does not appear fully adult, although very nearly so. The upper parts are grayish olive, the forehead and fore part of the crown black; lores and superciliary stripe dull white; wings dusky, the coverts slightly olivaceous; tips of middle and greater wing-coverts white, forming two white wing-bars; under parts white, with a yellowish wash; a few small and indistinct dusky spots on chest; wing (maximum measurement) 50.5, tail 35.5, exposed culmen 12, tarsus 17.5 mm.

Feathers writes us that this species "was taken in low country, near the ocean (not more than five miles distant) and probably in open or semi-open country." The genus *Xenerpestes* was not previously represented in the Academy's collection.

Hyloctistes subulatus assimilis (Berlepsch and Taczanowski)

Mt. Sapo.

Xenops minutus littoralis Sclater

Mt. Sapo (3000 ft.), Garachiné.

Sclerurus mexicanus andinus Chapman

Mt. Sapo (3000 ft.).

Dendroplex picirostris extimus Griscom

Garachiné.

Xiphorhynchus guttatus nanus (Lawrence)

Garachiné.

Xiphorhynchus lachrymosus lachrymosus Ridgway

Compared with specimens from the Canal Zone, Permé, and Pacific Colombia, a Garachiné male stands out by its very much larger size and paler, less contrasted coloration. It measures as follows: wing (worn) 135.5, tail 100, exposed culmen 38 mm. A male from Permé measures: wing 122, tail 91.5, exposed culmen 34 mm. Nine males from Pacific Colombia have wings of 113 to 126.5 mm.

Xiphorhynchus triangularis insolitus Ridgway

Mt. Sapo.

Glyphorhynchus spirurus sublestus Peters

Mt. Sapo (3000 ft.).

Sittasomus griseicapillus levis Bangs

Garachiné.

Although known from western Panama, west of the Canal Zone, not previously recorded from Darién. This bird occurs in northern Colombia, including the Santa Marta district. In Panama it is apparently confined to the Pacific slope. Vanderbilt obtained two fine specimens.

Dendrocincla fuliginosa ridgwayi Oberholser

Mt. Sapo (2000 ft.), Garachiné.

It has been pointed out that this bird is conspecific with *D. fuliginosa* of the Guianas and northern Brazil (cf. Zimmer, Amer. Mus. Novit., no. 728, 1934, pp. 18-20).

Oxyruncus cristatus brooksi Bangs and Barbour

Mt. Sapo.

A new race to the Academy's collection. The single specimen taken is a topotype.

Pipra erythrocephala erythrocephala (Linnaeus)

Mt. Sapo, Garachiné.

Chiroxiphia lanceolata (Wagler)

Garachiné.

Only two of the specimens are fully adult. The immature birds are in interesting stages of plumage. What is evidently the youngest is entirely olive-green above, with a few red feathers appearing on the fore crown. A second specimen is similar but has the crown entirely red, but of a lighter shade than in the adult and the feathers are not elongated and plume-like.

A slightly older example has the red crest absolutely intermediate in color and form between the last mentioned specimen and the fully adult bird, while the feathers of the mantle are slightly washed with blue, most apparent on the scapulars. The black on the under parts is beginning to show, particularly on the anterior portion. A fourth immature specimen has nearly reached adult plumage. The upper parts are virtually indistinguishable from the adult but the under parts are washed with grayish green. The two lengthened rectrices are present in the young birds, but are much narrower in the adults. All specimens taken are males.

Corapipo leucorrhoa altera Hellmayr

Mt. Sapo (3000 ft.).

Manacus vitellinus vitellinus (Gould)

Two males taken at Garachiné are obviously referable to *vitellinus* rather than to *viridiventris* Griscom, of which we have a large series from near the type locality in Colombia. The male of the latter has the posterior under parts decidedly darker and purer green, less yellowish green than in the nominate race. Birds from Juradó, northwest Colombia, are also *vitellinus*.

Schiffornis turdinus panamensis Hellmayr

Mt. Sapo (3000 ft.), Garachiné.

Specimens taken are referable to *panamensis*, being very different from *furvus* Ridgway. We have compared them with topotypes (2 ♂, 4 ♀) of *panamensis* in the American Museum of Natural History, in addition to specimens from Tapalisa, the Rio Sambú, Chepigana, and Cape Garachiné in the collection of the same institution.

Two females in the Academy's collection from the Rio Salaquí and Rio Juradó, in extreme northwestern Colombia, are duller, less rufescent on the throat, than a Mt. Sapo female, which is an unusually richly colored specimen. In addition, the lores are gray rather than rufous, but this is a variable character in the Rio Tuyra birds. In size the Mt. Sapo female is somewhat larger (wing 93, bill 15 mm.) than the Rio Salaquí female (wing 89, bill 14 mm.) and the Rio Juradó female (wing 88, bill 14 mm.). The latter were obtained at elevations of 900 and 300 feet, respectively. They also must be referred to *panamensis*, at least tentatively.

Cotinga nattererii (Boissonneau)

Garachiné.

Laniocera rufescens rufescens (Sclater)

Garachiné.

Rhytipterna holerythra holerythra (Sclater and Salvin)

Mt. Sapo (3000 ft.).

Pachyramphus cinnamomeus cinnamomeus Lawrence

Garachiné.

Pachyramphus polychropterus cinereiventris Sclater

A single male was collected at Garachiné. We have also two males from the Canal Zone. These appear intermediate between Central American and Colombian birds (*cinereiventris* × *dorsalis*).

Querula purpurata Müller

Garachiné.

One female was noted as "laying" (May 6).

Colonia colonus leuconota (Lafresnaye)

Garachiné.

Tyrannus tyrannus (Linnaeus)

This North American species was collected at Garachiné, April 18. The specimen taken was evidently about to migrate since "it was very fat." However, the testes were noted as "small."

Tyrannus melancholicus chloronotus Berlepsch

Garachiné, Rio Sambú, 3 miles southwest of Mt. Sapo.

Legatus leucophaeus leucophaeus (Vieillot)

Garachiné.

Myiodynastes maculatus difficilis Zimmer

Garachiné.

Megarhynchus pitangua pitangua (Linnaeus)

Garachiné.

This bird was taken at the junction of the ranges of *pitangua* and *mexicanus* (Lafresnaye). It has a wing of 115.5 mm., which is nearer to the average wing measurement of the smaller southern race (cf. Ridgway, Birds of North and Middle Amer., pt. 4, 1907, pp. 664-665).

Coryphotriccus parvus albovittatus (Lawrence)

Mt. Sapo (3000 ft.).

A very rare bird throughout its range. A female apparently not fully adult, is much paler yellow below than a male from Alto del Buey (Pacific slope, Baudó Mts.), Chocó, Colombia, and an unsexed specimen from Mt. Sapo. The yellow crown patch is likewise paler. Ridgway states that adults of both sexes are alike (Birds of North and Middle Amer., pt. 4, 1907, p. 669).

Measurements.—Mt. Sapo, ♀—wing 78.5, tail 64.5, bill 17.5; Mt. Sapo, ♂ (?)—wing 82.5, tail 66, bill broken; Alto del Buey, ♂—wing 82, tail 66, bill 18.5 mm.

Myiozetetes cayanensis harterti Bangs and Penard

Rio Sambú, Garachiné.

Myiarchus ferox panamensis Lawrence

Garachiné.

Myiarchus tuberculifer brunneiceps Lawrence

Mt. Sapo, Garachiné.

Nuttallornis borealis (Swainson)

Collected on Mt. Sapo April 29. Van Rossem has pointed out that *borealis* rather than *mesoleucus* is the correct specific name for the Olive-sided Flycatcher (cf. Trans. San Diego Soc. Nat. Hist., vol. 7, 1934, p. 352).

Contopus virens (Linnaeus)

Rio Sambú, Garachiné.

Taken April 20 and 21. The testes of two males were noted as "small."

Contopus richardsonii richardsonii (Swainson)

Collected May 1 and 3 on Mt. Sapo.

Contopus cinereus brachytarsus (Sclater)

Garachiné.

This widespread Central American bird was not known east of the Rio Chepó in Panama. A female collected constitutes the easternmost record for *brachytarsus*.

Empidonax traillii traillii (Audubon)

Garachiné, Mt. Sapo.

Taken April 18 and 20.

Empidonax traillii brewsteri Oberholser

One collected May 7 at Garachiné.

Terenotriccus erythrurus fulvigularis (Salvin and Godman)

Garachiné, Mt. Sapo.

Myiobius sulphureipygius aureatus Bangs

Garachiné.

Myiobius atricaudus atricaudus Lawrence

Garachiné.

Onychorhynchus coronatus fraterculus Bangs

Six miles south of Garachiné.

Platyrinchus mystaceus neglectus (Todd)

Garachiné.

Platyrinchus coronatus superciliaris Lawrence

Garachiné, Mt. Sapo.

Rhynchocyclus olivaceus bardus (Bangs and Barbour)

Garachiné.

Oncostoma cinereigulare olivaceum Lawrence

Garachiné.

Lophotriccus pileatus luteiventris Taczanowski

Mt. Sapo (3000 ft.).

Phylloscartes flavovirens (Lawrence)

One male collected at Garachiné. A very rare species, hitherto known from but two specimens, the type, taken in Panama City and another male from Port Antonio, Rio Chepó, Darién. Compared with a series of *Ph. ventralis angustirostris* (D'Orbigny and Lafresnaye) from Bolivia, our specimen of *Ph. flavovirens* differs in wing formula as pointed out by Zimmer (Amer. Mus. Novit., no. 1095, 1940, p. 2), in having a shorter wing (54.25 mm.) and a shorter tarsus (16 mm.), but longer and wider, less compressed bill (exposed culmen 12, width at nostrils 5 mm.). In color it is slightly darker, more grayish green above, while the under parts are duller yellow. The chin and throat are a trifle less yellowish in our specimen, not " more yellowish " as in specimens seen by Hellmayr (Birds of the Americas, pt. 5, 1927, p. 352). In addition, the pale tips to the wing-coverts are wider and whiter and thus the wing-bars are more conspicuous. But perhaps the most striking feature of this little bird is the uniformly broad whitish outer margins to the tertials.

Sublegatus glaber atrirostris (Lawrence)

Garachiné.

The first record of this species from Darién. The plumage of the above specimen is much worn, the bird having evidently completed breeding. The testes were noted as " 5 mm." For a discussion of the *glaber-modestus* groups see Zimmer (Amer. Mus. Novit., no. 1109, 1941, pp. 1-7).

Myiopagis viridicata accola Bangs

Garachiné.

Camptostoma obsoletum flaviventre Scalter and Salvin

Garachiné.

Not previously recorded from the Pacific coast of Panama east of the Rio Chepó, although a juvenile male of this species was taken at Cana (Griscom, Bull. Mus. Comp. Zool., vol. 72, no. 9, 1932, pp. 353-354; idem, vol. 78, no. 3, 1935, p. 354). Concerning the Cana specimen Griscom writes that " it is very small (wing 45 mm.) and that it is reasonably certain that this bird cannot be referred to *flaviventre*."

A Garachiné male, which is in worn plumage, is virtually indistinguishable in color from a male from the Canal Zone. It measures as follows:

wing 52.5, tail 38, bill 9, tarsus 14 mm. These measurements agree well with those of *flaviventre* as given by Ridgway (U. S. Nat. Mus., Bull. 50, pt. 4, 1907, p. 417). The bird was in breeding condition (April 19—testes " 5 mm.").

Mionectes olivaceus hederaceus Bangs

Mt. Sapo (3000 ft.).

Progne chalybea chalybea (Gmelin)

Rio Sambú, Garachiné.

Stelgidopteryx ruficollis uropygialis (Lawrence)

Rio Sambú.

Cyanocorax affinis zeledoni Ridgway

Garachiné.

Thryothorus leucotis galbraithii Lawrence

Garachiné.

Henicorhina leucosticta darienensis Hellmayr

Mt. Sapo (3000 ft.), Garachiné.

Hylocichla ustulata swainsoni (Tschudi)

Two specimens were taken on Mt. Sapo, May 1.

Polioptila plumbea bilineata Bonaparte

A male, taken at Garachiné, April 24, had enlarged testes (" 5 mm.").

Ramphocaenus melanurus rufiventris (Bonaparte)

A female, collected at Garachiné May 8, had enlarged ovaries.

Cyclarhis gujanensis subspecies

Vanderbilt obtained a single specimen of *Cyclarhis* at Garachiné, April 25. This constitutes the first record of the genus from anywhere in eastern Panama. The bird unquestionably represents a hitherto unknown subspecies but the skin is in such bad condition that its characters can not be determined accurately. It is a very different bird from *subflavescens* Cabanis, of Costa Rica and western Panama (Chiriquí), from *coibae* Hartert, of Coiba Island, and from *canticus* Bangs, of northern Colombia, much more closely resembling the northern Central American forms of the species, *flaviventris* Lafresnaye, and *nicaraguae* Miller and Griscom. The under parts are a rich yellow, except for the white abdomen. Unfortunately the tail is destroyed and the bill broken, but the bird is smaller than specimens of *nicaraguae* from Guatemala in the Academy's collection (wing 72; tarsus 21.5; mandible, from base of chin, 8 mm.). The lower mandible is black, except the tip, which is pale.

Vireo olivaceus olivaceus (Linnaeus)

Mt. Sapo, Garachiné.

Specimens of this common North American bird were collected from April 20 to May 1.

Vireo olivaceus insularis Bangs

Taken at Garachiné, April 20 and 21.

Hylophilus minor darienensis (Griscom)

Mt. Sapo (3000 ft.), Garachiné.

Hylophilus aurantiifrons subspecies

Garachiné.

Not previously recorded from the Pacific side of Panama. The one unsexed specimen has the dorsal surface decidedly duller green than in a series from Santa Marta, Colombia, and the pileum is duller, more dusky brown. It closely resembles a male in the collection of the American Museum of Natural History, from New Culebra, Canal Zone, but the yellow of the forehead is almost absent in the Garachiné bird, and the upper mandible is dark horn-color.

Coereba flaveola columbiana (Cabanis)

Mt. Sapo, Rio Sambú, Garachiné.

Dacnis cayana ultramarina Lawrence

Garachiné, Mt. Sapo.

Dacnis venusta fuliginata Bangs

According to Hellmayr this beautiful *Dacnis* was known in Panama only from the Caribbean slope of extreme eastern Darién (Birds of the Americas, pt. 8, 1935, p. 282). The nine specimens taken on Mt. Sapo obviously belong to *fuliginata*. They agree perfectly with a large series in the Academy's collection from northwestern Colombia (Juradó, etc.).

Cyanerpes cyaneus carneipes (Sclater)

Garachiné, Piñas Bay, Mt. Sapo.

Two of the males had enlarged testes (6 to 8 mm.).

Cyanerpes lucidus isthmicus Bangs

Mt. Sapo.

Chlorophanes spiza arguta Bangs and Barbour

Mt. Sapo (3000 ft.).

Conirostrum leucogenys leucogenys (Lafresnaye)

An adult male and female collected at Garachiné are topotypes of *panamensis* (Griscom). They are not distinguishable from Colombian specimens in comparable plumage in the Academy's collection. A male from Gamarra, Dept. Magdalena, is darker below than the Panama example and the upper parts are likewise darker. Two somewhat immature birds from Colombia

are paler. The female is precisely like Santa Marta birds. In Colombian skins the green tinge to the upper parts is apparent only in immature specimens. Adult females show no trace of green on the upper parts.

This species is not known from elsewhere in Panama. It was formerly placed in the genus *Ateleodacnis* (cf. Zimmer, Amer. Mus. Novit., no. 1193, 1942, p. 11). If *Conirostrum* is placed among the Parulidae, it is the only genus of wood warbler unknown from Central America (north or west of the Canal Zone) and the West Indies, or, in other words, Middle America.

Parula pitiayumi nana (Griscom)

A single specimen of undetermined sex was obtained at Garachiné. This is a topotype of *nana,* previously known from only two females. It has a rufous chest and a maximum wing measurement of 52.5 mm., which is 6 mm. more than in the type and thus is undoubtedly a male. The tail is 32.5 mm. in length.

Dendroica petechia aestiva (Gmelin)

A common winter resident throughout Panama. Specimens were collected at Garachiné April 26 and May 4.

Dendroica petechia aequatorialis Sundevall

Garachiné.

We are entirely in accord with Hellmayr in regarding the so-called "Mangrove Warblers" as conspecific with *D. petechia* (cf. Birds of the Americas, pt. 8, 1935, p. 374, footnote).

Dendroica fusca (Müller)

A transient through Panama. Taken on Mt. Sapo, April 28.

Seiurus noveboracensis limnaeus McCabe and Miller

Garachiné.

Although taken April 25, the testes were noted as "small."

Basileuterus fulvicauda semicervinus Sclater

Garachiné.

Gymnostinops guatimozinus (Bonaparte)

Rio Sambú.

A splendid species, known only from northern Colombia and the Pacific lowlands of east Darién.

Xanthornus decumanus melanterus (Todd)

Garachiné.

Eight specimens bear out Hellmayr's statements in regard to the validity of *melanterus.* They are much blacker below than skins from Venezuela in the Academy's collection (cf. Hellmayr, Birds of the Americas, pt. 10, 1937, p. 13 footnote).

Cacicus cela vitellinus (Lawrence)

Garachiné.

Icterus auricapillus Cassin

Garachiné, Rio Sambú.

This species has but recently been recorded from Panama. The Vanderbilt specimens agree with examples from Colombia and Venezuela.

Icterus chrysater giraudii Cassin

Garachiné.

Icterus mesomelas salvinii Cassin

A male collected at Garachiné is virtually indistinguishable from *salvinii,* although Hellmayr (Birds of the Americas, pt. 10, 1937, p. 125) suggests that birds from the eastern Darién should perhaps be referred to *carrikeri* Todd. The latter appears to be but slightly different from *salvinii.* Specimens from Costa Rica and Panama, in comparison with Venezuelan examples, are identical in color and in the extent of the black of the throat and fore neck, but the latter have slightly smaller bills. The Garachiné bird has a bill of 22 mm.

Tanagra xanthogaster chocoensis (Hellmayr)

Mt. Sapo (3000 ft.).

Tangara chrysophrys eusticta Todd

Mt. Sapo (3000 ft.).

Tangara gyrola deleticia (Bangs)

Mt. Sapo (3000 ft.).

Tangara inornata languens Bangs and Barbour

Garachiné.

Tangara nigro-cincta fanny (Lafresnaye)

None of four specimens from Garachiné shows a trace of the green margins to the greater upper wing-coverts which are characteristic of *franciscae* Sclater. The latter form is found about 50 miles north of Cape Garachiné (Rio Chimán), according to Griscom (Bull. Mus. Comp. Zool., vol. 78, no. 3, 1935, p. 374). It would be interesting to ascertain which form is found on the north side of San Miguel Bay. We feel certain that it will be *franciscae* rather than *fanny* and that the bay will prove to be the barrier preventing intergradation between these two well-marked subspecies.

Thraupis episcopus cana (Swainson)

Rio Sambú.

Thraupis palmarum atripennis Todd

Garachiné, Rio Sambú.

Ramphocelus dimidiatus dimidiatus Lafresnaye

Garachiné.

One of the males, collected April 26, is in juvenal plumage. A female is decidedly brighter red both above and below than two specimens from the Canal Zone (*isthmicus* Ridgway). In addition, the latter have the head and throat very slightly paler brown. The tails of the three females mentioned above are virtually the same in length, those of the Canal Zone examples being not longer than that of the Garachiné bird.

Ramphocelus icteronotus Bonaparte

Rio Sambú.

Piranga flava testacea Sclater and Salvin

Mt. Sapo.

This tanager is known in Darién only from the vicinity of Garachiné.

Chlorothraupis olivacea (Cassin)

Mt. Sapo (3000 ft.).

Tachyphonus luctuosus panamensis Todd

Garachiné.

Eucometis penicillata cristata (Du Bus)

Garachiné.

Chrysothlypis chrysomelas ocularis Nelson

Mt. Sapo (3000 ft.).

A beautiful and little-known tanager, hitherto recorded only from the summit of Mt. Pirri. In comparison with a single adult male of the nominate race from Costa Rica in the Academy's collection, Mt. Sapo males may be distinguished by their wider black orbital ring and black lores, although in one specimen (A.N.S.P. 148789) the lores are mostly yellow as in the Costa Rican form and the black orbital ring is likewise similar. In addition, the Darién males have the pileum a clearer yellow, less orange-yellow, than the Costa Rican example.

These birds were taken at the beginning of the breeding season. Males had enlarged testes and a female was noted as "laying" (April 26).

Measurements.—(♂) wing 64.5-69, bill 12.5-13 mm. (5); (♀) wing 57.5-59.5, bill 11.25-12 mm. (4).

The Costa Rican male has a wing of 69.5 and a bill of 13.25 mm.

Chlorospingus inornatus Nelson

Summit of Mt. Sapo (4262 ft.), Mt. Sapo (3000 ft.).

This local species, the only bird that was found on the summit of Mt. Sapo, was hitherto known from two specimens taken on Mt. Pirri at altitudes of 2600 and 4200 feet, respectively. The two adult males before us

agree well with Nelson's description. They both have bare patches on the ear-coverts, which probably were caused in the skinning. Incidentally, we note that Goldman states that the skin on the top of the head is much thickened and oily (Smiths. Misc. Coll., vol. 60, no. 3, 1912, p. 19). One of the males had enlarged testes (April 28).

Measurements.—wing 82.5, 82; tail 70, 67.5; bill 15.5 (2); tarsus 26 (2).

Spermophila aurita aurita Bonaparte

Rio Sambú, Garachiné.

Volatinia jacarina splendens (Vieillot)

Garachiné.

Arremonops conirostris striaticeps (Lafresnaye)

Rio Sambú.

D. The Birds of the Tres Marias Islands

The Tres Marias Islands are situated in the Pacific Ocean, opposite the coast of Tepic, Mexico. They lie about 40 miles off the mainland, on the continental shelf, the intervening water having a depth of not over 300 fathoms. The group consists of four islands, namely, from north to south, San Juanito, Maria Madre, Maria Magdalena, and Maria Cleofas. Maria Madre is the largest, with an area of approximately 90 square miles, and attaining an altitude of 2000 feet. San Juanito is the smallest of the group. It is only three to four miles in diameter, and differs from the others in being comparatively flat.

Historical Account

John Xantus was supposed to have visited the islands some time subsequent to 1859, but many of his specimens, labelled as having been taken on the Tres Marias, certainly never came from there and none of the common Tres Marias birds were represented in his collections.

The first undoubted collection from the Tres Marias was that of Colonel A. J. Grayson who visited the islands in 1866-67-68. All Grayson's specimens are believed to have been obtained on Maria Madre.

The next person to visit the islands was Alfonse Forrer, who made collections on Maria Madre in 1881. The specimens that he obtained are now in the British Museum (Natural History). No detailed account of his work has ever been published.

In 1887 E. W. Nelson and E. A. Goldman visited all the islands of the group and were joined on their expedition by Professor C. L. Merrick and his son, and Dr. T. S. Maltby. Their work resulted in the first comprehensive collection and account of the avifauna of the Tres Marias Islands.

In early March 1905, H. H. Bailey visited Cleofas Island and White Rock, an islet nearby. Unfortunately the birds taken on Maria Cleofas by

Bailey were lost when on leaving the island his boat was swamped by the breakers.

In May 1925 an expedition of the California Academy of Sciences, under Dr. G. Dallas Hanna, visited Maria Madre and Maria Magdalena. The results were subsequently published by Mr. M. E. McLellan, who himself collected on Maria Madre in October of that year.

In February 1938, Mr. George Willett and Dr. William Burt visited Maria Magdalena and Maria Cleofas. Birds collected by the former are in the Los Angeles Museum, while those taken by the latter are in the University of Michigan. In spite of their short stay (February 9-12) a number of interesting records were obtained. No report has, however, been published and we wish to express our appreciation to these two gentlemen for permission to include in this paper the specimens that they secured.

The Vanderbilt Expedition visited only Maria Madre, where collections were made from July 10 to July 16, 1941. No birds had previously been taken during the summer months.

As a result of so many expeditions to the Tres Marias, it might be considered that the islands are comparatively well known ornithologically. This, however, is not the case, and the Tres Marias remain among the least known of all Middle American islands and further records and even novelties are to be expected. Although no species are endemic, at least 27 subspecies are confined to this group of islands, the affinities of which lie with the adjacent mainland of Mexico.

Bibliography

Nelson (1899) has published a very thorough account of the Tres Marias Islands, including a bibliography up to that date. We herewith mention, therefore, only those papers relating to birds that have been published subsequent to this work.

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McLellan, M. E. 1926. Expedition to the Revillagigedo Islands, Mexico, in 1925. Proc. Calif. Acad. Sci., ser. 4, vol. 15, no. 11, pp. 279-318.

———— 1927. Notes on birds of Sinaloa and Nayarit, Mexico, in the fall of 1925. Proc. Calif. Acad. Sci., ser. 4, vol. 16, no. 1, pp. 1-51.

Annotated List

Puffinus pacificus cuneatus (Bonaparte)

Specimens taken off Maria Madre by Nelson and Goldman on May 2.

Oceanodroma melania melania (Bonaparte)

Apparently nests on White Rock and on the lower end of Maria Cleofas (Bailey); common between Isabela Island and the Tres Marias Islands (Nelson).

Phaëthon aethereus mesonauta Peters

Breeding at White Rock, near Maria Cleofas (Bailey).

Pelecanus occidentalis californicus Ridgway

Found about all the Tres Marias Islands (Nelson); recorded by McLellan from Maria Madre and Maria Magdalena and by Bailey from White Rock and Maria Cleofas.

Sula nebouxii Milne-Edwards

Many were nesting on sandy beaches at the northern end of San Juanito Island in late May (Nelson); recorded by McLellan from Maria Madre and Maria Magdalena.

Sula leucogaster brewsteri Goss

"Many thousands" reported nesting on a rock (presumably White Rock) northwest of Maria Cleofas (Nelson); breeds on White Rock (Bailey); one found dead by McLellan on Maria Madre (Oct. 25).

Phalacrocorax species

Two or three cormorants were seen "at a distance" (Nelson).

Fregata magnificens subspecies

A few seen about the Tres Marias; said to nest on San Juanito (Nelson). Recorded by McLellan from Maria Magdalena.

Ardea herodias subspecies

Recorded by Grayson, Nelson, and by McLellan (Maria Madre and Maria Magdalena). Nelson thought that the species may nest on the Tres Marias.

Casmerodius albus egretta (Gmelin)

Recorded by Grayson.

Leucophoyx thula subspecies

Recorded by Grayson.

Nyctanassa violacea bancrofti Huey

Specimens of the Yellow-crowned Night Heron, presumably the western *bancrofti*, were taken on the Tres Marias by Grayson; also recorded by McLellan (Maria Magdalena). Since Grayson took specimens in immature plumage, it is likely that this heron nests on the islands.

Plegadis guarauna Linnaeus

An immature female was taken on Maria Madre by McLellan (Oct. 26) and "a number" of others seen.

Coragyps atratus atratus (Bechstein)

Observed on Maria Madre in company with *Cathartes aura* (McLellan).

Cathartes aura subspecies

Maria Madre (Grayson, Nelson, McLellan), White Rock, Maria Cleofas (Bailey). "Vultures" are also found on Maria Magdalena (McLellan).

Buteo jamaicensis fumosus Nelson

Maria Madre (Grayson, Nelson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson), Maria Cleofas (Bailey).

Pandion haliaetus carolinensis (Gmelin)

Found nesting by Grayson; seen along the shores of all the islands by Nelson.

Polyborus cheriway pallidus Nelson

All the islands, including San Juanito (Nelson), Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Cleofas (Bailey).

All of Vanderbilt's specimens are immature. They differ from the young of the mainland *audubonii* Cassin in being paler, particularly on the flanks. In four specimens the feet and legs were bluish gray, in two yellow.

Falco peregrinus anatum Bonaparte

One shot by Grayson.

Falco albigularis Daudin

One collected by Grayson "at the Marias."

Falco columbarius subspecies

Recorded by Grayson, and by Bailey (White Rock).

Falco sparverius subspecies

Maria Madre (Grayson, Forrer, McLellan).

Two were seen by McLellan, October 26, in the vicinity of the wireless station.

Lophortyx douglasii vanderbilti new subspecies

TYPE.— ♀ ad., A.N.S.P. no. 150112, collected on Maria Madre, Tres Marias Islands, Mexico, July 12, 1941, by George Vanderbilt.

Description.—The adult female differs from both the nominate form and *bensoni* in having the crest dull chestnut, more or less regularly barred with black for the entire length, superciliary region and sides of neck more conspicuously spotted with black.

The adult males are virtually similar to *bensoni* Ridgway, but the mantle averages grayer and the brown on the wing-coverts averages darker.

Measurements of type.—Wing 108, tail 72.5, exposed culmen 13.5, tarsus 26 mm.

Range.—Apparently confined to Maria Madre, Tres Marias Islands.

Material examined.—*L. d. douglasii*: 92 ♂, 42 ♀, from Sinaloa; ♂ from Durango; 8 ♂, 6 ♀ from Tepic; 2 ♂ from Jalisco. *L. d. bensoni*: 3 ♂, 7 ♀, from Sonora. *L. d. vanderbilti*: 2 ♂, 4 ♀, from Maria Madre, Tres Marias Islands.

Remarks.—These are the first quail that have been collected on any of the Tres Marias Islands. At first we suspected that they had been introduced from the adjacent mainland, but examination of very large series of mainland specimens indicates the validity of the island race, which indeed appears to differ more markedly from either *douglasii* and *bensoni* than do the latter from each other. We have named this quail after its discoverer, George Vanderbilt, a trustee of the Academy.

Fulica americana americana Gmelin

Two females were collected by McLellan on Maria Madre (Oct. 23).

Haematopus ostralegus subspecies

Found throughout the Tres Marias Islands, whence recorded by Grayson, Forrer, Nelson, McLellan, and Bailey. Found nesting on Maria Magdalena by McLellan (May 20).

Tres Marias specimens are said to be intermediate between *frazari* and *palliatus* as might be expected.

Charadrius hiaticula semipalmatus Bonaparte

Specimen taken by Grayson. A female obtained by Forrer (March 14).

Charadrius vociferus vociferus (Linnaeus)

One taken on Maria Madre by McLellan, October 26.

Numenius americanus subspecies

One individual, believed to have been this species, was seen on Maria Madre, October 21 (McLellan).

Actitis macularia (Linnaeus)

Seen along the shores of all of the islands (Nelson). We doubt if the species nests on the Tres Marias as was believed by Nelson.

Catoptrophorus semipalmatus inornatus (Brewster)

Taken by Forrer on Maria Madre (March 4). Recorded by Bailey from White Rock.

Totanus flavipes (Linnaeus)

Taken by Nelson on Maria Madre in May.

Erolia bairdii (Coues)

Taken by Forrer on Maria Madre in May.

Erolia melanotos (Vieillot)

One taken on Maria Madre by McLellan (Oct. 26).

Himantopus himantopus mexicanus Müller

Taken by Forrer on Maria Madre (Feb. 20). Seen on Maria Madre by McLellan (Oct. 25).

Steganopus tricolor Vieillot

Taken by Forrer on Maria Madre (April and May).

Larus argentatus smithsonianus Coues

An immature specimen taken on San Juanito Island (May 22) by Nelson. Several others were seen, none fully adult.

Larus heermanni Cassin

Recorded from Maria Cleofas (Nelson, Bailey), where found nesting; also noted at White Rock (Bailey).

Sterna fuscata crissalis (Lawrence)

Recorded by Grayson; also by Nelson off Maria Madre, and between Maria Magdalena and Maria Cleofas.

Thalasseus maximus maximus (Boddaert)

Seen about the shores of all the Tres Marias by Nelson in May; one taken at Maria Cleofas (Nelson).

Anoüs stolidus ridgwayi Anthony

A few seen off the Tres Marias Islands during May (Nelson).

Endomychura species

Grayson mentions having seen " guillemots " off the Tres Marias Islands.

Columba flavirostris madrensis Nelson

Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan), Maria Cleofas (Bailey).

This race is easily separable from *C. f. flavirostris* Wagler, by its darker and more grayish, less brown mantle. The greater wing-coverts are also much more widely edged with white and the lesser wing-coverts are very close to the color of the hind neck instead of cinnamon. In this respect it is approached by *C. f. restricta* van Rossem, of Sonora. The latter, although not compared with *madrensis,* must be different as it is said to be paler throughout than *flavirostris,* while *madrensis* is darker.

Zenaidura macroura tresmariae Ridgway

Known only from Maria Madre (Grayson, Nelson). It is extraordinary that this Mourning Dove has not been found by other collectors on Maria Madre.

Zenaida asiatica mearnsi (Ridgway)

Maria Madre (Nelson, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan), Maria Cleofas (Nelson).

Apparently inseparable from mainland birds. Specimens taken (July 10-13) were in full moult.

Recorded by Nelson in May and by McLellan in October; not seen by Grayson. This species may visit the islands from the mainland periodically. It is noteworthy that both Nelson and McLellan recorded a specimen (April 22 and May 24, respectively), from Isabela Island, which is waterless. Grayson visited the Tres Marias Islands in January.

Columbigallina passerina pallescens (Baird)

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan).

Leptoptila verreauxi capitalis Nelson

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan).

A female, taken July 12, has completed its moult and is in very fresh plumage. Other specimens are in worn plumage.

This race differs so slightly from the mainland form, that one wonders if perhaps Grayson's record of *L. v. angelica* does not pertain to a somewhat soiled or dark individual of *capitalis*.

Amazona ochrocephala tresmariae Nelson

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt), Maria Cleofas (Bailey, Willett). Nelson stated that natives knew of another parrot which was occasionally seen on Maria Madre and suggested that it might be *A. finschi*.

Forpus cyanopygius insularis (Ridgway)

Maria Madre (Nelson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson).

Males have the entire under parts, except the throat, a beautiful verditer blue, whereas in females the under parts are yellowish green.

Coccyzus minor palloris Ridgway

Maria Madre (Nelson, McLellan, Vanderbilt).

A male and four females taken average darker below than mainland specimens of *palloris*.

Speotyto cunicularia hypugaea (Bonaparte)

Recorded by Grayson. Those seen may have been stragglers or migrant individuals, since Grayson states that an individual of this species flew on board his boat between Cape San Lucas (Lower California) and Mazatlán. Goldman saw and heard a small owl on Maria Madre (*Micropallas* ?) and a larger owl (*Ciccaba* ?) was seen on Maria Magdalena (Nelson). Grayson stated that he heard " the hissing scream of a barn owl " (*Tyto*) on the Tres Marias.

Chordeiles acutipennis texensis Lawrence

Maria Madre (Nelson, Vanderbilt).

This nighthawk probably breeds on Maria Madre, since Vanderbilt's specimens were taken on July 10. Measurements indicate that they are referable to the northern race rather than to *micromeris* Oberholser. The wing of the male measures 179 mm., that of the female 173 mm.

Nyctidromus albicollis insularis Nelson

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan).

Amazilia rutila graysoni Lawrence

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt) and Maria Cleofas (Bailey).

This hummingbird is much larger than the mainland form. In color it is barely distinguishable, the only difference being in the color of the back. In the Tres Marias bird the green is a little darker, less bronzy.

Cynanthus latirostris lawrencei (Berlepsch)

Found "on all the islands" (Nelson); recorded from Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Magdalena (McLellan), and Maria Cleofas (Bailey, Willett).

A specimen of the mainland *latirostris,* taken by Forrer, is labelled as having been collected on the Tres Marias, possibly in error (cf. Berlepsch, Ibis, 1887, p. 294). Incidentally, Nelson reported seeing a hummingbird, identified as *latirostris,* about midway between the islands and San Blas, and headed directly toward the Tres Marias.

Trogon ambiguus goldmani Nelson

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan, Willett), Maria Cleofas (Burt).

Megaceryle torquata torquata (Linnaeus)

Recorded by Bailey from White Rock.

Megaceryle alcyon subspecies

Recorded by Grayson and by McLellan.

Dryobates scalaris graysoni (Baird)

Found on "all the islands" (Nelson); recorded from Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett), Maria Cleofas (Bailey).

Platypsaris aglaeae insularis Ridgway

Maria Madre (Grayson, Nelson, Vanderbilt).

Tyrannus melancholicus occidentalis Hartert and Goodson

Recorded by McLellan from Maria Madre in October and by Vanderbilt in mid-July. Records by Nelson of *T. m. couchii* from Maria Madre,

Maria Magdalena and Maria Cleofas, are presumably referable to *occidentalis*. The Vanderbilt specimen has a wing of approximately 110 mm., agreeing in small size with specimens from Guerrero.

Since Grayson did not find this species on the islands, the bird may be absent during winter months.

Myiarchus tyrannulus magister Ridgway

A resident recorded from " all the islands " by Nelson, and from Maria Madre by Grayson, Forrer, McLellan, and Vanderbilt.

Myiarchus tuberculifer tresmariae Nelson

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt), Maria Magdalena (Willett), Maria Cleofas (Bailey, Willett).

Contopus richardsonii richardsonii (Swainson)

Recorded by Nelson (Maria Madre). This migrant was observed only during the first ten days in May.

Empidonax difficilis difficilis Baird

A winter resident, which has been recorded from Maria Madre (Grayson, Forrer, Nelson) and from Maria Magdalena (Nelson). Observed until May by Nelson.

Myiopagis viridicata minima Nelson

Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson).

The only Vanderbilt specimen, a male taken July 12, has a wing of 68 mm. (67.5 not flattened against the ruler), which is well within the range of measurements of *jaliscensis* Nelson as given by Ridgway (U. S. Nat. Mus., Bull. 50, pt. 4, 1907, p. 403), and greater than the maximum given for males of *minima* (viz. 65.5 mm.). We therefore think it likely that the larger specimens of this species that were collected by Grayson on the Tres Marias Islands in January, and subsequently identified as *jaliscensis*, were in reality merely large examples of *minima*. Excepting Grayson's records from the Tres Marias, *jaliscensis* is known only from Jalisco and Guerrero southeast of the islands.

We have two specimens of *jaliscensis* from Guerrero. These are at once distinguishable from *minima* by their decidedly weaker bills. The bill of the latter resembles that of *placens* Sclater, of southern Mexico, Guatemala and Honduras.

Camptostoma imberbe Sclater

Recorded in early May by Nelson, who believed those seen to have been transient individuals. The Beardless Flycatcher is known to be migratory in the northern part of its range. Burt states (U. S. Nat. Mus., Bull. 179, 1942, p. 314), that " in winter it withdraws entirely from the United States ",

but a few evidently winter in Texas, near the Mexican border (l.c. pp. 309, 310). How far south the migrant individuals travel has not been determined but it seems possible that examples of *imberbe,* recorded from Costa Rica by Underwood, within the range of the exceedingly closely allied *C. obsoletum,* may have been winter residents (cf. Hellmayr, Birds of the Americas, vol. 13, pt. 5, 1927, p. 460, footnote).

Hirundo rustica erythrogaster Boddaert *

What were believed to have been Barn Swallows were seen on Maria Madre in early May (Nelson).

Thryothorus felix lawrencii Ridgway

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt).

Thryothorus felix magdalenae Nelson

Maria Magdalena (Nelson, Willett), Maria Cleofas (Willett).

Mimus polyglottos leucopterus Vigors

Maria Madre (Grayson, Nelson, McLellan).

Melanotis caerulescens longirostris Nelson

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt).

Although this race is said occasionally to show white on the under surface (cf. Hellmayr, Birds of the Americas, pt. 7, 1934, p. 304, footnote), none of our series shows a trace of it. We believe *hypoleucus* of Guatemala and Honduras should be regarded as a distinct species. The Tres Marias form is readily separable from *effuticius* Bangs and Penard by the more silvery blue lanceolate feathers of the lower throat and breast.

Turdus rufo-palliatus graysoni Ridgway

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt).

Hylocichla ustulata ustulata (Nuttall)

Evidently a common winter resident of the Tres Marias Islands according to Grayson. Taken by Willett on Maria Magdalena.

Hylocichla ustulata swainsoni (Cabanis)

Taken on Maria Madre, May 5 and May 19 (Nelson), and on Maria Magdalena February 9 or 10 (Willett).

Myadestes obscurus insularis Stejneger

Maria Madre (Grayson, Nelson), Maria Magdalena (McLellan).

Vireo olivaceus forreri Madarász

Maria Madre (Nelson, Forrer, McLellan, Vanderbilt), Maria Magdalena (McLellan).

* A crow, probably *Corvus ossifragus imparatus* Peters, is said by natives to have occurred on Maria Madre (Nelson).

A summer resident, arriving at the islands at least as early as May. Apparently winters in Ecuador (cf. Zimmer, Amer. Mus. Novit., no. 1127, 1941, p. 4).

Vireo hypochryseus sordidus Nelson

Maria Madre (Grayson, Nelson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson).

Parula pitiayumi insularis Lawrence

Maria Madre (Grayson, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt), Maria Cleofas (Willett).

Dendroica aestiva rubiginosa (Pallas)

Recorded from Maria Madre (Nelson).

Dendroica aestiva sonorana (Gmelin)

Two taken in May on Maria Madre (Nelson). This record is referred by Ridgway to *sonorana.*

Dendroica aestiva brewsteri Grinnell

Two collected on Maria Madre, May 16 (McLellan).

Dendroica auduboni auduboni (Townsend)

Recorded by Nelson from Maria Madre (early May) and Maria Cleofas (May 30) and by McLellan (Oct. 20; seen at sea).

Dendroica townsendi (Townsend)

Seen on Maria Madre between May 8 and May 20 (Nelson).

Seiurus aurocapillus (Linnaeus)

One secured on Maria Madre, May 16 (McLellan).

Granatellus venustus francescae Baird

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (Burt).

Wilsonia pusilla pileolata (Pallas)

Recorded from Maria Cleofas, May 30 (Nelson) and from Maria Madre, May 16 (McLellan).

Piranga ludoviciana (Wilson)

Recorded from Maria Madre during the first half of May (Nelson, McLellan).

Piranga bidentata flammea Ridgway

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (Nelson, McLellan, Burt).

Cassidix mexicanus graysoni (Sclater)

Recorded from Maria Madre by Nelson. Perhaps of accidental occurrence.

Icterus pustulatus graysonii Cassin

Maria Madre (Grayson, Forrer, Nelson, McLellan, Vanderbilt), Maria Magdalena (McLellan, Burt, Bailey), Maria Cleofas (Bailey).

An immature male has the dorsal surface similar in color to the females, but with the spots on the scapulars as in adult males. The head and chest are decidedly orange, but of a duller shade than in the adult males.

Carpodacus cassinii Baird

One, presumably a transient, taken May 16 on Maria Madre (McLellan).

Spinus psaltria psaltria (Say)

Maria Madre (Grayson, Forrer, McLellan, Vanderbilt), Maria Magdalena (McLellan, Willett, Burt), Maria Cleofas (Willett).

Richmondena cardinalis mariae (Nelson)

Maria Madre (Grayson, Nelson, Forrer, McLellan, Vanderbilt), Maria Magdalena (Nelson, Willett, Burt), Maria Cleofas (Bailey).

On their return to the United States, the Vanderbilts stopped for a short time on Guadalupe Island, Lower California. A few birds were obtained here all of which were collected July 25, 1941. These include the Osprey (*Pandion haliaetus carolinensis*), Red-breasted Nuthatch (*Sitta c. canadensis*), Guadalupe Rock Wren (*Salpinctes obsoletus guadeloupensis*), Guadalupe House Finch (*Carpodacus mexicanus amplus*), and Guadalupe Junco (*Junco oreganus insularis*).