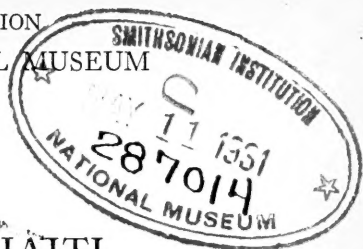


WEST INDIAN TREE DUCK (*DENDROCYGNA ARBOREA*). A RESIDENT SPECIES OFTEN FOUND IN MANGROVE SWAMPS

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BULLETIN 155



THE BIRDS OF HAITI AND THE DOMINICAN REPUBLIC

BY

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Assistant Secretary, Smithsonian Institution

AND

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The present work forms No. 155 of the *Bulletin* series.

ALEXANDER WETMORE,

Assistant Secretary, Smithsonian Institution.

WASHINGTON, D. C., *January 27, 1931.*

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INTRODUCTION

The island that Columbus named Hispaniola, divided politically in modern times between the Dominican Republic and the Republic of Haiti biologically is the most interesting of the Greater Antilles since in its great area of elevated mountains it has preserved remnants of life of an ancient type that elsewhere in the West Indies has disappeared. Though naturalists began their observations in Hispaniola in the days of Columbus since when many strange and peculiar forms have become known, only within the past fifteen years has there come a definite understanding of the importance of Hispaniola in outlining problems of distribution in this general area. Advance in modern knowledge of the life of this island has been due in large measure to the efforts of the veteran explorer Dr. W. L. Abbott. Since an early visit to the Dominican Republic in 1883 Doctor Abbott has been interested in Hispaniola and has visited the region of Samaná Bay repeatedly in the intervals between travels in more distant parts of the world. In 1916, he began definitely to make systematic collections on the island, which he continued until 1923, in that time amassing series of specimens, particularly in birds, mammals, reptiles, amphibians and plants, with material in less amount from various other groups. Since ceasing active personal work he has retained his interest in the island and has financed extensive work on the part of other naturalists. The rich collections thus obtained have all come to the Smithsonian Institution for the United States National Museum, and have given this institution the finest collections extant from the island in question. Though undertaken primarily to fill gaps in our collections the information that immediately became available was obviously so extended and so important that several reports on the collections have been planned. As the Museum collections became ex-

tensive it was decided finally to make these reports comprehensive accounts of the various groups covered so as to bring this information down to date.

The report on the birds of Hispaniola was projected originally by Dr. Charles W. Richmond, Associate Curator of Birds and Mr. Bradshaw H. Swales, Honorary Assistant Curator of Birds, in the United States National Museum. These two worked over the collections in a preliminary way as they were received from Doctor Abbott and published descriptions of a number of new forms. At the close of 1926 Doctor Richmond became engrossed in other matters and withdrew from this cooperative enterprise, which was continued by Mr. Swales in collaboration with Dr. Alexander Wetmore, Assistant Secretary of the Smithsonian Institution. Mr. Swales went over much of the literature published in English for records, and before his final illness and death on January 23, 1928, examined the preliminary write-up of the accounts of the first seventy forms of birds here treated. The surviving author has carded the remaining literature, has identified carefully the entire collection of birds and has written the account that follows. In view of Mr. Swales' prolonged interest in the project and the extensive work that he performed in assembling preliminary data it has seemed entirely fitting that he should be credited as part author of this report which may on that basis stand as a monument to his memory, to his contributions to the science of ornithology, and to his interest in that science which has brought hundreds of rare and valuable specimens to the collections of the United States National Museum.

PHYSIOGRAPHY

The island of Hispaniola has an irregular form elongated in general from east to west, and is approximately 650 kilometers long by 260 kilometers broad with a surface area that is said to be 73,150 square kilometers. (Pl. 2.) It is located between Cuba and Porto Rico between $17^{\circ} 36' 40''$ and $19^{\circ} 58' 20''$ north latitude and $68^{\circ} 20'$ and $74^{\circ} 30'$ west longitude. The Windward Passage, separating Hispaniola from Cuba, descends to depths of 1,830 meters while the maximum depth of Mona Passage between the Dominican Republic and Porto Rico is about 580 meters.¹

¹ Data for the present section, where not given from first-hand information, is taken principally from the following: Vaughan, T. W., Cooke, Wythe, Condit, D. D., Ross, C. P., Woodring, W. P., and Calkins, F. C., Geological Reconnaissance of the Dominican Republic, Geol. Surv. Dominican Republic, Mem. 1, 1921, pp. 1-268, 23 pls.

Woodring, Wendell P., Brown, John S., and Burbank, Wilbur S., Geology of the Republic of Haiti. Dept. of Public Works, 1924, pp. 1-631, 40 pls., 37 figs.

West Indies Pilot, vol. 1, ed. 5, 1927, Hydrographic Office, Navy Dept., pp. 358-359, 430-541.

On approach from the sea the general appearance of the island is rough and mountainous, broken hills bulking high on the horizon, and though there are extensive coastal and interior plains in travel by land one is continually climbing over ranges of hills, often by trails that are steep and difficult.

Beginning at the north, the Cordillera Septentrional, or northern mountain system, arises in low, arid, rocky hills near Monte Cristi, and extends southeastward about 200 kilometers roughly parallel to the northern coast to terminate finally at the marshy area known as El Gran Estero between Matanzas and Rivas at the head of Samaná Bay. The highest points in this range are north of Santiago where some of the peaks are reported to rise from 1,000 to 1,400 meters above sea level. Toward the east these hills become progressively better watered until on Loma Quita Espuela, northeast of San Francisco de Macoris, the rainfall is extremely heavy and there is abundant forest.

The estero just mentioned is low and marshy and has evidently at one time cut off what is now the Samaná Peninsula as a separate island. It has been filled in by silt borne by the Río Yuna, and it is said that channels communicate through its marshy expanse between the lower Yuna, which flows into Samaná Bay, and the Atlantic Ocean. The Samaná Peninsula which is about 50 kilometers long by 11 or 12 kilometers broad is traversed by a range of hills that rise to an average elevation of about 500 meters, the summit of Loma Las Cañitas at Sánchez being 514 meters above sea level. The hills, heavily forested with trees 15 to 25 meters high, are disposed in three parallel ridges with low depressions between, in which there are occasional small lakes, the Laguna de Rancho Fabián on the trail between Sánchez and Las Terrenas being 100 meters long by 75 meters wide.

To the south of the Cordillera Septentrional lies the great Cibao Valley that extends across from Manzanillo Bay near Monte Cristi to Samaná Bay. The western portion is traversed by the Río Yaque del Norte which heads finally in the great mountain system of the interior of the Dominican Republic beyond Jarabacoa. In its western portion the Cibao Valley is dry and arid and has great stretches grown with cacti that form veritable jungles. Near Monte Cristi considerable areas are cultivated under irrigation. Toward the east the valley becomes progressively better watered until beyond Santiago it is known as the Vega Real, where rainfall is abundant and rich and valuable crops are grown. This area is traversed by the Río Yuna and its principal tributary the Camú which carry waters from the central mountains as well as those that come to them in the valley. To the eastward the Vega Real becomes lower, until at

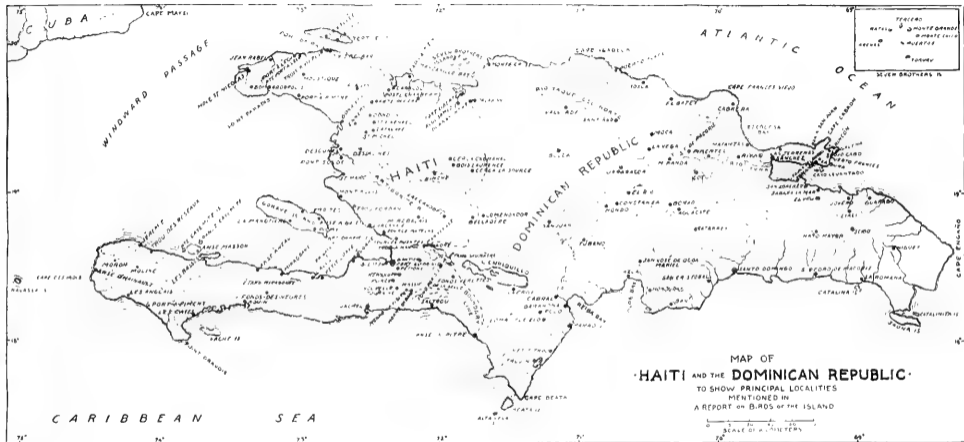
Samaná Bay it is swampy with broad, wet savannas grown with palms, or extensive stretches of wet forest, penetrated with difficulty, that at the sea become mangrove swamps.

The central mountain system of the island is a broken series of ridges and peaks that present no systematic arrangement to the eye of the traveller. The Cordillera Central, as it is known in the Dominican Republic, begins in a series of low hills in the arid eastern end of the island and extending westward broadens and becomes better watered until in its central portions it receives heavy downpours of rain. It continues through northern Haiti as the rugged Massif du Nord to a point northwest of Gros Morne, and at the south in Haiti is extended through the Montagnes Noires into the Sierra de Neiba that runs back into the Dominican Republic between the valleys of San Juan and Enriquillo. At the north the central mountain mass is limited by the Cibao Valley, while at the south in the Dominican Republic one spur reaches the vicinity of the sea at Sabaná Buey. The system is 130 kilometers wide near its middle, and in its greatest extent is between 400 and 500 kilometers long. The summit of Loma Tina, in the Dominican Republic, near its center, reputed to be the highest mountain in the West Indies, is reported to rise 3,140 meters above sea level, while Culo de Maco nearby is about its equal. Loma Rucillo, also called Pico de Yaque, not far from Culo de Maco, is recorded as 2,955 meters high. Broad stretches through these central mountains are covered with beautiful forests of pine mingled with areas of rain-forest jungle. The climate of the high interior valleys is invigorating, with hot days and cool nights, with occasional frost in the highest altitudes in winter. Rainfall is abundant in the Dominican Republic while to the west in Haiti the land is drier.

The northwest peninsula of Haiti is cut off from the Massif du Nord by the deep trough of the Trois Rivières valley, and is traversed by several mountain ranges, extending mainly from east to west, and rising to a maximum elevation of 700 meters above the sea. In the southern part of the western end is the extensive Bombardopolis plateau 20 by 25 kilometers in size, elevated to an average of 400 to 500 meters.

The great Central Plain, or Plaine Centrale of Haiti, begins near St. Michel and extends to the southeast as a level floored valley between the Massif du Nord and the Montagnes Noires, crossing the Dominican frontier to be known as the San Juan Valley. It forms a great interior basin cut off by hills from the bordering lowlands of the island. The plain of Azua extends from the eastern end of the Sierra de Neiba to the sea at the Bahía de Ocoa.





MAP OF
HAITI AND THE DOMINICAN REPUBLIC
 TO SHOW PRINCIPAL LOCALITIES
 MENTIONED IN
 A REPORT ON BIRDS OF THE ISLAND

SCALE OF 40 KILOMETERS

A remarkable depression called the Cul-de-Sac Plain begins in Haiti at the sea north of Port-au-Prince and continues to the southeast as a broad valley, crossing the Dominican frontier to be known as the Enriquillo Basin and reaches the sea again at the Bahía de Neiba. In the early Quaternary period, no distant time geologically, this great trough was a strait of the sea completely separating the southwestern part of Hispaniola from the main mass. At present it has an average altitude of only 50 meters or less above the sea, certain areas being actually below sea-level. The Étang Saumâtre in the Cul-de-Sac area of Haiti is a broad lake of brackish water, while to the eastward lies Lake Enriquillo, a body of heavily concentrated brine whose surface in 1919 lay 44 meters below sea level. This great valley of the Cul-de-Sac is dry and arid, and in places shows clearly its recent emergence above the sea in its shell-strewn sands and exposed growths of corals.

South of this great depression there begins the mountain complex known at its eastern end as the Sierra de Bahoruco which comes to the Caribbean Sea at Barahona, with spurs extending southward from the main range elsewhere toward the coast. To the west this mountain mass enters Haiti to form the backbone of the southern peninsula of that republic, where the mountain system is considered to be of two parts, the eastern being the Massif de la Selle, and the western the Massif de la Hotte that continues to the end of the peninsula. The Bahoruco range, Morne La Selle, and many of the ridges that surround Morne La Hotte have extensive forests of pine with an abundant turf of grass, mingled with low, dense rain forest. Morne La Selle is said to reach an elevation of 2,680 meters. The air is cool and pleasant in the high altitudes, suggestive of that of the mountains of Arizona and New Mexico. Frost comes occasionally in winter on the great ridge of La Selle. This mountain complex includes the bare ridges that rise back of Pétionville, and extends west to a low divide running from Jacmel to Grand Goave. There is however no abrupt surface transition at this line which has been chosen to limit the eastern extension of the Massif de la Hotte, the basis of division being difference in geological formation. The eastern part of the Massif de la Hotte as far west as the mountain pass that carries the road from Miragoane to Aquin is relatively low but to the west the ridge becomes higher culminating finally between Les Cayes and Jérémie in the mountainous region of Morne La Hotte, whose elevation is not definitely known but whose highest points rise well above 2,000 meters elevation. Throughout the entire higher areas of this southern mountain range rains are heavy, culminating finally in the almost constant precipitation on Morne La Hotte,

which supports a dense rain-forest with many peculiar botanical elements.

Coastal plains of more or less extent are found around much of the island, cut at many points where the interior mountains send down spurs to form sea cliffs, the different sections being designated by a variety of local names.

Saona Island, at the southeastern extremity of the main island, is about 22 kilometers long and from 3 to 5½ kilometers wide. The greater part of the island, which is wooded, is low, the land rising at the eastern end in a rocky bluff 35 meters high. Saona is located on a shallow bank connected with the adjacent coast.

On the same shallow bank north of Saona is found Catalinita Island, a small brush grown island 12 meters high, where there is a spring of fresh water and where, according to the West Indies Pilot, many birds are found.

Catalina Island, about two kilometers off the port of La' Romana, Dominican Republic, is about four kilometers in extent. The northern portion is low and flat while the southern part rises to 35 meters above the sea. The island is wooded and there is a sandy beach on the western side.

Beata Island, or Île de la Béate, situated off the most southern point of Hispaniola near the center of the south coast is a little more than 6 kilometers broad and rises to a height of 100 meters. It is connected with the main island by a shallow bank. On the northeast and west there are said to be sandy beaches.

Alta Vela Island, a short distance southwest of Beata, is about a kilometer long by a little less than a kilometer wide, rising in a great hill 152 meters high.

Île à Vache, opposite Les Cayes on the south shore of the southwestern peninsula of Haiti, is more than 12 kilometers long by 4 kilometers wide. The eastern end is low and thickly wooded, while in the west are several small hills 30 meters high. The channel between it and the main island is shallow.

Grande Cayemite Island, opposite Les Basses and east of Jérémie, is more than 9 kilometers long by 5 kilometers wide, is thickly wooded, and rises to a height of 152 meters above the sea. Petite Cayemite a short distance to the west is less than 2 kilometers long.

Gonave Island, the largest separate island in the group here considered, lies opposite Port-au-Prince, in the great bay between the northwestern and southwestern peninsulas of Haiti. It is 57 kilometers long and averages 15 kilometers wide. The highest points, Morne Chien Content and Morne la Pierre, near the eastern end, are elevated 755 meters above the sea. The southeastern part of the island is more rugged than the other portions. The Plaine Mapou in

this same section is a completely enclosed depression 5 kilometers long by 1 kilometer wide. The surface of the island is broken and hilly, and very arid, with xerophytic thickets in places near the coast, but broad open areas with only scattered trees in the interior. Mangroves fringe many bays. Gonave is joined to the main island by a shallow bank. There are several small islets near its eastern end, among which may be mentioned Petite Gonave and Île Fregate.

Tortue Island, off Port-de-Paix on the north coast of Haiti, is 37 kilometers long and has an average width of 5 kilometers. The interior consists of a rolling plateau rising in low, rounded knobs to 325 meters above sea level. Much of the island is heavily wooded though considerable areas have been cleared. The channel separating Tortue from the main island is remarkable for its depth, this ranging from 777 to 1,267 meters.

On the Monte Cristi bank between Cap-Haïtien and Monte Cristi is a group of small islets known as the Sept Frères or the Siete Hermanos. Monte Chico, Toruru, Muertos, Tercero, Ratas, and Arenas are low and sandy, covered with grass and scattered shrubs. Monte Grande, surrounded by reefs so that it is difficult of access, has a growth of higher trees. Lizards abound and terns and other birds resort to these Seven Brothers Islands to breed.

Elsewhere along the coasts of Hispaniola there are various other islets of small size concerning which little is known and which need not be enumerated here, except to state that there are a number along the northern shore of the Samaná Peninsula.

The small island of Navassa according to Dr. K. P. Schmidt² in "its topography recalls that of Mona Island, in the passage between Santo Domingo and Porto Rico, at least in its sheer sea cliff. It differs from Mona Island chiefly in the fact that there is a broad terrace at the top of the sea cliff, with a rising mound in the center. * * * The island is arid, and the vegetation scanty. * * * The surface rock is as rough as that of Mona, or the 'diente perro' country of Cuba described by Barbour."

HISTORICAL ACCOUNT OF ORNITHOLOGICAL INVESTIGATIONS

The record of ornithological observations in Hispaniola begins with the period of discovery and includes the names of many travelers. According to G. Brown Goode³ "Columbus was charged by Queen Isabella to collect birds, and it is recorded that he took back to Spain various skins of beasts." Whether he secured specimens during his sojourn in Hispaniola is not certain but it is related that in

² Bull. Amer. Mus. Nat. Hist., vol. 44, Dec. 23, 1921, p. 555.

³ Proc. Biol. Soc. Washington, vol. 3, 1886, p. 63.

his triumphal parade in Barcelona, in April, 1493, there were displayed various kinds of live parrots, and skins of birds. In the journal of Columbus first voyage there is mention during the first part of December, 1492, at Baie des Moustiques, Haiti, of a singing bird that was mistaken for the nightingale. At Gros Morne, about the middle of the month, the supposed nightingale was again recorded, with astonishment that it should sing in the winter. As it was heard both day and night it is probable that reference is made to the mockingbird, the only common song bird of the region that sings constantly in this manner. About the middle of January, 1493, at the eastern end of Samaná Bay, Columbus records feathers of parrots and other birds used by the Indians to decorate the hair. On his second voyage, at the end of August, 1494, his men are said to have landed on the islet of Alta Vela where they killed pigeons and other birds with sticks.

After noting the incidental references to birds made by Columbus it is of interest to record the observations of Oviedo which began in the earliest days of the colonization of the island. Gonzalo Fernandez de Oviedo y Valdéz, according to the account of Los Ríos, came to Hispaniola at the close of 1515 and on his return to Spain after a brief stay took with him "treyn ta papagallos" (thirty parrots). He returned to the island in 1523 to establish his family at Santo Domingo City, continuing his travels on September 16, of that year. At the end of 1530 he was with his family for a brief space and then continued to Spain, returning to Santo Domingo City in the autumn of 1532. In 1534 he was in Spain, and on January 11, 1536, had returned to Hispaniola, where he had established an estate on the Río Haina three leagues from the capital. From 1546 to early in 1549 he was in Spain again, where he returned in the autumn of 1556, and where he died in 1557 at the age of 79 years, having crossed the ocean to the New World twelve times. Oviedo's account of the birds of Hispaniola is fairly extensive, and, though it is in the main general, there may be definitely recognized from his descriptions such species as the palm-chat, martin, red-tailed hawk, woodpecker, parrot, paroquet, pelican and nighthawk, as well as a number of others that are included under such names as dove, heron, and similar group designations. His description of the nesting of the palm-chat is excellent. Because of the personal knowledge evident in most of his statements we may overlook his inclusion of the story current in his day of a monstrous bird with one foot webbed like that of a duck, and the other armed with the talons of a hawk that fed indifferently on fish or fowl, which Oviedo says was found in Hispaniola and Porto Rico! His entire account of his travels and observations, divided into fifty chapters, is replete with interest.

In the year 1618 Charles de Rochefort published a brief but interesting account of the hunting of the flamingo as noted during his travels.

At the close of the year 1700 Father Labat, a French priest who traveled extensively in the West Indies, came to Monte Cristi and visited in turn Tortue Island, Cap-Haïtien, Port-de-Paix, Môle St. Nicolas, Petite Rivière, Estère, Léogane, Île a Vache, Les Cayes, Fonds-des-Nègres, Maniel, and Catalina and Saona Islands, departing from the island in April, 1701. His accounts of birds are casual, including mention of pigeons, paroquets, thrushes and other birds on Tortue, and pigeons at a few other points.

Mathurin Jacques Brisson in his six-volume work entitled *Ornithologie*, published in 1760, includes recognizable descriptions of thirty-three kinds of birds from Hispaniola, in the collection of M. de Reaumur from species received from a M. Chervain. In some cases male and female of one kind are considered distinct forms, and there are four not included in the number above whose identity is uncertain, as well as three others improperly attributed to Hispaniola. The two types of *Phaenicophilus* erroneously are said to have been collected in Cayenne by Artur. Of the collector Chervain nothing has been learned aside from this mention in Brisson. Apparently he was an industrious naturalist who worked prior to 1760, presumably in the French colony of Haiti. M. de Reaumur may be the person mentioned in the *Journal de Saint-Domingue* (December, 1765, p. 65, and February, 1766, pp. 236-237) as author of a work on entomology, and proponent of the introduction of the cochineal insect to be reared on the abundant cacti of the island. The work of Chervain has been important as the accepted scientific names of a number of birds are based on the descriptions taken by Brisson from his specimens.

In the *Histoire Naturelle des Oiseaux* of Georges Louis Leclerc Buffon, published in nine volumes with the assistance of Montbeillard from 1770 to 1783, there are included many references to Hispaniolan birds, taken mainly from published accounts, but notable for their inclusion of many excellent first hand observations obtained from reports of a correspondent named Deshayes. According to Moreau de Saint-Méry⁴ M. Lefebure Deshayes, born in Saint-Malo, France in 1732, resided in the canton of Plymouth, parish of Jérémie, on an estate called Tivoly, about a quarter of a mile (220 toises) from the sea. Deshayes while a student of general natural history preferred birds to all other subjects, and painted them with such care and beauty of execution that his work received high praise from Buffon. He was a member of the society called *Cercle des*

⁴ *Descrip. Part. Franç. Isle Saint-Domingue*, vol. 2, 1798, pp. 814-815.

Philadelphes, formed by amateurs resident in Haiti, interested in various phases of science, and among other papers contributed to that organization is said to have presented one on *le colibri* (possibly the tody, rather than the hummingbird, since *colibri* is the usual name for the common tody of Haiti). Deshayes died in Cap-Haïtien in 1788 leaving to the Cercle des Philadelphes his manuscripts and a part of his library. His portrait was hung in the assembly room of the society.

Among other naturalist-observers of the French colonial period mention must be made of M. de Rabié who is said to have been "maréchal de camp, ingénieur en Chef de la partie du nord de St. Domingue." All that is known of his work as a naturalist is found in a set of water color drawings bound in four volumes that have been available for examination through the courtesy of Wheldon and Wesley Ltd. of London, and that have since been purchased for the Blacker Library in McGill University at Montreal through the interest of Dr. Casey A. Wood. One of these volumes is given to birds and includes 58 plates of that group, most of them natural size, shown in most cases in excellent color and attitude, and taken obviously from life. They include a herring gull, the only record for the island, as well as representation of *Antrostomus cubanensis ekmani* and *Pterodroma hasitata*; the majority are the common birds of the island. These plates have been bound in a volume 10½ by 12½ inches, the binding being old with a sticker on the inside of the front cover that reads

Aux deux creoles
Rue du Faub. St. Honoré, No. 60.
De La Rue, Rapetier.
Fabrique toutes sortes de Registres & Portfeu
Fourniture de Bureaux
Tient tout ce qui à rapport au Dessin & à Pein^{re}
à Paris

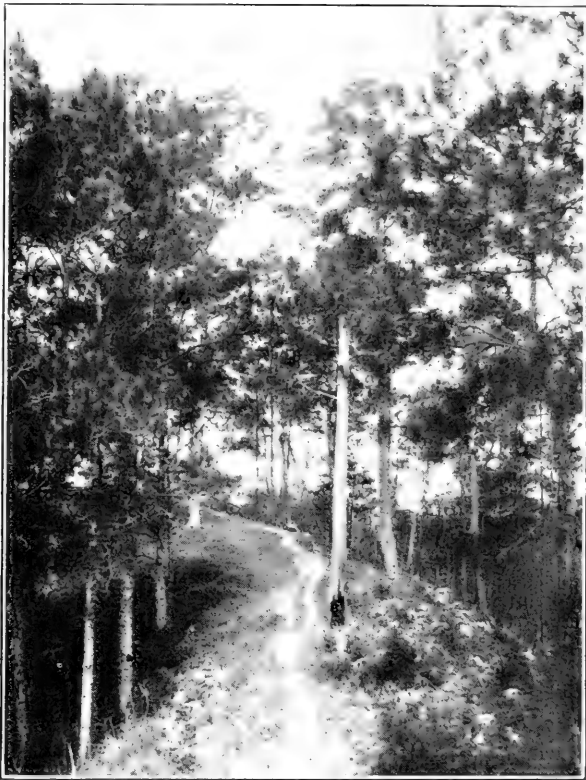
The birds are shown in life-like attitude in many cases with a background of landscape. The collection has been renumbered in its present arrangement and some of the drawings that had become frayed at the margins trimmed. The original inscription in some cases is partly gone but has been carefully copied so that the wording has been preserved. The drawings of birds are marked as made "au Cap" which would signify Cap-Haïtien, except one which is marked Fort Dauphin, and are dated from December 29, 1773, to August 19, 1784. Apparently Rabié's interest in depicting the local fauna and flora was aroused in 1771 since some of his drawings of fishes are marked as made at sea in that year. Moreau de Saint-Méry mentions his name as an engineer as early as 1752 so that he



SHORE OF SAMANÁ BAY WITH THE INTERIOR HILLS IN THE BACKGROUND
Near Sánchez, Dominican Republic, May 9, 1927.



NEAR THE MOUTH OF THE RÍO YUNA SHOWING GROVES OF ROYAL PALMS
Near Sánchez, Dominican Republic, May 10, 1927.



A MOUNTAIN TRAIL THROUGH THE PINES
Near Constanza, Dominican Republic, May 19, 1927.



DENSE JUNGLE OF RAIN FOREST, TYPICAL OF THE HIGHER ALTITUDES
WHERE RAINFALL ABOUNDS

Near Constanza, Dominican Republic, May 19, 1927.

seems to have been long resident in the colony. He is said to have died in Paris in 1785. His sketches include fruits and vegetables, insects, fish, crustaceans, and mollusks as well as birds.

Francis Alexander Stanislaus, Baron de Wimpffen, who traveled in Hispaniola from 1788 to 1790, gives occasional mention of birds, noting especially the presence of guinea-fowl, wild turkeys, and curassows, introduced gallinaceous birds that he hunted as game. In passing the islet of Alta Vela he described it as "a mere rock, with a few green spots about it" and says that it is a "retreat for a prodigious number of sea birds."

Vieillot seems to have traveled in Haiti between 1790 and 1800, the date and the length of his sojourn not being definitely indicated in the sources seen at this time. In the introduction to his *Histoire Naturelle des Oiseaux de l'Amérique Septentrional* (vol. 1, 1807, pp. 1, 2) he notes that during a sojourn in Hispaniola he made many notes on the birds which he prepared in the form of a memoir and offered to Buffon. The latter had already completed the volumes on birds in his great natural history and therefore advised Vieillot to return to North America, gather further material, and prepare a complete account of the ornithology of that continent. Subsequently Vieillot began this undertaking but it was ten years after his return from Hispaniola before he came again to America. In his final account he incorporated his notes made in Hispaniola but after the issuance of two volumes the work was suspended and never completed. Though he makes no reference to definite localities it is probable that his investigations were made in Haiti, at that time a prosperous French colony, since travel in the Spanish part of the island was difficult, and the Spanish were not on too good terms with the French. Further where he gives the local names of birds these are the creole appellations current in the Republic of Haiti to-day. He described particularly the sharp-shinned hawk of the island (*Accipiter striatus striatus*), and is the first naturalist to name in modern scientific form a species that he had taken personally on the island.

Among the various historians who in their chronicles of progress and travel in Hispaniola have made reference to birds special mention must be made of Moreau de Saint-Méry who published in 1797 and 1798 two separate works of two volumes each, one dealing with the French part of the island and the other with the Spanish section, in which he describes with much detail the various parts of the island with remarks on the people, the agriculture, the forests, the history and a multitude of other subjects. While his reference to birds is casual his work serves as a source of valuable collateral information, particularly as regards interest in science in general, and has given much data that otherwise would have been lost.

Early interest in science in the island turned to plants rather than to other branches of natural history. Charles Plumier made botanical collections in 1690. Jean Baptiste René Pouppe Desportes collected plants at Cap-Haïtien in 1732, and Pére Nicolson made similar collections for several years, publishing in 1776 a natural history of the island in which however he makes no reference to birds. In the Dominican Republic Olaf Swartz collected plants about 1784 to 1786, and Turpin from 1794 to about 1802 carried on similar studies near Cap-Haïtien and on Tortue Island. Poiteau, from 1794 to about 1801, was engaged in similar researches on the north side of the island.

M. E. Descourtilz, according to his *Voyages d'un Naturaliste*, published in Paris in 1809, came to Port-au-Prince on April 2, 1799, continuing on April 7 to St. Marc where apparently he arrived two days later. Here he speaks of observations at the Lagon Peinier in the plain of the Artibonite, and on April 16 passed by way of Pont de l'Estère to Gonaïves and Plaisance, so that on April 26 he was in Cap-Haïtien. Returning immediately to Gonaïves he studied and collected for some time at the Artibonite, near Desdunes, and at Gros Morne. On August 4 he set out for Port-au-Prince, continuing by land to L'Arcahaie, and from there by boat to his destination. On August 22 he began the return journey to St. Marc. Until February and March, 1800, his further travels covered familiar ground, when he made an expedition into the mountains of Cibao, returning to St. Marc, April 6. At about this time he was taken captive during the revolt of the negro slaves, and was held for some time, this terminating his natural history observations. He finally obtained freedom and left the island on "4 Prairial, an XI" of the revolutionary calendar (about May 23, 1803). The list of birds in his account of his expedition comprises about 56 species, named in part after Brisson, and in part not described sufficiently for certain identification. His accounts are frequently of interest though concerned principally with hunting birds for game.

William Walton, jr. in 1810, in an account of the Present State of the Spanish Colonies, included a brief statement of the game birds of Hispaniola that has some records of value.

Karl Ritter, who is indicated on the title page of his book *Naturhistorische Reise nach der Westindischen Insel Hayti auf Kosten Sr. Majestät des Kaisers von Oesterreich*, published in Stuttgart in 1836, as "Gartendirector in Ungarn und Mitgleid mehrerer gelehrten Gesellschaften" came on April 14, 1820, to Cap-Haïtien, where through force of circumstances he remained for some time, not permitted to travel except in the immediate neighborhood. On October 16 he records a journey to Sans Souci where he speaks of the Citadelle but was not allowed to enter though he climbed the hill on

whose summit it rests. Later in October he made an excursion to "Fort-Royal", followed by a journey to the Rivière Massacre in search of living crocodiles. On February 7, 1821, he left for Gonaïves, arriving on the third day, and continued later to St. Marc, but did not go to Port-au-Prince. His work in natural history was much curtailed by the political conditions at the time. In his account of the fauna he gives observations on habits of a few birds and a list of 78 species, of which he indicates that he secured specimens of 52.

Paul Wilhelm, Herzog von Württemberg, also visited Hispaniola, since in his *Erste Reise nach dem Nördlichen Amerika in den Jahren 1822 bis 1824*, published in 1835 he speaks (p. 48) of a shell brought to him in Cuba and remarks "desto häufiger fand ich sie später auf S. Domingo und an den östlichen abhängen der Cordillern." And later (p. 59) mentions reports of a mapou tree near Miragoane revered by natives as a god. In another place (p. 68) he mentions two forms of crow on "St. Domingo" and in a footnote says they are new and gives them scientific names. Württemberg made two journeys and must have visited Hispaniola in the second since his detailed itinerary in the book mentioned does not touch that island. In *Naumannia* for 1852 (pp. 50-56) is an article by Hartlaub entitled *Ueber einige neue oder weniger bekannte Vögel Amerika's aus brieflichen Mittheilungen des Herzogs Paul Wilhelm von Württemberg mitgetheilt*, in which there is an annotated list of birds recorded by Württemberg in Cuba with occasional references to Haiti. He mentions observations made at Miragoane, Mirebalais, the hills east of Mirebalais, "Escabobas" and Loma de San Juan. The date "1829" is given in connection with some of these statements.

According to Mulsant and Verreaux,⁵ Alexandre Ricord, born in 1798 in Baltimore, traveled in 1826 in the Antilles, mainly in Santo Domingo, for the Paris Museum, where he collected many interesting specimens, devoting his attention principally to fishes. His name is carried in the genus *Riccordia*, spelled by Reichenbach with a double c through a slip of the pen. Ricord collected the type of *Plagiodontia aedium* Cuvier, a curious mammal, among other specimens, but nothing has come to our eyes regarding birds that he secured, with exception of his description of *Loxia haitii*,⁶ a species of uncertain identity.

Alcide d'Orbigny in his *Voyage Pittoresque dans les deux Amériques*, 1836, pp. 11-24, describes his landing in Port-au-Prince on May 29, 1826, where he was occupied for a week in the city and

⁵ Hist. Nat. Ois. Mouch., vol. 2, 1876, p. 76.

⁶ Rev. Zool., 1838, p. 167.

the country nearby. He mentions Bizoton, Mon Repos, and Roche Blanche, and says that on June 10 he embarked for Cap-Haïtien, viewing en route Gonaïves, Môle St. Nicolas, and Tortue Island, arriving at the Cap June 14. From here he visited Milot and the Citadelle. After leaving Cap-Haïtien he came to Les Cayes leaving there on "30 mai" (apparently should be June 30). His only mention of birds is general and it is not definitely said that he made collections in ornithology.

John Hearne was another traveling naturalist of this period who visited Haiti, though knowledge of his activities there is scanty. In a letter dated February 15, 1834, at Port-au-Prince, he wrote to the Zoological Society of London regarding a pair of goats sent to the gardens of that organization, and mentions several birds, including the musicien, or solitaire. On July 16, 1834, in a second communication from Port-au-Prince he announced the sending of "an alligator from the river Artibonite," and some doves, including the ground-dove and the Key West quail-dove (*Oreopeleia chrysia*). John Gould in the Proceedings of the Zoological Society of London, 1837 (published 1838) (p. 127) describes an immature specimen of the glossy ibis (*Plegadis f. falcinellus*) collected by Hearne in Haiti as *Ibis erythrorhyncha* under the impression that it represented a new species.

One of the earliest naturalists to make an extensive collection of birds was Auguste Sallé, who according to Crosse,⁷ came to Santo Domingo City June 8, 1849, and made this his base for excursions during the ensuing two years, in the course of which he covered the greater part of the Dominican Republic. From Baní Sallé penetrated to Maniel and Azua, and on a subsequent journey continued through Azua to San Juan, Neiba, and Lake Enriquillo to Cerro de Sal and Barahona. On a subsequent journey he reached Cotuí, La Vega, Moca, Santiago, Ponton in the valley of the Yaqui, near the Haitian frontier, and Puerto Plata. Another expedition included Sabana Grande, Seibo, Higuëy, Macao, Cap Espada and Cap Engaño. He passed considerable time at San Cristobal, in the hills seven or eight leagues west of Santo Domingo City. He was searching especially, at the instance of Hugh Cuming, for a land shell *Helix gigantea*, of which for a long time he found only a few dead examples. Finally on the eve of his departure, when he was almost in despair, he discovered that this creature was nocturnal, and sallying forth with torches in a downpour of rain that threatened to extinguish his lights, found the shell common in regions where he had searched carefully for it by day, and collected a fine series. He

⁷ Crosse, H., Faune Malacologique Terrestre et Fluviale de l'Isle de Saint Domingue, Paris, 1891, pp. 7-27.

left the island July 8, 1851. Sallé gave in the Proceedings of the Zoological Society of London for 1857 (pp. 230-237), a considerable account of his ornithological collections, including 61 species. A few of his skins have come through dealers in natural history specimens into the collections of the United States National Museum. He described the vervain hummingbird under the name *Ornismia catharinae*, and in a sale catalogue of specimens issued in 1861 included a number of birds taken in the Dominican Republic.

Some time about 1865 P. R. Uhler visited Haiti and secured a few species of birds which were included in Doctor Bryant's report on the Younglove collection mentioned beyond. Seven of his skins that came to the Smithsonian were catalogued on November 17, 1865. One alcoholic specimen transferred later was collected near Jérémie, being a young mockingbird taken at the Grand Anse river on March 20, 1865. Nothing further is now known regarding this material or the ornithological collections of this worker.

William More Gabb came to the Dominican Republic early in the year 1869 at the request of the government of that country, and remained until 1872 conducting a geological reconnaissance of the island. He was on the island again in the winter of 1876-1877, to develop a promising mining claim, and came again the following winter but was taken ill and returned to the United States where his health was so broken that he died on May 30, 1878. Gabb collected birds in small numbers, and among his specimens that came to the United States National Museum there may be mentioned the type of *Lawrencina nana* (locality and date not certain), and of two birds in alcohol, a myrtle warbler and a grassquit, secured by a friend, Charles A. Fraser at Puerto Plata. Lawrence in describing *Tolmarchus gabbii* remarks that the type, which came from Hato Viejo, was brought by Professor Gabb with eight other species from Santo Domingo, and speaks of further collections that were expected.

Charles B. Cory collected in Haiti between January 1 and March 12, 1881, later publishing an account of his observations in which he enumerates 65 species. He gives no itinerary but records notes and specimens from Port-au-Prince, Fort Jacques, Gonaïves, Le Coup, Jacmel, Gantier, Jérémie, Étang Saumâtre, and Lake Enriquillo. From data obtained from his recorded specimens it appears that he was at Jacmel January 12 to 26, Gonaïves February 10, Le Coup, now called Pétionville, February 15 to March 9, Port-au-Prince February 17 and 21, Fort Jacques March 3, and Gantier March 6. In the latter part of 1882 Cory returned to the island for work in the Dominican Republic which was continued until September, 1883. He was assisted in these investigations by the taxidermist M. Abbott Frazar, but whether both Cory and Frazar were in the field continuously is

not certain. No account of the trip has been published but an itinerary may be worked out roughly from published dates connected with specimens. As there is an overlapping in dates in some cases it appears that the two collectors were separated occasionally. Following is a digest of available dates: Puerto Plata November 12, 1882 to January 30, 1883; Magua January 7, January 26 to February 1; Samaná January 8, March 12 to April 27, June 1, 2, and 25, September 1 to 11; La Vega July 9 to August 15; Almercen, or Villa Rivas, August 21 to 29. In La Vega, in May, 1927, Wetmore met by chance an old gentleman who had been Cory's host and hunting companion in that region, who still recalled his skill as an unerring shot. The results of the prolonged work of Cory's two expeditions included descriptions of a number of new forms, and were embodied finally in an illustrated work on the "Birds of Haiti and San Domingo" which was published in four parts, beginning in March, 1884, and completed a year later. This covers 111 species, most of the peculiar forms of the island being illustrated in color, with descriptions and brief notes on habits.

In June and July, 1883, Dr. W. L. Abbott came to Samaná Bay in the Dominican Republic and there made a considerable collection of birds that he presented to the Academy of Natural Sciences in Philadelphia. He collected at Samaná, Las Cañitas (the present day Sánchez), and at Sabana la Mar, securing representatives of about 42 species. These specimens have been examined in part in the preparation of the present report.

In the Ibis for 1884 (pp. 167-168) Canon Tristram published a list of 29 species of birds from the Dominican Republic received from Mr. C. McGrigor. No localities are cited, but from the published catalogue of Tristram's collection it appears that McGrigor collected at Samaná, definite dates noted being April 25 and September 10 and 12, 1883, and January 11, 1884. There is listed also a skin of *Calyptophilus* taken at Arenoso March 23, 1884. In addition Tristram received a number of birds collected at Almercen, or Villa Rivas, in 1886 and 1887 by A. S. Toogood who is believed to have been a missionary.

L. Gentil Tippenhauer of Port-au-Prince in his work entitled Die Insel Haiti, published in two parts in 1892, and reprinted in one volume in 1893, gives a list of birds of the island compiled mainly from literature but including a few original observations made during a long residence on the island.

On August 20, 1892, Dr. Ernst Hartert observed and collected in the vicinity of Sánchez while his steamer lay at anchor off that town. A few notes appear in his account of his early journeys, the actual date of his visit having been furnished by Doctor Hartert in a recent letter.



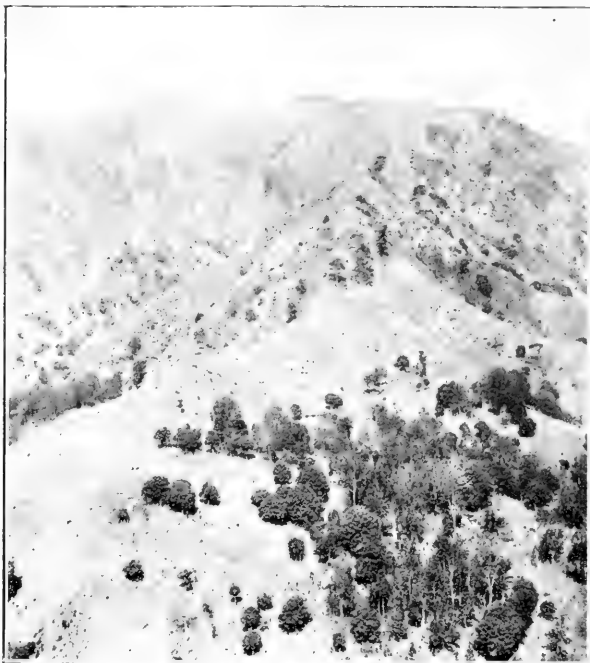
GRAVEL KNOLLS FREQUENTED BY THE BAHAMAN NIGHTHAWK (*CHORDEILES MINOR VICINUS*)

Near Hinche, Haiti, April 23, 1927.



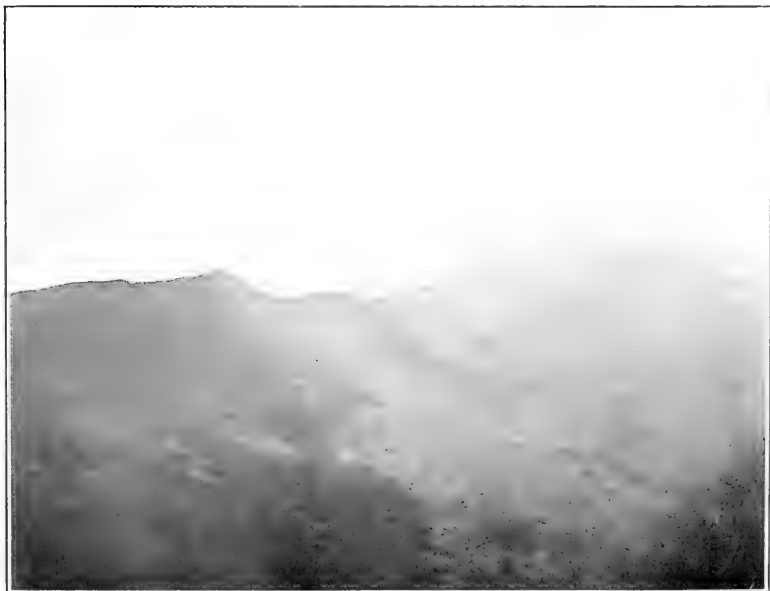
TYPICAL VIEW OF THE CENTRAL PLAIN OF HAITI

Near Hinche, Haiti, April 23, 1927.



LOOKING TOWARD MORNE TRANCHANT FROM THE
LOWER SLOPES OF LA SELLE. NOTE SCANTY COVER
OF FOREST

Near Furey, Haiti, April 9, 1927.



WESTERN END OF THE MAIN RIDGE OF LA SELLE

From Morne La Visite, April 11, 1927.

Early in January, 1895, Dr. Cuthbert Christy landed at Santo Domingo City, continuing at once to Sánchez, which he notes was called Las Cañitas on older maps. He remained on the island until July, and though occupied busily with a medical practice prepared about 70 skins, collected during country excursions to visit distant patients. He was located at La Vega during the greater part of April and May, spending the remainder of his stay at Sánchez. His published list, written in pleasing style, includes interesting observations on the habits of 59 species of birds, and is one of the few of the earlier accounts that gives much on the life history of the native forms.

At this same period George K. Cherrie was engaged in making an extensive collection of birds for the Field Museum under direction of Mr. Cory. Cherrie arrived in Santo Domingo City January 8, 1895. On January 19 he left the capital and from January 21 to February 6 was located at Catarrey, spelled Catare in Cherrie's paper on his collections, in the foothill region at an elevation of about 450 meters. From this base he made various excursions, one of which took him up the course of the Río Guanaito, a tributary of the Haina, into the pines of the higher altitudes. Following this for a short period he worked at Santo Domingo City, and then returned through Catarrey to Aguacate for the period February 20 to 28. From March 2 to 7 he was again at Catarrey. After another brief period at Santo Domingo City he removed to San Cristobal, where among other activities he explored some caves. On March 28 he continued to Honduras, near the Río Ocoa, where he located March 29 to April 2. On April 3 he continued to Maniel, shown on the maps as San José de Ocoa, where he remained for six days in vain attempt to find a guide to conduct him into the high interior mountains toward Loma Tina. Failing this he returned to Santo Domingo City and continued collecting in that vicinity until the first week in May. From his field notes he prepared for publication an annotated list of 83 species with many valuable observations.

A. Hyatt Verrill collected in the Dominican Republic from December 21, 1906, to April 13, 1907, securing considerable series of the resident birds and a long array of North American migrants. Part of his specimens came to the Tring Museum, and many more to Mr. J. H. Fleming. Verrill began work at Sánchez, continuing there until about December 29, when he crossed Samaná Bay to San Lorenzo, working there until January 13, and at El Valle, farther inland, until January 19. From January 20 to 28 he was again at Sánchez, when he removed to Sainaná, collecting in that vicinity until about February 25. He worked at Sánchez again from February 26 to March 11, and then located at La Vega March 18. His next point called Miranda he says "is a small village nearly forty miles

inland from La Vega, and situated in the heart of the wild and unsettled mountains of the island." His work was terminated by an attack of typhoid fever that nearly cost his life. His account of the birds was published in collaboration with A. E. Verrill.

James Lee Peters, traveling for the Museum of Comparative Zoölogy, began ornithological investigations at Monte Cristi, Dominican Republic, on February 6, 1916. From February 11 to 14 he was occupied in a journey to Bulla in the valley of the Río Mao, proceeding by way of Valverde, where he reached the edge of the pine forests. On February 23 he proceeded by water to Puerto Plata and located at Sosúa, 25 kilometers to the east. On March 3 he began a pack trip to the eastward, during which he collected at Gaspar Hernandez March 3 and 13, Río San Juan March 4 and 12, Cabrera March 5, 7 and 11, Arroyo Savanna March 8 and 9, and Los Toritos March 10. From March 24 to 26 he was at Chocó, in the hills a short distance south of Sosúa, and on April 5 visited El Batey, returning to Sosúa by way of Cabarate. He left the island on March 11. His investigations are detailed in a report on birds from the northern coast of the Dominican Republic published in the Bulletin of the Museum of Comparative Zoölogy.

In the same year Rollo H. Beck, on an extended collecting trip to secure specimens for the Brewster-Sanford collection in the American Museum of Natural History, touched at San Pedro de Macoris September 23, 1916, and arrived that same day at Santo Domingo City. He collected in that vicinity until October 26 when he proceeded by water to Sánchez arriving the following day. On November 20 he crossed Samaná Bay to San Lorenzo, and on November 27 removed to La Vega, where he remained until December 10, when he returned to Sánchez, and on December 18 arrived once more in Santo Domingo City. On December 29 he came to Túbano in the Province of Azua, and on January 1, 1917 started on an expedition into the mountains of the interior. He ascended Loma Tina to its summit on January 3, and on January 11 was on the high ridge separating the valleys of Túbano and Constanza. On January 16 he was at Túbano, and on January 26 visited La Cañita. January 31 he set out again for the mountains, following a branch of the Río de los Cuevos toward Loma Pelone Blanco, known locally as Ultima Ciénaga, and February 2 ascended that mountain. February 6 he returned to Túbano remaining until February 21 when he started on a trip to Loma Rucillo. His trail led over the range above the Río de los Cuevos, across the Río Medio and up a steep slope for about 8 kilometers to the settlement of La Cañita, the second of that name in his itinerary, the other being below Túbano. On February 23 he crossed to the head of the Río Yaque del Sur and there secured his

first crossbills. The following morning at his camp in a little valley he records that the ground was white with frost. He remained in this vicinity working the high slopes, until March 4 when he left for Túbano, arriving the following day. On March 10 he was again in his former camp at the head of the Yaque, on this day collecting nine crossbills. March 13 he moved to Tortillos, a short distance east on the Río Blanco, returning to his former camp March 15. Four days later he set out for Túbano, continued to Azua on March 21, and on March 24 arrived in Santo Domingo City. Following this he made a trip to St. Thomas and other islands east of Porto Rico, returning to Santo Domingo City May 21. On June 11, 1917 he came to Les Cayes, Haiti (frequently called Aux Cayes in English writings) and continued that evening to Port-à-Piment a short distance west. On June 15 he moved to Les Anglais, his objective being the ascent of Morne La Hotte. June 18 he proceeded inland up a steep slope where he found coffee growing to 1200 meters, and at noon reached the last available water above the highest native hut. Beyond there were no trails and progress was impeded by trees blown down by a recent hurricane. On the following day he laboriously cut a trail to the top of a long ridge running toward the highest peak in the vicinity and continued along this to two pines. On returning to his camp at noon he found that his men had deserted him. On June 21 he moved to another site, the following day cutting a trail up to the pines. June 24 he climbed again to the summit of the ridge near the base of the peak, returning on June 26 to Port-à-Piment. On July 1 he returned again to the interior, and July 4 cut another trail along the ridges toward the peak. On July 6 he returned to Port-à-Piment, and on the following day was in Les Cayes. July 12 he continued to Navassa Island where he remained until July 19, proceeding then to Cuba. Dr. F. M. Chapman has described several new forms from Beck's collection and has courteously allowed full use of the Beck material in the present report. Beck's itinerary as given above is taken from his manuscript journals, available through the kindness of Doctor Chapman and Doctor Murphy of the American Museum of Natural History.

Dr. Glover M. Allen of the Museum of Comparative Zoölogy, while collecting reptiles and other material in Haiti in 1919, secured a few birds at Dumai which he says (in a letter) is a plantation a few kilometers from Port-au-Prince on August 7, and near Lake Enriquillo August 14.

Mr. J. S. Brown and Mr. W. S. Burbank, during field studies concerned with a geological survey of the Republic of Haiti, on March 4 and 5, 1921 visited the caves at L'Atalaye, near St. Michel, to examine the deposits of guano there found. (Pls. 11 and 12.) In the

course of excavations to determine the depth of this material in the Grotte San Francisque they encountered a deposit of bones and brought away a handful or two as samples. In this material which came to the United States National Museum Wetmore found the fragments from which he described the great barn owl *Tyto ostologa*.

Emil Kaempfer came in the late spring of 1921 to Puerto Plata and remained for some time in the Dominican Republic, the birds that he collected going to the Tring Museum. The exact date of his departure is uncertain but Doctor Hartert writes that he collected a pigeon hawk at Moca January 1, 1924. Kaempfer was engaged principally in other zoological collecting but devoted considerable attention to birds, and has published a general account containing his more interesting observations. He traveled extensively collecting birds on the Samaná Peninsula, at Rivas, La Vega, Cotuí, Moca, Jarabacoa, Constanza, and Túbano.

A small collection of birds of the Dominican Republic has been assembled at the Agricultural station at Moca by Prof. Raffaele Ciferri, Director of the station, the specimens procured having been identified by Dr. E. Moltoni of Milan. A brief list of the collection has been published by the collector (see bibliography). In addition to this Professor Ciferri and his brother Ermanno Ciferri, the latter resident at San Juan de la Maguana, have presented to the Museo Civico di Storia Naturale in Milan a collection of three hundred bird skins representing one hundred and thirteen forms which have been the basis of a report by Doctor Moltoni. The work of the two Ciferri has been centered principally about San Juan and Moca, but has included collections from Haina, the Río Haina and Guerra in the Province of Santo Domingo, San Juan, Sabana San Thomé, Sitio de la Maguana, Río Manade, and Monte Viejo in the Province of Azua, Bonao in the Province of La Vega, Moca in the Province of Espaillat, Santiago in the Province of Santiago, the Seven Brothers Islands off the north coast opposite Monte Cristi, and Beata Island on the south coast. Their investigations as reported by Moltoni extend from 1925 to 1929, and have added several forms to the list known from the island.

William Beebe, as director of an expedition of the Department of Tropical Research of the New York Zoological Society, worked in Haiti from January 1 to May 23, 1927. Though occupied principally with life in the water Beebe made numerous observations on birds, and his published records give considerable useful information. His observations were carried on principally in the vicinity of Bizoton, where his schooner was anchored, with records from the Étang Miragoane, Source Matelas, the various reefs along shore—including those near Gonave Island—the Étang Saumâtre, Furcy, and a few

other points. His published list includes 36 species, and there are numerous references to birds throughout the text of his book *Beneath Tropic Seas*.

In the summer of 1927 Prof. Stuart T. Danforth of the University of Porto Rico made an extended journey through Hispaniola between June 14 and August 10, collecting birds at numerous localities. From June 14 to July 27 he was accompanied by Frank P. Mathews whose skins came to the American Museum of Natural History, and from July 2 to August 10 by John T. Emlen, jr., whose specimens are in the Philadelphia Academy of Natural Sciences. The party traveled by motor car principally, working near Santo Domingo City from June 14 to 18, near Monte Cristi until June 28, with visits to an irrigation project at Vásquez and to Laguna del Salodillo near the Haitian frontier. June 29 and 30 they were near La Vega, returning then to Santo Domingo City until July 2. From July 4 to 7 the party worked at Higüey, Seybo, and Hato Mayor, and from July 9 to 11 near San Juan. July 12 they crossed into Haiti at Belladère and continued by way of Las Cahobes to Port-au-Prince. July 15 they traveled by airplane to Anse à Galets on Gonave Island, remaining there until July 20, collecting between that village and Étroites, with one trip to Boucan Legume. From July 22 to 24 Mathews and Emlen visited Kenscoff, while Danforth worked the Etang Miragoane, Fonds-des-Nègres, Aquin, and Les Cayes. July 28 and 29 Danforth and Emlen continued to St. Marc, collecting at the Étang Bois-Neuf south of that town, and at the Artibonite River to the North. July 31 they were at Cap-Haïtien, and August 2 and 3 at the Citadelle above Milot. On August 4 they crossed the border into the Dominican Republic at Dajabón for a second short stay at Monte Cristi, and on August 7 were near Bonaò as the guests of Doctor Ciferri. Work was concluded at Santo Domingo City August 10. The combined list of birds observed as published by Danforth includes notes on 121 forms.

James Bond, research associate of the Philadelphia Academy of Natural Sciences, engaged in extended ornithological investigations in Haiti from December, 1927, to June, 1928, during which he covered the principal geographic divisions of the Republic. During the last of December he worked in the vicinity of Port-au-Prince, and in January was occupied in two excursions into the Massif de la Selle, the first to Morne Tranchant in the vicinity of Kenscoff and Furcy, and the second to Morne Malanga and Gros Morne in the Crête à Piquants group at the western end of the La Selle mountain formation. He also visited Jaemel and worked along the sea coast to Marigot. Later he traveled into the eastern part of the La Hotte region and worked in the swamps of Trou Caïman. During Feb-

ruary he was on Gonave Island at the Étang Miragoane, and in the arid region about Trou Forban between Mont Rouis and L'Arcahaie. During all of March and a part of April he was occupied in northwestern Haiti, where he visited Tortue Island. He ascended Morne Basile and also Morne Haut Piton south of Port-de-Paix. In the latter part of April he traveled through the Cul-de-Sac region to the Étang Saumâtre and Lake Enriquillo, continuing to Laguna Limón. In May he crossed to northeastern Haiti and came south from the northern plain through the Massif du Nord to Hinche, ascending Morne Salnave, above Acul Samedi. In late May he was again on Gonave Island, and in early June climbed Morne La Selle, returning to Trou Caïman and crossing once more to Gonave. His published observations contain distributional notes of much value since he visited points not previously seen by ornithologists. His observations are especially valuable for their notes on the nests and eggs of rare native forms.

Dr. E. L. Ekman, who has explored Haiti and the Dominican Republic botanically more thoroughly than any other naturalist, became interested in birds through his contact with Wetmore in 1927 when they worked on Morne La Selle, and in 1928 when he made several prolonged excursions with Bond. In his later journeys Doctor Ekman has collected specimens of unusual and interesting birds, which he has forwarded principally to Dr. Einar Lönnberg, who has named a goatsucker (*Antrostomus cubanensis ekmani*) in his honor. A collection of about 200 specimens made by Ekman reported on by Professor Lönnberg in 1929 contained representatives of 107 forms including skins from Navassa, Gonave, and Tortue, and many of the rarer birds from the main island. Of particular interest have been his notes on the birds of Navassa as most of what is now known of the birdlife of that island is found in his published records of his observations there, and his observations from the higher elevations of the Dominican Republic and the Seven Brothers Islands off Monte Cristi.

The Crane Pacific Expedition of the Field Museum under the leadership of Dr. Karl Schmidt visited Haiti in the latter part of 1928, including observations on birds in its schedule of investigation. At this writing the extent of the studies made is not known.

FIELD WORK FOR THE SMITHSONIAN INSTITUTION

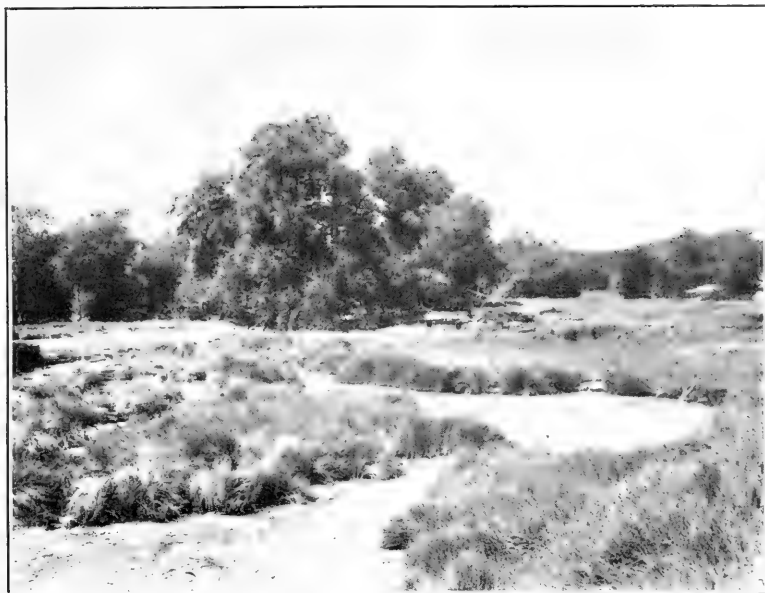
Active participation of the Smithsonian Institution in research in the ornithology of Hispaniola began in 1866 when Mr. A. E. Younglove of Cleveland, Ohio, with Mr. J. H. Beardsley as a traveling companion, visited Haiti at the instance of Spencer Fullerton Baird, Assistant Secretary of the Smithsonian Institution, travel-

ing as nearly as may be ascertained at this late date through love of adventure and to aid somewhat in collecting new material for science. All that is known of this expedition is contained in letters addressed to Baird preserved in the files of the United States National Museum, and a manuscript catalogue of the collection embracing 141 specimens that came to the Smithsonian Institution. Younglove and Beardsley left New York about December 15, 1865, and were shipwrecked on the Jersey coast, barely escaping with their baggage. They returned to New York to set out again about two weeks later and arrived at Port-au-Prince January 15, 1866. Younglove writes of the comparative scarcity of birds so far as species are concerned, and of his difficulties in securing information about the habits of his specimens because of his lack of knowledge of the language of the country. Most of his collecting was done in the vicinity of Port-au-Prince, though he made one trip to Jérémie on the southwestern peninsula. He describes the mountains as impenetrable because of the condition of the trails, and remarks on the unhealthiness of the country. One of his skins is marked *Le Coup* and several are labeled "Mountains" without any other data. They probably come from the area near Kenscoff or Furcy. He speaks in his letters of a plan to visit some salt lakes 30 miles away, evidently the *Étang Saumâtre*, but apparently did not put this into effect. His work was finished about July 1, 1866, when he returned home. Many of his specimens are still preserved in the United States National Museum while others have been distributed to other institutions. The collection was reported on in 1867 by Dr. Henry Bryant, who described five species from it as new to science.

The most important observations and collections in natural history that have been made in Hispaniola have been those of the veteran explorer Dr. William L. Abbott who, following his early work of 1883, returned to the island in the summer of 1916 and continued work with only brief interruptions for journeys to the United States until the close of 1923. During this extended period Doctor Abbott visited all of the important districts of the area under consideration, penetrating to the most remote sections, and amassed collections for the Smithsonian Institution that are without equal elsewhere. In addition to his own efforts, he took with him on various occasions Mr. E. C. Leonard of the division of plants in the United States National Museum, and after ceasing active work in the field himself has continued his interest through providing the means for further travel on the part of others. It is his efforts in this field that have made possible the present report on the birds. The itinerary that follows is taken from manuscript notes and other sources and is sufficiently complete to indicate the places and periods of collecting.

Drawn by memories of his earlier visit in 1883, Doctor Abbott returned to the Samaná Bay region in the Dominican Republic toward the end of July, 1916, and on July 26 began collecting birds near Samaná, a town of about two thousand inhabitants on the shore of Samaná Bay. The population here is descended in large part from negroes, the majority of whom speak English, come from the United States from 1822 to 1824 during the regime of President Boyer of Haiti. The region is hilly, and fairly well wooded in spite of the considerable country population. From July 28 to 30 Doctor Abbott was at San Lorenzo on the south side of Samaná Bay, where precipitous limestone hills, honey-combed with caves, descend abruptly to the sea. (Pl. 13.) Here he camped in one of the caves which he noted was floored with shell middens and contained many Indian carvings. From August 6 to 14 he collected at Laguna, a settlement of scattered houses belonging mainly to English speaking people near the southern base of the hill called Pilon d'Azucar, distant about 8 kilometers inland from Samaná. There was much virgin forest here with few inhabitants to the north until the coast was reached because of lack of water. On August 17 he crossed to San Juan Bay on the northern side of the peninsula, and on August 26 collected at Rojo Cabo, a short distance inland from the south shore of Bahía de Rincón, and at La Galera on the bay itself. The land here was rough and stony. On August 29 and 30 he was at Rojo Cabo, and on September 9 to 10 crossed again to San Lorenzo.

Following this Doctor Abbott undertook one of the most important journeys connected with his work on the island, his first visit to the great interior valley of Constanza. Proceeding by way of La Vega, on September 20 he was at the small settlement of El Río on the upper waters of the Río Jimenoa at about 1200 meters altitude. (Pl. 15.) From September 22 to October 2 he was located at Constanza about 25 kilometers beyond El Río, an old settlement in a broad, open valley at about 1200 meters elevation with mountains rising on either side 600 meters higher. (Pls. 14 and 15.) The waters of the valley of Constanza drain into the Río Yaqui del Sur. The Río Jimenoa at El Río is an affluent of the Río Yaqui del Norte, and the Río Tireo, whose valley is crossed on the trail from El Río to Constanza, is a tributary of the Yuna. The region thus is an important water-shed. The village of Constanza in 1916 had about eighty houses, and about 1000 people were resident in the region. The rounded hills bordering the valley were covered with forests of open pine mingled with areas of dense rain forest. (Pl. 4.) On this expedition he secured the first specimens of the crossbill (*Loxia megalaga*), the song sparrow (*Brachyspiza capensis antillarum*), and the eared owl (*Asio stygius noctipetens*) gaining thus an insight into the strange highland avi-



SWAMPY MEADOWS AND SPRING AT SOURCES PUANTES, HAITI

March 30, 1927.



THE VALLEY AT FONDS-DES-NÈGRES, HAITI, FROM THE SOUTH

April 5, 1927.



SEMIARID HILLS BEHIND AQUÍN BAY

Near Aquín, Haiti, April 3, 1927.



THE ÉTANG MIRAGOANE

The largest fresh-water lake in Haiti, April 1, 1927.

fauna whose presence hitherto had been entirely unsuspected. October 4 to 9 he made El Río his base for operations, and from October 11 to 16 was at Jarabacoa at a much lower elevation. Following this he returned to Sánchez where he collected from October 20 to 24.

On returning again to the island in 1917 he began work in the Republic of Haiti, landing at the end of January at Port-de-Paix on the north coast. On January 30 he crossed to Tortue Island, where he remained until February 8, securing the first ornithological collections to be made on this island, and finding there a peculiar vireo (*Vireo crassirostris tortugae*) with its near relatives in the Bahama Islands to the north. He collected at Port-de-Paix February 12, and from February 16 to 22 was located on the coast at Rivière Bar, at the mouth of a small stream about 10 kilometers east of Port-de-Paix. On February 24 he was again in Port-de-Paix, and continued at the beginning of March to Moustique, inland from Cabaret on the Baie des Moustiques, not far from the center of the northwestern peninsula, where he remained from March 2 to 12, except for March 9 when he was at Port-à-Piment on the southern side of this peninsula. March 19 he was at Môle St. Nicolas, and from March 21 to 27 worked on the elevated plateau at Bombardopolis. March 29 and 30 he was at Jean Rabel, and March 31 and April 1 was again on the Baie des Moustiques, reaching Port-de-Paix on April 4. He collected on Tortue again April 6 to 8, and from April 14 to 17 was working once more at Port-de-Paix. From April 25 to 27 he was occupied in the vicinity of Cap-Haïtien.

At the beginning of May Doctor Abbott again traveled west along the northern coast, collecting at Baie des Moustiques May 4 to 8, and at Petit Port à l'Écu May 9, the latter being a short distance east of Port à l'Écu. May 12 he was at Trois Rivières on the coast, a few kilometers east of Port-de-Paix. From May 16 to 20 he was again on Tortue collecting further specimens. In work on this island he camped at La Vallée and Basse Terre, both on the south coast, and from here made excursions to all parts of the island. The southeastern section near the coast is densely inhabited, with less cultivation elsewhere. May 30 to June 3 he was once more at Jean Rabel, June 13 and 14 he was again at Port-de-Paix, June 26 to 28 at Petit Port à l'Écu, and June 29 on Tortue. This completed investigations for this expedition.

In November, 1917, Doctor Abbott returned to Haiti for investigations in the southern part of the Republic, where his work centered for a time about Jérémie. He collected there assiduously from November 18 to December 20, making an excursion to the caves at La Grotte about 12 kilometers southwest from December 8 to 9. From December 18 to 24 he was located at Moron on the head waters of the

Rivière Grand Anse, 25 kilometers in an airline southwest of Jérémie. From December 25 to 28 he collected again at Jérémie, and then moved to Grande Cayemite Island, locating at Anse Masson from January 4 to 14, with a visit to the island of Petite Cayemite on January 13, and one to the vicinity of Les Basses on the coast of the main island opposite Grande Cayemite on January 9. January 16 he collected again at Jérémie, and then made an attempt to reach the interior mountain of La Hotte, locating at Moline at about 600 meters altitude from January 25 to February 1, and collecting on the hills near-by to an elevation of 900 meters. The little settlement in question is about 20 kilometers in an air line east of south of Jérémie in a beautiful hill country where much coffee is grown. It proved unhealthy so that in a few days Doctor Abbott's boys were down with fever, from which one later died, and it was necessary to return. He found the narrow-billed tody (*Todus angustirostris*) and Swainson's hummer (*Riccordia swainsonii*) at this point, and reports some pine forest in the vicinity. From February 8 to 10 he was again at Jérémie, where he packed his collections and then set out in a small boat for Gonave Island, where he located from February 18 to 28 at La Mahotiere near the middle of the southern coast, where he says the water was very bad. He describes Gonave as dry, with little rainfall, but nevertheless fertile since vegetable gardens and pastures receive moisture from the abundant dew. The coast belt at La Mahotiere was very arid with the hills inland covered with greener and more luxuriant vegetation. From here he proceeded to Port-au-Prince, and March 5 to 10 was occupied near the eastern end of the Étang Saumâtre. Following this until March 12 he was at Trou Caïman, a short distance away, where he was taken ill and was incapacitated for some time, nearly losing his life.

At the beginning of February, 1919, Doctor Abbott returned for further work in the Dominican Republic, coming to Sánchez where he located from February 3 to 23, collecting on the wooded hills above town, and in the great expanses of swampy forest in the delta of the Yuna River. (Pl. 3.) He removed then to Samaná, collecting birds March 3 at the Río San Juan on the north coast, and at Laguna from March 4 to 10. March 16 to 20 he was engaged in ornithological investigations at San Lorenzo on the south side of Samaná Bay.

Following this he made a prolonged trip to the valley of Constanza, proceeding on April 3 by rail from Sánchez to La Vega, where he secured pack horses and continued the following day to Jarabacoa. He arrived at Constanza on April 6, to find that there had been a severe drought in the region extending southward from the town so that food was scarce and cattle in poor condition. The arrival of

rain was coincident with his coming so that supplies gradually became more plentiful. He was accompanied by John King and another black boy from Samaná. On April 15 he marched to a clearing known as "Boho Kali" (spelling uncertain, the first being possibly Bohio, this meaning a hut) said to signify the "place of the vine," at 1,500 meters elevation on the slopes of the Loma Río Grande southeast of Constanza and about 7 kilometers distant in an air line. There it rained constantly and was very cold with morning temperature about 50° Fahrenheit. Many thousands of acres of pineland had been burned over during the preceding drought to make green feed for a few head of stock with much injury to the pine forests, as undergrowth was destroyed and the vitality of the larger trees injured. It was reported that plantations did poorly here as they were killed by frost in winter. The siskin (*Loximitris dominicensis*) was common in flocks, the birds being in molt at that season. April 24 Doctor Abbott returned to Constanza, and April 28 crossed the high ridge to the southward to a clearing 10 kilometers distant known as Corralito, where he camped among the pines 450 meters above the narrow valley of the Río Grande. He remarks that the country reminded him of Kashmir. On May 3 he continued 10 kilometers farther to the little settlement of Hondo on the Río Grande, camping between one and two kilometers above Hondo Abajo in a small grass grown clearing surrounded by thick scrub on a bluff above the river. Three species of swifts were seen here and the notes of nightjars were heard regularly. He speaks of one goatsucker that he did not secure, with a peculiar flight that reminded him of the course of an Australian boomerang. On May 10 he returned to Constanza where he found paroquets feeding on ripening guavas. May 12 he continued to El Río to search for crossbills, which he did not find, and remained for eight days, coming on May 20 to Jara-bacoa, May 21 to La Vega, and May 22 to Sánchez, where he remained until about June 1, returning then for a brief period to the United States.

In August of that year Doctor Abbott was again in the Dominican Republic, collecting from August 11 to 21 on the eastern end of the Samaná Peninsula. On August 11 and 13 he worked at Laguna, August 12 at the Pilon d'Azucar, August 16 to 19 at Puerto Rincón on the bay of that name, and August 21 at Puerto Francés south of Cap Samaná. Laguna del Diablo, where he took numerous water birds during his various stays in this general region is a small lagoon in the interior hills a few kilometers west of Rincón. In September he began work on islands off the southeastern coast, visiting Catalinita Island September 11, where he found a colony of brown pelicans and saw barn swallows and kingfishers. On Saona Island from

September 12 to 17 birds were in poor plumage and difficult to find, with many mosquitoes and sand flies. Catalina Island was visited September 19. Returning to the main island he went into the southwestern section of the Dominican Republic, camping from October 1 to 6 at Duvergé, about five kilometers from the southeastern shore of Lake Enriquillo. Sandpipers and other water-loving birds abounded along the swampy shores of the lake, and many rails were heard. Following this he returned again to the States.

About the middle of February, 1921, Doctor Abbott returned once more to Haiti, accompanied by Mr. E. C. Leonard of the United States National Museum who engaged in extended botanical explorations. They were occupied in Port-au-Prince from February 19 to 23, and then moved to St. Marc for a few days. March 2 about sundown they arrived at Anse à Galets, a village of a dozen houses on Gonave Island, where they collected until March 14. The town is located near the mouth of a little stream called La Source that rises from a spring in the hills. The small bay here was bordered by mangroves back of which were extensive salines bare of vegetation, rising to ground covered with a dense growth of *Prosopis juliflora* and numerous cacti. Beyond were rugged hills. About eleven on the morning of March 15 they arrived at Étroites farther to the west at Étroite Point, the town being located in a break in the mangrove swamp with a reef offshore. Inland was an open plain, and beyond hills covered with trees and bushes. Work continued here until March 22 when they returned to St. Marc, remaining there until March 30, and then removing to Port-au-Prince for the period April 1 to 3. From April 4 to 14 they were at Manneville, at the eastern end of the Étang Saumâtre, where many strong springs of fresh water rise from the earth and after a course of a few rods through boggy meadows empty into the lake. Back of the lake shore the level ground was covered with thorny trees and cacti. April 7 Doctor Abbott collected at Trou Caïman, about one mile southwest of Thomazeau, where there are extensive swamps grown closely with cat-tails and other marsh growth and a border of open meadowland. From April 17 to May 3 they located at Fonds Verettes in the lower hills of La Selle, where there were dense thickets grown with climbing bamboo and scattered pine trees, though most of the primitive woodland had been destroyed. On one occasion Doctor Abbott had a glimpse of the thrush afterwards secured by Wetmore (*Haplocichla swalesi*) but though he returned to the spot several times did not succeed in obtaining specimens. From May 5 to 13 Doctor Abbott and Mr. Leonard were at Fond Parisien on the shores of the Étang Saumâtre where they found the weaverfinch and so solved the mystery of a supposed colonizing oriole that had been reported from

Haiti. May 14 to 16 they were again at Manneville, and on May 26 were at Furcy in the hills back of Port-au-Prince, in a region almost entirely cut over with only occasional pines. They collected here on Morne Tranchant, on Morne St. Vincent, and on other eminences in this much-broken country. About the middle of June they moved to Pétionville where they were located from June 15 to 28, and on July 4 arrived again on Gonave Island, this time landing at Picmy on the south coast a short distance west of the southeastern point. Here there were a few palm trees where Doctor Abbott sought the mythical "*Dulus nuchalis*," and collected the specimens from which the Gonave palm-chat has been described. Abbott and Leonard remained here until July 9, and on July 10 landed on Petite Gonave Island, where they found ragged coral rocks and occasional sandy beaches with a lagoon bordered by mangroves in the center. Following this they returned to Port-au-Prince and continued north by way of Cap Haïtien leaving the island at the end of July.

At the end of November, 1920, Doctor Abbott returned to Hispaniola, this time to the Dominican Republic. Until about December 12 he was at Sánchez and then removed to Samaná, working over familiar ground at Laguna from December 17 to 24, and at Samaná December 27 to 30. After a second stay at Sánchez he moved to Villa Riva, or Rivas, on the railroad line to La Vega for a few days, and on January 19 was at Pimentel. January 28 he was collecting at Cotuí, remaining there until February 7. Collections in the savannas of the two latter localities brought specimens of the grasshopper sparrow and thick-knee. From February 13 to 21 he was at Guayubin on the Río Yaqui del Norte not far from Monte Cristi, and February 23 to March 1 he worked at Mao where a specimen of *Antrostomus cubanensis ekmani* was taken. He located at Navarrete March 3 to 6, and then from March 9 to 14 was at Sánchez, and from March 16 to 20 at Samaná. A trip through the end of the Samaná Peninsula covered Rojo Cabo March 23 and 24, Cape Samaná March 25 and 26, Lajana, a small settlement 4 kilometers south of Puerto Rincón, March 27, Puerto Francés, March 28 and 29, and Las Cacaos a little village 9 kilometers east of Sánchez March 30 and 31. There followed a journey to the southern shores of Samaná Bay, where he located at San Gabriel Island April 5 and collected in this neighborhood until April 11, with a visit to a second spot known as La Llanada, this time just west of San Gabriel island. He returned to Samaná then, collecting at Hato Viejo on the Old Heart River 15 kilometers northwest of Samaná near Port Limón from April 19 to 23. He was at Samaná April

25, and Sánchez April 28 to May 1. His work was concluded in Puerto Plata May 7.

January 3, 1922, found Doctor Abbott again in Sánchez. January 8 to 10 he moved to Samaná, and January 11 to 14 was once more in Sánchez. Following this came an extended journey to the Barahona district in the southwestern part of the Republic where he worked on the Sierra de Bahoruco. He was at Barahona January 23 to 24, and at Paradis, a village on the seashore 31 kilometers southeast of Barahona January 28 to February 5 and again on February 18. Work here extended to Herman's coffee plantation at an elevation of 450 meters in the hills. February 8 to 14 he located at Trujín on the shore of a large salt lagoon, and February 15 to 17 at Petit Trou, also called Enriquillo, on the coast. Following this he entered the Sierra de Bahoruco, visiting Polo at an elevation of 600 meters from February 26 to March 13. From here he explored the Loma del Cielo about 1200 meters high finding a rain-forest at the summit, and Loma Le Haut, of about the same elevation. The solitaire was common in these sections. From March 15 to 18 he was at Cabral on the Laguna Rincón, where he reported the most extensive reed beds he had seen on the island, covering several thousand acres. Here he obtained the short-eared owl, and various water birds.

Returning to Sánchez for work March 30 and 31, he continued to San Francisco de Macoris and from there made a pack trip to Loma Quita Espuela from April 5 to 14, where his work centered about a clearing known as La Brazita on the southern slopes, and covered the area to the top of the mountain. April 17 he had returned to San Francisco de Macoris, April 20 to Sánchez and April 23 to Samaná, when he crossed to the south shore of Samaná Bay for work at San Gabriel and San Lorenzo April 26 to May 2. May 5 and 6 he was at Samaná, May 9 and 15 at Laguna, May 17 to 20 at Samaná, and May 24 to 30 at Sánchez, which concluded his work for the season.

Two brief trips by Doctor Abbott to the Dominican Republic were made in 1923. The first came in the early part of the year and took him to new country to the eastward of San Lorenzo Bay, a region hitherto inaccessible. From February 1 to 7 he was at Jovéro on the coast and then moved ten kilometers inland along the trail to Seibo to a little clearing called El Liar where he remained from February 8 to 16. Beyond this point there was extensive virgin forest with the hills of the eastern extension of the Cordillera Central above. February 18 to 20 he was again at Jovéro, and from February 22 to 27 remained at Las Cañitas (a common place name in the Dominican Republic), located about thirty kilometers east of Jovéro, near the shore of Samaná Bay. March 2 he was in Samaná, and March 6 to 13 collected near Sánchez.



HEAD OF THE RIVIÈRE CHOTARD ON MORNE LA SELLE

April 15, 1927.



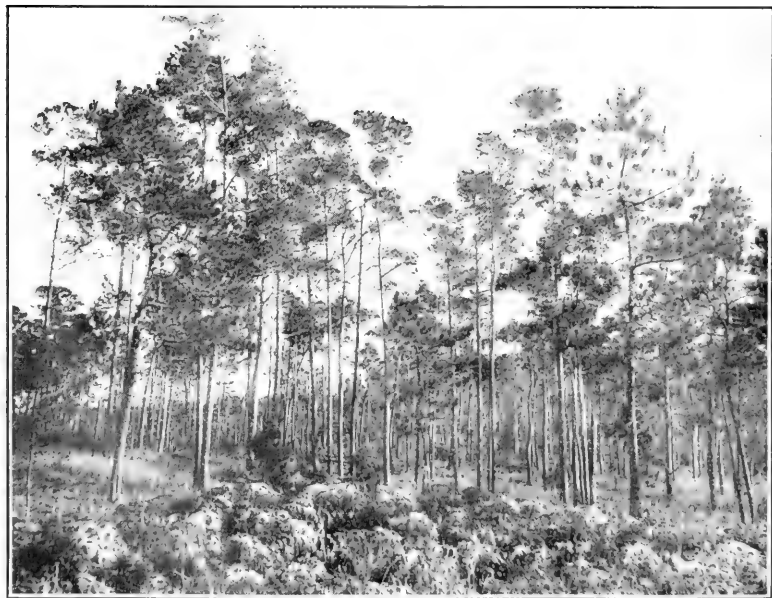
CAMP ON LA SELLE AT ABOUT 2,000-METERS ELEVATION

April 12, 1927.



ARTIBONITE RIVER NEAR LAS CAHOBES, HAITI

April 20, 1927.



OPEN FOREST OF PINE AT 2,000-METERS ELEVATION ON THE MAIN RIDGE
OF LA SELLE

Below Morne La Visite, April 11, 1927.

In early November, 1923, Doctor Abbott was again at Sánchez where he collected plants from November 4 to 8, and then removed to Samaná until November 12. November 15 and 16 he was again at Jovéro, and then moved to the little settlement of Guarabo on the trail to the east behind Cape Rafael, where he remained until November 24 working the adjacent area including Monte Redondo, an isolated hill about 300 meters high, near the cape, that serves as a landmark for the entrance to Samaná Bay from the southward. At this time there was one small clearing on the west base, the remainder being forested with much indication of damage by hurricanes. He located at Punta Jicaco November 29 to December 1, was at Jovéro December 4 to 6, and then returned to Samaná. On December 14 he visited a long ridge rising to an altitude of 600 meters that crosses the base of the peninsula of Cabo Cabron that is known locally as Loma de Traverzada. December 17 to 19 he was at Samaná and December 24 to 28 at Sánchez, this completing his investigations on the island which had covered all of the important areas.

On April 1, 1917, Mr. J. B. Henderson, regent of the Smithsonian Institution, and Dr. Paul Bartsch, Curator of Mollusks in the United States National Museum, came to Port-au-Prince, Haiti, and were engaged until near the end of that month in collecting mollusks through an area extending along the coast from Jérémie to St. Marc, and inland through the Cul-de-Sac region. Doctor Bartsch, interested always in the bird-life about him, made daily entries in his journal of the birds that he observed, and as opportunity offered collected birds for specimens, preserving part as skins and part entire in alcohol. The detailed itinerary of this party follows: Pétionville, April 1; Thomazeau, April 2; Gloré, April 3; Trou Caïman, April 4; Petit Goave, April 8 and 9; Miragoane, April 9; Jérémie, April 10 to 12; Trou des Roseaux, April 13 and 14; Jérémie, April 15 and 16; Port-au-Prince, April 19; Port-au-Prince to St. Marc and return April 21 and 22; Cul-de-Sac region, April 24; salt flats north of Port-au-Prince, April 25; near Port-au-Prince, April 25 to 28. The more than eighty birds taken during this period are sufficient indication of Doctor Bartsch's energy, in view of his occupation with the collection of mollusks which was the main object of the expedition. From his specimens he described a new form of yellow rail, *Porzana flaviventer hendersoni*, while there were included as well several migrant birds not previously recorded or little known in the island. He has placed at our disposal his manuscript notes from which numerous records of value have been taken.

During March and April, 1925, Mr. Gerrit S. Miller, jr., accompanied by Mrs. Miller, was occupied in work in Haiti principally in the cave deposits near L'Atalaye which had been located four years

previous by Burbank and Brown. Mr. Miller arrived in Port-au-Prince March 3, 1925, and was located for the following ten days about ten kilometers west of the city near Point Lamentin. Following this he spent four weeks at L'Atalaye near St. Michel at the western border of the Central Plain, where he explored the bone deposit located in 1921, and found additional beds of the same material in four other caves in the vicinity. (Pls. 11 and 12.) Included in the large collections obtained were quantities of bird bones, including abundant remains of the extinct barn owl and other species of interest. In addition numerous birds were collected, partly through the assistance of Mr. E. J. Sieger, manager of the plantation at L'Atalaye.

In February, 1928, Mr. Miller, with Mrs. Miller, and Mr. Herbert W. Krieger, Curator of Ethnology in the United States National Museum, came to the Dominican Republic for the exploration of kitchen midden sites in the caves on the south side of Samaná Bay, and at old Indian village sites on the Samaná Peninsula, Mr. Miller's principal interest being in the bones to be obtained, and Mr. Krieger's in study of the archeological remains. The first explorations continuing from February 19 for about a month, were made in the caves near San Lorenzo where quantities of bird bones were secured with the remains of other vertebrates. (Pl. 13.) Later beginning about the first of April the old village site of Cacique Mayobanex at the mouth of the Río San Juan on the north side of the Samaná Peninsula was explored, with more bones of birds as a result. Toward the end of April middens at Anadel two kilometers from Samaná were excavated and additional remains of birds were obtained.

In January, 1929, Mr. Krieger returned to the Dominican Republic for further archeological explorations, being occupied from January 22 to April 1 in the Silla de Caballo range east and south of Monte Cristi, and then making a traverse along the north coast from near the eastern end of the Samaná Peninsula to Puerto Plata. The bones of birds obtained as a part of this work were not as abundant as those from previous expeditions but are of importance. He made a further expedition in the first weeks of 1930, working at Constanza and Jara-bacoa and securing quantities of bird bones from Indian village sites.

To supplement the collections previously made by Dr. W. L. Abbott, and to obtain information on faunal areas and distribution for use in reports on the Abbott collections, Alexander Wetmore conducted zoological explorations on the island, under the Swales Fund, and through assistance from Doctor Abbott from March 27 to June 3, 1927. Following his arrival in Port-au-Prince, and a few days spent in that vicinity, at Sources Puantes (Pl. 7), Mont Rouis, Gressier and elsewhere work was begun on March 31 at Fonds-des-

Nègres in the southern peninsula, where, in company with Dr. C. H. Arndt, a considerable area was covered from Aquin on the south coast to the great fresh water lake known as the Étang Miragoane on the north. (Pls. 7 and 8.) Much of Haiti is dry and arid, but the vegetation in the better watered region at Fonds-des-Nègres appears more as is anticipated in visits to subtropical regions. Guinea hens running wild in abundance, native coots (*Fulica caribaea*) with smooth, glistening white plates on the forehead, gray or green lizards 12 inches in length clinging motionless on the tree trunks, and for some unknown reason held in the deepest fear by the Haitian laborers, were a few of the many attractive features of this locality. There was opportunity here to investigate the communal nests of the palm-chat whose flocks construct at the top of some royal palm a permanent home of sticks at times six or seven feet in diameter. (Pl. 23.)

On returning from the southern peninsula, Wetmore in company with Dr. E. L. Ekman, the botanist, and Doctor Arndt set out the morning of April 8 from Pétionville for the great mountain ridge of La Selle. The road, at first broad and open, wound steadily up the slopes of the hills bordering the Cul-de-Sac plain toward Kenscoff and Furcy to altitudes where the air was cool and pleasant at which there appeared the familiar weeds of temperate climates, left as evidence of the agriculture of the period of French colonization. The first evening camp was made on the Rivière Jacquisy in the valley below Furcy. On the second day when they approached the precipitous escarpment of La Selle the pack animals were unable to progress with their loads of camp and collecting equipment over the steep, rocky trails, and it was necessary to engage cheerful Haitian women as porters, finally reaching the summit of the ridge at 2,250 meters above the sea. (Pl. 6.) At camp 300 meters below the summit, near the head of the Rivière Chotard were forests of pine with the ground covered with bracken, or with a turf in which white clover and strawberries blossomed. (Pls. 9 and 10.) The higher peaks and the slopes of many ravines were covered with rain-forest jungle in which trees and shrubs grew densely, interlaced with the entangling, wirelike strands of a creeping bamboo. Parrots, vociferous crows, and pigeons were abundant in the pinelands, while in the jungles were found solitaires, a beautiful chestnut-sided robin, *Haplocichla swalesi* not previously known to science, and many other birds. (Pl. 22.) In early morning it was pleasant to rest in the warm sun on the edge of the 450 meter precipice that marked the face of Morne La Visite, one of the higher points above camp, while through the still air from the jungle depths came the clear, flutelike notes of the *musicien*, the appropriate Haitian name of the solitaire,

mingled with the throbbing beat of distant work drums to whose irregular cadence laborers toiled and sang in a remote world of cultivated fields far below. As no zoological collector had visited the crest of this mountain ridge previously so far as known, various specimens taken were new to science. Smoothly scaled lizards, found under flat stones and preserved in a bottle of native rum purchased from the load borne on the head of a traveling merchant woman, proved to be a new genus, and landshells gathered at random were also new. By means of a tall pine tree felled for a ladder Wetmore and Ekman climbed down into a great sink hole and discovered in a sheltered crevice bones of extinct mammals that ranged the island before the coming of Columbus. Returning April 17 by way of Chapelle Faure in Nouvelle Touraine Wetmore journeyed April 20 past the Artibonite River (Pl. 10) to Hinche in the level Central Plain where he was welcomed at the experiment station by Mr. and Mrs. J. E. Boog-Scott, and pleasantly entertained while he explored for strange birds. (Pl. 5.) April 21 he visited the caves at L'Atalaye, to view the excavations from which had come the remains of the giant owl *Tyto ostologa* and other birds. (Pl. 11 and 12.) April 24 he visited another cave at the Bassin Zime to the northeast, and on April 25 returned to Port-au-Prince.

On April 26 he journeyed by airplane through courtesy of the Marine Corps from Port-au-Prince to the north over the Central Plain, past the ruins of the Citadelle of Christophe perched on its high hilltop, to Cap-Haïtien and then overland by motor car to Poste Charbert where work continued until April 28, including a visit to Caracol on the coast on April 27. Returning by plane with Capt. R. A. Pressley he crossed to Gonaïves and for miles flew low over the coastal swamps viewing the myriads of water birds from the air and finally locating the flamingos of which he was in search.

Early on the morning of April 30 he left the hospitable home of Dr. and Mrs. George F. Freeman and began the long journey by motor car to Santo Domingo City, proceeding by way of Belladère and Comendador. That night he stopped in San Juan in the Dominican Republic, continuing the following morning to Azua to arrange details of importation of part of his collecting outfit, and then returned to Comendador to claim guns and ammunition which it had been necessary to leave in the police station the night before. Santo Domingo City was reached late that evening. He was received with the greatest courtesy by Mr. E. E. Young, American Minister, and by officials of the Dominican Republic, and on May 4 continued by motor car through Catarrey and Aguacate, scenes of early investigations by Cherrie, to Bonao, Cotuí, and San Francisco de Macoris. The following morning he went by train to Sán-

chez, where he remained until May 16, working in the swamps of the Yuna delta, and visiting the Arroyo Barrancota and San Lorenzo Bay to examine the caves, and the colonies of pelicans, terns and frigate birds on the Cayos de los Pájaros. (Pls. 3 and 13.)

Continuing May 16 to Moca and La Vega at the latter place he bargained for pack mules and on the following day was bound for the mountains of the interior. Leaving the palms and banana plantations of the lowlands he traveled for miles through open forests of beautiful pines past Jarabacoa, climbed by narrow trails up the steep slopes of El Barrero, impassable during rains, to come finally to El Río, and on May 18 to the interior valley of Constanza, where the air was cool and where, in winter, frosts come to kill tender vegetation. (Pl. 15.) At Constanza, birds abounded, among them especially a song sparrow of the genus *Brachyspiza* with its relatives in South and Central America, and found elsewhere only in the interior mountains of this island. Dense deciduous forests covered many slopes, alternating with pines in pleasing contrast. (Pls. 4 and 14.) A rare quail-dove inhabited the jungles, and trogons nested in hollow trees. In climate and topography, the region, except for its vegetation, was reminiscent of the mountains of Arizona and New Mexico.

On May 29 he came again to El Río, and on May 30 reached La Vega. May 31 he made a brief visit to Santiago, and on June 2 moved by motor car from La Vega to Santiago and from there by train to Puerto Plata to leave for New York on June 3.

Bones of extinct mammals and birds secured by Mr. Miller in Haiti in 1925 proved of such scientific value that further work there became of importance. Through the interest of Dr. W. L. Abbott the necessary funds were provided and on December 15, 1927, Mr. A. J. Poole, aid in the Division of Mammals, United States National Museum, began further work in the caves near St. Michel. Through the courtesy of Mr. G. G. Burlingame, President of the United West Indies Corporation, headquarters were made on the plantation at L'Atalaye. Work continued here with brief interruptions until the middle of March, with extensive collections containing many bird bones as a result. Visits were made at the end of December and during the first week of March to a cave at St. Raphael, at the middle of February to the Citadelle, and during the first week in March to Cap-Haïtien. Before leaving for New York on March 21 Mr. Poole also visited the cavern at Diquini near Port-au-Prince.

The following winter Mr. Poole returned to Haiti, accompanied by Mr. W. M. Perrygo of the staff of taxidermists of the United States National Museum to carry on further explorations in various caves and to make zoological collections, particularly of birds and

reptiles in areas not previously visited, the work being financed in part by Dr. W. L. Abbott and in part by the Smithsonian Institution. The following account is taken principally from the manuscript notes of Mr. Poole. The collectors reached Port-au-Prince December 16, and on December 20 proceeded by way of Ennery to St. Michel, where they established headquarters for work in that vicinity and at L'Atalaye. January 10 they removed to St. Raphael, and January 14 and 15 worked again at St. Michel. January 17 they moved to Dondon, and on January 20 proceeded by way of Grand Rivière to Cap-Haïtien, and from there to Fort Liberté, where they arrived January 26. Here they outfitted for work in the small islands known as Les Sept Frères, or the Seven Brothers, off the coast. They reached the islands in a twenty foot Haitian sail boat on January 28, on this day visiting Toruru, Monte Chico, and Muertos Islands. All of these islands are small,⁸ Toruru being approximately 150 meters long by 100 meters wide, flat and only slightly elevated, with two or three small trees, a few bushes, small cacti, and a rather heavy growth of coarse grass. The western side of the island was rough with reefs projecting above the water and large pieces of coral strewn over the narrow beach. Small lizards were abundant. Monte Chico is almost a duplicate of Toruru both in size, appearance and vegetation.

Camp was established on Muertos Island the afternoon of January 28, and this was used as a base during subsequent work on the islands. This island, the smallest of the seven, is only 120 by 90 meters, very low with sandy shores, and is surrounded on three sides by reefs. In the center were three or four trees of good size and a small but heavy growth of bushes. Small lizards were common, and there was a colony of roof rats here.

Tercero Island, visited on January 30, is about 800 meters long by 400 meters wide, surrounded by a wide, sandy beach. The island was covered with thorny bushes and small trees, interspersed with patches of cacti. At the northeast is a depression that apparently marks the site of an old lagoon. The oystercatcher was obtained here. The following day the boat was despatched for supplies but was prevented from returning until February 3 during which period the collectors were marooned on Muertos Island dependent on rains for drinking water. On February 4 attempt was made to land on Monte Grande, the largest in the group with rather heavy forest, but weather conditions were not right to permit entry through the reefs to the rocky shore so that they continued to Ratas Island. In

⁸ For an account of the plant-life of these islands see Ekman, *Excursion Botanica al Nord Oeste de la Republica Dominicana*, published in *Est. Agr. Moca, Ser. B, Bot.*, No. 17, January, 1930, pp. 11-16.



LIMESTONE RIDGE IN WHICH IS THE GROTTA SAN FRANCISCO AND OTHER BONE CAVES

Near St. Michel, Haiti, April 21, 1927.



TYPICAL GULLY CUT THROUGH THE CENTRAL PLAIN. HAUNT OF MANY BIRDS

Ravine Papaye, near Hinche, Haiti, April 22, 1927.



INTERIOR OF GROTTÉ SAN FRANCISCO. TYPE LOCALITY OF EXTINCT BARN OWL (*TYTO OSTOLOGA*)

Near St. Michel, Haiti, April 21, 1927.



THE RIVIÈRE SAMANÁ, IN THE FOOTHILLS ABOVE THE CENTRAL PLAIN OF HAITI

Near Bassin Zime, Haiti, April 24, 1927.

size and vegetation this was similar to the neighboring Tercero Island. At the north and east were extensive reefs exposed at low tide, which were attractive to shore birds. They did not land on Arenas Island but passed near enough to observe that it was identical with the others in form and vegetation. On February 5 the party returned to Fort Liberté, with a collection representative of the bird life of the islands as well as numerous other specimens. Terns nest there but at this season had not yet come in to their breeding grounds, it being reported by fishermen that they appeared in May. The golden warbler and migrant sandpipers and plovers were the most abundant birds.

At Fort Liberté birds were abundant and the collectors remained there for some time securing an excellent collection. February 20 they left for Cap-Haïtien, and continued on February 23 to St. Marc. Here they collected in the hills back of town, and near the Artibonite River at Pont Sondé, which is just north of the Artibonite River on the road to Dessalines. February 27 they left in a sailboat for Gonave Island, landing at Anse à Galets the following day, and on March 2 moved back into the interior of the island to the section called En Café, a nine hours' journey to explore in caves, and make collections of birds and reptiles. March 9 and 10 they were at Massacrin, and March 11 and 12 at Plaine Mapou. March 13 they returned to Anse à Galets. Their instructions were to collect principally in the interior of the island as previous work had been done mainly on the coast. March 17 they arrived at Hinche where they were given assistance by Mr. J. E. Boog-Scott, and on the day following came to Cerca-la-Source. They located camp here near a large cave 8 kilometers from the village where they were occupied until March 29, this concluding their field work on the island, as they sailed for the north from Port-au-Prince on April 3. Their collections are important both for remains of extinct animals from new sites, and for the birds obtained from localities hitherto unknown. Three North American migrants secured were new to the avifauna of the island. Their work was materially assisted by Gen. John M. Russell, American High Commissioner, Dr. George F. Freeman, head of the Service Technique, and many friendly officers in the United States Marine Corps and the Haitian Gendarmerie.

DISCUSSION OF THE AVIFAUNA

The total list of forms of birds at present known from Hispaniola and the islands adjacent, including Navassa, Gonave, Tortue, and Saona is 215, while there are 13 additional that have been recorded but on such questionable grounds that their occurrence is uncertain

so that at present they are considered hypothetical. These last are included in the general account that follows but the statement regarding them is placed in brackets to indicate that their status in the list is not definite.

The following references given in the works of older authors as relating to birds from Hispaniola do not pertain to species of that area, or may not be identified successfully from the data given:

Tamatia à tête & Gorge Rouges, BUFFON, Hist. Nat. Ois., vol. 7, 1780, p. 97, "Saint-Domingue." This is a species of barbet figured as the *Barbu, de St. Domingue*, by Daubenton, Planch. Enl., p. 206, fig. 2, and is accredited to Hispaniola through some misunderstanding of the locality from which it came.

Chiroxiphia pareola, TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 121, listed as "(?) a. San Domingo, 1887.—A. S. Toogood" is certainly an error, as this bird known now as *Chiroprion pareola* ranges from the Amazon Valley and Guiana to the Island of Tobago.

Formicarius brachyurus, HARTLAUB, Isis, 1847, p. 609, listed from Hispaniola is properly known as *Ramphocinclus brachyurus*, a species confined to the island of Martinique.

Muscicapa coronata, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156. "Buff. 298, gekrönter Fliegenfänger;" and *Muscicapa coronata* "Azarás Churrinche," Hartlaub, Isis, 1847, p. 609, listed from Hispaniola, may refer to the vermilion flycatcher *Pyrocephalus rubinus*, a species ranging in continental America from the southwestern United States to Argentina.

The following may refer to species of Hispaniola but give no certain clue through which they may be identified:

Ficedula Carolinensis BRISSON, Ornith., vol. 3, 1760, pp. 486-488. ("S. Domingue," described from a specimen sent by Chervain to de Reaumur.)

Ficedula Dominicensis fusca BRISSON, Ornith., vol. 3, 1760, pp. 513-515, pl. 28, fig. 5. ("S. Domingue," described from a specimen sent by Chervain to de Reaumur, is perhaps a warbler.)

Muscicapa Americana BRISSON, Ornith., vol. 2, 1760, pp. 383-386. ("S. Domingue," sent by Chervain to de Reaumur.)

Parra calidris RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157. (Listed without comment.)

Sylvia griseicollis VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 29-30, pl. 87. ("Saint-Domingue;" apparently a species of warbler.)

Sylvicola griseocollis HARTLAUB, Isis, 1847, p. 609. (Listed from Hispaniola; probably taken from Vieillot's *Sylvia griseicollis*.)

Sylvia pumilia VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol 2, 1807, p. 39, pl. 100. "À la Jamaïque, à Saint-Domingue, à Caïenne, ainsi qu'à la Caroline;" apparently a species of warbler.)

Sylvicola pumilia, HARTLAUB, Isis, 1847, p. 609. (Listed from Hispaniola; probably taken from Vieillot's *Sylvia pumilia*.)

When birds as a concrete topic are mentioned in conversation with those of foreign birth resident in Hispaniola, particularly with Americans, the remark is inevitably made that the island has no birds, a statement not entirely accurate as the number of forms that has been found will indicate. This belief, however, has become a part of the usual knowledge gathered by the casual tourist in brief visits to Port-au-Prince or Santo Domingo City, and is so universally accepted that it is even current and established among some of those residents who have interest in local natural history. In consequence scant attention is paid to birds and an exceedingly interesting subject for investigation has been almost wholly neglected. This is true even among persons of native birth, since only the more striking avian species are singled out by name, the small, obscurely marked forms being designated usually merely as "oiseaux," "siguas" or "siguitas" according to the language that is spoken.

It is true that as one traverses roads and trails by motor car or on horse or mule back few birds are noted by either eye or ear, except by one who is adept in field ornithology. The circumstance seems so convincing that one might well accept current tradition in the matter and turn to botanizing as an outlet for recreational energy, since everywhere interesting plants of many species cloak the land in profusion. Let an observant pedestrian follow the little footpaths that everywhere in Haiti lead through the scrubs, or penetrate the less frequented woodlands and thickets of the Dominican Republic, and a different picture meets the view. Woodpeckers laugh and call amid the trees, anis scale away with planelike flight from branches barely out of reach, the lizard cuckoo peers out through red-lidded eyes, the gray thrush hops robinlike to meet the visitor, and a host of smaller forms that may perhaps be identified only with glasses flutter among the branches or along the ground, each individual intent on his own affairs. As one pauses and looks about tiny palm swifts dart quickly overhead, a sparrow hawk or a burrowing owl meets the view, or with chattering calls the curious palm-chats flutter past in search of flowers or berries. Though it is true that in Hispaniola birds are far fewer than in tropical regions of Central and South America where hundreds of species may occur at one locality, yet they are actually common, and in proportion to the number of species are about as abundant in individuals as is the case in the average temperate zone region. The number of resident

birds is greatly augmented by swarms of migrants that reach the island as the northern summer closes, and remain until spring and the approach of the breeding season call them again northward, but even after the first of May when the spring migration is practically at an end resident birds may be found in fair abundance by one who searches properly.

The explanation of this strange difference between fact and current information may be found in the lack of striking song among the resident forms, and the silence of migrants and winter residents that reserve their principal vocal efforts for sojourn in their northern homes. The mockingbird, the vireo, and the thrush are the only persistent singers whose notes are loud and striking. Crows gabble among the palm trees, the woodpecker calls, parrots shriek and squall, pigeons utter their hooting and cooing calls, and sudden outbursts of sound come from flocks of palm-chats. Aside from these striking bird notes are few. The little yellow-throated grassquit sings constantly but so modestly that its notes may be scarcely heard with the singer near at hand in plain view. The same is true of a number of other species that are commonly distributed. Again breeding seasons for different individuals may vary through a considerable period so that only a part of each species may be in song at one time. There is thus no concentration of annual song in a brief period of weeks as in regions with definite seasons.

As these lines were first written on a pleasant morning in early June, 1927, in the woodlands of Plummers Island in the Potomac River a few miles above the city of Washington the notes of wood thrush, red-eyed vireo, Kentucky warbler, cardinal, tufted titmouse, and a host of minor songsters greeted the ear, while an hour earlier in open fields not far distant there were heard the songs of bluebirds, robins, house wrens, chats, chewinks, thrashers, and field sparrows. At the same time memory carried back ten days to a last excursion in the highlands of the Dominican Republic where squamated pigeons, trogons, solitaires, parrots and strange flycatchers furnished the avian chorus, while other equally interesting forms went silently about their affairs, and one is convinced that it is to their less exuberant notes and not to smaller numbers that we must attribute the current belief that Hispaniola has no birds. The apparent paucity is due to lack in perception on the part of the observer.

Of the known forms of birds of Hispaniola there are 68 that are endemic in the area considered, most of these being found on the main island, with a few confined to Gonave, Tortue, Navassa, or Saona. Most of these peculiar forms have allies in the other islands of the Greater Antillean group but a few, as *Rupornis ridgwayi*, *Speotyto c. dominicensis*, *Loximitris dominicensis*, *Loxia megalaga*, and *Brachyospiza c. antillarum* are here isolated in their distribution,

having their nearest relatives in the Lesser Antilles or on the American continents. Certain others, as *Dulus dominicus*, *Lawrencina nana*, the two species of *Microligea*, *Calyptophilus*, and *Phaenicoophilus* are quite peculiar, *Dulus*, *Lawrencina*, and *Calyptophilus*, especially being without known relatives of close affinity. The occurrence of a species of *Loxia* with its nearest relatives breeding in the boreal areas of North America and of a form of *Brachyspiza*, ranging elsewhere through South America north into Costa Rica is especially notable in its union in the highlands of this Antillean island of faunal elements considered typical respectively of the northern and southern American continents. Though the presence of these two here may be due to some fortuitous chance it is suggestive of an earlier time, perhaps in the Pleistocene, possibly at the close of the Tertiary, when these and other similar forms had a broader range than at present, but through various causes have been restricted elsewhere leaving a few survivors on Hispaniola as indication of their former spread.

Following is the complete list of living forms peculiar to this area:

- Accipiter striatus striatus*
- Rupornis ridgwayi*
- Falco sparverius dominicensis*
- Rallus longirostris vafer*
- OEdicnemus dominicensis*
- Chaemepelia passerina navassae*
- Oreopeleia leucometopus*
- Amazona ventralis*
- Aratinga chloroptera chloroptera*
- Hyetornis rufigularis*
- Saurothera longirostris longirostris*
- Saurothera longirostris petersi*^o
- Tyto glaucops*
- Speotyto cunicularia troglodytes*
- Asio domingensis domingensis*
- Asio stygius noctipetens*
- Antrostomus cubanensis ekmani*
- Siphonorhis brewsteri*
- Nyctibius griseus abbotti*
- Anthracothonax dominicus*
- Riccordia swainsonii*
- Mellisuga minima vielloti*
- Temnotrogon roseigaster*
- Todus angustirostris*
- Todus subulatus*
- Chrysoperes striatus*

^o Confined to Gonave Island.

- Nesocittes micromegas*
*Nesocittes abbotti*⁹
Tolmarchus gabbii
Myiarchus dominicensis
Blacicus hispaniolensis hispaniolensis
*Blacicus hispaniolensis tacitus*⁹
Elaenia albicapilla
Lamprochelidon sclateri
Corvus palmarum palmarum
Mimus polyglottos dominicus
Mimocichla ardosiacea ardosiacea
Haplocichla swalesi
Myadestes genibarbis montanus
Dulus dominicus dominicus
*Dulus dominicus oviedo*⁹
*Vireo crassirostris tortugae*¹⁰
Lawrencia nana
Coereba bananivora bananivora
*Coereba bananivora nectarea*¹⁰
Dendroica petechia albicollis
*Dendroica petechia solaris*⁹
Dendroica pinus chrysoleuca
Microligea palustris
Microligea montana
Icterus dominicensis
Holoquiscalus niger niger
Tanagra musica
Calyptophilus frugivorus frugivorus
 " *frugivorus abbotti*⁹
 " *tertius tertius*
 " " *selleanus*
Spindalis multicolor
Phaenicophilus poliocephalus poliocephalus
*Phaenicophilus poliocephalus coryi*⁹
Phaenicophilus palmarum palmarum
*Phaenicophilus palmarum eurosus*¹¹
Loximitris dominicensis
Loxia megaplaga
Loxia violacea affinis
*Loxia violacea maurella*¹⁰
Ammodramus savannarum intricatus
Brachyospiza capensis antillarum

⁹ Confined to Tonave Island.

¹⁰ Found only on Tortue Island.

¹¹ Peculiar to Saona Island.



VIEW AMONG ISLAS DE LOS PAJAROS, BREEDING PLACE OF SEA BIRDS
San Lorenzo Bay, Dominican Republic, May 11, 1927.



CAVE ON SAN LORENZO BAY, DOMINICAN REPUBLIC, FORMERLY INHABITED BY INDIANS

May 11, 1927



HILLS NEAR THE VALLEY OF CONSTANZA, DOMINICAN REPUBLIC
May 24, 1927.



VIEW ACROSS THE VALLEY OF CONSTANZA, DOMINICAN REPUBLIC
May 21, 1920.

From cavern deposits there has been described also one species, a great barn owl *Tyto ostologa*, a form of huge dimension compared to its living relatives, that seems to have lived within comparatively recent times but that so far as known is now entirely extinct. Including this owl the endemic forms number 69. Account of the birds of the cavern bone deposits will be the subject of a special report when the extensive collections secured in recent work have been fully identified.

Among extinct species there is also to be included in all probability a macaw of which nothing is known except for brief mention by Buffon on the authority of the naturalist Deshayes. The color and size of this bird remain entirely unknown and its very presence is open to question, though probable because of the known occurrence of species of this group on Cuba and Jamaica.

Migrant birds from North America and a few from elsewhere come to Hispaniola in abundance and in the northern winter season furnish a prominent element in the insular birdlife. There are no doubt additions to be made to this list particularly among the waterbirds so that local observers will do well to pay close attention to them. Some of those reported seem to have come merely as stragglers while the relative abundance of others is at present uncertain. Among species of casual occurrence Wilson's petrel *Oceanites o. oceanicus* breeds in southern seas and comes northward in its migrations. One form of nighthawk *Chordeiles m. gundlachii* is seemingly migrant through this area from breeding grounds in Cuba. To the naturalist from North America one of the pleasing features of the migrant swarm of wood warblers is the great abundance of the Cape May warbler which seems to center its winter distribution in this island and is at times the most abundant of the smaller birds. In connection with migration, attention is directed to the records of common terns and black-crowned night herons banded in the United States and found subsequently in Hispaniola accounts of which are given under the species in subsequent pages. Following is a complete list of the migrant species at present known from the island:

Oceanodroma leucorhoa leucorhoa

Oceanites oceanicus oceanicus

Butorides virescens virescens

Nycticorax nycticorax hoactli

Nettion carolinense

Querquedula discors

Nyroca affinis

Circus hudsonius

Pandion haliaëtus carolinensis

Falco peregrinus anatum
Falco columbarius columbarius
Porzana carolina
Fulica americana americana
Charadrius melodus
Charadrius semipalmatus
Oxyechus vociferus vociferus
Pluvialis dominicus dominicus
Squatarola squatarola cynosurae
Arenaria interpres morinella
Capella delicata
Phaeopus hudsonicus
Actitis macularia
Tringa solitaria solitaria
Totanus flavipes
Totanus melanoleucus
Pisobia minutilla
Pisobia melanotos
Micropalama himantopus
Ereunetes pusillus
Ereunetes mauri
Tryngites subruficollis
Crocethia alba
Larus argentatus smithsonianus
Sterna hirundo hirundo
Chlidonias nigra surinamensis
Antrostomus carolinensis
Chordeiles minor gundlachii
Chaetura pelagica
Megaceryle alcyon alcyon
Sphyrapicus varius varius
Riparia riparia riparia
Hirundo erythrogaster
Dumetella carolinensis
Hylocichla minima minima
Bombycilla cedrorum
Mniotilta varia
Compothlypis americana pusilla
Dendroica tigrina
Dendroica coronata coronata
Dendroica caerulescens caerulescens
Dendroica caerulescens cairnsi
Dendroica dominica dominica
Dendroica palmarum palmarum

Dendroica magnolia
Dendroica discolor
Dendroica striata
Seiurus aurocapillus aurocapillus
Seiurus motacilla
Seiurus noveboracensis noveboracensis
Seiurus noveboracensis notabilis
Geothlypis trichas trichas
Geothlypis trichas brachidactyla
Setophaga ruticilla
Dolichonyx oryzivorus
Hedymeles ludoviciana

Of numerous attempts at the introduction of exotic birds definite success seems to have attended the experiment with only four kinds, namely, *Colinus v. virginianus*, *Colinus v. cubanensis*, *Numida galeata*, and *Textor c. cucullatus*. Lieutenant Wirkus of the Gendarmerie is reported to have brought guinea fowl to Gonave Island in an attempt to establish them there as a game bird but so far as known without success, as this species has not been recorded wild. Gonave seems to have been the field for earlier experiments of this sort since in the account of Moreau Saint-Méry (vol. 2, 1798, p. 529) we read that "depuis cette époque [1787] & pendant son généralat, M. de la Luzerne s'est occupé de peupler la Gonave de plusieurs animaux utiles—Il y a fait mettre des pacaris venus de Carthagène, des Agamis tirés de Cayenne, & on vient d'y lâcher 4 paires de tourterelles & deux oiseaux martins de L'Isle de France." Nothing is known further of these attempts.

The peacock seems to have become wild on the plains of Neyba, Dominican Republic near the close of the eighteenth century as Saint-Méry¹² says "Here it is also that are found the royal or crowned peacocks (a mixture of the white and colored peacock), which are highly esteemed, because they have a more delicate flavour than the common peacocks, and because the beauty of the brilliant plumage surpasses that of the peacocks in Europe." He says they were also found at Azua. Walton¹³ records them from Neyba saying "nor can anything be more pleasing than to see flocks of this animal feeding in stately parade in the rich bottoms. Though their plumage is not so brilliant as those we domesticate in Europe it still varies to the sight in gay colours. * * * This is the only quarter where the bird is seen collectively."

¹² Descrip. Span. Part Saint-Domingo, vol. 1, 1798, pp. 85, 306.

¹³ Pres. State Span. Col. incl. partic. Rep. Española, vol. 1, 1810, pp. 121-122.

The turkey (*Meleagris gallopavo*) seems at one time to have been feral on the island since the Baron de Wimpffen in his Voyage to Saint Domingo in the years 1788, 1789 and 1790 says (p. 124) "the turkeys, which the Jesuits seem only to have domesticated for themselves, had again run wild" and on the following page remarks "when we are in want of game, I take my gun, go into the coverts, and bring home a turkey, just as a sportsman, with you, does a snipe, or a woodcock."

Wimpffen in another place (p. 161) mentions the "Hoco" saying further (p. 162) "the Hoco, Oco, or Oeco transported hither from Cayenne, and originally from Mexico, with a plumage of glossy black, except the breast which is white, and a crest of the most beautiful yellow, is stronger and larger than the peacock."

Ritter also ¹⁴ says that a curassow "*Cruax alector*" was introduced into Haiti from Mexico.

Bond ¹⁵ lists the domestic fowl *Gallus gallus* with the local name Poule marron with the remark that it is "said to occur near Caracol in a wild state, though I never encountered it. Doctor Barbour, of the Service Technique, tells me that they are smaller than the average domestic fowl and are mottled in appearance." Columbus included the domestic fowl among the animals that he brought to Hispaniola on his second voyage in 1493.

REMARKS ON DISTRIBUTION

The resident forms of Hispaniola divide loosely into two principal groups, one of species found on the coastal plain or lower hills of the interior some of whose members range at large over the entire main island, and a second much smaller aggregation confined to the high interior mountains. The endemic forms in the first mentioned are mainly of types that range through the adjacent Greater Antillean islands, with a few highly peculiar species, as, *Lawrencina nana* and *Dulus dominicus*, that have no close relatives elsewhere. The high mountain species, as, *Loxia megalaga* and *Brachyospiza capensis antillarum* are highly peculiar in occurrence and seem to represent remnants of an ancient general distribution of these types that have become extinct in adjacent islands being preserved in the upland area of Hispaniola where the elevated lands are of greater extent than elsewhere in the West Indies. The actual range of these mountain forms in Haiti and the Dominican Republic still remains to be accurately determined. The crossbill, *Elaenia*, and *Microligea montana* are found in Haiti on the higher slopes of La Selle. Possibly some other of the peculiar forms

¹⁴ Naturh. Reis. Westlnd. Insel Hayti, 1836, p. 150.

¹⁵ Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520.

known about Constanza in the Dominican Republic may be found on La Selle or in northern Haiti when the mountains of that republic have been more thoroughly explored.

Some peculiarities of distribution are of interest though in some cases without apparent cause. To date there seem to be no records from the Samaná Peninsula for the elsewhere omnipresent ground dove. This peninsula it will be recalled is a mountainous ridge separated from other high ground by a broad area of lowland swamp so that it is in effect an island. If the ground dove occurs in that area it is local and has escaped record by collectors. *Oreopeleia leucometopiis* and *Brachyospiza capensis antillarum* are known only from the high interior of the island in the region extending from near El Río and Constanza to Túbano and the mountains above San Juan. The handsome thrush *Haplocichla swalesi* has been found only on the high ridge of Morne La Selle, and *Phaenicophilus poliocephalus poliocephalus* is known only in the western part of the southwestern peninsula, except for the geographic race *P. p. coryi* of Gonave Island, though its close relative *Phaenicophilus palmarum palmarum* ranges universally through the main island.

As of interest in this discussion of distribution there is summarized in following paragraphs what is known of the birds to be found on some of the small islands adjacent to the coasts of Haiti and the Dominican Republic.

BIRDS OF GONAVE ISLAND

Gonave Island, the largest of the separate islands tributary to the main island of Hispaniola, has much of romantic interest, and has been the object of considerable research since its peculiarities were first made known by Dr. W. L. Abbott. The total list reported from it is now 84 forms which seems fairly complete though numerous others may be expected. Resident birds on Gonave show a decided tendency to variation in the direction of slightly larger size and grayer coloration from those of adjacent Haiti so that there have been recognized 7 geographic races as peculiar to Gonave alone, all of these being allied to Haitian forms. Following is the complete list known for Gonave on present information:

Pelecanus occidentalis occidentalis

Sula leucogastra leucogastra

Fregata magnificens

Ardea herodias adoxa

Hydranassa tricolor ruficollis

Florida caerulea caerulescens

Butorides virescens maculatus

Nyctanassa violacea violacea

Phoenicopterus ruber

- Buteo jamaicensis jamaicensis*
Falco sparverius dominicensis
Aramus pictus elucus
Rallus longirostris vafer
Pagolla wilsonia rufinucha
Oxyechus vociferus rubidus
Totanus flavipes
Totanus melanoleucus
Pisobia minutilla
Ereunetes pusillus
Himantopus mexicanus
Gelochelidon nitotica aranea
Sterna albifrons antillarum
Thalasseus maximus maximus
Columba leucocephala
Columba squamosa
Zenaida zenaida zenaida
Zenaidura macroura macroura
Melopelia asiatica asiatica
Chaemepelia passerina insularis
Oreopeleia montana
Oreopeleia chrysis
Amazona ventralis
Coccyzus americanus americanus
Coccyzus minor teres
Hyetornis rufigularis
*Saurothera longirostris petersi*¹⁶
Crotophaga ani
Speotyto cunicularia troglodytes
Asio stygius noctipetens
Siphonorhis brewsteri
Chordeiles minor vicinus
Nyctibius griseus abbotti
Anthracothorax dominicus
Riccordia swainsonii
Mellisuga minima vielloti
Megaceryle alcyon alcyon
Todus subulatus
Sphyrapicus varius varius
*Nesocittes abbotti*¹⁶
Tyrannus dominicensis dominicensis
Myiarchus dominicensis
*Blacicus hispaniolensis tacitus*¹⁶
Petrochelidon fulva fulva

¹⁶ Peculiar to Gonave Island.

Corvus leucognaphalus
Mimus polyglottos dominicus
Mimocichla ardosiacea ardosiacea
*Dulus dominicus oviado*¹⁶
Vireo olivaceus olivaceus
Lawrencina nana
Coereba bananivora bananivora
Mniotilta varia
Compsothlypis americana pusilla
*Dendroica petechia solaris*¹⁶
 " *tigrina*
 " *caerulescens caerulescens*
 " *dominica dominica*
 " *palmarum palmarum*
 " *discolor*
 " *striata*
Seiurus aurocapillus aurocapillus
 " *motacilla*
 " *noveboracensis noveboracensis*
Geothlypis trichas trichas
 " " *brachidactyla*
Icterus dominicensis
Holoquiscalus niger niger
Tanagra musica
*Calyptophilus frugivorus abbotti*¹⁶
Spindalis multicolor
*Phaenicophilus poliocephalus coryi*¹⁶
Hedymeles ludovicianus
Tiaris olivacea olivacea
 " *bicolor marchi*
Loxia violacea affinis

BIRDS OF TORTUE ISLAND

Tortue Island off the northern coast of Haiti like Gonave has had its bird life first known through the investigations of Doctor Abbott. At present 47 forms of birds have been recorded from its confines, a number that is sure to be considerably augmented. As the channel separating Tortue from Haiti is deep ranging from 270 to 625 fathoms in depth, it might be expected to show as much peculiarity in its birdlife as Gonave but to date only three forms have been recognized as restricted to it. One of these, *Vireo crassirostris tortugae*, has no representative on Hispaniola proper being allied to forms of the Bahama Islands to the north. The occurrence of this

¹⁶ Peculiar to Gonave Island.

bird on Tortue would seem to be fortuitous since there is little reason to suppose a former close union of Tortue with the Bahamas. The honey-creeper and grosbeak (*Loxia*) of Tortue differ from those of the main island, while the lizard-cuckoo is the same. It will be recalled that the latter on Gonave is a distinct race. Numbers of the peculiar types of Hispaniola are not known to range to Tortue. Following is the complete list of birds known from the island:

- Phaëthon lepturus catesbyi*
Falco sparverius dominicensis
Aramanus pictus elucus
Pagolla wilsonia rufinucha
Totanus flavipes
Crocethia alba
Himantopus mexicanus
Columba leucocephala
 " *inornata inornata*
Zenaida zenaida zenaida
Zenaidura macroura macroura
Chaemepelia passerina insularis
Oreopeleia chrysis
Coccyzus minor teres
Saurothera longirostris longirostris
Chordeiles minor vicinus
Chaetura pelagica
Streptoprocne zonaris pallidifrons
Anthracothorax dominicus
Mellisuga minima vielloti
Sphyrapicus varius varius
Tyrannus dominicensis dominicensis
Myiarchus dominicensis
Petrochelidon fulva fulva
Dumetella carolinensis
Mimus polyglottos dominicus
Mimocichla ardosiacea ardosiacea
*Vireo crassirostris tortugae*¹⁷
Vireo olivaceus olivaceus
*Coereba bananivora nectarea*¹⁷
Mniotilta varia
Compsothlypis americana pusilla
Dendroica petechia albicollis
 " *tigrina*
 " *coronata coronata*
 " *caerulescens caerulescens*
 " *palmarum palmarum*

¹⁷ Peculiar to Tortue Island.



EDGE OF PINE FOREST WITH GUAVA BUSHES IN FOREGROUND. HAUNT OF
SONG SPARROW (*BRACHYSPIZA C. ANTILLARUM*)

Near Constanza, Dominican Republic, May 20, 1927.



HEADWATERS OF RÍO JIMENOA

Near El Río, Dominican Republic, May 29, 1927.

Dendroica discolor
Seiurus aurocapillus aurocapillus
 " *noveboracensis notabilis*
Geothlypis trichas brachidactyla
Dolichonyx oryzivorus
Icterus dominicensis
Hologuiscalus niger niger
Tiaris olivacea olivacea
 " *bicolor marchii*
*Loxigilla violacea maurella*¹⁷

BIRDS OF GRANDE CAYEMITE ISLAND

The avifauna of this small island is known only from a brief visit by Dr. W. L. Abbott who recorded there 13 forms of birds, a list that will be greatly extended. The abundance of *Rupornis ridgwayi*, (collected also on Petite Cayemite) is the only matter of especial note. Following is the known list:

Pelecanus occidentalis occidentalis
Hydranassa tricolor ruficollis
Nyctanassa violacea violacea
Rupornis ridgwayi
Pagolla wilsonia rufinucha
Totanus flavipes
Pisobia minutilla
Himantopus mexicanus
Columba leucocephala
Myiarchus dominicensis
Dendroica coronata coronata
 " *palmarum palmarum*
Tiaris olivacea olivacea

BIRDS OF SAONA ISLAND

The bird life of Saona Island also is known through the efforts of Doctor Abbott who collected there briefly at a period when birds were in poor plumage. One form *Phaenicophilus palmarum eurous* is peculiar. The following list of 22 forms known now from Saona will be greatly extended:

Sula leucogastra leucogastra
 " *piscator*
Fregata magnificens
Charadrius melodus
Oxyechus vociferus rubidus
Catoptrophorus semipalmatus semipalmatus

¹⁷ Peculiar to Tortue Island.

Totanus flavipes
 " *melanoleucus*
Pisobia melanotos
Larus atricilla
Sterna hirundo hirundo
 " *dougallii dougallii*
 " *fuscata fuscata*
 " *albifrons antillarum*
Thalasseus maximus maximus
Chlidonias nigra surinamensis
Chaempelia passerina insularis
Coccyzus minor teres
Tyrannus dominicensis dominicensis
Hirundo erythrogaster
Corvus leucognaphalus
Phaenicophilus palmarum eurous

BIRDS OF THE SEVEN BROTHERS ISLANDS

The bird life of this group of seven small islets off the north coast between Cap-Haitien and Monte Cristi is known principally from brief investigations made by A. J. Poole and W. M. Perrygo of the United States National Museum who collected there at the end of January and beginning of February, 1929. They did not succeed in landing on the island of Monte Grande which is well wooded and where conditions for small birds are better than on the other islets of the group. Further observations will add considerably to the list of birds that they obtained especially in the way of more migrants since these islands are in a position to attract wandering or lost individuals. The known list of forms follows:

Ardea herodias adoza
Florida caerulea caerulescens
Pandion haliaëtus carolinensis
Haematopus palliatus prattii
Charadrius melodus
Squatarola squatarola cynosurae
Arenaria interpres morinella
Ereunetes pusillus
 " *mauri*
Crocethia alba
Sterna anaetheta melanoptera
 " *fuscata fuscata*
Thalasseus maximus maximus
Dendroica petechia albicollis
 " *coronata coronata*
 " *discolor*

BIRDS OF NAVASSA ISLAND

Finally there may be listed the few birds known from distant Navassa, an American possession that is included in the present account through its geographic position. Our present knowledge of the life of this island comes principally from the work of R. H. Beck who was there in July, 1917, and Dr. E. L. Ekman who visited Navassa in October, 1928. The list at present contains twenty-one forms, one peculiar to the island and two of doubtful status:

- Sula leucogastra leucogastra*
 " *piscator*
Fregata magnificens
Falco peregrinus anatum
Sterna anaetheta melanopectera
Columba leucocephala
Columba squamosa
Chaemepelia passerina navassae
Coccyzus americanus americanus
Crotophaga ani
 ?*Tyto glaucops*
Megaceryle alcyon alcyon
Tyrannus dominicensis dominicensis
 ?*Petrochelidon fulva fulva*
Vireo olivaceus olivaceus
Mniotilta varia
Dendroica palmarum palmarum
Seiurus aurocapillus aurocapillus
Geothlypis trichas brachidactyla
Setophaga ruticilla

RECOMMENDATIONS REGARDING FURTHER STUDIES

Attempt has been made in the present paper to make the account for each form complete so far as existing information permits but the many gaps in our knowledge of many birds are readily evident on careful perusal. There are needed especially definite observations on the nests, eggs, and nesting habits of numerous forms, and an economic study of the avifauna remains to be undertaken. The range of the high mountain species remains to be worked out in detail, and there is required much information regarding migrants that come to the island with regard to their arrival, departure, and relative abundance. In a word, the present account with its summary of present information may be taken as a starting point for further detailed studies.

Finally, recommendation is made that definite areas in both republics be set aside as national parks and established as sanctuaries

where original conditions may be preserved for coming generations and the continuance of plants, birds, and other animal life assured. In the present stage of development there remain large areas that as yet have not been commercially exploited where the original xerophytic forests, rain-forests, or stands of pine remain in their primitive condition, but every year sees some curtailment of this condition and some new use proposed for these various types of land. Establishment of park areas and forest reserves, for example in the Quita Espuela district, in the high mountain area about Constanza, on the ridge of La Selle, and in the La Hotte region may now be made without particular difficulty. If delayed too long the timber will be largely destroyed and a condition similar to that in Porto Rico where it has been possible to establish only one reserve of any extent, that on El Yunque, while elsewhere original conditions have been largely destroyed, will result. Such park areas, set aside now and guarded from fire and needless cutting, will prove valuable assets for the future.

ACKNOWLEDGMENTS

The present account of the birds of Hispaniola is due primarily to the interest of Dr. W. L. Abbott, whose untiring energy during his prolonged work in the field assembled the bulk of the specimens upon which our work has been based, giving to the United States National Museum what is unquestionably the finest and most complete collection of the birds of this area extant. In addition to specimens Doctor Abbott has furnished numerous manuscript notes and much oral information on the frequent occasions on which he has been consulted, either in the museum or during visits to his home in Maryland. His assistance has given the greatest addition to knowledge of the avifauna of this region that has come in the present century, and has continued beyond his personal efforts in that he has financed further work on the part of others. The United States National Museum stands deeply indebted to him for his long and continued interest.

In work in the field in 1927 Doctor Wetmore was most hospitably received in both Haiti and the Dominican Republic, and has to acknowledge many courtesies. Through the State Department necessary information and other courtesies were obtained. Col. D. C. McDougal, of the United States Marine Corps, gave much information regarding the island as well as letters that aided most materially in establishing contacts in Haiti. In Port-au-Prince Doctor Wetmore was received with every attention by Gen. John H. Russell, American High Commissioner, and was assisted further by Gen. Julius Turrill, at that time Chief of the Gendarmerie d'Haiti, and

other officers of the Gendarmerie. Thanks are due to the air service of the Marine Corps for transportation to and from Cap-Haïtien by plane, a courtesy that enabled a view of the northern part of the republic not otherwise possible in the time at hand.

Dr. George F. Freeman, Directeur Général of the Service Technique du Departement de l'Agriculture, was deeply interested in the work and afforded every facility to further it, and with Mrs. Freeman extended the hospitality of his home in Port-au-Prince, besides assisting most materially in work throughout the country. To Dr. and Mrs. C. H. Arndt, and Mr. and Mrs. J. E. Boog-Scott thanks are due for hospitable entertainment at Fonds-des-Nègres and Hinche, respectively, while to Dr. William R. Barbour thanks must be returned for the arrangements that permitted work in the north at Poste Charbert. Dr. G. N. Wolcott thoughtfully arranged several local excursions about Port-au-Prince, and other assistance came from Dr. Carl Colvin, Dr. A. E. Vinson, and Mr. M. J. Perry of the Service Technique. Dr. E. L. Ekman, the botanist, was a pleasant companion during an excursion to La Selle, his knowledge of the country and of the people rendering comparatively simple a task otherwise somewhat difficult.

In Santo Domingo City Mr. Evan E. Young, American Minister, was most helpful in giving advice, and in arranging for permits necessary before field work could be begun. These were granted most expeditiously and considerately by Señor Luis Ginebra, at that time Secretario de Estado del Interior, Policía, Guerra y Marina. Earlier assistance in these matters had been courteously rendered by Señor Angel Morales, Minister from the Dominican Republic in Washington, and by Lic. Ramón O. Lovatón, Minister from the Dominican Republic in Port-au-Prince. At La Vega valuable assistance was obtained through the governor of the province, Senor Teófilo Cordero y Bido in arrangements for a trip to Constanza. Finally thanks must be returned to many persons who rendered hospitality during travel in regions not too plentifully supplied with hotel and other accommodations without whose friendly aid the journey would have been difficult or impossible.

In work on collections during the preparation of this report specimens have been examined in the Field Museum in Chicago, the Museum of Comparative Zoölogy in Cambridge, and the American Museum of Natural History in New York City, and necessary material has been received in loan from these institutions, as well as from Mr. J. H. Fleming of Toronto, who further supplied a list of specimens from the Dominican Republic collection secured from the field work of Verrill. Dr. Frank M. Chapman permitted examination of material in the Beck collections, and Dr. Robert Cushman

Murphy allowed access to Beck's manuscript journal for information regarding collecting localities. Dr. C. E. Hellmayr has been most helpful in furnishing information regarding specimens in the Cory collection in the Field Museum, and Mr. J. L. Peters has given valuable assistance and data, especially useful from his personal experience in the field in the Dominican Republic. Dr. Ernst Hartert has kindly furnished data on many specimens in the Tring Museum, Dr. Einar Lönnberg has given information regarding skins received from Doctor Ekman and Dr. E. Moltoni has supplied certain data from specimens in his charge. Finally thanks are due Dr. Charles W. Richmond, Associate Curator in the Division of Birds in the United States National Museum, particularly for advice in certain questions of nomenclature.

METHOD OF TREATMENT

With each of the forms treated in the annotated list that follows, there is given the current scientific name, with the authority, followed by the usual English name and the names current locally in Hispaniola in Spanish, French, and Creole where these are known. The first reference to literature that follows, is, in all cases, that to the publication where the form was first described under the accepted scientific name, and includes in parentheses the type locality. There follows a brief synonymy, that includes synonyms where an endemic bird has been redescribed, and that gives the more important pertinent references to the scientific names or common names under which the form has been recorded from Hispaniola. In parentheses there is included a brief statement as to occurrence or other points of interest in the reference concerned. By consulting this synonymy it will be possible to coordinate names used in the writings of older authors with modern usage where there has been change. There has been no attempt to make the synonymy exhaustive or complete as it is considered that this would be useless labor, but there have been included all references of interest or value, so far as they have come to attention.

The first paragraph in the general account under each form gives briefly a statement of the occurrence and range so far as concerns Hispaniola. This is followed by discussion in detail of the various records available with what is known of the habits, song, characteristics, and other matters of interest. A final paragraph presents in brief form a statement regarding size and color that will be of assistance in identifying the various birds of the island. It is believed that this last will be useful information since there is no compact handbook available that covers the birds of the region. The student will find the Handbook of the Birds of Eastern North

America, by Dr. Frank M. Chapman (published by D. Appleton and Company, New York City), a useful work of reference; though this does not treat the forms peculiar to the West Indies, it includes the many migrants that come to Hispaniola from North America, as well as many of the water-birds which have extended ranges that carry them to the shores of the mainland as well as through the Greater Antilles.

The island covered in this account is known variously as Haiti or as Santo Domingo (sometimes written San Domingo), current terms that may cause some confusion where attempt is made to make statement regarding the eastern or western sections since the land is occupied politically by two separate countries, the Dominican Republic in the east and the Republic of Haiti in the west. Difficulty at once arises when either Haiti or Santo Domingo is used when reference is made to the entire island to express the intended thought clearly, this being further complicated in references from the older French works on natural history in which the present area occupied by the Republic of Haiti, formerly a French colony, is termed Saint-Domingue. To avoid any ambiguity of meaning in the present account the name Hispaniola, used for the island by the early Spanish writers, has been adopted for reference when the entire area is intended, while where Haiti or the Dominican Republic is mentioned reference is made to the territory occupied now by these two republics. This course has been followed as the simplest method to permit clear, concise statement.

Order COLYMBIFORMES

Family COLYMBIDAE

COLYMBUS DOMINICUS DOMINICUS Linnaeus

WEST INDIAN GREBE, ZARAMAGULLON, ZAMBULLIDOR, TIGUA, PLONGEON, CASTAGNEUX DE SAINT-DOMINGUE, PETIT PLONGEON

Colymbus dominicus LINNAEUS, Syst. Nat., vol. 1, 1766, p. 223 (Hispaniola).

Colymbus fluviatilis Dominicensis BRISSON, Ornith., vol. 6, 1760, pp. 64-67, pl. 5, fig. 2 (sent to de Reaumur by Chervain).

Castagneux de Saint-Domingue, BUFFON, Hist. Nat. Ois., vol. 8, 1781, p. 248 ("Saint-Domingue").—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 265 (taken once).

Podiceps dominicus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 237 (Higuëy).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Haiti).—CORY, Birds Haiti and San Domingo, March, 1885, pp. 185-186 (listed after Bryant).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).—LÖNNBERG, Fauna och Flora, 1929, p. 100 (Haiti, specimen).

Podiceps dominicus, CHRISTY, Ibis, 1897, p. 343 (Yuna swamps).

Colymbus dominicus, RITZER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).

Colymbus dominicus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).—CORY, Cat. West Indian Birds, 1892, p. 81 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (Yavon River, San Lorenzo; "Yaqui" River, Miranda; rare).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 217 (Étang Miragoane).

Colymbus dominicus dominicus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 396 (Cabrera, specimen; El Batey).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Étang Miragoane, Port-de-Paix).

Resident; fairly common, in fresh-water marshes, lagoons and sluggish streams.

The West Indian grebe is so shy that it is observed with difficulty, so that it is probable that it is more common than the few records available indicate. It inhabits fresh waters where there is abundant aquatic growth to afford it shelter. When alarmed it escapes by submerging slowly or by a rapid dive, after which it may rise to the surface at a distance or may come up within the rushes so that it is not again seen. Its mysterious disappearances are proverbial among hunters and others who invade its haunts.

Brisson's account on which the Linnaean name now recognized for this bird was based, states that this grebe was sent from "S. Domingue" by Chervain for the collection of M. de Reaumur. In spite of this early reference to the species there are few other definite records for Hispaniola. Sallé mentions it from a marsh on the plains near Higuëy. Cory did not find it. Christy says: "In July, while shooting in the Yuna swamp, I several times obtained a good view of this grebe. It was very shy, and always dived or swam into the rushes on the first appearance of the boat." Verrill records it from the Río Yavón near San Lorenzo, and near Miranda. For the latter locality he reports it from the "Yaqui River," apparently an error for the Río Yuna which passes near Miranda, as the Yaqui del Norte is far distant. Peters shot a male March 11, 1916 at Cabrera, where he found "two or three others of the same species in a small, muddy pool less than forty yards across." He saw three more in a lagoon at El Batey April 5. On May 13, 1927, at an altitude of 1,500 feet above the sea in the hills between Sánchez and Las Terrenas, as Wetmore looked out from a commanding knoll across the little lake known as the Laguna de Rancho Fabián, one of these grebes suddenly appeared on the surface, followed a few seconds later by another. Since this lake is small and is entirely surrounded by heavy forest it seemed a most unlikely place for the species. Turtles were seen in the same water. He did not meet the bird elsewhere.

In the Republic of Haiti the species is known from several points including two specimens, both immature females, taken by Dr. W. L. Abbott at Port-de-Paix on April 4 and 14, 1917, and from the account of Bond who reports it from Étang Miragoane and Port-de-Paix.

In Abbott's specimens the iris is noted as yellow, or brownish yellow.

Descourtilz informs us that the breast feathers are used to make a valuable ornament but considered the bird rather rare as he took it only once. Bartsch saw it on the Étang Saumâtre near Gloré on April 3, 1917, and on Trou Caïman, April 4. Beebe, on March 2, 1927, reports six on the Étang Miragoane.

The birds should be found in the fresh-water lagoons through the coastal plain. It is probable that the Chervain record given above refers to what is now the Republic of Haiti, since the French in the main occupied the western part of the island.

In color this grebe is grayish brown above, grayer on the head; throat dull black; foreneck brownish; underparts white; feet broadly lobed, projecting far back on the body; tail apparently absent; length 225 to 275 mm., wing 75 to 85 mm. In the immature bird the throat is whitish. This species is distinguished from the Antillean grebe, the only other species of its family in this region, by slender bill and by smaller size.

PODILYMBUS PODICEPS ANTILLARUM Bangs

ANTILLEAN GREBE, ZUMBULLIDOR, ZARAMAGULLON, PLONGEON, GRAND PLONGEON

Podilymbus podiceps antillarum BANGS, Proc. New England Zool. Club, vol. 4, March 31, 1913, p. 89 (Bueycito, Province of Oriente, Cuba).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 396 (Laguna Flaca near Cabrera).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Étang Miragoane, Artibonite River).—DANFORTH, Auk, 1929, p. 359 (Laguna del Salodillo, Santo Domingo City, Haina, Artibonite River).—LÖNNBERG, Fauna och Flora, 1929, p. 100 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 307 (Río Haina).

Grebe, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 217 (Étang Miragoane).

Plongeon, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 264 (Rivière Estère).

Podiceps dominicensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (specimen).

Podilymbus podiceps, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, March, 1896, p. 26 (Ozama River, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (Río Camú, near La Vega, rare).—BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1927, p. 132 (Haiti).

Resident; common in lagoons and sluggish streams where there is proper cover.

The Antillean grebe, the West Indian form of the pied-billed grebe frequents ponds, lakes, and sluggish streams where there is cover of rushes to which it may retreat when danger threatens. It feeds frequently in open waters, securing its prey of small fishes, crustaceans and aquatic insects by diving. It seldom uses its shortened wings but depends upon submerging to avoid its enemies, an art

in which it is so expert that it frequently escapes the aim of the hunter by disappearing so rapidly at the discharge of a gun that it is safely below the surface before the shot from the shell can reach it. In the breeding season the males utter a loud, rolling, sonorous call that carries over the water for long distances.

The Antillean grebe is distinguished from the form of pied-billed grebe found in the United States by faintly darker color and slightly smaller size. In 8 males from Hispaniola the wing ranges from 120.1 to 124.5 mm., and in 3 females from 113.0 to 114.4 mm. The North American bird, in which the wing in males ranges from 128.1 to 133.7 mm. and in females from 116.0 to 126.5 mm., may occur as a winter migrant as it passes south at that season into Cuba. Three skins of *antillarum* taken at Fort Liberté, February 14 and 15 by Poole and Perrygo which have the streakings of the young plumage on the sides of the head and neck, though in bodily size fully grown, differ conspicuously from skins of *P. p. podiceps* in the same stage of development in much darker coloration above and on the sides. The difference, in fact, is so striking that it demonstrates effectively the distinctness of the two races.

Cherrie secured one of these grebes on the Ozama River near Santo Domingo City, April 26, 1895. Verrill considered it rare along the Río Camú in the vicinity of La Vega. Peters found two on Laguna Flaca, several miles south of Cabrera, on March 10, 1916. Abbott shot a male on Laguna del Diablo, near Rojo Cabo on the Samaná Peninsula on March 8, 1919, and reports it as breeding at that point. Danforth found it in 1927 at Los Tres Ojos de Agua, near Santo Domingo City, near Haina, and at Laguna del Salodillo near Copey. Moltoni lists a specimen from the Río Haina, August 14, 1929.

This grebe may be more numerous in Haiti than in the adjacent republic, since more specimens have thus far come from that part of the island. In the river near Jérémie Dr. W. L. Abbott found the Antillean grebe common and collected adult male and female and an immature female on February 8, 1918. Dr. Paul Bartsch secured an adult pair at Trou des Roseaux on April 13, 1917, and an adult male at Trou Caïman on April 4 of the same year. Abbott secured specimens from the Étang Saumâtre on March 5 and 6, 1918, and April 8, 1920. Another is marked as taken near Fond Parisien on the same lake May 7, 1920. He reports the species as fairly common on this body of water. A female taken March 6, 1918 was evidently breeding as it contained nearly mature eggs. Wetmore recorded a mated pair on the Étang Miragoane April 1, 1927, and heard several other birds calling. A grebe seen by Beebe on this same lake March 2, 1927 is believed to be this same form. There is a skin in the Museum of Comparative Zoölogy taken August 14,

1919 at Lake Enriquillo by G. M. Allen. Descourtilz found these birds rather common on the Rivière Estère, where he shot them for his negro companions to eat. He relates an incident where he had killed one and a boy was swimming out to retrieve it when the bird was seized and drawn down by a large caiman. Danforth records young one-third grown July 28 and 29 on the Artibonite beyond St. Marc. Bond says that he found these birds common on the lakes and rivers of Haiti, stating specifically that he saw them at the Étang Miragoane, and on the Artibonite River. As has been previously mentioned Poole and Perrygo shot three immature birds molting into first fall plumage at Fort Liberté February 14 and 15, 1929.

The adult bird above is blackish brown; below silvery white, washed with brownish on the chest, and more or less mottled with blackish on sides and under surface; throat black; bill strong and heavy, with a blackish band across the center; feet strongly lobed, projecting far back on the body; length about 340 mm., wing 113 to 124 mm. The immature bird is whiter below and has the throat white. The species is distinguished from the West Indian grebe by larger size and thick heavy bill.

Order PROCELLARIIFORMES

Family PROCELLARIIDAE

PUFFINUS LHERMINIERI LHERMINIERI Lesson

AUDUBON'S SHEARWATER

Puffinus lherminieri LESSON, Rev. Zool., vol. 2, 1839, p. 102 ("Ad ripas Antillarum").

Procellaria obscura, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98 (between Haiti and Navassa).

Puffinus obscurus, CORY, Birds Haiti and San Domingo, March, 1885, p. 184 (at sea, twenty miles north of Tortue Island).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Puffinus auduboni, CORY, Cat. West Indian Birds, 1892, p. 83 (Haiti and San Domingo).

Puffinus lherminieri lherminieri, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (near Inagua Island).—DANFORTH, Auk, 1929, p. 360 (north of Puerto Plata).

The exact status of Audubon's shearwater on the coasts of Hispaniola is at present uncertain. Bryant refers to it under the name *Procellaria obscura*, remarking that "the last eight birds were seen by myself off the coast, at a short distance from land, between St. Domingo and the island of Navassa." Cory says that numbers were seen at sea about twenty miles north of Tortue Island. On June 30, 1927, Emlen found it common fifty miles north of Puerto Plata.

Bond saw it near Inagua Island to the northward. These are the only pertinent records. For the statement of Godman¹⁸ that it breeds on "San Domingo" we find no basis; we assume that Bent¹⁹ followed Godman when he also included "Santo Domingo" in the breeding range of this species.

Audubon's shearwater nests in the Bahamas and may be expected to occur regularly off the northern coasts of both republics, mainly well out at sea. It is possible that careful exploration in the group of islands known to the Haitians as Les Sept Frères and to the Dominicans as Los Siete Hermanos, may reveal the species as a nesting bird.

This shearwater is sooty black above and white below with tubular nostrils and sharply hooked bill. It measures about 325 mm. in length, with the wing from 195 to 203 mm. long. The flight is smooth and graceful, performed often by sailing with stiffly spread wings. On land the bird is not able to stand erect.

PTERODROMA HASITATA (Kuhl)

BLACK-CAPPED PETREL

Procellaria hasitata KUHLE, Beitr. Zool. Vergl. Anat., 1820, p. 142 ("Mers de l'Inde").

Diablotin, BUFFON, Hist. Nat. Ois., vol. 9, 1783, p. 335 ("Saint-Domingue").

Æstrelata hasitata, COBY, Cat. West Indian Birds, 1892, p. 84 (Haiti).—SALVIN, Cat. Birds Brit. Mus., vol. 25, 1896, p. 403 (Haiti, specimen).—GODMAN, Mon. Petrels, pt. 3, 1908, p. 186, pl. 49 (specimen from Haiti figured).

Pterodroma hasitata, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, pp. 307-308 (Moca, specimen).

Early record for the black-capped petrel for this area is based upon the skin of an adult in the British Museum received from J. Hearne and marked as from Haiti. It may be noted that at a meeting of the Zoological Society of London on July 14, 1835 John Gould exhibited "a collection of skins of Birds, formed in Haiti by J. Hearne, Esq.," that contained sixteen species.²⁰ The petrel is not, however, specifically mentioned. Godman gives a colored plate taken from the British Museum specimen, and says regarding it "it was originally presented to the Zoological Society by Mr. J. Hearne, and is believed to have come from Hayti." In addition to this Buffon has quoted a statement from Labat which attributes the diablotin to "Saint-Domingue." There may be mentioned also an excellent water color drawing of this species in a portfolio of paintings by M. de Rabié, which we have examined through the courtesy of Messrs. Wheldon and Wesley, in which a specimen is

¹⁸ Monograph Petrels, Part 2, March, 1908, p. 130.

¹⁹ U. S. Nat. Mus. Bull. 121, 1922, p. 76.

²⁰ Proc. Zool. Soc. London, 1835, p. 105.

depicted in lifelike attitude resting on its breast on land at the edge of a body of water. This plate (No. 42) is labelled *Le Diablotin* and is indicated as made "au Cap le 26 8bre 1778. Rabié." The attitude of the bird suggests strongly that the artist saw it alive. Dr. C. W. Richmond notes that on April 20 or 21, 1900 while travelling by steamer along the north coast of the Dominican Republic he distinctly saw three of these birds flying in toward the land. More recently Moltoni reports a specimen collected at Moca, May 15, 1928, where the bird is to be considered a stray as this is an inland locality.

This petrel nested formerly on Guadeloupe and Dominica in the Lesser Antilles in abundance but has not been found on its breeding grounds in recent years. Both J. T. Nichols and Wetmore have observed it in the past fifteen years at sea off the West Indian Islands.

The black-capped petrel is dark brownish black above with white under parts and upper tail coverts and a white band across the hind-neck. It is about 370 mm. long, with the wing about 290 mm. The nostrils are tubular as in all birds of its group.

Family HYDROBATIDAE

OCEANODROMA LEUCORHOA LEUCORHOA (Vieillot)

LEACH'S PETREL

Procellaria leucorhoa VIEILLOT, Nouv. Dict. Hist. Nat., vol. 25, 1817, p. 422 (maritime parts of Picardy, France).

Dominican Republic, casual.

On May 11, 1927, Wetmore shot a male Leach's petrel on Samaná Bay midway between Sánchez and San Lorenzo Bay. The bird was alone and was flying low over the water. No one who examined it in Sánchez had ever seen one previously, and this individual must be considered merely a stray that had wandered in from the ocean. On Atlantic coasts the species nests from Maine north to Greenland and in winter passes south to the Equator or casually farther. It is seldom seen near land except on its breeding grounds.

This petrel is slaty brown in color throughout, blacker on wings and tail, with a brownish band along the wing coverts, and white upper tail-coverts. It is about 185 mm. long with the wing from 148 to 163 mm. long. The nostrils are enclosed in a tube.

OCEANITES OCEANICUS OCEANICUS (Kuhl)

WILSON'S PETREL

Procellaria oceanica KÜHL, Beiträge Zool., 1820, p. 136, pl. 10, fig. 1 (southern Atlantic Ocean, off the mouth of the Río de la Plata).²¹

Oceanites oceanicus, DANFORTH, Auk, 1929, p. 359 (Dominican Republic).

²¹ Designated by Mathews, *Birds Austr.*, vol. 2, May 30, 1912, p. 13.

Reported off the coast of the Dominican Republic; abundance uncertain.

Danforth writes that "three followed the S. S. *Catherine* for about an hour off the southeast coast of the Dominican Republic on June 14." There is no other record.

Wilson's petrel, like Leach's petrel, is black with white on the upper tail-coverts, but is a little smaller, and is distinguished by the longer tarsi, the feet in flight projecting beyond the end of the tail so that they are easily seen.

Order PELECANIFORMES

Suborder PHAËTHONTES

Family PHAËTHONTIDAE

PHAËTHON LEPTURUS CATESBYI Brandt

YELLOW-BILLED TROPIC-BIRD, RABIJUNCO, PAILLE-EN-QUEUE

Phaëthon catesbyi BRANDT, Bull. Soc. Imp. Sci. St. Pétersbourg, vol. 4, 1838, p. 98 (Bermuda).

Phaëton catesbyi BARTSCH, Smiths. Misc. Coll., vol. 68, no. 10, 1917, fig. 43 (photo taken near Jérémie).

Phaëton flavirostris, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98 (listed from Haiti).

Phaëthon flavirostris, CORY, Birds Haiti and San Domingo, March, 1885, pp. 175-176 (listed); Cat. West Indian Birds, 1892, p. 84 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 26 (Santo Domingo City, specimens).

Phaëthon americanus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 137; Beneath Tropic Seas, 1928, p. 218 (at sea ten miles off Môle St. Nicolas; Bizoton).

Phaëthon lepturus catesbyi, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Tortue Island).

Phaëthon lepturus catesbyi, DANFORTH, Auk, 1929, p. 300 (Puerto Plata).

Resident; locally along rocky coasts.

Cherrie found the yellow-billed tropic-bird along the coasts of the Dominican Republic and reports two young and an adult female brought to him at Santo Domingo City on April 19, 1895. Danforth says that Emlen saw three at Puerto Plata, June 30, 1927.

The tropic-bird is mentioned by Bryant without comment as reported from Haiti. Bartsch found a nesting colony of about fifty birds near Jérémie April 10 to 16, 1917, and saw others at Trou des Roseaux April 14. Doctor Abbott secured a nestling nearly ready to fly at Jean Rabel Anchorage, May 30, 1917, and collected an adult male on Tortue Island, April 8, 1917. He says that tropic-birds breed in the latter locality. Beebe speaks of two seen off Môle St.

Nicolas and of one noted at Bizoton. Bond recorded them on the rugged north coast of Tortue Island, March 23, 1928, and believed that they were nesting there.

The tropic-bird is found usually near rocky headlands or along sea-cliffs, but may occur casually anywhere along salt water. It is sometimes seen far at sea.

The tropic-bird is white, the feathers of breast and back usually with a faint blush of pink, with black about the eye and on the wing. The strong bill is yellow or orange yellow. The young have the back rather finely barred with blackish. The bird is 480 to 600 mm. or more long, the two long slender median tail feathers projecting far beyond the others composing one half or more of this length. In general form it suggests a gull but is easily distinguished by the form of the tail.

Suborder PELECANI

Superfamily PELECANIDES

Family PELECANIDAE

PELECANUS OCCIDENTALIS OCCIDENTALIS Linnaeus²²

BROWN PELICAN, ALCATRAZ, PELICAN, GRAND-GOSIER, BLAGUE-À-DIABLE

Pelecanus onocrotalus β *occidentalis* LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 215 (West Indies).

Alcatraz, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 6, (Reprint) Madrid, 1851, pp. 444-445 (Santo Domingo City; description, habits).

Grand-Gosier, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, pp. 40-41 (description; mention of white pelican).

Pélecan, BUFFON, Hist. Nat. Ois., vol. 8, 1781, p. 294 ("Saint-Domingue").—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 241-243 (uses for pouch).

Pelikan, HARTERT, Nov. Zool., vol. 9, 1902, p. 293 (Sánchez).

Pelecanus onocrotalus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 157 (listed).

Pelecanus fuscus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (abundant); Birds Haiti and San Domingo, March, 1885, p. 172 (Port-au-Prince, St. Marc; common); Cat. West Indian Birds, 1892, p. 85 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317-318 (listed).—CHERRIE, Field Col.

²² Charlevoix (Hist. Isle Espagnole, vol. 1, 1733, pp. 40-41) described the pelican rather fully remarking "au bord de la mer, où sa couleur est toujours, d'un cendre obscur, & de long des rivières, où il est, au moins en quelques endroits, d'un très-beau blanc." The last phrase seems to indicate the occurrence of the white pelican (*Pelecanus erythrorhynchos*) in early times, a species larger than the brown pelican and colored white. His observation is especially apt since he says that the white form occurs on rivers as the white pelican frequents fresh waters. However, no other report of the species is known so that this record, alone from the fact that it is made rather casually, is not considered sufficient to give the species full standing in the insular list, particularly since it is possible that Charlevoix may have confused the pelican with some other large white bird.

Mus., Ornith. ser., vol. 1, 1896, p. 26 (Samaná Bay).—CHRISTY, Ibis, 1897, p. 342 (Samaná Bay, common; nesting on Pelican Cays).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (abundant).

Pelecanus occidentalis, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 396 (Estero Balsa, Manzanillo Bay; Margante).—CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Pelecanus o. occidentalis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, pp. 27, 29, 138, 218 (Sand Cay and Lamentin Reef, near Port-au-Prince).

Pelecanus occidentalis occidentalis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Jacmel, Gonave Channel, Port-de-Paix, Gonave Island).—DANFORTH, Auk, 1929, p. 360 (Boca Chica, San Pedro de Macoris, St. Marc, Les Salines, Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 308 (Haina, specimen).

Resident, found along coasts in fair numbers.

The brown pelican is found along the coasts, and is widely distributed, being most abundant where fish abound in shallow bays. In spite of its ungainly form the brown pelican dives gracefully and swiftly from thirty feet or more in the air, and secures its food of fish in the scoop formed by the capacious pouch dependant from the lower mandibles. The fish captured are swallowed and are not held in the pouch as many suppose.

Oviedo gives a description of the brown pelican and its method of feeding, and says that it was seen daily about Santo Domingo City. The size and capacity of the pouch were to him matters of much wonder.

The only breeding resorts definitely known at this time in the Dominican Republic are on the Pelican Keys (called also *Islas de los Pájaros*) at the entrance to San Lorenzo Bay, and on Catalinita Island. (Pl. 13.) Christy describes the colony first mentioned as large but did not visit it personally. On May 11, 1927 Wetmore recorded only half a dozen nearly grown young in this rookery, but nesting was nearly over for the year as he found numbers of young on the wing on Samaná Bay, near the mouths of the Barrancota and Yuna Rivers, and along the beach east of Sánchez. The nests observed were built in the tops of low trees on the rocky slopes of the islets. Apparently the birds were more abundant in earlier years as Christy mentions a gathering of 600 at the head of Samaná Bay after an easterly gale. Abbott secured a number of bones of the pelican in caves formerly inhabited by Indians, one fourth mile from the sea at San Lorenzo Bay. Peters saw a few pelicans at Estero Balsa on Manzanillo Bay February 10, and one at Margante March 13. Cherrie found them only in Samaná Bay. September 10 to 12, 1919, Abbott reported about one hundred nests, about half containing young, on the northern end of Catalinita Island. There

is a specimen (male) in the collection of J. H. Fleming taken February 16, 1907 by Verrill on Cayo Levantado opposite Samaná. Danforth found the pelican in 1927 at Boca Chica and San Pedro de Macoris on the south coast, and Ciferri collected one at Haina, July 6, 1926.

The species is fairly common along the coast of Haiti. Buffon in 1781 reported it on the authority of Deshayes, this being the earliest record for the republic. The bird occurs regularly but in small numbers in the vicinity of Port-au-Prince. Beebe, reports six seen regularly at Sand Cay and from ten to seventeen at Lamentin Reef during the late winter and early spring of 1927. He observed them feeding on *Jenkinsia* and *Atherina*, and says that twice he saw a diving pelican collide with a yellow-tail, both fish and bird being in pursuit of the same prey. Bartsch recorded pelicans daily in April, 1917 in excursions about Jérémie, and also noted them at Trou des Roseaux April 13 and 14, and near Miragoane and Petit Goave April 9. Cory found the species at St. Marc, and Wetmore saw it in the vicinity of Gonaïves April 28, 1927. Abbott secured skins of a young bird fully grown, and an adult male in breeding dress on Grande Cayemite Island, January 7 and 8, 1918. Another male was prepared as a skeleton. He took an adult female in much worn and faded plumage, on Gonave Island, February 26, 1918, and reports the bird common there at that time. Danforth saw them at St. Marc, Les Salines, and on Gonave Island in the summer of 1927. Bond found them at Port-de-Paix, Jacmel, and in the Gonave channel, and was told of a breeding colony near the eastern end of Gonave Island. There may be another colony somewhere along the north shore of the southern peninsula. Poole and Perrygo recorded a pelican at Anse à Galets, Gonave Island, February 28, 1929. Abbott was told by an American resident in St. Marc that thirty years ago pelicans had been far more plentiful but that large numbers had been slaughtered for their feathers and that since the species had not regained its earlier abundance. Descourtiz writes that in his day the pouch of the pelican was put to various uses, as a pouch to carry shot or tobacco, as a water proof shoe which guarded the wearer against arthritis, or as a cape for children, which was supposed to ward off certain ills.

The brown pelican is one of the largest sea birds on the island and is marked from all others by the long bill, 260 to nearly 300 mm. in length, with a pouch bare of feathers suspended beneath. Adults in breeding plumage have the back of the neck deep chestnut while at other times this area is white. Young have the head and neck grayish brown.

Superfamily SULIDES

Family SULIDAE

SULA LEUCOGASTRA LEUCOGASTRA (Boddaert)

BROWN BOOBY, BOBY, PÁJARO BOBO, FOU

Pelecanus leucogaster BODDAERT, Table Planch. Enl., 1783, p. 57 (Cayenne).

? FOU, OEXMELIN, Hist. Avent. Flibustiers, vol. 1, 1775, pp. 356-357 (recorded; species not indicated).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 243-244 (two shot; species not indicated).

Sula fusca, SALLÉ, Proc. Zool. Soc. London, 1857, p. 237 (recorded, eastern coast Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (listed, Dominican Republic).

Sula sula, CORY, Cat. West Indian Birds, 1892, p. 84 (Haiti, Dominican Republic).

Sula leucogastra, CORY, Birds Haiti and San Domingo, March, 1885, p. 171 (listed after Bryant).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—CIFERRI, Segund. Inf. An. Est. Agr. Moca, 1927, p. 6 (listed).—LÖNNBERG, Fauna och Flora, 1929, p. 99 (Navassa, specimen).—EKMAN, Ark. för Bot., vol. 22A, No. 16, p. 6 (Navassa, breeding).

Sula leucogastra leucogastra, DANFORTH, Auk, 1929, p. 360 (Saona Island; Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 308 (Beata).

Recorded on the eastern and southern coasts of the Dominican Republic; found on Navassa Island; of irregular occurrence in Haiti.

Sallé remarks that this booby is found along the sea in desert regions which would indicate that he saw it somewhere along the arid eastern coast of the Dominican Republic. Abbott (September 12 to 18, 1919) saw several near Saona Island but did not take specimens. He reports a booby of some kind on a mid-channel buoy near Sánchez (March, 1919) but did not identify it. Danforth saw a few off Saona Island June 14, 1927. Ciferri obtained one alive on Beata Island in May, 1926. The brown booby breeds in numbers on Mona and Desecheo Islands in Mona Passage between Hispaniola and Porto Rico, so that it should occur regularly near the adjacent Dominican coast in its excursions for food. Nesting colonies are found also among the Bahamas so that it should come at times to the northern shores of both republics. This booby fishes at sea so that it is not seen frequently except from vessels, or near its colonies. It obtains its food by diving from the air.

Oexmelin records a booby from Tortue Island, and Descourtilz reports that he shot two, but in neither case is there definite indication of the species. Cory reports the brown booby from Haiti but without known basis so that his record is doubtful. Danforth writes that F. P. Mathews saw three at Boucan Legume, Gonave Island, July 18, 1927. Ekman secured a specimen on Navassa Island, according to Doctor Lönnberg, and found them breeding there.

The adult brown booby has the entire upper surface, the neck and upper breast dark brown, and the remainder of the lower surface white. Immature birds are entirely grayish brown, paler below, with the primaries blackish. In the first year it is similar to the red-footed booby of similar age but does not have the red feet of that species and is slightly larger. The brown booby is approximately 760 mm. in length and has a strong, heavy bill.

SULA PISCATOR (Linnaeus)

RED-FOOTED BOOBY, PÁJARO BOBO, FOU

Pelecanus piscator LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 134 (Java Seas).

Sula piscator, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 519 (listed).—DANFORTH, Auk, 1929, p. 360 (Saona Island).—LÖNNBERG, Fauna och Flora, 1929, p. 100 (Navassa, specimens).—EKMAN, Ark. för Bot., vol. 22A, No. 16, p. 6 (Navassa, breeding).

Recorded from Navassa Island, and off the Haitian coast opposite; probably breeding on Navassa.

Mr. W. B. Alexander informs me that on March 8, 1926, as he passed Navassa Island small parties of red-footed boobies flying over the sea were frequent, and were in view regularly until evening when the high mountains of Haiti were dimly visible through the haze. Toward evening the birds were evidently heading toward Navassa Island to spend the night. Dr. E. L. Ekman secured two on Navassa that he forwarded to Lönnberg, and writes that the birds were nesting there in numbers.

There is a breeding colony on Desecheo Island in Mona Passage so that these birds may be expected at times to range off the eastern coast of the Dominican Republic with the brown booby. Danforth records one seen by F. P. Mathews near Saona Island, June 14, 1927.

The red-footed booby has habits similar to those of the related species and likewise secures its food by diving from the air.

The adult of this species is marked by pure white plumage except for the black primaries and black tips on the greater wing coverts and secondaries. The immature bird is sooty gray, paler on the head and lower surface, with a very faintly indicated darker band across the breast, and whitish tips on the tail. In a later stage the undersurface may be nearly white with faint indication of the dark pectoral band and the dorsal surface paler gray. Occasional individuals that appear fully adult have the posterior part of the body, including the tail pure white, and the rest of the plumage gray. The immature stage is distinguished from the brown booby only by slightly smaller size and red feet and tarsi. In this dress the two can rarely be separated unless in the hand except by one familiar with them.

[*SULA DACTYLATRA DACTYLATRA* Lesson

BLUE-FACED BOOBY

Sula dactylatra LESSON, *Traité d'Orn.*, 1831, p. 601 (Ascension Island).

Sula dactylatra?, BRYANT, *Proc. Boston Soc. Nat. Hist.*, vol. 11, May, 1867, p. 97 (Haiti, listed).

Sula cyanops, CORY, *Birds Haiti and San Domingo*, March, 1885, pp. 170-171 (listed); *Cat. West Indian Birds*, 1892, p. 84 (Haiti, Dominican Republic).—TIPPENHAUER, *Die Insel Haiti*, 1892, p. 323 (listed).

The blue-faced booby was reported with a query from Haiti by Bryant, merely as a name without comment of any kind. The record is considered very doubtful and seems to be the basis for other reports of this species from this area. The note may refer perhaps to the red-footed species.

The blue-faced booby nested formerly in the Bahamas, but is not known elsewhere nearby, the nearest modern breeding colonies known to us being Alacran reefs on the coast of Yucatan, and Los Hermanos Islands, Venezuela. The adult is white like the red-footed booby but has the tail feathers, except the middle pair, sooty brown. The young is dark grayish brown above with whitish streaks on back and rump, and white below with grayish streaks on the flanks.]

[Family PHALACROCORACIDAE]

[*PHALACROCORAX AURITUS FLORIDANUS* (Audubon)?

FLORIDA CORMORANT, GRAND GOSIER

Carbo floridanus AUDUBON, *Birds Amer. (folio)*, vol. 3, 1835, pl. 252 (Florida Keys).

Cormoran, DESCOURTILZ, *Voy. Nat.*, vol. 2, 1809, pp. 239-241 (common near the sea).

Descourtilz includes in his list of birds "le Cormoran, appelé à Saint-Domingue *Grand-Gosier*, Brisson, tom. VI pag. 511, pl. XLV." He describes it as common near the sea and says that the pouch is used to carry tobacco, as the negroes believe that it keeps the leaves fresh. Since Descourtilz traveled also in Cuba where the Florida cormorant is common it is possible that his observations pertain to that island and that he is in error in ascribing the species to Hispaniola. We have chosen to consider the record uncertain in view of the fact that some of the ornithological observations of Descourtilz who was primarily a botanist seem open to question. It must be borne in mind however that this author came to the island in 1799 when conditions may have differed from those at present, and that further the region between Gonaïves and the mouth of the Artibonite where Descourtilz worked extensively has not been studied carefully by an ornithologist.

The Florida cormorant is from 535 to 760 mm. long with the wing about 305 mm. The adult is black with a greenish sheen and has a tuft of white feathers on each side of the crown when in breeding dress. The young are dull grayish brown. The bird has a long body, long neck, webbed feet like those of a pelican, and a hooked bill.]

Suborder FREGATAE

Family FREGATIDAE

FREGATA MAGNIFICENS Mathews

FRIGATE-BIRD, MAN-O'-WAR BIRD, RABIHORCADO, RABIJUNCO, TIJERILLA, FRÉGATE

Fregata minor magnificens MATHEWS, Austr. Av. Rec., vol. 2, December 19, 1914, p. 120 (Barrington Island, Galápagos Archipelago).

Frégate, OEXMELIN, Hist. Avent. Flibustiers, vol. 1, 1775, pp. 357-358 (habits).—SAINT-MÉRY, Descript. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (near Port-de-Paix).

Man of War Bird, SAINT-MÉRY, Descript. Span. Part Saint-Domingo, vol. 1, 1798, pp. 192-193 (Samaná Bay).

Tachypetes aquilus, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98 (Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Haiti; seen); Birds Haiti and San Domingo, March, 1885, pp. 173-174 (shot).—CHRISTY, Ibis, 1897, p. 342 (Samaná Bay).

Tachypetes aquilis, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Fregata aquila, CORY, Cat. West Indian Birds, 1892, p. 85 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (San Lorenzo Bay).

Fregata magnificens, PETERS, Bull. Mus. Comp. Zoöl. vol. 61, 1917, p. 397 (North Coast, Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Gonave channel, Port-de-Paix).—DANFORTH, Auk, 1929, p. 360 (Saona Island, Santo Domingo City, San Pedro de Macoris, Boca Chica, Gonave).—LÖNNBERG, Fauna och Flora, 1929, p. 99 (Navassa, specimen).—EKMAN, Ark. för Bot., vol. 22A, No. 16, p. 6 (Navassa).

Fregata magnificens rothschildi, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Port-au-Prince; Fregate Island, breeding).

Resident; seen in small numbers along the coasts, locally common.

Moreau de Saint-Méry records the man-ó-war bird among the small islands of Samaná Bay, and in his remarks concerning the species says "the cooling oil of which is excellent for the gout and the sciatica." His observations evidently refer to the colony on the islands that comprise the Pelican Keys or Islas de los Pájaros at the entrance of San Lorenzo Bay, where the birds still nest today. (Pl. 13.) Doctor Abbott, on March 16, 1919, reported about forty or fifty pairs in this colony, and collected two sets of two eggs each, and a pair of adult birds. He notes one set of eggs as fairly well incubated, and says that some of the nests con-

tained young. The eggs are dull white, with chalky shells, more or less nest-stained. The two sets measure 71.3 by 49.8 and 67.4 by 47.5; 72.3 by 48.7 and 65.5 by 49.2 mm. On May 11, 1927, in this colony Wetmore recorded twenty occupied nests containing well-grown young, some nearly able to fly. The nests were grouped closely in several small trees at the summit of the islet, fifty feet above the water. Adults soared silently overhead watching as two men landed on a rock shelf from a launch and climbed up the steep slopes through the matted vegetation. The nests were composed of fair-sized twigs formed into a loose platform. One young bird that was brought away as a specimen is covered with white down except for the bare throat, and has the brown tertials and interscapulars well developed, while the primaries and secondaries are barely breaking the growing sheaths. The early growth of the feathers of the back is a highly practical adaptation to the needs of the bird since these feathers serve to protect the body from both sun and rain, a matter of importance as the nests are wholly exposed. This young bird had the usual habit of clattering the bill loudly and biting when approached. It was able to break the skin on the back of a man's hand with the sharp hook at the end of the bill.

From this colony the adult birds range over all of Samaná Bay. Christy speaks of them as seen several times, and Verrill mentions them. Wetmore saw them at the mouth of the Arroyo Barrancota, and once along the beach east of Sánchez. Peters mentions them as seen occasionally along the north coast of the Dominican Republic between February 6 and April 11, 1916, but says that they were by no means common. Abbott reported them as common on Saona Island from September 12 to 18, 1919, and says that when he first visited Samaná Bay in 1883 he found the birds in thousands so that their numbers have greatly decreased. Danforth in 1927 found them off Saona Island, June 14, Santo Domingo City, June 14, San Pedro de Macoris, July 1, and Boca Chica, July 4.

The frigate bird is regular in occurrence on the coasts of Haiti but has been little recorded. Oexmelin in 1775 describes their habit of pursuing boobies to make them disgorge food, which the frigate then seizes, and says that this is the most diverting thing to be seen in America! Saint-Méry reports them near Port-de-Paix. Cory remarks that his party saw and shot several but gives no localities. Doctor Bartsch reports the species near Jérémie from April 11 to 16, near the Trou des Roseaux April 13 and 14, and near Port-au-Prince April 19, 1917. At the Étang Miragoane on the north coast of the southern peninsula, on April 1, 1927, Wetmore observed half a dozen circling high overhead and finally passing over toward the sea at an altitude where they were barely visible from the earth. Their presence at this point was strange as the lake has sweet water. He

observed one on April 27 flying above the landing at Caracol. Abbott found a few on Gonave Island February 18 to 28, 1918, and Beebe reports a breeding colony on January, 1927, on Fregate Island at the eastern end of Gonave. Danforth saw them about Gonave July 17 to 20, 1927, and Poole and Perrygo observed two on February 27, 1929, in crossing from St. Marc to Anse à Galets. Bond saw them in the Gonave channel, and near Port-de-Paix. Ekman collected one on Navassa Island, reported by Lönnberg, and reports that they nest on this island.

This species is parasitic in habit, depending for food upon prey taken by force from weaker companions. At San Lorenzo Bay the frigate bird nested adjacent to colonies of terns and pelicans that might serve to capture its food.

The male frigate bird is entirely black, with a greenish or violet sheen above. On the throat is a bare sac that is brilliant red in the breeding season and may be inflated like a top balloon. At other periods of the year it is shrunken, and is colored orange. The female is dull black, with the breast and foreneck white, and a brown band along the wing coverts. The bill is long and strongly hooked, while the feet and tarsi are extraordinarily small and weak compared to the size of the body. The tail is long and deeply forked. The species varies from 950 to 1050 millimeters in length.

Order CICONIIFORMES

Suborder ARDEAE

Family ARDEIDAE²³

Subfamily ARDEINAE

ARDEA HERODIAS ADOXA Oberholser

WEST INDIAN GREAT BLUE HERON, GARZON CENICIENTO, CUACO, RECONGO, GROS QUOCK, LA GIRONDE

Ardea herodias adoxa OBERHOLSER, Proc. U. S. Nat. Mus., vol. 43, Dec. 12, 1912, p. 544 (Curaçao Island).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Port-au-Prince, Port-de-Paix, Lake Enriquillo).—DANFORTH, Auk, 1929, p. 360 (Monte Cristi, Aquin, Les Salines, Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 308 (Santiago, specimens).

Ardea herodias, CHERRIE, Field Columbian Mus., Orn. ser., vol. 1, 1896, p. 25 (mouth of Río Ozama).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, pp. 70, 218 (one taken, two seen).

Ardea herodias repens, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 397 (Río Yaqui; between Gaspar Hernandez and Río San Juan).

²³ Tippenbauer, Die Insel Haiti, 1892, p. 323, lists *Ardea occidentalis* without comment as found in Haiti. The record is regarded here as erroneous.

Resident; fairly common, mainly in coastal region.

The West Indian great blue heron is found locally, mainly in extensive lagoons and marshes near the coast. The species is seemingly resident though no nesting sites have yet been recorded.

Cherrie saw these birds frequently in 1895 along the Río Ozama near Santo Domingo City, and Peters observed several along the Río Yaqui del Norte near Monte Cristi on February 6, 1916, and a few others at widely scattered localities between Gaspar Hernandez and the Río San Juan early in March. Dr. W. L. Abbott observed this bird on Lake Enriquillo near Duvergé, and Bond found it in 1928 on this same large lake. Danforth records it at Monte Cristi July 24 to 27 and August 5, 1927. Poole and Perrygo in 1929 in work in the small islands of the Seven Brothers group off the north coast of Haiti recorded one on Tercero Island on January 30, and one on Ratas Island February 4. In both cases the birds flew across to Monte Grande Island. Ciferri obtained two specimens near Santiago, D. R., January 1, 1928.

An adult male taken by Abbott near Sánchez, February 12, 1919, agrees with the diagnosis for the subspecies *adoxa* in being paler above than *Ardea herodias herodias* of the United States. It has the following measurements: Wing 467 mm., tail 180 mm., culmen from base 149.8 mm., tarsus 178 mm. Very little material in this species has been collected in the West Indies.

There is comparatively little known of the occurrence of this heron in Haiti. Dr. Paul Bartsch observed it on the Étang Saumâtre near Gloré on April 3, 1917, and at Trou Caïman the following day. In crossing the coastal lagoons and mudflats between Gonaïves and Desdunes by airplane on April 28, 1927, with Capt. R. A. Pressley, United States Marine Corps, Wetmore observed about thirty of these birds. The majority were in the delta of Rivière de l' Estère, south of Gonaïves. On the same trip several were noted in the coastal lagoons near Port-au-Prince.

It was a curious experience to look down on these great birds and the multitude of other herons from an airplane, and to observe the confusion spread among them as the great vehicle approached and passed. There would seem to be a rookery somewhere near Gonaïves. The birds usually nest in trees but where these are not suitable they may select low bushes or may even make nests on the ground among rushes. Danforth found them at Aquin July 23, Les Salines July 30, and on Gonave Island July 16, 1927. Beebe reports a bird in immature dress taken near Port-au-Prince and two others seen, one at Source Matelas March 21, 1927. Bond saw them near Port-au-Prince and Port-de-Paix, and says that they are rare. Poole and Perrygo recorded one at Fort Liberté February 6, and three at Anse à Galets on Gonave Island February 28.

The great blue heron is a solitary species except when breeding when it usually gathers in colonies. It feeds in shallow bays or marshes standing rigidly in the water with head bent forward, waiting motionless for the small fishes that form its principal prey to approach the surface when they are seized with a quick forward thrust, held for a moment until their struggles moderate, and then are swallowed. The flight is performed with a steady flapping of the broad wings, with the neck drawn in against the forepart of the body.

As the great blue heron is the largest of the long-legged, long-necked heron tribe in the island it can be confused with no other species. In general the bird is gray, with black and white markings on head and breast, and rufous tibiae. The one collected by Abbott measured 1,160 mm. in length.

CASMERODIUS ALBUS EGRETTA (Gmelin)

EGRET, GARZA REAL, GARZON BLANCO, CRABIER BLANC, QUOCK BLANC

Ardea egretta GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 629 (Cayenne).

Grande Aigrette, BUFFON, Hist. Nat. Ois., vol. 7, 1780, p. 378, ("Saint-Domingue").

Grande Aigrette Blanche, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 222-224 (common).

Herodias leuce, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (listed).

Ardea leuce, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).

Ardea egretta, RITIER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 151, 157 (Fort Royal, specimen).—CORY, Cat. West Indian Birds, 1892, p. 89 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 323 (listed).—CHRISTY, Ibis, 1897, pp. 340-341 (Yuna swamps; mouth of Barrancota, breeding).

Casmerodius albus egretta, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 219 (Port-au-Prince, one).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 489 (Trou Caïman, specimen).

Casmerodius alba egretta, DANFORTH, Auk, 1929, p. 360 (Laguna del Salodillo, Les Salines).

Resident; formerly common, now rare.

Buffon includes "Saint-Domingue" in the range of this heron without further comment as to locality. Sallé the next earliest writer to report this heron says merely that it is known as the white heron. Christy in 1893 found the egret common in the Yuna swamps at the head of Samaná Bay, and reported a breeding colony on February 18, on a rocky island near the mouth of the Arroyo Barrancota, that contained about one hundred birds. He speaks of shooting several and says that occasionally the merchants of Sánchez sent the plumes of these birds to New York for sale. Since that time the species has decreased so that apparently few remain. Abbott has recorded it from Lake Enriquillo near Duvergé from October 1 to 6, 1919.

Wetmore did not succeed in finding it in 1927, but Danforth observed one at the Laguna del Salodillo, near Copey, June 26, 1927.

The earliest report for Haiti is that of Ritter who speaks of finding the egret near Fort Royal and says that he secured a specimen. Bartsch recorded it at Trou Caïman, April 4, 1917, and on the coastal flats north of Port-au-Prince April 25. Beebe reports that during the late winter and early spring of 1927 a solitary bird flew back and forth past his schooner anchored off the Bizoton wharves to feeding and resting places. Danforth saw three at Les Salines July 30, 1927. Bond shot one at Trou Caïman January 15, 1928, and saw another at the same point on June 15.

The egret is found usually in mangrove swamps, in shallow bays, or along the reefs of the coastal region. Its long pursuit by man for the handsome plumes that adorn its back in the breeding season have brought the species near extermination throughout its range, and constant persecution has made the few survivors wary and difficult of approach. Now that fashion has been informed that the decorative plumes are at their highest stage only when young birds are hatching in the nest so that when the parents are killed the young are left to starve sentiment has turned tardily in favor of the egret and there is no longer a market, other than a surreptitious one, for the beautiful feathers that have brought the species so near extinction. In the southern United States egrets are increasing under this protection but unfortunately in tropical America the country man still has in mind the former high value of "Garza" plumes and is inclined to kill the birds at every opportunity. It is highly desirable that this attitude change as the species is one of those graceful and interesting forms whose esthetic appeal when alive far outweighs the value of the few filamentous feathers that may be cut from its dead body that is then cast aside in the stinking mud of the swamps and left a prey to scavenger crabs and flesh flies, while its young slowly starve in the trees above.

The egret is the largest of the herons of pure white plumage in this region, being a little more than a meter in length with the wing measuring about 381 mm. In life it is distinguished by large size coupled with yellow bill and black tarsi.

EGRETTA THULA THULA (Molina)

SNOWY HERON, GARZA BLANCA, CRABIER BLANC, QUOCK BLANC

Ardea Thula MOLINA, Sagg. Stor. Nat. Chili, 1782, p. 235 (Chile).

Aigretta, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 227-228 (mentioned).

Ardea alba minor, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 62-63 (plain of the Artibonite).

Herodias candidissima, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (listed).—
RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 151-157 (Fort Royal).—

BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (listed).—TRISTRAM, Ibis, 1884, p. 168 (specimen, Dominican Republic).—CORY, Birds Haiti and San Domingo, Dec., 1884, p. 153; Cat. West Indian Birds, 1892, p. 89 (Haiti and Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 323 (listed).

Egretta thula thula, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 397 (Monte Cristi, and mouths of Ríos Piedra, Ori and San Juan).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138 (Étang Miragoane); Beneath Tropic Seas, 1928, p. 219 (Étang Miragoane).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490.—DANFORTH, Auk, 1929, p. 360 (Vásquez, Monte Cristi, Bonao).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 308 (Bonao, specimens).

Resident, in the lagoons and marshes of the lowlands, mainly near the coast; now rare.

Sallé has included the snowy heron in his list of birds from the Dominican Republic without record of where he saw it, his notes apparently furnishing the basis for subsequent inclusion of the species by Bryant and Cory. Tristram²⁴ records a specimen without locality in a collection made by C. McGrigor. Peters seems to be the only observer who has found the bird in any numbers. He noted it at Monte Cristi February 6, 1916, and near the mouths of the Ríos Piedra, Ori, and San Juan from March 3 to 14, at times in small flocks. Abbott found it uncommon at Lake Enriquillo near Duvergé from October 1 to 6, 1919. Danforth found it near Vásquez June 25, near Monte Cristi August 5, and on the Yuna near Bonao August 7, 1927. Ciferri collected three on the Yuna near Bonao February 8 and April 5 and 6, 1927.

In Haiti Abbott secured a male at Jérémie on December 28, 1917, and Bartsch recorded the snowy heron at Trou Caïman April 4, 1917. Beebe saw six or eight at the Étang Miragoane, March 2, 1927, and Bond observed it at the same point in 1928. It is probable that this species was represented among many white herons seen by Wetmore from an airplane on April 28, 1927, in passing over the coastal swamps south of Gonaïves, but of the identity of these the observer could not be certain. Descourtiz, in April, 1799, found the snowy heron common at "lagon Peinier" in the plain of the Artibonite, and says that the scapular plumes were sold for one hundred francs per ounce, being more valuable than those of the large species. Ritter reported the snowy heron near Fort Royal.

These graceful birds are found in lowland swamps and lagoons, often among mangroves but also on fresh waters farther inland where they feed on fishes and large insects. They are alert and wary and seldom permit close approach. Their nuptial plumes though smaller than those of the large egret have been highly prized

²⁴ Ibis, 1884, p. 168.

in the past and have led to the destruction of untold thousands. There is little definite data as to the former abundance of the snowy heron in Hispaniola, but it is probable that it was common and has been reduced in numbers by plume hunters as in Cuba and Porto Rico.

The snowy heron is one of the smaller species to be confused mainly with the white immature stage of the little blue heron, from which it is distinguished by entirely white primaries when in the hand, and when alive by the black legs and black bill, the latter being yellow only at the base. It is much smaller than the egret; the one taken by Abbott measured 565 mm., with the wing 252 mm.

DICHROMANASSA RUFESCENS RUFESCENS (Gmelin)

REDDISH EGRET, GARZA

Ardea rufescens GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 628 (Louisiana).

Ardea rufa, COBY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, seen); Birds Haiti and San Domingo, Dec., 1884, pp. 152-153 (specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Ardea rufescens, COBY, Cat. West Indian Birds, 1892, p. 89 (Haiti, Dominican Republic).

Dichromanassa rufescens, DANFORTH, Auk, 1929, p. 360 (Artibonite).

Dichromanassa rufescens rufescens, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520 (listed).

Apparently a rare resident in Haiti and the Dominican Republic.

Cory in 1881 reports several seen without mentioning definite locality, later (1885) remarking "probably resident in San Domingo. Several specimens were taken." The only specimen that we have seen is a female in white phase taken by Abbott at the eastern end of Lake Enriquillo on October 2, 1919. He informs us that he saw birds in the reddish phase but is now uncertain as to the locality. Danforth reports two seen on the Artibonite Sloughs above St. Marc July 29, 1927.

Examination of a small series of these herons in the United States National Museum collection, including five adults from various localities in Lower California but only three from the eastern part of the range of the species (one from Florida and two from Cozumel Island), bear out the contention of Van Rossem in describing *Dichromanassa rufescens dickeyi*²⁵ as new that birds from Lower California are darker on the head and neck. Part of our series from Lower California however have the tips of the dorsal plumes pale as in the eastern birds.

The reddish egret, a species larger than the little blue heron or

²⁵ *Dichromanassa rufescens dickeyi* Condor, 1926, p. 246. (San Luis Island, Lower California.)

snowy heron, in the dark phase has the head and neck rufous chestnut and the remainder of the body plumage dark bluish slate. About thirty plumes that grow from the back and extend beyond the tail are slaty, tipped more or less with whitish. There is also a white phase in which the bird is entirely white except occasionally for a slight grayish mottling at the tips of the primaries. The specimen secured by Doctor Abbott had a total length of 715 mm. and a wing measurement of 320 mm. The dark phase is readily recognized but the white form, formerly considered a distinct species is sometimes identified with difficulty. In the hand it is found that the reddish egret has the tarsus twice as long as the middle toe without the claw while in the egret, snowy heron and little blue heron the tarsus is decidedly less than twice the middle toe without the claw. This measurement is sufficient to determine any white specimen of the present species.

HYDRANASSA TRICOLOR RUFICOLLIS (Gosse)

LOUISIANA HERON, GARZA, CRABIER, QUOCK

Egretta ruficollis GOSSE, Birds Jamaica, 1847, p. 338 (Jamaica).

Demi-Aigrette, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 228-229 (recorded from Haiti).

Ardea leucogastra, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Hydranassa tricolor, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 67, 70, 108, 219 (near Port-au-Prince).

Hydranassa tricolor ruficollis, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 397 (Mouth of Río Piedra).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Étang Miragoane, Trou Caïman, Port-de-Paix, Fort Liberté, Gorave Island).—DANFORTH, Auk, 1929, p. 360 (Monte Cristi, Laguna del Salodillo, specimens).

Resident; common in the mangrove swamps and lagoons of the coast, about the salt lakes of the Cul-de-Sac plain, and the fresh water lagoons of the lowlands.

Though the Louisiana Heron is fairly common in both republics it has been seldom reported in print. Peters recorded one seen near the mouth of the Río Piedra, D. R. on March 16, 1916. Doctor Abbott secured specimens near Sánchez February 13, 1919, and at the eastern end of Lake Enriquillo on October 5, 1919. Wetmore observed one on the Arroyo Barrancota, May 8, 1927, and others on the islands known as Cayos de los Pájaros at the entrance of San Lorenzo Bay May 11. It is possible that they breed with other herons at this latter locality. Danforth in 1927 saw them at Monte Cristi, Laguna del Salodillo and Vásquez.

In Haiti Abbott collected specimens on Cayemite Island January 5, 1918, on the Étang Saumâtre March 6, 1918, at Trou Caïman April 7, 1920, and at Port à l'Ecu June 28, 1917. The bird from

Cayemite Island is in immature dress and probably indicates breeding in that locality. Bartsch reports the Louisiana heron near Gloré on the Étang Saumâtre April 3, 1917, at Trou Caïman April 4, and from the salt-flats north of Port-au-Prince April 25. Beebe saw three near Port-au-Prince during a period of three months in 1927, and records them also at Source Matelas January 13 and March 21, and at the Étang Miragoane.

Wetmore found this species common in the marshes of the Étang Miragoane April 1, 1927, observed several in the coastal lagoons near Aquin April 3, and one on the open beach near Cap-Haïtien April 26. On April 28 in passing by airplane at a very low altitude above the mangrove-bordered lagoons south of Gonaïves he recorded many with multitudes of other herons. He noted approximately four hundred of the present species rising from shallow water in one opening in the swamps. Danforth in 1927 saw it at Port-au-Prince, Aquin, Étang Miragoane, Gonaïves, Les Salines, Cap-Haïtien and Anse à Galets, Gonave Island. Bond, who found the species at the Étang Miragoane, Trou Caïman, Port-de-Paix, Fort Liberté and on Gonave Island considered it the most common heron of Haiti with the exception of the green heron. Poole and Perrygo collected two males at Fort Liberté February 12 and 18, 1929.

The Louisiana heron is confined entirely to the lowlands where, as has been indicated, it is found usually in the coastal lagoons but may range also in fresh-water marshes when these are extensive. It is largely restricted to marshy and swampy habitats and is seldom found feeding in the dry fields so often frequented by other small herons.

This species has the upper parts largely dark slate, with buffy tips to the dorsal plumes; throat white, with more or less chestnut on the foreneck; breast mingled slaty and white and abdomen entirely white. The bird measures from 600 to 660 mm. in length. Among a group of birds characterized by thin form the Louisiana heron is more slender and elongated than any of the others here treated, so that it is distinguished at a glance by its long thin neck, long bill, and slender legs.

FLORIDA CAERULEA CAERULESCENS (Latham)

LITTLE BLUE HERON, GARZA AZUL, GARZA BLANCA, CRABIER, CRABIER BLEU, CRABIER NOIR, CRABIER BLANC, QUOCK, QUOCK BLANC, MÉTIS

Ardea caerulescens LATHAM, Index Orn., vol. 2, 1790, p. 690 (Cayenne).

Métis, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 224-227 (Haiti).

Crabier Bleu, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 229-230 (Haiti).

Little Blue Heron, BEEBE, Beneath Tropic Seas, 1928, p. 108 (Étang Miragoane).

Ardea caerulea, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (specimens, Haiti); Birds Haiti and San Domingo, Dec., 1884, p. 154 (idem.); Cat. West Indian Birds, 1892, p. 90 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (specimen, Dominican Republic); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 270 (specimen, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 323 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 25 (specimen).—CHRISTY, Ibis, 1897, pp. 338-339 (Sánchez).

Ardea caerulea caerulescens, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (abundant).

Florida caerulea, PETERS, Bull. Mus. Comp. Zoöl., vol. 6, 1917, pp. 397-398 (common).

Florida caerulea caerulescens, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Étang Miragoane, Fort Liberté, Gonave Island).—DANFORTH, Auk, 1929, p. 360 (common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 308 (Bonaio, Santiago, specimens).

Resident; common in the lowlands, particularly in the coastal lagoons.

The little blue heron is one of the common herons of the island, that through lack of decorative plumes has escaped the fate of the more highly ornamented egrets. It is found in great abundance in the shallow lagoons grown with mangroves that often border the outer margins of the coastal plain, particularly at the mouths of streams, and also occurs inland about fresh water lakes. In addition it ranges in the interior along some of the small streams where these flow quietly with sluggish current.

In the vicinity of Samaná Bay these herons abound. Verrill records them as common on the water front near the town of Samaná, and in the collection of J. H. Fleming there is a series of eleven skins taken by Verrill on the Caña Honda, San Lorenzo Bay, from December 30, 1906 to January 12, 1907. They range along the lower Yuna and Arroyo Barrancota, and on May 11, 1927, Wetmore found a number of occupied nests containing either eggs or small young in trees on the slopes of the Cayos de los Pájaros at the entrance of San Lorenzo Bay. Christy reported them as common and Peters found them on the north coast. Abbott recorded them near Duvergé on Lake Enriquillo from October 1 to 6, 1919. Ciferri obtained specimens near Bongo on the Río Masim Pedro December 12, 1926, on the Yuna February 2, 8 and 20, 1927, and at Santiago October 20, 1927.

In Haiti Abbott secured one at Moron on December 18, 1918, an inland locality, and Wetmore saw the species along a small stream, the Rivière des Côtes de Fer, at the Coffee Experiment Station at Fonds-des-Nègres. Little blue herons were seen in many hundreds by Wetmore on April 28, 1927, in passing in an airplane low over the lagoons near Gonaïves and Desdunes. From some of the bays a

veritable cloud of birds rose, the majority being the present species. He observed them further at Aquin, Étang Miragoane, Gressier, Port-au-Prince, Cap Haïtien and Caracol, all during April, 1927. James Bond recorded them at the Étang Miragoane, Fort Liberté and on Gonave Island. F. P. Mathews saw them on Gonave Island in July, 1927, according to Danforth. Poole and Perrygo saw this species at Grand Rivière January 21, 1929, on Tercero Island, in the Seven Brothers group January 30, and collected two adults and two in white immature dress at Fort Liberté February 11, 12 and 15, 1929. Further they secured an adult four miles south of Cerca-la-Source March 23, 1929. The latter it is supposed represents a wanderer from the coastal region.

Descourtiz describes the mixed phase of plumage in this species which he thought was produced by crossing between the little blue heron and the egret. In Haiti the young in white dress are known as crabier blanc, and the adults as crabier bleu, or crabier noir.

The adult bird is slaty gray above and blackish below, with a wash of rufescent color on head and foreneck. Part of the young are slaty and a part pure white except for a mottling of grey at the tips of the primaries. Other individuals show a mixture of slate and white. The length ranges from 540 to 575 mm., and the wing from about 245 to 275 mm. The white birds are often mistaken for the snowy heron but may be told by the greenish tarsi, these being black in the snowy heron.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus)

LITTLE GREEN HERON

Ardea virescens LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 144 (coast of South Carolina).

Butorides virescens virescens, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 398 (Sosúa, specimen).

Rare in winter; three specimens known.

Peters shot a male at Sosúa, Dominican Republic on March 29, 1916, that he has identified as the typical form of this species saying that it "agrees perfectly in color and size with representatives from the United States; the sides of the neck being more purplish than in *B. v. maculatus*, while all its measurements are larger than typical *B. v. maculatus*. Wing 177, tail 70.5, exposed culmen 60, tarsus 52, middle toe 44 mm.

"While I have referred this specimen to the continental form it is perfectly possible that its larger size may be due to individual variation in *B. v. maculatus*."

Abbott collected a male at Sánchez, D. R., February 12, 1919, that measures as follows: wing 176.0, tail 62.0, culmen 59.0, tarsus 51.0 mm. And a male secured by Poole and Perrygo at Fort Liberté, Haiti, February 12, 1929, has the following dimensions: wing 178.0, tail 66.3, culmen 61.9, tarsus 49.3 mm. These are distinctly larger than specimens of the resident form *B. v. maculatus* secured at the same time, and in addition are decidedly darker in color on the sides of the neck and on the abdomen.

Apparently the green heron of eastern North America comes regularly to the island.

There is also one record of a bird of this form taken at Fajardo, Porto Rico, February 16, 1899²⁶ so that the subspecies may occur casually in winter in the two eastern islands of the Greater Antilles.

The characters of this form as distinguished from the West Indian little green heron are indicated above.

BUTORIDES VIRESCENS MACULATUS (Boddaert)

WEST INDIAN GREEN HERON, MARTINETE, GARZA MORADA, CRABIER, CRACRA, RACRAC, VALET DE CAÏMAN

Cancroma maculata BODDAERT, Table Planch. Enl., 1783, p. 54 (Martinique, Lesser Antilles).

Crabier, SAINT-MÉRY, Descript. Part. Franc. Île Saint-Domingue, vol. 1, 1797, pp. 262, 717 (Dondon, Port-de-Paix).—DESCOURETILZ, Voy. Nat., vol. 2, 1809, pp. 230-231 (common).

Ardea cracra, DESCOURETILZ, Voy. Nat., vol. 2, 1809, p. 66 (Pont de l'Estère).

Ardea virescens, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Port-au-Prince, specimen); Birds Haiti and San Domingo, Dec., 1884, p. 155 (Gantier, Port-au-Prince).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 25 (common).—CHRISTY, Ibis, 1897, pp. 339-340 (common).

Butorides virescens, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (listed).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 270 (Dominican Republic, specimen).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 108-219 (common).

Butorides virescens virescens, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 309 (Bonao, specimens).

Butoroides virescens maculata, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (abundant).

Butorides virescens maculatus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 393 (Monte Cristi, Sosúa, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Étang Miragoane, Trou Caïman, Port-de-Paix, Gonave Island).—DANFORTH, Auk, 1929, p. 360 (common).

²⁶ See Wetmore, Birds Porto Rico and Virgin Islands, New York Acad. Sci., Scient. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 295-296.

Resident, common; most abundant in the lowlands but ranging along streams into the high interior.

The green heron is the most widely distributed of its family in Hispaniola as it ranges in mangrove swamps, lakes, and marshes, or along streams wherever it may find food and cover. Because of its small size it is comparatively little disturbed and so is usually very tame. It may be expected to occur anywhere that there is water.

Though common these birds are not truly gregarious, and in fact are inclined to resent too close approach of another of their own kind. Along the Rivière Cul-de-Sac near Damien, Wetmore observed two fighting petulantly until one dropped into the water when it swam a few strokes before it reached shallows that permitted it to wade. The voice of this heron is a rude squawk uttered in a protesting tone when it is disturbed in any way.

At Caracol, Haiti on April 27, 1927, one was seen with a large crayfish which it only swallowed after several unsuccessful attempts. Bond reported nests at Trou Caïman in June. Descourtilz, who records this heron at Pont de l'Estère on April 16, 1799, says that it was called *valet de caïman* because it is believed by the countrymen to warn the caïman by its cries of the approach of danger.

On May 10, 1927, this heron was the most common of its kind along the lower Yuna near where that stream empties into Samaná Bay. A nest found was a flattened structure of twigs built on a projecting tree limb about six feet above the water. An adult crouched at the side of this rude platform which contained two fresh eggs. These are glaucous-green and measure 39.5 by 29.5 and 39.9 by 29.5 mm. Another set of two taken by Abbott near Jean Rabel Anchorage on June 3, 1917, came from a nest placed twenty feet from the ground in a tree growing near the beach. The male parent was taken on the nest. The eggs in this second set are lighter in color than the two described above as they are pale glaucous-green. They measure 40.1 by 39.5 and 38.6 by 29.8 mm.

Following are measurements from our series of skins from Hispaniola:

Seven males, wing 162.0-168.5 (166.3), tail 53.0-62.0 (56.9), culmen 51.5-63.0 (56.9), tarsus 45.8-55.0 (48.4) mm.

Five females, wing 165.0-172.0 (169.4), tail 55.5-61.2 (58.6), culmen 53.9-61.5 (57.3), tarsus 45.9-51.5 (48.7) mm.

The adult green heron is dull greenish above, darker on the head, with wing coverts edged with buffy; the sides of the neck and breast are deep rufous, with a line of white mixed with dusky down the foreneck; the abdomen is gray. Young birds have the

anterior underparts whitish streaked with grayish and the dorsal surface duller. These birds range from 410 to 470 mm. in length, and have the wing from 162 to 175 mm. long.

NYCTICORAX NYCTICORAX HOACTLI (Gmelin)

BLACK-CROWNED NIGHT HERON, YABOA, GALLINAZO, COQ-D'EAU, COQ DE NUIT, QUOCK

Ardea Hoactli Gmelin, Syst. Nat., vol. 1, pt. 2, 1789, p. 630 (in *Novae Hispaniae lacubus*).

Coq-d'eau, Descourtilz, Voy. Nat., vol. 2, 1809, pp. 238-239 (reported).

Nyctiardea naevia, Tippenhauer, Die Insel Haiti, 1892, p. 323 (listed).—Christy, Ibis, 1897, p. 341 (Yuna swamps).

Nycticorax nycticorax naevius, Peters, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 398 (Río Sosúa).—Ciferri, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).—Bond, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (listed).—Danforth, Auk, 1929, p. 360 (Artibonite, Les Salines).—Moltoni, Att. Soc. Ital. Scienz. Nat., vol. 68, p. 309 (Haina, specimen).

Apparently resident, though migrants come from North America during the northern winter; rather rare.

The status of this heron is uncertain as there are few records. Christy found it several times in the Yuna region. Peters records two near the Río Sosúa, April 10, 1916. Abbott collected a female near Sánchez February 6, 1919. Wetmore saw three along the Arroyo Guayabo near where that stream enters the Yuna on May 10, 1927, and noted several on the following day on the islets known as Cayos de los Pájaros at the entrance of San Lorenzo Bay. Ciferri secured one near Haina April 4, 1926. In Haiti the species is reported by Descourtilz, who says it is excellent for the table, by Tippenhauer (without locality or comment), and by Bartsch who observed it on the salt flats north of Port-au-Prince, April 25, 1917. Danforth in 1927 saw one on the Artibonite beyond St. Marc July 29, and six at Les Salines July 30. Though some individuals of the black-crowned night heron may be resident others come from the north during winter. To Dr. W. B. Bell and Mr. Frederick C. Lincoln, of the Bureau of Biological Survey, United States Department of Agriculture, we are indebted for reports of two birds banded in a nesting colony at Barnstable, Massachusetts, that were taken subsequently in Hispaniola. One of these, marked June 15, 1924 by Mr. Leavitt C. Parsons, was taken about November 5, 1927, between Constanza and San Juan de la Maguana, Dominican Republic. The other, banded June 17, 1925 by Mr. E. H. Forbush was killed at Anse-à-Veau, Haiti, by Numa Cassy, and was reported under date of May 21, 1928 by the editor of *Le Temps*, of Port-au-Prince.

The night heron as its name indicates is abroad mainly after night-fall though at times it is more or less active by day. In daylight hours, however, it is usually found resting in the seclusion of dense

trees, ordinarily in swamps, where it flushes with heavy flight. Its harsh calls are heard often at night overhead as the birds pass to roosts or feeding grounds.

The adult has the neck, forehead and underparts whitish and the crown, and upper back greenish black. The lower back, wings and tail are ashy, and two slender plumes growing from the back of the head are white. The immature bird is grayish brown above streaked with white or buffy, and whitish below streaked with blackish. The bird measures about 450 mm. in length. It is heavier bodied than other herons.

NYCTANASSA VIOLACEA VIOLACEA (Linnaeus)

YELLOW-CROWNED NIGHT HERON, YABOA

Ardea violacea LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 143 (Carolina).

Ardea cayenensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 151, 157 (Fort Royal).

Nycticorax violaceus, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 25 (Río Ozama).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (very common).

Nyctiardea violacea, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Nyctanassa violacea, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 219 (Bizoton, one).—LÖNNBERG, Fauna och Flora, 1929, p. 99 (Haiti, specimen).

Nyctanassa violacea violacea, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Port-au-Prince; Grand Lagon, Point-à-Raquettes, Gonave Island).—DANFORTH, Auk, 1929, p. 360 (fairly common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 309 (Bonao, Moca, San Juan, specimens).

Resident; fairly common in suitable localities.

Cherrie saw the yellow-crowned night heron on the Río Ozama near Santo Domingo City on several occasions. Verrill writes that it was "very common in the swamps and along the larger rivers" without giving definite localities. In the collection of J. H. Fleming there is a male taken by Verrill, March 8, 1907, at Sánchez. Abbott collected specimens at Laguna and Cape Rojo on the Samaná Peninsula on August 10 and 29, 1916, respectively. Danforth in 1927 found this species at Monte Cristi, San Juan, and Bonao. Ciferri obtained specimens at Bonao, Moca, and San Juan.

In Haiti Ritter records one taken near Fort Royal, Abbott secured specimens on Grande Cayemite Island January 5, 1918, and at Petit Port à l'Ecu on May 9, 1917. He saw yellow-crowned night herons occasionally on Gonave Island from February 18 to 28, 1918. Dr. C. H. Arndt, under date of April 22, 1927, has written from Fonds-des-Nègres that a pair were nesting at that time in a large mombin tree on the grounds of the coffee experiment station. Beebe saw one

near Bizoton, and Wetmore noted one near pools of water along the Ravine Papaye, in the vicinity of Hinche, on April 20 and 23, 1927. Bond found it near Port-au-Prince, and at Grand Lagon and Point-à-Raquettes on Gonave Island. He secured a female in first fall plumage on Gonave February 9, 1928. Danforth in 1927 saw it near St. Marc, Les Salines, and Les Cayes.

This heron in the main is an inhabitant of wooded swamps where it is most active at night; during the day it perches in thick trees where it is sheltered from the sun. Wetmore found one in the Ravine Papaye where the only water was collected in scattered pools as it was the dry season. Though by choice inactive during daylight hours, this heron is alert and takes to flight when too closely approached. Its flight is strong and direct, performed with the neck drawn in on the shoulders as is usual in herons.

The yellow-crowned night heron in general is colored gray, with a whitish wash on the abdomen, and blackish streaks on the dorsal surface; the crown, cheeks, and the slender, elongated plumes growing from the back of the head are white, the rest of the head and the throat are black. The immature bird is rather like the young of the black-crowned night heron but is marked by its heavier bill. The bird is similar in size to the black-crowned night heron.

[Subfamily BOTAURINAE]

[BOTAURUS LENTIGINOSUS (Montagu)]

AMERICAN BITTERN

Ardea lentiginosa MONTAGU, Suppl. Orn. Dict., 1813, text and plate (Piddleton, Dorsetshire, England).

Botaurus minor, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

The only record is that of Tippenhauer who lists the species without comment.

The American bittern comes regularly to Cuba²⁷ and is found occasionally in Porto Rico²⁸ so that it may be expected in Hispaniola in winter. For the present it is held in the hypothetical list.

The bittern above is brown, with the feathers bordered and mottled with buff and buffy ochraceous; top of head and back of neck bluish slate washed with buff; below creamy buff, streaked with buffy brown; a black stripe on either side of upper neck. Young birds are deeper buff than adults. The total length is about 710 mm. and the wing about 265 mm.]

²⁷ Barbour, Mem. Nuttall Ornith. Club, no. 4, 1923, p. 31.

²⁸ Wetmore, New York Acad. Sci., Scient. Surv. Port Rico, Virgin Islands, vol. 9, 1927, pp. 302-303.

IXOBRYCHUS EXILIS EXILIS (Gmelin)

LEAST BITTERN, MARTINETE CHICO, CRABIER

Ardea exilis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 645 (Jamaica).

Crabier des Mangles, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 231-233 (one).

Ardea minuta, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (specimen).

Ardetta exilis, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Ixobrychus exilis, BARTSCH, Proc. Biol. Soc. Washington, July 27, 1917, p. 132 (Haiti, listed).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 397 (Monte Cristi).

Ixobrychus exilis exilis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Trou Caïman, Port-de-Paix, Lake Enriquillo).—DANFORTH, Auk, 1929, p. 361 (Laguna del Salodillo).

Resident; local in distribution.

In the Dominican Republic Peters found a few least bitterns in reed-grown swamps near the mouth of the Río Yaquí del Norte at Monte Cristi on February 20, 1916, and Danforth saw one at Laguna del Salodillo, near Copey, June 26, 1927. Bond has recorded them from Lake Enriquillo.

In Haiti Bartsch reported the bird near Gloré on the Étang Saumâtre April 3, 1917 and secured five at Trou Caïman on April 4. Later Abbott collected three at the Étang Saumâtre on March 6, 8, and 9, 1918. Wetmore flushed one in a swamp grown with saw-grass at the Étang Miragoane on April 1, 1927. Descourtiz says that he captured one in his hand but does not give the locality. Bond reports that they are abundant at Trou Caïman, and found them also at Port-de-Paix.

The least bittern frequents the rushes of lowland swamps, usually being found in aquatic growth standing in the water. It is seldom that men penetrate its chosen habitat as there is little there to attract invasion so that this heron may be seen seldom though fairly common. The birds often turn the striped breast toward an intruder rather than take to flight, when with bill pointing straight in the air their form simulates the surrounding growth of rushes so closely that the eye does not readily single them out. When they do flush they fly out with dangling legs, uttering protesting, croaking notes.

Part of the adult least bitterns that we have examined from Hispaniola and Porto Rico are paler below than the average from the eastern United States, possibly indicating that the Antillean bird is separable. There is such variation in depth of color that we call attention to this matter with the suggestion that West Indian birds be collected in considerable series before attempt is made to establish their status as a distinct race. The matter is complicated

by some uncertainty regarding Cory's least bittern, which may be an erythrism of *exilis*, though some contend that it is specifically distinct.

The least bittern, the smallest of our herons, is only from 315 to 340 mm. in length, and is slight and slender in body. Its plumage is marked by buffy and rufescent tints, with the crown and back black in males and brown in females.

Suborder CICONIAE

Superfamily CICONIIDES

Family CICONIIDAE

Subfamily MYCTERIINAE

MYCTERIA AMERICANA Linnaeus

WOOD IBIS, FAISAN

Mycteria americana LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 140 (Brazil).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520 (listed).

Pheasant, SAINT-MÉRY, Descrip. Span. Part Saint-Domingo, vol. 1, 1798, p. 85 (Plain of Neiba).

Tantalus loculator, CHRISTY, Ibis, 1897, p. 338 (Yuna swamps).

Resident locally in the Dominican Republic, now very rare.

The wood ibis is well known to hunters in the Dominican Republic under the name Faisan, but no report of it in adjacent Haiti has come to our eyes. Moreau de Saint-Méry speaks of the "Pheasant" as common at the close of the eighteenth century on the plain of Neiba. Christy reports wood ibises at the end of June, 1895, in the swamps at the mouth of the Río Yuna, describing their occurrence as follows: "I saw five of these birds about half a mile off perched on a tree covered with matted creepers. They very soon rose, and rather to my surprise circled high up into the air. We several times during that day saw single birds, and once I obtained a long shot at one flying over, but without result. The boatman called them the 'Faisan.' What the word meant they could not tell me; but it seemed to have some connection with the bare vulture-like head and neck of the birds." The local name is the Spanish term for pheasant, whose application to the present species seems curious. Abbott, in June, 1919, heard of large ibises on the Arroyo Guayabo which flows into the Yuna a few miles above its mouth, and in September of the same year saw one at Saona Island.

At Sánchez, in May, 1927, Wetmore was told by experienced hunters that the species had not been seen on the Yuna for several years. He heard report of it, however, in the swamps of the lower Yaqui del Norte, and in the vicinity of Lake Enriquillo, and was told that

a mounted bird had been displayed in recent years in a drugstore in Santiago. Inspection of twenty or more little pharmacies in that city on May 31 gave no trace of such a specimen.

The wood ibis is as large as the great blue heron but with much heavier body, shorter legs, longer, curved bill, and the head and neck in the adult bare of feathers. The wing and tail feathers are glossy black and the rest of the plumage is white. The immature bird has the head and neck more or less feathered but is easily distinguished by the long, curved bill.

Superfamily THRESKIORNITHIDES

Family THRESKIORNITHIDAE

Subfamily THRESKIORNITHINAE

PLEGADIS FALCINELLUS FALCINELLUS (Linnaeus)

GLOSSY IBIS, COCO PRIETO, PÊCHEUR, IBIS NOIR

Tantalus falcinellus LINNAEUS, Syst. Nat., ed. 12, pt. 1, 1766, p. 241 (Austria, Italy).

Pêcheur, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 233-235 (Haiti, rather rare).

Glossy Ibis, BEEBE, Beneath Tropic Seas, 1928, p. 108 (Étang Miragoane).

Tantalus Falcinellus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 157 (Haiti, specimen).

Ibis erythrorhyncha GOULD, Proc. Zool. Soc. London, Nov. 14, 1837 (publ. June 14, 1838) p. 127 (Haiti).—HARTLAUB, Isis, 1847, p. 609 (listed).

Plegadis autumnalis, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 ("Colorado River," specimen).

Plegadis falcinellus, CORY, Cat. Birds Haiti and San Domingo, Dec., 1884, p. 151 (of possible occurrence).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 322 (listed).

Plegadis falcinellus falcinellus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 490 (Étang Miragoane, Trou Caïman, Artibonite Plain, Fort Liberté, Lake Enriquillo).—DANFORTH, Auk, 1929, p. 361 (Artibonite Sloughs).

Resident; fairly common locally.

In the Dominican Republic the glossy ibis seems to be confined principally to the southern section since the only report north of the central mountain range is that of Verrill who records "one specimen taken at Colorado River," which is near Sánchez.

Abbott found them common on the open marshes and secured specimens at the eastern end of Lake Enriquillo October 2, 3, and 5, 1919. He saw several and shot one at Lake Rincón, near Cabral, on March 15, 1922. Bond also records them from Lake Enriquillo.

In Haiti the species seems more abundantly distributed, though Descourtilz in 1799 reported them rather rare. A bird secured by Hearne, apparently a young individual, was described as a distinct

species in 1838 by Gould. Abbott has forwarded specimens labeled *Étang Saumâtre* taken April 5 and 6, 1920. One was secured from a lake near Thomazeau May 13, and one near Manneville on May 14, in the same year. Bartsch observed the species at Trou Caïman April 4, 1917, and Abbott collected specimens there on March 12, 1918, and April 7, 1920. Beebe records glossy ibises at the *Étang Miragoane*. Wetmore saw glossy ibises feeding in swampy meadows at that point on April 1, 1927, and a number came flying overhead when disturbed by the discharge of a gun. Near Desdunes on April 28, a flock of twenty rose at the passage of an airplane, in which Wetmore was passenger, and unlike the herons which remained near the water, ascended to the level of the passing airship, and finally rose above it. Danforth and Emlen saw one on the Artibonite Sloughs beyond St. Marc July 28, 1927. Bond records them as common locally at *Étang Miragoane*, Trou Caïman, on the Artibonite Plain, and at Fort Liberté. On June 22, 1928 he found a large breeding colony in the Trou Caïman swamp, most of the nests containing young, with many out of the nest. He examined one set of four eggs.

The glossy ibis is found about fresh or brackish ponds where the water is shallow, or in marshy meadows. It usually occurs in flocks that are alert and if hunted do not permit close approach. The birds have a strong, direct flight with the neck and long, curved bill extended straight in front so that their profile in the air is entirely different from that of the straight-billed herons. Their flock formation is highly pleasing as the birds move in lines or angled flocks with each individual holding position with military precision at a set distance from his companions.

The glossy ibis stands as tall as the smaller herons but is heavier in body. When feeding or flying it appears plain black so that the hunter is astonished when one comes to hand to find that the feathers of the back show a glint of green, and that in the adult the head, neck and underparts are coppery brown with, in places, a metallic sheen. The young are duller and have the coppery color replaced by dull brown, the head and neck being obscurely streaked with white.

GUARA ALBA (Linnaeus)

WHITE IBIS, COCÓ, COCÓ BLANCO

Scolopax alba LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 145 (Carolina).

? *Gru blanche d'Amerique*, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 221-222 (Haiti, rare; specimen).

Tantalus albus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 157 (Haiti, rare; specimen).

Ibis alba, TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 270 (Dominican Republic, specimen).

Eudocimus albus, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 150-151 (Dominican Republic, recorded).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317-322 (listed).—CHRISTY, Ibis, 1897, pp. 337-338 (Yuna, Barrancota, specimens).—LÖNNBERG, Fauna och Flora, 1929, pp. 98-99 (Haiti, specimen).

Guara alba, CORY, Cat. West Indian Birds, 1892, p. 88 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (abundant).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (Étang Miragoane).

Resident; now rare.

In the Dominican Republic the white ibis was first reported by Cory who noted it as a winter visitant and probably a resident. As the species is not known to migrate, except for local shifting of individuals with the seasons, his statements with regard to its fluctuating numbers are difficult of interpretation. The bird seems to have been most common always in the swamps at the head of Samaná Bay, and there it remains today in small numbers. Christy reported it as very common in 1895 on both the Yuna and the Arroyo Barrancota. The cocó has always been one of the game birds of the island, and Christy informs us that several times he shot thirty or forty in one hunt during the brief period of evening twilight. Verrill found the birds common and said that they were excellent eating. A pair that he collected March 1, 1907, near Sánchez are in the J. H. Fleming collection. Tristram possessed a specimen taken in the Dominican Republic by A. S. Toogood. In the collections forwarded by Abbott there are four skins, two in adult and two in immature plumage, that were taken near Sánchez, February 3 and 6, 1919. A female taken on the date last mentioned contained eggs nearly ready to lay. According to Hartert, Kaempfer collected an immature male in the Yuna swamps on October 1, 1922, for the Tring Museum. Wetmore observed several near the mouth of the Yuna on May 10, 1927, and on May 16 recorded one along the same stream at Villa Riva. Abbott found a few on Lake Enriquillo near Duvergé October 1 to 6, 1919.

In Haiti the "Gru blanche" of Descourtilz, which he said flew in V-shaped flocks in the marshes, and was so rare that he secured only four in five years' hunting, was probably this species. One is reported by Ritter, and Tippenhauer remarks of this bird that it was sought eagerly for its flesh. Bartsch reported one at Trou Caïman April 4, 1917. Bond writes that it is not uncommon at the Étang Miragoane but did not find it elsewhere.

The white ibises are now shy and difficult of approach, so that they are noted usually as white birds with black-tipped wings and long curved bills that fly with outstretched necks across the sky, or rest in the tops of distant trees. The immature individuals are distin-

guished from the adults by their grayish brown backs, and grayish heads and necks. The white ibis measures from 565 to 700 mm. in length.

Subfamily PLATALEINAE

AJAIA AJAJA (Linnaeus)

ROSEATE SPOONBILL, CUCHARETA, SPATULE

- Platalea ajaja* LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 140 (Brazil).
Spoon-bill, SAINT-MÉRY, Descript. Span. Part Saint-Domingo, vol. 1, 1798, p. 306 (Dominican Republic, mentioned).
Spatule, BUFFON, Hist. Nat. Ois., vol. 7, 1780, p. 460 ("Saint-Domingue").—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 220-221 (Haiti, very rare).
Platalea ajaja, TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).
Ajaja ajaja, CORY, Cat. West Indian Birds, 1892, p. 88 (Haiti, Dominican Republic).
Ajaia ajaia, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 309 (specimen).
Ajaia ajaja, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 398 (Monte Cristi, specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (reported).—DANFORTH, Auk, 1929, p. 361 (Laguna del Salodillo, Artibonite River).

Resident; rare.

The spoonbill is one of the rarest of marsh birds of Hispaniola. It is mentioned by Moreau de Saint-Méry as one of the birds found in the Dominican Republic but without statement of definite locality. Tristram reports one in a collection made by C. McGrigor that is supposed to have come from near Samaná Bay. J. L. Peters in 1916 examined the skull of one obtained by Curt Peters in the marshes at the mouth of the Río Yaqui del Norte, and states that the species was reported as rare near Monte Cristi. Abbott informs us that he found a flock of twenty or more near Trujín in the Dominican Republic on February 9, 1922, but that they were so wild that he did not succeed in collecting specimens. They were said to breed there at the south end of the lagoon. He heard of them at Rincón and also in the Yuna swamps, and was told that they were found occasionally at Lake Enriquillo. An officer in the marines informed him that he had killed one at the eastern end of this lake. Danforth saw eight at the Laguna del Salodillo, near Copey, June 26, 1927. Dr. E. L. Ekman (in a letter) says that he found this species on the island of Beata, and on the Barahona Peninsula.

Descourtilz reported the spoonbill as very rare in Haiti. Abbott heard of them on the Étang Saumâtre, and saw the wing of one said to have been killed there. Near Desdunes, Haiti, on April 28, 1927, as Wetmore crossed by airplane in company with Captain Pressley, flying low over the coastal lagoons, a flock of three spoonbills rose to follow a flock of flamingos. Looking directly down from an

altitude of two hundred and fifty feet the spatulate bill was observed clearly, serving to identify them with ease. Danforth saw three near the mouth of the Artibonite, July 30, 1927.

The spoonbill is a large ibis-like bird, with pinkish red and white plumage, having the head and throat more or less bare. It is separated from all other birds of this region by the long, flattened bill, that is greatly expanded at the tip so as to present the form of a spatula with broadened end.

Suborder PHOENICOPTERI

Family PHOENICOPTERIDAE

PHOENICOPTERUS RUBER Linnaeus

FLAMINGO, FLAMENCO, FLAMAND

Phoenicopterus ruber LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 139 (Jamaica, Cuba, and Bahamas).

Flamman, ROCHEFORT, Hist. Nat. Mor. Iles Antilles l'Amerique, 1618, pp. 151-152 (recorded).

Flamand, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, pp. 41-42 (recorded).—SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, pp. 111, 621 (Gonaïves, breeding).

Flamingo, SAINT-MÉRY, Descrip. Span. Part Saint-Domingo, vol. 1, 1798, pp. 85, 306 (Neyba, Azua).—CONDIT and ROSS, Geol. Rec. Dominican Republic, Geol. Sur. Dom. Rep., Mem., vol. 1, 1921, p. 192 (Lake Enriquillo).

Flammant, BUFFON, Hist. Nat. Ois., vol. 8, 1781, pp. 485-486, 491 (Île a Vache, Gonave, Lake Enriquillo).

Flamant, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 217-220 (Gonaïves).

Flamenco, WALTON, Pres. State Span. Col. incl. partic. Rep. Hispaniola, vol. 1, 1810, p. 121 (plains of Neyba).

Phoenicopherus ruber, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 151, 156 (Haiti, specimen).

Phoenicopterus ruber, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 ("Laguna de Neyba").—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Haiti); Birds Haiti and San Domingo, March, 1885, p. 165, (Gonaïves); Cat. West Indian Birds, 1892, p. 88 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 323 (Gonaïves, Salt Lakes).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 399 (Monte Cristi, specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (Gonave Island, Étang Saumâtre, Lower Artibonite, Caracol, Fort Liberté, Lake Limón).—DANFORTH, Auk, 1929, p. 361 (Artibonite River).

Phoenicopterus r. ruber, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, pp. 108, 218-219 (Étang Saumâtre).

Resident; locally in small numbers.

Moreau de Saint-Méry in his account of the Dominican Republic informs us that "the plain of Neybe * * * seems to be the chosen spot of the flamingoes * * * which keep in flocks" and

continues on another page to say that they are found also near Azua. Walton reports them in 1810 from the Plains of Neiba. In view of these early observations it is of interest to record that Abbott secured a male at the eastern end of Lake Enriquillo on October 5, 1919, and was told that these birds nested in that region. He saw as many as forty or fifty in a day. Condit and Ross in the course of a geological reconnaissance of the Republic also reported them on the southern shores of Lake Enriquillo. Buffon writes that Deshayes recorded them on Lake Enriquillo, and that at one time several were kept in captivity for a year. Sallé informs us that though he did not secure specimens he saw these birds near the "Laguna de Neiba." Three taken by Abbott at Trujín in this same general region include two adult females and a male in immature plumage. They were said to breed at the south end of the lagoon at that point. J. L. Peters examined the skull of one taken near Monte Cristi by Curt Peters, and says that they are reported in fall in that vicinity. Tristram examined one in a collection of birds made by C. McGrigor in the Dominican Republic (without specific locality). Abbott heard of them on Saona Island in 1919, but did not find them. Rochefort in 1618 says that flamingos were common and that hunters approached them on all fours, covered with the skin of an ox so that they passed unnoticed among the grazing cattle. By this ruse they killed the birds with ease. He describes the flesh as delicate, and the skin as prized for its down. He believed that the birds were able to detect the approach of a hunter or the nearness of firearms by their odor (a belief for which we consider there is no foundation, though it is alleged today by duck hunters in parts of Europe that ducks are frightened by human scent borne on the wind). Though Rochefort describes the flamingo, the figure that accompanies his account is that of a spoonbill. Charlevoix, writing in 1733, does not agree with the statement as to the excellence of the flesh of the flamingo, as he says that it is ordinary except for the tongue which is a delicate morsel.

In Haiti Deshayes informed Buffon that flamingos were common on Gonave Island, Île à Vache and in the Cul-de-Sac region. Saint-Méry at the end of the eighteenth century reported flamingos as common near Gonaïves, and said that they breed there. They were kept in captivity by Rossignol de Grandmont, and became very tame. He recorded them also on the coast at Aquin, and says that the Baie des Flamands is named from their presence. Descourtilz likewise found them very common near Gonaïves, and relates that during a threatened invasion by the English an excited negro threw the entire populace into a state of alarm by mistaking the flocks of pink plumaged flamingos on the salines for troops of red-coated British sol-

diery advancing to attack the town. He tells us also that the natives made flutes and pipe-stems from the long leg bones of these birds. Persecution by hunting probably accounts for the statement of Ritter in 1836 that flamingos were seen in flocks but were very shy. Cory says that he saw a flamingo near Gonaïves (in the spring of 1881), and reports that the bird was known to the natives at Gantier. Tippenhauer records them near Gonaïves, and on the saline lakes of the Cul-de-Sac.

Abbott heard of flamingos on the Grande Saline near Gonaïves, on the lagoons on the north side of Gonave Island, and on occasion on Tortue Island, but did not see them. Beebe, on March 15, 1927, encountered twenty-one in two flocks on the Étang Saumâtre and heard that there was a large breeding colony on this lake. He saw three young birds on the wing. W. J. Eyerdam, in a letter sent to the United States National Museum reports that at the end of July and during early August, 1927, during work on Gonave Island, flamingos were common. He counted twenty-two in one flock and fourteen in another, and states that they were seen daily while he was at Point-à-Raquettes. The natives reported that they were nesting.

Capt. R. A. Pressley, United States Marine Corps, states that he has found flamingos regularly in the shallow lagoons near Desdunes, and on April 28, 1927, in flying over this area with Wetmore as passenger, located a flock of twelve. As the plane passed and then banked to swing again over the birds, they flew low over the surface of the water—wonderfully beautiful in their pinkish plumage set off by black-tipped wings. To the passenger the pleasure of this view was redoubled when his glance passed over the members of the flock one by one to discover that three birds following behind were the even rarer roseate spoonbill. Danforth and Emlen saw about 150 near the mouth of the Artibonite River July 30, 1927, where they were feeding on the open flats. James Bond writes that he found the flamingo not rare, recording it at the Étang Saumâtre, on the lower Artibonite River, at Caracol, and at Fort Liberté. There were many on Laguna Limón on the Dominican frontier in April, 1928, and he saw it in large numbers on Gonave Island. He was told that it nested at Trou Louis on the south side of the island, and at Grand Lagon on the north.

It is probable that the flamingos of the island nest in one or two colonies isolated in great stretches of salt lagoons, and that they range more widely at other times of the year. It may be possible for some observant aviator to locate such a breeding colony from the air. The birds should not be disturbed as they are now too rare to be considered game.

In addition to the color, which has been described above, this species may be told by its form, as it stands taller than the great blue heron, and by the curious, heavy bill, which is bent down at an abrupt angle near its middle. Young are whitish with dusky streakings above.

Order ANSERIFORMES

Family ANATIDAE²⁹

Subfamily DENDROCYGNINAE

DENDROCYGNA VIDUATA (Linnaeus)

WHITE-FACED TREE-DUCK

Anas viduata LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 205 (Lake Cartagena).

Dendrocygna viduata, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 66, 1929, p. 309 (Haina, specimens).

Very rare; possibly of accidental occurrence.

The only record for this species is that of Moltoni who reports a pair taken by Ciferri at Haina May 20, 1926. The species is common in the continental portions of tropical America and has been recorded casually in Cuba and Barbadoes in the West Indies.

²⁹ The species of ducks that are now known to occur in Hispaniola are so few that it is certain that the list will be considerably extended with further observations. Some of the species to be found are included beyond in brackets to indicate that they are still in hypothetical status.

Anas torquata, reported from "St. Domingue" by Schlegel (Mus. Pays-Bas, Anseres, 1866, p. 61) does not refer to Hispaniola, since the species in question, now known as *Nettion leucophrys*, comes from South America.

The muscovy duck *Cairina moschata* (Linnaeus), common in domestication, may occasionally be found in a wild state, through wandering from its accustomed place with man. Buffon (Hist. Nat. Ois., vol. 9, 1783, p. 167) states that these ducks were kept captive at that day but says nothing to indicate that they had become feral. Ritter (Naturh. Reis. Westind. Insel Hayti, 1836, p. 157) reports a specimen, but does not say where he obtained it. An officer in the Marine Corps described to Doctor Abbott a large duck that must have been this form that he had killed near Santo Domingo City. There is no indication that this species was native to the island.

There is uncertain record for the wood duck *Aix sponsa* (Linnaeus), since it was reported to Abbott that it had been shot near Santo Domingo City. He saw no specimens. The species is resident in Cuba. Bond also says (Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520) that in February he "shot a small duck which was swimming about with a small flock of Lesser Scaup (*Nyroca affinis*) at Lake Miragoane. Unfortunately the bird was only wounded and I was unable to find it. The duck appeared to have white patches about the eyes, giving it a spectacled appearance. After examination of the study collection of ducks in this Academy, I feel the bird may have been a female wood duck, but am by no means certain. An American living in Port au Prince told me of having observed the wood duck in Haiti."

There is ground for belief that geese of unknown species came in earlier years as migrants. Oviado (Hist. Gen. Nat. Indias, Libr. 14, cap. 2. Reprint, Madrid, 1851, p. 443) says "hay muchos Ansares de passo bravas y es el passo dellas por diciembre." Further Descourtiz (Voy. Nat., vol. 2, 1809, pp. 251-252; remarks under the name oie sauvage, "est la même que celle d'Europe, * * * Elles volent aussi très-haut sur deux lignes, formant un V."

This duck has the forepart of the head entirely white, the lower neck chestnut, the back of the head and neck, lower back, and abdomen black, the upper back brown, and the sides whitish buff barred with black. The tarsus is like that of the fulvous tree-duck.

DENDROCYGNA ARBOREA (Linnaeus)

WEST INDIAN TREE-DUCK, YAGUASA, YAGUASA COLORADA, CANARD SIFFLEUR, GINGEON

Anas arborea LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 128 (America).
Gingeon, BUFFON, Hist. Nat. Ois., vol. 9, 1783, pp. 176-181 (part; habits).
Canard Siffleur, de St. Domingue, DAUBENTON, Planch. Enl., no. 804.

Canard Siffleur, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 252-254 (Rivière Estère).

Dendrocygna viduata, CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Anas arborea, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (Haiti, specimen).

Dendrocygna arborea, CORY, Birds Haiti and San Domingo, March, 1885, pp. 166-167 (specimens); Cat. West Indian Birds, 1892, p. 87 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds Bel. H. B. Tristram, 1889, p. 270 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (common).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Source Matelas).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (Étang Miragoane).—DANFORTH, Auk, 1929, p. 361 (Laguna del Salodillo, Les Salines, Gonaïves, Grand Goave, Étang Miragoane, Artibonite).

Resident; fairly common in the lowlands.

Former distribution of the tree-duck (frontispiece) in the Dominican Republic is somewhat uncertain, but to-day the section surrounding Samaná Bay, particularly the area near San Lorenzo Bay, seems to be that where the species is most common. W. L. Abbott secured specimens there on July 26 and 30, and September 10, 1916, and forwarded a female from Sánchez February 22, 1919. He reports tree-ducks as fairly numerous at Lake Enriquillo October 1 to 6, 1919. On May 6, 1927, while wading in a recently flooded swamp five miles east of Sánchez, Wetmore flushed two tree-ducks in a wooded area where water was overflowing green vegetation growing in the shade of trees. The birds rose heavily with a low quack and flying low under the branches passed rapidly out of sight. Danforth reports them common at Laguna del Salodillo, near Copey, June 26, 1927, where he shot twelve. Two had small seeds in their stomachs.

In Haiti Bartsch recorded the tree-duck on April 3, 1917, near Gloré on the Étang Saumâtre, and saw it again at Trou Caïman on April 4. Abbott shot specimens at the Étang Saumâtre on March 7,

1918, and secured one at Les Basses on January 9, 1918. He says that it is in his experience the most common duck in Haiti, and easy to shoot as when one fires into a flock the survivors usually fly to a distance and then return giving opportunity for one or two more shots before they finally leave. Bond found them at the Étang Miragoane and heard of them at Fort Liberté. Beebe noted three at Source Matelas. Danforth in 1927 found them very common at Les Salines and near Gonaïves, and observed a few near Grand Goave, at the Étang Miragoane, and in the Artibonite Sloughs beyond St. Marc.

Descourtilz reports the tree-duck as common, and says that he saw it on the Rivière Estère. Buffon quotes extensively from notes furnished by Deshayes, and though he gives these under the wigeon refers certainly to this tree-duck since Deshayes describes them as perching in trees, as having long legs, and as holding the tail down like a guinea when walking. Deshayes relates that the birds are found in flocks and feed extensively on rice. They laid in January, having young about in March. Often the eggs were taken and placed under hens for hatching so that tree-ducks were frequent in captivity.

The species is found to-day in lagoons and swamps in the lowlands. It feeds frequently at night and is seldom seen except when one chances to encounter a flock hidden in the reaches of swamps.

In general coloration this tree-duck is dull brown above, with paler margins on most of the feathers that give the plumage a squamated appearance. The throat is white, the foreneck whitish streaked finely with dusky, and the upper breast dull brown. The lower breast, sides and under tail coverts are buffy white spotted with blackish, and the abdomen is buffy white. The species is distinguished from all other ducks of this region by the relatively long legs which are covered with finely reticulated scales that form a honey-comblike pattern quite different from the broad transverse plates that cover the front of the lower leg in ordinary ducks.

Subfamily ANATINAE

[MARECA AMERICANA (Gmelin)

BALDPATE, AMERICAN WIGEON

Anas americana GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 526 (Louisiana and New York).

Anas penelope, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 42 (Artibonite).

Anas americana, RITTEB, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).

Mareca americana, TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).

Status uncertain; probably found during winter as migrant from North America.

Descourtilz reports the wigeon from "lagon Peinier" in the plain of the Artibonite in April, 1799, but without clear description so that the record is subject to question. Notes by Ritter and Tippenhauer likewise seem uncertain, so that the species is here placed in hypothetical status. As it comes to Cuba and Porto Rico there is little question but that it will be found eventually with other migrant ducks in Hispaniola.

The adult male has the middle of the crown white or buffy, bordered by glossy green more or less sprinkled with black; cheeks and throat buff finely barred with black; upper breast and sides vinaceous, the latter somewhat barred with wavy black lines; lower breast and abdomen white; black grayish brown finely barred with black. The female has the head and throat white or pale buff, finely streaked with black, the upper breast and sides pale vinaceous washed with grayish, and the rest of the underparts white. The back is grayish brown barred somewhat with buff. The greater wing coverts in both sexes are white, forming a prominent patch, and the speculum is black, in the male glossed distinctly with green. The species is about the size of the Bahama pintail and is told from other ducks by the proportionately small bill.]

IDAFILA ACUTA TZITZIOHA (Vieillot)

PINTAIL, SPRIG, PATO PESQUEZILARGO

Anas tzitzioha VIEILLOT, Nouv. Dict. Hist. Nat., vol. 5, 1816, p. 163 (Mexico).

Probably a winter visitor.

An officer in the United States Marine Corps who hunted ducks regularly in Haiti informed Dr. W. L. Abbott that he had killed "sprigs" in addition to the Bahama pintail with which he was thoroughly familiar. The pintail comes regularly to Cuba³⁰ in small numbers and Danforth has seen it in western Porto Rico³¹ so that it may be expected to range occasionally in winter to Hispaniola. Until more definite information is available we place it in the hypothetical list.

The pintail has the general form of the Bahama pintail, but is slightly larger and has a longer, more slender neck, and an elongated tail in the male with a projecting spike of feathers. The male has the head and throat olive brown, a blackish stripe on the hindneck, and the back gray. The scapular feathers are black, the wing

³⁰ Barbour, Mem. Nuttall Ornith. Club, No. 6, 1923, p. 37.

³¹ Journ. Dept. Agric. Porto Rico, vol. 10, 1926, p. 37.

speculum green, and the underparts white. The female suggests somewhat the Bahama pintail but is grayer and has the tail grayish brown, not different in color from the back.]

DAFILA BAHAMENSIS BAHAMENSIS (Linnaeus)

BAHAMA PINTAIL, BAHAMA DUCK, PATO CRIOLLO

Anas bahamensis LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 124 (Bahamas).

Dafila bahamensis, CORY, Birds Haiti and San Domingo, March, 1885, pp. 167-168 (possibly seen); Cat. West Indian Birds, 1892, p. 86 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Poecilionetta bahamensis, LÖNNBERG, Fauna och Flora, 1929, p. 99 (Haiti, specimen).

Poecilionetta b. bahamensis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Source Matelas).

? *Dafila caribaea* "Herz. v. Württemb." HARTLAUB, Naumannia, 1852, p. 56 (Haiti).

Dafila bahamensis bahamensis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (Étang Miragoane, Trou Caïman, Port-de-Paix).—DANFORTH, Auk, 1929, p. 361 (Laguna del Salodillo, Étang Bois-Neuf, Artibonite Sloughs, Gonaïves.)

Resident; fairly common.

The Bahama pintail was overlooked by early travelers, except by Cory who believed that he saw it on two occasions but was not certain.

The only records for the Dominican Republic are those of Abbott, who secured one at Trujín February 8, 1922, and saw others near Cabral in March, 1922, and of Danforth who found them abundant at Laguna del Salodillo, near Copey.

Paul Bartsch secured one at Trou Caïman, Haiti, on April 4, 1917, and preserved the head in alcohol. Abbott says that numbers were found during the winter of 1916-1917 near Port-de-Paix, and that a few bred there. He shot two at that point on April 14, 1917, and April 5, 1920 secured two more on the Étang Saumâtre. On May 6 he took a male near Fond Parisien. Wetmore flushed two from a salt water lagoon near Aquin on April 3, 1927, and observed two near Gonaïves and nine more north of Port-au-Prince on April 28 in passing low over the coastal swamps by airplane. Danforth saw thirty at the Étang Bois-Neuf, south of St. Marc July 25, collected one on the Artibonite Sloughs July 28, and saw a dozen near Gonaïves July 30, 1927. Bond found it in 1928 at the Étang Miragoane, where he secured a male February 4, at Trou Caïman, where he took a female June 22, and at Port-de-Paix. He speaks of it as the most numerous of the resident ducks, and says that though it prefers fresh water it frequents salt water lagoons, being the only duck in this area having that habit.

Attention may be called here to the name *Dafila caribaea* of Hartlaub described briefly from Haiti as "Wesentlich verschieden von *D. americana* und *urophasianus*; grösser wie beide." As *urophasianus* is an old name for *Dafila bahamensis* it is possible that *Dafila caribaea* refers to the Bahama duck, though from the meager description the species concerned may not be successfully identified.

The Bahama duck is found in freshwater marshes or in the brackish lagoons of the coast, at times ranging on broad stretches of open water, but usually found among rushes or other aquatic growth, or in mangroves. It flushes quickly and flies with swift direct flight.

The generic name for this duck is usually given as *Paecilometta*, but Wetmore has determined that birds of this supposed group are not generically distinct from *Dafila*.³²

The Bahama duck, which is only a little larger than a teal is easily told in the hand or on the wing by the light, buffy brown tail, distinctly lighter than the back, and the sharp line of demarcation on the cheeks between the white of the throat and side of the head and the grayish brown of the crown. There is a spot at the base of the bill which is usually bright red but is said sometimes to be light yellow, a case of this being recorded by Abbott in a specimen taken at Port-de-Paix.

NETTION CAROLINENSE (Gmelin)

GREEN-WINGED TEAL, PATO DE LA FLORIDA, SARCELLE

Anas carolinensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 533 (Hudson Bay to Carolina).

Nettion crecca carolinensis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Port-au-Prince).

Rare in winter.

Beebe says "three were examined in a hunter's bag in Port-au-Prince." Abbott was informed by Lieutenant Nickinson of the Marine Corps that he had shot this species near Santo Domingo City. This teal should occur with other migrant ducks in winter, and may be more common than the meager information above quoted indicates.

The green-winged teal, with its blue-winged relative, is among the smallest ducks that come to the island. The adult male has the head and neck rufous chestnut, with green on the sides of the head. The female is more plainly colored. Either sex is distinguished easily from the blue-winged teal by the green wing speculum and the lack of blue on the shoulder. These birds measure about 365 mm. in length.

³² See Wetmore, New York Acad. Sci., Scient. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 310-311.

QUERQUEDULA DISCORS (Linnaeus)

BLUE-WINGED TEAL, PATO DE LA FLORIDA, SARCELLE

Anas discors LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 205 (Virginia or Carolina).

Sarcelle, SAINT-MÉRY, Descript. Part Franç. Île Saint-Domingue, vol. 2, 1798, p. 565 (Étang Miragoane).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 256-257 (Haiti).

Teal, SAINT-MÉRY, Descript. Span. Part Saint-Domingue, vol. 1, 1798, p. 214 (Manzanillo and "Cosbeck" Bays).

Anas discors, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).

Querquedula discors, SALLÉ, Proc. Zool. Soc. London, 1857, p. 237 (Higuëy).—CORY, Birds Haiti and San Domingo, March, 1885, pp. 168-169 (listed); Cat. West Indian Birds, 1892, p. 86 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—CHRISTY, Ibis, 1897, p. 342 (Yuna swamps).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (Dominican Republic).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, pp. 67, 70, 218 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 491 (Étang Miragoane, Trou Caïman, Port-de-Paix).

Winter visitor, common; migrant from North America.

For a bird that is reported as common there are comparatively few definite records for the blue-winged teal, probably because most of the specimens shot have found their way into the cooking pot. Moreau de Saint-Méry wrote that "ducks, teals * * * fly in clouds particularly in the Bay of Mancenilla and that of Cosbeck," a statement that must refer in part to the present bird since it is the most common of migrant ducks in the West Indies. Sallé recorded it in the marshes near Higuëy, Dominican Republic, and Christy shot several in the Yuna swamps but did not find it common. Verrill makes only a general statement regarding it. Abbott reported a small flock on Lake Enriquillo, October 1 to 6, 1919.

In Haiti Bartsch recorded the blue-winged teal at Gloré on the Étang Saumâtre April 3, 1917, and at Trou Caïman April 4. Abbott collected one from a large flock at Les Basses on January 4, 1918, and others at the Étang Saumâtre April 10 and 13, 1920.

Saint-Méry reports teal, apparently this species from Étang Miragoane, and Descourtilz gives a very good description of the blue-winged teal under the name "Sarcelle commune de Saint-Domingue." The latter author speaks of ten species of ducks that are recognized by hunters in Haiti, and says that at Etable (near the Artibonite) ducks were so numerous that their noise disturbed his sleep. His servant in four shots at night killed fifty-eight. Officers of the Marine Corps who hunted extensively in the marshes and lakes of the lowlands informed Wetmore that from November to March this teal was the most abundant duck that they encoun-

tered and that at times it occurred in large numbers. Beebe in 1927 saw four at Source Matelas January 13 and eight March 21. He reports that he saw fifty-three killed March 2, and that the last were noted April 12. Bond found it at the Étang Miragoane, Trou Caïman, and Port-de-Paix and says that it is by far the most abundant of the migrant ducks.

This teal is one of the important game-birds of Hispaniola as its hunting is excellent sport and its flesh is palatable for the table.

The blue-winged teal is instantly recognized by the bright blue patch on the shoulder that shows clearly in flight and is the most prominent marking when the bird is in the hand. It is a species of small size. Adult males are brighter colored than females, and have a prominent white crescent in front of the eye.

[*SPATULA CLYPEATA* (Linnaeus)

SHOVELLER

Anas clypeata LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 124 (Southern Sweden).

Sucet, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 257 (listed).

Anas clypeata, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (Haiti).

Descourtiz includes the shoveller among the wild game of the island under the name *sucet*, and the species is listed by Tippenhauer. James Bond informs me that it was described to him by several Americans who hunted ducks in Haiti, including Dr. W. R. Barbour of the Service Technique. The bird should be present in small numbers with other ducks as a winter migrant from North America, as it is known from Cuba and Porto Rico. Until a specimen is reported it is included in the hypothetical list.

The shoveller has the same bright blue shoulder patch as the blue-winged teal, but is larger and is marked at once by the peculiar bill, which is expanded at the tip until it is twice as wide as at the base, a character from which the species derives its name.]

Subfamily NYROCINAE

NYROCA AFFINIS (Eyton)

LESSER SCAUP DUCK, PATO DEL MEDIO

Fuligula affinis EYTON, Mon. Anatidae, 1838, p. 157 (North America).

Fuligula affinis, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (Haiti).

Aythya marila, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (San Lorenzo Bay).

Nyroca affinis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Port-au-Prince).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 492 (Trou Caïman, Artibonite River, Étang Miragoane).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 310 (specimen).

Winter visitant from North America (abundance not known).

Abbott secured three from a flock of four January 2, 1922 in the mouth of the Yuna River opposite Sánchez. He saw others at Cabral between March 15 and 18, 1922. It is assumed that the birds reported by Verrill in San Lorenzo Bay as the greater scaup were the present species, since the greater scaup has not been known to occur in winter south of Florida.

In Haiti Abbott secured a female January 4, 1918 at Grande Cayemite Island, and another specimen at the Étang Saumâtre April 6, 1920. Beebe reports four off shore from Port-au-Prince (probably near the Bizoton wharves) early in January, 1927. Tippenhauer lists the species from Haiti without comment. Bond found it at the Étang Miragoane, Trou Caïman and on the Artibonite River.

There is nothing further known to us regarding the occurrence of this species.

The lesser scaup is a North American species that comes regularly to the West Indies to spend the winter on open lagoons or stretches of quiet water on the larger streams. The birds are gregarious and are usually encountered in little groups that drift about in the safety of open water during the day, and approach the shore line only under cover of darkness. This species is one of the deep water ducks that secures its food mainly by diving.

The adult male has the head, neck and upper breast black with a gloss of purple on the side of the head. The back is white mottled with dusky, and the under surface white, except for the under tail coverts which are black. There is a white wing speculum. In the female the black found in the male is replaced by dull brown, and there are conspicuous white markings on the head adjacent to the bill, particularly on the sides of the head. The hind toe as in all deep water ducks has a broad flap or lobe.

[*NYROCA COLLARIS* (Donovan)]

RING-NECKED DUCK

Anas collaris DONOVAN, Brit. Birds, vol. 6, 1809, pl. 147 (Lincolnshire, England. Found in Leadenhall Market, London).

Fuligula collaris, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Reported without comment by Tippenhauer and here placed in the hypothetical list pending report of a specimen. The species is seemingly rather rare in Cuba, and has been reported only once in Porto Rico.

The ring-neck in form and appearance is generally similar to the lesser scaup duck. The male has the back black, and a poorly defined

chestnut collar around the neck. The female is brown. Both sexes have the wing speculum gray, and a light band across the tip of the bill, characters which distinguish them readily.]

Subfamily ERISMATURINAE

ERISMATURA JAMAICENSIS JAMAICENSIS (Gmelin)

WEST INDIAN RUDDY DUCK, PATÍCO DE FLORIDA, COUCOURAIME

Anas jamaicensis Gmelin, Syst. Nat., vol. 1, pt. 2, 1789, p. 519 (Jamaica).

Erismatura rubida, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (Haiti).

Erismatura jamaicensis, CIFERRI, Segund Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Erismatura jamaicensis jamaicensis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 492 (Trou Caïman).—DANFORTH, Auk, 1929, p. 361 (Laguna del Salodillo, specimen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 310 (Haina, specimen).

Resident; local.

Tippenhauer lists the ruddy duck from Haiti without definite locality or statement as to its occurrence. W. L. Abbott believes that he saw it on the Laguna del Diablo, at the eastern end of the Samaná Peninsula, but was not entirely certain.

Ciferri has listed a specimen in the collection of the Experiment Station at Moca, D. R., the first one actually known for the island, and sent a specimen collected near Haina April 10, 1926, to Moltoni. Danforth saw three males at the Laguna del Salodillo, near Copey, June 26, 1927, and collected one which he says agrees well in color and measurements with Porto Rican specimens. He measured it as follows: Wing 132.0, tail 77.5, culmen 42.5, tarsus 33.0 mm. Bond found the ruddy duck in 1928 in small numbers at the Trou Caïman, Haiti, and on January 15 secured a female which had been caught alive by a boy. This bird is in very worn plumage and is extremely dark in color, being blackish above mottled faintly with dull russet, the russet color predominating on the scapulars, and showing strongly on occasional feathers of the side of the neck. On the under surface it is dark hair brown. The wing is very small and apparently not fully developed, while the tail is so worn that the shafts of the feathers project as spines having only ragged bits of web, with the tips completely gone. The wing measures 109.6 mm., the culmen from base 40.7 mm. and the tarsus 30.7 mm. The length of wing is decidedly under that normal for the West Indian form, and it is apparently not entirely grown. Bond believed that he saw a male in full plumage with two females at the Étang Miragoane February 4, 1928. At the Trou Caïman natives informed him that the ruddy duck nested during the summer months.

The ruddy duck is short and compact in body with a full, heavy neck and broad bill. The throat and back of the male in full plumage are bright rufous-brown, and in the young male, male in eclipse dress and the female grayish-brown. The species is easily known by the stiffly pointed tail-feathers, which are often held erect as the bird swims, and by the very short upper tail coverts.

NOMONYX DOMINICUS (Linnaeus)

MASKED DUCK, PATO CHORIZO, GROUBE

Anas dominica LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 201 (Hispaniola).
Croube, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 254-256 (Haiti).

Querquedula Dominicensis BRISSON, Ornith., vol. 6, 1760, pp. 472-474, pl. 41, fig. 2 ("S. Domingue," specimen).

Anas dominica, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 42 ("lagon Peinier," Artibonite).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).

Erismatura dominica, TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).

Nomonyx dominicus, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (Colorado River near Sánchez).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 399 (El Batey, specimen).

Resident; apparently rare.

The earliest account of this curious little duck that we have seen is that of Brisson who describes its color and form in detail, says that it occurs in "S. Domingue & au Mexique" and that he had examined it in the collection of Abbé Aubry. As he designates it "La Sarcelle de S. Domingue" we may suppose that the specimen he examined came from Hispaniola.

Definite records are few. Verrill under this species remarks, "Colorado River, Sánchez, rare" a record that may be open to some doubt. Peters shot a male among reeds at the border of a lagoon near El Batey, on April 5, 1916, the only existing specimen from the island known to us at the present time. Abbott believes that some little ducks seen on Laguna del Diablo on the Samaná Peninsula, March 12, 1919, were this species but did not collect specimens.

In Haiti Bartsch reports this species as seen on Trou Caïman, Haiti, April 4, 1917. Descourtilz found it in the "lagon Peinier" on the plain of the Artibonite, in April, 1799, and says of it that it is solitary, that its flight is very low and for only a short distance, and that its eggs which are white are very large for the size of the bird. Bond believed that a bird described to him under the name of Canard Zombi was this species but was not certain.

The masked duck is found in reed grown lagoons where it seldom ventures into the open. When alarmed it may dive and disappear with all the facility of a grebe or may fly to some cover.

The adult male is in general rusty brown, paler below with the anterior portion of head black, the back streaked with black, and the wing speculum white. The female and young male are paler with the black markings more broken. The birds are small as they measure only 300 to 370 mm. long.

Order FALCONIFORMES³³

Suborder FALCONES

Family ACCIPITRIDAE

Subfamily ACCIPITRINAE

ACCIPITER STRIATUS STRIATUS Vieillot

HISPANIOLAN SHARP-SHINNED HAWK, GUARAGUOU DE SIERRA, SAN NICOLAS, HALCÓN, MALFINI, PETIT MALFINI

Accipiter striatus VIEILLOT, Ois. Amér. Sept., vol. 1, 1807, p. 42, pl. 14 ("Saint-Domingue"=Haiti³⁴).

Sparvius striatus, VIEILLOT, Encycl., Méth., vol. 3, 1823, pp. 1265-1266 ("Saint Domingue").

Nisus striatus, HARTLAUB, Isis, 1847, p. 609 (listed).

Nisus fuscus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, specimen).

Accipiter fringilloides, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 120-121, col. plate (Le Coup, specimen); Cat. West Indian Birds, 1892, p. 98 (Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).—CHERRIE, Field

³³The following references pertain apparently to either the turkey vulture *Cathartes aura* (Linnaeus), or the black vulture *Coragyps urubu* (Vieillot).

Marchand, BUFFON, Hist. Nat. Ois., vol. 1, 1770, pp. 176, 179 (name applied by French of "Saint-Domingue").

Vultur Brasiliensis BRISSON, Ornith., vol. 1, 1760, p. 470. (S. Domingue.) No specimen is listed.

Aquila nudicollis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti). The only note is "geyer mit nakendem Halse." There is no mention of a specimen taken. This name which occurs in a list of birds supposedly found in Haiti has been overlooked except as indicated in the next citations.

Falco nudicollis (*Ibycter aquilinus*), HARTLAUB, Isis, 1847, p. 610 (listed after Ritter with query).

Aquila nudicollis, TIPPENHAUER, Die Insel Haiti, 1892, p. 319 (listed apparently after Ritter).

Cathartes aura, HARTLAUB, Isis, 1847, p. 610 "wir kennen ihn von Cuba, Domingo und St. Nevis."

The note by Ritter, which seems to be the sole basis for all other references, may probably refer to birds that he saw in Cuba. There is current, however, an uncertain belief that buzzards were introduced near Gonaïves many years ago during the period of French colonization, the experiment being unsuccessful. We have found no definite statement to substantiate this.

³⁴In the original description Vieillot remarks "elle porte le nom de malfini, que les Créoles donnent indistinctement à tous les petits oiseaux de proie" and in the Tableau Encyclopédique et Méthodique says further "les colons de Saint-Domingue appellent cet Epervier *Malfini*, avec l'épithète de *petit*." As the name malfini is used only in the Republic of Haiti it is taken from this that his description applies to the bird of Haiti which is therefore indicated as the restricted type locality.

Columbian Mus., Ornith. ser., vol. 1, 1896, p. 22 (Honduras, Catarrey, specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Miranda, specimen).

Accipiter striatus striatus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 399 (Bulla).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 492 (listed).—DANFORTH, Auk, 1929, pp. 361-362 (La Vega).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 310 (San Juan, specimen).

Resident mainly in the hills of the interior; locally common.

The sharp-shinned hawk of Hispaniola is found principally in the wilder sections of the forested hills of the interior. Though observed as early as the close of the eighteenth century by Vieillot in his travels on the island, the bird remained little known, and until recently comparatively few have been taken.

In the Dominican Republic Cherrie secured specimens at Honduras (near Baní) April 2, 1895, and at Catarrey, February 6. In the stomachs of these he found remains of large insects, lizards and birds. Verrill collected this form at Miranda. Peters recorded one at Bulla on February 12, 1916, but did not secure it. He did not find it in his work along the north coast of the island. Near Constanza in the high interior the sharp-shinned hawk seems to be locally common, as, though Wetmore did not record it, Abbott obtained specimens in that vicinity on April 9, 12, 19, and 30, and May 2, 1919. One of these, taken April 19, is marked as from the Loma Río Grande. In 1917 Beck collected specimens for the American Museum of Natural History on Loma Rucillo March 1, Loma Tina January 15, and at Túbano February 15 and 20. Danforth records one seen by F. P. Mathews near La Vega July 7, 1924. Ciferri obtained one at the Sabana San Thomé, near San Juan, Oct. 19, 1928.

As indicated above it appears that Vieillot's specimen which served as his type came from the Republic of Haiti. Cory secured one near Pétienville (or Le Coup) on March 3, 1881, the only one that he observed. Bartsch reported it from near Jérémie from April 10 to 16, 1917. On July 3, 1917, Beck collected three on the higher slope of Morne La Hotte. Wetmore recorded one below Morne Cabaio in the Massif de La Selle, April 10 and 13, 1927. On one occasion one flew through the pines at his camp with a hummingbird (*Riccordia swainsonii*) in hot pursuit. Abbott secured skins at Moustique March 3, and at Bombardopolis March 21, 1917. He found remains of a small bird in the stomach of one, and describes the iris of this hawk as varying from deep crimson to orange red, the bill as leaden colored with the tip black, the tarsi greenish yellow, and the toes yellowish.

This small hawk, little if any larger than the sparrow hawk, is distinguished readily by its much longer, square-ended tail. It is

a species of swift, darting flight that seems common in the forests of the high interior. There is nothing known of its nesting, or little of its habits except as recorded above.

Above this species is dark slate gray, with a whitish tail tip. The sides of the head and neck are cinnamon brown, and the remainder of the underparts white barred finely with cinnamon and slate. The tibia are sometimes cinnamon brown, margined lightly with white, and sometimes white barred with mixed slate and warm brown. The tarsi are very long and slender.

Subfamily BUTEONINAE

BUTEO JAMAICENSIS JAMAICENSIS (Gmelin)

WEST INDIAN RED-TAILED HAWK, GUARAGUOU, MALFINI, GROS MALFINI

Falco jamaicensis GMELIN, Syst. Nat., vol. 1, pt. 1, 1788, p. 266 (Jamaica).

?Malfeni, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, p. 41 (recorded).

?Malfini, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 263 (Dondon).

Guaraguao, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2. Reprint, Madrid, 1851, p. 442 (habits).

Red-tailed hawk, BECK, Nat. Hist., vol. 21, 1921, p. 381 (food).

Buteo fulvus, VIELLOT, Ois. Amér. Sept., vol. 1, 1807, p. 34 ("Saint-Domingue").

?*Aquila antillarum* RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti: *nomen nudum*).—TIPPENHAUER, Die Insel Haiti, 1892, p. 319 (listed).

Rupornis ridgwayi, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 22 (Dominican Republic, refers to *Buteo*).

Buteo tropicalis VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, pp. 357-358 (Described as new, San Lorenzo, Dominican Republic).

Buteo borealis, CORY, Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 221 (Haiti).

Buteo borealis jamaicensis, PETERS, Bull. Mus. Comp. Zoöl. vol. 61, 1917, pp. 399-401 (Chocó, Los Toritos, El Batey, Sosúa).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (Haiti, common).—DANFORTH, Auk, 1929, p. 362 (Haiti and Dominican Republic).—MOLTONI, Att. Soc. Ital. Scienz. Nat. vol. 68, 1929, p. 310 (Moca, specimens).

Resident; common, mainly among hills and mountains.

The West Indian red-tailed hawk is widely spread through both republics and is seen regularly in travel through the country. Cherrie who did not secure specimens gives notes under the name of *Rupornis ridgwayi* that evidently refer to the present bird, as he reports it seen frequently in the mountains, while *Rupornis* is more a species of the lowlands. Further *Rupornis* is rare and the red-tail, which Cherrie does not mention at all, is common. Cory did not include the red-tail in his Birds of Haiti and San Domingo published in 1885, but lists it from Hispaniola in his Catalogue of West Indian Birds which appeared in 1892.

Peters found this form fairly common in hilly or heavily timbered country near the coast (Chocó, Los Toritos, Sosúa, El Batey) and collected an adult male at Chocó March 25, 1916. Abbott has forwarded specimens from Sánchez, October 24, 1916, and February 15, 16 and 17, 1919, from El Río in the interior, September 20, October 8 and 9, 1916, and May 12, 1919, and from near Constanza September 26, and October 2, 1916.

Wetmore observed two over the Monte Las Cañitas near Sánchez May 7, 1927, found the species at San Lorenzo Bay on May 11, and in the swamps at the mouth of the Arroyo Barrancota May 8. Numbers were seen over the forested hills between Sánchez and Las Terrenas May 13, and he prepared as a specimen one brought to him alive at Sánchez on May 11.

On May 17, 1927, Wetmore observed several near El Río. Near Constanza this bird was seen regularly from May 18 to 26. Danforth in 1927 saw this bird at Monte Cristi June 27, and San Pedro de Macoris July 7. Abbott secured one on Saona Island, September 16, 1919, and reported several others during the period from September 12 to 18. Ciferri collected specimens near Moca February 27 and September 18, 1927.

In Haiti Bartsch has reported the red-tail in the vicinity of Jérémie April 12, 15 and 16, and near Trou des Roseaux April 13 and 14, 1917. Abbott collected one at Jérémie November 25, 1917, and three others at Moline January 30, 1918. He secured one on Morne St. Vincent June 2, 1920, one at an altitude of 600 meters near Moustique, March 8, 1917, and one near Anse à Galets, on Gonave Island, March 7, 1920. He reports several seen on Gonave from February 18 to 28, 1918.

Wetmore found this hawk common at Fonds-des-Nègres from March 31 to April 5, 1927, recorded one near La Tremblay April 7, and saw three circling over a deep valley among the hills east of Furcy on April 8. From April 9 to 16 he observed it regularly on the great ridge of La Selle, and on April 17 recorded several near Chapelle Faure, Nouvelle Touraine. He recorded one in the hills northeast of Hinche near the Bassin Zime April 24, and two near Caracol April 27. On April 28 in crossing above Morne Terrible toward the Cul-de-Sac Plain by airplane he saw one circling below, with its colors showing to advantage in this unusual lighting. G. S. Miller, jr., secured one between St. Michel and L'Atalaye on March 26, 1925. Danforth in 1927 found the red-tail at Pétionville and Kenskoff July 23, at the Citadelle above Milot August 2, and on Gonave Island July 17. Bond reports it common throughout Haiti in 1928. In the following year Poole and Perrygo secured one at Plaine Mapou on Gonave Island, March 12, at which the natives were

so delighted that they gave the collectors several chickens. The red-tail was seen also at Cerca-la-Source March 18 to 24.

The traveler from other climes who is accustomed to scan the sky for large birds welcomes with keen delight the stately form of the red-tail as it soars over the barren mountain slopes, cultivated fields, pinelands or swamps of Hispaniola. The birds float high in air calling occasionally with high pitched screams whose wild cadences seem fitting and appropriate to the scenes that they survey. Red-tails are gregarious to the extent that sometimes half a dozen may be in the field of vision at one time though usually single individuals are seen.

For food they have available the introduced rats and mice, birds, lizards, snakes, frogs and possibly large insects. Wetmore observed one in flight with a rat dangling from its talons. Abbott records one taken near Sánchez that had remains of rats in its stomach, and another from near Furcy that had eaten bats. They were said to destroy chickens even in the time of Oviedo, which is not surprising in a country where chickens are not confined, but compelled to seek the greater part of their food, wander regularly afield at a distance from houses. Many houses, too, occupy only small clearings so that these hawks come naturally near at hand. Wetmore noted that the passing of these hawks frequently caused commotion among small birds. Beck notes several dashing at domestic fowls, and shot one with the remains of a chicken in its crop.

The scream of this form is exactly like that of the red-tail of eastern North America. Occasionally these birds are very tame and when resting in trees allow close approach, only calling shrilly in protest when one approaches too near.

Buteo tropicalis Verrill, described as a new species from two specimens from the south side of Samaná Bay, one at least being from San Lorenzo Bay, is based on the immature phase of the present form.

The United States National Museum has now twenty-one skins of this hawk, the largest series known to us. It is pertinent to list here the measurements of the specimens from Hispaniola:

Eight males, wing 332-366 (342), tail 180-203 (192); culmen from cere 24.0-26.4 (24.9); tarsus 72.0-83.6 (77.0) mm.

Nine females, wing 360-374 (363.0), tail 190-212 (201.3), culmen from cere 25.0-28.8 (27.0), tarsus 81.2-85.7 (83.9) mm.

Aquila antillarum of Ritter is a *nomen nudum* without nomenclatural standing. It is cited questionably under the red-tail since this, the most prominent of the large hawks of Haiti, is not otherwise mentioned by Ritter. It is possible therefore that Ritter may have intended to indicate the red-tail under this name.

The specific name of the red-tailed hawk must change from *borealis* to *jamaicensis* with the recognition of the Greater Antillean race as a valid form, since Gmelin who proposed both these names on the same page named *jamaicensis* first with *borealis* following. Through application of the principle of anteriority the scientific name of the red-tail becomes *Buteo jamaicensis*.

The red-tailed hawk, the largest of the common hawks of this area, is easily distinguished when adult by its reddish brown tail. The back is dusky brown, mottled more or less with buffy, the throat blackish, and the rest of the underparts buffy white, with a large blackish patch, more or less interrupted with white, on the center of the lower surface. The young have the tail dusky brown barred indistinctly with paler.

BUTEO PLATYPTERUS PLATYPTERUS (Vieillot)

BROAD-WINGED HAWK

Sparvius platypterus VIELLOT, Tabl. Encycl. Méth., vol. 3, 1823, p. 1273 (Schuylkill River, near Philadelphia, Pa.).

Apparently very rare.

During a visit to the Exposición Nacional at Santiago, Dominican Republic, on May 31, 1927, Wetmore examined a mounted specimen of the broad-winged hawk that was shown among examples of the work produced by one of the higher schools of Santiago. The bird was in immature plumage and had been recently mounted as it was fresh and clean in appearance. Nothing could be learned regarding it except that it was said to have been killed near Santiago. There is no other record of the species for Hispaniola, though occurrence of the bird there is not surprising since the broad-winged hawk is found regularly in Cuba and has been reported from Porto Rico.

The adult broad-wing is dusky brown above, more or less variegated with a whitish or brownish wash on the feathers, with the tail broadly banded with whitish. It is buffy white below, barred irregularly with rufescent brown. The immature bird is darker above, with the tail band grayish instead of white, and below is streaked and spotted with dusky brown. The species has a wing measurement in males of 250 to 270 mm. and in females of 280 to 290 mm. It is easily distinguished from *Rupornis* by the more pointed wing tip which in the broad-wing has the seventh and eighth primaries (counting from the inside) about equal and the sixth abruptly shorter (being 20 mm. or more less in length than the seventh) while in *Rupornis* there is little difference in length between the sixth, seventh and eighth primaries, the sixth and the eighth being about equal.

RUPORNIS RIDGWAYI Cory

RIDGWAY'S HAWK, CULLALA, GUARAGUOU, MALFINI SAVANNE

Rupornis ridgwayi CORY, Quart. Journ. Boston Zoöl. Soc., vol. 2, Oct., 1883, p. 46 (Samaná, Dominican Republic).—CORY, Auk, 1884, p. 4 (reprint orig. description, with further notes); Birds Haiti and San Domingo, Dec., 1884, pp. 121-122, 2 col. pls. (Samaná, Almercen, Magua, specimens); Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—TRISTRAM, H. B., Cat. Coll. Birds belonging H. B. Tristram, 1889, pp. 61, 271 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).—CHRISTY, Ibis, 1897, p. 335 (? Yuna).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Miranda, specimen).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 401 (Laguna Flaca, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (Massif du Nord).

Coryornis ridgwayi, DANFORTH, Auk, 1929, p. 362 (Santo Domingo City, Haina, Gonave Island).

Resident, rather rare.

In the Dominican Republic Dr. W. L. Abbott secured an adult male at Guarabo near Jovéro on November 18, 1923, noting that the feet were yellow, and the iris brownish yellow, and that the stomach contained lizards. He also secured an immature bird (with sex not marked) near Sánchez, February 7, 1919. The stomach of the second specimen contained remains of a rat. There are also skins in the Academy of Natural Sciences taken by Abbott labeled Samaná Bay June 30 and La Cañita (now Sánchez), D. R., July 14 and 15, 1883. Cory records specimens from Magua January 31, Samaná April 3 and September 4, and Almercen, August 27, 1883, and there is a skin in the United States National Museum received from Cory taken at Almercen, now known as Rivas, on August 24, 1883. Tristram possessed one specimen taken by T. A. Toogood at Samaná in 1886. Verrill reports one taken at Miranda and says that he observed it in other localities. Peters shot two males at the Laguna Flaca on the north coast on March 8, 1916. These records all pertain to the northeastern part of the Dominican Republic. Danforth, however, in 1927 recorded the bird east of Santo Domingo City July 4 and 8 and near Haina June 16.

In Haiti Abbott found Ridgway's hawk common and tame in the scrub on the Cayemite Islands in January, 1918, and collected a fine series. Twelve were taken on Grande Cayemite between January 6 and 10, and one on Petite Cayemite January 13. Two were seen in the latter locality. The stomach of one contained remains of a ground dove, and of another a mouse. Abbott records the iris as brown, brownish yellow, or pale brownish yellow, bill leaden color with the tip black, the cere yellowish green, the tarsi greenish, and

the feet yellow. Bond found it in among the pine forests in the eastern part of the Massif du Nord, where he collected an adult female near Bois Laurence May 2, 1928, and on the same day recorded two nests placed twenty-five and forty feet from the ground respectively. Both held downy young. Danforth says that on July 18, 1927 he saw three circling over low woods on Gonave Island. Nothing is recorded of the habits of the species and few of the inhabitants know it. At Sánchez it was reported to Wetmore under the name cullala, and near La Vega it was known as the guaraguou.

No definite type locality is assigned in the original description but through the kind offices of Dr. C. E. Hellmayr we learn that both male and female indicated by Cory as types were secured at Samaná in April, 1883.

After comparison of a very fair series of specimens we are led to believe that Mr. Ridgway, in describing *Coryornis*³⁵ as a monotypic genus for *Rupornis ridgwayi* was deceived by inadequate material since the characters alleged to separate the supposed group from *Rupornis* Kaup do not appear to exist. We consider *ridgwayi* as not generically separable from *Rupornis magnirostris* the type form of Kaup's genus.

The adult bird is dull gray above, with indistinct shaft streakings of dusky, and the wing coverts washed with brownish. The chin is white, the upper breast light gray streaked with dusky, and the rest of the lower parts, including the tibiae, rufous brown barred narrowly with white. The bird is from 360 to 390 mm. long.

Subfamily CIRCINAE

CIRCUS HUDSONIUS (Linnaeus)

MARSH HAWK

Falco hudsonius LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 128 (Hudson Bay).

Circus hudsonius, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (Trou Caïman, St. Michel, Tortue Island).

Uncommon in winter as a migrant from North America.

Peters reports one seen on several occasions near Sosúa in the late winter of 1916 but did not secure it. Abbott saw one twice, about March 19, 1922, near Cabral, but did not get within gun range. In Haiti in 1928 Bond saw the marsh hawk at Trou Caïman, St. Michel, and on Tortue Island. It is probable that the bird comes casually during the winter months as a migrant from North America. It is

³⁵ Auk, 1925, p. 585.

seen rather regularly in Cuba and the Bahamas, and has been recorded from Porto Rico.³⁵

The bird does not watch for prey from a commanding perch like other hawks of the island but instead is found quartering steadily back and forth over marshy savannas or open fields in search for food. Attempt should be made to secure specimens.

The marsh hawk is about as large as the red-tail, but has a longer tail and more slender form. The female is dark brown, and the male light gray, both sexes being marked by a large white patch on the rump.

Subfamily PANDIONINAE

PANDION HALIAËTUS CAROLINENSIS (Gmelin)

OSPREY, AGUILA MARINA

Falco carolinensis GMELIN, Syst. Nat., vol. 1, pt. 1, 1788, p. 273 (Carolina).

Pandion haliaëtus, CORY, Birds of Haiti and San Domingo, Dec., 1884, pp. 125-126 (Port-au-Prince).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (recorded).

Pandion haliaëtus carolinensis, CORY, Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 402 (Monte Cristi).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Port-au-Prince).

A winter visitant in small numbers along the coast.

Peters has recorded an osprey seen near Monte Cristi on February 17, 1916. Abbott saw this species at Lake Enriquillo October 1 to 6, 1919, and at the mouth of the Yuna during spring of the same year. At Catalinita Island he recorded four from September 10 to 12, 1919. In view of these few records Verrill's statement that the bird was "abundant around the mangrove swamps" must be taken with some reservation.

Cory recorded one at Port-au-Prince (probably in February, 1881) but did not secure it. Beebe says that at the Bizoton wharves, on March 3, 1927, one attempted to alight on one of the masts of his schooner with a large fish in its talons. Poole and Perrygo observed two about the island of Monte Grande in the Seven Brothers group on January 30 and February 4, 1929.

As the osprey feeds entirely upon fish it must be confined to the coastal region and the lakes and larger streams of the lowlands in Hispaniola. Its large size distinguishes it from all other hawks of the region.

The osprey is blackish brown above with the head white marked with blackish brown on the crown and cheeks. Below it is white, sometimes streaked with light brown.

³⁵ Wetmore, New York Acad. Sci., Sci. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, p. 323.

PANDION HALIAËTUS RIDGWAYI Maynard

BAHAMAN OSPREY

*Pandion ridgwayi*³⁷ MAYNARD, Amer. Exch. and Mart, vol. 3, no. 3, January 15, 1887, p. 33 (Andros Island,³⁸ Bahama Island).

Apparently a straggler.

Mr. Gerrit S. Miller, jr. Curator of Mammals, United States National Museum has furnished the following interesting statement:

"On the morning of February 17, 1928, while running southeastward along the coast of the Dominican Republic toward Cape Engaño, the steamship Huron of the Clyde Santo Domingo Line was visited by a fish-hawk which I had no hesitation in identifying as *Pandion ridgwayi* Maynard. The bird perched on the steamer's low mast-head for several hours and evinced much interest in the passengers moving about on the deck beneath, constantly turning its head from side to side and downward to keep them in view. The head markings could thus be perfectly studied, even without the aid of a glass. With a glass the individual feathers could almost be counted. The markings were exactly those of the Bahaman fish-hawk, the type specimen of which, now in the British Museum, was for many years in my possession."

This form described originally from the Bahama Islands and found recently on the coast of Yucatan³⁹ is similar in size to the American osprey, differing from that bird in having the sides of the head white without the dark line that passes through the eye in the other form, and the top of the head and neck also white except for an occasional dark marking. Careful watch should be maintained as it may prove to be of regular occurrence.

Family FALCONIDAE

Subfamily FALCONINAE

FALCO PEREGRINUS ANATUM Bonaparte

DUCK HAWK

Falco anatum BONAPARTE, Geogr. and Comp. List, 1838, p. 4 (Egg Harbor, New Jersey).

F. p. anatum, LÖNNBERG, Fauna och Flora, 1929, p. 98 (Navassa, recorded).

Falco peregrinus anatum, EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

³⁷ Given as *Pandion ridgwayi* in corrected description in vol. 3, no. 6, February 5, 1887, p. 69.

³⁸ Swann, Synop. Accip., pt. 4, May 20, 1922, p. 232, gives the type locality as "Bitter guana Key," but in the original description it is listed as from Andros.

³⁹ Griscom, Amer. Mus. Nov. No. 235, Nov. 18, 1926, p. 13; recorded from Hick's Key, Ascension Bay, Boca de Paila, breeding.

Migrant from North America; rare.

The only record for the Dominican Republic is that of one taken by Kaempfer and sent to the Tring Museum. Hartert informs us that this specimen is labeled Espailat, November, 1923, 300 meters altitude. The locality probably refers to the Province of Espailat. The primaries in this bird are in molt.

Poole and Perrygo recorded one February 11, 1929, near the old fort at Fort Liberté, Haiti, but did not secure it. Lönnberg reports a young bird from Navassa Island, in October, 1928, from a collection made by E. L. Ekman.

The adult is dark bluish slate above, and cream-buff below barred and spotted with black. The immature is fuscous on the back, more or less margined with ochraceous or rufous, with the underparts streaked, spotted or barred with black. There is a prominent mark of black in the region of the ear. The species is easily told as the largest of the falcons, being from 400 to 480 mm. in length.

FALCO COLUMBARIUS COLUMBARIUS Linnaeus

PIGEON HAWK, GAVILÁN

Falco columbarius LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 90 (Carolina).

Falco columbarius, CORY, Birds of Haiti and San Domingo, Dec., 1884, pp. 123-124 (Puerto Plata, specimen); Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHRISTY, Ibis, 1897, p. 335 (head of Samaná Bay).

Falco columbarius columbarius, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 401 (Arroyo Savanna, specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (? Gonave Island).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 310 (Laguna de Haina, specimen).

Winter visitant in uncertain numbers.

Christy reports one seen in a mangrove swamp at the head of Samaná Bay without giving the date. Peters shot a female at Arroyo Savanna on March 9, and saw another near Monte Cristi, February 19, 1916. Beck took specimens at La Vega November 28 and December 7, 1916, and on Loma Rucillo February 27, 1917. Cory collected a male at Puerto Plata on December 7, 1882, and Abbott shot an adult male at Trujín in the southwestern part of the Dominican Republic on February 10, 1922. Dr. Hartert writes us that Kaempfer collected two immature specimens for the Tring Museum, a female at Lopez, Prov. Espailat March 12, 1922, and a male at Moca, January 7, 1924. Ciferri secured one alive at the Laguna de Haina in February, 1926.

In Haiti the only records are those of specimens take by Abbott, an immature bird, sexed questionably as a female, shot at an altitude of 900 meters near Moustique in the northwest, on March 4, 1916, an

adult male killed near Moline in southwest Haiti, on January 26, 1918, and an immature female shot on Grande Cayemite Island January 5, 1918. The one taken at Moline had eaten a bat. Perrygo observed one near L'Atalaye toward the end of December, 1928.

On comparison the four specimens secured by Abbott prove to be typical *columbarius*, as would be expected.

The pigeon hawk is a dashing little falcon that feeds extensively on birds that it captures readily as it is swift of flight and strong in muscle.

This species is about the size of the sparrow hawk, but is easily distinguished by the dark slaty gray upper surface streaked indistinctly with blackish, by the heavy blackish streaking and barring of the underparts, and by the black tail, tipped with whitish and banded with gray.

FALCO SPARVERIUS DOMINICENSIS Gmelin

HISPANIOLAN SPARROW HAWK, CERNICALO, CUYAYA, MALFINI, PRIPRI,
GRIGRI, VERS-MOUCHETTE, 'TI MALFINI

Falco dominicensis GMELIN, Syst. Nat., vol. 1, pt. 1, 1788, p. 285 (Santo Domingo).

Cernicalo, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2, Reprint, Madrid, 1851, p. 442 (mentioned).

Grigri, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue vol. 1, 1797, p. 263 (Dondon).

Emerillon, de St. Domingue, DAUBENTON, Planch. Enl. No. 465.

Aesalon Carolinensis BRISSON, Ornith., vol. 1, 1760, p. 389, pl. 32, fig. 1 ("Saint-Domingue").

Aesalon Dominicensis BRISSON, Ornith, vol. 1, 1760, p. 393, pl. 32, fig. 2 ("Saint-Domingue").

Falco plumbeiceps HARTLAUB, Naumannia, 1852, pt. 2, p. 52 (Cuba and Haiti).

Falco mercurialis HARTLAUB, Naumannia, 1852, pt. 2, p. 52 (Cuba and Haiti).

Tinnunculus sparverius, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 41 ("Saint Domingue").

Tinnunculus sparverius, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Nizao).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, specimens).

Tinnunculus isabellinus, TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 271 (Dominican Republic).

Falco spaverius, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti, specimen).

Falco sparverius, CORY, Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 358 (Miranda).

Falco sparverius isabellinus, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 124-125 (Puerto Plata, Magua).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).

Falco dominicensis, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 90 (Dominican Republic, Haiti).—CORY, Cat. West Indian Birds, 1892, p. 99 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser.,

vol. 1, 1896, p. 23 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 358 (Dominican Republic).

Falco sparverius dominicensis, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, pp. 401-402 (Monte Cristi, Sosúa, Chocó, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 181 (Dominican Republic).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (Haiti, including Tortue and Gonave Islands).—DANFORTH, Auk, 1929, p. 362 (common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, pp. 310-311 (Haina, Moca, specimens).

Cercensis dominicensis, CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Resident; common except in the densest forests. Following are definite records of occurrence:

Dominican Republic:—Sánchez, San Francisco de Macoris, Pimentel to La Vega, along the railroad (Wetmore); Chocó, Sosúa (Peters); Monte Cristi (Peters, Danforth); Miranda (Verrill); Santiago (Wetmore); Puerto Plata, Magua (Cory); Jarabacoa, El Río, Constanza (Abbott, Wetmore); Comendador (Wetmore); Nizao (Sallé); Haina (Danforth).

Haiti:—Caracol, Cap-Haïtien, Hinche, Maissade, Las Cahobes, Morne à Cabrits, (Wetmore); Dondon (Saint-Méry); St. Michel, Fort Liberté, St. Raphael, Pont Sondé, Cerca-la-Source (Poole and Perrygo); Bombardopolis, Moustique, Fonds Verettes (Abbott); Port-au-Prince, Damien, Carrefour, Kenskoff, Furcy, Massif de la Selle near Morne La Visite, La Tremblay, Fonds-des-Nègres, Miragoane, Étang Miragoane (Wetmore); Jérémie (Abbott); Gonave Island, Tortue Island (Abbott, Danforth, Poole and Perrygo); Thomazeau, Gloré, Trou Caïman, Petit Goave, Trou des Roseaux (Bartsch).

The little sparrow hawk is one of the familiar species of Hispaniola, welcome to the eye on its open perch on pole, dead tree or royal palm spike, in a land where many of the birds skulk and hide, and are seen with difficulty. The sparrow hawk has characteristics that readily distinguish it whether quietly at rest, hovering gracefully over some creature concealed in the grasses that may serve as food, or flying across open savannas or among the trees of open forests. Its usual call is a shrill *killy killy killy* that proclaims it at once a member of the great horde of sparrow hawks that inhabit the New World. It is impetuous and playful, and frequently darts at red-tailed hawks at rest or on the wing. Wetmore found it among the palms of the lowlands and lower hills and also among the open pines of the higher mountains. It was occasionally seen soaring high above the trees but usually rested on open perches amid the branches. It does not occur amid dense rain forest jungles and so is more abundant in semi-arid sections than elsewhere. It seems rather

rare on the southern side of the Samaná Peninsula. The bird is not averse to the haunts of man and may be seen even in the gardens in the suburbs of Port-au-Prince.

The sparrow hawk builds its nest in hollows in trees. Bond has observed them mating as early as January. At Comendador on April 30, 1927, Wetmore bought two young not quite fledged from a boy who said that he had taken them from a hollow in a palm. These were male and female. Abbott collected a mated pair at Jérémie, December 3, 1917, and shot a female at Étroites on Gonave Island, March 20, 1920, that contained eggs nearly ready to be laid. The season for breeding probably varies as climatic conditions are diverse in different parts of the island.

Wetmore recorded the sparrow hawk eating lizards on several occasions and once saw one carrying a small snake. Abbott writes that the stomach of one taken at Jérémie, January 16, 1918, was filled with insects, mostly grasshoppers. The bird is a useful species as it is frequently a destroyer of the larger injurious insects.

The names *Falco mercurialis* and *F. plumbiceps* of Hartlaub⁴⁰ based on collections by Württemberg, applied to supposed races of the sparrow hawk of Cuba and Haiti seem to have been overlooked. Hartlaub's statement in full is as follows:

"3. *Falco sparverius*, auct. Von dieser Art beobachtete der Herzog zwei Subspecies, eine dunkelgraugefärbte, welche er *F. mercurialis*—und eine lohgelbe, welche er *F. plumbiceps* nennt. Bei den Creolen hiess ersterer S. Antonio, letzterer S. Nicola. Beide kommen auf Cuba und Haiti vor." So far as Haiti is concerned these are synonyms of *Falco dominicensis* Gmelin, published in 1788, while for Cuba they are antedated by *Falco sparverioides* Vigors described in 1827.

The degree of relationship between the sparrow hawks of Hispaniola and those of Cuba is one somewhat difficult to establish in spite of the abundant material from both islands at hand. The Cuban bird *Falco sparverius sparverioides* Vigors in the male has the wing 170.0 to 185.0 mm. (with an average in 12 specimens of 175.8), and in the female 174.0 to 191.0 (with an average in twelve skins of 182.8 mm.) Many of both sexes are deeply rufescent above and below, this color being relieved only by the usual black markings; while others are nearly white on the under surface. Some have considered these two color phases as distinct species but for this there is no foundation as the extremes are connected by intergrades so that they merge into one another. Barbour notes that light and dark birds frequently mate.

⁴⁰ Naumannia, 1852, pt. 2, p. 52.

The bird from Hispaniola in the male has the wing 182.0 to 193.0 with an average of 186.0 mm. (14 specimens) and in the female 184.5 to 202.0 with an average of 190.3 mm. (13 specimens). It thus averages slightly larger than the Cuban bird, though a few in the series from Cuba are as large as birds from the adjacent island. The series from Haiti and the Dominican Republic varies in depth of brownish color from nearly white below to a strong brownish wash on the breast but none that we have seen are as completely rufescent as the darkest specimens from Cuba. Except for the rufescent phase so commonly represented in Cuba birds from the two islands are quite similar in coloration.

The male sparrow hawk is white or buffy white below with more or less of a rufescent wash on the breast, and the sides and flanks with a few black spots. The tail is bright reddish brown with whitish tip followed by a black band. The rump and upper back are reddish brown and the middle back, wing coverts and crown are gray, the latter sometimes with a reddish brown central patch. Black streaks across the otherwise pale cheeks form prominent field marks. The female is similar but has the entire upper surface except the head reddish brown barred heavily with black, and is streaked below with reddish brown. The species ranges from 255 to 285 mm. in length.

Order GALLIFORMES

Suborder GALLI

Superfamily PHASIANIDES

Family PERDICIDAE

Subfamily ODONTOPHORINAE

COLINUS VIRGINIANUS VIRGINIANUS (Linnaeus)

BOB-WHITE, CAILLE

Tetrao virginianus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 161 (Carolina).

Caille, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 479 (Léogane, common).

Ortyx virginiana, CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, common); Birds Haiti and San Domingo, Dec., 1884, pp. 138-139 (specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320-321, 322 (Haiti).

Colinus virginianus (part), CORY, Cat. West Indian Birds, 1892, p. 96 (Haiti).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Bizoton, Étang Miragoane).—DANFORTH, Auk, 1929, p. 362 (Mirebalais, Grand Goave, Fonds-des-Nègres).

Colinus virginianus virginianus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 493 (Furcy, Étang Miragoane).

Haiti, introduced; locally common.

Introduction of the quail in Haiti came during the French colonial period as it was recorded from Léogane, at the close of the eighteenth century. Of this locality Moreau de Saint-Méry in his pleasantly informative descriptive narrative says "elle a beaucoup de cailles, dont l'espèce est semblable à la perdrix à pied gris des États-Unis d'Amérique."

Cory in 1881 said the bob-white was common, and according to statement of the inhabitants had been introduced many years ago. It is curious that the species was not mentioned by Younglove who between January and June, 1866 covered much of the same area in Haiti visited by Cory. The bird is well known to the Haitian countrymen and is now established in many sections.

Paul Bartsch recorded it at Thomazeau, April 2, 1917, near Jérémie April 10, about five miles west of Jérémie April 16, in the Cul-de-Sac region April 24, and near Port-au-Prince, including the coastal region and the hills back of the city, from April 25 to 27. The specimen collected by Abbott, the only one from Haiti in the United States National Museum, is similar in color to birds from Christchurch Parish, South Carolina in the deep brown of the upper surface, the greater extent of black, and the restriction of brownish mixture in the black of the auricular region. On the other hand it is much more buffy below. This bird is decidedly darker than those from the central and northern states, but is entirely different from the form found in Florida. Cory remarks of his Haitian specimens that they "approach very closely in coloration to the Bahama form, but are lighter and much less black on the breast than that which is found in Florida."

Wetmore found the quail at Fond-des-Nègres from April 3 to 5, 1927, and heard the males whistling regularly in early morning. Dr. and Mrs. C. H. Arndt at the Coffee Experiment Station said that they had heard it calling daily for some time. It is well known near Miragoane where Mr. Rogevie said that the natives trapped quail and offered them for sale alive. He had kept several in captivity at one time. They were said to be offered at times in the markets of Port-au-Prince. W. R. Barbour of the Service Technique stated that he had found quail in some numbers throughout the Cul-de-Sac Plain. Beebe in 1927 heard it daily at Bizoton and found it at the Étang Miragoane. On April 17, 1927 Wetmore heard its calls near Kenskoff, and W. L. Abbott, on June 13, 1920, shot a male near Furcy. Danforth recorded it in 1927 at Mirebalais, Grand Goave and Fonds-des-Nègres. Bond found it at Furcy and near the Étang Miragoane.

There is such abundance of cover in its range that quail are difficult to find. They seem from present information to occur along the southern peninsula from a point west of Jérémie through Fonds-des-

Nègres east to Port-au-Prince and north and east through the Cul-de-Sac Plain at least as far as Mirebalais and Thomazeau, and a point 20 kilometers north of Port-au-Prince, extending inland through the hills to an elevation of 1,200 meters or more at Kenskoff and below Furey.

The bob-white has a short plump form that distinguishes it from all other birds of the island except the quail-doves. It is reddish brown above mottled with black and grayish buff, and whitish below barred irregularly with black. The flanks are streaked with bright brown, and there are heavy black markings on the sides of the head, crown and upper breast. The throat is white in the male and brown in the female. The male taken by Abbott measured 230 mm. in length.

COLINUS VIRGINIANUS CUBANENSIS (Gould)

CUBAN BOB-WHITE, CODORNIZ, CORONISA

Ortyx cubanensis GOULD, in Gray, Gen. Birds, vol. 3, May, 1846, p. 514 (Cuba).

Cuban Quail, PHILLIPS, U. S. Dept. Agr. Techn. Bull. 61, April, 1928, p. 31 (Dominican Republic.)

Colinus cubanensis, CORY, Auk, 1895, p. 279 (Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. Ser., vol. 1, March, 1896, p. 24 (Dominican Republic).

Colinus virginianus, DANFORTH, Auk, 1929, p. 362 (part, Santo Domingo City, Los Alcarrizos, Hato Mayor).

Colinus virginianus virginianus, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 311 (Sabana de Guerra, specimen).

Said to have been introduced into the Dominican Republic.

The earliest record for the Cuban bob-white is that of Cherrie who says "introduced into San Domingo by an American sugar planter by the name of Bass, about six years ago. It has increased very rapidly, and now for a good many miles around San Domingo City flocks of from ten to twenty-five are frequently met."

In the American Museum of Natural History there are two adult males taken by R. H. Beck near Santo Domingo City May 28 and 29, 1917. Both of these birds are very dark, the black of the breast being so extensive that it covers the greater part of each feather. The rufescent colors also are darker than the average for this race. These two have the following measurements: wing 101.2–102.0, tail 37.0–41.1, culmen from base 14.5–15.0, tarsus 27.9–28.2 mm. Maj. J. A. Bonilla Atilas of the Policia Nacional Dominicana informed Wetmore that he had found this bird in flocks and had shot a number. At Constanza there was further talk about the quail at San Pedro de Macoris and it was believed here that the bob-white was an enemy of the woodpecker which it drove from the cornfields when that

bird came to feed on maize! The foundation for this curious statement is uncertain. Danforth in 1927 found quail quite common in the region west of Santo Domingo City, and on June 30 at Los Alcarrizos saw a covey of five adults with several downy young. Others were seen at Hato Mayor. Ciferri obtained a young bird at Sabana de Guerra, in Santo Domingo Province, August 12, 1929.

The Cuban bob-white differs from the bird introduced into Haiti in being much darker colored. The male has the breast nearly solid black, and shows little brown above except on the upper back. The female is much more heavily barred below and more black above with very little mixture of brown.

Family NUMIDIDAE

NUMIDA GALEATA Pallas

GUINEA HEN, GUINEA, GALLINA DE GUINEA, PINTADO, PINTADE, PINTADE MARONNE, PINTADE SAUVAGE

Numida galeata PALLAS, Spic. Zool., vol. 1, fasc. 4, 1767, p. 13 (Based on domesticated bird).

Pintade, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, pp. 39-40 (in feral state).

Pintade marrone, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, pp. 262, 717; vol. 2, 1798, pp. 79, 174, 621, 648, 809 (many localities).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 177-182 (habits).

Pintado, WIMPFEN, Voy. Saint Domingo, 1817, p. 188 (mentioned).

Guinea-fowl, SAINT-MÉRY, Descrip. Span. part Saint-Domingo, vol. 1, 1798, pp. 305-306 (numerous).—WALTON, Pres. State Span. Col. incl. partic. Rep. Hispañola, vol. 1, 1810, p. 122 (plains of Neyba, abundant).—KENT, Forest and Stream, vol. 20, 1883, p. 68 (Dominican Republic).

Numida meleagris, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 150, 156 (Haiti).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (Baní, San Juan de la Maguana, Santiago, Monte Cristi).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).—CORY, Cat. West Indian Birds, 1892, p. 96 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 320 (listed).—CHRISTY, Ibis, 1897, p. 341 (Dominican Republic).—VERBILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (listed).—PHILLIPS, U. S. Dept. Agric. Techn. Bull. 61, April, 1928, pp. 11-12 (Dominican Republic).

Numida galeata, DANFORTH, Auk, 1929, p. 362 (Haiti, Dominican Republic).

Numida g. galeata, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Haiti).

Numida galeata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 494 (Haiti).

Introduced; common in many localities; at present found in largest numbers in Haiti. Following are notes of recorded occurrence:

Dominican Republic:—Baní, Santiago, (Sallé); San Juan, Monte Cristi (Sallé, Danforth); Neiba (Walton); Comendador (Wetmore); Azua, Túbano (Beck); near mouth of Yuna (Christy); Sosúa (Abbott).

Haiti:—Dondon, Port-de-Paix, Port-à-Piment, Petite-Rivière, Aquin, St. Louis, Jérémie, (Saint-Méry); Port-à-Piment, on southern peninsula (Beck); Moustique, Rivière Bar, Pimentel (Abbott); Gloré, Trou Caïman (Bartsch); Fonds-des-Nègres, La Tremblay, Caracol (Wetmore); Hinche (Wetmore, Poole and Perrygo); St. Michel, Cerca-la-Source (Poole and Perrygo); L'Arcahaie, St. Marc, Les Salines (Danforth).

The guinea hen was introduced into Hispaniola many years ago so that it was well established and wide spread in the eighteenth century. Charlevoix in 1733 records the wild bird, and believed that it could not be domesticated. Saint-Méry in 1797 and 1798 lists it from many localities often in flocks. At Petite-Rivière he notes that in the dry season hunters set fire to the vegetation and so drove the birds where they could be killed. As this often took place in the breeding season a great destruction of nests resulted. Descourtiz, who came to Port-au-Prince in 1799, found the bird common and gives a considerable account of its habits and hunting. Walton, writing in 1810 says that guineas were killed on the plains of Neiba in such numbers that they sold in the market for one real each. Ritter reports that they were brought to the Antilles in the year 1500, but does not give his authority for that statement.

Christy remarks that the guinea hen was common in the Dominican Republic, and shot it in the drier parts of the Yuna delta. Beck secured a young bird one-third grown at Azua, December 28, 1916, and a series at Túbano from December 30, 1916, to March 6, 1917. Abbott found them at Sosúa in 1919 and recorded them as common but difficult to procure near Pimentel January 19 to 25, 1921. In the spring of 1927 Wetmore heard of guineas at various places but actually saw them only near Comendador, on April 30. It was his belief that they were common through the wild semi-arid scrubs in the western part of the eastern Republic but that elsewhere hunting had greatly reduced their numbers.

In Haiti the Pintade, usually pronounced "pintard," is one of the common game birds and abounds in many localities. Abbott prepared specimens shot at Moustique Bay on the northwest coast May 4, 1917, at Rivière Bar, also near the coast, on February 21, 1917, and at Moustique, inland from Moustique Bay, near the center of the northern peninsula, on March 8, 1917. Beck shot one at Port-à-Piment, on the southern peninsula, June 29, 1917. Bartsch saw guineas at Gloré on the Étang Saumâtre, April 3, 1917, near Trou Caïman April 4, five miles west of Jérémie April 16, between Port-au-Prince and St. Marc April 21 and 22, and in the Cul-de-Sac Plain April 24.

On April 5, 1927, Wetmore killed four from a flock of a dozen at Fonds-des-Nègres, preparing two as skins. This flock was encountered in the tops of tall trees where the birds rested quietly or walked along the larger limbs fifty feet from the ground. Their flesh possessed a delicate flavor, that made it better than that of the domesticated bird. At dusk on April 7 at La Tremblay in the Cul-de-Sac plain a number flew into the tops of dense growths of mesquite to roost. They were calling loudly here though ordinarily the wild bird is rather silent. Near Hinche from April 22 to 24 guineas were seen occasionally either in the tops of trees or on the ground. On April 24 at dusk several flushed from trees in an isolated grove in a small ravine where they had come to roost at some distance from other cover. At Poste Charbert, near Caracol, several were seen on April 26 and 27. Their habit of perching high in the trees and of flying swiftly away forty or fifty feet above the ground was somewhat of a surprise to one accustomed to them only as a barnyard fowl in a state of domestication. Poole and Perrygo found them common at St. Michel in December, 1928, and January, 1929, collecting specimens December 27 and January 15. They were common at Hinche March 17, 1929, and very plentiful at Cerca-la-Source March 18 to 24, five being taken.

The thorny scrubs of the semi-arid regions seem best fitted for the needs of guinea fowl and in such areas it abounds in many localities. Kent informs us that the birds are prolific and that he has frequently seen fifteen in a brood. They come out to feed in cultivated lands but seem more at home in the scrubs where though many may be heard particularly in evening they are hard to find. Bond found them ranging to 750 meters above the sea on La Selle, but says that they are more common at lower elevations. He did not find them in a wild state on either Tortue or Gonave Islands. Lieutenant Wirkus of the Gendarmerie is said to have released a pair on Gonave but the birds soon disappeared. It is current belief that the wild guinea has the tarsi black while those of the domesticated bird are reddish. Of the sixteen skins from Hispaniola examined, eleven have the tarsi dull black while five have more or less of a reddish cast. It is doubtful that the supposed color criterion will hold as there is in all probability a constant mixing between feral and domestic birds.

The following measurements of wild-killed birds from Hispaniola are offered:

Two males, wing 252.0-255.0 (253.5), tail 135.0-142.0 (138.5), culmen from cere 21.0-21.1 (21.0), tarsus 62.5-69.0 (65.8) mm.

Three females, wing 230-245.0 (235.0), tail 120.0-137.5 (127.8), culmen from cere 21.0-22.0 (21.4), tarsus 66.2-67.5 (66.7) mm.

The guinea fowl is so well known that it is necessary merely to state that it is a bird the size of a domestic fowl, in color grayish black profusely spotted with white, with a prominent bony crest on the head.

Order GRUIFORMES

Suborder GRUES

Superfamily GRUIDES

Family ARAMIDAE

ARAMUS PICTUS ELUCUS Peters

LIMPKIN, CARRAO, COLAS, GRAND COLAS, POULE-A-JOLIE, POULE BELLE

Aramus pictus elucus PETERS, Occ. Pap. Boston Soc. Nat. Hist., vol. 5, January 30, 1925, p. 143 (Sosúa, Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 494 (Haiti, Gonave and Tortue).—DANFORTH, Auk, 1929, p. 362 (Bonaó, Villa Alta Gracia).—LÖNNBERG, Fauna och Flora, 1929, pp. 100-101 (Haiti).

Ardea scolopacca, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).

Aramus scolopaceus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (Dominican Republic).

Aramus scolopaceus giganteus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Haiti, specimens).

Aramus pictus, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 157-158 (Gantier, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Aramus pictus pictus, MOLTONI, Att. Soc. Ital. Scienz. Nat., 1929, p. 311 (Río Yuna, Bonaó, specimens).

Aramus giganteus, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 267 (Almercen, specimen).—CORY, Cat. West Indian Birds, 1892, p. 90 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Dominican Republic).

Aramus vociferus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 403 (Sosúa, specimen).

In the Dominican Republic Abbott shot an adult male on the Río San Juan (or St. John), near Samaná, and a series, including three pairs, at Sosúa (four prepared as skins and two as skeletons). In the locality last named he found them very common. The latter are topotypes of the present subspecies, as in describing it Peters chose as his type an adult female that he had collected personally at Sosúa, Dominican Republic on March 22, 1916. In addition to those mentioned there is in the Academy of Natural Sciences a skin taken by Abbott on Samaná Bay, June 30, 1883. Verrill reported the species as common throughout the savannas of the Dominican Republic "but seldom seen although frequently heard." Sallé records them without giving localities saying that they were found in heavy,

humid forests where they lived principally upon mollusks. In the evening they perched on the tops of tall trees and from these elevated points uttered their sonorous cries.

Peters reports that his type specimen was killed in thick brush bordering a dry stream-bed, and that another, flushed March 30 from tall grass flew into nearby woods. He thought that possibly limpkins were more common in that vicinity than his few notes indicate, as they were retiring in habit, an observation borne out by the series collected by Abbott at this same point.

Cory secured specimens of this bird at Samaná, and Canon Tristram had one taken at Almercen (now Villa Rivas) by A. S. Toogood in 1887. Danforth saw them near mountain streams in the vicinity of Bonao and Villa Alta Gracia on August 7, 1927, where he heard them calling during the night. He received a specimen taken near Bonao December 14, 1927, by Ermanno Ciferri. Others were sent by Ciferri to Moltoni.

In Haiti the limpkin is first definitely noted by Cory who secured two at Gantier and remarks that the flesh was held in high esteem for the table. Abbott forwarded a female taken at Moustique on March 2, 1917. He says that limpkins are common on the northeast peninsula but that he did not find them in the southern part of the republic. He heard them calling on Tortue Island. The limpkin was reported to Wetmore at various points, both in the uplands and along the coastal plain but he did not meet it in person. It is probably less common now than formerly.

Bond writes that he found the limpkin generally distributed through Haiti from sea-level to 1,500 meters altitude, occurring on Gonave and Tortue as well as on the main island. He collected a female near St. Michel March 8, 1928. Regarding its habits he writes "this peculiar bird never took to wing if it could possibly avoid it, preferring to run through the undergrowth just far enough to keep out of sight. If chased and hard pressed it would open its wings like a hen, and run with great speed. On one occasion I chased a limpkin for about five minutes and was not only unable to make it fly, but failed to oust it from the clump of bushes where I had found it. Only once, when I came face to face with a limpkin on Gonave Island, was it startled sufficiently to take to flight, and had it not been on a steep hillside, I firmly believe that it would not have done so." Among bones brought from the caves at En Café, Gonave Island by J. S. C. Boswell are leg bones of a limpkin. Poole and Perrygo collected one at Dondon January 19, 1929.

The bird is as large as a medium sized hen with long bill, long neck, and long legs. The plumage is olive brown in general with prominent white streaks, more pronounced on the anterior portion of the body. The throat is white.

Superfamily RALLIDES

Family RALLIDAE

Subfamily RALLINAE

RALLUS LONGIROSTRIS VAFER Wetmore

HISPANIOLAN CLAPPER RAIL, RALE D'EAU, RATEAU

Rallus longirostris vafer WETMORE, Proc. Biol. Soc. Washington, vol. 41, June 29, 1928, p. 121 (Étroites, Gonave Island, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, 1928, p. 495 (Port-au-Prince, Caracol, Jaquesy, Fort Liberté).—DANFORTH, Auk, 1929, p. 362 (Monte Cristi, Les Salines, Gonave).

Rallus longirostris, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139 (Bizoton); Beneath Tropic Seas, 1928, p. 129.

Rallus longirostris caribaicus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 402 (Monte Cristi).

Resident in mangrove swamps; local in occurrence.

The first specimen of the clapper rail known to us for Hispaniola is a male taken by J. L. Peters in an extensive mangrove swamp near Monte Cristi on February 18, 1916. Danforth collected one at the same point June 24, 1927. These are the only two definite records for the Dominican Republic.

Bartsch reported the clapper rail from the coastal swamps north of Port-au-Prince, Haiti, on April 25, 1917, and Abbott collected specimens on Gonave Island in 1920, securing four at Étroites March 18, 19 and 20, and two at Picmy July 7 and 8. Beebe reports one seen twice in 1927 on a sandy beach at Bizoton.

On April 3, 1927, Wetmore heard the cackling, grunting calls of these rails in the mangroves bordering the bay at Aquin, Haiti, and flushed one at the border of an open lagoon. This individual flew swiftly to shelter on the opposite side of a stretch of open water. At Caracol on April 27 the grunting calls of clapper rails came from the mangroves on all sides, becoming loud and vociferous at every shot fired by the collector. At this point the high ground marking the landing for the village was limited in area and was closely invested with mangrove swamps. There was constant activity here among fishermen and in the landing of small cargoes from schooners plying along the coast. As the men engaged in this work were preoccupied with their own affairs, and there was no hunting, rails had become unusually tame, and came without fear into little open places among the mangroves. They walked slowly and with a furtive air, twitching the white marked tail at intervals, or when they felt that they were under observation paused motionless. When really alarmed they ran swiftly to safe shelter amid the black shadows of

the arching mangrove roots. Of three taken two were prepared as skins and one as a skeleton.

Danforth in 1927 records them from Les Salines and Gonave Island. They seem to be especially common along the northern coast as Bond in 1928 found them particularly numerous on the shores of the Baie de Caracol at Caracol and Jaquesy. He noted them also at Port-au-Prince and Fort Liberté, but did not see them on Gonave Island. Poole and Perrygo noted two at Cap-Haïtien January 22, and collected four at Fort Liberté February 8, and 18, 1929.

In most localities the clapper rail is shy and secretive so that its presence is betrayed through its notes coming by day or night from thickets or mangroves, or by its long-toed tracks, with long stride, impressed in the soft mud of the runways leading through its haunts. Its nocturnal activities we may only conjecture, though from the light tracery of its foot prints it appears that under shadow of night the bird comes out into the open. Ordinarily it is seen only as a gray shadow slipping away among the mangrove roots, or more rarely is flushed from some restricted corner where it is under necessity of flying to gain new shelter.

The clapper rail of Hispaniola differs from the bird of Jamaica, *R. l. caribaeus* Ridgway, with which it has been ordinarily allocated, in being grayer, less brownish both above and below, with the fore-neck and upper breast more evidently cinnamon colored, and the malar stripe, which is the same color, more prominent. In the original description Wetmore⁴¹ states that "there is decided variation in color in rails of this group, two distinct phases being evident, one being paler above, due to predominance of the lighter edgings of the dorsal feathers and restriction of the dark centers, and the other decidedly darker with the duller colors of the central parts of the dorsal feathers much extended, and the lighter margins correspondingly restricted. The darker appearance of the extreme of the latter type becomes much accentuated with plumage wear. The individual differences indicated need to be kept carefully in mind in segregating geographic races.

"The Jamaican material before me in the present comparisons includes the type of *caribaeus* and one other specimen in the United States National Museum, and a third skin from the Museum of Comparative Zoölogy, loaned through the courtesy of Mr. Outram Bangs. These birds are all old and are more or less faded, having been collected in the sixth decade of the last century. In arriving at differential characters to distinguish the Hispaniolan race due allowance has been made for color change in the Jamaican series, particularly through study of differences evident between these three

⁴¹ Proc. Biol. Soc. Washington, vol. 41, June 29, 1928, p. 122.

and specimens of comparable museum antiquity of other races of *longirostris*, with the result that the darker, duller, browner appearance of the series of *caribaeus* justifies the separation here proposed. In the three *caribaeus* examined two males have the wing 144.0 and 147.6 mm., the culmen 61.8 and 58.5 mm., and the tarsus (in both) 54.2 mm. while a female has the wing 139.8, culmen, 54.7, and tarsus 50.2 mm. There is indicated a slightly longer wing, and shorter culmen and tarsus than in *vafes*, a difference so slight, however, that it needs to be verified in a larger series before it is accepted."

The series of *vafes* that we have seen includes two females from Caracol, and two males and four females from Étroites and Picmy on Gonave Island. The latter do not differ from the mainland birds. One of the specimens from Caracol is in partly melanistic phase as the cinnamon color normal to the breast is almost entirely obscured by dark gray.

Measurements are as follows (given in millimeters):

Males (4 specimens) wing 151.0–159.5 (155.0), tail 61.5–66.4 (63.3), culmen, 63.8–68.5 (65.5), tarsus, 57.0–61.0 (59.0).

Females, (7 specimens) wing, 134.5–144.5 (138.4), tail 54.4–60.0 (56.9), culmen, 53.6–63.0 (58.7), tarsus, 46.4–59.5 (52.8).

Type, male, wing 151.8, tail 62.2, culmen 63.8, tarsus 59.0.

Peters writes that the male he secured at Monte Cristi had the wing 149 mm., tail 65 mm., exposed culmen 61 mm., and tarsus 50 mm.

The adult clapper rail is about 340 mm. in length, with long neck and bill, strong legs, large feet, and short tail. The upper surface is deep brown, the feathers margined with grayish olive, the throat is white, the breast buffy brown, and the sides dusky, barred with white. The downy young are coal black.

PORZANA CAROLINA (Linnaeus)

SORA, GALLINUELA

Rallus carolinus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 153 (Hudson Bay).

Rallus olivaceus VIEILLOT, Nouv. Dict. Hist. Nat., vol. 28, 1819, p. 561 ("Saint-Domingue").

Porzana carolina, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Étang Miragoane).

Winter visitor; abundance not certainly known.

Dr. W. L. Abbott secured two males at Laguna Rincón near Cabral, Dominican Republic, March 18, 1922, and a third at the same point on the following day. The birds were common. He collected a female at Trou Caïman, Haiti, March 11, 1918, and

reports others near the Étang Saumâtre. Bond secured two at the Étang Miragoane February 4, 1928. These constitute the only records at present known to us from the island.

The sora rail inhabits the rushes and grasses of freshwater marshes, where it seeks heavy cover but may be flushed by driving, when it flies away with dangling feet to drop after a short distance into the marsh. The bird may be expected in suitable localities from October to March.

Dr. C. W. Richmond has called our attention to the *Rallus olivaceus* of Vieillot, described in 1819 from "Saint-Domingue." Sharpe⁴² has made this a synonym of his *Porzana albicollis* of South America, which is erroneous as Vieillot's description is that of a young sora rail in first fall plumage. It is therefore cited here in the synonymy of *Porzana carolina*.

The back is olive-brown with dark centers to the feathers, and faint streaks of white. The breast is gray or brownish gray, the abdomen white, and the sides black barred with white. Adults have the throat and face black, a marking lacking in the immature birds in fall. The sora measures 205 to 225 mm. in length, and has a narrow body, very short tail, and strong legs.

PORZANA FLAVIVENTER HENDERSONI Bartsch

YELLOW-BELLIED RAIL, GALLERETA CHIQUITA

Porzana flaviventris hendersoni BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 131 (Trou Caïman, Haiti). Smithsonian Misc. Colls., vol. 68, no. 12, 1918, fig. 42 (view of habitat).

Porzana flaviventer hendersoni, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Trou Caïman).

Hapalocrex RIDGWAY, Smithsonian Misc. Coll., vol. 72, no. 4, Dec. 6, 1920, p. 3 (type by orig. desig. *Rallus flaviventris* Boddaert).

?*Rallus*, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).

Resident in Haiti; apparently rare.

There are few specimens known from Hispaniola at present—two from Trou Caïman, Haiti, a female secured by Bartsch on April 4, 1917, and a male taken by Abbott on March 11, 1918, and a female from the freshwater marshes southwest of Fort Liberté shot by Poole and Perrygo February 13, 1929. Bartsch writes that he saw three others at Trou Caïman, two near Gloré on the Étang Saumâtre April 4, and another at Trou des Roseaux April 13. Bond saw one at Trou Caïman January 15, 1928. Sallé mentions a small rail from the Dominican Republic that is probably this species but took no specimens.

⁴² Cat. Birds Brit. Mus., vol. 23, 1894, p. 102.

This tiny rail is found in the aquatic growths of freshwater marshes where it is so secretive that it is probably much more common than the few records given indicate. In its marshy haunt the collector seldom penetrates and the rail remains hidden securely unless startled. Thomas Barbour in Cuba secured a number by beating their coverts with a long bamboo, thus frightening the birds into flight, when they could be seen and shot, an artifice that will merit attention from collectors who visit the haunts of this bird.

The yellow-bellied rail of Cuba and Jamaica is now designated as *Porzana flaviventer gossii* (Bonaparte). The three seen from Haiti are similar in color to *gossii* but are very slightly smaller. The wing in *gossii* ranges from 65.1 to 71.4 mm. with an average of 67 mm., while the culmen measures from 16.2 to 17.9 mm. In the three birds from Hispaniola one male has the wing 62.0 and the culmen 15.9 mm., while two females have the wing 63.1–63.5 and the culmen 14.6–16.3 mm. The difference is so slight that it may prove inconstant, in which case *hendersoni* will become a synonym of *gossii*, which will then range throughout the Greater Antilles.⁴³

We have considered the characters alleged for *Hapalocrex*, proposed by Mr. Ridgway⁴⁴ to receive the present species, but fail to find them in our opinion sufficiently distinct to merit recognition when compared with other species of the group usually designated as *Porzana*. The combined length of the first two joints of the middle toe is in most specimens of *flaviventer* not quite as long as the tarsus, instead of equalling that measurement as stated, the proportion being almost the same in other species of *Porzana* when due allowance is made for size. The length of the alula and other items in a larger series than originally available to Ridgway do not seem diagnostic.

With the general form of the sora, the yellow-bellied rail is characterized by tiny size as it is but little larger than a sparrow. It is whitish below with a wash of buff on the breast, and heavy bars of black on the flanks and under tail coverts. Above it is deep buff and black, streaked with white with a dusky gray crown.

Subfamily GALLINULINAE

IONORNIS MARTINICUS (Linnaeus)

PURPLE GALLINULE, GALLARETA, GALLINA DE AGUA, POULE SULTANE, ANGOLI, POULE-À-JOLI, JORDELLE

Fulica martinica LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 259 (Martinique).

Calamon, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2, Reprint, Madrid, 1851, p. 442 (mentioned).

⁴³ For more detailed discussion of the supposed races of this species see Wetmore, New York Acad. Sci., Sci. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 338–339.

⁴⁴ Smithsonian Misc. Coll., vol. 72, no. 4, Dec. 6, 1920, p. 3.

Poule Sultane, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 199-201 (Rivière Limbé).

?Rale Bidi-bidi, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 245-246 (identity not certain).

?*Rallus jamaicensis*, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 66 (identity not certain).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (identity not certain).

Gallinula martinicensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (Haiti, specimen).

Porphyrio martinica, CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Haiti, specimens).

Porphyrio martinicus, TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 267 (Dominican Republic, specimen).

Porphyriola martinica, CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Ionornis martinica, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Ionornis martinica, CORY, Birds Haiti and San Domingo, March, 1885, pp. 162-163 (Gantier); Cat. West Indian Birds, 1892, p. 91 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (San Lorenzo, Sánchez).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 402 (Monte Cristi, El Batey).

Ionornis martinicus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Étang Miragoane).—DANFORTH, Auk, 1929, p. 362 (Vásquez, Laguna del Salodillo).

Iornis martinicus, MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 311 (Haina, specimens).

Resident; fairly common in freshwater marshes.

Following are records of definite occurrence. Dominican Republic:—Laguna Rincón, near Cabral (Abbott); San Lorenzo Bay (Verrill); Sánchez (Verrill, Abbott, Wetmore); El Batey, Monte Cristi (Peters); Vásquez, Laguna del Salodillo (Danforth); Haina (Ciferri).

Haiti:—Gantier (Cory); Sources Puantes (Wetmore); Étang Miragoane (Bond); Trou Caïman, Trou des Roseaux (Bartsch); Jérémie (Abbott); Rivière Limbé, (Descourtiz).

On Laguna Rincón, near Cabral, Dr. W. L. Abbott found these birds plentiful, and collected an adult female March 15, 1922. Verrill wrote that they were "not rare at San Lorenzo and in the vicinity of Sánchez," and Abbott secured a male at Sánchez February 7, 1919. On May 10, 1927 Wetmore observed two resting on reeds at the mouth of the Río Yuna enjoying the warmth of the early morning sun. An immature female that he shot is molting into first plumage and has the wing feathers about three-fourths grown. His boatman said that the birds were seen regularly at this point. Peters shot males near El Batey in April, and in the vicinity of Monte Cristi in February. Danforth shot one at Vásquez June 25, and saw two at the Laguna del Salodillo, near Copey, June 26, 1927. Descourtiz found the purple gallinule breeding on the Rivière Limbé.

In Haiti Cory secured the purple gallinule near Gantier, where he found it not uncommon, and saw birds brought by natives to Pétionville (then known as Le Coup). The latter may have come from some distance, however, as women travel many miles with articles of food which they display in the markets. Bartsch shot one at Trou Caïman April 4, 1917, and recorded the species at Trou des Roseaux April 13. Abbott collected two near Jérémie February 8 and 10, 1918. On March 29, 1927 Wetmore observed one walking along a muddy bank among mangroves at the overflow of the sulphur spring at Sources Puantes north of Port-au-Prince. (Pl. 7.) Bond saw several at the Étang Miragoane February 4, 1928.

The purple gallinule usually seeks covert in aquatic growths where it wades, climbs, or swims, but may occasionally be seen in the open. In proper light the coloration of the adult bird is beautifully bright but in any shadow it is obscure. When walking the constant twitching of the white under tail coverts attracts the eye when the bird might otherwise remain unnoticed. Abbott describes the colors of the bill in a female taken at Jérémie as follows; terminal half of bill pale green; base of lower mandible reddish; base of the upper mandible and frontal plate fleshy brown.

This gallinule when adult has the under surface rich purple, changing to black on the abdomen, and white on the under tail coverts. The back is dull green, the head purple, and the outer webs of the primaries, and a line along the side of breast and neck, bright blue. The immature are washed with brown. The bird is nearly as large in body as a pigeon.

GALLINULA CHLOROPUS PORTORICENSIS Danforth

ANTILLEAN GALLINULE, GALLARETA DE AGUA, GALLINAZA, GALLARETA PICO ROJO, POULE D'EAU

Gallinula chloropus portoricensis DANFORTH, Auk, 1925, p. 560 (Cartagena Lagoon, Porto Rico).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 465 (Port-de-Paix, Trou Caïman, nesting).—DANFORTH, Auk, 1929, p. 362 (Hispaniola, common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 311 (Guerra).

Poule d'eau, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 261-262 (Rivière Estère).

Gallinula galeata, SALLÉ, Proc. Zool. Soc. London, 1857, p. 237 (Mouth of Río Haina).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Gantier); Cat. Birds Haiti and San Domingo, March, 1885, pp. 161-162 (Gantier, specimens); Cat. West Indian Birds, 1892, p. 91 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Dominican Republic).

Gallinula chloropus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (Haiti, specimen).

Gallinula chloropus cachinnans, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 402 (El Batey, Yastica River).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 219 (Étang Saumâtre, Étang Miragoane).

Gallinula chloropus (cerceris?), MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 312 (Bonaò).

Resident; locally common in freshwater marshes.

Sallé found this gallinule at the mouth of the Río Haina. Abbott secured a male and a female, both adult, at Laguna Rincón, near Cabral, where the birds were plentiful, on March 16 and 17, 1922, and a male in immature dress at Sánchez on February 7, 1919. Peters reported this gallinule as rather common in the lagoons and sluggish streams of the north coast, and collected two females at El Batey, April 5, where in a large lagoon he noted adults accompanied by young still in black down. On the same day in riding from El Batey to Cabarete he saw a flock of a dozen resting on the bank of the Río Yastica. Verrill reported this gallinule as common but gave no localities. Danforth, in 1927, collected two at the Laguna del Salodillo June 26, and on July 3 saw a pair with four downy young at Los Tres Ojos de Agua, near Santo Domingo City. Ciferri obtained specimens at Guerra, August 11, 1929 and on the Río Yuna near Bonaò April 22, 1927.

In Haiti, in 1799, Descourtilz found this gallinule on the Rivière Estère. Abbott shot two females at Port-de-Paix, April 14, 1917, a male at Trou Caïman, April 7, 1920, and a male at the Étang suitable places on the Cul-de-Sac plain, as Cory in 1881 found them near Gantier, and Bartsch records them from Gloré on the Étang Saumâtre April 3, 1917, and shot one (head and feet preserved in alcohol) at Trou Caïman April 4. Bartsch found them also at Trou des Roseaux on the southwestern peninsula April 13, and between Port-au-Prince and St. Marc April 21 and 22. He reports that on April 28 in Port-au-Prince women brought to his hotel a bunch of live gallinules which they offered for sale. Abbott collected an immature female at Jérémie February 8, 1918, and Wetmore killed an adult male on the Étang Miragoane April 1, 1927. Beebe found them at the Étang Miragoane and the Étang Saumâtre. Danforth found a nest containing one egg at the Artibonite sloughs beyond St. Marc on July 29, 1927. Bond secured eggs near Port-de-Paix in early April, and at Trou Caïman June 22, 1928. Poole and Perrygo collected eleven at Fort Liberté February 14 and 15, 1929, finding the birds common in freshwater marshes southwest of town.

The Antillean gallinule is found in fresh or slightly brackish marshes where it frequents sluggish channels, swimming about like

a coot in open water, but at any alarm taking refuge in the rushes. In spite of its narrow toes it swims as readily as it wades.

Peters⁴⁵ has written that the gallinule of the West Indies is not to be distinguished from *Gallinula chloropus cachinnans* of the United States. In this we do not agree as on comparison of an excellent series we find that the gallinule of the Antilles, south at least to Dominica, as well as that from the Bahamas is distinguished from the North American bird by the restricted area of brown coloration on the back which in most specimens does not extend far onto the wings coverts.⁴⁶

Following are measurements taken from our series from Hispaniola:

Seven males, wing 166.0–178.0 (172.0), tail 62.3–75.6 (69.8), culmen from posterior margin of nostril 21.5–22.9 (22.0), tarsus 54.7–61.0 (57.4⁴⁷) mm.

Nine females, wing 161.0–171.0 (167.0), tail 63.6–73.5 (67.7), culmen from posterior margin of nostril 19.2–21.9 (20.6), tarsus 50.1–57.4 (53.8) mm.

In size, form, and color this gallinule resembles the coots found in the same waters but may be readily identified by the bright red frontal shield, which is entirely without white, and in the hand, by the long narrow toes without lobes.

Subfamily FULICINAE

FULICA AMERICANA AMERICANA Gmelin

AMERICAN COOT, MUDHEN, GALLARETA, GEOUDEL, POULE D'EAU, CANARD MARRON

Fulica americana GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 704 (North America).

Fulica americana americana, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Port-de-Paix, specimen).

Fulica americana grenadensis, DANFORTH, Auk, 1929, p. 363 (Haina).

Migrant from North America; possibly resident in suitable localities.

Eight skins, all collected in Haiti, constitute the records of this species based on specimens for the island. (Pl. 16.) Dr. W. L. Abbott collected a male at Port-de-Paix, April 14, 1917, a male at the Étang Saumâtre March 9, 1918, and a male at Jérémie November 23,

⁴⁵ Auk, 1927, p. 535.

⁴⁶ For a discussion of this form and its relationships see Wetmore, New York Acad. Sci., Scient. Survey Porto Rico and Virgin Islands, vol. 9, 1927, pp. 344–345.

⁴⁷ Average of six specimens.



AMERICAN COOT (*FULICA AMERICANA AMERICANA*) IN CENTER; CARIBBEAN COOT (*FULICA CARIBAEA*) AT RIGHT AND IN BACKGROUND

The two species are distinguished by the color of the frontal shield.

1917. Wetmore shot a female at the Étang Miragoane April 1, 1927. Poole and Perrygo secured male and female at Dessalines December 24, 1928, and a female at Fort Liberté February 14, 1929. Bond shot a male at Port-de-Paix April 2, 1928. Danforth records two near Haina June 16, 1927 which would indicate that they were on their breeding grounds. Attention is drawn to this matter that investigation may be made by those interested.⁴⁸

In habits and appearance this well known bird is similar to the Caribbean coot, differing only in the color of the frontal shield, which in the present species has the upper portion deep red. (Pl. 16.)

FULICA CARIBAEA Ridgway

CARIBBEAN COOT, GALLARETA, GALLARETA PICO BLANCO, GEOUDEL,
POULE D'EAU, FOULQUE

Fulica caribaea RIDGWAY, Proc. U. S. Nat. Mus., vol. 7, 1884, p. 358 (St. John).—PETERS, Bull. Mus. Comp. Zoöl, vol. 61, 1917, p. 403 (El Batey).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Trou Caïman, specimen).—DANFORTH, Auk, 1929, p. 363 (Laguna del Salodillo, Haina, Étang Miragoane, Artibonite, Gonaïves).—MOLTONI, Att. Soc. Scienc. Nat., vol. 68, 1929, p. 312 (Guerra).

Poule d'eau, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 262-264; vol. 3, 1809, p. 147 (Haiti, habits, hunting).

?Poule d'eau, SAINT-MÉRY, Descrip. Part. Franc. Île Saint Domingue, vol. 2, 1798, p. 809 (Jérémie).

?*Fulica mexicana*, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 66 (Pont de l'Estère).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (Haiti).

?*Fulica americana*, CORY, Bull. Nuttall Ornith. Club, 1881, p. 155 (Haiti); Birds Haiti and San Domingo, March, 1885, pp. 163-164 (Gantier); Cat. West Indian Birds, 1892, p. 91 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser. vol. 1, 1896, p. 25 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Dominican Republic).

?*Fulica a. americana*, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 219 (Étang Miragoane).

Resident, locally common.

As the Caribbean coot (Pl. 16) in Hispaniola has been confused with the American coot until recently, records in literature, except for those of Descourtiz, and Peters are of uncertain allocation. As a matter of convenience others are given, with a query, under the present species.

⁴⁸ It may be noted that there is in the National Museum a male American coot taken at Cabañas, Cuba, on May 23, 1900, by William Palmer and J. H. Riley. Danforth, Auk, 1928, p. 482, has recorded two coots taken on Long Pond near Hodges, Jamaica, August 9, 1926, under the name *Fulica americana grenadensis* Riley. Our specimens from Haiti have the frontal shield exactly as in continental *americana*, and have no indication of the characters of *grenadensis*.

The first certain record of this species for the Dominican Republic is that of Peters who killed a male and a female at El Batey April 5. He found several pairs in a lagoon formed by an old channel of the Río Yasica, and collected a set of seven eggs. Peters reports other coots seen near Monte Cristi, but was not certain whether they were the Caribbean or the American species. The eggs taken, preserved in the Museum of Comparative Zoölogy, have the ground color slightly brighter than pale olive-buff, spotted finely with plumbeous black and blackish slate, part of the spots being minute dots, and a part somewhat larger, all distributed uniformly and rather closely over the surface. These eggs measure as follows: 50.2 by 33.9, 50.8 by 34.6, 51.0 by 34.4, 51.2 by 34.8, 51.2 by 34.9, 51.4 by 34.3, and 51.4 by 34.7 mm. Both Cherrie and Verrill under the name *americana* mention coots as seen without definite locality, that may or may not have been the present species. Abbott also reported coots of uncertain identity as common at Laguna Cabral near Rincón in March, 1922. Danforth collected one at the Laguna del Salodillo, near Copey, June 26, 1927, and saw others at Haina. Ciferri obtained one at Laguna de Ranachero, near Guerra, August 12, 1929.

Among specimens collected by Abbott in Haiti there are two *caribaea*, a female from Port-de-Paix, taken April 14, 1917, and a male from Trou Caïman shot April 7, 1920. Bartsch preserved the head and feet from a specimen taken at Trou Caïman April 4. He also recorded coots without certain identification from Trou des Roseaux April 13, and on April 28 saw a bunch of live mudhens brought for sale to his hotel in Port-au-Prince. Cory during the late winter months in 1881 found coots, that must have included this species, common about the lakes near Gantier. Bond collected one at Trou Caïman January 15, 1928, and John T. Emlen, jr., secured a male near the mouth of the Artibonite River July 28, 1927.

The earliest record is that of Descourtilz who mentions a coot seen at Pont de l'Estère, April 16, 1799, and later describes the present species as he specifically states that the frontal shield was pure white. He says that hunting them is best accomplished by four men armed with shotguns, one to walk on either bank of the stream or channel, and two to proceed over the water in a boat. These last drive the birds from the shelter of the rushes, in which they hide at the slightest noise, so that they may be killed. In the nesting season it is common practise to set fire to the marshes at the time when coots and other water birds have eggs. The negroes then search in the ashes for partly roasted eggs or for birds that have not had the fortune to escape the flames. The destructiveness of this method is evident.

Wetmore collected three Caribbean coots at the Étang Miragoane on April 1, 1927, preserving two, a male and a female, as skeletons, and a female as a skin. As he approached the open water of this lake along a little trail hidden among rushes he saw numbers of coots swimming with nodding heads on the open water. One that was within range was killed at once, and the black boy who accompanied him to retrieve birds floundered in soft muck to his waist in securing it. Other coots of this species swam in little groups spreading ripples over the calm, mirrorlike surface of the lake, while in the blue sky high above a flock of frigate-birds turned in slow spirals, at an altitude so great that they appeared no larger than swallows. Along a swampy channel coots were gathered in bands, walking about across the open mud like dumpy, large-footed chickens. These gatherings often contained all three of the species found in the island that sportsmen usually group under the name of "mudhen" as on one occasion on a right and left with his doubled barreled gun into a flying flock Wetmore secured two Caribbean coots, an American coot, and an Antillean gallinule. Danforth in 1927 found them at the Étang Miragoane, on sloughs near the lower Artibonite River where he collected one July 28, and near Gonaïves.

The frontal shield in this species is plain white with a faint tinge of ivory throughout. (Pl. 16.) The end of the bill is crossed by a dark band. In the fresh specimen the frontal shield is perfectly smooth, and is as hard and firm to the touch as the shield in *americana*. This is curious since in museum specimens the shield in *americana* dries smooth while in *caribaea* it becomes more or less wrinkled. The light color of the frontal shield in *caribaea* is very distinct and with fresh killed specimens in hand the differences in color described showed clearly.

The local name of "Geoudel" applied to these birds is of uncertain meaning.

The wing in *Fulica caribaea* is diastataxic as in *F. americana*.

The Caribbean coot, like the American species, is as large as a small chicken, with strong, broadly lobed feet armed with sharp claws. The head and neck are blackish slate, and the remainder of the plumage dark slaty gray, with whitish tips on some of the secondaries, a white line on the alula, edge of metacarpal, and part of outer margin of first primary, and black under tail-coverts, bordered broadly on either side with white. As noted above the frontal shield is pure white.

Order CHARADRIIFORMES

Suborder CHARADRII

Superfamily JACANIDES

Family JACANIDAE

JACANA SPINOSA VIOLACEA (Cory)

WEST INDIAN JACANA, GALLITO, GALLITO DE AGUA, MEDECIN, VANNEAU ARMÉ, CHIRURGIEN, POULE D'EAU DORÉE, CHEVALIER MORDORÉ ARMÉ

Parra violacea CORY, Bull. Nuttall Ornith. Club, 1881, pp. 130 and 155 (Gantier, Haiti).

Jacana, BUFFON, Hist. Nat. Ois., vol. 8, 1781, pp. 187-188 (description, habits).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 65-66 (Pont de l'Estère).

Vanneau Armé, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 208-209 (Haiti).

Jacana armata fusca BRISSON, Ornith., vol. 5, 1760, pp. 125-129, pl. 11, fig. 1 ("S. Domingue").

Parra gymnostoma, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 159-160, col. pl. (Le Coup?).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 323 (listed).

Parra jacana, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 157 (listed).—HARTLAUB, Isis, 1847, p. 610 (listed).

Jacana spinosa, CORY, Cat. West Indian Birds, 1892, p. 92 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 25 (Río Ozama).

Jacana spinosa violacea, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 406 (El Batey, specimens; Monte Cristi).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 108, 220 (Étang Saumâtre, Étang Miragoane).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Étang Miragoane, Fort Liberté).—DANFORTH, Auk, 1929, p. 363 (Haina, Laguna del Salodillo, Étang Miragoane, Gonaïves).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 312 (Río Haina, specimens).

Resident; fairly common at certain points, but apparently local in distribution.

At the eastern end of Lake Enriquillo Abbott found jacanas fairly common, and collected two adult males on October 2, 1919, while at Laguna Rincón, near Cabral, where the birds were plentiful, he took an adult female on March 15, 1922, and another female in immature dress March 17. Cherrie in 1895 found jacanas quite common along the Ozama River near Santo Domingo City, and states that he saw downy young with their parents on April 26. Peters found jacanas in small numbers on a lagoon at El Batey, near the north coast of the Dominican Republic, on April 5, 1916, and collected two specimens. He also examined the wing of one killed on the Río Yaqui del Norte near Monte Cristi. Danforth collected one at the Laguna del Salodillo, near Copey, June 26, 1927, and saw others near Haina. Ciferri secured two on the Río Haina, August 14, 1929.

The species is seemingly rather local in the Dominican Republic, and is not recorded as yet from the lagoons of the Samaná Peninsula, nor from the Yuna delta at the eastern end of Samaná Bay.

In Haiti the jacana is first recorded definitely in 1760 by Brisson who described a specimen sent by Chervain to de Reaumur. Buffon notes that according to Deshayes this species is known as "chevalier mordoré armé." Descourtilz found it April 16, 1799 at the Pont de l'Estère, and makes mention of it in connection with other birds on other pages of his book. He calls it "le Vanneau Armé de Saint-Domingue."

Cory described this form from a single specimen taken in the late winter of 1881, and was told by the natives that the bird was found at other points. No locality is given in the original description but in his work entitled *Birds of Haiti and San Domingo*, published in 1884 (p. 160) he says that this specimen was "taken near Le Coup." In the *Bulletin of the Nuttall Ornithological Club* for 1881 (p. 155), he says, however, that it came from Gantier. Hellmayr at Wetmore's request has examined the type specimen in the collections of the Field Museum and informs us that the type specimen of *Parra violacea*, Field Museum No. 36416 (Cory Coll. No. 5104) is a female (not a male as stated in the original description) taken on March 5, 1881. The locality given on the label is Le Coup, Haiti, but this name is written in different ink from the rest of the data and seems to have been added later. Since Le Coup, now called Pétienville, is in the hills above Port-au-Prince, the occurrence of the bird there seems entirely out of place as its haunts are in the lowlands. It seems probable that the type was taken near Gantier as described in 1881. On consulting the roster of specimens given in the *Birds of Haiti and San Domingo* we find that Cory was at Le Coup from March 1 to 4 and again on March 7. In the intervening period there is record of specimens taken at Gantier March 6. It will be noted that the type in question was taken March 5. In view of this and of Cory's own statement in 1881 we consider Gantier the proper type locality and believe that "Le Coup" was added erroneously without consideration of the topographic difference involved in the few miles separating the two points in question.

Bartsch recorded the jacana at Trou Caïman April 4, 1917, and Abbott collected a male at the same point on March 10, 1918. This bird is peculiar as it resembles the adult above but below is white with only a slight mixture of black and brown. In spite of its seeming immaturity as regards the ventral plumage it is marked as a breeding bird. We consider that it is an albinistic specimen that has retained the juvenile dress in part after reaching maturity. Abbott secured other males near the Étang Saumâtre March 7, 1918, and April 11, 1920, and one near Manneville on May 15, 1920. Beebe

found them in marshes at the Étang Saumâtre March 2, 1927. At the Étang Miragoane on April 1, 1927, Wetmore found the jacana common and collected an adult female. He saw several young in immature dress. He did not meet the species elsewhere but while in Haiti did not visit other points suited to it. Danforth found it at the Étang Miragoane and near Gonaïves in the summer of 1927. Bond also found it at the Étang Miragoane, and saw a few at Fort Liberté, where two were taken by Poole and Perrygo February 14, and others seen February 16, 1929.

The jacana inhabits wet meadows, or pools and lagoons covered with mats of floating vegetation over which it walks with ease by grace of its long toes with their greatly elongated claws, which because of their wide spread in relation to the slight weight of the body give ready support on an apparently unstable surface. The legs are very long.

Measurements of birds from Hispaniola follow:

Eight males, wing 120.7–125.4 (123.2), tail 40.3–49.2 (42.8), culmen from base 29.3–31.9 (31.1), tarsus 49.4–54.4 (52.5) mm.

Two females, wing 137.3–142.7, tail 47.0–49.5, culmen from base 34.1,⁴⁹ tarsus 51.1–58.5 (57.8) mm.

The front of the head is ornamented by a lappet with the posterior margin divided into three narrow lobes. In the adult the plumage of the anterior portion of the body is black, while elsewhere the feathers are purplish brown except for the wing quills which are light yellowish green. The bend of the wing bears a sharp thornlike spine from which the bird receives its Haitian name of *medecin*. The immature is pure white below with a white line through the eye. The light green of the wings, displayed in flight or often by raising the wings above the back when the bird is on the marsh, is a prominent field mark. The body is about as large as that of a Wilson's snipe.

Superfamily CHARADRIIDES

Family HAEMATOPODIDAE

HAEMATOPUS PALLIATUS PRATTII Maynard

BAHAMAN OYSTER-CATCHER, PRATT'S OYSTER-CATCHER, CORACOLERO, OSTRERO

Haematopus prattii MAYNARD, Appendix to Cat. Birds West Indies, Nov. 29, 1899, p. 34 (Flemming's Key, Bahama Islands).⁵⁰

Haematopus palliatus, CORY, Birds Haiti and San Domingo, Dec., 1884, p. 145 (reported); Cat. West Indian Birds, 1892, p. 95 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

⁴⁹ One specimen.

⁵⁰ This appendix was published in advance of the work itself, and was reprinted with the appearance of the list proper. In this reprint the generic name of the present bird is corrected to *Haematopus*.

Rare; possibly resident.

The oyster-catcher was reported to Cory on the coasts of the Dominican Republic but was not seen by him personally. So far as we are aware the only definite record for the eastern republic is that of a male taken at Jovéro, Dominican Republic, on November 28, 1923, by Dr. W. L. Abbott. Poole and Perrygo collected a pair on Tercero Island in the Seven Brothers group January 30, 1929. Nothing further is known of the occurrence of the bird on the island.

The oyster-catcher is a shore-bird of large size that frequents rocky shores or nearby sandy beaches, where it calls and whistles loudly at the sight of man, and at any alarm flies to some secure spot where it is safe from attack. It is strong and robust in body and is difficult to kill.

Though current literature⁵¹ lists the oyster-catcher of the West Indies as typical *H. p. palliatus* this seems to have been done without examination of specimens from the Greater Antilles. On comparison of the skins from Hispaniola we find that the males have the following measurements: culmen from base 81.3 and 85.9 mm., which equals the average for *H. p. prattii* the form of the Bahama Islands, and is longer than the bill in males of typical *palliatus* from the southeastern United States. The tip of the bill in the female from Tercero Island is broken so that it can not be measured. The bill in the Hispaniolan specimens is also relatively heavy, somewhat more so in fact than in the only male of *prattii* available to us at this time. As elongated culmen and heavy bill are the characters at present used to separate the Bahaman bird the Jovero and Tercero skins must be identified as of that race. This makes it appear probable that the bird of Desecheo Island in Mona passage, between the Dominican Republic and Porto Rico, identified as *palliatus*⁵² solely on the assumption of supposed range as no specimens were available, may also be this same form. It is possible on the other hand that the bird from Jovéro is a migrant or a stray from the Bahamas. The status of the races of *palliatus* as regards the area from northern South America northward is yet unsatisfactory and should be reviewed when more material is available. It may be noted that Murphy in the paper cited above is in error in attributing *prattii* to Bangs as this form was first described by Maynard.

The oyster-catcher has the head and neck sooty black, the back grayish brown, and a large patch in the wings and the under surface white. Abbott, in the bird taken at Jovéro, records the iris as brownish yellow, the feet as pinkish flesh color, and the bill and margin of the eyelids red. It measured 447 mm. in length.

⁵¹ Ridgway, R., U. S. Nat. Mus. Bull. 50, pt. 8, 1919, pp. 32, 36; Murphy, R. C., Amer. Mus. Nov., No. 194, Nov. 17, 1925, pp. 5-7.

⁵² Wetmore, A., New York Acad. Sci., Sci. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 349-350.

Family CHARADRIIDAE⁵³

Subfamily CHARADRIINAE

CHARADRIUS NIVOSUS TENUIROSTRIS (Lawrence)

CUBAN SNOWY PLOVER, PLAYERO

Egialitis tenuirostris LAWRENCE, ANN. Lyc. Nat. Hist. New York, vol. 7, 1862, p. 455 (near Guantanamo, Cuba).

Charadrius nivosus tenuirostris, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520 (listed).—DANFORTH, Auk, 1929, pp. 231-232, 363 (St. Marc, Haiti, specimen).

Rare; status uncertain, but apparently breeds.

There are few records of the snowy plover at present for Hispaniola. There is in the United States National Museum a female taken at the Étang Saumâtre, Haiti, March 9, 1918, by W. L. Abbott, a bird in somewhat worn adult dress so that from the date it seems probable that the species may breed in the area mentioned. Danforth found a pair on July 25, 1927, at the Étang Bois-Neuf, a small brackish lagoon south of St. Marc, Haiti, and collected a female which was near the breeding season. The stomach of this specimen contained three ants (*Odontomachus haematodes*) and two Corixids.

The snowy plover is one that frequents alkaline plains near the borders of lakes and channels, where its light coloration, coupled with the intense light reflected from the alkaline crusts of its background, often render it difficult to see even when its presence is made certain by its low, whistled call. When its breeding grounds are approached it may circle about overhead or may start out running across the muddy surface, continuing without pausing for distances far beyond those usually covered by its relatives so that it is necessary for the observer to run also to keep within sight of it.

The bird is not much larger than a sparrow, having the wing from 98 to 107 mm. long. It is light gray above, and white below with a blackish spot on either side of the breast. It is distinguished from the semipalmated plover by paler coloration above, slightly smaller size, and lack of a breast band.

CHARADRIUS MELODUS Ord

PIPING PLOVER

Charadrius melodus ORD, Reprint, Wilson's Orn., vol. 7, 1824, p. 71 (Great Egg Harbor, New Jersey).

⁵³ *Vanellus Dominicanensis armatus* Brisson (Ornith., vol. 5, 1760, pp. 118-120), which was said to have come to de Reaumur from "S. Domingue" through Chervain, from the description is evidently a wattled plover. This bird was called *Charadrius brissonii* by Wagler, Syst. Av., 1827, p. 77, and is listed under this name by Hartlaub, Isis, 1847, p. 609. The locality must be incorrect since no plover of this type is known from the Antilles.

Migrant from North America; apparently rare.

The only record is that of two females collected by Poole and Perrygo on Tercero Island in the Seven Brothers group January 31, 1929.

The piping plover is reported as migrating regularly to the Bahamas so that its occurrence on the northern shores of Hispaniola is not unexpected. It is another of the small beach birds that are confusing in identification except by one familiar with them.

In color the piping plover is similar to the Cuban snowy plover, but is distinguished by slightly larger size, the wing measuring 112 to 124 mm. instead of 98 to 107 mm. as in the preceding species. The bill is shorter and distinctly heavier, measuring only 11 to 13.5 mm., against 13 to 15.5 in *C. n. tenuirostris*.

CHARADRIUS SEMIPALMATUS Bonaparte

SEMIPALMATED PLOVER, PLAYERO

Charadrius semipalmatus BONAPARTE, Journ. Acad. Nat. Sci. Philadelphia, vol. 5, 1825, p. 98 (coast of New Jersey).

Egialitis semipalmatus, TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—CORY, Birds Haiti and San Domingo, Dec., 1884, p. 144 (Puerto Plata, specimen); Cat. West Indian Birds, 1892, p. 95 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 20 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Samaná).

Charadrius semipalmatus, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 404 (Monte Cristi).—DANFORTH, Auk, 1929, p. 363 (Monte Cristi).

Migrant from North America.

Though there are comparatively few records for this species it is probable that when a more careful search is made it will be found fairly common, particularly in spring and fall.

Cory reports one taken at Puerto Plata in December. One collected at about the same time by C. McGrigor somewhere in the Dominican Republic, possibly at Samaná, is recorded by Tristram.

Verrill says that the semipalmated plover was common at Samaná (January 29 to February 25, 1907) and Peters saw a small flock at Monte Cristi February 18, 1916. Abbott collected an immature male at Lake Enriquillo, October 5, 1919, and an adult male and an immature female at Saona Island September 17, 1917. Wetmore saw one near Sánchez May 6, 1927. Danforth records a flock of ten at Monte Cristi August 5, 1927.

The little known of the species in Haiti is expressed in an immature female taken at Jérémie, December 5, 1917 by Abbott, one recorded at Aquin, April 3, 1927 by Wetmore, one taken at Port-au-Prince, April 25, 1917 by Bartsch, and five from Fort Liberté shot February 10 and 19, 1929 by Poole and Perrygo.

The semipalmated plover frequents muddy flats often with flocks of other shorebirds but is so small and quiet that it is frequently overlooked. From the few records available it appears to be present from September to May.

This species is very small and is marked by dark brown color above and white below, with a dark band across the breast, this being black or brownish gray according to season or age. In flight a band of white is shown in the wing. It measures from 165 to 190 mm. in length, with the wing 114 to 127 mm.

PAGOLLA WILSONIA RUFINUCHA (Ridgway)

RUFOUS-NAPED PLOVER, PLAYERO, TITIRE DE PLAYA, BÉCASSINE

Ægialitis Wilsonius, var. *rufinucha* RIDGWAY, Amer. Nat., vol. 8, February, 1874, p. 109 (Spanishtown, Jamaica).

Ægialitis wilsonius, CORY, Birds Haiti and San Domingo, Dec., 1884, p. 143 (Port-au-Prince); Cat. West Indian Birds, 1892, p. 95 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Ægialitis wilsoni, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Samaná).

Pagolla wilsonia wilsonia, RIDGWAY, U. S. Nat. Mus. Bull. 50, vol. 8, 1919; p. 110 (Samaná).

Pagolla wilsonia rufinucha, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 405 (Monte Cristi, Gaspar Hernandez).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 495 (Port-de-Paix, Fort Liberté, Gonave, and Tortue Islands).

Ochthodromus wilsonius rufinuchus, DANFORTH, Auk, 1929, p. 363 (Monte Cristi, Les Salines, Gonave).

Probably resident; local.

Verrill reported this plover from Samaná where he said that it was common. Peters says that these birds are found along the north coast wherever the beach is sufficiently wide to allow a margin of dry sand above high-water mark. He secured specimens at Monte Cristi and Gaspar Hernandez and remarks that birds taken at the latter point March 14 appeared to be paired. Hartert informs us that there are six in the Tring Museum, a male and two females, collected by Kaempfer at the mouth of the Yuna River September 3, 6, and 27, 1922, and a male and two females taken by Verrill at Samaná February 2, 4, and 6, 1907. Danforth found them common near Monte Cristi the summer of 1927 and secured four specimens.

There are more records of occurrence for Haiti, probably because of more extended field work in the coastal region. At Caracol, on the north coast, Wetmore found them common on an open playa near the landing. The birds here showed some agitation and were believed to be on their breeding grounds. Abbott secured adults at the Étang Saumâtre on March 6, 1918 and April 9, 1920, and took

two on Grande Cayemite Island, January 5, 1918. Wetmore killed a pair April 3, 1927, near Aquin on the south coast. There these plovers were common on open flats about a salt water lagoon. They ran about in the open, the heavy bill coupled with the dark band across the breast being marks that distinguished them easily from other shorebirds found here. Their call is a high-pitched *peet peet*. The two taken were near the nesting season.

Danforth records them in 1927 at Les Salines and also on Gonave Island where he collected four. Bond found them at Port-de-Paix and Fort Liberté, writing that a boy brought him an egg at the latter point on April 29, 1928. He collected two on Gonave Island February 8, 1928, and reports them as found also on Tortue Island. Poole and Perrygo found them common near Fort Liberté, collecting fourteen skins from February 7 to 19, 1929.

Subspecific relationships of the West Indian individuals of this species have been somewhat puzzling. The West Indian race was named *rufinucha* by Ridgway many years ago but recently⁵⁴ has been considered by the same author as inseparable from the group found along the coasts of the southeastern United States. Comparison of a series of twenty-one recent specimens from Hispaniola upholds Peters' contention⁵⁵ that there is a West Indian race marked by darker color of the dorsal surface. It appears that this difference lessens appreciably as specimens age in our collections as skins from Porto Rico and Cuba taken twenty-five years ago are so slightly darker than those of Florida that recently Wetmore has been misled into considering them not worthy of separation from true *wilsonia*.⁵⁶ On examining the fresh material indicated above in connection with the older series he is now convinced that *rufinucha* is valid, and that the form found on Porto Rico as well as on Hispaniola should bear that name.

Following are measurements of specimens from Hispaniola:

Ten males, wing 114.1–123.1 (118.0), tail 43.7–49.4 (47.2), culmen from base 19.3–23.5 (21.0), tarsus 28.7–32.2 (30.9) mm.

Eleven females, wing 113.8–123.7 (119.3), tail 44.0–50.1 (48.0), culmen from base 19.4–22.3 (21.1), tarsus 28.6–32.2 (30.4) mm.

The rufous-naped plover is larger than the semipalmated plover, but is similarly colored in that it is white below with a dark band across the chest, and grayish brown above. It is easily told by the large, heavy bill.

⁵⁴ Ridgway, R., U. S. Nat. Mus., Bull. 50, pt. 8, 1919, pp. 110–112.

⁵⁵ Auk, 1927, p. 535; Bull. Mus. Comp. Zool., vol. 61, 1917, p. 405.

⁵⁶ See Wetmore, A., New York Acad. Sci., Sci. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 352–353.

OXYECHUS VOCIFERUS VOCIFERUS (Linnaeus)

KILLDEER

Charadrius vociferus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 150 (Virginia and Carolina).

Oxyechus vociferus (rubidus?), MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 312 (Moca, specimens).

Migrant from North America; apparently rare.

Among specimens secured by Poole and Perrygo at Fort Liberté, Haiti is a female of the killdeer from North America, taken February 19, 1929. This specimen has the following measurements, wing 170.0, tail 92.0, culmen from base 20.7, and tarsus 37.9 mm., having the larger size and darker coloration above that mark the typical race of this bird. As this is the first record for the island the abundance of this form as a winter migrant is uncertain.

It is possible that specimens recorded by Moltoni from Moca November 25, 1926 and January 7, 1927, may also be this form as he records the wing in two females as 166 and 167 mm., and in one male as 165 mm.

OXYECHUS VOCIFERUS RUBIDUS Riley

WEST INDIAN KILLDEER, PLAYERO, FRAILECITO, COLLIER

Oxyechus vociferus rubidus RILEY, Proc. Biol. Soc. Washington, vol. 22, April 17, 1909, p. 88 (Santo Domingo=Hispaniola).

Pluvier à collier, de St. Domingue, DAUBENTON, Planch. Enl. No. 286.

Collier, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 262 (Dondon).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 211-212 (Haiti).

Kildir, BUFFON, Hist. Nat. Ois., vol. 8, 1781, p. 97 ("Saint-Domingue").

Killdeer, BECK, Nat. Hist., vol. 21, 1921, p. 39 (above Túbano).

Pluvialis Dominicensis torquata BRISSON, Ornith., vol. 5, 1760, pp. 71-74, pl. 6, fig. 2. ("S. Domingue.")

Charadrius vociferus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (listed).—HARTLAUB, Naumannia, 1852, p. 53 (Mirebalais).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Dominican Republic).

Ægialites vociferus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (Dominican Republic).

Ægialitis vociferus, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 141-142 (listed); Cat. Birds West Indies, 1892, p. 95 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 266 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317, 322 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 25 (Dominican Republic).—CHRISTY, Ibis, 1897, p. 337 (La Vega, Puerto Plata).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (El Valle, Sánchez, Samaná, La Vega).

Oxyechus vociferus, FORBES and ROBINSON, Bull. Liverpool Mus., vol. 2, 1899, p. 66 (Almercen).

Oxyechus vociferus rubidus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 404 (Jaibón, Gaspar Hernandez).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139;

Beneath Tropic Seas, 1928, p. 220 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Étang Miragoane, Trou Caïman, Étang Saumâtre, Ennery, Port-de-Paix).—DANFORTH, Auk, 1929, p. 363 (many localities).

Resident; locally distributed. Following are records of occurrence:

Dominican Republic:—San Juan (Wetmore); Lake Enriquillo (Abbott); Saona Island (Abbott); El Valle, Sánchez, Samaná, La Vega (Verrill); Almercen, or Rivas (Forbes and Robinson); Jaibón, Gaspar Hernandez, Monte Cristi (Peters); Constanza (Abbott, Wetmore); base of Loma Tina above Túbano (Beck); Higüey, Seibo, Hato Mayor, Haina, San Cristobal, Vásquez, Monte Cristi, Laguna del Salodillo, Dajabón, San Juan (Danforth).

Haiti:—Baie des Moustiques, Môle St. Nicolas, (Abbott); Étang Saumâtre (Abbott, Bond); Gloré, near Port-au-Prince (Bartsch); Trou Caïman (Bartsch, Bond); Sources Puantes, Aquin, Hinche, Caracol (Wetmore); Mirebalais (Württemberg); Dondon (Saint-Méry); Ennery, Port-de-Paix (Bond); St. Michel, Fort Liberté, Cerca-la-Source (Poole and Perrygo); Étang Bois-Neuf, Sloughs near mouth of Artibonite, Les Salines, Gonaïves, Les Cayes, Gonave Island (Danforth).

The killdeer is found in open meadows or fields, marshy savannas or bare, open playas where it walks or runs over the ground pausing at intervals to teeter slightly, uttering its clear calls of *kill deer*, *kill deer* at the slightest alarm. When at a distance it often turns its brown back toward the observer and then blends almost perfectly into its background. The bird may be less abundant now than formerly, as Verrill, in 1909, reported it common at a number of localities. It ranges from the coast to the higher elevations of the island wherever there is open country suited to its needs. Abbott collected a specimen at Constanza in the high interior May 11, 1919, and Wetmore found several there from May 18 to 21, 1927, and collected a female. They were found on prairies and pastures in the open valleys. Beck reports them from a high meadow above Túbano at the base of Loma Tina.

Forbes and Robinson⁵⁷ record the killdeer from Almercen (now known as Rivas). Cherrie noted it as fairly common along water courses near the coast, and secured one that contained a nearly developed egg on March 24. Abbott recorded it at Lake Enriquillo, October 1 to 6, 1919, Peters collected six at Jaibón, and Gaspar Hernandez, and saw others at Monte Cristi. Danforth in 1927 found it at Higüey, Seibo, Hato Mayor, Haina, San Cristobal, Vásquez, Monte Cristi, Laguna del Salodillo, Dajabón, and San Juan.

In Haiti, Brisson reports the killdeer in 1760, and Saint-Méry and Descourtilz recorded it under the name "collier" in 1797 and

⁵⁷ Bull. Liverpool Mus., vol. 2, 1899, p. 66.

1809 respectively. Württemberg secured it at Mirebalais. Abbott shot specimens at Môle, St. Nicolas March 19, and Baie des Moustiques May 5, 1917, and one at the Étang Saumâtre March 5, 1918. On March 29 and 30, 1927, Wetmore found one feeding along the muddy overflow of the sulphur spring at Sources Puantes on the coast north of Port-au-Prince, and April 3 saw a number with other waders about a lagoon at Aquin. At Hinche on April 23 and 24 a pair was found on a barren, stony knoll far from water. From their actions they appeared to have a nest or young. Near Caracol killdeer were seen in open ground at Poste Charbert April 26, and near the coast on April 27. Danforth in 1927 found them at the Étang Bois-Neuf, on the sloughs near the mouth of the Artibonite, at Les Salines, Gonaïves, Les Cayes, and on Gonave Island.

Bond found them at the Étang Miragoane, Trou Caïman, Étang Saumâtre, Ennery, and Port-de-Paix. Poole and Perrygo secured skins at St. Michel January 14, and Fort Liberté February 11, 1929. They recorded these birds also at Cerca-la-Source from March 18 to 24, 1929.

W. L. Abbott secured a set of three eggs May 30, 1917, at Jean Rabel Anchorage, brought to him by a boy who found them in a nest on a pebbly sea beach. These eggs have the ground color slightly brighter than pale olive-buff, spotted irregularly with black, a few of the markings being partly concealed so that they appear slate gray. The spots are rather evenly distributed over the surface but with the larger, heavier ones on the larger end. The markings on the average are angular or drawn out into short lines. One of the eggs is less profusely marked than the other two. They measure as follows: 36.5 by 28.1, 36.7 by 28.0, and 36.7 by 27.9 mm.

Following are measurements of birds from Hispaniola.

Four males, wing 145.0–157.0 (151.0), tail 84.3–93.4 (88.5), culmen from base 18.5–20.7 (19.7), tarsus 33.7–35.0⁵⁸ (34.6) mm.

Three females, wing 155.0–160.0, tail 82.9–90.0 (86.4), culmen from base 20.7–20.9 (20.8), tarsus 33.9–36.7 (36.0) mm.

The Tourterelle, de St. Dominique, figured by Daubenton (Planch. Enl. No. 487) is evidently an artifact made with the body of a mourning dove (*Zenaidura macroura*), and the head and upper neck of a killdeer.

The killdeer is as large as a thrush with grayish brown back, rufous brown rump and upper tail coverts, and white forehead and under surface, with two black bands across the chest, a black band across the front of the head and a white line behind the eye. As the bird raises its long wings in flight prominent white markings are displayed on the flight feathers.

⁵⁸ Average of three.

PLUVIALIS DOMINICUS DOMINICUS (Müller)

AMERICAN GOLDEN PLOVER, CHORLITO, PLUVIAL, PLUVIER DORÉ

Charadrius dominicus MÜLLER, *Natursyst. Suppl.*, 1776, p. 116 (Santo Domingo=Hispaniola).

Pluvier Doré, BUFFON, *Hist. Nat. Ois.*, vol 8, 1781, p. 84 ("Saint-Domingue").—DESCOURTILZ, *Voy. Nat.*, vol. 2, 1809, pp. 209-211, (Haiti).

Pluvialis Dominicensis aureus BRISSON, *Ornith.*, vol. 5, 1760, pp. 48-51, pl. 6, fig. 1 ("S. Domingue").

Charadrius pluvialis, RITTER, *Naturh. Reis. Westind. Insel Hayti*, 1836, p. 157 (listed).

Pluvialis dominicus dominicus, MOLTONI, *Att. Soc. Ital. Scienz. Nat.*, vol. 68, 1929, p. 312 (San Juan, specimens).

Migrant.

The scientific name for the present species is based on *le pluvier doré de S. Domingue* of Brisson, who informs us that his description is taken from a specimen sent to M. de Reaumur by Chervain. Descourtilz speaks of the pluvier doré as common and says that they come to wet fields to feed and are very tame. Abbott reported them common at the Étang Saumâtre in early March, 1918. Ciferri collected three at the Sabana San Thomé, near San Juan, September 18, 1928. Further than this there is no record of the species at present. It may occur regularly in migration though this is as yet uncertain.

The golden plover is similar in size to the black-bellied plover, and is distinguished by lack of a hind toe.

SQUATAROLA SQUATAROLA CYNOSURAE Thayer and Bangs

AMERICAN BLACK-BELLIED PLOVER, PLUVIAL

Squatarola squatarola cynosurae THAYER and BANGS, *Proc. New England Zool. Club*, vol. 5, April 9, 1914, p. 23 (Baillie Island, Arctic America).—PETERS, *Bull. Mus. Comp. Zoöl.*, vol. 61, 1917, p. 404 (Monte Cristi, Río San Juan).—BOND, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 80, 1928, p. 496 (Port-de-Paix).—DANFORTH, *Auk*, 1929, pp. 363-364 (Monte Cristi; St. Louis, Les Salines, Gonave Island).

Found during winter; abundance, from available data, uncertain.

The only records for the Dominican Republic are those of Peters (the first to record the species in Hispaniola) who observed a flock of about twenty near Monte Cristi February 18, and two others west of the mouth of the Río San Juan March 4, 1916, Abbott, who found the species at Lake Enriquillo October 1 to 6, 1919, and Danforth, who saw a few at Monte Cristi June 24 and 27, and August 5, 1927. In Haiti Abbott collected a female in winter dress at Baie des Moustiques May 7, 1917, and saw black-bellied plovers early in March, 1918 at the Étang Saumâtre. Wetmore observed half a dozen near

Aquin April 3, and one near Caracol April 27, 1927. Bond saw a number near Port-de-Paix and collected one. Poole and Danforth found them at St. Louis July 23, Les Salines July 30, and at Anse à Galets and Étroites, Gonave Island July 17. Poole and Perrygo in 1929 collected one on Tercero Island January 31, and one on Muertos Island February 4, both of these being in the Seven Brothers group. At Fort Liberté they secured five on February 9.

The black-bellied plover during winter is found on open mud-flats, usually near coastal lagoons, but occasionally appears on sandy beaches. It is fairly large of body and has an erect carriage so that it is easily seen among other shorebirds with which it may be associated.

In winter dress, in which the species is usually seen in Hispaniola, the sides of the head and under parts are white, the breast somewhat streaked with dusky, and the upper parts brownish gray mottled somewhat with white. The axillar feathers are black. Birds found in late spring or early fall may be in breeding dress, in which they are pale gray above, spotted with brownish black, with the underparts and sides of head black. The bird is distinctly larger than a killdeer, has the wing ranging from 178 to 199 mm. and possesses a small but distinct hind toe.

Subfamily ARENARIINAE

ARENARIA INTERPRES MORINELLA (Linnaeus)

RUDDY TURNSTONE, PLAYERO TURCO

Tringa morinella LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 249 (coast of southeastern Georgia).

Strepsilas interpres, TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic).

Arenaria interpres, CORY, Cat. West Indian Birds, 1892, p. 92 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Samaná Bay).

Arenaria interpres morinella, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 406 (Monte Cristi, Gaspar Hernandez).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Jaquesy, Fort Liberté).—DANFORTH, Auk, 1929, p. 364 (Les Salines, Monte Cristi).

Winter visitant along the coast; fairly common.

Though there are few records for the turnstone this is probably due to lack of observation rather than to rarity of the bird, which should be distributed in fair numbers through the coastal lagoons.

The earliest report is that of Tristram, who received a skin from C. McGrigor taken in the Dominican Republic, probably near Samaná. Verrill reported them common on the little cays in Samaná Bay. There are two specimens in the collection of J. H. Fleming taken by Verrill on Cayo Levantado opposite Samaná on February 14, 1907. Peters saw them at Monte Cristi during the

second and third weeks in February, and between Gaspar Hernandez and the Río San Juan on March 4, 1916. Abbott collected a female on Saona Island, September 14, 1919. Danforth reports five at Monte Cristi August 5, 1927.

In Haiti Abbott secured a male at the Étang Saumâtre on March 7, 1918. At Aquin, on April 3, 1927, Wetmore observed fifty or more scattered over mudflats adjacent to a salt water lagoon, and others along adjacent sandy beaches, basis for our statement that the species is probably more common than the few records indicate. At Caracol on April 27 a dozen were recorded. Danforth saw fifteen at Les Salines July 30, 1927. They seem especially common along the north coast of Haiti as Bond records them at Jacquesy and Fort Liberté, collecting skins on April 28, 1928, and Poole and Perrygo in 1929 secured three on Muertos Island in the Seven Brothers group January 29 and February 2, and six at Fort Liberté February 9.

On its wintering ground the turnstone is found ordinarily on mud flats or muddy playas, always in the open, and ordinarily in little flocks. It is also encountered on sandy beaches, but is then usually in migration. It is unobtrusive and feeds quietly, often allowing close approach, to flush when alarmed with a low whistle and fly with rapid flight to another feeding ground.

The turnstone is somewhat heavier in body than the killdeer but is of about the same stature. The adult is white below, with the chest and foreneck black, and the upper surface marked with black, white and rusty brown. The lower back and upper tail coverts are white, the rump is black, and there is a prominent white band in the wings, so that the bird appears strikingly colored as it rises in flight. In winter and immature dress the black of the chest is restricted, and there is little rusty on the back. The wing measures from 139 to 157 mm.

Family SCOLOPACIDAE⁵⁹

Subfamily SCOLOPACINAE

CAPELLA DELICATA (Ord)

WILSON'S SNIPE, BECASINA, BÉCASSE DES SAVANNES

Scolopax delicata ORD, Reprint of Wilson's Ornithology, vol. 9, 1825, p. ccxviii (Pennsylvania).

⁵⁹ Ritter, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157, includes the red-backed sandpiper (*Pelidna alpina sakhalina*) in his list, under the name *Tringa cinclus*, without annotation as to where he found it. Abbott believes that he saw this sandpiper on Saona Island, September 12 to 18, 1919, but did not secure specimens. The species is found on mudbars, where it probes for food with its long bill. It has not been definitely reported south of southern Florida.

The species is one of moderate size being 200 mm. or a little more in length with the upper parts brownish gray, middle upper tail coverts blackish, under parts whitish, the breast indistinctly streaked with blackish. In breeding dress there is a large patch of black on the abdomen that may be more or less indicated in birds in migration. The bill is relatively long and slightly decurved at the tip.

Bécassine, BUFFON, Hist. Nat. Ois., vol. 7, 1780, p. 488 (migrant).

Bécasse des Savannes, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 212-214 (Haiti).

Scolopax frenata, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 317 (listed).

Gallinago delicata, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (San Lorenzo, El Valle).

Capella gallinago delicata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Étang Miragoane, Trou Caïman, Artibonite Plain, Port-de-Paix).

Migrant from the north; abundance uncertain.

Verrill writes that this snipe was "abundant at San Lorenzo and at El Valle, where in the broad wet savannas I found the best snipe shooting I have ever seen." This was between December 29, 1906, and January 19, 1907. Abbott saw several at the eastern end of Lake Enriquillo between October 1 and 6, 1919. Hartert informs us that there is a skin in the Tring Museum taken by Kaempfer at Villa Riva, January 6, 1924.

Deshayes wrote to Buffon that the bécassine was migrant remaining through the winter until February, and that a month after arrival they become so fat that they are heavy as quail. Descourtiz describes this species as the bécasse des savannes. Abbott secured two skins at Trou Caïman, March 10, 1918. Bond writes that he found them at the Étang Miragoane, Trou Caïman, on the Artibonite Plain, and at Port-de-Paix.

The Wilson's snipe or jack snipe is found in wet meadows or open marshes where it remains hidden until startled when it springs into the air with a harsh, explosive note and darts away with swift, erratic flight that after a few yards becomes straight. The bird may pitch again nearby, or may swing back overhead and pass to some other feeding ground. Its sudden rise is disconcerting and though the despair of the tyro provides excellent sport for the expert wing shot.

The bird is blackish brown above, streaked longitudinally with buffy brown, and white below with mottled breast and barred sides. Its peculiar mark is the long straight bill with flexible tip, with which it probes in the mud, and the large eyes set far back on the sides of the head. The wing measures from 117 to 135 mm.

Subfamily NUMENIINAE

[PHAEOPUS BOREALIS (J. R. Forster)]

ESKIMO CURLEW

Scolopax borealis J. R. FORSTER, Philos. Trans., vol. 62, 1772, p. 431 (Fort Albany, Hudson Bay).

Numenius borealis, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Status uncertain.

The Eskimo curlew, formerly abundant, is now nearly extinct as few individuals have been seen in recent years. It has been found in Porto Rico casually. Tippenhauer has included it in his list of birds without information as to its standing. It is placed in the hypothetical list.

This species is similar to the Hudsonian Curlew in general appearance, but is smaller, the bill being under three inches, and the primaries blackish without bars on the inner surface.]

PHAEOPUS HUDSONICUS (Latham)

HUDSONIAN CURLEW

Numenius hudsonicus LATHAM, Index Ornith., vol. 2, 1790, p. 712 (Hudson Bay).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Étang Saumâtre).

Phaeopus hudsonicus, DANFORTH, Auk, 1929, p. 364 (Les Salines).

Rare during migration.

Tippenhauer mentions this bird without giving locality where he found it. Beebe in 1927 remarks that "three birds kept just beyond gun-shot on the marshes of the Étang Saumâtre." Danforth and Emlen saw one at Les Salines July 30, 1927. There are no further records at present. The Hudsonian curlew is found on open mud-flats or beaches.

It is grayish brown above, with the feathers mottled somewhat with whitish. The rump and tail are barred with buff and dull black, the underparts are buffy or whitish streaked with black on the neck and breast, and barred with black on the sides and under wing coverts. The decurved bill is more than three inches in length.

ACTITIS MACULARIA (Linnaeus)

SPOTTED SANDPIPER, PLAYERO MANCHADO

Tringa macularia LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 249 (Pennsylvania).

? Becasseau, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 214-216 (in part).

Tringoides macularius, CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Jacmel, specimens); Birds Haiti and San Domingo, Dec., 1884, pp. 148-149 (Port-au-Prince, Jacmel, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHRISTY, Ibis, 1897, p. 337 (Sánchez, Yuna River).

Totanus macularius, HARTERT, Nov. Zool., vol. 9, 1902, p. 293 (Sánchez).

Actitis macularia, CORY, Cat. West Indian Birds, 1892, p. 94 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 25 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 356 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p.

404 (Monte Cristi, Sosúa, between Cabarete and San Juan).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Bizoton).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (abundant).—DANFORTH, Auk, 1929, p. 364 (L'Arcahaie, Les Salines, Monte Cristi, Bonao).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (Río San Juan, specimen).

Winter visitant; common.

The spotted sandpiper is universally distributed through both republics wherever conditions are suitable for it, from the salt lagoons and mangroves of the coast to the larger streams of the interior where the shores are not too heavily forested. Hartert found it on the beach at Sánchez August 20, 1892 (date furnished in a letter). It was observed by Cherrie "at all points visited," Christy found it at Sánchez, and along the Yuna. Verrill speaks of it as "exceedingly common everywhere." In the collection of J. H. Fleming there are five skins of this species taken by Verrill at Samaná February 5, 6, and 17, and La Vega March 14, 1907. Peters found it at Monte Cristi, Sosúa, and along the sandy beaches from Cabarete to San Juan. He observed it until his departure from the island on April 11, 1916. On Samaná Bay Wetmore recorded it near Sánchez, May 6 and 9, near the mouth of the Arroyo Barrancota May 8, in the Yuna delta May 10, and at San Lorenzo Bay May 11, 1927 (three seen). He collected an adult female in summer plumage near Sánchez on May 6. Danforth saw it at Monte Cristi August 4 and 5, and near Bonao August 7, 1927. Ciferri obtained one on the Río San Juan September 18, 1929.

In Haiti Cory reports two taken near Port-au-Prince in February, and three at Jacmel in the latter part of March, 1881. W. L. Abbott, collected one at Jérémie, December 5, 1917. Bartsch found this species at Gloré, on the Étang Saumâtre April 3, Trou Caïman April 4, Petit Goave, April 8 and 9, and near Port-au-Prince, April 25, 1917. Wetmore recorded it at Source Matelas and Mont Rouis March 30, Aquin April 3, Caracol April 27, and Gressier April 28. Beebe found it at Bizoton. Danforth found it at L'Arcahaie July 25 and Les Salines July 30, 1927. Poole and Perrygo collected four at Fort Liberté February 11 and 18, 1929, and three near Cerca-la-Source March 22 and 25, 1929. Two of the latter, preserved as skins, are in an interesting stage of molt with the spots of the summer plumage appearing on the lower surface.

The species may be expected to occur regularly from July to May as many return from their breeding grounds in North America during early summer, and some linger until the spring is far advanced.

The spotted sandpiper is found on muddy shores, gravel bars, or sandy beaches indifferently, and though often associated with others of its kind where food is abundant it is not gregarious and does not

occur in flocks. As it moves it tilts the body nervously, the posterior portion tipping up and the anterior down, a constant jerking motion that is certain to catch the eye. Though usually found in the open the spotted sandpiper may penetrate far into the depths of mangrove swamps. When flushed the bird rises with a low *peet weet* and flies off with short strokes of its wings, usually just above the water, so that often it is mirrored on the surface, giving to the eye of the observer two figures, the bird itself and its reflection below.

The spotted sandpiper is among the smaller sandpipers being 200 mm. or less in length. It is greenish olive above, with obscure dusky markings, and white below. In breeding dress the under surface is heavily spotted with dull black. In winter plumage the underparts are white with perhaps a faint wash of grayish brown across the breast. As it flies there is displayed a prominent white band in either wing.

TRINGA SOLITARIA SOLITARIA Wilson

SOLITARY SANDPIPER, ZARAPICO SOLITARIO

Tringa solitaria WILSON. Amer. Orn., vol. 7, 1813, p. 53, pl. 58, fig. 3 (probably Pennsylvania).

Totanus solitarius, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 7, 1896, p. 25 (Santo Domingo City).

Tringa solitaria solitaria, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Trou Caïman).—DANFORTH, Auk, 1929, p. 364 (Artibonite).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (Haina, San Juan).

Winter visitant; probably fairly common.

Little is known at present of the occurrence of the solitary sandpiper in Hispaniola. Tippenhauer lists it without comment. Cherrie found it on March 16 and April 27 on the Río Ozama near Santo Domingo City, and according to Hartert there is a skin in the Tring Museum taken by Kaempfer at Las Lagunas, Province Espailat, March 5, 1922. Ciferri collected it at Haina in September, 1925, and near San Juan August 11 and September 1, 1928. Wetmore saw one near Gressier March 29, 1927, and Danforth one near the mouth of the Artibonite July 29, 1927. Bond saw several and collected one at the Trou Caïman in January, 1928. The species is probably fairly common during winter about swamps and lagoons on the coastal plain.

The solitary sandpiper, like the spotted sandpiper, ranges alone on open muddy shores or about small pools of fresh water. It is prone to occur anywhere that water collects after heavy rains as in such situations it finds suitable feeding grounds. It is quiet in demeanor and though it jerks the body nervously as it moves is less active than some of the other sandpipers. As it wades in the shal-

lows it may easily pass unnoticed until it is approached too closely when it flushes swiftly with a loud *pees wees* and flies rapidly away.

The solitary sandpiper is larger than the spotted sandpiper and has longer legs. It is dusky black above, spotted very lightly with white, with the outer tail feathers barred prominently with white. Beneath it is white with fine dusky gray lines on the foreneck and sides of the breast, and the axillars and under wing coverts grayish black, barred with white. The wing measures from 121 to 134 mm., females being usually larger than males.

CATOPTROPHORUS SEMIPALMATUS SEMIPALMATUS (Gmelin)

WILLET, CHORLO

Scolopax semipalmata GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 659 (New York).

Totanus semipalmatus, TIPPENHAUER, Die Insel Haiti, 1882, p. 322 (listed).

Catoptrophorus s. semipalmatus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 67, 69, 219 (Source Matelas).

Catoptrophorus semipalmatus semipalmatus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 520 (listed).—DANFORTH, Auk, 1929, p. 364 (Les Salines, specimen).

Probably resident; local.

The only records of the willet for the Dominican Republic are those of one taken on Saona Island, September 14, 1919, by W. L. Abbott, and two males secured by Kaempfer, now in the Tring Museum, which Hartert informs us were taken at the mouth of the Yuna River October 11, 1922, and near Sánchez November 25, 1921. The Abbott specimen, of uncertain sex, has the following measurements: wing 197.0, tail 70.2, culmen from base 57.5, tarsus 55.4 mm. It is identified as the subspecies *semipalmatus*. Abbott saw several at Baie des Moustiques in 1917, and Beebe recorded five at Source Matelas January 13 and 23, 1927.

In Haiti Wetmore found a dozen near Aquin on April 3, 1927, scattered over the open mudflats near a salt water lagoon. He shot one but was prevented from retrieving it by the depth of the soft mud. The birds called noisily and flew about with display of the prominent black and white wing markings. He recorded one at Caracol on April 27, and on April 28 saw numbers near Gonaïves in passing low above the coastal lagoons in an airplane. The clear cut wing markings made identification easy as the birds flew beneath the plane.

Danforth collected one of two seen at Les Salines July 30, 1927. The species is one that inhabits open mudflats and is thus restricted to the coastal plain.

The willet in breeding dress is grayish brown above with spots and bars of dusky, and white below with irregular markings of dusky. The axillars and under wing coverts are blackish. In winter the bird lacks the dusky spottings. When at rest it appears quite plain and ordinary so that one is astonished by the striking pattern of white on black revealed when it spreads its wings for flight. The species is one of the largest shorebirds reported for the island being as bulky in body as a pigeon.

TOTANUS FLAVIPES (Gmelin)

LESSER YELLOWLEGS, CHORLO, CABALLERO, PATA AMARILLA

Scolopax flavipes GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 659 (New York).

Totanus flavipes, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (Haiti).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Étang Miragoane, Trou Caïman, Port-de-Paix, Fort Liberté, Gonave and Tortue Islands).—DANFORTH, Auk, 1929, p. 364 (Étang Bois-Neuf, Artibonite, Les Salines, Monte Cristi).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (Laguna de Guerra, specimen).

Neoglottis flavipes, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Source Matelas).

Winter visitant; probably common near the coast.

The present species is common during migration through the Greater Antilles. The only records for the Dominican Republic are the following. W. L. Abbott secured one on Saona Island September 13, 1919, and one at the eastern end of Lake Enriquillo, October 5, 1919. (At the latter point the bird was common from October 1 to 6). Kaempfer collected one at Sánchez September 15, 1922, the specimen now being in the Tring Museum according to Hartert. Danforth saw lesser yellowlegs at Monte Cristi August 4 and 5, 1927. Ciferri shot one at Laguna de Guerra August 13, 1929.

In Haiti, Ritter in 1836 and Tippenhauer in 1893 list this species without comment, and it is probable that this bird is included among those listed by Descourtilz in 1809 under the names clin-clin and tui-tui. Bartsch saw this species in a trip from Port-au-Prince to St. Marc and return April 21 and 22, 1917, and collected one on the salt flats north of Port-au-Prince April 25. Abbott shot one at Trou Caïman March 11, 1918, and two at Grande Cayemite Island January 4, 1918. Wetmore recorded one in muddy shallows near the sulphur spring at Sources Puantes March 29 and 30, 1927, and at the Étang Miragoane April 1. Beebe found a flock of 21 at Source Matelas in January, 1927. Danforth collected one of about

one hundred seen at the Étang Bois-Neuf July 25, and saw others on the sloughs near the mouth of the Artibonite July 28 and 29, and at Les Salines July 30, 1927. Bond records them from Étang Miragoane, Trou Caïman, Port-de-Paix, Fort Liberté, and on Gonave and Tortue Islands.

The lesser yellowlegs is found singly or in little groups on muddy shores along salt or fresh water, or around ponds and marshes, where aquatic vegetation is low so that it does not impede feeding. The birds walk about on the mud or wade in shallow water to secure their food of water insects, amphipods and other aquatic creatures. Their flight is swift and direct, and they often utter a clear, whistled note that is characteristic when once it is learned.

The lesser yellowlegs is grayish brown above, mottled with white and dusky, with white rump and light barred tail. Below it is white, with grayish brown streaks on the breast. The markings of the under surface are heavier in the breeding season. The bird is distinguished by the bright yellow tarsi and feet. The wing measures from 149 to 163 mm.

TOTANUS MELANOLEUCUS (Gmelin)

GREATER YELLOWLEGS, CHORLO, CABALLERO CHILLON, PATA AMARILLA

Scolopax melanoleuca GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 659 (Chateau Bay, Labrador).

Totanus melanoleucus, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).—CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).—DANFORTH, Auk, 1929, p. 364 (Monte Cristi, Les Salines, Gonave Island).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 313 (Haina, San Juan, specimens).

Neoglottis melanoleuca, BEEBE, Zool. Soc. Bull. vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 69, 70, 220 (Source Matelas).

Winter visitant; abundance uncertain.

Abbott reported this species from Saona Island, September 12 to 18, 1919, and Danforth found it at Monte Cristi June 24 and 27 and August 5, 1927. Ciferri obtained it at Haina in April, 1926, and San Juan October 28, 1928.

In Haiti it is listed by Tippenhauer without comment. Bartsch saw it on the salt flats north of Port-au-Prince, Haiti on April 25, 1917. Beebe found it at Source Matelas January 23, 1927, and took one at the same point March 21. Danforth found it at Les Salines July 30, and on Gonave Island observed it at Anse à Galets July 15 and Étroites July 17, 1927. The species is regularly migrant through the Greater Antilles so that the records though not based on specimens taken are not to be considered unusual.

Like its small relative the greater yellowlegs will be found in the marshes of the coastal plain or on the mudflats bordering saline

lagoons. It has the same habits as the lesser species but to a discriminating ear its calls are slightly different. It resembles the lesser yellowlegs in coloration but is told by larger size, the wing measuring from 180 to 199 mm.

Subfamily CALIDRINAE

PISOBIA MINUTILLA (Vieillot)

LEAST SANDPIPER, ZARAPICO MENUDO

Tringa minutilla VIEILLOT, Nouv. Dict. Hist. Nat., vol. 34, 1819, p. 466 (Nova Scotia to Antilles).

Ereunetes minutilla, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Pisobia minutilla, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 129 (Source Matelas).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Lake Enriquillo, Gonave Island).—DANFORTH, Auk, 1927, p. 364 (Étang Bois-Neuf, Artibonite River, Les Salines, Monte Cristi).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (San Juan, specimen).

Migrant and winter visitant along coast; abundance uncertain.

At Lake Enriquillo in the Dominican Republic this little sandpiper was found in large flocks from October 1 to 6, 1919, by Abbott, and was reported in 1928 by Bond. Wetmore shot one near Sánchez May 6, 1927, and saw four others near the mouth of the Río Yuna May 10. Hartert writes us that there are six in the Tring Museum taken at Sánchez December 24, 1906 by A. H. Verrill, and six more collected by Kaempfer at the mouth of the Yuna September 27 to October 3, 1922. Danforth found the least sandpiper at Monte Cristi August 4 and 5, 1927. Ciferri collected it at San Juan September 1, 1928.

In Haiti a number of specimens of this species were taken by Bartsch on the salt flats north of Port-au-Prince April 25, 1917. W. L. Abbott took one on Grande Cayemite Island January 14, 1918, indicating that the species is present through the winter, and reported the birds as common. Beebe secured specimens at Source Matelas in early 1927, and Wetmore found two near Aquin April 3, 1927. Danforth in 1927 saw many at the Étang Bois-Neuf July 25, collecting one, and reports them also from the sloughs at the mouth of the Artibonite July 29, and at Les Salines July 30. Bond says that he found them particularly numerous on Gonave Island.

This species usually frequents open stretches of mud, and in Hispaniola is most common near the coasts, as elsewhere there is only limited area available to it. It is small and quiet and so may frequently escape attention. At times it occurs in flocks.

The least sandpiper is among the smallest of its group having the wing only from 82 to 91 mm. long. It is mottled black and

grayish buff above, with occasional indications of rusty, and white below with the breast grayish white streaked with dusky. In the hand it may be told from its small relative, the semipalmated sandpiper, by the lack of webs between the toes, while in life it is marked from that species by the greenish tarsi.

PISOBIA MELANOTOS (Vieillot)

PECTORAL SANDPIPER, ZARAPICO MANCHADO

Tringa melanotos VIEILLOT, Nouv. Dict. Hist. Nat., vol. 34, 1819, p. 462 (Paraguay).

?Becassine des savannes, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 216-217 (Haiti).

Cinclus Dominicanis BRISSON, Ornith., vol. 5, 1760, pp. 219-222, pl. 24, fig. 1. ("S. Domingue.")

Tringa dominicensis DEGLAND, Orn. Eur., vol. 2, 1849, p. 232. (Based on Brisson.)

Tringa maculata, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Pisobia melanotos, DANFORTH, Auk, 1929, p. 364 (Les Salines).

Pisobia melanotus, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (San Juan, specimens).

Migrant: status uncertain.

Abbott shot a pectoral sandpiper on Saona Island September 15, and two more on Catalina Island September 19, 1919. Ciferri secured two at Sabana San Thomé, San Juan, August 11, 1928.

These are the only records for the Dominican Republic.

The Alouette-de-mer de S. Domingue or *Cinclus Dominicanis* of Brisson taken from a bird in the Reaumur collection secured by Chervain has been identified as the present species and has served as the basis for *Tringa dominicensis* Degland. Descourtiz described a bird as the Bécassine des savannes that is possibly the pectoral sandpiper but this is not certain. Tippenhauer lists this species without comment. Danforth writes that he saw two at Les Salines July 30, 1927. No specimen, other than that of Brisson is known from Haiti.

This sandpiper is found on muddy shores where it wades about quietly, or in recently flooded meadows where it may not be seen until it flushes suddenly with a harsh note. It is found usually on fresh or brackish waters. It nests in the far north and spends the winter in South America so that it should visit Hispaniola regularly in spring and fall.

The pectoral sandpiper is streaked with blackish and rusty buff above, and below is white with a grayish buff band streaked with dusky across the breast. The wing measures 119 to 146 mm., and the bird is shorter legged than other sandpipers with which it might be confused. The tarsus is dull greenish.

MICROPALAMA HIMANTOPUS (Bonaparte)

STILT SANDPIPER

Tringa himantopus BONAPARTE, Ann. Lyc. Nat. Hist. New York, vol. 2, 1826, p. 157 (Long Branch, New Jersey).

Micropalama himantopus, CORY, Cat. West Indian Birds, 1892, p. 92 (Haiti, Dominican Republic).

In migration; status uncertain.

The only record for this species is that of Cory who lists it from Hispaniola without stating his basis for its inclusion. As the stilt sandpiper is known to be migrant in Cuba and Porto Rico it should be fairly common in spring and fall migration, since it nests in the far north and spends the winter in South America.

The stilt sandpiper somewhat resembles the lesser yellowlegs, but is more slender, and has somewhat grayer, less contrasted markings. The legs are greenish in color, which distinguishes it at once from the yellowlegs. It is found in similar situations as that species.

EREUNETES PUSILLUS (Linnaeus)

SEMPALMATED SANDPIPER, MARINGOUIN, BÉCASSINE

Tringa pusilla LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 252 (Santo Domingo=Hispaniola).

? Maringouin, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 249-251 (Haiti, common).

Cinclus Dominicensis minor BRISSON, Ornith., vol. 5, 1760, pp. 222-226, pl. 25, fig. 2 ("S. Domingue").

Ereunetes pusillus, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (Sánchez).—BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 403 (Monte Cristi).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 49 (Lake Enriquillo, Gonave Island).—DANFORTH, Auk, 1929, p. 364 (Étang Bois-Neuf, Les Salines, Monte Cristi).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, pp. 219-220 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 313 (San Juan, specimens).

? Alouette de Mer, BUFFON, Hist. Nat. Ois., vol. 7, 1780, pp. 551-552 ("Saint-Domingue").

Migrant from eastern North America.

In the Dominican Republic the semipalmated sandpiper has been taken at Sánchez by Verrill, and at Monte Cristi, February 18, 1916 by Peters. Danforth saw it at Monte Cristi August 5, 1927. Bond records it from Lake Enriquillo. Ciferri secured three at Sabana San Thomé, San Juan, August 9, 1928.

In Haiti Tippenhauer includes the semipalmated sandpiper in a list of birds without comment. Bartsch secured specimens on the salt flats north of Port-au-Prince, April 25, 1917, and Wetmore saw several about a salt water lagoon near Aquin April 3, 1927. Beebe observed two in the early part of 1927. Danforth in 1927 collected

two at the Étang Bois-Neuf July 25, observing many others. He recorded several at Les Salines July 30. Bond reports them from Gonave Island. Poole and Perrygo shot a female (culmen 18.1 mm.) on Monte Chico Island in the Seven Brothers group January 29, 1929, and two males (culmen 17.5 and 19.1 mm.) at Fort Liberté February 10, 1929.

The Linnaean name for this species is based on Brisson's description of the Petite Alouette-de-mer de S. Domingue, *Cinclus Dominicensis minor* taken from a bird in the collection of de Reaumur secured by Chervain in "S. Domingue." Descourtilz speaks of a bird called the maringouin that he says is very small and flies in dense flocks so that on one occasion he killed 120 with two shots, that is probably this species.

This sandpiper is found on extensive mudflats and often congregates in large flocks that patter quickly about in friendly company in search of food, and when alarmed take flight in close bands that pass swiftly through the air, moving and turning with the greatest precision as though practised in intricate maneuvers by some stern drillmaster.

The species is similar in size to the least sandpiper but may be distinguished in life by the distinctly *black* bill and tarsi, these being greenish in the related species, and in the hand by the small webs between the toes.

EREUNETES MAURI Cabanis

WESTERN SANDPIPER

Ereunetes mauri CABANIS, Journ. für Ornith., 1856, p. 149 (Cuba).—BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).

Migrant from western North America.

Among specimens taken on the salt flats north of Port-au-Prince April 25, 1917 by Paul Bartsch there is one that is identified as this species as it has a bill measurement of 26.8 mm. Poole and Perrygo found the western sandpiper in numbers on the Seven Brothers Islands off the north coast of Haiti in 1929 and collected fourteen males and eight females on Muertos Island February 1, and one female February 2. Measurements of the culmen in the males are as follows: 21.4, 21.7, 21.7, 22.0, 22.3, 22.8, 22.9, 23.0, 23.9, 23.9, 24.1, 24.1, and 24.7 mm.; in females 24.6, 26.0, 26.2, 26.3, 27.2, 27.3, 27.5, 27.9, and 29.3 mm. The first three males are a trifle small but fit in this series better than in *E. pusillus*. All are in winter plumage so that no color differences are evident. The occurrence of the western sandpiper in such numbers at this point is somewhat surprising, and indicates that attention should be paid to the collection of more of this genus to determine the relative abundance of the two species involved.

In general appearance and habits the western sandpiper is exactly like the semipalmated. It will be found casually with that species. In color it is like the semipalmated sandpiper though a little more rusty above, being distinguished mainly by the longer bill, which is as long as or longer than the tarsus, instead of shorter as in the related species.

TRYNGITES SUBRUFICOLLIS (Vieillot)

BUFF-BREASTED SANDPIPER

Tringa subruficollis VIEILLOT, Nouv. Dict. Hist. Nat., vol. 34, 1819, p. 465 (Paraguay).

Tryngites subruficollis, MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 313 (San Juan, specimen).

Casual in migration.

The only record is that of one collected by Ciferri at the Sabana San Thomé, near San Juan, D. R., October 1, 1928.

The buff-breasted sandpiper has the wing from 122 to 136 mm. long. Above it is pale grayish brown with the centers of the feathers olive. The underparts are brownish buff mixed with whitish, usually with concealed black markings. The primaries have the inner webs speckled prominently with black.

[LIMOSA FEDOA (Linnaeus)]

MARBLED GODWIT

Scolopax fedoa LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 146 (Hudson Bay).

Limosa fedoa, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Status uncertain.

Tippenhauer has included this with other shorebirds without stating where it is found. As it has been recorded from Cuba and Porto Rico it may be expected to occur occasionally during migration. It frequents muddy shores.

The marbled godwit in life appears as large as the Hudsonian curlew from which it is distinguished by browner plumage, and by the form of the bill, which is long and slightly upcurved at the tip.]

CROCETHIA ALBA (Pallas)

SANDERLING, ARENARO, BÉCASSINE

Trynga alba PALLAS, in Vroeg, Cat. Rais., Adumbr., 1764, p. 7 (coast of North Sea).

Calidris arenaria, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Calidris leucophaca, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 404 (Gaspar Hernandez).

Crocethia alba, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 496 (Tortue).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 313 (Haina, specimens).

Found during migration; may remain through winter.

One seen by Peters on an open sandy beach a few miles east of Gaspar Hernandez on March 4, 1916 and two secured by Ciferri at Haina in 1925 are the only observations at present for the Dominican Republic.

Tippenhauer includes it in his list of the birds of Haiti without indicating reason for this action. Abbott shot two on the shores of the Étang Saumâtre on March 10, 1918, these being the only specimens now recorded from the entire island. Bond saw a number on Tortue Island.

The sanderling may occur alone or in flocks along sandy beaches or with other waders in open areas of muddy lagoon.

This species is of small size, having the wing 113 to 127 mm., and appears very light in color, especially when flying, as in winter plumage, the stage in which it will be found in Hispaniola, it is pure white beneath and light brownish gray above, with the primaries black crossed by a white band. In the hand it may be told from all other sandpipers by the fact that it has no hind toe.

Family RECURVIROSTRIDAE

HIMANTOPUS MEXICANUS (Müller)

BLACK-NECKED STILT, VIUDA, PLAYERO, ECHASSE, PET-PET, BELLE PETE, PIGEON D'ÉTANG, BÉCASSINE

Charadrius mexicanus MÜLLER, *Natursyst.*, Suppl., 1776, p. 117 (Mexico).

Echasse, DESCOURTILZ, *Voy. Nat.*, vol. 2, 1809, pp. 235-238 (Haiti, breeding).

Himantopus mexicanus, SALLÉ, *Proc. Zool. Soc. London*, 1857, p. 237 (Higuëy).—BRYANT, *Proc. Boston Soc. Nat. Hist.*, vol. 11, May, 1867, p. 97 (Dominican Republic).—CORY, *Birds Haiti and San Domingo*, Dec., 1884, pp. 146-147 (listed); *Cat. West Indian Birds*, 1892, p. 92 (Haiti, Dominican Republic).—TIPPENHAUER, *Die Insel Haiti*, 1892, p. 322 (listed).—CIFERRI, *Segund. Inf. An. Est. Nac. Agr. de Moca*, 1927, p. 6 (listed).—BEEBE, *Zool. Soc. Bull.*, vol. 30, 1927, p. 139; *Beneath Tropic Seas*, 1928, pp. 69, 70, 219; (Source Matelas, Étang Miragoane).—BOND, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 80, 1928, pp. 496-497 (Étang Miragoane, Trou Caïman, Port-de-Paix, Fort Liberté, Gonave and Tortue Islands).—DANFORTH, *Auk*, 1929, p. 364 (numerous localities).—LÖNNBERG, *Fauna och Flora*, 1929, p. 100 (Haiti).—MOLTONI, *Att. Soc. Ital. Scienz. Nat.*, vol. 68, 1929, p. 314 (Haina, Laguna de Guerra, specimens).

Resident; local.

Sallé found the black-necked stilt in marshes near Higuëy. Abbott found them common at the eastern end of Lake Enriquillo October 1 to 6, 1919, and shot one at Laguna Cabral, near Rincón, March 16, 1922. Danforth in 1927 records them as breeding at Haina and Monte Cristi, and saw them also at the Laguna del Salodillo. Ciferri sent specimens to Moltoni from Haina April 15, 1926, and Laguna de Guerra August 13, 1929.

In Haiti the stilt seemingly is locally common. Descourtilz says that it deposits from two to four eggs, and that its local name of *pet-pet* is given in imitation of its cry. W. L. Abbott reports it common in suitable localities, and shot a male and two females near Port-de-Paix April 14, 1917, and a female at the Étang Saumâtre, April 5, 1920. He found it also on the saline on Grande Cayemite Island in the early part of January, 1918. Bartsch recorded it between Port-au-Prince and St. Marc April 21 and 22, 1927. Wetmore observed two near Aquin, on April 3, 1927 near a salt water lagoon and near Desdunes in passing low over the swamps in an airplane on April 28 saw a considerable colony at one lagoon. Beebe in 1927 recorded it at Source Matelas, January 23 and March 21, and at the Étang Miragoane, and says that two shot at the former locality had been feeding on corixids. Danforth found it in 1927 at the Étang Bois-Neuf, the sloughs near the mouth of the Artibonite River, Les Salines, Sources Puantes, and on Gonave Island. Bond says that it is common in all fresh water swamps, and is found also in mangrove lined lagoons along the coast. He records it at Étang Miragoane, Trou Caïman, Port-de-Paix, and Fort Liberté, and on Gonave and Tortue Islands. Stilts were nesting at the Trou Caïman in June.

These birds are found in lowland marshes usually those that border salt water, and appear to be local in their distribution. They walk gracefully about on their long stiltlike legs and when on their breeding grounds are so solicitous for their nests or young that they fly courageously to meet intruding man, sad to say, often to their own destruction. Their sharp, barking calls are distinctive and resemble those of no other bird.

The body of the black-necked stilt, about as large as that of a small pigeon, is mounted on very tall, slender stilts of legs that with the long neck and straight bill give the bird a curious appearance of fragility. It is pure white below and on the lower back, and black on wings, neck and upper back, with a wash of gray on the back in the immature. The tail is grayish white.

Superfamily OEDICNEMIDES

Family OEDICNEMIDAE

OEDICNEMUS DOMINICENSIS Cory

**HISPANIOLAN THICK-KNEE, BÚCARO, COURLIS DE TERRE, COURRE-VÎTE,
COQ SAVANNE, POULE SAVANNE**

Oedicnemus dominicensis CORY, Quart. Journ. Boston Zool. Soc., October, 1883, p. 46 (La Vega, Dominican Republic).

Courlis de Terre, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 202-204 (description).

Burhinus dominicensis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141 (exhibited alive in zoological park).

Oedipodius dominicensis, CORY, Auk, 1884, pp. 4-5 (notes); Cat. Birds Haiti and San Domingo, Dec., 1884, pp. 140-141, col. pl. (Dominican Republic); Cat. West Indian Birds, 1892, p. 95 (Dominican Republic).—THOMPSON, Auk, 1885, p. 110 (Cincinnati Zoological Gardens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 317-322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 25 (Dominican Republic).—CHRISTY, Ibis, 1897, p. 337 (Rivas).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 356 (rare).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 497 (Étang Saumâtre).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 497 (reported on northern and central plains).—DANFORTH, Auk, 1929, p. 363 (Gonaïves).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 314 (San Juan).

Resident; locally fairly common in the northern part of the Dominican Republic and extreme northeastern Haiti; reported also near Hinche and San Juan.

The specimens upon which the original description of this species was based were secured near La Vega, D. R. Cory reports the bird as fairly common on the high hills back of La Vega, and says that M. A. Frazar considered it somewhat nocturnal in its habits though he saw it feeding during the day. Christy found it on one occasion on the Sabana Grande near Almercen (now called Rivas). W. L. Abbott shot specimens at Pimentel January 25 and 26, where he found a good many, and near Cotuí February 3, 1921. He heard of it south of Jovéro. J. A. Julia informed Wetmore that it was common west of Monte Cristi toward Dajabón on the Haitian frontier. He relates that when driving at night he has had birds bewildered by his head lights strike the fender of his car. Abbott heard of them in this same area. It was also reported to Wetmore inland from Sabana La Mar on the south shore of Samaná Bay. H. W. Krieger, of the United States National Museum, during archeological researches in this same area was told by Señor R. Arcadio Sánchez, Governor of Monte Cristi Province, that the búcaro was well known on the plain southeast of Monte Cristi from thirty to fifty kilometers distant, and that it occurred also along the coast and in the delta region of the Río Yaque del Norte. The same statement was made by Mr. Grossart of the Compañía Comercial and others. Chauffeurs are said to delight in running them down on the auto roads.

Abbott did not find this bird in the southern part of the Dominican Republic and from present information, except for a specimen sent by Ciferri to Moltoni from San Juan, October 19, 1929, it is known in that republic only from Sabana La Mar and Cotuí north and west through La Vega for an undetermined distance toward Monte Cristi and Dajabón.

In Haiti Descourtilz says that he took specimens and describes the bird as the *Courlis de terre* or *Courre-vite*, but does not say certainly that he secured them within the limits of the Haitian Republic. Abbott heard that the species occurred on the Plaine du Nord west of Ouanaminthe, and that it was also found at Môle St. Nicolas. Beebe writes that John Tee-Van saw two on the shore of the Étang Saumâtre March 15, 1927, and in a letter written to Wetmore says further that there can be no question of the identification as the birds were seen under the most favorable circumstances by one long familiar with the thick-knee in captivity. Tippenhauer reports that this bird was brought often from the Dominican Republic and kept in captivity. According to Danforth one was seen near Gonaïves July 14, 1926, by R. S. Mathews. His record for Kenscoff seems uncertain. Bond heard of the occurrence of this species on the Northern and Central Plains. He was assured by natives that a strange cackling call heard before daybreak near Acul-Samedi south of Fort Liberté was this bird. He saw none during the course of his work. Poole and Perrygo were told at Hinche of the *Coq savanne* but were not able to find it and from the descriptions given them were not certain of its identity. J. E. Boog-Scott says, however, that he has found the bird in the vicinity of Hinche. It is possible that part of the reports for Haiti, including that of Beebe, pertain to introduction through escape from captivity. The definite range of the species in both republics should be ascertained as accurately as possible before the thick-knee is crowded out of existence by increase in agriculture.

The búcaro is a bird that inhabits open plains and prairies and is found in pairs or family groups. It is terrestrial and seldom flies, and in fact is so quiet that it seems almost stolid. It runs quickly at need but after a short distance stops and remains without movement for long periods so that it is difficult to detect. Wetmore traveled long distances through its haunts without seeing one at freedom.

The búcaro is kept by many people in patios and corrals for its services in eating roaches and vermin of all kinds, and it is thus in considerable demand. Wetmore was told that both adults and young were sold in the markets at from fifteen to thirty cents each. Adults had one wing clipped when first captured and, though never tame in the sense that they permitted themselves to be handled, became fearless and remained after they had regained the power of flight at the next molt. They are usually kept in pairs and are said at times to breed in the state of loose captivity in which they were held. Their call is a loud repetition of a single note given so rapidly that it becomes a rattle, rising in volume and then dying away, a sound that

comes frequently from behind the fences or walls surrounding the better homes in small towns. Popular superstition relates that the búcaro calls at the change of each hour so that the birds are reputed to be time keepers. They are among the most interesting of the island's species. Two of these birds were exhibited in the Zoological Gardens in Cincinnati, Ohio, as early as 1884.

The búcaro in body is as large as a small crow with long legs and very short toes (which are three in number), and fairly long neck, which is usually disguised as the bird habitually stands with the head drawn in on the shoulders. Above it is dusky streaked with buff, with a black mark above the eye and a light mark through it. The breast and foreneck are grayish white with dusky streaks, and the rest of the underparts are dirty white. Abbott describes the large, expressive eye as yellow, and the tarsi as greenish slate.

Suborder LARI

Family LARIDAE

Subfamily LARINAE

LARUS ARGENTATUS SMITHSONIANUS Coues

HERRING GULL

Larus Smithsonianus COUES, Proc. Acad. Nat. Sci. Philadelphia, 1862, p. 296 (East and West Coasts of North America).

Accidental.

The only record for this species is that of a water color sketch of an adult herring gull in a bound book of drawings made by M. de Rabié in Haiti in the latter part of the eighteenth century, this volume having been examined through the courtesy of Messrs. Wheldon and Wesley. Drawing no. 37, marked "La Mauve" depicts an adult herring gull in lifelike attitude, according to the inscription on the back of the plate in the handwriting of the artist, "au 2/3 de grandeur naturelle" made "au Cap le 7 juillet 1775." The locality au Cap refers to Cap-Haïtien.

The herring gull is a species of North America that comes south casually to Cuba but is very rare south of Florida. The sketch is identified as the American form on the basis of probability.

The herring gull with a wing from 401 to 419 mm. long is so much larger than the laughing gull, the only other species found in Hispaniola, that it may be told with ease. The adult has the head and underparts pure white, and the back and upper surface of the wings gray. The ends of the primaries are black tipped with white. Young birds are grayish brown mottled with whitish, becoming lighter with age until they assume adult plumage.

LARUS ATRICILLA Linnaeus

LAUGHING GULL, GAVIOTA, PIGEON DE LA MER

Larus atricilla LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 136 (Bahama Islands).

Gavia ridibunda BRISSON, Ornith., vol. 6, 1760, pp. 192-195, pl. 18, fig. 1 ("S. Domingue").

Larus atricilla, CORY, Birds Haiti and San Domingo, March, 1885, pp. 177-178 (listed); Cat. West Indian Birds, 1892, p. 82 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 497 (Port-au-Prince, and interior saline lakes).

Chroicocephalus atricilla, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 217 (Haiti).

Larus atricilla atricilla, DANFORTH, Auk, 1929, p. 364 (coast).

Fairly common; of regular occurrence but not as yet recorded breeding.

In the Dominican Republic Abbott collected two laughing gulls at Catalinita Island September 11, 1919, that are adults in winter dress as shown by the white tail and gray alula only faintly marked with dusky. One is still molting about the head. He found the species at Saona Island September 12 to 18, and from October 1 to 6 of the same year reported it common at the eastern end of Lake Enriquillo. Wetmore recorded two in the little bay at the mouth of the Río Ozama at Santo Domingo City, May 3, 1927, and in a café at Sánchez saw a crudely mounted specimen suspended by a wire from the ceiling that was said to have been killed at Matanzas. The latter was a young individual with spots still persisting on the wing coverts. Danforth saw one in the harbor of Santo Domingo City June 14, and two at San Pedro de Macoris July 4, 1927. Brisson in 1760 describes the laughing gull from a specimen secured by Chervain for de Reaumur, presumably in Haiti. Abbott shot two males and one female, all in full nuptial plumage, at Fond Parisien on the Étang Saumâtre May 5, 1920. Beebe reports one seen in 1927, apparently near Port-au-Prince. Bond saw one at Port-au-Prince in July, 1928, and found them on the saline lakes of the Cul-de-Sac Plain. Danforth observed a few in Port-au-Prince harbor July 27, six at Les Salines July 30, and recorded many off Môle St. Nicolas July 27, 1927 on the authority of F. P. Mathews. Cory recorded a few individuals but does not state whether they were seen at the eastern or western end of the island.

The laughing gull is found along coasts, and from Abbott's records on the Étang Saumâtre and Lake Enriquillo comes also to the saline lakes of the Cul-de-Sac region. No breeding colonies are

at present known. The two adult males taken have the wing 296 and 300 mm. respectively, and the female has the wing 299 mm. Measurements of birds examined from the Antilles indicate vaguely two groups of individuals, one with the wing ranging from 293 to 305 mm. and the other from 312 to 331 mm. There is however no definite break between the two so that there is no clear support of the contention that there is a North American continental race distinguished by larger size, particularly since some of the large birds from the West Indies and Bahamas are taken at dates when migrants should have retreated north to their nesting grounds. The matter is discussed by Dwight⁶⁰ and Wetmore⁶¹ who agree that the present evidence does not substantiate claim for two forms. The question can be settled only with adequate series of breeding birds from the Bahamas and West Indies.

In breeding dress the laughing gull has the entire head except for the white eyelids dark sooty gray, the back gray, the ends of the wings black and the rest of the plumage white. In winter dress the head is more or less mottled with white, the white being extensive in birds of the year. It can be confused only with the royal tern from which it differs always in smaller bill which is dull reddish in life, and the extensive black in the wing.

Subfamily STERNINAE

GELOCHELIDON NILOTICA ARANEA (Wilson)

GULL-BILLED TERN

Sterna aranea WILSON, Amer. Ornith., vol. 8, 1814, p. 143, pl. 72, fig. 6 (Cape May, New Jersey).

Gelochelidon nilotica aranea, DANFORTH, Auk, 1929, p. 365 (recorded).

Migrant; status uncertain.

The only records for the gull-billed tern are those of a pair taken by Abbott near Fond Parisien on the Étang Saumâtre May 5, 1920, and of birds recorded by Danforth, who found four at Étang Mira-goane July 22, twenty-five at Les Salines July 30, five at Monte Cristi August 5 (where one was taken), and four at Étroites, Gonave Island July 17, 1927 (reported by Emlen). The species is known to breed on Cuba and some of the Bahama Islands. The birds noted on Hispaniola may have been in migration to some other point or there may be a breeding colony about the salt lakes in the Cul-de-Sac region.

⁶⁰ Bull. Amer. Mus. Nat. Hist., vol. 52, Dec. 31, 1925, pp. 266-267.

⁶¹ New York Acad. Sci., Scient. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, pp. 378-379.

The gull-billed tern is pure white below and pale gray above with black crown. It is distinguished from other medium-sized terns by the heavy bill which is black in color. In winter dress the crown is white, the auricular region gray, and a space in front of the eye blackish. The wing is 290 to 300 mm. long.

STERNA HIRUNDO HIRUNDO Linnaeus

COMMON TERN, GAVIOTA

Sterna hirundo LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 137 (Sweden).

Sterna hirundo hirundo, DANFORTH, Auk, 1922, p. 365 (Saona Island).

A number of records; status not certain, but apparently regular in migration.

W. L. Abbott secured two specimens, an adult in full summer plumage, and a young male in juvenal dress, apparently only recently on the wing, at Saona Island, September 14, 1919. Danforth reports that they were common off Saona June 14, and Emlen noted about fifty there July 1, 1927. Hartert writes that there are three skins taken by Kaempfer in the Tring Museum, an immature male from the mouth of the Yuna shot December 28, 1922, and two other males marked Samaná Bay, an immature on October 2, and an adult on October 28, 1922.

The hurricanes of the late summer of 1928 apparently brought havoc to the ranks of this tern since following the storms a number of dead birds were reported, all of particular interest since they were birds banded before they were able to fly in breeding colonies on the coast of Massachusetts. For information regarding them we are indebted to Frederick C. Lincoln of the Biological Survey. A bird banded by Charles B. Floyd on July 10, 1928 at Tern Island, Chatham, Mass. (No. 678,732,) was reported through the Department of State as captured at Haina, D. R., on September 15, 1928. One banded July 7, 1928, at Penikese Island, Mass., by F. C. Lincoln (No. 709,083) was reported by A. D. MacGillivray September 14, 1928 as blown in by the hurricane at San Pedro de Macoris. Another banded at the same point by Mr. Lincoln on July 8 (No. 710,318) was reported by the Department of State September 14, as captured at Boca Chica, one of the mouths of the Yuna, opposite Sánchez. Another marked at Chatham, Mass., by Mr. Floyd July 3 (No. 675,752) was reported found at Altamira, Puerto Plata, D. R., by Ramón Germán under date of October 23. The final record, a bird marked at Chatham, Mass., by Mr. Floyd on July 9, 1928, that was found dead near Cap-Haïtien, Haiti, September 27, 1928, by Maj. John R. Henley is of particular interest since it is at present the only record of this species from Haiti.

The common tern is recorded throughout the summer in western Porto Rico, particularly near Cabo Rojo lighthouse on the southwestern point of the island.⁶² As Saona Island is not far distant birds seen there may have come from Porto Rico, or there may be colonies that nest along the little known eastern coast of Hispaniola. The records may, however refer entirely to northern migrants which apparently pass regularly through this area, as such is indicated by the banded birds from Massachusetts that have been reported. The fact that specimens taken come during the months of fall is some indication that they refer to migrant birds.

The common tern is from 315 to 320 mm. in length, gray above with black crown, and white below. The tail is white with the outer webs of the outer feathers dusky. Larger size and the dark markings in the tail distinguish it from the roseate tern.

STERNA DOUGALLII DOUGALLII Montagu

ROSEATE TERN

Sterna dougallii MONTAGU, Suppl. Orn. Dict., 1813, text and plate (not numbered) (Cambrae Islands, Firth of Clyde).

Sterna dougallii TIPPENHAUER, Die Insel aiti, 1892, p. 323 (listed).

Breeding on the eastern coast of the Dominican Republic.

Abbott shot a male roseate tern on Saona Island, September 13, 1919. Wetmore collected three breeding females on the Cayos de los Pájaros or Pelican Keys at the entrance of San Lorenzo Bay, on May 11, 1927. Two of these were preserved as skins and one as a skeleton. On the date given about twenty pairs were nesting on the smallest of the three islets composing the group, where as nearly as could be told from the summit of an adjacent island they were occupying an open platform of rock thirty or forty feet square where there was no vegetation. This was the highest point of the islet and was elevated about forty feet above the water. The birds remained close about their breeding place and seemed to pass out to the east toward the open sea to feed. When disturbed they circled overhead with sharp cries.

Tippenhauer included the roseate tern in his list without comment as to his basis. There is at present no certain record for Haiti.

The roseate tern is colored in general like the common tern but is smaller and has the long, forked tail pure white. In breeding dress the feathers of the undersurface are suffused with a blush of pink from which the species derives its name.

⁶² Struthers, Auk, 1923, p. 474.

STERNA ANAETHETA MELANOPTERA Swainson

BRIDLED TERN

Sterna melanoptera SWAINSON, Birds W. Africa, vol. 2, 1837, p. 249 (West Africa).

Sterna anosthaeta, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Sterna anaetheta melanoptera, LÖNNBERG, Fauna och Flora, 1929, p. 100 (Navassa, specimen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 314 (Seven Brothers group, specimens).

Melanosterna anaetheta recognita, EKMAN, Ark. för Bot., vol. 22 A, No. 16, p. 6, 1929 (Navassa, breeding).

Sterna anaetheta recognita, EKMAN, Est. Agr. Moca, Ser. B., Bot., No. 17, January, 1930, pp. 11, 12, 13 (Monte Grande, Tercero, Ratas, breeding).

Tippenhauer includes the bridled tern in his list without stating reason for his action. Lönnberg records one from Navassa Island taken by E. L. Ekman, which he writes us was collected in October, 1928. Wetmore and Bond were told that at certain times of the year eggs of seabirds were found in abundance on the little islands of the Seven Brothers group off Monte Cristi toward Cap-Haïtien which suggested that there was a tern colony in that group. In February, 1929, Poole and Perrygo visited the islands in question to determine if possible what birds nested there but found that they were too early in the season as the bird colonies were deserted. On Tercero Island they secured quantities of skulls and other bones which on identification in Washington prove to be those of the bridled tern. The season of nesting from available information seems to come from May to July. Ciferri obtained two specimens of this tern in the Seven Brothers group in July, 1929, where they are reported by Ekman from Monte Grande, Tercero, and Ratas.

This species breeds in the colonies of seabirds that frequent Mona and Desecheo Islands and as it is seen occasionally along the western coast of Porto Rico should come also to the adjacent shores of the Dominican Republic.

The bridled tern is easily distinguished among other terns by its sooty black wings and crown, slaty back, and white forehead, the line of white extending back on either side above the eye, and white underparts.

STERNA FUSCATA FUSCATA Linnaeus

SOOTY TERN

Sterna fuscata LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 228 (Santo Domingo=Hispaniola).

Sterna fuscus BRISSON, Ornith., vol. 6, 1760, pp. 220-222, pl. 21, fig. 1. ("S. Domingue.")

Sterna fuliginosa, RITTEB, Naturh. Reis. Westind. Insel Hayti, 1836, p. 157 (specimen).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98

(Haiti).—CORY, Birds Haiti and San Domingo, March, 1885, pp. 181–182 (recorded); Cat. West Indian Birds, 1892, p. 83 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).

Sterna fuscata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 497 (questionably identified, Gonave Channel).—DANFORTH, Auk, 1929, p. 365 (Puerto Plata, Saona Island, Môle St. Nicolas).

Recorded; status not certain, but a breeding species.

The scientific name of the sooty tern is based on Brisson's description of a bird in juvenal dress sent by Chervain from "S. Domingue" to de Reaumur. From the figure and description the specimen was very young and can not have been long on the wing, indication that it came from a breeding colony somewhere along the coast of Hispaniola. Ritter lists a specimen of this species in his collection made in 1820–1821. Cory writes that this bird is found without giving definite localities. Danforth reports that the sooty tern was seen by Emlen at Puerto Plata June 30, and off the eastern coast of Santo Domingo July 1, and by Mathews off Saona Island June 14, and off Môle St. Nicolas July 27, 1927. The species is known to breed in the Bahama Islands and on the island of Mona east of the Dominican Republic. It is found only along the sea.

The sooty tern is black above and white below, differing from the bridled tern in darker back and in restriction of white on the forehead which does not extend back over the eye.

STERNA ALBIFRONS ANTILLARUM (Lesson)

LEAST TERN, PIGEON DE MER

Sternula antillarum LESSON, Compl. Oeuvres Buffon, vol. 20, 1847, p. 256 (Guadeloupe Island, West Indies).

Sterna antillarum, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98 (Haiti).—CORY, Birds Haiti and San Domingo, March, 1885, pp. 179–180 (listed); Cat. West Indian Birds, 1892, p. 83 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).

Sterna albifrons antillarum, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 497 (Fort Liberté, Étang Saumâtre, Lake Enriquillo, Gonave Island).—DANFORTH, Auk, 1929, p. 365 (Monte Cristi, Les Salines, Saona Island).

A breeding species; probably resident.

There are few definite records for the least tern in the Dominican Republic. Abbott recorded it at Saona Island from September 12 to 18, 1919, and earlier took one, now in the Academy of Natural Sciences, at La Cañita (Sánchez) July 13, 1883. Bond found it on Lake Enriquillo.

In Haiti Bryant in 1863 includes it in his list without comment. Cory in his Birds of Haiti and San Domingo says of it "common in summer and probably breeds" but gives no localities for either republic.

Abbott collected a pair, May 12, 1917, at the mouth of Trois Rivières in northwestern Haiti, and an adult male on the Étang Saumâtre near Fond Parisien, on May 5, 1920. At Jean Rabel Anchorage, on May 30, 1917, he secured a set of two eggs from a pebbly sea beach just above high water mark. The parent was seen on the nest. These eggs have the ground color light cartridge buff, with the surface dull, not shining. They are spotted rather heavily with Hays brown, natal brown and slate gray, the spots being most numerous about the larger end. They measure 30.8 by 23.6, and 31.0 by 23.5 mm. Danforth says that F. P. Mathews found a small breeding colony on the beach at the mouth of the Río Yaque del Norte June 25, 1927, and that least terns were found at Les Salines July 30 and off Saona Island August 10. Bond records them from Fort Liberté, Étang Saumâtre, and on Gonave Island. He did not observe them until April, after which they were common. Abbott describes the bill in an adult female in life as yellow, tipped with black, and the feet as yellow with black claws.

The least tern frequents sea beaches, but also goes inland in suitable localities, so that it should occur regularly about the lakes of the Cul-de-Sac region.

This species is easily distinguished as the smallest of the terns. The back is light gray, the crown black, the forehead and under parts pure white. It ranges from 230 to 245 mm. in length.

THALASSEUS MAXIMUS MAXIMUS (Boddaert)

ROYAL TERN, GAVIOTA, PIGEON DE MER

Sterna maxima BODDAERT, Table Planch. Enl., 1783, p. 58 (Cayenne).

Sterna regia, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 98 (Haiti).

Sterna maxima, CORY, Birds Haiti and San Domingo, March, 1885, pp. 178-179 (listed); Cat. West Indian Birds, 1892, p. 82 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 323 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 355 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 403 (Puerto Plata, Sosúa).—LÖNNBERG, Fauna och Flora, 1929, p. 100 (Gonave, specimen).

Thalasseus maximus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 497, (Bizoton).—EKMAN, Est. Agr. Moca, Ser. B, Bot., No. 17, January, 1930, p. 13 (Ratas Island).

Thalasseus maximus maximus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 497 (Gonave and St. Marc Channels, Fort Liberté, Étang Saumâtre, Lake Enriquillo).—DANFORTH, Auk, 1929, p. 365 (recorded).

Of regular occurrence; fairly common; probably breeds.

In the Dominican Republic the royal tern was reported as common by Verrill, who collected two at Sánchez, on March 1, 1907, which are now in the collection of J. H. Fleming. Abbott found them at

Saona Island September 12 to 19, 1919, and collected a female at Sánchez February 6, 1919. Wetmore found them common at the head of Samaná Bay from May 6 to 11, 1927, and at times noted several fishing in company. He collected a male near the mouth of the Arroyo Barrancota, May 8, 1927. Peters reported them at Puerto Plata February 25, 1916, and occasionally at Sosúa until April 11. Wetmore recorded one in the harbor at Puerto Plata June 3, 1927. Danforth observed the royal tern in Santo Domingo City harbor June 14 and August 9, at San Pedro de Macoris July 4, at Monte Cristi June 24 and August 5, and at Puerto Plata July 1, 1927. Bond found this species on Lake Enriquillo. Ekman in July, 1929, found a flock resting on Ratas Island in the Seven Brothers group.

The royal tern is first recorded for Haiti by Bryant in 1863. In 1917 Bartsch found it at Petit Goave and Miragoane April 9, near Jérémie April 11, and at Trou des Roseaux April 13. Wetmore saw it at Aquin April 3, and at Caracol April 27, and Abbott collected a male at the mouth of Trois Rivières May 12, 1917. Beebe reported one occasionally about his schooner at Bizoton in the early part of 1927. According to Danforth Emlen saw it on Gonave Island July 17, 1927. Bond saw it in the Gonave and St. Marc Channels, at Fort Liberté, and on the Étang Saumâtre. Poole and Perrygo collected five, all males, at Fort Liberté on February 10, 1929. Lönnberg records one taken by Ekman on Gonave Island.

The royal tern is found mainly along the seashore, searching for fish which it secures by diving in the shallows of bays and harbors, or resting, facing the wind, on some pile or stake standing in the water. It is the largest of the terns of this region being from 475 to 505 mm. in length so that it can be confused only with the laughing gull from which it differs in longer, straighter bill, and in lack of prominent black on the ends of the wings. The upper surface is light gray, with the crown black, and the underparts white. In winter dress the anterior part of the crown is white. The feathers of the nape are extended to form a short crest. The eye is dark brown, the bill light orange or orange yellow, and the feet and tarsus black (colors noted by Abbott from freshly killed specimen).

THALASSEUS SANDVICENSIS ACUFLAVIDUS (Cabot)

CABOT'S TERN, GAVIOTA

Sterna acuflavida CABOT, Proc. Boston Soc. Nat. Hist., vol. 2, 1847, p. 257 (Tancab, Yucatan).

Sterna cantiaea, TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Thalasseus sandvicensis acuflavidus, DANFORTH, Auk, 1929, p. 365 (Monte Cristi, Samaná Bay).

Recorded; status not certain.

Abbott secured a male in post-breeding dress at Sánchez June 1, 1919. Hartert informs us that Kaempfer collected an adult male for the Tring Museum at the same point on September 23, 1922. Danforth writes that he saw five at Monte Cristi July 5, 1927, and that R. S. Mathews saw six off Samaná Bay, July 11, 1925.

The bird is included by Tippenhauer in his list for Haiti without definite comment.

Cabot's tern is of medium size among the terns of this region, and in color is a miniature of the royal tern. The bill is relatively longer and is black with the extreme tip yellow.

[HYDROPROGNE CASPIA IMPERATOR (Coues)

CASPIAN TERN

Thalasseus imperator COUES, Proc. Acad. Nat. Sci. Philadelphia, vol. 14, February, 1863, p. 538 (Fort Resolution, Great Slave Lake, Mackenzie).

Hydroprogne caspia, DANFORTH, Auk, 1929, p. 365 (Les Salines).

Danforth writes "three noted at Les Salines on July 30 1927."

As specimens were not taken, and as this tern is not known to go regularly to the West Indies this report is here placed in the hypothetical list pending further information.]

CHLIDONIAS NIGRA SURINAMENSIS (Gmelin)

BLACK TERN

Sterna surinamensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 604 (Surinam).

Hydrochelidon lariformis, TIPPENHAUER, Die Insel Haiti, 1892, p. 393 (listed).

Migrant; apparently rare.

Tippenhauer has reported this species without giving definite record. The only specimens known to us are two taken by W. L. Abbott on Saona Island, Dominican Republic, September 13, 1919.

The black tern is found usually over freshwater ponds, marshes, and lagoons, where it flies easily back and forth low over the water. Its flight is light and graceful so that a flock of the birds on the wing is a most pleasing picture.

The black tern is a little larger than the least tern, being from 230 to 245 mm. in length. The adult in breeding dress has the head and undersurface entirely black, and is dark gray above. Immature birds and adults in post-breeding plumage are white below, with the forehead and a ring around the neck whitish, and the crown dusky. Birds seen in spring show transition between white and black on the under surface. The bill and feet are black.

ANOÛS STOLIDUS STOLIDUS (Linnaeus)

NODDY TERN

Sterna stolidus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 137 (West Indies).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 97 (Haiti).

Anous stolidus, CORY, Birds Haiti and San Domingo, March, 1885, pp. 182-183 (common); Cat. West Indian Birds, 1892, p. 83 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 323 (listed).

Anous s. stolidus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 138; Beneath Tropic Seas, 1928, p. 218 (Bizoton).

Anous stolidus stolidus, EKMAN, Est. Agr. Moca, Ser. B., Bot., No. 17, January, 1930, pp. 12, 13 (Tercero, Ratas, breeding).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 314 (Seven Brothers Group, specimen).

Probably of regular occurrence along the coast; abundance uncertain.

Bryant reported the noddy as abundant off the coast, while Cory says that it is common in summer. The only recent record is that of Beebe who says "an unmistakable Noddy flew swiftly past the schooner early one morning after a very severe storm which had lasted most of the night." This was at Bizoton near Port-au-Prince. Ekman writes that the noddy nests abundantly on Tercero and Ratas Islands in the Seven Brothers Islands where the native fishermen call it "bubi." Ciferri obtained one here in July, 1929.

The noddy is known to nest on Mona and Desecheo Islands and in some of the Bahama Islands so that it should range regularly to the coasts of Hispaniola. Possibly colonies may be found on some of the coastal islands. It is found at sea or about the islands on which it nests, and elsewhere does not come near shore except by accident.

The noddy tern is of medium size in its group, and is easily told by its sooty brown color with a wash of grayish white on the crown.

Order COLUMBIFORMES

Suborder COLUMBAE

Family COLUMBIDAE⁶³

COLUMBA LEUCOCEPHALA Linnaeus

WHITE-CROWNED PIGEON, PALOMA CABEZA BLANCA, PALOMA AQUITA, RAMIER, PIGEON A COURONNE BLANCHE, RAMIER TÊTE BLANCHE

Columba leucocephala LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 164 (Bahama Islands).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Repub-

⁶³ Cory, in the Auk, 1887, p. 120, remarks of the ring-dove *Streptopelia risoria* (Linnaeus) that he had a specimen in his collection marked "San Domingo." Since this species is known only in captivity it does not have definite status in the list of birds from Hispaniola.

lic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti); Birds Haiti and San Domingo, Dec., 1884, pp. 134-135 (Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 96 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 23 (sold in markets).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Dominican Republic).—KAEMPFER, Journ. für Ornith., 1924, p. 183 (Sánchez).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 498 (Jacmel, Ennery, Caracol; Gonave and Tortue Islands).—DANFORTH, Auk, 1929, p. 365 (recorded).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti, specimen).—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, pp. 5, 7 (Navassa).

Pigeon à couronne blanche, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 186-188 (Haiti).

Patagioenas leucoccephala, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 408 (San Juan, Margante).

Resident; common.

In the Dominican Republic Sallé, in 1857, wrote that the white-crowned pigeon was abundant and sold at such a low price as to be a veritable manna to the inhabitants. Pigeons were killed when in flight between their feeding and resting grounds, or by means of an artificial decoy placed in the top of a tree which attracted passing birds so that they alighted, offering easy shots to the hunter beneath. He found them nesting about March, and ranging in bands from April to October. Cherrie, in May, 1895, saw immense numbers offered for sale in the markets of Santo Domingo City. Verrill, in 1907, found them in great flocks from May to September. They were hunted extensively and sold for ten cents to twenty-five cents a pair. Abbott collected a male at San Lorenzo on Samaná Bay, July 31, 1916, and on August 6, 1916 secured a male in juvenal plumage at Laguna, on Samaná Peninsula. This bird is duller gray than adults and lacks the handsome markings of the hindneck, which is plain sooty brown. The crown is the same color with a slight indication of white on the forehead. The wing coverts and breast feathers are tipped narrowly with cinnamon-buff. Kaempfer reported them breeding near Sánchez in May.

From May 7 to 13, 1927, Wetmore found the white-crowned pigeon in abundance around Samaná Bay, including the hills back of San Lorenzo Bay. Many were seen between Sánchez and Pimentel May 16. The thousands that frequented the swamps bordering the lower courses of the Río Yuna and the Arroyo Barrancota were the great feature of the bird life of this section. Flocks and single birds passed above the tree tops with direct, sweeping flight, and others rested scattered through the tops of the mangroves. Their white crowns and dark plumage made a pleasing contrast when they were at rest or on the wing. The birds were not greatly molested, though occasionally a few were shot for the table, so that they were quite

tame. In Sánchez during the day white-crowned pigeons passed along the hills back of the village, flying between the swampy woodlands at the head of Samaná Bay and the forested slopes to the eastward. Occasionally single birds were seen but usually they passed in flocks containing four or five to a dozen individuals. At a distance they appeared black but sometimes the sun rays caught the white crown cap so that it glistened like silver. The birds flew with strong, vigorous flight. In the wet forests at an altitude of 1,500 feet their guttural cooing came from all sides, and in traversing the trails birds flushed continually with loudly clapping wings.

Struthers in an account of the birds of Mona Island lying midway between the Dominican Republic and Porto Rico⁶⁴ remarks "at sunrise and sunset flocks numbering as high as five hundred individuals were seen approaching Mona from the direction of Santo Domingo. Many of these birds were collected and several had the seed of the royal palm in their crops. As this palm was not found on Mona these birds must have migrated recently." Mona is distant about 35 miles from the nearest point of the Dominican Republic.

Cory found the white-headed pigeon in large numbers and said that they nested in May. He secured specimens at Puerto Plata December 21 and 29, 1882, and January 3, 1883. Peters found a few at San Juan and Margante March 12 and 13, 1916, and was told by natives in this section that large flocks appeared in August. Danforth found many at Seiño early in July, and flocks between Dajabón and Monte Cristi in June and August, 1927.

In Haiti Bartsch found this species in 1917 near Jérémie April 12 and 15, Trou des Roseaux April 14, between Port-au-Prince and St. Marc April 21 and 22, and in the Cul-de-Sac region April 24. Abbott reported them as breeding in numbers on Grande Cayemite Island in January, 1918. On Gonave Island he secured males on February 22 and 27, 1918, and March 5 and 9, 1920, and was told that numbers came there at the proper season to breed. Near Bombardopolis, at an altitude of 1,500 feet, they seem to have been common as he secured eight specimens, including both sexes, March 22, 23, 25 and 26, 1917. Four more males were collected on Tortue Island April 6, 7 and 8, 1917. The birds breed here in numbers in the mangroves, and on May 17, 1917, Abbott collected twenty sets of one egg each. These are glossy white in color and elliptical in form, slightly pointed at the smaller end. There is some variation in shape, and considerable variation in size as the following measurements will indicate: 32.8 by 26.2, 33.4 by 25.7, 34.6 by 26.1, 35.0 by 25.9, 35.1 by 27.2, 35.6 by 26.2, 36.5 by 25.5, 36.6 by 25.6, 36.7 by 25.5, 37.0 by 26.1, 37.2 by 26.8, 37.2 by 27.0, 37.3 by 27.0, 37.4 by 26.8, 37.4

⁶⁴ Auk, 1927, p. 543.

by 28.4, 37.5 by 25.6, 37.6 by 27.5, 38.4 by 26.0, 40.0 by 27.0, and 40.0 by 27.9.

Wetmore observed one white-crowned pigeon at Poste Charbert on April 26, 1927. Danforth collected specimens on Gonave Island in 1927. Bond records them in 1928 from Jacmel, Ennery, and Caracol, and says that they are common on Gonave and Tortue Islands. He secured a female June 24 (locality not given) that contained an egg nearly ready to be deposited. He records measurement of one egg as 37.9 by 27.3 mm. Poole and Perrygo in 1929 saw several at Anse à Galets, Gonave Island February 28, and recorded others at En Café in the interior from March 3 to 14. They collected one (at Massacrin) March 8 and three others March 12.

R. H. Beck secured three on Navassa Island July 14, 1917, including a juvenile bird fully grown but still entirely in juvenal dress with no white on the crown, so that it seems that the species breeds on that island. It has been recorded there in October by E. L. Ekman.

The soft parts in an adult male taken by Wetmore near Sánchez May 8, 1927 were colored as follows: iris light buff; tip of bill dull greenish yellow, rest, as well as cere, dull red; tarsus and toes dull red; claws light brown.

This bird is dull gray with black edgings and greenish reflections on the feathers of the hindneck, a rich reddish brown patch on the nape and a white crown. Females have the light color of the crown obscured by a wash of slate.

COLUMBA SQUAMOSA Bonnaterra

SCALED PIGEON, PALOMA TURCA, PALOMA TORCAZA, PALOMA MORADA, RAMIER, RAMEREAU, RAMIER COU ROUGE

Columba squamosa BONNATERRE, Tabl. Enc. Méth., vol. 1, 1792, p. 234 (Gua-deloupe Island, West Indies).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 498 (La Hotte, La Selle, Chaine des Mateux, Massif du Nord, Montaignes Noires, Gonave Island).—DANFORTH, Auk, 1929, p. 365 (recorded).—LÖNNBERG, Fuana och Flora, 1929, p. 101 (Haiti).—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, pp. 5, 7 (Navassa).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 314 (Bonaò, specimens).

Paloma Torcaça, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2; Reprint, Madrid, 1851, p. 442 (common).

Ramier (in part), SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, pp. 262, 717, vol. 2, 1798, pp. 79, 506, 577, 621, 648, 809 (Dondon, Port-de-Paix, Port-à-Piment, above Jacmel, Cayes, Fonds-des-Nègres, Aquin, Saint-Louis, Jérémie).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 182-186 (common).

Wood-pigeon (in part), SAINT-MÉRY, Descrip. Span. Part Saint-Domingo, vol. 1, 1798, pp. 193, 214 (common).—WIMPFEN, Voy. Saint Domingo, 1817, p. 188 (mentioned).

Columba portoricensis, HARTLAUB, Isis, 1847, p. 609 (listed from Hispaniola).—SCHLEGEL, Mus. Pays-Bas, Pt. 4, Columbae, 1868, p. 68 (type from Haiti).

Columba corensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).—CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 136–137 (Magua, specimens); Cat. West Indian Birds, 1892, p. 96 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol 1, 1896, p. 24 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Dominican Republic).—KAEMPFER, Journ. für Ornith., 1924, p. 183 (Sánchez).

Resident; abundant in many places in the interior.

The scaled pigeon, which shares with the white-headed and plain pigeons the names paloma in the Dominican Republic and ramier in Haiti, is common through the wooded sections of the island being especially numerous in the hills of the interior. Oviedo speaks of it in the early part of the sixteenth century, and it has been one of the favored game birds of the island to the present day.

In the Dominican Republic Abbott collected a male above Paradis, February 1, 1922, and two pairs at Laguna, on the Samaná Peninsula August 7, 12 and 13, 1916, and March 6, 1919. He notes that birds secured here in March were in breeding condition. He secured another pair near Constanza April 13 and 17, 1919, the latter taken at an altitude of 1,800 meters on Loma Río Grande. Kaempfer noted scaled pigeons near Sánchez, and Cory secured a pair at Magua January 27 and 29, 1883. Wetmore did not identify them in the coastal region but on May 17 and 18 and again on May 29 to 30, 1927 recorded many in riding from Jarabacoa to Constanza by way of El Río. At Constanza in the intervening period the birds were common. The birds were found in both deciduous and pine forests, and were observed continually flying with strong flight high above the mountain valleys as they crossed from slope to slope. Their calls, smooth and less guttural in tone than those of *C. leucocephala*, came frequently to the ear. The note may be written *who whoo hoo-oo-hoo* uttered slowly in a loud tone. The male in display scaled out with set wings, tilting from side to side and changing direction slightly every few feet so that while it transversed a circular or elliptical course the actual line of flight was very irregular. Danforth records one taken at Laguna del Salodillo, near Copey, June 26, 1927, others seen at Seibo and La Vega, and ten, mainly young shot at Bonao in early August. Ciferri sent specimens to Moltoni from Bonao taken November 7, 18, and 20, 1927.

In Haiti the birds are abundant in forested sections but not found elsewhere. Abbott found them in numbers near Moron, back of Jérémie, and collected three males December 18, 1917. At Moustique

he recorded them as common and prepared twelve skins from March 3 to 9, 1917. A female shot March 9 contained mature eggs.

Wetmore in 1927 reported one from Sources Puantes March 30, and others at Fonds-des-Nègres April 2 and 5. On the Massif de la Selle they were seen regularly from April 12 to 15. Here the ramier was especially common among the scattered fields of the Jardins Bois Pin where they perched in the tops of dead trees, often in little companies. At one time nine were observed resting in the early morning sun in two adjacent trees. The swift, direct flight always caught the eye as they crossed the sky. At rest they sat erect with tail straight down and head well up so that the neck appeared long. When approached in the open they usually took flight out of gun range but there was little difficulty in stalking them behind light cover for they were not too wary due to present prohibition against the general possession of firearms in Haiti. They were observed at Chapelle Faure on April 17. The skulls of several taken on this mountain range were preserved as specimens while the bodies made an excellent addition to a somewhat restricted camp menu. A male shot April 15 was approaching the breeding season. At Hinche Wetmore took one April 22 and on April 24 observed several near the Bassin Zime. The adult male taken April 22 showed the following colors of the soft parts: iris orange red; margins of eyelids bright red; bare skin about eye pale purplish red above and in front of eye, with scattered papillae colored honey yellow; distal half of bill dull grayish yellow; basal portion, including cere, deep red, tarsus and toes deep, dull red; claws dull grayish yellow. Abbott has recorded the eyes in specimens taken at Laguna in August as red in the male and orange red in the female, while in a female from Moustique taken in March he reports the iris as orange, eyelids red, and the orbital skin yellow. Danforth found squamated pigeons at the Citadelle de Christophe above Milot, at Fonds-des-Nègres, and on Gonave Island in 1927. Bond found this pigeon widely distributed through the mountainous regions recording it in Morne La Hotte, Massif de la Selle, Chaîne des Mateux, Massif du Nord, and the Montagnes Noires. He found it rare on Gonave Island. A nest found on Morne Salnave back of Acul Samedi was placed about five metres above the ground. Poole and Perrygo collected one at L'Atalaye December 31, 1928, and one at St. Michel January 6, 1929. E. L. Ekman has reported this species from Navassa Island in October, 1928.

Schlegel⁶⁵ says that the type of *Columba portoricensis*, a synonym of the present species, came from Haiti.

⁶⁵ Mus. Pays-Bas, vol. 4, 1873, Columbae, p. 68.

This pigeon, almost as large as the domestic species, is dark bluish gray in general color, with the head, hindneck and upper breast dull purplish drab, the hindneck with a patch of rich purplish brown, and the duller feathers behind margined with the same color. The female is slightly duller than the male.

COLUMBA INORNATA INORNATA Vigors

PLAIN PIGEON, PALOMA, RAMIER, MILLET, CENIZA, RAMIER CENIZA

Columba inornata VIGORS, Zool. Journ., vol. 3, December, 1827, p. 466 (near Havana, Cuba).

? *Coritas*, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2; Reprint, Madrid, 1851, p. 442 (common).

Great Ash-colored Wood Pigeon, SAINT-MÉRY, Descrip. Span. Part Saint-Domingo, vol. 1, 1798, p. 305 (common).

Columba?, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).

? *Columba caribaea*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).—HARTLAUB, Isis, 1847, p. 609 (listed).

Columba inornata, TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Columba inornata, CORY, Birds Haiti and San Domingo, Dec., 1884, p. 136 (Magua); Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—CHRISTY, Ibis, 1897, p. 336 (head of Samaná Bay).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (listed).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).

Columba inornata inornata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 498 (Northern Peninsula, Massif du Nord, Montagnes Noires, Ennery, Étang Saumâtre, Lake Enriquillo, Tortue Island).—DANFORTH, Auk, 1929, p. 365 (Artibonite).

Resident; locally common.

The plain pigeon is less widely distributed than the two preceding species but is common in certain sections. It is less wary and more readily killed, which probably accounts for the lessening numbers recorded of the present form in Cuba and of the slightly differentiated subspecies described from the Isle of Pines, Jamaica, and Porto Rico. The wooded interior of Hispaniola today is the only area where representatives of the species as a whole are actually common.

This is apparently the bird referred to by Oviedo as *corita*, and is also the great ash-colored wood-pigeon of Moreau de Saint-Méry, which was said to be "extremely delicate" and to fly in clouds. There are two skins in the Academy of Natural Sciences taken by W. L. Abbott on Samaná Bay, D. R., July 30, 1883. Cory collected a male at Magua in the Dominican Republic February 2, 1883. Christy describes it as abundant at the head of Samaná Bay in June, July and August. He gives an account of its hunting but we

believe has confused it in part with the white-headed pigeon which he does not mention in his list, and which is today the predominately abundant species of large pigeon in the area mentioned. Verrill records the plain pigeon as rarer than the squamated pigeon. Abbott secured specimens at San Lorenzo, on Samaná Bay, July 28, 1916, and March 19, 1919, and one at Sánchez February 22, 1919. He thought that they were nesting in the mangroves at San Lorenzo in March but was not certain. R. H. Beck collected specimens at Sánchez November 6 and 23, 1916, and a series on Loma Tina from January 8 to 24, 1917.

Wetmore found a few at the mouth of the Arroyo Barrancota May 8, 1927, and one at the mouth of the Yuna May 10. Near Constanza from May 20 to 27 they were fairly common both among the pines and in the rain forest, though most in evidence in the pines because of the more open branches. The hooting of males at a distance suggested the calls of owls but near at hand came to the ear as *kr-r-r-r coo-whoo-hoo*, *coo-whoo-hoo* the first note being a guttural growl, followed by slow, hooting calls. At times the guttural note was omitted. When calling they perched on dead limbs in the tops of tall trees where they had view over the surrounding country. Males were truculent like most pigeons and were seen driving one another about.

Ritter must have had the present species in mind when he listed *Columba caribaea* from Haiti. The species is also included from Haiti by Cory and Tippenhauer, but the only definite records appear to be those of Wetmore who saw several along the road between Maissade and Hinche April 21, 1927, and found them common near Hinche April 22 to 24, preparing a pair as skins on April 22 and others as skulls and skeletons on that date and the day following. They were the most common of the large pigeons in this vicinity, frequenting the large trees along the streams and ravines, particularly along the Ravine Papaye. They rested in little groups of two to ten, sometimes in dead trees and sometimes on leafy branches, and true to their reputation in other islands were far less wary than other doves so that they were easily approached. They sat quietly arranging their plumage or resting, and when alarmed drew up very straight with the head fully erect, finally taking flight with a loud clapping of wings to dart rapidly away. The breeding season was at hand and on April 23 a nest was found in a mango tree standing in a little clearing near the Ravine Papaye. The structure, placed twenty feet from the ground among branches where a denser growth of leaves than ordinary furnished shelter, was a plat-

form of weed-stems and grasses, with a slight concavity arranged so loosely that the egg was visible from below. The adult was flushed from the nest so that identity was certain. The single egg was slightly incubated and like all pigeons' eggs of this group is white with a somewhat glossy surface. It measures 35.9 by 28.0 mm. At Poste Charbert, near Caracol, the plain pigeon was common April 26 and 27.

Danforth saw five in low woods near the mouth of the Artibonite River July 29, 1927. Bond says that this is the most common pigeon in northern Haiti, being one of the few common birds in the upland pine forests of this section. He records them from the Northern Peninsula, Massif du Nord, Ennery (specimen), Montaignes Noires, Étang Saumâtre, Lake Enriquillo and on Tortue Island. He did not see them on Gonave. Poole and Perrygo secured two at L'Atalaye January 8, 1929, reported them at Hinche March 17, and found them very plentiful at Cerca-la-Source, preparing two skins and two skeletons March 21 and on March 24 and 25 preserving a number of skulls. An adult female taken April 22, had the iris grayish white; margins of eyelids dull rose, bare skin about eye purplish, washed with dull rose; bill dull black, cere dusky gray; tarsus and toes dull red; claws dusky.

Through the courtesy of the Museum of Comparative Zoölogy there has been available an extensive series of this form from Cuba for comparison with our equally extensive lot from Hispaniola. There is considerable individual variation in the depth and suffusion of the reddish color both above and below and also some individual difference in the depth of the gray colors. Allowing for this the birds from the two islands are so closely similar as to remain united in one form. The measurements as well as the colors are also practically the same as the following will show:

Ten males from Cuba, wing 205.0–229.0 (212.6), tail 123.3–146.8 (134.2), culmen 17.4–20.8 (19.1), tarsus 27.1–30.8 (29.3) mm.

Nine males from Hispaniola, wing 208.0–228.5 (219.4), tail 117.5–132.5 (125.0), culmen 17.8–21.4 (19.7), tarsus 29.3–31.6 (30.0) mm.

Eight females from Cuba, wing 207.0–222.0 (212.0), tail 132.2–146.7 (139.7), culmen 17.7–20.0 (18.6), tarsus 28.0–31.0 (28.8) mm.

Seven females from Hispaniola, wing 205.0–217.0 (211.5), tail, 110.5–131.0 (120.1), culmen 17.6–20.7 (19.8), tarsus, 28.0–30.3 (29.2) mm.

The plain pigeon, as large as the scaled pigeon and possibly heavier in body, is gray washed with vinaceous or purplish red over the forepart of the body, with the greater wing coverts edged lightly with white. Females are less brightly colored than males.

ZENAIDA ZENAIDA ZENAIDA (Bonaparte)

ZENAIDA DOVE, TÓRTOLA, ROLON, TOURTE, GROSSE TOURTERELLE,
TOURTERELLE ROUGE, GROS TOURTE

Columba zenaida BONAPARTE, Journ. Acad. Nat. Sci. Philadelphia, vol. 5, June, 1825, p. 30 (Florida Keys).

? Tourte, Grosse Tourterelle, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 188-189 (apparently Zenaida dove).

Zenaida, LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).

Zenaida amabilis, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 128-129 (Puerto Plata, Magua).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).

Zenaida zenaida, CORY, Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 24 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Dominican Republic).

Zenaida zenaida zenaida, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 407-408 (La Chorrera, Arroyo Savanna).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (San Juan, specimens).

Zenaida aurita zenaida, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 498 (Haiti, Gonave, Tortue).—DANFORTH, Auk, 1929, p. 366 (common).

Resident; locally common.

The Zenaida dove frequents open fields, pastures, and prairie lands bordered by trees and open growths of arid scrub, and does not occur in densely forested regions where there are no clearings. It is possible that with increase in cultivation in the last twenty-five years it has extended its range to a considerable degree, particularly in the Dominican Republic since Cherrie in 1895 reported it as common in the coast districts but not found in the high interior, and Cory at an earlier date recorded specimens only from Puerto Plata and Magua. The latter found them nesting in May.

Wetmore found the Zenaida dove common along the road between Azua and Comendador May 1, 1927, and recorded single birds at San Francisco de Macoris May 7, and Santiago May 31. Peters, who secured three specimens, found them common only on the Martinez Savanna, southwest of Cabrera. His skins were procured at La Chorrera February 12, 1916, and Arroyo Savanna March 9 and 10. Abbott secured a male at El Río near the head of the Río Jimenoa, where there are extensive clearings, on May 17, 1918, and another at Hondo, west of Constanza May 5, 1919. There do not seem to be records of this species on the Samaná Peninsula. Danforth reports this dove in 1927 as very common, especially in the hills west of Azua, and says that he collected specimens at Vásquez and San Juan. Ciferri secured it near San Juan (Arroyo Loro, Sabana San Thomé).

In Haiti the Zenaida dove is apparently more abundant than in the eastern republic of Hispaniola. Bartsch recorded it at Trou Caïman April 4, 1917, and near Port-au-Prince April 25. Abbott collected specimens at Jean Rabel Anchorage March 30, 1917, Bombardopolis at elevation of 450 meters March 27, and Baie des Moustiques May 7. He secured a female on Gonave Island February 18, 1918, and two of the same sex on Tortue Island February 2 and 4, 1917. Wetmore found Zenaida doves common at Hinche, where he collected one April 22, 1927. They fed on bare open ground and were seen to some extent among open scrubs. The call of the male, phrased like that of the mourning dove but deeper in tone and more sonorous, given somewhat more quickly and not quite so prolonged at the end, with all the syllables somewhat curtailed, may be written as *coo oo oo coo coo*. The wings in flight produce a whistling sound that is louder and lower pitched than that of the related species. The resemblance between these two forms is really surprising and in life it requires careful attention to avoid confusing them. The males of the Zenaida dove in the breeding season have a display habit, common to many pigeons, of circling in the air with stiffly set wings. The Zenaida dove was common at Poste Charbert near Caracol on April 26 and 27.

There is a specimen in the Academy of Natural Sciences from Gonave Island taken July 18, 1927, by John T. Emlen, jr. Bond reports it from Gonave, as well as from Tortue. Poole and Perrygo secured one at St. Michel, December 23, 1928, and four at Cerca-la-Source March 23, 25 and 28, 1928. One of these shows albinistic tendencies as the usual brown color is replaced in part by buff.

The Zenaida dove is warm brown in color, with violet iridescence on the sides of the neck. There is a black spot below the ear and black markings on the inner secondaries. The tail is tipped with gray and the secondaries with white. In appearance it is similar to the mourning dove but is distinguished by the short, slightly rounded tail.

ZENAIIDURA MACROURA MACROURA (Linnaeus)

WEST INDIAN MOURNING DOVE, TÓRTOLA, TOURTERELLE, TOURTERELLE
QUEUE-FINE

Columba macroura LINNAEUS, Syst. Nat., ed. 10, pt. 1, 1758, p. 164⁹⁶ (Cuba).
? Ring-dove, SAINT-MÉRY, Descrip. Span. Part Saint Domingo, vol. 1, 1798,
p. 305 (abundant).

⁹⁶ Based on the Long-Tailed Dove of Edwards Natural History, p. 15, pl. 15, which came from the West Indies. Type locality here designated as Cuba.

The Tourterelle de St. Domingue, Daubenton, Planch. Enl. No. 487, is an artifact with the body of a mourning dove and the head of a killdeer (not a golden plover as Salvadori has stated). On it are based *Columba dominicensis* Latham, Index Ornith., vol. 2, 1790, p. 615, (in *Dominicensi Insula*), and *Columba annulata* Wagler, Syst. Av., 1827, p. 267 (in *Dominicensi Insula*). For a full synonymy see Salvadori, Cat. Birds Brit. Mus., vol. 21, 1893, pp. 639-640.

Turtle, WIMPFEN, Voy. Saint Domingo, 1817, p. 188 (size of quail).

Tórtola (in part) OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2; Reprint, Madrid, 1851, p. 442 (recorded).

Tourterelle, SAINT-MÉRY, Descript. Part. Franc. Ile Saint-Domingue, vol. 1, 1797, pp. 262, 717, vol. 2, 1798, p. 79 (Dondon, Port-de-Paix, Port-à-Piment).

Tourterelle vineuse, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 189-193 (common).

Tourterelle brune, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 193-194 (common).

Turtur caroliniensis BRISSON, Ornith., vol. 1, 1760, p. 110, pl. 8 ("Saint-Domingue").

? *Columba dominicensis*, HARTLAUB, Naumannia, 1852, p. 53 (Haiti, common).

Columba carolinensis, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Haiti, Dominican Republic).

Zenaidura carolinensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Gantier); Birds Haiti and San Domingo, Dec., 1884, pp. 129-130 (Le Coup, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHRISTY, Ibis, 1897, p. 335 (La Vega).

Zenaidura macroura, CORY, Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 24 (San Cristobal, Honduras, Maniel).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (La Vega, specimen).—KAEMPFER, Journ. für Ornith., 1924, p. 183 (Sánchez).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).

Zenaidura macroura macroura, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 408 (Monte Cristi).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 498 (Haiti, Gouave, Tortue).—DANFORTH, Auk, 1929, p. 365 (common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (San Juan, specimens).

Resident; common.

In appearance, habits and note the West Indian mourning dove is a counterpart of the forms of North America. In Hispaniola this bird, as usual, is a species of open country, where it feeds in fields and pastures, or of open glades in woodland, and nests and rests in thickets and groves of trees. It does not penetrate dense rain-forest jungles except casually, although it finds in the open pine forests of the highlands conditions favorable for its life. The birds are found ordinarily in pairs or little bands that congregate where seeds that furnish food abound. They walk about on the ground with rapidly nodding heads but at any alarm stop to remain motionless when their color harmonizes so with the ground that they may not be perceived until they flush with musically winnowing wings and dart quickly away with rapid flight to a perch in some tree. When approached in such a situation they jerk the head and twitch the tail nervously and then suddenly take flight again. The song of this species is a cooing call, uttered with slow cadence, that in tone is mournful to the ears of some, though others, like the writers, find it pleasing. The birds are hunted as game but unless too severely pursued hold their abundance.

The mourning dove has been recorded by many naturalists in Hispaniola. Oviedo includes under the name *tórtola*, Brisson in

1760 describes a mourning dove sent to de Reaumur by Chervain, and it is described in more or less detail by Saint-Méry, Descourtilz and Baron Wimpffen.

In the Dominican Republic Wetmore found it common in the semi-arid section extending from Comendador to Azua on April 30 and May 1, 1927. Cherrie reported it from San Cristobal, Honduras and San José de Ocoa (which he terms Maniel). Kaempfer found it at Sánchez, and Christy and Verrill obtained specimens near La Vega. Wetmore recorded it near Santiago May 31, 1927. Peters found it rather rare on the north coast in 1916 as he observed it only near the fort at Monte Cristi. In the interior Abbott secured four males and one female near Constanza on September 22 and 28 and October 1, 1916, and April 29 and May 1, 1919, obtaining one at an altitude of 1,500 metres. Wetmore recorded it commonly in the open valley of Constanza from May 18 to 25, and found a few scattered through the open pine lands. He collected two on May 18 and 20 which were prepared for skeletons. He found the mourning dove in the clearings at El Río on May 29. Danforth found it especially abundant near Monte Cristi. Ciferri sent specimens to Moltoni, taken at Sabana San Thomé, San Juan, October 10 and 23, 1928.

In Haiti, where the country is more open and the climate on the average drier, the mourning dove is more common. Two specimens were sent to the Smithsonian Institution from Port-au-Prince by A. E. Younglove in 1866, one of them being still in the United States National Museum collections. Cory reported this dove from Gantier and Pétionville, in the former locality as abundant. In 1917 Bartsch recorded this species at Thomazeau, April 2, near Gloré April 3, Trou Caïman April 4, and near Port-au-Prince April 19 to 25. On the southwestern peninsula he found it near Jérémie April 10 to 15, Trou des Roseaux April 13 and 14, Petit Goave April 8 and 9, and Miragoane April 9. In 1927 Wetmore recorded several March 29 in mesquite thickets near the city of Port-au-Prince and observed others drinking from the Rivière Cul-de-Sac near Damien on April 29. Several were seen at the Étang Miragoane April 1, and doves were common in open fields at Fonds-des-Nègres April 2 and 5, Aquin April 3, and L'Acul April 4. Several were observed near La Tremblay April 7. On the Rivière Jaquisy below Furcy this dove was common April 8 and 9, and its voice at the earliest hint of dawn was the first bird note of the morning. On La Selle from April 9 to 15 it was common, being especially abundant in the cultivated fields of the Jardins Bois Pin. Mourning doves called from the trees about camp at the head of the Rivière Chotard and were found assembled in little flocks in open fields dotted with dead trees. The mourning dove was seen at Chapelle Faure and Furcy April 17. It was ob-

served on Morne à Cabrits April 20 and at Maissade April 21, and was recorded daily at Hinche April 20 to 24. At Caracol on the North Plain it was common on April 26 and 27 and was found in pairs.

Abbott secured a female at Bombardopolis March 21, 1919, and a pair at Moustique on March 9 and 10 at elevations of 600 and 900 meters. He took a female at Baie des Moustiques May 4. On Tortue Island he secured three males January 30 and 31, and May 18, 1917, and on May 18 and 19 collected two sets of eggs, one containing the two eggs usual to this species, and the other, apparently incomplete, only one. The nests were located about twelve feet from the ground in mangroves near the seashore. The parent of the set of two, taken on the nest, proved to be a male bird. The eggs, as usual are pure white with a slight gloss. The set of two measures 27.7 by 21.8 and 29.0 by 22.2, and the single egg 29.0 by 21.2 mm. Danforth in 1927 found the mourning dove very common between Gonaïves and Cap-Haïtien. Bond reports them on Gonave and Tortue Islands, and Poole and Perrygo collected specimens at St. Michel January 6 and 15, Fort Liberté February 15, St. Marc February 25, and at En Café in the interior of Gonave Island March 5, 1929.

Three males from Tortue Island are distinctly darker below than others from Haiti, this color extending over the lower tail-coverts. They are equalled only by two birds seen from eastern Cuba which differ from other Cuban specimens as the Tortue birds do from others from Haiti. Further material will be of interest but it is probable that the specimens indicated represent individual and not geographic variation.

Following are measurements of the series from Hispaniola:

Eleven males, wing 133.0-148.1 (138.2), tail 115.4-129.4 (122.4), culmen 12.5-14.7 (13.4), tarsus 20.4-22.5 (21.1) mm.

Four females, wing 129.4-137.2 (133.4), tail 95.0-111.8 (102.5), culmen 11.8-13.9 (13.0), tarsus 19.3-21.3 (20.7) mm.

Columba macroura of Linnaeus⁶⁷ is a composite based on the long-tailed dove of Edwards, which is the mourning dove of the West Indies, and the *Palumbus migratorius* of Catesby, which is the passenger pigeon. The Edwards reference is the one given first and has been used in applying the name, though the range assigned by Linnaeus is that of the passenger pigeon. In the twelfth edition of the *Systema Naturae* in 1766 Linnaeus dropped *Columba macroura* of 1758 entirely, and named the passenger pigeon *Columba canadensis* (p. 284) and *Columba migratoria* (p. 285), the North American mourning dove *Columba carolinensis* (p. 286), and the long-tailed dove of Edwards *Columba marginata* (p. 286). In the period when the twelfth edition of Linnaeus was generally accepted as the basis

⁶⁷ *Syst. Nat.*, ed. 10, vol. 1, 1758, p. 164.

for zoological nomenclature the mourning dove was called *Columba carolinensis*, or later, *Zenaidura carolinensis*. When the committee of the American Ornithologists' Union appointed to prepare a check-list of North American birds decided to adopt the tenth edition of Linnaeus as the starting point of binomial nomenclature the mourning dove became through this procedure *Zenaidura macroura*.⁶⁸ In 1902 William Palmer and J. H. Riley recognized that the Cuban birds differed from those of the eastern United States in smaller size and named the former *Zenaidura macroura bella*.⁶⁹ They did not discuss the name *macroura* but accepted it as currently used. Subsequently Bangs reviewed this action,⁷⁰ deciding that *Columba macroura* 1758 applied to the passenger pigeon, which under this became *Ectopistes macrourus* (Linnaeus), that the North American mourning dove should be called *Zenaidura carolinensis carolinensis* (Linnaeus) and the West Indian form should be known as *Zenaidura carolinensis marginata* (Linnaeus). The third edition of the A. O. U. Check-list in 1910 gives *Zenaidura macroura macroura* as "extra-limital" without comment and uses *Zenaidura macroura carolinensis* for the continental bird. Ridgway in the seventh volume of the Birds of North and Middle America in 1916 uses *macroura* for the bird of the West Indies and *carolinensis* for the form of eastern North America. From this brief synopsis it is evident that the names of the mourning dove are involved in some confusion.

The "Long-tailed Dove" of Edwards was described and figured in the first part of his Natural History on page 15, the colored plate facing this page. On page 125, in part two of this work, in a catalogue of the names of birds that he had described, Edwards refers to it as "Columba, macroura" so that Linnaeus was correct in his citation from Edwards though he does not give the page reference to the Latin name. Edwards states definitely that his specimen of the long-tailed dove was brought "from the West Indies."

Since two races of the mourning dove have been recognized in the area in question the name *macroura* has been applied to the Antillean form and *carolinensis* to the continental bird. In no place, however, does there seem to have been definite assignation of the Linnaean name *macroura* or definite designation of a type locality. It seems logical to follow current custom in applying *macroura* to the mourning dove, as though a composite as used by Linnaeus in 1758 the citation of Edwards may be taken as the principal reference since it stands first, and Linnaeus accepted Edwards' Latin name for his species though he did not give the page on which this Latin name

⁶⁸ First published by Ridgway, Proc. U. S. Nat. Mus., vol. 8, 1885, p. 355.

⁶⁹ Proc. Biol. Soc. Washington, vol. 15, March 5, 1902, p. 33. (Type locality, Mariel, Cuba; type in U. S. National Museum.)

⁷⁰ Proc. Biol. Soc. Washington, vol. 19, February 26, 1906, pp. 43-44.

occurred. As an attempt to stabilize current usage *Columba macroura* Linnaeus of 1758, a composite in the original description, is here definitely taken as applying to the mourning dove from the reference given to Edwards, and its type locality designated as Cuba, where the bird is common. The West Indian race will stand as *Zenaidura macroura macroura* (Linnaeus), with *Columba marginata* Linnaeus, 1766, and *Zenaidura macroura bella* Palmer and Riley, 1902 as synonyms.

The mourning dove is colored like the Zenaida dove but lacks the white in the wings and has the tail long, narrow and much graduated.

MELOPELIA ASIATICA ASIATICA (Linnaeus)

**WHITE-WINGED DOVE, ALA BLANCA, TOURTERELLE AILE-BLANCHE,
BALBARIN, BARBARIN**

Columba asiatica LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 163 ("Indiis"=Jamaica).

Melopelia leucoptera, CORY, Birds Haiti and San Domingo, Dec., 1884, p. 131 (Puerto Plata, specimen); Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 24 (Mt. Laguneta, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 351 (recorded).

Melopelia a. asiatica, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (recorded).

Melopelia asiatica asiatica, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 407 (Sosúa, Río San Juan).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 498-499 (Haiti, Gonave and Tortue).—DANFORTH, Auk, 1929, p. 366 (recorded).

Fairly common resident in lowlands and lower hills; not known at present from the high interior.

The white-winged dove is generally distributed through the coastal plain and the lower hills and is seen regularly in travel through the country. The loud cooing calls of the males come from the shelter of trees through the hottest hours of the day, indicating the presence of unseen birds, while frequently a passing dove seen in flight from trail or roadway reveals the flash of white in the wing that identifies the present species. The white-winged dove is especially partial to mesquite scrubs of the arid sections, particularly where these are intermingled with tree cacti, but ranges also in areas of heavy rainfall.

In the Dominican Republic Cherrie reports the species from "Mount La Laguneta" a locality that we do not know but assume to be near San Cristobal as there is a skin from that point in the Field Museum. Wetmore found the white-winged dove fairly common in the scrubs bordering the auto road between Comendador and Azua April 30 and May 1, 1927. Occasional birds were seen or

heard at Sánchez May 6 and 9, several were found in the woodland at the mouth of the Yuna May 10, and one was recorded at San Lorenzo Bay May 11. On May 9 he took an adult male from the top of a tall tree and found the colors of the head remarkably brilliant. The bill, including the cere, was dull black; bare skin about eye bright blue; iris reddish orange; tarsus and toes red; claws dusky. Peters observed a few near Sosúa February 25 to April 11, 1916 and collected one specimen. A few were noted March 4 at the mouth of the Río San Juan. Danforth in 1927 found this bird very common in the arid section about Monte Cristi, and reports a few near Santo Domingo City and San Juan.

The species has been more frequently recorded in Haiti. Bartsch found it at Petit Goave April 8 and 9, 1917, Jérémie April 10 to 12 and 15 to 16, and near Trou des Roseaux April 13 and 14. He recorded it in the vicinity of Port-au-Prince April 19, 24 and 27. Wetmore found it in the mesquites at the edge of Port-au-Prince in early morning of March 29, and saw it later in the day at Damien and Carrefour. At Fonds-des-Nègres it was common from March 31 to April 5 and was heard calling constantly throughout the day. The birds remained concealed in the heavy foliage here and were not seen as frequently as in more arid sections. Individuals were seen at the Étang Miragoane April 1, Aquin April 3, and L'Acul April 4. On April 20 he recorded them at Las Cahobes, and from April 22 to 24 found them in small numbers near Hinche. At Poste Charbert near Caracol they were common, particularly along the Rivière Trou where dozens were observed. It is possible that the birds were colonizing here to breed, as is the regular habit of the subspecies found in the southwestern United States. Poole and Perrygo secured specimens at L'Atalaye January 9, St. Michel January 6 and 15, and Cerca-la-Source March 25, 1929. Abbott collected a male at Moustique at an elevation of 450 meters, and a female at Anse à Galets, Gonave Island March 5, 1920. From February 18 to 28, 1928 he reported the white-wing as the most common dove on Gonave. On June 4, 1917 he collected two sets of two eggs each at Jean Rabel Anchorage, one from a nest in a tree cactus ten feet from the earth, and the other from a nest placed four feet from the ground in a small tree near the sea. These eggs are white, with a very faint tinge of cream, and have somewhat glossy shells. They measure 29.0 by 22.6, and 29.5 by 22.7; 28.6 by 22.2 and 29.2 by 21.9 mm. Danforth in 1927 says that they were quite common between St. Marc and Gonaïves, and that he saw a few near Belladère, Port-au-Prince, Étang Miragoane, Aquin, and Les Cayes. They were quite common on Gonave Island. Bond reports a nest with young on Gonave Island in January 1928, and one with eggs at Trou Caïman in June.

Birds from Haiti seem a little paler above than those from Jamaica but the material at hand is too small in amount to distinguish them successfully.

Columba asiatica of the tenth edition of Linnaeus is taken from the *Turtur, indicus, fuscus* of Edwards Natural History (pp. 76, 127) and the *Columba subfusca media* of Browne (p. 468). Linnaeus gives the habitat as "in Indiis". Edwards says that he was told that his specimen "came from the East Indies," which is an obvious error. In his twelfth edition (p. 281) Linnaeus renamed this bird *Columba leucoptera*, adding to the two previous references Brisson's *Columba indica*,⁷¹ giving the habitat as "Asia." The type locality of *asiatica* is indicated by Mearns⁷² with some uncertainty in the statement "Jamaica, or at least the West Indies, is supposed to be the type locality of *Melopelia asiatica* (Linnaeus)." The type locality is here definitely designated as Jamaica.

The white-winged dove is about as long as the Zenaida dove but is smaller in body. It is light brown above and on the breast, with a black spot below the ear and a wash of purple on the head. The rest of the underparts are light gray, the wing black with a prominent band of white, and the rounded tail black tipped with white.

CHAEMEPELIA PASSERINA INSULARIS (Ridgway)

CUBAN GROUND-DOVE, ROLITA, ORTOLAN

Columbigallina passerina insularis RIDGWAY, Proc. U. S. Nat. Mus., vol. 10, 1887, p. 574 (Grand Cayman).

Petite Tourterelle de St. Domingue, DAUBENTON, Planch. Enl., pl. 243.

Cocot-zin, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 194-196 (common).

Turtur parvus Americanus Brisson, Ornith., vol. 1, 1760, p. 113, pl. 9, fig. 1 ("Saint-Domingue").

Columba passerina, HEARNE, Proc. Zool. Soc. London, 1834, p. 110 (forwarded from Haiti).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Haiti, specimen).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic, Haiti).

Columbigallina passerina, CORY, Cat. West Indian Birds, 1892, p. 92 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 24 (Dominican Republic).

Chaemepelia hortulana HARTLAUB, Naumannia, 1852, p. 56. (Haiti.)

Chaemepelia passerina, SALLÉ, Proc. Zool. Soc. London, 1857, p. 236 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti); Birds Haiti and San Domingo, Dec., 1884, pp. 127-128 (abundant).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 322 (listed).—CHRISTY, Ibis, 1897, p. 335 (La Vega).

⁷¹ Ornith., vol. 1, p. 105.

⁷² Auk, 1911, p. 489.

⁷³ *Turtur parvus Americanus* Brisson, Ornith., vol. 1, 1760, p. 116, pl. 8, fig. 2, of which the author says "on la trouve à saint Dominique, d'où elle a été envoyée à M. de Reaumur par M. Chervain" is *Chaemepelia minuta* of South America, wrongly ascribed to Hispaniola.

Chaemepelia passerina aflavida, TODD, Ann. Carnegie Mus., vol. 8, 1912, pp. 563-564 (Haiti, Dominican Republic).—RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 7, 1916, p. 415 (Jacmel, Pétionville, Port-au-Prince, Catarrey, Honduras, Sánchez, San Cristobal, La Vega, San José de Ocoa, Fuerte Resoli, Santo Domingo City, Puerto Plata).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 139; Beneath Tropic Seas, 1928, p. 220 (Haiti).—DANFORTH, Auk, 1929, p. 336 (common).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (San Juan, specimens).

Chaemepelia passerina insularis, PETERS, Bull. Mus. Comp. Zoöl., p. 407 (Monte Cristi, Sosúa).

Chamaepelia passerina insularis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 499 (Port-de-Paix, specimen).

Resident, except in the higher mountains and in dense forests.

The ground-dove is too widely distributed to make necessary detailed discussion of its distribution. It has been recorded at the following points:

Dominican Republic: Comendador to Azua, Santo Domingo City to San Francisco de Macoris, Moca (Wetmore); La Vega (Christy, Verrill, specimen from latter in collection of J. H. Fleming) Jara-bacoa (Abbott); Monte Cristi, Sosúa (Peters); San Juan (Ciferri); Saona Island (Abbott).

Haiti: Jérémie (Abbott, specimens; Bartsch); Trou des Roseaux, Petit Goave, Miragoane (Bartsch); Aquin, Fonds-des-Nègres, Étang Miragoane, L'Acul, Carrefour, Damien, La Tremblay (Wetmore); Port-au-Prince (Younglove, specimens, Bartsch, Wetmore); Trou Caïman, Gloré (Bartsch); Massif de la Selle, Chapelle Faure, Furcy, Morne à Cabrits to St. Michel by way of Hinche, Caracol (Wetmore); Rivière Bar, Moustique; Étroites and Anse à Galets, Gonave Island; Tortue Island (Abbott); L'Atalaye, St. Michel, St. Raphael, Pont Sondé, Fort Liberté, Cerca-la-Source (Poole and Perrygo).

The bird has long been known from Haiti since Hearne in 1834 sent specimens alive to the Zoological Society of London. Wetmore found a few in the cultivated fields of the Jardin Bois Pin on La Selle but did not meet with it in the open pine forests on the summit of the ridge. It is not known at present from the high valley of Constanza. Abbott found it abundant on Gonave, Tortue, and Saona Islands. It seems to be rare on the Samaná Peninsula as there are no records for it there at present.

The ground-dove is found in open fields or pastures and does not range in dense woodland though it may occur in very small clearings. Many are noted at the roadside in traveling through the country. The ground-dove is found in pairs or little bands, congregating where its food of seeds may be obtained. It walks about, nervously moving the head, to remain still at hint of danger and then to rise suddenly with a bright flash of reddish brown from the under surface of the wings. The call of the male, uttered constantly

during the breeding season, may be written *coo-oo-oh*, *coo-oo-oh* uttered almost as one syllable, with a rising inflection. Given constantly through the heat of the day it may become highly monotonous to the human ear. The birds though small are hunted to some extent as game.

Cory reports ground doves nesting in May, while near La Vega Christy found eggs and young toward the end of June. The eggs are white with a distinct gloss, and number two to a set. Abbott collected a set of two near Sosúa, July 22, 1919 from a nest of grasses placed on the ground beneath a tussock of grass. These measure 21.3 by 16.2 and 21.3 by 16.8 mm. He forwarded one egg from Tortue Island, Haiti, taken on May 14, 1917, which measures 22.5 by 17.0 mm. Christy also describes nests found on the ground, a habit that will be inimical to the species as the mongoose increases, but that may perhaps be overcome as in Porto Rico where a closely related subspecies of ground dove now nests in trees.

Danforth and Emlen report the flight of one of these doves, timed by the speedometer of their automobile, at thirty-four miles an hour.

Following are measurements for comparative examination:

Twenty-three males from Hispaniola (including Tortue, Gonave and Saona Islands), wing 80.0–87.0 (83.6), tail 51.8–61.1 (54.6), culmen 9.7–11.8 (10.9), tarsus 14.9–17.2 (16.0) mm.

Six females from Hispaniola (including Tortue and Gonave Islands), wing 81.5–83.5 (82.3), tail 51.2–56.4 (54.3), culmen 10.3–11.6 (11.0), tarsus 14.4–16.9 (15.7) mm.

Hartlaub⁷⁴ gives "*Chamaepelia hortulana*, Herz. v. Württemb. Von den Creolen Haitis Ortolan genannt; grösser als *passerina*; eine allerliebste kleine Taube, welche eine sehr gute speise abgibt und von allen mir bekannten arten abweicht." Though probably referring to the ground-dove because of the generic name used this is not certain since the only descriptive phrase that saves this from being a *nomen nudum* "*grosser als passerina*" does not hold true. Hartlaub's species, therefore, is considered not certainly identifiable so that the name is not accepted. Todd⁷⁵ writes that Hellmayr has not been able to locate Hartlaub's type. The name *insularis* based on a bird from Grand Cayman is used for this race.

The ground dove of Hispaniola is similar to that of Cuba and the Cayman Islands. Though there is variation in depth of color this is individual and not correlated with geographic range. J. L. Peters has kindly compared the series in the Museum of Comparative Zoölogy for us and informs us that birds from Cuba and Hispaniola in that collection are identical as they are in ours. A small series

⁷⁴ Naumannia, 1852, pt. 2, p. 56.

⁷⁵ Ann. Carnegie Mus., vol. 8, 1912, p. 564.

from Gonave Island are very faintly paler than birds from Haiti proper but not sufficiently to merit more than casual notice. Several from Tortue Island are duller, less pinkish below and decidedly darker above, a difference that seems to be due to wear and stain on the feathers. One from Saona Island is the same as that of Hispaniola.

The ground-dove is distinguished from all others of its family by tiny size as it is only a little larger than a sparrow. The male is pinkish brown on breast and forehead and gray above, with the breast flecked with black and the wings spotted with metallic blue. The female does not have the reddish color on the breast and the wing spottings are paler. Both sexes have the under surface of the wings deep cinnamon brown.

CHAEMEPELIA PASSERINA NAVASSAE Wetmore

NAVASSA GROUND-DOVE

Chaemepelia passerina navassae WETMORE, Proc. Biol. Soc. Washington, vol. 43, September 26, 1930, p. 149 (Navassa Island).

Chamaepelia passerina, EKMAN, Ark. för Bot., vol. 22 A, no. 16, 1929, p. 7 (Navassa).

Chaemepelia passerina aflavida, LÖNNBERG, Fauna och Flora, 1929, p. 101 (Navassa, specimen).

Navassa Island; resident.

The first specimens of this dove recorded are three pairs taken by R. H. Beck, July 16 and 17, 1917, for the American Museum of Natural History. Through the kindness of Dr. F. M. Chapman these were examined during work on the Haitian collections in the American Museum when it was observed that they seemed slightly paler than typical *insularis*. As these birds were all in much worn plumage, it was decided after somewhat lengthy comparisons that this difference might be due to fading, so that it was considered that they were not sufficient basis to warrant naming the Navassa bird as a distinct race. On May 10, 1930, Lee Parish visited Navassa in his yacht *Esperanza* on behalf of the Smithsonian Institution when two males and three females of the ground-dove were obtained by S. W. Parish and W. M. Perrygo. These birds which came to hand as this report was in press are in fresh, unworn plumage, and have been sufficient to indicate that the bird of Navassa differs from that of Haiti in paler coloration and in slightly smaller size. It is interesting to note that its variation is in the direction of *C. p. exigua* of Mona Island.

This dove was also collected on Navassa by E. L. Ekman.

Following are measurements from all of the birds seen:

Males, five specimens, wing 79.6–82.0 (80.9), tail 51.6–57.5 (54.8), culmen with cere 9.8–10.8 (10.2), tarsus 14.8–16.0 (15.2) mm.

Females, five specimens, wing 76.2–83.0 (80.0), tail 52.4–57.5 (53.6), culmen with cere 11.1–11.7 (11.4), tarsus 13.8–15.8 (14.7) mm.

Type, male, wing 81.0, tail 55.0, culmen with cere 10.8, tarsus 14.8 mm.

OREOPELEIA MONTANA (Linnaeus)

RUDDY QUAIL-DOVE, PERDIZ, PERDRIX, PERDRIX ROUGE

Columba montana LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 163 (Jamaica). Perdrix rouge, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, p. 40 (mentioned).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 196–199 (found in hills).

?*Columba montana*, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).

Geotrygon montana, SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Republic).—CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 132–133 (Puerto Plata, Samaná, specimens); Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 24 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 357 (Dominican Republic).—KAEMPFER, Journ. für Ornith., 1924, p. 184 (Cotuf).

Oreopeleia montana, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 406 (Los Toritos).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 520–521 (listed).—DANFORTH, Auk, 1929, p. 366 (San Juan, Bonao, Gonave).

Resident; fairly common in forested areas in regions of considerable rainfall.

The ruddy quail-dove frequents forests where the ground beneath the trees is sufficiently open to permit it to walk about, conditions that are found in swampy woodlands along the lowland streams or in the growths that cover the hills. Verrill reports it from dense growths of sawgrass, which seems unusual, while Abbott found that groves of cacao, with their heavy shade and open lanes along the ground, were frequented instead of the forest growth which they replaced. The quail-dove is retiring so that it usually walks quickly aside to avoid a human intruder or flushes quickly with a flutter of wings to dart immediately behind some cover and then fly away unseen behind this protective screen. The difficulty of hunting it is easily evident. Its presence is often unsuspected except by those who recognize the moaning calls of the males that come regularly during the breeding season from the forest depths, or who have eyes quick enough to detect the movement of birds walking on the ground among the dense shadows amid which they live.

Sallé knew these quail-doves well and gives a graphic word picture of the sombre shade of their forest haunts. Cory reports them as abundant and found them in flocks, a report pertaining apparently to Puerto Plata where he secured six specimens December 16 and 18, 1882. He lists one other specimen in his collection from Samaná

April 2, 1883. He had specimens also from Almercen (Villa Rivas). One of his skins, a female, from Puerto Plata, December 14, 1882, is now in the United States National Museum. Cherrie recorded the ruddy quail-dove in the hills of the southern part of the Dominican Republic in small numbers but saw few near the coast. He obtained specimens at Catarrey. Verrill says that near El Valle large numbers were trapped by the natives and sold in the markets at three cents a pair. Ridgway examined specimens from Sánchez and La Vega in addition to those indicated above. Beck secured specimens at Santo Domingo City October 9, 10, 19, and 20, 1916, and at Túbano February 13, 1917.

At Laguna, on the Samaná peninsula, Abbott found the ruddy quail-dove in numbers so that he collected twelve specimens of both sexes August 10, 13, and 14, 1916, and March 4, 6, 7, 8, and 10, 1919. He took two at Sánchez February 17 and 20, 1919. A female shot February 20, near Sánchez, contained a nearly mature egg, and he indicates February to May as the regular breeding season. At Laguna he observed a number of nests composed of a few sticks or dead leaves placed loosely from six to eight feet from the ground on clumps of *Tillandsia*, an epiphyte abundant in the dripping woodland. A set of two eggs taken at this point about March 15, 1919, are colored light buff, are rather rounded, and measure 26.4 by 21.1 and 26.1 by 21.7 mm. A second set of two and a single egg secured in April, 1919 were forwarded from the same locality, the single being slightly paler than the average of the others. One egg in the set is broken, the other measuring 28.1 by 21.2 mm. The single egg mentioned is greatly elongated and is more pointed, its measurements being 31.2 by 19.6 mm. It appears abnormal in form. Two young birds not quite grown were taken March 6 and 7, 1919.

Kaempfer found the ruddy quail-dove very common at Cotuí, where nests seen at the end of February contained either young or hard-set eggs. The nests observed were placed only a meter above the ground. He wrote that the birds were hunted at night with torches when they could be captured by hand.

Wetmore heard the resonant cooing of this dove in the heavy forests above Sánchez May 7, 1927, and on May 13 these birds were fairly common in the dripping woodland bordering the irregular trail that leads over the hills to Las Terrenas on the north coast. May 10 he flushed several in swampy forest opposite the Arroyo Guayabo near the mouth of the Yuna, and heard their moaning calls frequently. One was heard near Constanza May 24. Peters collected a male at Los Toritos in the spring of 1916 and reports that children trapped these birds in little traps made of sticks.

Danforth collected one near San Juan July 11, and two near Bonao August 7, 1927. On the latter date he found a nest placed on a matted bush about a foot from the ground; it contained two eggs.

The ruddy quail-dove seems far less abundant in Haiti than in the Dominican Republic, probably because of the restricted areas in the former republic where suitable rain forest is found. Descourtiz describes the hunting of this species and says that it is known locally as *heleux*. Tippenhauer includes it in his list without comment. F. P. Mathews collected a male at Anse à Galets, Gonave Island July 17, 1927.

Abbott reports the iris in males as brownish yellow, orange brown, or brownish yellow.

The adult male is chestnut or rufous-chestnut above, glossed on the hindneck and back with reddish purple, pinkish cinnamon on throat and malar region, vinaceous fawn on the breast, and buffy cinnamon on the rest of the underparts. The female is much darker, being olive-brown above except for the rufescent forehead, the plumage glossed faintly with bronze, and cinnamon below, with a band of darker brown across the breast. The birds are about as large in body as the Zenaida dove and have the tail nearly square.

OREOPELEIA CHRYSIA (Bonaparte)

KEY WEST QUAIL-DOVE, PERDIZ, PERDRIX, PERDRIX GRISE

Geotrygon chrysia BONAPARTE, Compt. Rend., vol. 40, 1855, p. 100 (Florida).
Perdrix grise, DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 196 (recorded).
Columba mystacea, HEARNE, Proc. Zool. Soc. London, 1834, p. 110 (sent alive from Haiti).

Columba martinica, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Haiti, specimen).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Port-au-Prince, specimens).

Leptoptila, SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Republic).

Geotrygon martinica, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 133-134 (Puerto Plata); Cat. West Indian Birds, 1892, p. 97 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 322 (listed).—CHERIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 24 (Aguacate).—VERBIL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 351 (Cayo Levantado, specimen).

Oreopeleia chrysia, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, pp. 406-407 (Arroyo Salado, Puerto Plata, specimens).—RIDGWAY, U. S. Nat. Mus., Bull. 50, vol. 7, 1916, p. 471 (Puerto Plata, Aguacate, Cuya, Cayo Levantado).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 499 (Haiti, Gonave, Tortue).—DANFORTH, Auk, 1929, p. 366 (San Juan, Bonao, Fonds-des-Nègres).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti, specimen).

Resident; found locally in small numbers.

The present species like the preceding is an inhabitant of forests where it walks about on the ground, and is seen with difficulty ex-

cept when it is in flight. It is not restricted to areas of considerable rainfall, however, and can accommodate its environmental needs to limited tracts of semi-arid scrub so that though perhaps seeming less abundant in numbers than the ruddy quail-dove it has a much wider range. Hartert informs us that Kaempfer collected a number for the Tring Museum at altitudes ranging from 30 to 500 meters near Túbano in the province of Azua, between August 9 and 17, 1923. These include two juveniles taken August 12 and 13, which offer some clue to the breeding season in that locality. Cherrie saw only one, which had been killed by a native at Aguacate. Verrill secured one on Cayo Levantado, opposite Samaná, which Hartert tells us is now in the Tring Museum, and was taken February 15, 1907. Peters secured one in rather open woodland at Arroyo Salado, March 7, 1916, and says that there is one in the Museum of Comparative Zoölogy shot at Puerto Plata by M. Abbott Frazar, January 16, 1883. Cory lists one taken at Puerto Plata, December 18, 1882. W. L. Abbott has reported it from the Dominican Republic in his manuscript notes but does not cite definite localities. Beck collected a series of twenty-seven skins near Túbano from February 3 to 15, 1917. Danforth shot one near San Juan July 10, and saw one near Bonao August 7, 1927.

There are numerous records for Haiti. Descourtilz mentions it in 1809, and it is included among other species sent by John Hearne in 1834 to the Zoological Society of London. Ritter records taking one, and two secured by A. E. Younglove in 1866 were sent to the Smithsonian, a male from "Le Coup" (Pétionville) February 19, and a female from near Port-au-Prince, May 9, these being the two listed by Bryant from Port-au-Prince. The first of these Younglove specimens is still in the United States National Museum. W. L. Abbott secured three at an elevation of 300 meters near Bombardopolis on March 24, 26, 1917. He saw a quail-dove on Tortue Island which he believed to be this species, in which in all probability he was correct, since the forest there seems too dry to favor the occurrence of *O. montana*. Wetmore collected an adult female in the Ravine Papaye, near Hinche April 22, 1927, and on the following day heard two calling in the dense, hot scrub in that vicinity, the note being a low, resonant *coo*, suggestive of that of the ruddy quail-dove but with a different pitch and far less carrying power so that it was audible only to a distance of less than one hundred yards. The bird taken flushed with a loud rustling of wings at the edge of a dry water course and flew rapidly. When first taken the iris was dull red, with the inner margin honey yellow; margins of lids and bare skin about eye dull red; distal half of bill dusky; basal half,

including cere, deep dull red; tarsus and toes dull red with a grayish cast; claws dusky. Danforth saw one at Fonds-des-Nègres July 23, 1927. Bond in 1928 reports them as common in the arid regions of Haiti and as particularly numerous on the islands of Gonave and Tortue. He reports one flushed from an empty nest on Gonave June 25, and found them breeding on Tortue in March. Natives trapped them on Gonave Island in numbers, using corn or water as bait. Bond reports the call as a booming note that is ventriloquial in effect and so difficult to locate. Poole and Perrygo collected one at L'Atalaye January 5, four at Cerca-la-Source March 22 and 26, and one at Anse à Galets March 13, 1929.

This quail-dove is reddish brown on back and wings, with the crown and hindneck metallic green or blue according to the angle of light, and the forehead brown. Below it is white on the throat, with a malar stripe of brown, vinaceous drab on the breast, and white on the abdomen. The wing-coverts are reddish brown brighter in the male and duller in the female.

OREOPELEIA LEUCOMETOPIUS Chapman

HISPANIOLAN QUAIL-DOVE, PERDIZ, PERDIZ CENIZA, PERDRIX GRIS

Oreopeleia leucometopius CHAPMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, p. 327 (Loma Tina, Province of Azua, Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 521 (La Selle).

Oreopeleia leucometopium, EKMAN, Est. Agr. Moca, Ser. B. Bot., No. 15, December, 1929, p. 5 (Loma de Jayaco).

? Violet-winged pigeon, SAINT-MÉRY, Descrip. Span. Part Saint-Domingo, vol. 1, 1798, p. 305 (abundant).

Blue ground pigeon, BECK, Nat. Hist., vol. 21, 1921, pp. 39, 41 (habits, collecting).

Resident in rain-forest of mountains of Dominican Republic.

The present species was discovered in 1917 by R. H. Beck who found it on the slopes of Loma Tina, near Túbano, and near Las Cañitas, the latter locality being on the Río del Medio, a tributary of Río Yaque del Sur. Beck describes it as living on the ground in dense forest and in habits more like a quail or partridge than an ordinary pigeon. He secured an excellent series on Loma Tina January 12, 15, 17, 22, and 27, and February 2, at Túbano February 10, 12, 13, 14, and 15, and at La Cañita nearby March 9, 1917. The type specimen, Amer. Mus. Nat. Hist. No. 163,788, a male, taken on Loma Tina January 27, 1917 (original no. 7089), has the following measurements: wing 151.7, tail 76.6, culmen with cere 13.5 and tarsus 35.6 mm. Whether this is the "violet-winged pigeon" mentioned long ago by Moreau Saint-Méry is not certain, but this is not impossible. It is true that the wings of this quail-dove are not violet, but

the adjacent back feathers are that color which is found in no other dove of the island.

Abbott shot a pair of these quail-doves at an elevation of 900 meters near Hondo, west of Constanza on May 3, and 5, 1919, a locality not far from Las Cañitas where Beck secured specimens. Abbott records them as not common and writes that he killed a young individual near Constanza but that it was too badly shot to skin. On March 13, 1922, he collected a female at an elevation of 1,200 meters on Loma del Cielo in the Sierra de Bahoruco about two miles east of Polo, Province of Barahona. He was told also by an officer of the Guardia of a curious pigeon near Cabo Isabella on the north coast but was not certain that it was the present species.

On May 17, 1927, as Wetmore ascended the trail to El Río, at the summit of the steep mountain slope above the crossing of the Río Jimenoa below Jarabacoa one of these beautiful doves flew across the path directly in front of his mule. Another was seen at dusk directly above the settlement of El Río. The flight was swift and direct, and on the wing the neck appeared very short. On the morning of May 25, above Constanza, in heavy rain-forest where slender palms thrust their heads toward the light amid denser growth he heard a strange call, certainly a pigeon but one not familiar, that began as a low *hoot hoot hoot* repeated with great rapidity and audible for only a few yards and changed suddenly to a hollow, resonant *coo* that came to the ear in slow, throbbing beats often for the space of a minute, a sound that carried for a long distance through the dripping verdure. Creeping slowly through little openings between the trees, hampered always by the entangling strands of the climbing bamboo he finally looked down a steep slope into a space where for a few yards the ground was free of undergrowth beneath a little group of palms to obtain a brief glimpse of one of these quail-doves as it walked quickly aside into cover. A quick shot through the dense growth had no other effect than to place a load of shot pellets in the trunks of intervening trees, and half an hour later from the trail above he heard the strange, cadenced beat of the call from the same spot as before. On the following day very early in the morning the bird was again calling but took alarm before it was seen and a wait in a blind for an hour and a half gave no result. On May 27, another prolonged wait was fruitless, but on returning toward the trail a quail-dove that possibly had been watching the hunter flushed with a great rustling of wings, to alight twenty-five feet from the ground in a tree, where an instant later it was secured. It was truly a wonderful bird that well repaid the long tramps afoot over execrable trails in the faint light of

dawn, and the waits in the wet jungle growth. Another was heard calling this day and it was found that they were well known to the natives though reputed difficult to secure. The species was reported at El Río May 30.

The individual taken May 27, which after some deliberation was preserved in alcohol for subsequent dissection, had the tip of the bill pale brown; top of cere dusky; sides of cere and base of bill dull red; iris orange red; tarsus and toes light pinkish brown; claws dusky. Abbott noted the iris in a female from Hondo as blood red. E. L. Ekman under date of September 21, 1929 writes that he had collected this species recently on the summit of Loma Jayaco in the Cordillera de Neiba. He observed it in the Cordillera Central from 1000 to 1500 meters altitude. At La Vega Wetmore heard further talk of this quail-dove under the name *paloma del suelo*, a bird that local hunters supposed was a hybrid between the ordinary quail-dove or *perdiz* and a pigeon or *paloma*. Apparently the species now has a considerable distribution in the high mountains but will soon be restricted in range as the rain-forests that provide its home are cleared to provide lands for cultivation.

In Haiti this quail-dove is as yet not certainly reported though from Abbott's record in the Sierra de Bahoruco it may range in those mountains across the frontier. Bond writes that "the natives on the top of Morne La Selle told me that they occasionally encountered a gray quail-dove. It was said to be rare and to occur in the scrub on the ridge of the mountain."

Oreopeleia leucometopius is unquestionably of the same stock as *O. caniceps* of Cuba, differing in white instead of gray forehead, darker gray on head, more bluish back, greater extent of metallic purple on sides of breast, deeper russet of ventral region, restricted rufous on outer webs of primaries, and slightly shorter wing tip so that the emarginations of the outer primaries are slightly nearer the tip of the wing. Though the two birds are patently similar we agree with Doctor Chapman that the form of Hispaniola is specifically distinct. It will be recalled that Wetmore has described a quail-dove of this same type, in structural form at least, as *Oreopeleia larva* from bones found in cavern deposits of Porto Rico.

This quail-dove has the forehead pure white, head slate gray, back and sides of breast rich purple, becoming indigo on the rump, center of upper breast greenish, lower breast dull gray and abdomen and under tail coverts rufous. The female is somewhat duller than the male. In body the bird is as large as a Zenaida dove. The species is to be mistaken for no other found in Hispaniola.

Order PSITTACIFORMES

Family PSITTACIDAE

Subfamily PIONINAE

AMAZONA VENTRALIS (Müller)⁷⁰

HISPANIOLAN PARROT, COTORRA, PERRUCHE, JACQUOT

Psittacus ventralis MÜLLER, *Natursyst.*, Suppl., 1776, p. 79 ("Martinique"=Hispaniola).

Papagayo, OVIEDO, *Hist. Gen. Nat. Indias*, Libr. 14, Cap. 4; Reprint, Madrid, 1851, p. 443 (common).

Amazone à tête blanche, BUFFON, *Hist. Nat. Ois.*, vol. 6, 1779, p. 213 ("Saint-Domingue").—DESCOURTILZ, *Voy. Nat.*, vol. 2, 1809, pp. 201-202 (Haiti).

Amazone à tête jaune, DESCOURTILZ, *Voy. Nat.*, vol. 2, 1809, pp. 201-202 (Dominican Republic, error for *A. ventralis*).

Perruche, SAINT-MÉRY, *Descrip. Part. Franç. Île Saint-Domingue*, vol. 1, 1797, p. 262 (Dondon).

Parrot, JEFFERYS, *Nat. Civ. Hist. French Dom. North and South America*, pt. 2, 1760, pp. 12, 170 (method of capture).—SAINT-MÉRY, *Descrip. Span. Part Saint-Domingo*, vol. 1, 1798, p. 306 (numerous).—WIMPFEN, *Voy. Saint Domingo*, 1817, p. 188 (recorded).—BECK, *Nat. Hist.*, vol. 21, 1921, p. 41 (near Loma Tina).

Psittacus dominicensis, HARTLAUB, *Isis*, 1847, p. 609 (Hispaniola).—RITTER, *Naturh. Reis. Westind. Insel Hayti*, 1836, p. 155 (listed).

?*Psittacus ochrocephalus*, RITTER, *Naturh. Reis. Westind. Insel Hayti*, 1836, p. 155 (listed).

Chrysotis sallaei SCLATER, *Proc. Zool. Soc. London*, 1857, p. 224 (described as new from Dominican Republic).—SALLÉ, *Proc. Zool. Soc. London*, 1857, p. 234 (habits).—CORY, *Bull. Nuttall Ornith. Club*, 1881, p. 154 (Jérémie, specimen); *Birds Haiti and San Domingo*, Dec., 1884, pp. 115-116, col. sketch of head (Samaná, Magua, Jérémie, specimens).—TIPPENHAUER, *Die Insel Haiti*, 1892, pp. 318, 322 (listed).—CHRISTY, *Ibis*, 1897, p. 334 (Sánchez, common).

Psittacus Sallaei, BRYANT, *Proc. Boston Soc. Nat. Hist.*, vol. 11, May, 1867, p. 96 (Dominican Republic, Haiti).

Amazona sallaei, COBY, *Cat. West Indian Birds*, 1892, p. 101 (Haiti, Dominican Republic).—CHERRIE, *Field Columbian Mus., Ornith. ser.*, vol. 1, 1896, p. 22 (abundant).—CLARK, *Auk*, 1905, pp. 331, 344 (listed).—VERRILL, *Proc. Acad. Nat. Sci. Philadelphia*, 1909, p. 359 (common).

Chrysotis ventralis, HARTERT, *Nov. Zool.*, vol. 9, 1902, p. 293 (Sánchez).

Amazona ventralis, PETERS, *Bull. Mus. Comp. Zool.*, vol. 61, 1917, pp. 408-409 (Attoyo Savana, specimens).—KAEMPFFER, *Journ. für Ornith.*, 1924, p. 183 (Sánchez).—BEEBE, *Zool. Soc. Bull.*, vol. 30, 1927, pp. 140, 141; *Beneath Tropic Seas*, 1928, p. 221 (recorded).—BOND, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 80, 1928, p. 499 (La Selle, Chaîne des Mateux, Montagnes Noires, Massif du Nord, Gonave).—DANFORTH, *Auk*, 1929, p. 366 (generally distributed).—LÖNNBERG, *Fauna och Flora*, 1929, p. 102 (Haiti).—MOLTONI, *Att. Soc. Ital. Scienc. Nat.*, vol. 68, 1929, p. 315 (Bonao, specimens).

⁷⁰The Papegai à bandeau rouge, of Buffon, *Hist. Nat. Ois.*, vol. 6, 1779, pp. 241-242 ("Saint-Domingue"), and the Perroquet, de St. Domingue, of Daubenton, *Planch. Enl.*, no. 792, refer to *Amazona vittata* of Porto Rico.

Resident; common in many localities particularly in the interior.

The parrot is a common captive in Hispaniolan households where it often lives in a state of semi-freedom in houses, patios, and shade trees. It is docile when captured young, learns to speak words of human speech readily, and is exported in small number to nearby islands or to the United States. Though locally common in the settled lowlands it is reduced from its early abundance and is encountered in numbers at present only in the forests of the interior mountains. Where it is found it is a conspicuous member of the avifauna as though it feeds concealed among the leaves of trees it makes daily flights in screeching flocks above the forests.

The species has long been considered a game bird. Jefferys in 1760 related that the Indians were said to send a boy into a tree with a captive parrot on his head which he caused to scream. Wild birds attracted by this gathered about squalling excitedly and were noosed skilfully one by one and killed. Moreau de Saint-Méry says that parrots were numerous in his day and excellent for the table, but Baron Wimpffen in 1817 found them shy so that it was "almost impossible to get a shot." Sallé says they were good to eat and natives still consider them game.

Cherrie relates that he saw several flocks of parrots containing as many as five hundred birds, and that the birds were watchful so that they were approached with difficulty. Beck, near the base of Loma Tina, observed that they ate the seeds of ripe sour oranges. Wetmore found a flock near San Juan, May 1, 1927, but there are comparatively few modern records in the southern section of the Dominican Republic. Hartert observed this bird at Sánchez in 1892, and Christy records it in that section as found at every turn. He observed it nesting in holes in the palm trees. Abbott records a nest at Laguna on the Samaná Peninsula, that on March 5, 1919, contained two young covered with pin feathers. The nest was in a hollow about nine inches in diameter in a half dead vervain tree that stood in a clearing a hundred yards from a house and the same distance from woodland. The trunk of this tree was hollow for most of its length with the lower part filled with wet debris. The entrance hole was twenty-seven feet above the ground. On May 28, 1919 his boy, John King, secured an addled egg from a hollow in a palm twenty feet from the ground. This egg is white, stained to a dull color by age. It measures approximately 35.7 mm. long (one end being damaged) by 27.6 mm. wide. Kaempfer recorded parrots as breeding in the lowlands in April. He says that they are destructive to maize and the cultivated legume called gonduro, a complaint made almost universally of Amazon parrots throughout the range of the genus. Cory secured skins at Samaná March 23,

and June 1, 1883, and at Magua January 29 of the same year. Peters took specimens at Arroyo Savana and found the species common east of the Río San Juan and inland from Cabrera. Ridgway has listed specimens from Caña Honda, Sabana la Mar, La Cañita, and Almercen (Rivas) in addition to the localities that have been mentioned. Abbott forwarded skins from several points on the Samaná peninsula, including two from the north shore near San Juan Bay August 17, 1916, La Galera, August 26 and Rojo Cabo, August 30. He collected one at an altitude of 1500 metres near Constanza September 22, 1916, and another at the same point April 29, 1919. There are two in the Academy of Natural Sciences that he took at Sabana la Mar June 25, 1883.

Wetmore observed parrots at Villa Altagracia May 4, 1927, when a flock of a dozen passed. Near Sánchez they were observed in the mouth of the Arroyo Barrancota, May 8, along the lower Yuna May 10, and near the village May 14. In the interior they were more abundant being observed at El Río May 18, 29 and 30, and near Constanza in numbers from May 18 to 29. They passed across the sky regularly in early morning and late afternoon traveling high in the air. Their flight though not of great velocity is remarkably ducklike as it is performed with short, quick wing strokes. When flying low over the trees they frequently sail for short distances with set wings. Loud, screeching calls almost invariably announce the coming of a flock, a sound that amid the forests clothing the great ridges or in the broad open valleys was not so disagreeable to the ear as when the birds are confined within a building. At times they alighted in dead trees where they crawled and squalled in usual parrot fashion. It was always a matter of astonishment to have a number fly into the branches of a fairly open deciduous tree and there seem to disappear entirely so closely did the green of the plumage blend with the leaf color amid which they rested. When assured that there was no danger threatening they began then to call in low tones and to crawl about through the limbs.

A female taken May 27 at Constanza had the bill pale brownish white, tinged with slate on the sides and with yellow at the base; cere pale brownish white; bare skin about eye dull yellowish white; iris bone brown; tarsus and toes dull grayish white; claws dusky. In 1927 Danforth found parrots especially common in the wooded hills near Bonao where he collected specimens August 7. Others were recorded between Azua and San Juan, between Navarreté and Monte Cristi, and near Seibo and Comendador. Ciferri sent specimens to Moltoni shot near Bonao February 6, 1927.

In Haiti the parrot though fairly common seems less abundantly distributed than in the Dominican Republic, though here again many are seen in captivity. Saint-Méry in 1797 reported them from Dondon. Bryant in the middle of the nineteenth century while on Great Inagua Island in the Bahamas saw a number of these parrots brought in captivity from Haiti. Cory in 1881 reported the species as abundant on the coast in summer and procured one specimen at Jérémie. During Abbott's investigation he recorded parrots as generally distributed but not particularly common except on Grande Cayemite Island where in January, 1918, they abounded (specimen taken January 6). He shot one at Jérémie December 26, 1917, and one at Furcy June 1, 1920. Two were taken at Moustique, at elevations of 600 and 900 meters on March 3 and 4, 1917. G. S. Miller, jr., collected three (two preserved as skeletons) near St. Michel, March 12, 1925. Wetmore found parrots in numbers on the high ridge of La Selle from April 9 to 15, 1927, where they were observed feeding about the plantations of the Jardins Bois Pin or in flight above the pine forests in morning and evening. In traveling long distances the flocks though maintaining coherence were divided clearly into pairs or groups of three that flew closely, the third individual probably being a young bird still accompanying its parents. Above Hinche a few were seen near the Bassin Zime April 24, and at Caracol on April 26 and 27, flocks were seen in morning and evening flight. Danforth found them in 1927 between St. Marc and Gonaïves. Bond records them from La Selle, Chaîne des Mateux, Montaignes Noires, and Massif du Nord, and Poole and Perrygo recorded them at St. Michel December 21 and 23, 1928, and Grand Rivière January 21, 1929.

On Gonave Island Abbott observed a few parrots high up on the hillsides from February 18 to 28, 1918, but found none there in 1920. He did not see them on Tortue Island. Bond says that parrots are fairly common on the higher parts of Gonave Island, and Perrygo saw a pair at En Café March 9 and four March 10. The birds were very wild so that none were taken.

The series in the United States National Museum has the following measurements:

Males, 12 specimens, wing 178.5–192.0 (186.4), tail 91.4–107.3 (98.8), culmen from cere 24.3–28.5 (26.0), tarsus 18.7–21.9 (20.5) mm.

Females, 5 specimens, wing 171.0–185.0 (181.1), tail 93.0–103.9 (98.2), culmen from cere 24.2–26.1 (25.2), tarsus 20.2–22.8 (21.6) mm.

The parrot is clear green in general coloration with blue on the crown and sides of the head, and on the wings, white on the forehead and in front of the eye, and more or less red on the abdomen.

Subfamily ARINAE

[MACAW

Macaw, ROTHSCHILD, Bull. Brit. Orn. Club, vol. 16, Nov. 1, 1905, pp. 14-15 (Hispaniola); Extinct Birds, 1907, p. 52 (Hispaniola).

Ara rouge, BUFFON, Hist. Nat. Ois., vol. 6, 1779, p. 183 (reported).

Ara tricolor, CLARK, Auk, 1905, pp. 337, 348 (listed from Haiti).

Macaws are reported in early days from Cuba and Jamaica but the only note that refers to them in Hispaniola is that of Buffon who in the Histoire Naturelle des Oiseaux, (vol. 6, 1779, p. 183) says under l'Ara rouge "en général, les aras étoient autrefois très-communs à Saint-Domingue. Je vois par une lettre de M. le chevalier Deshayes, que depuis que les établissemens françois ont été poussés jusque sur le sommet des montagnes, ces oiseaux y sont moins fréquens." A. H. Clark, in Auk, 1905, p. 348, cites this but through a *lapsus calami* refers it to Brisson, and considers that the Haitian bird may have been *Ara tricolor*.

According to Moreau de Saint-Méry,⁷⁷ Deshayes, born in 1732, resided on an estate called Tivoly located a quarter of a mile from the sea in the canton of Plymouth, parish of Jérémie. Though a student of general natural history he preferred birds to all other subjects.

Lord Rothschild writes⁷⁸: "I may also mention that a small Macaw, also supposed to have been *A. tricolor*, was found on Hayti. This, in my opinion, must have been a third species, but we have no definite description of it." And in another place⁷⁹ says: "There was a third member of the *tricolor* group of Macaws found on the large island of Haiti, which Mr. Clark has also united under *A. tricolor*, but I believe it must have been different, just as the Jamaica bird."

The record as it stands above is indefinite and uncertain and until other evidence is offered the macaw can not be accepted in this list.]

ARATINGA CHLOROPTERA CHLOROPTERA (Souancé)

HISPANIOLAN PAROQUET, PERICO, PERRICHE, PERRUCHE

Psittacara chloroptera SOUANCÉ, Rev. Mag. Zool., 1856, p. 59 ("Saint-Domingue").

Papagayo, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 4; Reprint, Madrid, 1851, p. 443 (common).

Sincialo, BUFFON, Hist. Nat. Ois., vol. 6, 1779, pp. 265-268 (part; "Saint-Domingue").

⁷⁷ Descrip. Part, Franc, Isle Saint-Domingue, vol. 2, 1798, pp. 814-815.

⁷⁸ Bull. Brit. Ornith. Club, vol. 16, 1905, pp. 14-15.

⁷⁹ Extinct Birds, 1907, p. 52.

Peroquet, OEXMELIN, Hist. Avent. Flibustiers, vol. 1, 1775, pp. 355-356, (common).—SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, pp. 262, 717 (Dondon, Port-de-Paix).

Papegai à bandeau rouge, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 201-202 (recorded).

Paroquet, BECK, Nat. Hist., vol. 21, 1921, pp. 41, 46 (Túbano).

?*Psittacus rufrostris*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (listed).

Psittacus guyanensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 151, 155 (specimen).

Psittacus chloropterus, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May 1867, p. 96 (Dominican Republic).

Conurus guyanensis, HARTLAUB, Isis, 1847, p. 610 (Hispaniola).

Conurus euops, TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic).

Conurus chloropterus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (Dominican Republic).—CORY, Birds Haiti and San Domingo, December, 1884, pp. 113-114, col. pl. (descriptions, habits); Cat. West Indian Birds, 1892, p. 101 (Dominican Republic); Auk, 1895, p. 279 (listed).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 272 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 121 (not common, specimens).—CHRISTY, Ibis, 1897, p. 334 (Yuna).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (El Valle, Matanzas).

Aratinga chloroptera, LÖNNBERG, Fauna och Flora, 1929, p. 102 (Haiti).

Aratinga chloroptera chloroptera, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (recorded).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 499 (Port-au-Prince, La Selle, Ennery, Massif du Nord, St. Michel).—DANFORTH, Auk, 1929, pp. 366-367 (abundant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (San Juan, specimens).

Resident; common in the high mountains of the interior, locally distributed elsewhere.

In the early history of Hispaniola paroquets were found in numbers. Oviedo speaks of them as common and says that the Indians called them *waxabes*. Oexmelin reported them in flocks and writes that they nested in old woodpecker holes or other cavities in trees, laying three or five eggs, or rarely seven. He supposed that they deposited eggs always in odd numbers. In the nineteenth century paroquets seem to have become rare in the coastal region and lower hills, as Sallé secured only one specimen and saw few others. Cherrie reported few and secured only four. Natives reported the species to him as abundant at certain seasons which probably indicates that flocks descended at times from the interior mountains. Christy in 1895 observed several small flocks in the Yuna swamps. Verrill considered them rare and found them only at El Valle and Matanzas. Cory secured a number at Samaná March 12, April 3, 7, 9 and 18, and September 3, 1883, three of these skins being now in the United States National Museum. Beck collected a series on Loma Tina and at Túbano, in December, 1916 and January 1, 1917. Abbott

found paroquets in small flocks in the high interior near Constanza, securing two specimens there on April 26, and four on May 11, 1919, and one near El Río on May 19 of the same year. On March 1, 1922, he shot one at an elevation of 600 meters in the Sierra de Bahoruco near Polo. Near Sánchez in 1883 he found the paroquet common. He was told that fifty years previous paroquets had come in great flocks so that it was necessary to guard the fields of maize against their depredations. Hundreds were shot in driving them out. In 1919 he saw none at all on the Samaná peninsula, and in that vicinity heard of them only at Matanzas and near Cabo Francés Viejo. With prohibition against firearms the birds seem to be again on the increase since Wetmore found several flocks May 10, 1927, along the lower Yuna. He recorded several bands near Comendador April 30, and found them near Constanza May 18 and 21, collecting two on the date last mentioned. These two were shot on the wing at one discharge from a passing flock, divided as usual into couples that flew near together, and proved to be male and female, indication that these segregations within the flock are pairs as is always supposed.

Danforth writes that in 1927 the paroquet was abundant through the region between San Juan, Dominican Republic, and Mirebalais so that thousands were seen in small flocks daily. At San Juan there was a roost somewhere to the west as flocks were observed traveling to and from it night and morning. The birds were feeding on the fruit of a wild fig, and were tame and unsuspecting so that they were not alarmed even when some of them were shot. Nine taken were not in breeding condition. He observed this species elsewhere at Laguna del Salodillo, near Copey, June 26, Hato Major July 7, Vásquez August 6, and Bonao August 7. Ciferri obtained it at San Juan, February 5 and May 30, 1928, and July 4, 1929.

In Haiti the paroquet has been reported more rarely. Saint-Méry speaks of it near Dondon and Port-de-Paix. Abbott collected three at the Étang Saumâtre April 8, 1920, and others on the slopes above Fonds Verettes May 1, and near Fond Parisien May 6 and 8. Bartsch observed one in the Cul-de-Sac region April 24, 1917, and Beebe records a few flocks in the interior. Wetmore found them numerous on the summit of La Selle April 9 to 15, 1927, and secured two specimens April 13. Squalling flocks passed over the pines at intervals but the birds were wary and seldom permitted near approach. Many were seen about the little plantations of the Jardins Bois Pin. The flight of the paroquet is swift and direct and the long slender tail makes an excellent field mark. One morning at sunrise two alighted in the top of a dead tree near camp and when collected proved to be male and female. G. S. Miller, jr.,

secured one near St. Michel March 18, 1925. Wetmore found a few along the Ravine Papaye near Hinche April 20 and 23, and at the Bassin Zime April 25. A few were observed near Maissade April 21. At Poste Charbert near Caracol, flocks were seen in evening flight on April 26 and 27. Danforth saw a few at Pétionville July 23, 1927.

Bond recorded the paroquet at Port-au-Prince, on La Selle, the Massif du Nord, and at Ennery and St. Michel. He reports a nest on Morne Salnave placed in a hole in a dead pine "at least 80 feet above the ground." Poole and Perrygo found paroquets common at St. Michel December 21, 1928, and on December 31, collected one at L'Atalaye. Another was taken at St. Raphael January 13, 1929, and others were seen at Grand Rivière January 21, and Hinche March 17. At Cerca-la-Source four were taken March 21 and 23.

The calls of this paroquet are higher pitched than those of the native parrot so that the two are easily distinguished at a distance when they may not be seen. As the paroquet raises the wings to take flight the flash of red from the under wing coverts is very pleasing. A few of these birds were seen in captivity with one wing clipped to prevent their flying but they did not seem such favorites as cage birds as the parrots. The Haitian name *perriche* is a creole rendition of the French *perruche*.

In studying the series of skins of this bird from Hispaniola it has been necessary to again consider the status of *Aratinga chloroptera maugei* on the basis of the single specimen from Mona Island in the Field Museum, which has been available for comparison through the kindness of Dr. C. E. Hellmayr. The green in this bird is faintly duller on the underparts and the bill is slightly larger than the average. The greatest peculiarity is found in the extensive red on the under primary coverts, this color pervading all of these coverts except two on one side. In an extended series of *chloroptera* from Hispaniola proper, including those in the Field Museum, United States National Museum, Academy of Natural Sciences, Tring and the American Museum there are some birds that have a few of the under primary coverts red but not one approaches the bird from Mona in that respect. The bird from Mona, which is a female, has the following measurements; wing 162.0, tail 159.5, culmen 26.6 and tarsus 17.8 mm. It, therefore, averages slightly smaller than skins from Hispaniola. It may be noted here that the right wing has the tips of the two longest primaries slightly broken so that this wing measures only 157.5 mm., which will account for this wing length given by Wetmore in his Birds of Porto Rico and the Virgin Islands,⁸⁰ as in earlier

⁸⁰ New York Acad. Sci., Sci. Surv. Porto Rico and Virgin Islands, vol. 9, 1927, p. 417.

examination this wing was measured without noticing the slight break indicated.

Following are measurements from the Hispaniolan series; 10 males, wing 169.4–178.5 (171.6), tail 129.0–155.6 (147.7), culmen from cere 22.8–28.3 (25.7), tarsus 15.2–18.3 (16.9) mm.

Eleven females, wing 162.5–170.0 (166.8), tail 131.5–156.5 (147.1), culmen from cere 23.3–25.9 (24.5), tarsus 15.3–18.7 (16.9) mm.

The paroquet is entirely green except for more or less mixture of red on the under wing coverts that some times shows on the edge of the wing. The long, graduated, pointed tail serves to distinguish it readily from the square tailed parrot.

Order CUCULIFORMES

Suborder CUCULI

Family CUCULIDAE

Subfamily CUCULINAE

COCYZUS AMERICANUS AMERICANUS (Linnaeus)

YELLOW-BILLED CUCKOO, PÁJARO BOBO

Cuculus americanus LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 111 (Carolina).

Cuculus Dominicensis BRISSON, Ornith., vol. 4, 1760, pp. 110–112, pl. 9, fig. 2 ("S. Domingue").

Coccyzus americanus, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 19 (Dominican Republic, specimens).—EKMAN, Ark. för Bot., vol. 22 A, No. 16, p. 7, 1929 (Navassa).

Coccyzus americanus americanus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Port-au-Prince).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 499–500 (listed).—DANFORTH, Auk, 1929, p. 367 (apparently breeding).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (San Juan, specimens).

Fairly common; apparently breeding.

Brisson describes and figures the yellow-billed cuckoo from a specimen sent by Chervain to de Reaumur. Cherrie relates that at the beginning of May, 1895, at Santo Domingo City this species suddenly appeared in numbers so that on May 2, 3, and 4 he collected five pairs. One female secured held an egg in the oviduct that would have been deposited within two days. Beck collected one at Sánchez November 22, 1916, and one at Santo Domingo City May 28, 1917. Hartert informs us that four specimens in the Tring Museum collected by Kaempfer were secured near Túbano, in the Province of Azua, from August 9 to 19, 1923. They were found

from 400 to 700 meters altitude. Danforth recorded them at Monte Christi June 22, Dajabón June 23 (specimen), Laguna del Salodillo June 26, Santo Domingo City July 1, Vásquez August 6, and Bonao August 7. Ciferri sent specimens to Moltoni taken at San Juan July 5 and 6, 1929.

In Haiti Abbott collected a female at Port-de-Paix June 13, 1917, and four males and one female at Picmy, Gonave Island July 5 and 6 of that year. All of these are adult birds. Beebe reports one in a garden at Port-au-Prince without giving the date. Danforth records six taken on Gonave July 15 to 19, 1927, one of which, in the Academy of Natural Sciences, was taken at Anse à Galets July 15. Danforth found them also at the sloughs near the mouth of the Artibonite July 29. He reports that three birds taken on Gonave had the stomachs filled with noctuid caterpillars, with an elaterid beetle in one. From present somewhat meager evidence it appears that the yellow-billed cuckoo nests in Hispaniola, while from Cherrie's experience at Santo Domingo City where the species appeared suddenly in numbers at the opening of May it would seem that it may be a migrant found mainly in summer. Known dates of its occurrence at present range from May 2 to November 22. The bird is found in dense shrubbery and trees where it moves slowly and leisurely occasionally uttering a loud, slowly cadenced, rattling call. The specimens taken at 700 meters near Túbano may mark the upward limit of range in the interior hills.

E. L. Ekman found the yellow-billed cuckoo on Navassa Island in October, 1928.

We have compared the series of six secured by Abbott with specimens from eastern North America and find that they are apparently identical in color. These specimens have the following range of measurement (in millimeters):

Four males, wing 134.8-143.1 (138.1), tail 134.0-136.7 (135.7), culmen from base 24.2-25.0 (24.6), tarsus 25.7-26.8 (26.2).

Two females, wing 135.6-146.9 (141.2), tail 133.1-149.8 (141.4), culmen from base 24.2-25.0 (24.6), tarsus 25.7-26.8 (26.2).

Though the average is slightly less than that for extensive series from eastern North America many northern birds are no larger than those from Haiti so that the apparent difference would probably disappear with more specimens. We consider the Hispaniolan birds to be *C. a. americanus*.

The yellow-billed cuckoo, while from 275 to 308 mm. long, is very slender. It is white below and grayish brown above, with a chestnut wash on the primaries, and a black tail with the outer feathers broadly tipped with white.

COCCYZUS MINOR TERES Peters

MANGROVE CUCKOO, PÁJARO BOBO, TACOT

Coccyzus minor teres PETERS, Proc. New England Zoöl. Club, vol. 9, June 24, 1927, p. 112 (Sosúa, Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 500 (recorded).—DANFORTH, Auk, 1929, p. 367 (specimens).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).

Cuculus seniculus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti, specimen).

Coccygus minor, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, specimens); Birds Haiti and San Domingo, July, 1884, pp. 101–102 (La Vega, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).

Coccygus dominicus?, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).

Coccyzus seniculus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (listed).

Coccyzus dominicus, HARTLAUB, Isis, 1847, p. 609 (listed); Naumannia, 1852, p. 53 (Haiti).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (listed).

Coccyzus minor, CORY, Cat. West Indian Birds, 1892, p. 102 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. Ser., vol. 1, 1896, p. 19 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (San Lorenzo, El Valle, La Vega).

Coccyzus minor nesiotus, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 7, 1916, p. 27 (Port-au-Prince, Le Coup, San Cristobal, Catarrey, Puerto Plata, Samaná, Caña Honda, La Cañita, San Lorenzo, El Valle, La Vega).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 409–410 (Monte Cristi, Sosúa).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 315 (Bonaò, specimen).

Coccyzus minor maynardi, CORY, Cat. West Indian Birds, 1892, p. 102 (Haiti, Dominican Republic).

Resident; fairly common in some localities.

Though known as the mangrove cuckoo the present species frequents tangled growth of all kinds from the thorny cactus grown scrubs of semi-arid sections to the dense lowland jungles of the areas with abundant precipitation. It moves about rather slowly, peering out among the leaves as it searches for its insect food, largely caterpillars, and when not seen frequently announces its presence by loud, rolling, sharply syllabled calls. It is local in occurrence and may be absent over wide areas. There is considerable variation in depth of color in specimens from Hispaniola which has caused some naturalists to suppose that two forms were found on the island. There is no indication of this, however, and recently Mr. Peters has recognized a distinct form from Hispaniola and Porto Rico in which we concur.

Seven males from Haiti and the Dominican Republic in the United States National Museum have the following measurements (in millimeters): wing 120.4 to 127.4 (125.1), tail 151.0 to 162.5 (154.8), culmen from base 26.1 to 29.9 (27.6), tarsus 26.9 to 28.0 (27.2).

Six females measure as follows: 126.0–131.9 (128.1), tail, 140.0–161.0 (151.9), culmen from base 27.3–28.9 (27.7), tarsus 27.0–28.8 (27.9).

In the Dominican Republic Cherrie reported a few from the lowlands (Catarrey, San Cristobal) in the southern part of the country and did not find the species above 100 meters altitude. Abbott secured a pair at Trujín on February 8 and 10, 1922, two at Villa Rivas January 15 and 17, a female, near the breeding season, at Pimentel January 23, 1921 and one at Laguna on the Samaná Peninsula March 7, 1919. Verrill reported them as abundant in some localities but entirely absent in others. He records them in his paper from San Lorenzo, El Valle and La Vega but says that he saw none at Sánchez. Specimens that he secured, now in the collection of J. H. Fleming of Toronto, include three from Caña Honda January 6, 10 and 12, two from Samaná, January 31 and February 19, and three from La Vega March 11, 13 and 14, 1907. Cory lists two from La Vega July 24 and August 7, 1883, these being the only summer specimens at present on record. Peters found them common in the desert region at Monte Cristi, and in the more luxuriant tangles near Sosúa, securing eighteen skins. Beck secured specimens at Santo Domingo City September 27, and October 2, 17 and 19 and November 29, 1916. Abbott reports this bird as common on Saona Island September 12 to 18, 1919 but did not collect specimens.

In 1927 Danforth collected a breeding male at Seibo July 4 and observed another individual carrying nesting material on the following day. He took one at Vásquez June 25 and saw others at Monte Cristi June 18 to 27 and Bonao August 7. Ciferri secured one at Bonao September 5, 1927.

In Haiti Württemberg, according to Hartlaub, found this species very common. A. E. Younglove sent two, taken at Port-au-Prince February 28 and April 13, 1866 to the Smithsonian Institution, which are still in the collections of the United States National Museum. Bartsch recorded the species near Gloré April 3, and at Trou Caïman April 4, 1917. Abbott secured skins at Port-de-Paix April 14, and Cap-Haïtien April 27, 1927. He collected a female at Anse à Galets on Gonave Island March 5, 1920. Wetmore secured one near Caracol on April 27, 1927, the only one observed during the entire course of his work on the island. Danforth records them in 1927 from the Citadelle Hill above Milot August 2, and collected one at the Étang Miragoane July 22. Others were taken on Gonave Island during the middle of July. Bond says that he did not see this bird until after February 20, 1928, but that after that he recorded it frequently. He reports it from the Morne La Hotte and

the Massif de la Selle, and from Port-de-Paix, Cap-Haïtien, Gonave and Tortue Islands. There are three specimens in his collection in the Philadelphia Academy of Natural Sciences, one from Miragoane February 20, and two from Tortue Island March 17 and 18, 1928. One was taken at Anse à Galets, Gonave Island, July 19, 1927, by John T. Emlen, jr. Poole and Perrygo in 1929 found this cuckoo at L'Atalaye January 5, Fort Liberté February 6, 7, 10, 12, and 19, and St. Marc February 25.

The present species is from 300 to 325 mm. in length with slender form and long, narrow tail. Above it is grayish brown with a blackish line through the eye, and below it is deep buff, grayish on the breast, the buff color becoming deeper on the under tail coverts. The under side of the tail is black with the feathers tipped broadly with white. The bill is black except for the base of the lower mandible, which is yellow as in the yellow-billed cuckoo.

HYETORNIS RUFIGULARIS (Hartlaub)

HISPANIOLAN HYETORNIS, BOBO, MANTERO, TACOT, TACOT CABRI

Coccyzus rufigularis "Herz. v. Württemb." HARTLAUB, Naumannia, 1852, p. 55 (Mountain forests of Dominican Republic).

Piaya Pauli guilchmi HARTLAUB, Naumannia, 1852, p. 55 (substitute name for *Coccyzus rufigularis*).

Hyetornis fieldi CORY, Auk, 1895, p. 278 (Described as new; type locality "Maniel"—San José de Ocoa, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 19–20 (Honduras, San José de Ocoa, specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (between Miranda and La Vega).

Hyetornis rufigularis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 500 (Gonave Island).—DANFORTH, Auk, 1929, p. 368 (Gonave Island).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti).

Resident; local in distribution.

In view of the large size of this cuckoo, larger even than the lizard-cuckoo, the little known regarding it at present is surprising. It was first recorded by Württemberg who secured it in 1829 "in den gebirgigen Urwäldern des Spanischen S. Domingo." His description of it however was overlooked so that when Cherrie in 1895 secured three at Honduras and two at San José de Ocoa Cory described them as new under the name *Hyetornis fieldi*. Cherrie reports that he learned comparatively little of the habits of this bird since it progressed so rapidly through the forest, running quickly along the limbs of the trees and flying across to new points of vantage, that it was necessary to move rapidly to keep it in sight. He likened the note to the hoarse croaking of a frog. Like other cuckoos of the Dominican Republic he said that the flesh of this bird was esteemed as a delicacy for the sick. Verrill met with the species only once between Miranda and La Vega. Beck collected an extensive series

at Túbano December 30, 1916 and February 4 to 20, 1917, and one on Loma Tina January 8, 1917. Abbott secured specimens near Constanza April 9 and 30, and May 1, and near Hondo at an altitude of 900 meters May 4, 1919. On April 28 he speaks of them as common at Corralito near Constanza, and says that they were common elsewhere in that region. He found them breeding in May, and on May 9 near Hondo, killed a female that contained an egg ready to lay. The one taken April 30 had the stomach filled with locusts, mantids, pentatomids, and the remains of lizards. Hartert writes that there are seven skins in the Tring Museum collected by Kaempfer, an adult male from Constanza taken July 31, and two males and four females secured near Túbano at from 300 to 500 meters altitude between August 9 and 23, 1923.

In Haiti Abbott secured three near Moustique at from 750 to 900 meters altitude March 9 and 12, 1917. He saw them nowhere else on the mainland but secured five on Gonave Island on February 20, 23, 25, and 26, 1918, and four more at Anse à Galets, March 11, and Étroites March 16 and 21, 1920. They were not especially shy but inhabited dense jungle where they were not easily seen except when called out into view. Most of them were found on densely wooded hillsides at 300 meters altitude. The stomach of one taken March 21, 1920 contained the remains of mice.

Abbott records the bill as blackish above and lead colored at the base of the mandible, and the tarsus as lead colored. This agrees with the statement of Cherrie who writes "maxilla and point of mandible is black; eye dusky; feet, legs and basal part of mandible plumbeous." Danforth records one collected by F. P. Mathews in the hills above Anse à Galets, Gonave Island, July 19, 1927 and says that the stomach contains lizard remains and a few bits of Coleoptera. Bond writes "not uncommon on Gonave Island. I did not observe it elsewhere. The notes of this cuckoo resemble the bleating of a rather large lamb from which it has derived its name of Tacot cabri. It also emits at times a very strange though more cuckoo-like *ú-wack-ú-wack-u-wack-u-wáck-wáck-wáck-wáck*. Its flight is heavier, more labored, than that of *Saurothera*."

In view of the differences that exist between the lizard-cuckoos of Gonave Island and those of Hispaniola proper it is somewhat surprising that the *Hyetornis* from these two localities appear identical. In the present species the female is slightly larger than the male. Following are comparative measurements of birds from Hispaniola proper and Gonave Island:

Haiti and the Dominican Republic:

Males, four specimens, wing, 160.0-175.0 (167.1), tail 251.0-266.0 (258.3), culmen from base 35.0-36.2 (35.6), tarsus 37.0-40.4 (38.5) mm.

Females, four specimens, wing 181.0–184.5 (183.1), tail 270.0–285.0 (277.8), culmen from base 40.5–45.9 (43.8), tarsus 43.0–45.0 (44.3) mm.

Gonave Island:

Males, four specimens, wing 163.0–173.0 (168.0), tail 246.0–269.0 (254.3), culmen from base 37.1–42.1 (38.8), tarsus 38.7–45.3 (41.3) mm.

Females, five specimens, wing 180.0–185.0 (183.0), tail 270.0–280.0 (274.8), culmen from base 42.2–44.2 (43.2), tarsus 42.5–46.0 (44.6) mm.

The present species measures from 430 to 525 mm. in total length, nearly two-thirds of this being given to the long tail. The upper surface is grayish brown except for the end of the tail which is black, tipped with white and a wash of chestnut on the wing. The breast, throat and sides are chestnut, the abdomen cinnamon-buff, and the under surface of the tail black, the individual feathers tipped widely with white. The bill is strongly decurved with minute serrulations along the cutting edges.

SAUROTHERA LONGIROSTRIS LONGIROSTRIS (Hermann)

HISPANIOLAN LIZARD-CUCKOO, PÁJARO BOBO, TACOT

Cuculus longirostris HERMANN, Tab. Affin. Anim., 1783, p. 186 (Hispaniola). Tacco, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 6, 1779, pp. 402–407 (part; habits).

Cuculus Jamaicensis longiroster BRISSON, Ornith., vol. 4, 1760, pp. 116–118, pl. 17, fig. 2 (“S. Domingue”).

Cuculus vetula, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti, specimen).

Saurothera vetula, HARTLAUB, Isis, 1847, p. 609 (listed).

Saurothera Vicilloti, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (Dominican Republic).

Saurothera vieillotii?, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic).

Saurothera domingensis “Herz. v. Württemberg” HARTLAUB, Naumannia, 1852, p. 55 (Dominican Republic).

Saurothera dominigencis, CIFERRI, Segund. Inf. An. Est. Agr. Moca, 1927, p. 6 (listed).

Saurothera Dominicensis LAFRESNAYE, Rev. Zool., vol. 10, November, 1847, p. 355. (Based on *Cuculus Jamaicensis longiroster* Brisson, from “S. Domingue.”)

Saurothera dominicensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154, (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 98–99, col. pl. of head (Pétionville, Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 102 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 272 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 19 (Dominican Republic, abun-



THE HISPANIOLAN LIZARD-CUCKOO (*SAUROTHERA LONGIROSTRIS LONGIROSTRIS*)

dant).—CHRISTY, Ibis, 1897, p. 331 (Dominican Republic).—FORBES and ROBINSON, Bull. Liverpool Mus., vol. 1, August, 1897, p. 42 (Las Cañitas, specimens).—VERBELL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 409 (Monte Cristi, Bulla, Sosúa, Chocó, specimens).—BARTSCH, Smithsonian Misc. Colls., vol. 68, no. 12, 1918, fig. 56 (photo).—KAEMPFER, Journ. für Ornith., 1924, p. 181 (nest, habits).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, pp. 140, 141; Beneath Tropic Seas, 1928, pp. 51, 52, 221 (food).

Saurothera longirostris, STRESEMANN, Nov. Zool., vol. 27, 1920, p. 330 (change of name).—LÖNNBERG, Fauna och Flora, 1929, p. 101 (Haiti, Tortue).

Saurothera longirostris longirostris, RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, pp. 105, 106 (mentioned).—BOND, Proc. Acad. Nat. Sci., vol. 80, 1928, p. 500 (Haiti, Tortue).—DANFORTH, Auk, 1929, p. 367 (common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, p. 316 (Haina, San Juan, Bonaó, specimens).

Resident, common.

The lizard-cuckoo is one of the common birds of the island, distributed everywhere that there is shrubbery or forest to afford it cover. (Pl. 17.) It occurs close about the towns, coming into the outskirts of Port-au-Prince, and is seen at times in gardens. In the country districts the birds appear everywhere, in Haiti even in scant stands of bushes on barren mountain slopes. They move in a leisurely manner, walking with long strides along the tree-limbs, often crouching and proceeding stealthily in search of their insect or lizard prey, or creeping and crawling like great rats along dense branches near the ground. Frequently they rest quietly at one point for several minutes. In early morning particularly they delight in sitting in the rays of the sun with feathers fluffed out loosely to absorb the warmth. Their call, a rattling, grating note, repeated several times, is given frequently. In addition they have low calls that may be rendered as *tchk*, a clicking sound, and *tick cwuh-h-h* in a lower tone. Though preferring to progress among limbs, when flight is necessary it is performed with rapid beats of the relatively small, rounded wings, and ends in a sail with spread pinions that carries the bird to the desired perch. The whole reminds one of descriptions of the supposed method of flight of the archeopteryx, the most ancient of known fossil birds.

Lizard-cuckoos are inquisitive and fearless and may be decoyed easily to approach within a few feet. Their food is made up largely of orthoptera and lizards, and it is common to see one with the limp body of a lizard dangling from its bill. Abbott reports a mantis in the stomach of one and orthoptera in three that he examined. In the Dominican Republic the flesh of the pájaro bobo is given to invalids to produce appetite, and is highly prized among the country people as a cure for indigestion.

The species has seemingly always been abundant. Cherrie reports that he collected 80 specimens, representing all of the localities where

he worked. Christy found large green orthoptera in the stomach of two that he skinned. J. H. Fleming has a considerable series collected by Verrill at Caña Honda, El Valle, Sánchez, near Samaná, and at La Vega. Kaempfer describes a nest found near Jarabacoa as a flat, poorly made structure composed of a few leaves placed on the stump of a tree 50 cm. from the ground. He reports orthoptera and a snake 42 cm. long in the stomachs of specimens collected. Abbott secured specimens at Laguna on the Samaná Peninsula, near Jarabacoa, and in the vicinity of Constanza. Wetmore observed a number at Constanza, and near El Río, so that the species seems to range from the sea coast through the interior over the high mountains. Abbott reports one shot but not preserved on Saona Island September 12 to 18, 1919.

Danforth collected a young bird barely able to fly near Monte Cristi June 22, 1927. In the stomach of one bird he found two cockroach nymphs and two cicadas (*Odopoea cincta*), and in another two large cicadas, a small grasshopper, and a lizard of the genus *Anolis*. Ciferri sent specimens to Moltoni from Haina, Bonao, and the Sabana San Thomé near San Juan.

In Haiti, as has been said, the bird occurs wherever there is cover. In 1866 A. E. Younglove found it common as he forwarded eight from Port-au-Prince and Jérémie to the Smithsonian Institution. Abbott secured one near Furey, and Wetmore saw numbers on the summit of La Selle. The bird extends through the Cul-de-Sac plain and the great central plain, and is common in the north. Abbott found it common on Tortue Island where he collected three specimens. Beebe brought living specimens to New York for exhibit in the Zoological Park.

A male collected by Wetmore at Fonds-des-Nègres April 2, 1927, had the maxilla and tip of mandible dull black; rest of mandible pale neutral gray; center of lower eyelid neutral gray; rest of bare skin about eye clear red; tarsus and toes neutral gray; under sides of toes yellowish.

Following is the occurrence of this species as recorded by Wetmore in 1927:

Dominican Republic: Comendador, April 30; San Juan May 1; Sánchez May 6 to 13; La Vega to El Río May 17; Constanza May 18 to 27.

Haiti; Port-au-Prince, March 29; Fonds-des-Nègres March 31 to April 4; Aquin, April 3; La Tremblay, April 7; Rivière Jaquisy April 8 and 9; Massif de la Selle, April 9 to 15; Chapelle Faure, April 17; Morne à Cabrits, April 20; Las Cahobes, April 20; Hinche, April 20 to 24; Maissade, April 21; Caracol, April 26.

Abbott collected specimens at Jérémie and Rivière Bar, in addition to those already mentioned. Poole and Perrygo secured this bird at L'Atalaye, St. Michel, St. Raphael, Dondon, Pont Sondé, and Cerca-la-Source.

Stresemann⁸¹ wrote that the earliest name applicable to this species is *Cuculus longirostris* of Hermann, published in 1783, which antedates the name *dominicensis* of Lafresnaye (1847) long in current use. On investigation it appears that *longirostris* of Hermann is based on the Tacco of Montbeillard in Buffon.⁸² This is a composite composed of a mixed account of the lizard-cuckoos of Jamaica and Haiti taken from Sloane and others. The first reference is to the Coucou à long bec, de la Jamaïque in Daubenton, Planch. Enl., no. 772, which in spite of the locality given is the species of Hispaniola. The name *longirostris* of Hermann will, therefore, apply as Stresemann indicates to the species current as *S. dominicensis* (Lafresnaye), with Hispaniola as the type locality.

In a considerable series of these birds there is slight variation in depth of color of the upper surface and in extent and depth of shade in the cinnamon of throat and abdomen but this appears individual, as birds from the high mountains and coastal plain and from arid and humid sections appear similar. The skins obtained by Abbott on Tortue island do not differ from those of Hispaniola proper.

In the Philadelphia Academy of Natural Sciences there is an immature male not fully grown with wing quills still in process of development that was taken by James Bond at Port-au-Prince December 26, 1927. In general color this is like the adult but has a faint wash of brown above, and the webs of the two central tail feathers distinctly brownish. The buff of the throat is well indicated but is faintly paler than in the adult while the chin is nearly white. The rectrices have a fairly distinct spot of chamois at the extreme tip and a wash of the same color on the proximal portion of the usual white marking. The outermost pair lacks the customary white tip of the adult, the dark coloration of the main part of the feather fading gradually into a terminal mark of dull chamois. The buff throat is so distinctly more evident than the faint wash of that color found in the form of lizard-cuckoo peculiar to Gonave Island as to suggest a wider separation than has been supposed for that form. Following are measurements of birds from Hispaniola, including Tortue Island:

Fourteen males, wing 129.7–138.0 (134.3), tail 184.0–227.0 (205.5), culmen from base 46.0–53.6 (50.7), tarsus 33.4–37.5 (35.5) mm.

⁸¹ Nov. Zool., vol. 27, 1920, p. 330.

⁸² Hist. Nat. Ois., vol. 6, 1770, p. 402.

Nineteen females, wing 126.7–144.6 (136.6), tail 182.0–227.0 (210.0), culmen from base 46.4–54.3 (49.3), tarsus 33.9–39.3 (36.7) mm.

The lizard-cuckoo ranges from 405 to 450 mm. in length, more than one half of this being taken by the greatly elongated tail. The bird is slender in form, with a long bill that in life appears nearly straight. (Pl. 17.) The upper surface is dark grayish brown, the breast light gray, the throat and abdomen cinnamon, and the under surface of the tail black with the feathers broadly tipped with white.

SAUROTHERA LONGIROSTRIS PETERSI Richmond and Swales

GONAVE LIZARD-CUCKOO, TACOT

Saurothera longirostris petersi RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, p. 105 (La Mathotiere, Gonave Island, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 500 (Gonave Island).—DANFORTH, Auk, 1929, p. 367 (Gonave Island).—LÖNNBERG, Fauna och Flora, 1929, pp. 101–102 (Gonave).

Gonave Island; resident.

The present form, named in honor of James L. Peters of the Museum of Comparative Zoölogy, is restricted to Gonave Island where W. L. Abbott collected the type, a male, near La Mahotiere on the south coast, February 20, 1918, and others on February 19, 20, 21, 22, and 23. On a subsequent visit he secured three additional males at Anse à Galets March 6 and 8, 1920. He reports that the bird is common in the dense scrubs and that its habits are similar to those of the mainland form except that it seems shyer. One that he examined had eaten a lizard. He describes the tarsus as lead-colored and the iris as reddish brown. Bond says that this race does not differ in notes and habits from the bird of the main island. Danforth reports that it is not as common as typical *longirostris*. In the stomach of one he found a lizard (*Anolis*), two sphingid caterpillars, three noctuid caterpillars, a chrysalid, and the wings of a damsel fly.

This race differs from *Saurothera l. longirostris* in the restriction or absence of the buffy throat patch, paler abdomen and undertail coverts, and paler dorsal surface. Three of our skins have no buff on the throat whatever, and in others this color is faint and restricted in area. The differences are so striking as to be almost of specific value. Measurements (in millimeters) of the specimens at hand range as follows:

Six males, wing 133.0–136.5 (134.5); tail 213.0–236.0 (221.3); culmen from base 44.0–52.7 (48.8); tarsus 34.9–37.0 (36.3).

Three females, wing 133.0–139.0 (135.2); tail 217.0–232.0 (223.0); culmen from base 44.5–47.0 (45.3); tarsus 38.5–40.0 (39.2).

Type specimen, male, wing 136.0, tail 224.0, culmen from base 44.0, tarsus 37.0.

Subfamily CROTOPHAGINAE

CROTOPHAGA ANI Linnaeus

ANI, BLACK WITCH, JUDIÓ, BOUTS-TABAC, FERROQUET NOIR

Crotophaga ani LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 105 (Jamaica).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152-155 (Haiti, specimen).—HARTLAUB, Isis, 1847, p. 610 (listed).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti, abundant); Birds Haiti and San Domingo, July, 1884, pp. 100-101 (Dominican Republic, Haiti); Cat. West Indian Birds, 1892, p. 102 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 19 (Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 272 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHRISTY, Ibis, 1897, pp. 331-332 (Sánchez, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 409 (Sosúa, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 180 (Dominican Republic).—CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (specimen).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, pp. 51, 221 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 500 (Haiti).—DANFORTH, Auk, 1929, p. 368 (common).—LÖNNBERG, Fauna och Flora, 1929, p. 102 (Haiti).—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 316 (Haina, Moca, specimens).

Ani des Paletuviers, MONTEBILLARD, in Buffon, Hist. Nat. Ois., vol. 6, 1779, pp. 423-429 (part).

Bouts-de-tabac, SAINT-MÉRY, Descrip. Part. Franc. Île Saint-Domingue, vol. 1, 1797, p. 717 (Port-de-Paix).

Crotophaga major, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti, specimen).—HARTLAUB, Isis, 1847, p. 610 (listed).

Resident, common and widely distributed; absent from heavily forested areas.

The ani is found mainly in fields and open pastures, especially where these are intermingled with shrubs or thickets. The birds are gregarious and are seldom seen alone as usually from six to a dozen are found in company. They frequently feed on the ground about cattle, capturing insects disturbed from the grass. They greet intruders with querulous calls and when disturbed fly up to low perches where they assume picturesque attitudes, often half a dozen perching on one limb facing in different directions with craning heads and twitching tails. In flight the feet are thrown back beneath the tail.

Christy found a few anis at Sánchez, but observed them in greatest abundance at La Vega where he examined eggs taken early in July. Verrill found them abundant. Abbott secured specimens at Laguna, on the Samaná Peninsula, August 6, and at Sánchez October 23, 1916. Kaempfer says that they roost at night in company, and that

nests containing one hundred eggs were reported to him by countrymen, the latter probably an exaggeration. Cory secured one at Puerto Plata November 24, 1882, and Peters collected two at Sosúa. Wetmore reported them at Comendador April 30, San Juan May 1, Los Alcarrizos and San Francisco de Macoris May 4, Sánchez May 6 to 14, and at various points between La Vega and Jarabacoa May 17. In the high valley at Constanza they were fairly common from May 19 to 27. On one occasion a flock came through a tract of pine forest flying and sailing a hundred feet or more in the air and pausing to rest in the tops of the tallest trees, an unusual habit in a bird that seldom rises fifty feet above the earth. On one occasion he observed a flock of fifteen at daybreak, indication that they may gather in roosts at night, as at Constanza the flocks observed during the day did not contain more than half a dozen individuals. They were recorded near El Río May 30. Moltoni reports specimens received from Ciferri from Haina and Moca.

In Haiti the ani is widely distributed and is known as *perroquet noir* or more usually among the creoles as *bouts-tabac* pronounced sometimes *bouts-de-tabac*. Deshayes wrote to Buffon that the flight of this bird was weak so that many were killed during hurricanes. Cory secured an egg near Jacmel, which was greenish blue in color covered irregularly with a coating of chalky white. Younglove forwarded four skins from Port-au-Prince taken February 2, and May 3 and 8, 1866. Bartsch found them near Gloré April 3, Trou Caïman April 4, Petit Goave April 8 and 9, Miragoane April 9, near Jérémie April 10 to 16, Trou des Roseaux April 13 and 14, and in the vicinity of Port-au-Prince April 21 to 27, 1917. Abbott, who reports them as universally distributed, collected specimens at Jérémie Nov. 18, 1917, Fonds Verettes April 20, 1920, and Baie des Moustiques May 8, 1917. Saint-Méry in 1797 noted them from near Port-de-Paix. Wetmore in 1927 found anis at Carrefour, Damien and Sources Puantes March 29, Mont Rouis March 30, Fonds-des-Nègres March 31 to April 5, Étang Miragoane April 1, Aquin April 3, and L'Acul April 4. On April 9 he observed several at an altitude of 1600 meters on the slopes of La Selle above the Rivière Jaquisy. He found them at Morne Rouge April 20, and at Hinche from April 22 to 24. On the latter date an occupied nest was seen in the streets of the village. At Caracol April 26 and 27 they were common. G. S. Miller, jr., secured a male at St. Michel March 21, 1925. Danforth records them as common on Gonave and says that he secured a specimen at Anse à Galets. Poole and Perrygo in the winter of 1928-1929 found this species at Port-au-Prince December 16, St. Michel January 6 and 23, St. Raphael January 13, Dondon January 17 to 19, Fort Liberté February 6 to 12, St. Marc

February 25, Pont Sondé February 26, Hinche March 17, Cerca-la-Source March 27 and at En Café and Plaine Mapou on Gonave Island March 3 to 14.

There is a skin of the ani in the United States National Museum from Navassa Island received December 3, 1890, from J. F. R. Dufour, of Washington. E. L. Ekman has recorded this species from Navassa in October, 1928.

The ani is from 345 to 390 mm. long with a very long tail and slender body. In life it appears black but in the hand shows indistinct markings of bronze on the head and forepart of the body, and faint violet reflections in the wings. The bill is greatly compressed and arched so that the upper margin is a thin plate and the whole bill is as high as the head. Like other cuckoos the ani has two toes in front and two in back.

Order STRIGIFORMES

Family TYTONIDAE

TYTO GLAUCOPS (Kaup)

HISPANIOLAN BARN-OWL, LECHUZA, FRESAIE

Strix glaucops KAUP, Jardine's Contr. Ornith., 1852, p. 118 ("Jamaica" = Dominican Republic⁸³).

Lechuza, Oviedo, Hist. Gen. Nat. Indias, Libr. 14, cap. 7; Reprint, Madrid, 1851, p. 446 (many).

Fresaye, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 263 (Dondon).

Oiseaux nocturnes, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 604 (Baradères).

?Owl, EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Strix glaucops, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 117-118 (Puerto Plata); Cat. West Indian Birds, 1892, p. 100 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (listed).

Strix dominicensis CORY, Bull. Nuttall Ornith. Club, vol. 8, 1883, p. 95. (Described as new from "Santo Domingo" = Puerto Plata, D. R.).

Tyto glaucops, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 410-411 (listed).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, pp. 140-141; Beneath Tropic Seas, 1928, p. 221 (Bizoton).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, p. 38 (mentioned).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 500 (Haiti).—DANFORTH, Auk, 1929, p. 368 (recorded).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 316 (San Juan, Moca, specimens).

Tyto alba glaucops, KAEMPFER, Journ. für Ornith., 1924, pp. 181-182 (Dominican Republic).—HARTERT, Nov. Zool., vol. 35, 1929, p. 101 (listed).

Resident; fairly common in some localities.

⁸³ Hartert, Vög. Pal. Fauna, vol. 2, August, 1913, p. 1040, says "der Typus im British Museum stammt von San Domingo."

The barn owl is widely distributed through the island and though nowhere common is probably more abundant than might be supposed since it is abroad usually by night and in the day remains in concealment, usually in caves, clefts in rocks, or hollow trees. Apparently it early found the haunts of men favorable to its activities since Oviedo writing in the sixteenth century says that there were many owls in Santo Domingo City, and that they came regularly about the thatched huts of the natives.

Sharpe⁸⁴ lists two mounted specimens in the British Museum from "S. Domingo", one taken by Sallé, and the other without indication of its source. One of these is assumed to be the type on which Kaup based his description. Curiously enough this species is not mentioned by Sallé, or by Selater in the paper listing Sallé's birds published in the Proceedings of the Zoological Society of London in 1857. Hartlaub's statement⁸⁵ regarding his *Strix dominicensis*, taken from Württemberg, is somewhat confused as he says "Vielleicht nur Varietät von *furcata*; eine schöne Tagueule aus den Urwäldern des spanischen Domingo." The comparison to *furcata* indicates a *Tyto* while the statement that it is a "day-owl" would seem to point to *Speotyto*.

Cory collected two males at Puerto Plata, December 2, 1882 and March 1, 1883, and says that no others were seen. On one of these in 1883 he based a new name *Strix dominicensis* which is however a synonym of *Strix glaucops* of Kaup, in addition to being a homonym of *Strix dominicensis* Gmelin of 1788. Cory saw only the two specimens mentioned. Verrill says "common, but seldom seen during the day." He does not mention collecting specimens. Peters did not see this species but at several points heard calls during the night which natives asserted were uttered by the barn owl.

Abbott seems to be the first collector to meet with the barn owl regularly. He secured a female at Samaná August 3, 1916, indicating the iris as dark brown, bill pale horn, cere pale purplish flesh color, and feet dirty brownish white. At Rojo Cabo he took a female August 29, 1916, and a male March 24, 1921. The stomach of the latter contained a large bat. At Laguna, also on the Samaná Peninsula, he secured a male August 9, 1916, and a female August 11, 1919. From Laguna he forwarded in addition three skeletons of this species, one March 19, 1919, one in 1919 without other date, and one November 29, 1923. The latter, received in rough dried form with much of the plumage intact, had five albinistic primaries in the left wing. R. H. Beck forwarded six adults to the American Museum of Natural History, taken at Santo Domingo City October 16, 1916, Túbano

⁸⁴ Cat. Birds Brit. Mus., vol. 2, 1875, p. 302.

⁸⁵ Naumannia, 1852, p. 54.



COLONY OF NESTS OF INTRODUCED WEAVER-FINCH (*TEXTOR C. CUCULLATUS*)

Near Mont Rouis, Haiti, March 30, 1927.



YOUNG HISPANIOLAN BARN OWL (*TYTO GLAUCOPS*)

From high ridge of La Selle, Haiti, April 15, 1927.

February 6, 8, 9 and 12, 1917, and Loma Tina January 5, 1917. A native brought him two young in the down with the adult at Túbano February 8, the young with new feathers appearing on back and wings and being in color like the younger specimen in down secured by Wetmore in Haiti. Kaempfer reported the lechuza fairly common and observed that he secured a female and two young in December. He sent six skins to the Tring Museum according to information given us by Doctor Hartert. He records that flesh of this owl made into a pomade was believed to cure asthma. Danforth found this owl in a limestone cave at Los Tres Ojos de Agua, east of Santo Domingo City, July 3, 1927. Ciferri obtained it at the Sabana San Thomé, San Juan September 1, 1928 and Moca in April, 1929.

In Haiti this owl was recorded at Dondon by Saint-Méry, and is probably the species represented by the "Oiseaux nocturnes" reported by the same author to inhabit a cavern at the Bay of Baradères. Abbott secured a female in the cave known as Trou de Bon Dieu near Port-de-Paix, April 17, 1917, and a second female in a mangrove swamp near Petit Port à l'Ecu on May 9, 1917. In his notes he remarks that this species was heard calling nearly everywhere at night, and that he noted it on Isle Tortue. Beebe says that one came about his schooner anchored off Bizoton on six different evenings, flying about and swooping at the light. He secured a female alive on shore.

Three miles west of L'Acul on April 4, 1927, Wetmore flushed one of these owls in a small cave in a limestone formation. The bird retreated first to the depths of the cave and then came fluttering out overhead into the light of the sun. A ledge of rock twenty feet from the cave floor was evidently a favored perch as below it were quantities of bones from regurgitated pellets of which a small bag full were taken for identification. On April 7, 1927 Dr. G. N. Wolcott presented a male that had been killed in his yard in Port-au-Prince. Barn owls were heard calling regularly at night about Dr. G. F. Freeman's residence, Villa Keitel. One was heard in camp on the Rivière Jaquisy April 8, and another April 10 near the head of the Rivière Chotard on La Selle. On the following morning while investigating a sink hole called by the natives Trujín, an opening forty or fifty feet deep and one hundred fifty feet long with an arch across the center, a barn owl was observed resting like the true bird of Minerva on a round column of stone twenty-five feet below the surface level. Its gaze was directed downward and it paid no attention whatever to those above as they circled the opening looking for a means of descent. This was below Morne La Visite at an elevation of nearly 2000 meters. On April 15 a tall slender pine with many branches was cut, and the limbs trimmed a

foot from the trunk which was then lowered into the hole to form a ladder down which descent was easy. Below the column on which the owl rested regularly was a considerable accumulation of bones from its prey while beneath a slight ledge projecting out over the floor of the sink was a nest containing two young in the down, one developing pin feathers on the wings and the other somewhat younger. (Pl. 18.) There was no nesting material other than an accumulation of pellets and other refuse. The young uttered characteristic growling, hissing notes and shrank away as the nest site was examined. The half eaten body of a rat lay beside them, and the parent bird flushed from its shelter, seeming confused as it half flew and half clambered along the rocky wall to a height of six feet and then flew to a perch at the opposite end of the sink. A quantity of pellet material was collected for examination. A native boy plucked a few filaments of down from one of the young, putting them away carefully and on questioning explained somewhat sheepishly that they were "pour la remède."

The young bird taken is covered with long soft down in color somewhat duller than light buff.

Bond says that according to natives this species does not occur on Gonave Island. Ekman writes "an owl has been seen and heard repeatedly by the keepers of the lighthouse" on Navassa Island, an interesting observation that should refer to the barn owl. The food of the barn owl is composed largely of rats, with a fair number of birds and occasional lizards. For the benefit of those not familiar with the feeding habits of these birds it may be stated that their prey is torn apart and swallowed in fragments, the bird consuming skin, bones, fur, scales, and many feathers though birds except those of smallest size are usually partly plucked. The digestive processes of the stomach remove the nutriment from such masses, and the bones and other indigestible parts are formed into pellets which at the proper time are regurgitated leaving the stomach empty for another meal. Pellets accumulate in quantity beneath perches frequented by these owls and from their content serve as a ready index to the food preferences of the bird, it being necessary only to identify the skulls and other bones found in them. There follows an account of four sets of such pellets collected in the field and examined by Wetmore in Washington.

In March, 1925 G. S. Miller, jr., secured a number of barn owl pellets from a cave at Diquini, not far from Port-au-Prince. From these he removed a large number of brown rat remains (*Rattus rattus*) and skulls and other bones of bats, in search for other mammalian species. Other bones were identified by Wetmore. These included jaws of a small lizard (*Anolis* sp.) remains of a small tree-toad

(*Hyla dominicensis*) and the following birds: 2 mourning doves (*Zenaidura m. macroura*), 4 ground-doves (*Chaemepelia p. insularis*), 2 mangrove cuckoos (*Coccyzus m. teres*), 4 lizard cuckoos (*Saurothera l. longirostris*), 1 solitaire (*Myadestes g. montanus*), 1 palm-chat (*Dulus d. dominicus*), 1 weaver-finch (*Textor c. cucullatus*), 1 Jamaican vireo (*Vireo o. olivaceus*), 2 warblers (*Dendroica* sp.), 5 palm tanagers (*Phaenicophilus p. palmarum*), 1 grassquit (*Tiaris o. olivacea*), 1 grassquit (*Tiaris b. marchii*), 1 grosbeak (*Loxigilla v. affinis*). The above list does not include the numbers of the different mammals found as this data was not available.

In a cave near L'Acul, Haiti, on April 1, 1927, Wetmore collected a quantity of pellet material beneath a ledge where a barn owl rested and from it identified the following: 41 brown rats (*Rattus rattus*), 29 house mice (*Mus musculus*), 27 bats of 4 species (*Artibeus j. jamaicensis*, *Phyllops haitiensis*, *Macrotus w. waterhousii*, and *Monophyllus cubanus ferreus*), 3 young domestic fowl from ten to twenty days old (*Gallus gallus*), 1 wild pigeon (*Columba* sp.), 1 ground dove (*Chaemepelia p. insularis*), 1 young quail-dove (*Oreopeleia* sp), 1 lizard-cuckoo (*Saurothera l. longirostris*), 1 ani (*Crotophaga ani*), 1 Hispaniolan tody (*Todus subulatus*), 1 Hispaniolan woodpecker (*Chryserpes striatus*), 3 palm-chats (*Dulus d. dominicus*), 1 weaver-finch (*Textor c. cucullatus*), 12 Jamaican vireos (*Vireo o. olivaceus*), 4 palm tanagers (*Phaenicophilus p. palmarum*), 3 grassquits (*Tiaris o. olivacea*), 1 grosbeak (*Loxigilla v. affinis*), 1 large tree-lizard (*Anolis ricordii*), and 12 tree-toads (*Hyla dominicensis*).

From about the nest of a barn owl in the sink hole called by the natives Trujín, located on the high ridge of La Selle below Morne La Visite on April 15, 1927, Wetmore collected another lot of pellet material that included the following: 134 brown rats (*Rattus rattus*), 6 house mice (*Mus musculus*), 4 bats (*Eptesicus hispaniolae*), 1 black swift (*Nephoecetes n. niger*), 1 cloud swift (*Streptoprocne z. melanotis*), 1 Hispaniolan trogon (*Temnotrogon roseigaster*), 2 Hispaniolan siskins (*Loximitris dominicensis*), 4 Hispaniolan cross-bills (*Loxia megaplaga*). The presence of the remains of two swifts in this material can be explained only on the supposition that they were captured among rock ledges when asleep at night as it would be impracticable for an owl to take birds of such rapid flight except when they were at roost.

In the early spring of 1928 G. S. Miller, jr., and H. W. Krieger of the United States National Museum while searching caves at San Lorenzo Bay in the Dominican Republic collected a quantity of pellet material in one cave from which the following are identified: 6 tree frogs (*Hyla dominicensis*), 16 ground lizards (*Ameiva* sp.),

1 small lizard (*Anolis* sp.), 1 pigeon (*Columba* sp.), 2 mourning doves (*Zenaidura m. macroura*), 1 mango hummingbird (*Anthracothorax dominicus*), 1 Hispaniolan tody (*Todus subulatus*), 1 narrow-billed tody (*Todus angustirostris*), 1 Hispaniolan woodpecker (*Chryserpes striatus*), 1 cliff swallow (*Petrochelidon f. fulva*), 3 Hispaniolan thrushes (*Mimocichla a. ardosiaea*), 5 Jamaican vireos (*Vireo o. olivaceus*), 1 redstart (*Setophaga ruticilla*), 2 Hispaniolan spindalis (*Spindalis multicolor*), 13 Hispaniolan palm tanagers (*Phaenicophilus p. palmarum*). Bones of these species were selected from a great quantity of remains of rats which are not available for count. The presence of tree-frog remains is notable.

From the above data it appears that the barn owl is a definite element in the control of rats and mice which are of economic importance in their destructiveness to crops and other things pertaining to man. It is true that the owl seems to capture many birds, but it is believed that its aid in rodent control offsets any injury in this direction and the owls should not be destroyed for that reason.

The barn owls of Haiti show two distinct color phases one being light with light buffy and grayish tints predominating and the other very dark with the buff very deep and the color of the back much darker. Very light and very dark birds offer considerable contrast but in the series available the two phases merge imperceptibly through individual specimens.

The barn owl is one of the larger landbirds of the island being 350 mm. or more in length. It is easily told from other birds by the broad disks or rings of gray feathers that surround either eye which give the bird the strange appearance that in the United States causes a closely related form to be known as the "monkey-faced owl." Above the barn owl is dusky brown mottled with light or dark buff or grayish and below buff with the feathers barred lightly with irregular marks of dusky. Feathering extends down the tarsus but the feathers become sparse on the lower half continuing as stiff, scattered, hairlike filaments to the last joints of the toes.

TYTO OSTOLOGA Wetmore

GIANT OWL

Tyto ostologa WETMORE, Smithsonian Misc. Colls., vol. 74, no. 4, October 17, 1922, p. 2, figs. 1 and 2 (from cave near St. Michel, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 521 (listed).

Extinct; known only from bones found in caves in Haiti.

During a geological reconnaissance in Haiti in March, 1921 J. S. Brown and W. S. Burbank secured the fragments of the metatarsus from which the present species was described in a large cave known

as Grotte San Francisco, near the summit of a long ridge of limestone about three kilometers northeast of St. Michel. The specimens were secured at a depth of less than a meter from the surface. Intrigued by the peculiar mammalian bones from these same excavations Gerrit S. Miller, jr., Curator of Mammals in the United States National Museum, visited the section indicated in March and April, 1925, securing a large quantity of bones, among them many additional remains of this owl. These, which will be described fully in a paper dealing with the birds represented in the bone deposits of Haiti, give information on other parts of the skeleton additional to the metatarsus. The results of Mr. Miller's work were so valuable that in December, 1927, under funds provided by Dr. W. L. Abbott, Arthur J. Poole, Aid in the Division of Mammals, was sent to St. Michel to complete the collections from these caves. This was important at this time since it had been learned that earth from these deposits was being removed for use as fertilizers, a procedure that would destroy everything in the deposits of scientific value. Mr. Poole remained in the field until March, 1928, during which period he explored a number of caves, sifting the earth carefully and recovering a great mass of mammalian and avian bones among which are many remains of this owl. The species is known from these investigations from the Grotte San Francisco near St. Michel and from caves above L'Atalaye a short distance away.

The size of *Tyto ostologa* is apparent when it is known that a complete metatarsus measures 93 mm. in length and that the other bones of the skeleton are of proportionate dimensions. The metatarsus in the ordinary barn owl is from 66 to 77 mm. long and is much more slender. *T. ostologa* was apparently as tall or perhaps somewhat taller than the great horned owl *Bubo virginianus* and had very large, strong feet. Its period of existence as a species coincided with a flourishing native fauna of small mammals now so far as known entirely extinct, whose existence was first indicated in certain stories repeated by the historian Oviedo as he heard them from the Indians but which were disregarded until discovery of an abundance of mammalian bones in the caves from which come the remains of *Tyto ostologa*. If we may judge from analogy with the living barn owls these bone deposits are due to the activities of the giant owl which foraged for its animal food, swallowed it with many of the bones entire, and subsequently in its cavern homes regurgitated the indigestible parts of its meals in the form of pellets which formed the usual accumulations beneath its perches. From the remains of these pellets we now secure skulls and other remains of extinct insectivores, rats, and hutia-like mammals, and various birds

mingled with an occasional fragment of the owl through whose agency the other remains have been preserved for us. Occasional lumps of bones found in the deposit are still cemented together in the form of pellets.

In a visit to St. Michel on April 21, 1927, Wetmore examined in person the Grotte San Francisco from which had come the type bones of *Tyto ostologa*. After walking up a limestone slope through dry scrub in the blazing heat of an afternoon sun the air within the cavern was cool and refreshing. Stalagmitic columns divided the cave in two sections, with a large opening or chimney admitting light from above into a chamber at the farther end. The loose soil was reddish in color and rose in a powder of dust during some casual digging that disclosed a few bones. At one side was a projecting ledge which apparently had served the great owl as a roost as it does the modern barn owl today as below mammalian remains were in abundance. As the site was examined one could imagine great owls peering down with drowsy eyes from the cavern ledges or flying out on soft, noiseless wings through the opening above to range the nearby hillsides and savannas in search of prey.

There is no definite criterion from which the age of these cave deposits may be estimated, except that the animal tissues have entirely disappeared from the bones found in them. Some of the more perfect bones are white and appear startlingly recent. It seems probable that the deposits were accumulated over a long period of years extending perhaps from four hundred to two thousand or more years ago.

On April 15, 1927, in the Trujin on La Selle described in connection with *Tyto glaucops*, beneath the span of rock forming a bridge across the sink, Wetmore chanced to observe a hollow thirty inches long by a foot wide behind some hanging stalactites at an elevation of six feet from the floor where the depression was completely sheltered from the elements. On climbing up to look into this an old skull lying on a little earth caught the eye and proved on examination to represent one of the extinct species of rodents of the island. Careful digging revealed many other bones among them skulls of *Nesophontes*. Practically all of the earth was removed and brought to Washington where it has been carefully examined. Though no remains of *Tyto ostologa* were identified the other material is so similar to that from La Selle as to lead to the supposition that the depression was formerly the nesting place of the giant owl.

In this connection it is of interest to detail an account of a visit to La Selle given by Moreau de Saint-Méry⁸⁶ whose account he says was taken from the journal *Affiches Americaines* for April 28, 1788.

⁸⁶ Descrip. Part. Franç. Ile Saint-Domingue, vol. 2, 1798, p. 298.

The story runs that on February 1, 1788 M. l'Abbé Madoulé, master of mathematics, M. le Comte de Bermont, and M. Toupin climbed to the summit of La Selle from the northwest at about ten leagues from Port-au-Prince. They found trees covered with moss, the ground torn by the rootings of wild pigs, and reported an abundance of pigeons, thrushes, and woodpeckers. From eight in the evening until one in the morning they heard hollow cries imitating the human voice that they attributed to some nocturnal bird, as they had seen feathers resembling those of a swan at the edge of sort of a den or cavern. The account is so definite as to suggest that they may have heard the calls of *Tyto ostologa*. As these adventurers noted that the feathers examined were like those of a swan we may suppose that they were white, which may be a clue to the color of this bird.

There is no indication that this species, which was far larger than any others now recorded for its family, is still living. It must be considered one of the most extraordinary members of a highly interesting extinct fauna.

Family STRIGIDAE⁸⁷

SPEOTYTO CUNICULARIA TROGLODYTES, new name

HISPANIOLAN BURROWING OWL, CHOUETTE À TERRIER, COU-COU, COU-COU TERRE

Speotyto dominicensis CORY, Auk, 1886, p. 471 (Haiti).

Buhio de paja, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 7; Reprint, Madrid, 1851, p. 446 (recorded).

Chouette, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 263 (Dondon).

⁸⁷ The small eared owl described and figured by Vieillot (Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, pp. 53-54, pl. 22) as le Hibou Nudipède, *Bubo nudipes*, is currently identified as a species found in Central America. In the original description Vieillot gives no locality, stating of his specimen only "de ma collection." On page 45 of the work cited, however, in discussing the chouette nudipède of Porto Rico, which is *Gymnasio nudipes*, he says "cette Chouette porte un vêtement qui a de l'analogie avec celui du Hibou nudipède; mais ses couleurs ne sont pas nuancées et distribuées tout-à-fait de même. Le Hibou a les plumes de la tête élevées en forme d'aigrettes, la Chouette les a aussi courtes que les autres. * * * L'une et l'autre se trouvent a Saint-Domingue et a Porto-Ricco." The same author later (Nouv. Dict. d'Hist. Nat., vol. 7, 1817, p. 46) bases the name *Strix psilopoda* on the plate cited above, stating that "on le trouve à Saint-Domingue et a Porto-Ricco." In the Tabl. Méth., Ornith., vol. 3, 1823, p. 1282, he uses this latter name again saying that the bird is found on both the islands mentioned.

It is true that the description and plate agree closely with the Central American owl currently known as *Otus nudipes*, except that the figured bird has a more rounded tail, but at the same time it is curious that if it is that species Vieillot should have given the range as "Saint-Domingue et Porto-Ricco" as he collected personally on the first island mentioned. Further at that date there were few specimens accessible to him from the region extending from Costo Rica to Panama, the range of the species to which the name is now attributed.

In this connection it may be noted that Oviedo (Hist. Gen. Nat. Indias, Libr. 14, cap. 7; Reprint, Madrid, 1851, p. 446) describes a small eared owl from the Dominican Republic saying "hay buhos, pero muy chiquitos é no mayores que las lechuças que he dicho [referring to the burrowing owl], é assi aquellas orejas ó cuernos levantados en la cabeça y de proprio plumaje, é los ojos pequeños á proporcion del cuerpo; pero muy claros, como los buhos de España."

In view of the above it seems not impossible that a small eared owl may exist in Hispaniola, a matter that should be borne in mind in future investigations.

- Athene cunicularia*, HARTLAUB, Isis, 1847, p. 610 (listed).
Athene dominicensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (habits).
Strix cunicularia, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, pp. 48-49 (habits).
Strix dominicensis, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 90 (Dominican Republic).
Speotyto, LÖNNBERG, Fauna och Flora, 1929, p. 102 (Haiti).
Speotyto cunicularia, CORY, Birds Haiti and San Domingo, Dec., 1884, pp. 118-119 (Pétionville, Port-au-Prince).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).
Speotyto dominicensis, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (between La Vega and Santiago, Azua).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Haiti).
Speotyto cunicularia dominicensis, CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (range); Cat. West Indian Birds, 1892, p. 100 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 22 (Honduras).—KAEMPFER, Jour. für Ornith., 1924, p. 182 (habits).
Speotyto floridana dominicensis, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 6, 1914, p. 823 (Haiti, Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 410 (Sosúa, Monte Cristi).—BARTSCH, Smithsonian Misc. Colls., vol. 68, no. 12, 1918, fig. 45 (photo).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 501 (Haiti).—DANFORTH, Auk, 1929, p. 368 (specimens).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 316 (San Juan, specimen).

Resident; locally common.

The burrowing owl inhabits semi-open arid scrubs and does not enter areas of heavy forest. It has not been recorded from the Samaná Peninsula, and in the high interior is known now only from the valley of Constanza. It is most common in Haiti and in north-western and southwestern Dominican Republic.

This species lives in holes in the earth which it excavates to a depth of several feet. It is active by day and may be seen standing on the little mound of earth above its burrow singly, in pairs, or in family groups, or perched in low trees, on fence posts, stumps or other low perches where it watches all that may transpire with round eyes and a general air of smug satisfaction at its estate. When alarmed it bows with quick genuflexions and if disturbed flies quickly to some more distant perch or retreats hastily to the depths of its burrow. Although active by day it is also abroad by night and is frequently heard calling after dark. In modern travel it is often observed at night in the light thrown by automobile headlights.

Oviedo mentions owls smaller than those of Spain that must include the present species. Sallé describes the habits of the burrowing owl and remarks that the burrow entrance is usually strewn with fragments of dried horse dung, a peculiar habit of unknown significance observed in other forms of the burrowing owl in North America and in the plains of southern South America. Cherrie did not find burrowing owls abundant in the Dominican Republic as he

collected only one, taken at Honduras. Verrill found them near Azua and between La Vega and Santiago. Peters secured a pair at Sosúa, and found them rather common in the desert area near Monte Cristi. His specimens secured near Sosúa lived in a burrow with two entrances dug in reddish soil which had heavily stained their plumage.

Wetmore recorded a few between Comendador and Baní April 30 and May 1, 1927. Many were observed at night by the lights of the motor car in which he was traveling when the birds watched the moving shadows about them and paid little attention to the light rays themselves. Near San Juan May 1 some one had dug out a burrow three feet deep in the side of a bank beside the road and had killed the three fledged young that the nest contained. An adult owl perched on the body of one of the young birds, tearing at it with vigor and when disturbed attempted unsuccessfully to fly away with its prey. A second bird was badly torn about the head while the third was untouched. The case was evidently one of cannibalism but whether on the part of a parent or a stranger it was impossible to say. One of the young, prepared as a skin, was as yet unable to fly. It has the abdomen and flanks dull buff without spots or markings.

W. L. Abbott secured a male at Constanza on April 7, 1919, and Wetmore observed one at the same point May 19, 1927 that had been captured on its nest which contained five hard set eggs. The boy in whose possession it was, placed the eggs in one of the hollowed logs which are stood on end and used in pounding coffee. The bird, apparently a female, tethered by a long cord, recognized her eggs immediately and settled down to incubate them in spite of rough handling. Two days later she was still faithfully covering her treasures aided by bits of meat from the bodies of birds skinned for specimens in lieu of the rice offered as food by her captor. The latter, tired of his charge, wished to kill her but was persuaded to set her at liberty. Two of the eggs were blown, though very hard set.

Danforth found these owls common in 1927 in the dry area between Navarrete and Monte Cristi, and on June 23 saw them nesting in holes in dry clay banks bordering mangrove swamps. In the stomachs of two examined he found a little mouse fur in one, and remains of beetles and the claws of a centipede in the other. He observed them further at Santiago, Túbano, and San Juan. Ciferri sent a specimen to Moltoni taken at Sabana San Thomé, San Juan, June 22, 1929.

In Haiti the burrowing owl seems more common than in the eastern republic because of the more extensive sections adapted to its needs. It is especially numerous in the Cul-de-Sac region, and

Abbott recorded it in numbers on the northwest peninsula. Cory records specimens near Pétionville February 27 and 28, and March 1, 1881, and one near Port-au-Prince February 21, 1881. There is one in the United States National Museum from his collection taken at Port-au-Prince, December 31, 1880. He reported it common about the saline lakes of the Cul-de-Sac, and it still remains in numbers about the Étang Saumâtre according to Abbott and Bartsch. Bartsch secured one at Trou Caïman April 4, 1917, and Abbott took two at the same point March 10, 1918. Bartsch collected a series of five skins between Port-au-Prince and St. Marc April 20, 1917, and two more birds the following day at St. Marc which were put in alcohol. He recorded others at Thomazeau April 2, Gloré April 3, and near Port-au-Prince April 25 and 27. Wetmore found them at Damien March 29, 1927, Sources Puantes March 29, La Tremblay April 7, and Las Cahobes April 20. He had confidently expected to find them abundant in the central plain near Hinche but saw none there.

Saint-Méry recorded this species at Dondon. Abbott collected six skins at Baie des Moustiques from March 31 to May 4, 1917, and seven more at an altitude of 450 meters near Bombardopolis March 21 to 26 of the same year. One from the first locality had eaten a lizard and a scorpion, and one from the second contained insects and a mouse.

At Bais des Moustiques May 4, 1917 Abbott secured four sets of eggs. These are white, with a distinct gloss and are rounded in form. A set of two was fresh. They measure 31.6 by 26.7, and 32.0 by 26.4 mm. A set of three eggs also fresh, measures 28.3 by 25.3, 29.5 by 24.8 and 29.7 by 24.6 mm. A second set of three, apparently heavily incubated, measures 30.9 by 26.4, 31.0 by 26.5, and 31.5 by 26.3 mm. Four addled eggs from a burrow four feet long dug just beneath the surface of the earth in a meadow, at which both parents were taken measure 32.0 by 27.0, 32.1 by 26.9, 32.2 by 26.5 and 32.2 by 26.7 mm. The two eggs secured by Wetmore at Constanza are slightly larger, measuring 32.9 by 28.3 and 33.7 by 27.1 mm.

Danforth in 1927 recorded this burrowing owl at Port-au-Prince and Les Cayes. Bond says that he found this bird at Port-de-Paix in March, and further that he did not encounter it on Tortue Island. Poole and Perrygo secured skins at Fort Liberté February 11 and 18 and Pont Sondé February 26, 1929. Further they took one at Massacrin on Gonave Island March 9, though Bond says he did not find it on that island.

Viellot says that the eyes in the male are a very vivid yellow while those of the female are paler; Abbott, in a male shot at Bombardopolis March 21, 1917, records the iris as yellow, bill greenish yellow and feet greenish.

The Florida and Hispaniolan burrowing owls recently have been considered a species apart from *cunicularia* which, divided into a number of forms, ranges from western North America south to Patagonia, but in our opinion they have gone such a little way on the road to differentiation that the line of demarcation is not sharp cut so that we consider these two as subspecies of the continental group. Some South American specimens of *cunicularia* have the under wing coverts distinctly spotted and an occasional specimen of *troglydytes* has them nearly immaculate. Also occasional specimens of the *cunicularia* group are as heavily barred below as the *floridana* aggregation. The feathering of the tarsi is less heavy in *floridana* and *troglydytes*, but the difference here is slight.

After some search in literature it appears that the subspecific name *dominicensis* for the burrowing owl here discussed must be changed. *Speotyto dominicensis* Cory has been cited from the Bulletin of the Nuttall Ornithological Club, 1881, p. 154, but is here a *nomen nudum* as there is no description, the statement being merely "47. *Speotyto cunicularia dominicensis* (Mol.) Baird.—Resident and very abundant in the low scrub bordering the large lakes of the interior." The reference to Baird is not certain. In his Birds of Haiti and San Domingo (1885, p. 118), Cory calls this bird *Speotyto cunicularia*, but in the Auk for 1886 (p. 471) gives it as *Speotyto dominicensis* Cory, the name dating from this point, being accompanied by a description. However, there is a previous *Athene dominicensis* of Bonaparte⁸⁸ which is preoccupied by *Athene dominicensis*⁸⁹ Gray. The latter refers to *Speotyto c. cunicularia*, since it is based on Azara and must be, therefore, the bird of southern South America. As there is no other name available it becomes necessary to give the burrowing owl of Hispaniola a new designation. It may be known as *Speotyto cunicularia troglydytes*.

Following are measurements of our series; Males, 14 specimens, wing 152.0–164.5 (158.7), tail 69.0–81.7 (73.3), culmen from cere 13.7–16.4 (14.9), tarsus 42.3–46.6 (44.3) mm.

Females, 12 specimens, wing 150.0–163.0 (156.8), tail 63.3–74.0 (69.5), culmen from cere 13.8–15.3 (14.5), tarsus 40.0–44.8 (43.1) mm.

The burrowing owl is earthy brown above spotted and streaked with white and buffy white, and whitish or buffy below barred irregularly with earthy brown, with a broad white band across the upper breast and the throat white. The legs are feathered, the feathering becoming hairlike at the lower end of the tarsus and on the toes. The bird ranges from 210 to 230 mm. long, and is distinguished easily from any other owl of this area by small size and smooth, rounded head, without the projecting tufts of feathers called ears.

⁸⁸ Consp. Av., vol. 1, 1850, p. 38. ("Ex Antill.")

⁸⁹ Gen. Birds, vol. 1, 1845, p. 35.

ASIO DOMINGENSIS DOMINGENSIS (Müller)

HISPANIOLAN SHORT-EARED OWL, LECHUZA, CHOUETTE, CHAT-HUANT

Strix domingensis P. L. S. MÜLLER, Vollst. Naturs. Suppl. Reg.-Band, 1776, p. 70 (Hispaniola).

Chouette ou Grande Chevêche de Saint-Domingue, BUFFON, Hist. Nat. Ois., vol. 1, 1770, pp. 392-393 ("Saint-Domingue").

Strix dominicensis GMELIN, Syst. Nat., vol. 1, pt. 1, 1788, p. 296 (Hispaniola).—SHAW, Gen. Zool., vol. 7, pt. 1, 1809, p. 261 (based on Buffon).

?*Strix dominicensis*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Asio domingensis domingensis, WETMORE, Proc. Biol. Soc. Washington, vol. 41, October 15, 1928, pp. 165-166 (discussion of nomenclature).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 50 (St. Michel, specimen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 316 (Moca, San Juan, specimens).

Resident; rare.

W. L. Abbott collected a female of the native short-eared owl March 19, 1922, at the Laguna Rincón, near Cabral, Dominican Republic. E. L. Ekman, under date of December 2, 1929, writes that he obtained a pair near San Juan. The Ciferris collected specimens at Moca October 12, 1927, San Juan February 3, 1928, and Sabana San Thomé, near San Juan May 30, 1928. Another, a male, was secured by James Bond from four or five seen near St. Michel, Haiti, March 4, 1928. Abbott notes that his bird had eaten a rail, apparently a sora.

That Buffon examined a specimen of the short-eared owl from Hispaniola, and noted the peculiarities that distinguished this species from the widespread *Asio flammeus*, has been overlooked in recent decades. His remarks are as follows:

"Cet oiseau nous a été envoyé de Saint-Domingue, & nous paroît être une espèce nouvelle différente de toutes celles qui ont été indiquées par tous les Naturalistes; nous avons cru devoir la rapporter par le nom à celle de la chouette ou grande chevêche d'Europe, parce qu'elle s'en éloigne moins que d'aucune autre; mais dans le réel, elle nous paroît faire une espèce à part, & qui mériteroit un nom particulier; elle a le bec plus grand, plus fort & plus crochu qu'aucune espèce de chouette, & elle diffère encore de notre grande chevêche, en ce qu'elle a le ventre d'une couleur rouffâtre, uniforme, & qu'elle n'a sur la poitrine que quelques taches longitudinales; au lieu que la chouette ou grande chevêche d'Europe, a sur la poitrine & sur le ventre le grandes taches brunes, oblongues & pointues, que lui ont fait donner le nom de Chouette flambee, *noctua flammeata*."

The early authors who were so assiduous in coining Latin names for all birds whose descriptions appeared in current literature did not neglect this note of Buffon's as the species was styled *Strix domingensis* by Müller in 1776 and *Strix dominicensis* by Gmelin in 1788. The bird must bear the first name mentioned, that of Müller.

The species indicated by the *Strix dominicensis* of Ritter may be the present one but that is not certain.

Following are measurements in millimeters of the two specimens seen:

Acad. Nat. Sci. Phila. No. 82,270, male, wing 294, tail 130, culmen and cere 30.0, tarsus 52.5.

U.S.N.M. No. 279,303, female, wing 297, tail 132, culmen and cere 28.0, tarsus 57.2.

On comparison it develops that *Asio domingensis* is so related to *A. portoricensis* Ridgway, of the adjacent island of Porto Rico that the two should be treated as geographic races. The Porto Rican bird is distinguished by slightly smaller size, the wing in four examples ranging from 274 to 281 mm. (average 277 mm.), more rounded tail, darker forehead and less heavily marked chest. In general color, except as noted, the two forms are closely similar, birds in first fall plumage being darker buff than those that are older. The Porto Rican short-eared owl will be known as *Asio domingensis portoricensis* Ridgway.

The Hispaniolan short-eared owl is dark brown above with the feathers edged prominently with cinnamon buff, with bars of the latter color on wings and tail. There is a dark ring around the eye beyond which the facial disk is cinnamon buff and white. The bird is cinnamon buff below with the abdomen immaculate, the sides and flanks very lightly streaked and the breast very heavily marked with dusky. The bird is easily distinguished from the barn owl by the difference in color of the facial disk and from the eared owl by its smooth head and paler color.

ASIO STYGIUS NOCTIPETENS Riley

HISPANIOLAN STYGIAN OWL, LECHUZA, HOUHOU, FRESAYE-À-CORNES

Asio noctipetens RILEY, Smithsonian Misc. Colls., vol. 66, no. 15, Dec. 1, 1916, p. 1 (Constanza, Dominican Republic).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, p. 38 (mentioned).—KAEMPFER, Journ. für Ornith., 1924, p. 183 (Sánchez).

Asio stygius noctipetens, BOND, Proc. Acad. Nat. Sci., Philadelphia, vol. 80, 1928, p. 501 (Gonave Island, specimen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 316 (Moca, specimens).

Bubo clamator (part), VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 52 ("Saint-Domingue").

Resident; rare.

Little is at present known of this owl, first described from an adult male secured by Dr. W. L. Abbott near Constanza, D. R., at an elevation of about 1200 meters, on September 23, 1916. (Pl. 19.) Kaempfer collected a second bird from the swampy forests at the mouth of the Río Yuna, which Hartert says is an adult female taken November 18, 1922. Abbott informs us that this latter bird was secured alive from a native. According to infor-

mation from Hartert the label indicates the iris as golden yellow; bill blue-black, pale towards base; and feet dark gray, with a bluish tinge. The ends of the primaries are broken so that the true wing measurement may not be obtained. Ciferri secured skins at Moca January 1, 1927, and July 29, 1929.

Abbott says that he heard these owls hooting at night from the forests near Constanza but though Wetmore during his residence at that town listened for it regularly he was unable to hear any sound that might be attributed to it. The species, familiar to inhabitants under the name lechuza, was said to inhabit the dense rain-forests and to come out at night to hunt in the open pine-lands. It was reputed to rest in one certain place by day. Though its call was known no one could definitely describe it. It was said to take chickens on occasion when these were not properly housed.

Apparently this owl was known to Vieillot in his work in Haiti as under the name *Bubo clamator* (which refers to another owl but under which the author seems to have given notes pertaining to several species of eared owls) he remarks that the colonists of "Saint-Domingue" knew an owl that they called *houhou*.

James Bond collected a male at Pointe-à-Raquette on Gonave Island, June 29, 1928, the only specimen definitely known at present from Haiti. He was told that the bird was not uncommon on Gonave but saw it only on this one occasion. It was said to live in wooded ravines and to hunt at night in the plantations of the natives. The one taken had eaten a ground-dove.

Through the courtesy of Mr. Bond and Doctor Stone, Wetmore has compared the skin from Gonave Island with the type from Constanza and finds that it is similar though with coloration somewhat browner due obviously to wear and fading of the plumage. These skins are quite similar to *Asio stygius*, differing in general darker coloration, particularly above, with the light markings more restricted on wing coverts, scapulars, and facial disk and absent on the interscapular region. After careful comparison *noctipetens* is placed as a subspecies of *stygius* of which it is obviously the geographic representative. It will be recalled that *Asio stygius siguapa* (d'Orbigny) is found in the adjacent island of Cuba; according to Barbour⁹⁰ this differs from continental *stygius* in paler facial disk and general grayer coloration.

Following are measurements in millimeters of the two specimens from Hispaniola:

Type, U.S.N.M. 249,475, male, wing 291, tail 160, culmen and cere 34.3, tarsus 45.0.

⁹⁰ Birds of Cuba, Mem. Nuttall Ornith. Club, No. 6, June, 1923, p. 87.



THE HISPANIOLAN EARED OWL (*ASIO STYGIUS NOCTIPETENS*)



Acad. Nat. Sci. No. 82,272, male, wing 303, tail 169, culmen and cere 35.8, tarsus 47.3.

Abbott describes the soft parts in his specimen as follows: iris yellow, toes dirty lead color, claws black, bill horny black, with the tip and lower mandible yellowish.

This owl, which is about 440 mm. in length is blackish brown above, mottled faintly with grayish buff on forehead, sides of head, wing coverts, inner secondaries, and tertials, and barred with buff on the tail. Below it is buff, paler anteriorly, streaked and barred heavily with blackish brown. Elongated feathers project as two horns on the crown, and the legs are feathered to the toes. (Pl. 19.)

Order CAPRIMULGIFORMES

Suborder CAPRIMULGI

Family NYCTIBIIDAE

NYCTIBIUS GRISEUS ABBOTTI Richmond

HISPANIOLAN NYCTIBIUS, DON JUAN, CHAT HUANT

Nyctibius griseus abbotti RICHMOND, Smithsonian Misc. Colls., vol. 68, no. 7, July 12, 1917, p. 1 (Port à Piment, Haiti).—WETMORE, Proc. U. S. Nat. Mus., vol. 54, October 15, 1918, pp. 577-586, 3 figs. (anatomy, systematic position).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 502 (reported).

Resident; abundance not certain.

The present form was described from a male taken by W. L. Abbott at Port à Piment, on the southern shore of the northwest peninsula of Haiti, March 9, 1917. It was caught alive while asleep. Under date of February 12, 1918 Abbott wrote from Jérémie that he had heard many chat huant (as these birds are named in Haiti) calling but that he did not secure any. He also reported them from the Cul-de-Sac region under date of May 19, 1920. James Bond collected a female on Gonave Island June 28, 1928, a gray bird like the type, with the wing 295.0, tail 212.0, culmen from base 26.2, and tarsus 17.9 mm. He writes (in a letter) that his specimen came from Pointe-à-Raquette.

The body of the type specimen, preserved in alcohol, was studied by Wetmore who has published an account of the anatomy. The following items of food, with their percentages by bulk, were found in the capacious stomach of this bird:

Three *Stenodontes exsertus* Olivier 5 per cent, 2 other cerambycid beetles not identified 5 per cent, 2 small Passalid beetles 2 per cent, 18 locustid eggs 5 per cent, remains of moths 83 per cent.

In the Dominican Republic Abbott examined a bird, badly mounted, in a drug store in Puerto Plata, and heard the queer call of the Don Juan morning and evening in May near Hondo in the mountains. They were reported to be local in distribution, and were said to be found near San Francisco de Macoris.

Hartert writes us that there is an adult in the Tring Museum taken by Kaempfer near Túbano in October, 1923.

This group of birds is found elsewhere in the Greater Antilles only in Jamaica. It is true that Hartlaub⁹¹ says that Herzog von Württemberg secured one in Cuba, but there is no other record for that island and there is reason to believe that this individual was obtained elsewhere, possibly in Haiti where Württemberg traveled extensively.

The Don Juan or chat huant is the largest of the goatsuckerlike birds on the island and, though superficially like the others, through possession of powder downs and certain anatomical peculiarities, is segregated in a family distinct from the Caprimulgidae. The form of Hispaniola is approximately 450 mm. in length, with long tail, fairly heavy body, and a tremendous mouth that measures approximately 45 mm. across the gape and opens sufficiently to engulf a small mango. The bird is gray above, streaked with black and mottled with whitish, and the same color below, with black spots on the breast.

Family CAPRIMULGIDAE⁹²

Subfamily CAPRIMULGINAE

ANTROSTOMUS CAROLINENSIS (Gmelin)

CHUCK-WILL'S-WIDOW, PITANGUA, DON JUAN

Caprimulgus carolinensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 1028 (Carolina.)

? *Caprimulgus rufus*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

Caprimulgus carolinensis, KAEMPFER, Journ. für Ornith., 1924, p. 182 (Moca).

Antrostomus carolinensis, TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).

Antrostomus carolinensis, CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (specimens); Birds Haiti and San Domingo, July, 1884, pp. 84-85 (Pétionville); Cat. West Indian Birds, 1892, p. 105 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18, (Catarrey, specimen).—VER-

⁹¹ Naumannia, 1852, pt. 2, p. 54.

⁹² In the *Conspectus Avium*, vol. 1, 1850, p. 61 Bonaparte has the following description: "*Antrostomus dominicus*, Bp. Mus. Lugd. ex Insula S. Dominici. Similis praecedenti, [i. e. *Antrostomus vociferus*] sed obscurior, magis et pulcherrime variegatus." In the Cat. Birds Brit. Mus., vol. 16, 1892, p. 535, Doctor Hartert writes "I have examined the types of this supposed species in the Leyden Museum; they are said to be from Haiti, but, in my opinion, are *C. pectoralis* with wrong locality." *Caprimulgus pectoralis* is a species of South Africa.

RILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (Sánchez, La Vega, El Valle).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 317 (Haina, specimen).

Migrant from United States; abundance not certain as the birds are seldom seen.

The chuck-will's-widow is a migrant species that comes in winter from the southeastern United States to the West Indies. It is strictly nocturnal, remaining under cover during the entire day and becoming active only at night when it comes out to search for food. It is seen therefore only casually when one comes across a sleeping individual. The few records available are not to be taken as an index to the abundance of the species.

Cherrie secured one February 3, 1896, near Catarrey, and says that he heard the Chuck-will's-widow calling frequently on clear evenings. Verrill records it near Sánchez, La Vega, and El Valle, and says that it was not rare in the more open portions of wooded hill-sides. Hartert informs us that the Tring Museum has an adult female taken by A. H. Verrill at Sánchez, March 9, 1907. R. H. Beck secured specimens at Santo Domingo City October 14 and 17, La Vega December 4, 1916, Loma Tina January 16, and Túbano February 20, 1917. Abbott forwarded one taken February 18, 1923 at Jovéro, and says that it was killed by a boy with a slingshot or catapult in dense jungle near a river. Near Hondo, below Constanza, he saw several large nightjars in the wooded swamps that may have included this species, but this was not certain as he did not succeed in procuring specimens. Kaempfer has reported a few in cacao plantations near Moca, and Hartert states (in a letter) that the Tring Museum has skins collected by Kaempfer at Villa Riva, February 4, 1924, Guanabano, near the border between the Provinces of La Vega and Espaillat March 1, 1922, and near Caímato, Province of Espaillat, April 1, 1922. Moltoni received one taken by Ciferri near Haina.

There are few definite records for Haiti. Ritter lists a specimen of "rother Zeigenmelker" that may perhaps have been the chuck-will's-widow. Cory speaks of two taken and gives one of them as secured at Pétienville February 28, 1881.

The chuck-will's-widow is distinguished from other goatsuckers of the island by large size, having the wing 201 to 225 mm. long and measuring itself about 325 mm. in length. The plumage in general is brownish, above becoming more or less grayish on the inner wing feathers, everywhere minutely vermiculated with black, with black streaks and spots on head and back. The breast is similar but paler, there is a band of buff across the throat, and the abdomen is dull buff barred with dusky. The male has the inner webs of the outer

rectrices broadly white, while in the female they are buff. The species is distinguished from any of the other goatsuckers by having lateral filaments on the long bristles that project about the mouth.

ANTROSTOMUS CUBANENSIS EKMANI Lönnberg

HISPANIOLAN GOATSUCKER, PITANGUA

Antrostomus ekmani LÖNNBERG, Ark. för Zool., vol. 20 B, no. 6, March 18, 1929, p. 1, fig. 1 (Jérémie, Haiti).—LÖNNBERG, Fauna och Flora, 1929, pp. 102-103, fig. 1 (specimen, eggs).

? *Caprimulgus carolinensis* (part), KAEMPFER, Journ. für Ornith., 1924, p. 182 (notes on nest).

Antrostomus, sp. ? BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 521 (mentioned).

Known locally in the Dominican Republic, and Haiti; resident.

This peculiar bird is known at present from a specimen secured by W. L. Abbott February 23, 1921 at Mao, D. R., in the valley of the Yaqui del Norte, one found by Kaempfer near La Vega, August 2, 1922, and by a third, the type of the race, taken by Ekman near Jérémie in July, 1928. (Pl. 20.) The second specimen Hartert informs us was found dead in such condition that it could be preserved only by leaving most of the bones in the skin. Abbott writes that his bird was found resting on a branch near the ground in an area of the dense growth characteristic of the arid region there. Possibly this form was included among the goatsuckers seen but not collected by Abbott near Hondo below Constanza.

E. L. Ekman, the botanist, secured the type of this race at 1500 meters altitude at the Habitation Quillaud near Trou des Roseaux in the Massif de la Hotte June 27, 1928. The bird was flushed from a nest on the ground in which there were two eggs, light greenish white in color spotted with brown.

It is of interest to note that in a collection of water-color drawings of birds made by M. de Rabié near the close of the eighteenth century there is an excellent illustration of the present bird, easily recognized by size and color, particularly by the plain buff outer margins of the distal ends of the rectrices. The drawing in question is labelled *peut-on voir* and is indicated as made "au Cap" (=Cap-Haïtien). It is number 14 in the portfolio in question which has been examined through the courtesy of Wheldon and Wesley of London. There is no other mention of it in the older records from Haiti unless possibly this may be the *Caprimulgus rufus* listed by Ritter.¹

Kaempfer in his notes on "*Caprimulgus carolinensis*" (see reference above) writes "die Eier dieses Vogels sollen nach Berichten von Eingeborenen weiss mit braunen Punkten sein und das Nest sich auf

¹ (Naturh. Reis. Westind. Insel Hayti, 1836, p. 156) whose identity is not certain but which is more probably the chuck-will's-widow.



HISPANIOLAN GOATSUCKER (*ANTROSTOMUS CUBANENSIS* EKMAN)

dem Boden befinden. Der Ruf ist ein schauerlich klingendes weithin hörbares Pitanguá, gegen das Ende stark anschwellend." As *Antristomus carolinensis*, the chuck-will's-widow, is known only as a migrant these observations may refer to the native species.

This bird in size and form is similar to *Antristomus cubanensis cubanensis* Lawrence of Cuba from which it differs in having the light tips of the outer rectrices and the under tail coverts cinnamon-buff, immaculate except for the longer central feathers which have dark bars on the outer webs, and with the light mottlings on the inner webs of the primaries less extensive, the feathers being immaculate on the inner web for the distal fourth. The Cuban form has the entire under tail coverts heavily barred with the inner webs of the primaries displaying extensive mottled bars that extend to distal end of the feathers.

Though Abbott noted developing eggs as large as number two shot in his specimen for some reason he marked it "♀?". After comparison with Cuban birds it appears to be a female, as the female of that form differs from the male, in addition to the narrower light band on the tip of the tail, in having distinct paler markings on the inner webs of the outer rectrices, producing a series of bars. This area in the male is immaculate. As the bird from Mao has the mottled bars on the inner webs of the rectrices it appears certainly to be a female. It has the following measurements (in millimeters); wing 170.5, tail 128.3, culmen from base 16.3, tarsus 17.9. The dimensions are closely similar to those of *A. c. cubanensis*.

The present bird in form is like the chuck-will's-widow but is smaller, and grayer, less buffy, in color. In the hand it may be told by shorter wing, which measures about 170 mm. (instead of the 200 mm. or more of the chuck-will's-widow) and by the smooth bases of the rictal bristles which lack lateral filaments. (Pl. 20.)

SIPHONORHIS BREWSTERI (Chapman)

BREWSTER'S GOATSUCKER, GROUILLÉ-CORPS

Microsiphonorhis brewsteri CHAMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, p. 329 (Túbano, Dominican Republic).—BOND, Auk, 1928, pp. 471-474, pl. 16 (Gonave Island; habits, eggs).—LÖNNBERG, Fauna och Flora, 1929, p. 102 (Haiti).

Siphonorhis brewsteri, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 501-502 (Gonave Island, Trou Forban).

Resident; local.

The present species, peculiar to the island, was first taken by R. H. Beck, who collected an adult female near Túbano, in the Province of Azua, February 10, 1917. Hartert informs us that Kaempfer secured three specimens for the Tring Museum, near Túbano on

August 13 and 14, 1924, at an elevation of 300 meters. According to the labels these include one male and two females. This species was first identified from Haiti by bones from the cavern deposits at L'Atalaye identified by Wetmore. In 1928 Bond recorded it in small numbers in the arid region about Trou Forban and Magasin Caries between L'Arcahaie and Mont Rouis, and on Gonave Island found it fairly common so that he collected a series. He writes that he usually found them "perched lengthwise on a horizontal branch of a bush, from one to five feet above the ground. The protective coloring of the birds, combined with their immobility, made them extremely difficult to make out. Occasionally, however, I flushed them from the ground, on which occasions they would flit a short distance through the scrub like large moths and either settle again on the ground, or, as frequently happened, would fly up into a nearby bush like some passerine! It will thus be seen that the bird once found was not difficult to collect and in fact in no case did I fail to secure a bird which I had followed up.

"In May and June, which is evidently their breeding-season, the little goatsucker is more noisy at night, and at times I heard it during the day! The notes may be described as half croaks, half whispers, and can be recalled by the syllables *gu-eck*, *goo-ré-caw*, with the accent on the *ré*. The bird also emits at times a clear rising whistle, which reminded me forcibly of a Canada Jay.

"Partly because of its note, partly because of its habit, typical of the family, of quivering its wings when flushed from the nest, the little goatsucker is known to the natives as the 'Grouillé-corps' or 'shaking-body.'"

Bond secured two sets of two eggs each. The first one was found May 16, 1928 on Gonave Island on the top of a narrow ridge on burnt land, placed in a little hollow formed by the bird on the ground. The eggs are dull white with rather evenly distributed spots of pale violet-gray and numerous spots or scrawls of buff and pale brown. A second set brought in by a native June 27 has the violet-gray markings restricted to the large end and the buff spots lacking. The first set measures 25.0 by 18.2 and 25.2 by 18.9 mm., and the second 24.8 by 18.9 and 24.6 by 18.9 mm. Bond cites the hills above Pointe-à-Raquette as the place where this little goatsucker was first seen, but does not state whether his subsequent notes pertain to this locality or to others.

On examination of the excellent series collected by Bond it appears that male and female are generally similar in color, but that females average decidedly paler, less blackish on the breast, and in most of those examined are a little less rufescent on the back. Two juvenile birds secured May 17, 1928, though not quite grown, were evidently

able to fly. These are in molt from juvenal to first fall plumage, with most of the feathers except those on the breast already replaced. Where juvenile feathers persist on lower breast and abdomen the markings are softer and less distinct and the color is more buffy than in the next plumage. Otherwise they are like the adults.

Following are measurements of the series in the Academy of Natural Sciences:

Four males, wing 115.0–120.1 (117.0), tail 99.1–104.8 (101.2), culmen from base 9.2–11.3 (10.6), tarsus 24.4–24.9 (24.6) mm.

Five females, wing 112.9–120.2 (114.8), tail 92.6–104.1 (97.4), culmen from base 9.6–11.0 (10.3), tarsus 22.2–23.9 (23.1) mm.

Wetmore agrees with Bond that the present species should be placed in the genus *Siphonorhis* since the structural differences alleged in the original description of *Microsiphonorhis* do not hold when a series is examined, the only apparent distinction between *brewsteri* and *Siphonorhis americanus* being that the bill in the former is relatively heavier. The long, strong tarsi of the bird of Hispaniola attract attention at once, and we agree with Chapman that in length of tarsus and in general appearance both *Siphonorhis americanus* of Jamaica and *S. brewsteri* are of the same general type as *Nyctidromus* of the continental American tropics.

The present species is distinguished by small size from all others of its family found in Hispaniola. It is brownish gray above, mottled as usual in goatsuckers with a mixture of black and lighter colors. There is a distinct white throat band, and the under surface is barred and vermiculated with black and buff or buffy white.

Subfamily CHORDEILINAE

CHORDEILES MINOR VICINUS Riley

BAHAMAN NIGHTHAWK, QUERE BEBÉ, PEUT-ON-VOIR

Chordeiles virginianus vicinus RILEY, Auk. 1903, p. 432 (Long Island, Bahamas).

Aves Nocturnas, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, cap. 7; Reprint, 1851, p. 446 (habits).

Chordeiles minor, COBY, Birds Haiti and San Domingo, July, 1884, pp. 85–86 (La Vega, specimens); Cat. West Indian Birds, 1892, p. 105 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHRISTY, Ibis, 1897, pp. 328–329 (La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (Dominican Republic, common).

Chordeiles virginianus minor, KAEMPFER, Journ. für Ornith., 1924, p. 182 (Dominican Republic, common).

Chordeiles virginianus gundlachi, PETERS, Bull. Mus. Comp. Zoöl., 1917, p. 411 (Sosúa).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 502 (Port-de-Paix, Acul Samedi, Tortue Island).—DANFORTH, Auk, 1929, p. 369

(fairly common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 317 (Haina, Bonaó, specimens).

Chordeiles minor vicinus, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 37 (San Thomé, specimen).

Summer resident; locally common.

The nighthawk is migrant in Hispaniola, according to available information arriving in April and nesting in May and June. It is a bird that prefers pasturelands and other open country and does not range in dense forests as do other goatsuckers except to rest occasionally in trees. Nighthawks appear in the air toward sunset or on cloudy days, and fly steadily with strong beats of their long wings in zigzag, irregular course across the sky in search of insect food which they capture on the wing in their broadly opened mouths. As the dusk of evening deepens they come to lower elevations when they may sweep back and forth barely above the ground. The name of "hawk," given to them apparently because of their long, narrow wings, is a misnomer since they are members of the family of goatsuckers or nightjars. They rest on the ground or on the limbs of trees, in the latter case always perching longitudinally along the limb. The date of departure from Hispaniola for their unknown winter home somewhere in South America is not at present known.

The earliest report of the nighthawk on the island, that of Oviedo in the sixteenth century, relates probably to the Dominican Republic. He says "hay en esta isla aves mayores que vencejos, é las alas tienen y el vuelo de la mesina forma, é vuelan con tanto velocidad é con aquella manera de voltear, subiendo y descendiendo, dando vueltas en el ayre. É no salen ni se ven sino el tiempo que el sol se entra debaxo del horiçonte, é tambien algunas veces si el sol no parece, por estar el cielo ñubloso." He describes further their notes which may be heard at a distance and remarks that they are great enemies to bats, striking at them in the air, a curious statement of uncertain foundation. Cory, who secured three at La Vega, July 31 and August 2 and 4, 1883, remarks that the nighthawk is abundant in many localities in the summer months. Christy found them also at La Vega and writes that he observed nine at one time. Verrill writes that they were common in the savannas of the interior. Peters reports that the first of the returning migrants appeared on the north coast near Sosúa on April 10, 1916, the night before his departure from the island. Kaempfer reported them as the most common of the family found throughout the Dominican Republic. He was told that they nested on the ground in dry stony localities. They were found resting in low trees and appeared on the wing as the sun set, or sometimes earlier on cloudy days. He recorded a flock of fifty or more in May near Jarabacoa. Hartert writes us that the Tring Museum received

two skins from Kaempfer, a male taken at Manabáo, in the western part of the Province of La Vega, not far from the head of the Río Yaqui del Norte, May 2, 1923, and a female in worn dress from Túbano, August 16, 1923. Wetmore saw one near Comendador April 30, and at Constanza from May 18 to 28 recorded them regularly. They appeared high in the air above the village, always at sundown, coming from the north, northeast, or east, and passed down the valley to the west. It appeared almost that they moved down to some lower altitude where the evening air was warmer and therefore more favorable to flying insects. Most of those seen were males but occasionally a pair appeared when the male dashed down frequently past his mate to check suddenly and produce a peculiar roaring, whirring sound that carried for long distances. In the intervals in this display he called steadily and frequently suspended his wing strokes to hold his wings in a broadly open V above his back while he sailed for a short distance. The Spanish name of *querebebé* is given in imitation of the call of the male, which to Wetmore's ear resembled rather the syllables *chitty-chit chitty-chit* uttered rapidly. Danforth in the summer of 1927 found nighthawks fairly common, recording them at Seibo, Hato Mayor, Santo Domingo City, Los Alcarrizos, Bonao, Monte Cristi, and San Juan. Moltoni reports one taken by Ciferri at San Thomé, Province of Azua, August 20, 1929. Others that he lists under the name *gundlachii* from Haina, August 12, 1926, and Bonao May 4 and 8, 1927, the last taken from the nest, are also mentioned here.

In Haiti nighthawks were reported by Paul Bartsch April 21 and 22, 1917 between Port-au-Prince and St. Marc. June 28, 1917, Abbott collected a female at Port á l'Ecu on the north coast, and May 19 and 22 he secured three females on Tortue, where he recorded them as nesting on pebbly sea beaches. At Jean Rabel Anchorage he collected two eggs, one on May 29 and the second on June 2, 1917. In each case the parent was flushed from the egg which was deposited without nesting material among the pebbles of a gravelly sea beach. These eggs are elongate in form and measure 29.5 by 21.1 and 33.4 by 22.0 mm. The disparity in size between the two is somewhat remarkable. The ground color of these eggs is dull white with a slight gloss, speckled evenly everywhere with fine spots, in the larger egg of fuscous-black, and in the smaller one of neutral gray. Bond found nighthawks common on Tortue Island, records them at Port-de-Paix, and says that they were particularly numerous near Acul Samedi both on the lowland plains and in the pine forests of the hills.

Wetmore recorded two at Fonds-des-Nègres on April 2, 1927, and near Hinche from April 22 to 24 found them common. Two were taken here on the latter date. The birds were found over

gravel-surfaced knolls bearing little vegetation. Apparently they were located on their breeding grounds with nesting about to begin, as males swung back and forth through the air in zigzag course, fifty yards from the earth, each one confining himself to a limited area which apparently was his chosen nesting territory. As they flew they called *chitty-chit chitty-chit chitty-chit*, a rasping note that in tone and utterance sounded almost exactly like the call of a katydid. At intervals they swept suddenly down through the air, turning just before reaching the earth to produce a whirring boom that was higher pitched, weaker, and less resonant than that of the nighthawks of the *minor* group in the United States. To keen ears this was barely audible at fifty yards.

In the summer of 1927 Danforth reported nighthawks at Les Cayes. Poole and Perrygo recorded a dozen at Plaine Mapou on Gonave Island March 3 to 14, 1929 but did not collect specimens.

After careful comparison it appears that two forms of nighthawk come to Hispaniola of which the Cuban bird appears in passage to or from nesting grounds elsewhere, while the breeding bird as shown by Abbott's specimens is the Bahaman nighthawk, *C. m. vicinus*. Specimens from Tortue and Port à l'Ecu, and a male taken by Wetmore at Hinche, five in all, agree with *vicinus* from the Bahama Islands in being pale above and lighter below than the Cuban bird. In fact they average slightly lighter than most Bahaman birds. Measurements are as follows (in millimeters):

One male, wing 169.5, tail 90.8, culmen from base 7.0 and tarsus 13.4.

Four females, wing 167.5-175.0 (172.5); tail 87.6-94.3 (91.5); culmen from base 7.0-7.7 (7.2); tarsus 13.4-14.2 (13.8).

As a matter of convenience here all records in literature are cited under *vicinus* though part may refer to the other form. Since the breeding bird of Hispaniola proves to be *vicinus* that is probably the race that nests on Porto Rico, instead of *gundlachii* as has been supposed.

The relationship of the Cuban bird *gundlachii* and the Bahaman form *vicinus* to the nighthawks of the *minor* type of North America is puzzling. From all appearances the birds of the Greater Antilles and Bahamas are merely geographic races of the continental type yet the calls of the two from observations made by Wetmore in Haiti (where he collected both *vicinus* and *gundlachii*) are radically and entirely different. The call of North American *minor* in its various geographic races is a loud almost raucous *peent* or *pe-ernt* that announces the presence of these birds at a great distance, while the boom of the male is a resonant, roaring sound that may be heard likewise over a wide radius. The katydidlike *chitty-chit* of the

West Indian and Bahaman races is so absolutely different as to suggest strongly that these constitute a species distinct as is *Chordeiles acutipennis*. It may be noted too that the eggs of *vicinus* and *gundlachii* of which there is a fair series in the United States National Museum are much less boldly marked than in the continental birds the spots being decidedly finer. Only an occasional egg from North America is as finely marked. The eggs of the West Indian and Bahaman birds thus resemble those of *acutipennis*. Examination of the skins, however, in series reveals no trenchant difference and though Wetmore is convinced in his own mind that *gundlachii* and *vicinus* are specifically distinct the two are listed here as forms of *minor* pending further observations in the matter.

The nighthawk is easily told as the only one of the goatsucker family that is regularly abroad by day. Above the bird is heavily mottled with gray and buff on a black background, and below is whitish or buffy white barred narrowly with dusky. There is a buffy white band across the throat and a white bar on the under surface of the primaries near their tips. Males have a wide white bar across the end of the tail that is not found in females. Nighthawks differ from other goatsuckers in lack of strong bristles about the mouth.

CHORDEILES MINOR GUNDLACHII Lawrence

CUBAN NIGHTHAWK, QUEREBEBÉ, PATIN VOIE

Chordeiles gundlachii LAWRENCE, Ann. Lyc. Nat. Hist. New York, vol. 6, December, 1856, p. 165. (Cuba.)

Migrant; abundance uncertain.

It has been mentioned above that specimens now at hand of breeding nighthawks from Hispaniola belong to the Bahaman form instead of the Cuban race as had been supposed in the past.² Two skins taken by Wetmore at Hinche, on April 23, 1927, a male and a female, have the dark dorsal coloration and deep buff under surface characteristic of the Cuban race as at present understood and are identified as that form. They are small in dimension as the following measurements (in millimeters) indicate:

Male, wing 166.5, tail 83.0, culmen from base 8.4, tarsus 11.8.

Female, wing 168.5, tail 91.0, culmen from base 7.6, tarsus 13.2.

There is a male in the American Museum of Natural History secured at San Isidrio, Dominican Republic, June 1, 1917, by R. H. Beck, with the wing 164.0, tail 91.9, culmen from base 6.4 and tarsus 13.2 mm. that is also determined as this race, as is a female in the

² Oberholser, U. S. Nat. Mus. Bull. 80, 1914, p. 83, includes Haiti in the breeding range of the Cuban nighthawk, but does not list specimens examined from that island so that basis for his action is uncertain.

Academy of Natural Sciences taken at Caracol, Haiti, April 28, 1928, by James Bond with the wing 166.0, tail 85.3, culmen from base 4.4 and tarsus 14.7 mm.

As the Cuban bird does not winter in Cuba but goes elsewhere it is not surprising that it should occur in migration in Hispaniola. Further collecting should be carried on to indicate its abundance.

Order MICROPODIFORMES

Suborder MICROPODII

Family MICROPODIDAE

Subfamily CHAETURINAE

NEPHOECETES NIGER NIGER (Gmelin)

ANTILLEAN BLACK SWIFT, VENCEJO, GOLONDRINA, HIRONDELLE NOIRE

Hirundo nigra GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 1025 (Hispaniola).

Vencejo, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, cap. 2; reprint, Madrid, 1851, p. 442 (common).

Petit Martinet Noir, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 6, 1779, pp. 668-669 ("Saint-Domingue").

Hirundo Apus Dominicensis BRISSON, Ornith., vol. 2, 1760, pp. 514-515, pl. 46, fig. 3 ("S. Domingue").

Hirundo nigra, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 64 (habits).—HARTLAUB, Isis, 1847, p. 609 (listed).

Cypseloides niger, CORY, Cat. West Indian Birds, 1892, p. 105 (Haiti, Dominican Republic).—HARTERT, Cat. Birds Brit. Mus., vol. 16, 1892, p. 495 (La Vega, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (Samaná).

Nephoecetes niger, CORY, Birds Haiti and San Domingo, July, 1884, pp. 88-89, 1 fig. (La Vega, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHRISTY, Ibis, 1897, p. 329 (La Vega).

Nephoecetes niger niger, GRISCOM, Auk, 1924, pp. 68-71 (discussion).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 502 (La Selle, Morne Tranchant, Port-au-Prince).—DANFORTH, Auk, 1929, p. 368 (Dominican Republic).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 317 (Bonao, San Juan, specimens).

Resident; locally common, in a few places abundant.

The black swift is of a family often confused with the swallows—which belong in a separate order among the perching birds—because of its swallowlike form. It feeds in similar manner by capturing its prey in open mouth on the wing, but by one reasonably expert in ornithology may be told without trouble by its flight which is much more rapid than that of swallows, and is performed with greater dash and speed. Black swifts are usually seen in little flocks that feed rather high in air. Often they are difficult to secure for specimens as they never perch on tree limbs but alight only against the faces of cliffs or in hollow trees.

The black swift seems most abundant in the Dominican Republic in the vicinity of La Vega where Cory secured a number of specimens from July 25 to August 8, 1883. He says that he did not meet with it elsewhere. Christy also observed it near La Vega and relates that in wet weather he found it gathered in vast flocks just outside the town. Verrill reported it from Samaná. Abbott secured two males and a female at Hondo, below Constanza, May 8 and 9, 1919, and two females near El Río on May 14 of the same year. He did not procure it elsewhere.

Wetmore, in 1927, found a dozen at Las Alcarrizos May 4, one on the lower Yuna near Sánchez May 10, one at Villa Riva May 16, many near La Vega, May 17 and 30, two at El Río May 18, others at the same point May 30, several at Constanza from May 18 to 28, and several near Santiago May 30. He secured specimens near Constanza May 18. He observed that they were easily told at a glance from the chimney swift by the tail which in the black swift appears longer and distinctly broader at the end, and in addition seems distinctly flexible and is often expanded and twisted from side to side as the birds turn in the air. The birds appear very black with long wings. The flight is very rapid, and is accomplished generally with less wing motion than in the chimney swift. Near Constanza black swifts were rather local in occurrence and frequented certain parts of the valley almost to the exclusion of others. One morning when fog lay heavy along the hills on all sides but the sky above the town was clear, swifts circled overhead in the open air until the sun came through the mist when they disappeared. Black swifts seem very silent and only twice were loud chirping calls heard that apparently emanated from these birds though this was not wholly certain. West of La Vega on May 30 black swifts were observed in abundance in flocks of fifteen or twenty circling swiftly among the royal palms.

In California a closely related form places its nests on rocks beneath waterfalls or in dark crevices among the rocks of precipices, but it is possible from their apparent abundance at La Vega that here the black swifts locate their nests in some other manner.

In the summer of 1927 Danforth found them at Santo Domingo City in June and July, Bonao in July and August, San Juan July 10 and 11, and at Haina and La Vega in June. Ciferri obtained them at Bonao May 8 and September 1, 1927, and at Sabana San Thomé, near San Juan, May 5, 1929.

Curiously enough there are very few records for this bird in Haiti. Brisson in 1760 describes a specimen sent to de Reaumur from Chervain from "S. Domingue", possibly from Haiti. Vieillot in 1807 says that this species is found in dry, arid sections but gives no definite localities. His statement that "elle se perche souvent sur les

branches sèches" throws some doubt on his observations, as in this he has unquestionably confused them with some swallow. Bartsch has recorded them April 16, 1917, as seen about five miles west of Jérémie, and Dr. C. H. Arndt told Wetmore of great numbers of swifts seen in the month of January beyond Jérémie that may have been this species. Bond saw them at 1800 meters elevation on Morne La Selle, and on Morne Tranchant, and recorded three on one occasion at Port-au-Prince.

Following are measurements of a small series:

Males, two specimens, wing 150.4–151.7 (151.1), tail 58.7–64.4 (61.6), culmen from base 6.5–7.0 (6.8), tarsus 12.4–12.7 (12.6) mm.

Females, five specimens, wing 147.1–151.6 (148.3), tail 53.8–59.0 (56.8), culmen from base 5.4–6.3 (5.9), tarsus 11.0–12.5 (12.0) mm.

The black swift is as large as a medium sized swallow, and is sooty black in color throughout, lighter on the under surface, with black markings about the eye and a grayish edging on the feathers of the forehead and in front of the eye. Their difference from the chimney swift in appearance in life has been described. In the hand it is found that the tail feathers of the black swift are soft at the tip while in the chimney swifts the shafts of the feathers project beyond the web as little spines.

CHAETURA PELAGICA (Linnaeus)

CHIMNEY SWIFT

Hirundo pelagica LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 192 (Carolina).

Hirundo Pelasgia, VIEILLOT, Ois. Amér. Sept., vol. 1, 1807, p. 63 ("Saint-Domingue").

Chaetura pelagica, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (Haiti).

Found in passage during migration; abundance uncertain.

The chimney swift, a common bird in eastern North America, known to the early colonists as a species that nested in hollow trees, with the advent of Caucasian civilization took up its summer abode in chimneys and so became familiar about the homes of man. Each autumn it gathered in flocks for the southward migration and was traced in passage to Florida and the gulf coast of the United States and there disappeared. The credulous held firmly to the belief that during winter the birds went into a state of suspended animation in caves or hollow trees or submerged in the mud of marshes and ponds there to spend the winter months in hibernation. The more scientific, realizing that hibernation was unknown in birds, looked for these swifts in some winter home to the southward but for many years in vain.

An early observation of Vieillot on the chimney swift in Hispaniola has been completely overlooked. This author who traveled in Haiti, in his account of the chimney swift (see reference above), after stating the usual range for the bird in the north, remarks "on la trouve aussi à Saint-Domingue." On April 19, 1917, Paul Bartsch, familiar with the bird in the north, observed a number of chimney swifts circling in the air above the city of Port-au-Prince. On May 18, 1917, W. L. Abbott collected an adult male chimney swift on Tortue Island, the first collected specimen on record so far as we are aware from south of the United States.

In the early morning of April 15, 1927 Wetmore noted a flock of forty or fifty circling over his camp on La Selle at an altitude of 1,900 meters chipping clearly as they darted rapidly above the pines. At Hinche on the evening of April 23 a single bird passed toward the northwest traveling rapidly and directly at an elevation of 80 meters above the earth. On April 30 he noted several at Belladère and on the following morning saw several across the Dominican border near Comendador. It is believed that these records all pertain to birds in passage from some winter home in northern South America. Further observations of occurrence will be important.

The only other record of the chimney swift south of the United States that we have seen is that of Bangs and Peters³ who report a male taken at Presidio, Vera Cruz, by W. W. Brown, May 6, 1925.

The chimney swift is sooty black, paler on the rump and upper tail coverts and throat. It is smaller than the black swift as it has a wing measurement of only 122 to 133 mm., and in addition has the shafts of the tail feathers protruding as rigid spines.

STREPTOPROCNE ZONARIS PALLIDIFRONS (Hartert)

ANTILLEAN CLOUD SWIFT, VENCEJO

Chaetura zonaris pallidifrons HARTERT, Ibis, 1896, p. 368 (Ferry River, St. Catherine, Jamaica).⁴

Chaetura zonaris, CORY, Cat. West Indian Birds, 1892, p. 106 (recorded with a query, Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18 (Santo Domingo City, specimen).—VERRELL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (La Vega).

Streptoprocne zonaris melanotis, PETERS, Proc. New England Zool. Club, vol. 6, Nov. 23, 1916, p. 37 (described as new from Sosúa, Dominican Republic); Bull. Mus. Comp. Zool., 1917, p. 413 (Sosúa, specimens; Monte Cristi, Chocó, Río San Juan).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 502-503 (La Selle, La Hotte, Port-au-Prince, Ennery, Port-de-Paix, Tortue Island).—DANFORTH, Auk, 1929, p. 368 (recorded).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 317 (San Juan, specimen).

³ Bull. Mus. Comp. Zool., vol. 67, 1927, p. 474.

⁴ For this locality see Hartert, Nov. Zool., vol. 29, 1922, p. 399.

Supposed to be resident; local in occurrence.

The cloud swift is found ordinarily among the hills over towering, steep-sided ridges and about high precipices but through its great speed in flight so annihilates distance that flocks may appear temporarily almost anywhere. It is believed to be resident, and may breed in the interior mountains. Observers will do well to note its occurrence in the hope of locating nests, as it is one of the most interesting forms in the bird life of the island.

The earliest certain record is that of Cherrie, who secured one near Santo Domingo City in the early part of 1895, since Cory in 1892 had queried its occurrence on the island. Cherrie reported great flocks. Verrill recorded cloud swifts as common at La Vega but says that usually they flew at such elevation that they were beyond gun range. Peters collected four at Sosúa February 28, and March 27 and 31, 1916, and reported them also at Monte Cristi, Chocó, and Río San Juan. At Sosúa, where he saw them most frequently they were irregular in occurrence as sometimes none were observed for a period of a week. They were usually noted just before sundown when a flock would appear from the north and pass toward the south. Abbott secured two males at El Río, on May 14, and 18, 1919. He saw them at Hondo early in May of the same year, and recorded them as numerous at Constanza on May 10 and 11. On March 5, 1921 he recorded many flying low over a ridge above Navarrete but had no gun. On the following morning when he returned properly armed the birds had disappeared. Danforth found them quite common in 1927 at Bonao in June and August, saw several at La Vega June 29 and 30, and noted about two hundred at San Juan June 10 and 11. Others were noted at Comendador. Ciferri forwarded a skin taken at Sabana San Thomé, San Juan, June 4, 1928 to Moltoni.

In Haiti, Beck collected specimens at Port-à-Piment June 28 and 29, and on the slopes of La Hotte June 28 and July 1, 1917. Bartsch recorded this bird near Gloré on April 3, 1917. Wetmore found a number about the precipitous cliffs and over the high slopes of La Selle from April 9 to 14, 1927, and on April 17 observed them above Chapelle Faure, in Nouvelle Touraine. He collected two females on La Selle, one on Morne La Visite April 11, and one above the Jardins Bois Pin April 14. As he made camp with Ekman at the head of the Rivière Chotard a dozen cloud swifts came rapidly over the pines, and on April 11 he found thirty or forty circling in fashion typical of their family over the valley opposite the tremendous cliffs that mark the north face of Morne La Visite. At intervals a few darted in over the peak, and by dint of expenditure of much ammunition one came finally to hand after two or three had

fallen over the dizzy edge into the depths below where it was hopeless to search for them. On the wing they seem smaller than they really are. One was observed to make a loop in the air by turning head down and after a descent of a few feet swinging off to the side. In late afternoon when rainclouds obscured the peak little parties darted down the slopes above the pines passing at tremendous speed with a great rush of wings or occasionally swinging three together to sail in close proximity with the wings held stiffly in a V angle above the back. To observe their adroitness and skill in flight is exhilarating to a degree. Their call is high pitched *whee whee whee*, or a rapid *chip chip chip chip*. In the hand their form is stocky and solid, while the strong feet armed with curved claws are especially noticeable. The female taken April 14 had the iris bone brown, bill black, and tarsus and toes dark purplish gray. Bones of one of these great swifts found at a nest of the barn owl *Tyto glaucops* in the Trujín on La Selle must be from an individual pulled from some rock cleft at night as it is impossible to believe that the owl could capture this bird except when it was asleep.

Danforth in 1927 found a few at Las Cahobes July 12 and a few near the Citadelle above Milot August 2 and 3. James Bond reports these swifts from La Selle, the Massif de la Hotte, Port-au-Prince, Ennery, Port-de-Paix and Tortue Island. Perrygo observed two at L'Atalaye December 29, 1928.

Peters has described a local race of the cloud swift from specimens that he collected at Sosúa, Dominican Republic, distinguishing it from the bird of Cuba and Jamaica by blacker coloration particularly on the sides of the head. Through the courtesy of the Museum of Comparative Zoölogy we have been permitted to examine his type and other specimens and to compare them with four additional skins secured by Abbott and Wetmore. Though the type and one other bird are blacker than the average the remaining skins may not be successfully separated from the series from Cuba and Jamaica so that it appears that Mr. Peters' type and other skins are marked by individual characters that are not substantiated by further specimens. We use the name *pallidifrons* of Hartert for all the birds of the Greater Antilles.

The cloud swift is the largest of the swifts in Hispaniola and is among the large species in its family for the entire world. The wing spread is about equal to that of the sparrow-hawk but the wings are decidedly narrower. The plumage is sooty black, browner beneath, with a white color extending around the upper breast and hind neck. The bird is 200 mm. or more in length in life and has a wing measuring from 148 to 161 mm.

Subfamily MICROPODINAE

TACHORNIS PHOENICOBIA PHOENICOBIA GOSSE

PALM SWIFT, GOLONDRINA, PETIT ROLLÉ, JOLLE-JOLLE

Tachornis phoenicobia GOSSE, Birds Jamaica, 1847, p. 58 (Jamaica).

Hirundo cayennensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).

Cypselus cayennensis ? SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic).

Cypselus phoenicobius, CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Gantier, Jacmel, specimens); Birds Haiti and San Domingo, July, 1884, pp. 87-88, col. fig. (Gantier, Jacmel, Puerto Plata, La Vega, specimens); Cat. West Indian Birds, 1892, p. 106 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (La Vega).

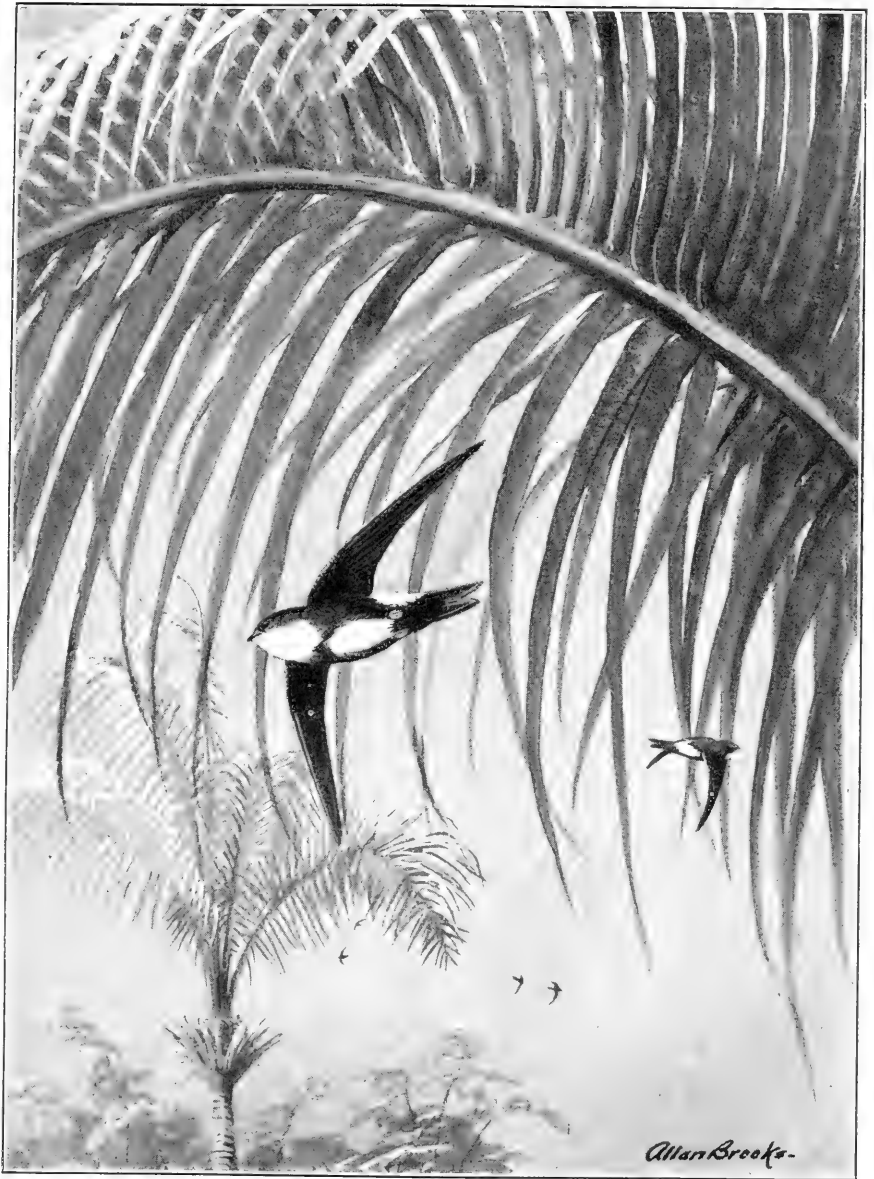
Tachornis phoenicobia, LÖNNBERG, Fauna och Flora, 1929, p. 103 (Haiti).

Tachornis phoenicobia phoenicobia, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 414 (Sosúa, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 503 (Port-au-Prince, Jacmel, Fond Parisien, Ennery, St. Michel).—DANFORTH, Auk, 1929, p. 368 (locally common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 318 (Moca, San Juan, specimens).

Resident in the lowlands; locally common.

The newly arrived naturalist in Hispaniola, eagerly alert to the kaleidoscopic impressions of a new environment that crowd his days, may have as one of his early experiences a glimpse of a little, gray, narrow-winged form that comes skittering overhead in the blazing sun, sliding from side to side in the air with a twinkle of wings and a flash of white so rapidly that it is gone among the palms before the mind has had time to consider whether it be giant moth or bird. Seconds after it has passed it is realized that the first of the palm swifts of the island has been in view. The narrow wings move so rapidly about the body as to appear often as a blur, while the bird travels so swiftly that it may require several meetings before there is clear perception of its colors and form.

The palm swift is confined mainly to the lower country but finds congenial haunts over the suburbs of towns and cities so that it is not difficult to see. (Pl. 21.) Sallé recorded it from the Dominican Republic saying that it appeared in numbers high in the air after rains. Cory secured specimens at Puerto Plata, November 23, 1882, and La Vega August 8, 1883. Verrill reported palm swifts as common along the Río Camú near La Vega and Peters found them fairly common near Sosúa, securing three as specimens. He saw them flying into the dead fronds of palms to rest. Abbott secured a female at Lake Enriquillo, October 5, 1919. In Santo Domingo City, on May 2, 1927, in passing through a suburban street Wetmore's



PALM-SWIFT (TACHORNIS PHOENICOBIA PHOENICOBIA)

attention was attracted by a swarm of these little birds darting in and out of a long shed-like structure. There was opportunity to investigate the following morning when it was found that the building was a tannery and that the birds were attracted by an abundance of flies that filled the place. On this second occasion a dozen swifts were constantly about, circling past the doorways and flying through the several low sheds that housed the plant. One was observed at San Francisco de Macoris May 4, and at La Vega they were common on May 17 and 30, when they were observed alighting among the dead, hanging fronds of the royal palms. They were common in Santiago May 31. Ciferri collected skins at Moca August 23, 1928 and Sabana San Thomé, San Juan, December 28, 1928.

In Haiti the palm swift is locally common. Cory found it abundant near Gantier where he took one March 6, 1881; he secured one at Jacmel January 12 of the same year. Bartsch in 1917 found the palm swift at Thomazeau April 2, near Gloré April 3, at Trou Caïman, April 4, Petit Goave April 8 and 9, Miragoane, April 9, near Jérémie April 10 to 12 and 15 and 16, at Trou des Roseaux April 13 and 14, and in the vicinity of Port-au-Prince April 19 to 27.

Abbott found the bird common about Jérémie and collected two females December 17 and 20, 1917. At Fond Parisien he secured three males May 8, 1920, and in northwestern Haiti shot males at Port-de-Paix February 24, and at Moustique, March 11, 1917. Near Bombardopolis he secured a female March 25, 1917 at an elevation of 450 meters above the sea, the highest altitude at which the species has been reported at present. Wetmore in 1927 observed palm swifts in Port-au-Prince from March 27 to 29, and on April 19, 25 and 28, usually among the palm grown gardens of the suburbs, but occasionally darting over the buildings in the business part of town. At the Étang Miragoane, on April 1 several coursed swiftly over marshy meadows often flying very low. A male taken here was past breeding and had the mouth and throat crammed with insects so that it may have been feeding young. Occasional birds were seen at Fonds-des-Nègres April 2, 4 and 5, and at Aquin April 3. James Bond reports this species from Port-au-Prince, Jacmel, Fond Parisien, Ennery, and St. Michel.

Careful comparison of our series of ten with several from Jamaica fails to show any definite differences between skins from the two islands. Jamaican specimens seem very slightly browner on the head but it is believed that this is due to adventitious stain from the greater age of these specimens.

Following are measurements of a small series from Hispaniola:

Males, five specimens, wing 99.3–100.1 (103.3), tail 39.3–40.8 (40.2), culmen from base 4.2–4.8 (4.5), tarsus 6.2–7.8 (7.1) mm.

Females, four specimens, wing 102.7–108.4 (105.8), tail 41.0–44.0 (42.5), culmen from base 4.2–4.4 (4.3), tarsus 7.0–7.3 (7.1) mm.

The palm swift is so tiny, being only 100 to 120 mm. long, that it will be confused with no other swift on the island. It is sooty black on back, wings and tail, the black being somewhat browner on head and sides, and white on breast, abdomen, and rump.

Suborder TROCHILI

Family TROCHILIDAE⁵

Subfamily TROCHILINAE

[*ARCHILOCHUS COLUBRIS* (Linnaeus)]

RUBY-THROATED HUMMINGBIRD

Trochilus colubris LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 120 (Carolina to New England).

Archilochus colubris, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, pp. 167–168, 222 (Bizoton, seen).

Status uncertain.

Beebe writes that “a male hummed about my head for several minutes, and then perched a few feet away at Bizoton sand beach on March 6. As far as visual reliability alone can be trusted, this is an absolute identification.” And further in his book Beneath Tropic Seas writes “One day as I was rowing lazily over a coral reef close to the sand beach of Bizoton, I heard a sharp whirr of wings directly behind me, and a moment later a ruby-throated hummingbird alighted on the end of a long net handle which stuck up over the stern-post. I rested on my oars and watched for a full minute while the perfect plumaged mite preened and arranged some feathers too small for my coarse eyesight. This was not any of the Haitian hummers, some of which were larger and one much smaller, but my own familiar countryman of northern honeysuckles. When he had finished his toilet, he wiped his beak, rose gently, hung in front of my face for a moment, and then, with a single upward curve, set a course northward, directly across the wide expanse of water.” There is no other record. The species is one that is found occasionally on the north coast of Cuba and in the Bahamas and may come casually to Hispaniola as a winter migrant. Pending further information as to its occurrence and the collection of specimens it is held in the hypothetical list.

⁵ *Polytmus holosericeus*, Vieillot, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 71, given from “Saint-Domingue,” and *Trochilus holosericeus*, Hartlaub, Isis, 1847, p. 609 included from Hispaniola, refer to the blue-breasted hummingbird, *Sericotes holosericeus* (Linnaeus), in which the typical form comes east through the Virgin Islands to the eastern coast of Porto Rico but is not known to range farther. Its citation from Hispaniola by the authors listed above must be considered an error.

The female is marked like the female of *Mellisuga m. vielloti* but is decidedly larger. The male has the throat metallic red.]

MELLISUGA MINIMA VIELLOTI (Shaw)

HISPANIOLAN VERVAIN HUMMINGBIRD, ZUMBADORCITO, OUANGA
NÈGRESSE, SUCÉ-FLEURS

Trochilus Vielloti SHAW, Gen. Zool., vol. 8, pt. 1, 1812, p. 347 (Hispaniola).

Trochilus niger, AUDEBERT and VIELLOT, Ois. Dor., vol. 1, 1802, pp. 119-122, pl. 53 (habits).—VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 73 ("Saint-Domingue").—RITZER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 153, 155 (nest).—HARTLAUB, Isis, 1847, p. 609 (listed).

Trochilus mellisugus, HARTLAUB, Isis, 1847, p. 610 (listed).

Trochilus minimus, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic; Haiti).

Ornismya minima, HARTLAUB, Isis, 1847, p. 609 (listed).

Ornismia Catharinae SALLÉ, Rev. Mag. Zool., October, 1849, p. 498 (described as new from Dominican Republic).

Dyrinia minima, KAEMPFER, Journ. für Ornith., 1924, p. 181 (Dominican Republic).

Dyrinia minima Vieilloti, SIMON, Hist. Nat. Troch., 1921, pp. 400-401 (Hispaniola).

Mellisuga Dominicensis BRISSON, Ornith., vol. 3, 1760, pp. 702-704, pl. 36, fig. 8 ("Saint-Domingue").—SALLÉ, Proc. Zool. Soc. London, 1857, p. 233 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 92-93, col. fig. (Pétionville, Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 107 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 108 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18 (Dominican Republic).—CHRISTY, Ibis, 1897, p. 329 (Sánchez, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (common).

Mellisuga catherinae, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 22 (Port-au-Prince).

Mellisuga catharinae, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 5, 1911, pp. 586-587 (Pétionville, Port-au-Prince, Catarrey, Honduras, San Francisco, Sánchez, Caña Honda, La Cañita, Río San Juan, La Vega).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 414; (Monte Cristi, specimens).—DANFORTH, Auk, 1929, p. 368 (recorded).—LÖNNBERG, Fauna och Flora, 1929, p. 103 (Haiti).

Mellisuga minima, PORSCH and SASSI, Verh. Ornith. Ges. Bayern, vol. 18, 1928, p. 7 (listed).

Mellisuga minima catharinae, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 503 (Haiti, Gonave, Tortue; nest and eggs).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 318 (Haina, specimens).

Resident; locally common.

This tiny bird with its closely related cousin of Jamaica is the second smallest of the birds of the world, the smallest being Helena's hummingbird (*Calypte helenae*) of Cuba. The greater size of the vervain hummer is expressed in so very few millimeters of length of wing and body that it is almost negligible and would not be perceived except with the birds in hand. On the wing the vervain

hummer appears small but its tiny dimensions are only fully appreciated when one pauses in its search of flowers to rest on some twig in the sun when it seems no larger than a bee, so that one marvels at its delicate form that retains in spite of its diminutiveness the organs and functions of larger relatives.

The vervain hummer frequents shrubbery, fields grown with bushes, and open scrubs, and does not penetrate dense forest growths. It ranges from sea level into the mountains, the highest elevation at which it is recorded at present being the Valley of Constanza. Apparently the climate of the uplands has little peril for it since the nights at that altitude are very cold. Possibly it may descend to lower elevations in winter when frost comes occasionally killing tender vegetation in the mountains.

Should its tiny form in its rapid movements escape the eye attention is regularly directed to it by its song, a series of labored, twittering syllables uttered with constantly elongating neck and turning head, an effort of surprising volume when the author is considered, that, though high pitched, has considerable carrying power as it is audible to human ears easily at a distance of seventy-five yards. Occasionally this song is given on the wing, but ordinarily the bird is moved to vocal expression when at rest on some perch in the sun. The song seemingly is greatly enjoyed as it may continue without cessation for several minutes. Like larger members of its family this hummer is pugnacious and does not hesitate to dash headlong at birds as large as the mockingbird that chance to offend its eye.

The Hispaniolan form has long been known, as Brisson in 1760 described it from a specimen in the museum of de Reaumur, collected by Chervain. Vieillot in 1802 gives a considerable account of its habits describing the song and nest. The latter he says may be placed on a limb or attached to the side of an upright branch. It is built of cottony material, covered externally with lichens. The eggs, two in number, are incubated for twelve days and the young remain in the nest for seventeen or eighteen days. He says that the male shares in the duties of incubation.

Sallé found this hummer in the Dominican Republic and, overlooking earlier names, described it as a new species under the specific designation *catharinae*, dedicating it to his mother. He records the nest as placed from eighteen inches to three feet from the ground in thorny thickets or on the leaves of cactus, woven ordinarily of the webs of spiders and caterpillars and covered with lichens. He observed occupied nests during July and August. Cory collected a male at Puerto Plata November 24, 1882. Tristram reports a male taken at Samaná in 1884 by C. G. McGrigor. Cherrie found the species common but difficult to collect. Christy received

a nest from La Vega at the beginning of March which contained two fully grown young. Dr. A. Busck secured a vervain hummer in the San Francisco Mountains in the southern part of the Dominican Republic August 28, 1905, the specimen being in the United States National Museum. Verrill found it common at all points visited and collected a number of specimens. Six of these in the collection of J. H. Fleming were secured at Samaná February 9, 12 and 18, 1907. Peters shot three at Monte Cristi, and Abbott skinned one at Sánchez October 24, 1916. Kämpfer reports a nest made of the down of the kapok tree, placed one and one half meters from the ground, and says that in August he found these hummers in thousands near Constanza. The latter observation may indicate a vertical migration from the lowlands into the mountain valleys as is regular in many continental hummers. Wetmore observed them in 1927 at Sánchez May 7 and 9, at El Río May 18 and 30, and commonly near Constanza May 20 to 27. One was taken May 21. Danforth found them in 1927 at Santo Domingo City (specimen), Bonao, and La Vega. Moltoni received skins from Ciferri taken at Haina in September, 1925.

In Haiti the vervain hummer is common and from its tiny size has attracted attention from many travelers. Ritter in 1836 speaks of finding its nest in guava bushes. A. E. Younglove forwarded two specimens taken June 1, 1866, to the Smithsonian Institution. These were preserved as mummies, one being still in the United States National Museum. Cory in 1881 spoke of it as abundant, and lists a female taken at Pétienville February 7, 1881. There is another that he secured from the same point on March 7 in the United States National Museum. Tippenhauer gives this form the local name of ouanga négresse. Bartsch in 1917 found it near Gloré April 3 (specimen), Trou Caïman April 4, near Jérémie April 10 to 12, 15 and 16 (specimens April 10 and 11), Trou des Roseaux April 14, and in the vicinity of Port-au-Prince April 19 to 27. Abbott reports it as generally common, and occurring on Tortue Island where he collected one February 1, 1917. He records it also from Gonave and says that it was common in the hills above three hundred meters elevation. Wetmore in 1927 collected one at the flowers of a mimosa near L'Acul April 4, and observed two in flowering logwoods near Fonds-des-Nègres April 5. He observed one near La Cahobes April 20, and at Hinche April 22 shot two at the blossoms of a flowering tree but because of their tiny size was unable to find either one. At Caracol on the north plain they were common April 26 and 27, and two were taken on the former date. They were seen ordinarily feeding at flowers. Beebe recorded them at Port-au-Prince.

Danforth in 1927 found them at Cavaillon, St. Marc, and Fonds-des-Nègres, and says that they are more common on Gonave Island than on Hispaniola proper. There are two specimens in the Academy of Natural Sciences taken on Gonave Island July 15, 1927 by John T. Emlen, jr. James Bond reports them from Gonave and Tortue and secured a nest containing two fresh eggs on Tortue Island March 21, 1928. The data with the nest states that it was "brought in by boy, who said nest was placed about three feet above ground near a spring in woods." The nest was constructed on the fork of a slender limb a little more than two millimeters in diameter and was made of soft plant downs of two colors, whitish and dull reddish brown. The structure varies from 30 to 33 mm. in diameter and is deeply cupped. Externally it is covered with flakes of thin, paper-like bark. The eggs are dull white in color. Bond gives the measurements as "11.6 by 8.4 and 11.5 by 8.15" mm. Both eggs were cracked when examined in May, 1929. Poole and Perrygo secured two specimens of this hummer at Fort Liberté, Haiti, February 6, 1929.

The earliest available name for the vervain hummer of Hispaniola is *Trochilus vielloti* of Shaw published in 1812. We agree with Simon⁶ that this form is best regarded a subspecies of *minima* of Jamaica from which it differs only in slightly darker coloration.

The vervain hummer measures from 60 to 70 mm. in length with the wing from 34 to 40 mm. It is dull metallic green above and pale grayish white below. The male has the throat spotted lightly with dusky, a marking lacking in the female.

RICCORDIA SWAINSONII (Lesson)

HISPANIOLAN EMERALD HUMMINGBIRD, ZUMBADOR, OUANGA NÈGRESSE

Ornismya swainsonii LESSON, Hist. Nat. Ois. Mouch., 1829, p. 197, pl. 70 ("Brésil"=Hispaniola).

Trochilus maugaeus (part), VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 73 ("Saint-Domingue").

Trochilus elegans, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic).

Sporadinus elegans, SALLÉ, Proc. Zool. Soc. London, 1857, p. 233 (mountains, Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Gantier, Pétienville, specimens); Birds Haiti and San Domingo, July, 1884, pp. 93-94, 1 col. fig. (Samaná, specimens); Cat. West Indian Birds, 1892, p. 107 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 110 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319, 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 18-19 (Catarrey, Aguacate, specimens).—CHRISTY, Ibis, 1897, p. 329 (Sánchez, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (El Valle).

⁶ Hist. Nat. Troch., 1921, pp. 400-401.

Riccordia elegans, PORSCH and SASSI, Verh. Ornith. Ges. Bayern, vol. 18, 1928, p. 7 (listed).

Riccordia swainsoni, KAEMPFER, Journ. für Ornith., 1924, p. 181 (Dominican Republic).

Riccordia swainsoni, LÖNNBERG, Fauna och Flora, 1929, p. 103 (Haiti).

Riccordia swainsonii, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 546 (Pétionville, Gantier, Samaná, Cattarey, Aguacate, El Valle, La Cañita, Sánchez, La Vega).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 503 (mountains of Haiti).—DANFORTH, Auk, 1929, pp. 368-369 (recorded).

Resident; found principally in the hills and mountains of the interior.

The emerald hummer is found mainly in heavy forest in the hills and is most common in regions of considerable rainfall. Cory recorded five specimens from Samaná April 27, and September 1, 3, 7, and 8, 1883. Tristram received one from the same point taken by C. G. McGrigor, January 11, 1884. Cherrie found it only at Cattarey and Aguacate, recording sixteen skins collected. He found it only in the darkest parts of the forest, usually near the ground. Christy says that it was fairly common at Sánchez and La Vega, while Verrill reports it as "found at all points visited but most abundant at El Valle." Beck collected specimens near Sánchez (probably in the hills above town) October 27, November 4 and 11, and December 11, 1916. He took a series on Loma Tina January 3 to 19, Loma Pelona February 3, Loma Rucilla March 19, and at La Vega November 28 and December 4, 1917. Abbott found it common about Constanza especially in the clearing at Bohokali. He collected seven specimens September 22 and 28, 1916, and April 7, 12 and 13, 1919. On Quita Espuela at 750 meters on April 16, 1922 he secured a nest of this species in heavy forest, the nest being built on a limb the size of a pencil in a small bush a meter from the ground in a situation where it was quite exposed. The nest is made of soft material, the base being filaments of moss and fern and the cup above of cottony substance mixed with coarser plant fibers, covered externally with bits of lichen stuck on with spider webbing. The nest is 50 mm. across by 60 mm. high, with the cup 25 by 35 mm. and the depression 20 mm. deep.

Kaempfer recorded this hummer only in the hills above 500 meters altitude. Wetmore in 1927 found it common in the forested hills back of Sánchez on May 13 and collected one specimen. He did not find it there in the lowlands. He saw it at El Río May 18, and near Constanza recorded it regularly from May 22 to 27. It was common in the damp, deciduous rain forests, keeping principally in the shade, anywhere from ground level to the tops of the trees. In early morning when the air was damp it came out occasionally to feed in the open growths of pine. The wings produce a loud

humming in flight. Danforth observed a few at Hato Mayor and Bonao in the summer of 1927.

Cory in 1881 reported two taken at Gantier and two near Pétionville (Le Coup) but apparently there may have been some error in this as subsequently he makes no reference to specimens taken at these points. The records are therefore considered doubtful as from present knowledge the species in Haiti is confined to the higher forested hills. Bond, however, writes (in a letter) that he has examined a female taken on Gonave Island. Abbott secured this species near Moline on the southern peninsula at 600 meters above the sea, February 1, 1918, on Morne Tranchant, near Furey, at 1200 meters altitude, May 29, 1920, and near Bombardopolis at 450 meters March 25, 1917.

Wetmore in 1927 observed one near Mont Rouis on March 30 in heavy forest a short distance above the sea. On La Selle from April 9 to 15 he found this hummer common above an elevation of 1500 meters. It was observed usually in the rain forest jungle but came out in more open country to feed at the flowers of a species of agave. A male taken April 12 at the head of the Rivière Chotard had the base of the mandible dull pinkish, the rest of the bill black, iris bone brown, and tarsus and toes brownish black. He found a few near Hinche April 22 and 23.

Danforth writes that these hummers were common on the Citadelle Hill above Milot August 2 and 3, 1927, and that he collected specimens that same summer at Pétionville and on Gonave Island. Bond found nests on June 3 and 6, 1928 on Morne Tranchant at an elevation of 1,900 meters, placed in bushes a meter or more from the ground. The nests were about 65 mm. high by 50 mm. in diameter. The first contained one young bird while the second was not yet complete.

Abbott says that the base of the bill in a male taken at Constanza September 28, 1916, was flesh color and the remainder black. The bicolored appearance of the bill, an easily seen field mark, persists in the dried skin.

The male is brilliant green above and below, with a touch of velvety black on throat and breast. The female is brownish gray beneath. This species is intermediate in size between the tiny vervain and the large mango hummers being distinctly smaller than the latter. The male is marked by the long forked tail.

ANTHRACOTHORAX DOMINICUS (Linnaeus)

HISPANIOLAN MANGO HUMMINGBIRD, ZUMBADOR, OUANGA NÈGRESSE

Trochilus dominicus LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 191 ("Dominica"=Hispaniola).

Hummingbird, GOULD, Proc. Zool. Soc. London, 1835, p. 105 (Haiti).

?Colibry, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, pp. 42-43 (observations).

?Colibri, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (Port-de-Paix).

Colibri, de St. Domingue, DAUBENTON, Planch. Enl., pl. 680, fig. 1.

Plastron Noir, BUFFON, Hist. Nat. Ois., vol. 6, 1779, pp. 59-60 (part; "Saint-Domingue").

Trochilus aurulentus, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic, Haiti).

Trochilus dominicus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Trochilus gramineus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 153-154, 155 (specimen).—HARTLAUB, Isis, 1847, pp. 609, 610 (listed).

Polytmus Dominicensis BRISSON, Ornith., vol. 3, 1760, pp. 672-673, pl. 35, fig. 4 ("S. Domingue").

Polytmus Jamaicensis BRISSON, Ornith., vol. 3, 1760, pp. 679-681, pl. 35, fig. 1 ("S. Domingue").

Polytmus aurulentus (part), VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 72 ("Saint-Domingue").

Polytmus elegans, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 72 ("Saint-Domingue").

Polytmus gramineus, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 72 ("Saint-Domingue").

Polytmus viridis, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 71 ("Saint-Domingue").

Lampornis aurulenta, SALLÉ, Proc. Zool. Soc. London, 1857, p. 233 (Dominican Republic).

Lampornis aurulentus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Pétionville, Haiti).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).

Lampornis dominicus, CORY, Birds Haiti and San Domingo, July, 1884, pp. 90-91, 2 col. figs. (abundant); Cat. West Indian Birds, 1892, p. 106 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 106 (Samaná, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (Haiti).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18 (common).—CHRISTY, Ibis, 1897, p. 329 (Samaná, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (common).—KAEMPFER, Journ. für Ornith., 1924, p. 181 (recorded).—PORSCH and SASSI, Verh. Ornith. Ges. Bayern, vol. 18, 1928, p. 7 (listed).

Lampornis dominicensis, TIPPENHAUER, Die Insel Haiti, 1892, p. 319 (listed).

Anthracorax dominicus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 414 (Monte Cristi, Sosúa, Chocó, specimens).

Anthracothorax dominicus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 222 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 503 (Haiti, Gonave, Tortue).—DANFORTH, Auk, 1929, p. 369 (common).—LÖNNBERG, Fauna och Flora, 1929, p. 103 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 318 (Haina, San Juan, specimens).

Resident, common.

The present species, the largest of the three hummers resident in Hispaniola, is widely distributed from sea-level into the mountains in both arid and well-watered sections so that it is the most commonly seen of its group. It is seemingly somewhat more abundant in semi-

arid regions but is found regularly where rainfall is heavy. It is perhaps the colibri recorded by Charlevoix in 1733, while both male and female are described and figured, under distinct names, by Brisson in 1760 from specimens sent by Chervain to de Reaumur.

In the Dominican Republic Sallé found this hummer many years ago about the flowers of cactus. Cory secured skins at Puerto Plata, December 14, 23 and 24, 1882, and at Samaná, April 5 and September 3, 1883. Tristram received three specimens from Samaná taken by C. G. McGrigor, in September, 1883. Cherrie found it tolerably common, but Christy identified it only twice, at Samaná and La Vega. Verrill wrote that it was common, a statement borne out by an excellent series of his taking in the collection of J. H. Fleming, taken in 1907, on January 4 and 10 at Caña Honda, January 14 at El Valle, February 1 at Río San Juan, February 3, 5, 10, 11, 12, and 18, and March 3, 6, 7, and 9 at Samaná, March 9 at Sánchez, and March 16 at La Vega. Peters secured a series of twenty at Monte Cristi, Sosúa, and Chocó. Abbott collected it at Laguna August 7 and 10, and at Rojo Cabo August 30, 1916, both places being near the eastern end of the Samaná Peninsula. He took others near Constanza September 27, 29 and 30, 1916, and April 9, and 16, 1919. Wetmore, in 1927, found this species at Azua May 1 about flowers in a suburban yard, at Sánchez, May 6 to 13 (a male taken May 7), at La Vega May 17, and near Constanza May 21 and 22. Danforth in the same year collected specimens at Santo Domingo City, Monte Cristi, Laguna del Salodillo, La Vega, and San Juan. Ciferri forwarded skins to Moltoni from Haina and Sabana San Thomé near San Juan.

In Haiti this is the most commonly seen of the hummingbirds. A. E. Younglove in 1866 collected four specimens near Port-au-Prince May 9, 16, and 21, which he forwarded to the Smithsonian Institution where they still remain. Cory in 1881 reported it as common, and though he found it feeding or resting near the ground says also that he saw it often in the tops of the tallest trees. He remarks especially upon one huge tree growing in a little valley in the outskirts of Pétienville in whose top he frequently saw a dozen of these hummers darting in and out among the top-most branches at such an altitude above him that they appeared to his eye no larger than flies. Bartsch in 1917 found it near the Étang Saumâtre April 3, Petit Goave April 8, near Jérémie April 10 to 12 and 15 and 16, near Trou des Roseaux April 13 and 14, and in the vicinity of Port-au-Prince April 21, 22, and 27. At all these points except Trou des Roseaux he secured specimens which were preserved in alcohol with the exception of one which was made into a skin. Abbott found them very common and secured an excellent series of 10 specimens from the main island, near Moline at an elevation of

600 meters January 30, 1918, Jérémie December 1, 2, 8 and 9, 1917, Rivière Bar, February 18 and 22, 1917, and Bombardopolis, at an elevation of 450 meters, March 22 and 23, 1917. On Gonave Island he found it likewise common, feeding at the flowers of cactus and collected four skins February 24, 25, and 27, 1918. He took four more on Tortue Island January 31 and February 1, 2, and 7, 1917.

Wetmore recorded this species at many localities, reporting it in Port-au-Prince in the garden of his hotel on March 27, the day of his arrival. At Montfleury, March 29, in company with Dr. G. N. Wolcott, he observed a male for some time as it alternately rested in the shade on a dead twig high above the Rivière Froid, or descended to feed at the blossoms of a flowering tree (*Inga vera*). The bird was alert and active on the wing, whirling, poising and shifting its position with the greatest celerity. The long tail was nervously expanded and gyrated from side to side to assist in balance during the frequent shifts in center of gravity as the bird whirled from flower to flower. The sun was reflected from its plumage as it passed through rays of light with a strong sheen of copper. One was seen at Damien this same day, and on March 30 one was observed in dry, hot mesquite scrub near L'Arcahaie. This hummer was found at the Étang Miragoane April 1, Fonds-des-Nègres April 2 and 5, L'Acul April 4 (when a female taken showed some development of the ovaries), La Tremblay April 7, and Kenskoff April 8. None were seen on the summit of La Selle. The species was noted at Hinche April 22 to 24, and Caracol April 26 and 27. Near Cap-Haïtien on April 28 Mr. Jungerneel showed him a nest of this species built on the flower stalk of a banana plant just below a bunch of developing bananas. The structure was made almost entirely of cotton, covered externally with lichens. It contained two young almost as large in body as the adult, with pin feathers barely beginning to show. There was a slight indication of down on the dorsal pteryla but nowhere else. Both birds had short bills, with elongation to the condition found in the adult just beginning. The skin was dusky gray with a wash of yellowish at the gape. The nest was located where it received the fierce heat of the sun with no shelter available until noon when shadow reached it. The young maintained the cervical air-sacs fully inflated with considerable inflation in the body also so that at first glance their bloated appearance gave a startling impression of deformity. The air cushions thus engendered may be supposed to have served as some protection against the extreme heat.

Danforth says that in the summer of 1927 these birds fairly swarmed in the tree cactus country near Gonaïves. He found a nest on Gonave Island July 19, built twenty feet from the ground on a

fairly large branch of a prickly legume. It contained two eggs. Poole and Perrygo secured specimens at L'Atalaye January 8, Fort Liberté February 6, Pont Sondé February 27, Cerca-la Source March 24, and at En Café on Gonave Island March 6, 7, 8 and 10, 1929. The birds from Tortue and Gonave Islands seem identical with those of the large island. Females of these hummers are subject to considerable adventitious staining from the flowers at which they feed.

Dr. R. Ciferri, Director of the Estación Nacional Agronomica at Moca, has presented to the United States National Museum a male of this hummer taken by E. Ciferri at San Juan de la Maguana, Dominican Republic, February 10, 1930 that in general is like the female with a few green feathers of the adult male dress growing in on the foreneck. The bird is said to have been sexually adult. It appears from this skin, the only immature male seen, that in this species the male in first plumage resembles the female. The skin forwarded by Ciferri is seemingly in molt from the juvenal stage into full adult dress.

This species which is as has been said the largest hummer on the island measures from 115 to 135 mm. in length, with the bill 23 to 27 mm. long. The male is shining green above, on the sides, and on the throat, black with a tinge of blue elsewhere underneath, with a few white feathers on the flanks. The tail is coppery colored on the inner web of the feathers. The female is whitish below with white tips on the tail feathers.

Order TROGONIFORMES

Family TROGONIDAE

TEMNOTROGON ROSEIGASTER (Vieillot)

HISPANIOLAN TROGON, PIRAGUA, PAPAGAYO, COTORRITA DE SIERRA, NATIONAL, CALEÇON ROUGE, DAME OR DEMOISELLE ANGLAISE, PIE DE MONTAGNE

Trogon roseigaster VIEILLIOT, Nouv. Dict. d'Hist. Nat., vol. 8, 1817, p. 314 (Hispaniola).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 235 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic).

Couroucou à ventre rouge (part), BUFFON, Hist. Nat. Ois., vol. 6, 1779, pp. 289-291 (habits).

Trogon rhodogaster TEMMINCK, Nouv. Rec. Planch. Col. Ois., vol. 3, livr. 63, November, 1825, in text for genus *Trogon* (Based on Buffon).

Temnotrogon roseigaster, CORY, Birds Haiti and San Domingo, July, 1884, pp. 95-97, col. pl. (La Vega, specimens); Cat. West Indian Birds, 1892, p. 103 (Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 19 (Aguacate, specimens).—CHRISTY, Ibis, 1897, p. 330 (reported).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (La Vega,

Miranda).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 413 (Chocó).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Miragoane).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 504 (Miragoane, La Hotte, La Selle, Haut Piton, Ennery; eggs).—DANFORTH, Auk, 1929, p. 368 (Bonao).—LÖNNBERG, Fauna och Flora, 1929, p. 104 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 318 (Bonao, Monte Viejo, specimens).

Resident in the hills and mountains; locally common.

In travel along the wilder trails through the hills of Hispaniola there may come to the ear a curious cooing call suggesting the note of a pigeon but at the same time differing from the sound produced by any of the familiar species of that group. The call is ventriloquial and seems to arise first from one side and then from another. Finally there is a glimpse of a bird in black silhouette, resting in shadow on some open limb, with body erect and tail hanging straight down. No color is visible and it is a pleasurable surprise when one of the birds pitches to a lower perch or is brought into closer view by the aid of binoculars and the colors of the plumage flash out brilliantly, the clear red of the abdomen sharply marked from the gray of the breast, and the back a shimmering green.

Trogon frequent both deciduous trees and pines and in places are common so that their calls are heard constantly through the day. In the hand, where the delicate white barring on the wing may be admired, the feathers are found to be lax and loose and the skin extremely tender so that the preparation of specimens for museum study is a matter of considerable care.

Sallé, familiar with the trogon during his early travels in the Dominican Republic, says that they utilize old woodpecker holes as nesting sites, and that their eggs are white (an inaccurate statement) and much rounded. He says that the natives called them *piragua*, though to-day they are usually known in Spanish as *papagayo*. Cory found them common in the forested hills above La Vega where he secured fifteen specimens from August 6 to 12, 1883. He speaks of them as local in occurrence which is true so far as the lower sections of the island are concerned. Cherrie encountered them only at Aguacate where he collected eight skins. Christy did not see the bird and listed it only from native reports. His statement that it was found near "Harabaja," which is quoted in the range given by Mr. Ridgway⁷ refers to the well-known town of Jarabacoa. Verrill found the trogon in the pine forests near La Vega and Miranda but speaks of it as shy and difficult to procure. Peters working on the north coast saw it only at Chocó, where he recorded one March 25, 1916.

To W. L. Abbott we are indebted for an excellent series of this beautiful bird, specimens being taken as follows: near Jarabacoa

⁷ U. S. Nat. Mus. Bull. 50, pt. 5, 1911, p. 792.

October 15, 1916, El Río, October 4, 5, and 6, 1916, and May 18, 1919, and in the vicinity of Constanza, September 25 and 26, 1916, and April 9, 1919, including seven skins from this last locality. In 1927 Wetmore heard the strange call of the trogon regularly on May 17 and 18 while riding over the mountain trails from Jarabacoa to Constanza by way of El Río. Near Constanza from May 19 to 27 the birds were common and were encountered regularly. They called among the high pines, the note resembling the syllables *cuh kwao* or *cuh kwao kwao*, uttered rather slowly and carrying for considerable distances through the clear air. Occasionally in some dense growth of rain forest one came down curiously to a closer view of the human intruder, flying with a rapidly tilting flight resembling in exaggerated type that of some long-tailed, short-winged sparrow, and accompanied by a loud rattle of the rounded wings. When excited or curious these trogons may utter a low, rattling call, or at times a complaining sound like the loudly pleading whine of a dog. One pair on May 25 was interested in a hole fifteen feet from the ground in a dead stub standing in the wet rain forest so located that it could not be reached as the trunk was too decayed to bear the weight of a climber. One bird rested near the opening and as the site was under examination another came flipping noisily through the wet leaves to join it in peering down at the intruder.

The species seemingly is very rare in the forests on the Samaná Peninsula, where the natives do not know it, the only report for this area being that of a marine who told Abbott that he had killed two in the hills back of Sánchez while shooting pigeons. Wetmore did not hear its characteristic calls during extended journeys afield in this region. Danforth heard it near Bonao August 7, 1927, and Ciferri forwarded skins to Moltoni taken at that locality at Lo Slano December 11, Allaco December 15, and Puente Yuna November 11, 1927, as well as from Monte Viejo (1,500 m.) August 28, 1929.

In Haiti the species has long been known. In Buffon in 1779 there is a considerable account of the bird from observations supplied by Deshayes. It is said there that the birds breed in April and again in August and September, depositing three or four eggs, erroneously described as white, on a bed of decayed wood in a cavity in a tree trunk. The young are said to be naked when hatched. Deshayes says that his attempts to keep them in captivity were unsuccessful. Some of his statements, notably where he says that when the nest cavity chosen is not sufficiently big they enlarge it with the strongly toothed bill need verification before they are implicitly accepted. Levaillant,⁸ according to Gould,⁹ says that he had a speci-

⁸ Hist. Nat. des Couroucouc, 1806, pl. 13. Date taken from Sherborn, Index Anim., pt. 1, 1922, p. lxxxii.

⁹ Mon. Trogonidae, 1838, without pagination.

men but that the bird was rare as he had seen only two others, in the collections of Abbé Aubry and Doctor Mauduit. Vieillot apparently did not meet with it personally, as he bases his description of the species mainly on the statements of Buffon.

A E. Younglove secured one in the "mountains," back of Port-au-Prince on June 5, 1866, and forwarded it to the Smithsonian Institution where it still remains in the United States National Museum. From that time to the period of the investigations made by Abbott there has been little added to knowledge of the bird in Haiti. Abbott secured one at Moline in southwestern Haiti on January 29, 1918. At Rivière Bar, east of Port-de-Paix, where the birds were common near sea level, he collected five on February 16, 17, and 19, 1917. The only other records available are from the inland hills where one was taken at 900 meters elevation near Moustique March 4, 1917.

In 1927, Wetmore encountered the trogon first at Fonds-des-Nègres April 2, when he collected two at an altitude of 450 meters on the upper course of the Rivière Seche, and heard others near the Coffee Experiment Station below. Others were recorded near Fonds-des-Nègres April 5. On the high slopes of La Selle the birds were common from April 10 to 15, and were heard daily calling from the tall pines or from thickets of deciduous forest. On April 12 half a dozen were gathered on low perches in a little grove engaged in mating display. Two, apparently rival males, were matched in harmless combat in which they rested a few feet apart with head outstretched and tail hanging straight down. At intervals the tail was raised slowly to nearly a right angle with the back and then brought down rather quickly to its normal perpendicular position. At brief intervals one dashed at the other with a loud rattle of wings but apparently the two never actually struck one another as the one attacking usually passed beneath the opponent. They uttered constantly a rolling note that mingled with the usual cooing calls uttered steadily by their companions. Their light-colored eyes and bills were very conspicuous. In the low thickets grown with creeping bamboo trogons perched at times within six feet of the ground. A pair taken at Fonds-des-Nègres April 2 had the iris light orange, bill bright honey yellow, tarsus brownish gray, and the under side of the toes yellow.

The Haitians call this species *caleçon rouge*, *dame* or *demoiselle Anglaise*, *pie de montagne*, or *national*.

Beebe observed this species only once west of Miragoane in January. Bond records it at the same point, stating that he found it in mangrove swamps at sea level. He also noted it on La Hotte, La Selle, Haut Piton in the Massif du Nord, and at Ennery. He col-

lected three on Morne Malanga, and says that he had report of it on Gonave Island but did not see it there personally. On La Selle he was fortunate in finding two occupied nests on June 10 and 11, 1928, both being placed in deserted nest-holes of the Hispaniolan woodpecker (*Chryserpes striatus*), one being five meters from the ground. Both sets contained two eggs, one fresh and the other slightly incubated. The eggs are decidedly paler than pale niagara green, unmarked, with the surface slightly glossed, and very slightly granular. They measure 30.4 by 23.3 and 27.9 by 23.5 mm. and 31.4 by 23.9 and 31.1 by 23.5 mm. The green color of these eggs is entirely unexpected as in most trogons they are white, the only exceptions that come to mind being the quetzal (*Pharomachrus mocinno*) which also has green eggs, and *Trogonurus mexicanus* which according to Salvin and Godman¹⁰ has very pale greenish eggs.

Following are measurements taken from our series of skins.

Males, seventeen specimens, wing 129.9–140.4 (135.2), tail 146.0–161.0 (154.0), culmen from base 16.4–18.4 (17.3), tarsus 15.0–18.4 (16.8) mm.

Females, four specimens, wing 132.6–141.0 (136.6), tail 150.0–161.0 (154.0), culmen from base 15.9–17.1 (16.5), tarsus 16.3–16.7 (16.4) mm.

The Hispaniolan trogon is metallic green above, gray on the throat and breast, and delicate red on the abdomen and under tail-coverts, with prominent spots of white at the tips of the tail feathers. The male differs from the female in having a bluish cast on the back, and the wing coverts barred narrowly with lines of white. The species is about as large as the sparrowhawk.

Order CORACIIFORMES

Suborder ALCEDINES

Superfamily ALCEDINIDES

Family ALCEDINIDAE

Subfamily CERYLINAE

MEGACERYLE ALCYON ALCYON (Linnaeus)

BELTED KINGFISHER, MARTIN PESCADOR, MARTIN-PÊCHEUR

Alcedo alcyon LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 115 (North America).

Martin-pêcheur hupé, de St. Domingue, DAUBENTON, Planch. Enl., pl. 593 (figure of male).

Ispidina Dominicensis cristata BRISSON, Ornith., vol. 4, 1760, pp. 515–517 ("S. Domingue").

¹⁰ Biol. Centr.-Amer., Aves, vol. 2, 1896, p. 488.

Megaceryle domingensis REICHENBACH, Handb. Spec. Ornith., Alcedineae, 1851, p. 26 (not *M. domingensis* idem p. 25=*M. stellata*).

Alcedo alcyon, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic, Haiti).

Ceryle alcyon, SALLÉ, Proc. Zool. Soc. London, 1857, p. 233 (listed).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (winter); Birds Haiti and San Domingo, July, 1884, pp. 103-104 (winter, specimens); Cat. West Indian Birds, 1892, p. 103 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 20 (near coast).—CHRISTY, Ibis, 1897, p. 332 (Samaná Bay, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 359 (recorded).

Megaceryle alcyon, EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Megaceryle a. alcyon, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 222 (Étang Miragoane).

Streptoceryle alcyon alcyon, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 412 (north coast).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 504 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 318 (Haina, specimen).

Winter visitant along coast and on the rivers and lakes of the coastal plain.

The belted kingfisher arrives as a migrant from North America in fall and remains until spring, frequenting mangrove swamps and the banks of streams, lagoons and lakes in the lowlands, where with its crested head it is an attractive feature of the landscape. Natives assert that it breeds, a statement that has been accepted by Verrill, but there is no basis for this assertion so far as can be ascertained.

In the Dominican Republic Cherrie recorded the kingfisher frequently along water courses near the coast. Christy found it on the Yuna, and among the mangroves at the head of Samaná Bay. He collected one March 7, and says that he saw it in June, the latter a statement to be taken with some reserve. Verrill reported the kingfisher as common, and Peters in 1916 says that it was fairly common along the north coast. Beck collected specimens at Santo Domingo City October 20, Sánchez November 6, 1916, and Túbano February 12 and 13, 1917. Abbott found it common in winter, and collected a female February 14, 1919, at Sánchez. He saw two or three at Catalinita Island from September 10 to 12, 1919, an early date of fall arrival. Hartert informs us that there are two in the Tring Museum collected by Kaempfer on the Río Yuna October 22, 1922. The collector has marked on the label "breeds here" but of this again there is no proof. Abbott says definitely that the kingfisher is absent in summer, and Wetmore was afield on Samaná Bay on many occasions in the first part of May, 1927, in localities favorable to this bird without seeing one.

The kingfisher has long been known from Haiti if we suppose that the one sent by Chervain to de Reaumur from "S. Domingue" (the specimen described by Brisson) came from the French colony. Cory speaks of the kingfisher as a common winter visitant, especially about the interior lakes, during his first work in Haiti in 1881. Bartsch in 1917 reported it on the Étang Saumâtre April 3, near Jérémie April 10 to 12, and 15, and at Trou des Roseaux April 13. Dr. W. L. Abbott found it common from November, 1917, to March, 1918, and recorded a few along the coast of Gonave Island February 18 to 28. He collected one at the Étang Saumâtre March 8. Beebe recorded one at Étang Miragoane March 2, 1927, and says that he saw others occasionally elsewhere. Wetmore, in 1927, observed it at Carrefour March 29, and at Mont Rouis March 30, both on the coast. He saw one April 8 along the Rivière Jaquisy, below Furcy, at an elevation of 800 meters, and one April 24 on the Rivière Samaná near Hinche. The last one that he recorded was found on the coast at Caracol April 27. The records for the Rivière Jaquisy and for Hinche probably represent the extent of the inland wandering of the species which follows the larger streams back among the hills. Perrygo reported the kingfisher at Fort Liberté February 8 and 16, 1929. Ekman found the kingfisher on Navassa Island in October, 1928.

Reichenbach¹¹ under *Megaceryle alcyon* refers to Daubenton's Planch. Enl. No. 593, Martin-pêcheur hupé, de St. Domingue, implying that mistakes have been made with regard to its scientific name. He says "Gray citirt sie ohne Anstand zu *Ceryle Alcyon*—mir zweifelhaft bleibt und wohl auf St. Domingo besser beobachtet zu werden und nach Wiederauffindung den Namen *M. domingensis* zu erhalten verdient." On a previous page, however (p. 25), he gives the name *Megaceryle domingensis* as referring his plate CCCCX, figure 3105, which is *Megaceryle stellata*, as he says "Das Vaterland des von mir 3,105 abgebildeten Vogels ist mir nicht bekannt und ich finde ihn so viel von Meyen's Vogel verschieden, dass ich ihn eher für den enl. 593 abgebildeten von St. Domingo halten möchte, über den ich weiter unten bei *M. Alcyon* mich noch weiter aussprechen werde: *M. domingensis* zu nennen." On page 24 he gives "*domingensis*: CCCX. * 3,105" immediately following his name *M. stellata* (Meyen) but there says nothing more about it. It appears then that he uses the name *domingensis* for two distinct species, and that through page priority its application to the belted kingfisher of North America is preoccupied by its allocation to the South American *Megaceryle stellata*.

The belted kingfisher is of moderate size being 325 mm. or more in length with small feet, heavy bill and strongly crested head. Above

¹¹ Handb. Spec. Ornith., Alcedineae 1851, p. 26.

it is dark gray and below white. The male has the band across the breast and the sides gray. In the female the sides are bright brown, a color that sometimes forms a second band across the breast.

Superfamily TODIDES

Family TODIDAE

TODUS SUBULATUS Gray

HISPANIOLAN TODY, BARRÁNCOLÍ, BARRANQUERO, PERROQUET DE TERRE, COLIBRI

Todus subulatus "Gould" GRAY, Gen. Birds, vol. 1, April, 1847, pl. 22 (Hispaniola²²).—HARTLAUB, Isis, 1847, p. 609 (listed).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—CORY, Birds Haiti and San Domingo, July, 1884, pp. 105-106, col. fig. (Puerto Plata, Port-au-Prince, specimens); Cat. West Indian Birds, 1892, p. 103 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 20 (abundant).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHRISTY, Ibis, 1897, pp. 332-333 (habits).—HARTERT, Nov. Zool., vol. 9, 1902, p. 293 (Sánchez, specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (abundant, Dominican Republic).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 441 (Monte Cristi, Sosúa, Chocó, Río San Juan, Arroyo Salado, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 181 (habits).—BEEBE, Zool. Soc. Bull. vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 221 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 504-505 (Haiti, Gonave Island; habits, nest).—DANFORTH, Auk, 1929, p. 369 (abundant).—LÖNNBERG, Fauna och Flora, 1929, p. 104 (Haiti, Gonave).—MOLTONI, Att. Soc. Ital. Scienz., Nat., vol. 68, 1929, p. 319 (Haina, San Juan specimens).

Todier, BUFFON, Hist. Nat. Ois, vol. 7, 1780, p. 226 (description, nest).

Todier de St. Domingue, DAUBENTON, Planch. Enl., pl. 585, figs. 1 and 2.

Perroquet de terre, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 262 (Dondon).

Todus viridis, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, pp. 87-88, pl. 56 (habits).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).—HARTLAUB, Isis, 1847, p. 609 (listed).

Todus dominicensis, SALLÉ, Proc. Zool. Soc. London, 1857, pp. 233-234 (habits).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti).—TRISTRAM, Cat. Coll. Birds belonging to H. B. Tristram, 1889, p. 98 (Samaná, specimens).

Resident; abundant. Not recorded for Tortue Island.

The Hispaniolan tody is universally distributed, with the exception of the higher mountain areas, and is one of the most abundant and constantly seen species of the island. It ranges alike in dry areas or humid sections, its only requirement being a cover of thorny scrub or low forest that will afford it shelter. It is one of the few species of birds that appears regularly beside the trails and roadways as one travels through the country.

²² Gray marked his plate simply "*Todus subulatus* Gould" without giving any locality.

Following is a digest of localities at which this tody has been reported:

Dominican Republic: Santo Domingo City, Seibo (Danforth), San Juan (Wetmore, Danforth); San José de Ocoa, Honduras, San Cristobal (Cherrie); Los Alcarrizos (Wetmore); Hondo, below Constanza (Abbott); Caña Honda (Verrill); Sánchez (Hartert, Verrill, Abbott, Wetmore); Samaná (Tristram, Verrill); Laguna, Rojo Cabo (Abbott); La Vega (Verrill, Wetmore); Jarabacoa (Wetmore); Monte Cristi (Peters, Danforth); Sosúa, Chocó, Río San Juan, Arroyo Salado (Peters); Haina, San Juan (Ciferri).

Haiti: Moron, Moline, (Abbott); Jérémie (Abbott, Bartsch); Trou des Roseaux (Bartsch); Aquin, Fonds-des-Nègres L'Acul, Étang Miragoane (Wetmore); Miragoane, Petit Goave, Trou Caïman, Gloré (Bartsch); Port-au-Prince (Younglove, Bartsch); Fonds Verettes (Abbott); Damien, Sources Puantes, Mont Rouis, La Tremblay, Rivière Jaquisy, to 1700 meters altitude on La Selle, Pétionville, Morne à Cabrits, Las Cahobes, Hinche, Maissade, Caracol (Wetmore); Dondon (Saint-Méry, Poole and Perrygo); Bombardopolis, Môle St. Nicolas, Moustique (Abbott); St. Michel, L'Atalaye, Cerca-la-Source, St. Raphael, Fort Liberté (Poole and Perrygo); Gonave Island (Abbott, Bond, Emlen, Poole and Perrygo, Danforth).

On the north slope of La Selle below Morne Cabaio Wetmore found this tody in April to an elevation of 1700 meters, which seems to be near its maximum elevation for regular occurrence. Elsewhere, where the slopes are lower, it may range over the tops of the mountains. In ascending the range of hills back of Sánchez this species was found on the south facing slopes to the very top, where a few were encountered in the edge of the range of the narrow-billed tody to which the Hispaniolan tody then gave way and disappeared. Abbott and Wetmore did not find it in the Valley of Constanza though Abbott collected specimens at Hondo a short distance below. This tody ranged in small numbers in the mangrove swamps of the Yuna and Barrancota on Samaná Bay, and was fairly common among the cacti and mesquites that formed the arid scrubs near L'Arcahaie, all of which will illustrate its adaptability to environment, and makes it appear the more curious that it does not penetrate through all of the dense rain forests that cover the mountains.

The Hispaniolan tody is common on Gonave Island where Abbott collected a considerable series, but is not found at all on Tortue Island, a curious circumstance. It is not recorded at present from Saona Island.

The tody is so strikingly marked with green back and brilliant red throat that it attracts the eye in spite of its small size and so is known

to the majority of those who travel in the country. The birds watch for their insect food from open perches, usually near the ground but occasionally well up among the branches of trees. They prefer shade and in the desert sections of their range usually perch in whatever shadow may be available. Attention is often attracted by their whistled call of *terp terp terp*, uttered in a complaining tone, varied by a metallic rattle heard during the nesting season. The notes are entirely different from those of the species found on Porto Rico. They perch with tail pointed down and the large bill directed up at an angle of forty-five degrees, their light eyes conspicuous at a near distance, turning the head to watch for their prey, and flying out with a whirl of wings to seize passing insects with a snap of the bill.

In April in Haiti Wetmore found them usually in pairs, preparing for the nesting season. Near Fonds-des-Nègres on April 2 a pair had started a tunnel in a low cut-bank a few feet above the water of the Rivière Seche. On April 3 near Aquin another pair was excavating a hole for a nest in a roadside bank with its surface baked hard by the intense heat of the sun, the tunnel at this time being only three or four inches deep. He was astonished at the sites chosen by some near Fonds-des-Nègres and evidently suitable cut-banks are less common than the birds. Several nest tunnels were located in the face of fairly steep slopes at the borders of paths while one was in a little bank that was only eighteen inches above the surrounding level, with a slope of only 45° . The hole in this case was about six inches above the trodden trail. The deepest openings seen were from one to two feet in length, with the excavation still continuing. No finished nests were observed but the tunnels were said to be from one to more than two feet in length, with an enlarged chamber at the end in which the eggs were deposited on loose earth. Both sexes at times produced a whirring rattle with the wings, a sound like that made by drawing a stick rapidly along a paling fence, flying quickly up as they made it and then dropping down. This was often produced as they left the nesting hole.

Near Laguna, on the Samaná Peninsula, early in March, 1919, Abbott found many nest holes under construction but none yet completed. On his return the first of June children had gathered a number of eggs for him in May during his absence and he preserved 29. He was told that four constituted the usual set. The eggs before us are white with a distinct gloss, frequently obscured by stain from the reddish earth on which they were laid, and rounded ovate in form. Following are measurements in millimeters of the Abbott specimens: 16.4 by 13.8, 16.6 by 14.1, 16.7 by 14.2, 17.2 by 14.4, 17.2 by 14.5, 17.3 by 14.7, 17.3 by 15.0, 17.4 by 14.5, 17.4 by 14.5,

17.5 by 14.2, 17.5 by 14.2, 17.5 by 14.5, 17.6 by 14.4, 17.6 by 14.5, 17.6 by 14.5, 17.6 by 14.5, 17.7 by 14.3, 17.8 by 14.0, 17.8 by 14.2, 17.8 by 14.4, 17.9 by 14.3, 18.4 by 15.1, 18.8 by 14.5. The last two seem abnormally long.

Abbott was told that todies bred twice each year. Kaempfer reports eggs in the month of May. Cory found one nest that contained three eggs. Danforth in 1927 collected a female at Santo Domingo City June 17 containing an egg ready to be deposited. A nest found July 18 on Gonave Island was in a little clay bank not over eight inches in height beside a much used footpath. The tunnel was only nine inches long. Sallé believed that they lined the nest cavity with dry herbaceous material, but in this seems to have been mistaken as others say that the eggs are deposited on the earth without protection. Vieillot's observation that the eggs are blue is also an error.¹³

In Haiti the natives call this tody colibri, a name that Mr. P. Rogevie of Miragoane says is correct. In the Dominican Republic the bird is usually known as barrancolí.

An adult male taken April 2 had the maxilla dusky brown, with a reddish cast near the center of the culmen; mandible orange red; iris grayish white; tarsus and toes dull brown; claws black. In the Philadelphia Academy of Natural Sciences there is a young male in juvenal dress taken at Anse à Galets, Gonave Island, July 18, 1928, by John T. Emlen, jr., that has the dorsal surface plain, dull green, and the lower parts white with the breast streaked heavily with poorly defined markings of dusky. There is no red evident anywhere and only a very faint wash of yellow on the flanks.

Birds from Gonave Island on first examination appear brighter green above and whiter below than those from the mainland but on examination of a large series so many individuals are found from Haiti and the Dominican Republic that are exactly like those of Gonave that the supposed differences disappear and lose even an average character. There is much variation from light to dark in shade of green and in the hue of the undersurface. Occasionally specimens are strongly suffused with red on the lower parts. Gonave birds are very slightly larger as the following will show:

Birds from Haiti and the Dominican Republic—

Males, sixteen specimens, wing 47.0–51.5 (49.0), tail 33.6–37.7 (35.8), culmen from base 19.0–23.2 (20.9), tarsus 13.3–15.0 (14.2) mm.

Females, thirteen specimens, wing 45.6–52.2 (49.0), tail, 33.6–37.6 (35.4), culmen from base 20.4–23.6 (21.4), tarsus 13.0–15.3 (14.3) mm.

Birds from Gonave Island—

Males, seven specimens, wing 49.8–52.5 (50.9), tail 34.0–38.2 (36.0), culmen from base 18.8–22.9 (21.1), tarsus 13.5–15.8 (14.7) mm.

¹³ Hist. Nat. Ois. Amer. Sept., vol. 1, 1807, p. 87.

Females, six specimens, wing 48.0–52.5 (50.2), tail 34.3–37.5 (35.7), culmen from base 19.8–21.6 (20.5), tarsus 14.0–14.8 (14.4) mm.

This tody measures from 115 to 125 mm. in length. The bill is long, flat, and comparatively wide, measuring from 5.5 to 6 mm. in width at the nostril. The throat is red, the breast grayish white, abdomen pale yellowish, and the sides and flanks light red. The under surface is often washed somewhat with reddish.

TODUS ANGSTIROSTRIS Lafresnaye

NARROW-BILLED TODY, BARRANCOLÍ, PICHUI, CHICORETTE

Todus angustirostris LAFRESNAYE, Rev. et Mag. Zool., October, 1851, p. 478 (Dominican Republic).—CORY, Birds Haiti and San Domingo, July, 1884, pp. 107-108, col. plate (Puerto Plata, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 322 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 20 (Dominican Republic).—VERBILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 369 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 412 (Sosúa specimens).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, pp. 38-39 (mentioned).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 504 (La Hotte, La Selle, Morne Tranchant, Morne Basile, Massif du Nord).—DANFORTH, Auk, 1929, p. 369 (Fonds-des-Nègres).—LÖNNREBERG, Fauna och Flora, 1929, p. 104 (Haiti).—MOLTONI, Att. Soc. Ital. Scienc. Nat., vol. 68, 1929, p. 319 (Monte Viejo, specimen).

Subulatus angustirostris, CORY, Cat. West Indian Birds, 1892, p. 103 (error for *Todus*).

Todus subulatus angustirostris, CORY, Cat. West Indian Birds, 1892, p. 103 (Haiti, Dominican Republic).

Resident; restricted mainly to the hills and mountains.

Since the other Greater Antillean islands have only one form of tody each it is astonishing to find two distinct species on Hispaniola. For many years the two were confused, until 1851 when Lafresnaye correctly described the present bird from a specimen taken by Sallé in the Dominican Republic. Sallé himself did not have proper understanding in the matter as in his list published in the Proceedings of the Zoological Society of London in 1857 he gives *angustirostris* as a synonym of *subulatus*, believing incorrectly that the differences pointed out by Lafresnaye between the two forms were those distinguishing male and female of one species. By some the narrow-billed tody was later called a subspecies of *subulatus* an allocation wholly incorrect as the two are specifically distinct.

The narrow-billed tody is primarily a species of dense, damp jungles and in Wetmore's experience was found principally in the higher mountains, as on La Selle and near Constanza. Above Sánchez he observed it around 450 meters altitude and it seems to be locally common under proper conditions at such elevations. Only along the abandoned railroad at San Lorenzo did he record it at sea level, and here and above Sánchez were the only places where he

found it mingling with the other species of today. The two seem to occupy distinct ecological associations, with the broad-billed form widely distributed through the lowland areas, and the narrow-billed species closely confined to the wet jungles bound with creeping bamboo that grow principally in the mountains, not wandering beyond these limits. Though superficially alike in color and markings the two species are easily distinguished by their notes so that there is instant recognition when they are heard. The call of the narrow-billed today, uttered with bill pointing upward at any disturbance in its haunt is a chattering *chippy chippy chippy chip* occasionally varied to *chic-o-ret* or *chip-chui*. In April Wetmore found them in pairs with the males scolding nervously at intruders. One was seen resting within a few inches of his mate with the feathers of his sides expanded beyond his wings so that their brilliant pink was prominently displayed while he jerked his tail and uttered his call. Though no shyer than the companion species the narrow-billed today is usually difficult to see when its calls are heard as it inhabits dense growths and is so tiny that a single leaf may completely hide it from view.

There is an old skin of this species without data in the United States National Museum that was secured by Gabb in the Dominican Republic. In the southern part of that country Cherrie found it at the interior points where he collected, securing specimens at Aguacate and Catarrey. Ridgway,¹⁴ has recorded it from Santo Domingo City but this we consider uncertain. (His basis for reference to it at Puerto Resoli is unknown to us.) Verrill confused it with the broad-billed species since he says that its note is similar to that of *subulatus* in which he was entirely mistaken. The only references of his to it that are to be trusted are skins that he collected at Caña Honda January 2, and El Valle, January 15, 1907, which E. Hartert informs us are in the Tring Museum. Beck collected specimens at Santo Domingo City, October 5 and 20, and Sánchez Nov. 3, 13, and 14, 1916, and on Loma Tina January 3, 1917.

Abbott found the narrow-billed today common near Constanza, where he collected specimens September 24, 25, 28, and 29, 1916, and April 9, 10, and 11, 1919. On May 4 and 6, 1919 he secured two at Hondo. On May 9 about two miles below Hondo Abajo he collected two eggs, one containing a fair-sized embryo, from a hole dug in the bank of a dry stream bed. The tunnel was excavated to a depth of eleven inches and near the end turned at right angles to the left, probably because of a large stone encountered at this point, to terminate in a chamber that from Abbott's notes was the "size of a small fist." He says that children often rob the nests to eat the eggs. The

¹⁴ U. S. Nat. Mus. Bull. 50, pt. 6, 1914, p. 445.

two eggs collected are glossy white, unmarked, and measure 15.5 by 13.5, and 15.7 by 13.5 mm., being distinctly smaller than those of *Todus subulatus*. Among eggs of todies brought to Abbott at Laguna, on the Samaná Peninsula, taken by children during May, 1919, there is one that from its size is certainly the present species as it measures 15.1 by 13.7 mm., distinctly smaller than in *subulatus*.

Peters found this tody only at Sosúa, where he collected one specimen. Cory records five from Puerto Plata, November 17, December 13, 22, and 23, 1882, and January 11, 1883. From the general topography it seems probable that these came from the hill Loma Isabela de Torres whose cloud-capped summit might offer suitable resort for this species.

In the spring of 1927, Wetmore found the narrow-billed tody on May 13 on the summit of the hills above Sánchez, in crossing on the trail that leads to Las Terrenas. In climbing up the steep mountain face *Todus subulatus* was common to the summit where at 450 meters altitude it mingled for a brief space with *T. angustirostris* which replaced it completely in the dripping rain forest farther inland. Three specimens of *angustirostris* were taken on this occasion. On May 11 he heard them calling from the hill slopes at San Lorenzo Bay but was not able to find them in the dense growth of vegetation. The presence of the species at this point however was verified subsequently when he identified the skull of one from barn owl pellets collected in one of the caves in that vicinity. On May 17 in ascending the steep slopes of El Barrero above the Río Jimenoa, on the trail from Jarabacoa to Constanza, the chattering calls of the narrow-billed tody came frequently from either hand as soon as the dense rain forest suited to its needs was encountered. Near Constanza from May 19 to 27 it was the only species encountered. Moltoni received one from Ciferri taken on Monte Viejo at 1200 to 1500 meters elevation in August, 1929.

In Haiti Abbott collected one at Moron on the southwest peninsula December 24, 1917, while at Moline, about 30 kilometers southeast of Jérémie at an elevation of 600 meters he found them common securing six between January 25 and 30, 1918. He took one near Furcy at an elevation of 900 meters, May 31, 1920.

Wetmore encountered the narrow-billed tody on the summit of La Selle from April 11 to 15 and collected several. The birds were found in dense thickets throughout this region down the slopes into the lower levels of the Jardins Bois Pin and the ravine of the Rivière Chotard, completely replacing the lowland species. On April 17 in passing over the steep trails from Chapelle Faure in Nouvelle Touraine to Furcy he recorded it at a number of places, particularly in the damp thickets on Morne St. Vincent. Beck secured one on the

higher slopes of La Hotte July 3, 1917, Danforth shot one at Fonds-des-Nègres July 23, 1927 in a coffee plantation, and Bond one on Morne Tranchant January 6, 1928. Bond found this species in 1928 on La Selle, Morne Tranchant (specimen), Morne Basile in the Montagnes Noires, and the Massif du Nord.

A male collected by Wetmore on La Selle April 12 had the maxilla and distal half of the mandible black, rest of bill light dull red, iris ivory white, tarsus and toes pinkish brown, and claws black. One from Constanza May 27 (preserved in alcohol and sex not taken) had the base of the mandible deep reddish orange, rest of bill blackish, iris pale grayish white, tarsus and toes dusky brown.

The Dominicans call this species barrancolí from its habit of nesting in cut banks, while at Constanza it was also known as pichui probably from its note. The Haitians on La Selle called it chicorette in evident imitation of one of its calls.

Like the other tody this species is brilliant green above with a bright red throat, and pinkish red sides. It is distinctly lighter below with the yellow wash confined to the undertail coverts and extreme lower abdomen so that it often appears clear white with a wash of grayish across the breast. In any case it may be told by its note, or in the hand by the distinctly narrower, black-tipped bill, which measures at the nostrils from 4 to 5 mm. in width.

Order PICIFORMES

Suborder PICI

Family PICIDAE¹⁵

Subfamily PICINAE

CHRYSERPES STRIATUS (P. L. S. Müller)

HISPANIOLAN WOODPECKER, CARPINTERO, CHARPENTIER, PIVERT

Picus striatus MÜLLER, Vollst. Naturs. Suppl. Reg.-Band, 1776, p. 91 (Hispaniola).

Carpintero, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, Cap. 2; Reprint, Madrid, 1851, p. 442 (habits).

Charpentier, CHARLEVOIX, Hist. Isle Espagnole, vol. 1, 1733, p. 40 (listed).—OEXMELIN, Hist. Avent. Flibustiers, vol. 1, 1775, p. 356 (nest).—SAINT-MÉRY,

¹⁵ *Picus rubidicollis* Vieillot, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 63, recorded from "Porto-Ricco et à Saint-Domingue," and *Picus portoricensis*, Hartlaub, Isis, 1847, p. 609, listed from Hispaniola, refer to the Porto Rican woodpecker (*Melanerpes portoricensis*), and are listed erroneously from Hispaniola as this species is confined to Porto Rico and the adjacent island of Vieques.

Picus Dominicensis minor Brisson, Ornith., vol. 4, 1760, pp. 75-77, pl. 4, fig. 2, said to have been sent from "S. Domingue" to Abbé Aubry seems to be a *Piculus* and can hardly have come from Hispaniola.

Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (Fort-de-Paix).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 68 (Gonaïves).

Pic Rayé de Saint-Domingue, BUFFON, Hist. Nat. Ois., vol. 7, 1780, pp. 27–28 (description).—DAUBENTON, Planch. Enl., pl. 281.

Pic Rayé à tête noire, de St. Domingue, DAUBENTON, Planch. Enl., pl. 614 (female).

Pivert, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 298 (La Selle).

Picus Dominicensis striatus BRISSON, Ornith., vol. 4, 1760, pp. 65–67, pl. 4, fig. 1 (“S. Domingue”; refers to male).

Picus Dominicensis striatus minor BRISSON, Ornith., vol. 4, 1760, pp. 67–69, pl. 3, fig. 2. (“S. Domingue”; refers to female.)

Picus striatus, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pl. 114 (description, habits).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti, specimen).—HARTLAUB, Isis, 1847, p. 609 (listed).—MACQUART, Ann. Soc. Ent. France, 1853, pp. 657–660 (parasitized by larva of a fly).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96, (Dominican Republic; Haiti).

Chloronerypes striatus, CORY, Cat. West Indian Birds, 1892, p. 104 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 21 (Dominican Republic).

Melanerpes striatus, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (Dominican Republic, abundant).

Centurus striatus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (Santo Domingo City).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 154 (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 111–112, 2 col. figs. (Puerto Plata, Pétionville).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 104 (Samaná, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—CHRISTY, Ibis, 1897, pp. 333–334 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, pp. 412–413 (Monte Christi; Sosúa, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 179 (Dominican Republic).—LÖNNBERG, Fauna och Flora, 1929, p. 104 (Haiti).

Chryserypes striatus, MILLER, Bull. Amer. Mus. Nat. Hist., vol. 34, 1915, pp. 517–520 (recognized as in distinct genus).—BEEBE, Zool. Soc. Bull. vol. 30, 1927, pp. 140, 141; Beneath Tropic Seas, 1928, p. 222 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 505 (Haiti; nesting).—DANFORTH, Auk, 1929, p. 369 (abundant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 319 (Moca, San Juan, specimens).

Resident; common.

The woodpecker is a bird of strong, robust form and familiar habit that is universally distributed wherever there is tree growth to support it, as it ranges from mangrove swamps on the coast through thorny scrubs, coffee plantations, and sparsely wooded hillsides to the rolling pinelands of the interior hills and mountains seemingly with no preference. It is one of the most common and easily seen of the native birds. So far as known at present it is confined to the main island and does not occur on Gonave and Tortue.

To the North American naturalist the Hispaniolan woodpecker in action at once suggests the melanerpine woodpeckers, while its

loud, rollicking, rolling calls, often interspersed with tree-toad-like gutturals, in its changing tones brings to mind continental flickers, ant-eating, and red-headed woodpeckers. The birds fly from tree to tree with rapidly bounding flight, and alight indifferently on trunk or branches, to hitch about, bracing with the strong, stiff tail, clinging to the bark with the strong feet and sharp claws. Occasionally one may fly to the outer branches of a tree and seizing a small twig in its feet swing back downward in search for food. The nest is placed in a hole drilled by the bird itself in a tree trunk. Often one tree may have several holes in it, and on one occasion Wetmore observed a palm with a dozen cavities cut by this woodpecker. In the lowlands the royal palm is the favorite nesting tree, and there is little doubt that subsequent rotting induced by the collection of water in these artificial cavities affects the tree and may eventually extend until the trunk breaks in the wind. Whether this damage is serious is questionable and one that should be examined with an open mind to all the factors concerned, including the abundance of palms, the extent to which they are utilized by man, and the rapidity of growth which would normally replace those destroyed. At the present time it appears that damage is negligible as royal palms abound as do the woodpecker. It is Wetmore's opinion from present observations that damage that has been claimed is more imaginary than real, being based on isolated cases where the shooting of one or two birds would correct the difficulty. At Poste Charbert Wetmore was told that the woodpeckers drilled holes in the water tank that supplied the house, a matter of some importance, corrected however by casual shooting. Near Constanza the woodpecker was reported to damage maize, an allegation made in other localities also. It would appear that the bird should be given careful study by some one competent to determine its exact status. It is the opinion of Wetmore from present information that as a species it is useful through destruction of injurious forest insects, and that only those individuals that develop injurious habits should be killed. There should be no general war on it without careful investigation.

That the woodpecker has been common throughout the historic period is shown by frequent reference to it in early works of travel. Oviedo describes the nesting cavity dug in the trunk of a palm. The species is mentioned by Charlevoix in 1733, and by Oexmelin in 1775, the latter like Oviedo noting the nesting holes drilled in the hard wood of palm trunks. Brisson in 1760 described minutely the male and female from specimens sent by Chervain to de Reaumur, considering them distinct species. Vieillot (writing in 1807) says that he found them nesting in May, and that they laid from four to five eggs.

In the Dominican Republic Sallé notes that in one taken near Santo Domingo City he found the larva of a parasitic fly which he succeeded in rearing and that was described by J. Macquart (in 1853) as an Anthomyid, *Aricia pici*, now called *Philornis pici*.¹⁶ Cory (in 1885), speaks of the woodpecker as abundant, and says that the complete set of eggs usually numbered three. He recorded one nest with eggs taken May 13 (year not given). Tristram received a pair from A. Toogood, taken at Samaná in 1887. Cherrie reported that the bird tapped the trunks of palm trees for the sap, an observation that seems not to have been made by others. Christy says that they are destructive to the fruit of the cacao, and reports that he secured four slightly incubated eggs at Sánchez on February 27. There are two skins in the United States National Museum taken by A. Busck September 1, 1905, in the San Francisco Mountains. Verrill heard bad report of the woodpecker as he says that it feeds on "fruits, oranges and cacao-pods, and frequently ruins the crop." He continues "fortunately its increase is kept down by a fatal provision of nature in the shape of a parasitic worm that infests the throat and head. This worm matures at the season when the young woodpeckers are able to leave the nest, and after that time it is practically impossible to find an adult *Melanerpes* [that is woodpecker] alive. The ground beneath the nests is often strewn with the dead and dying birds, their throats and crops so distended with the disgusting parasites as to render them incapable of flight." This account would appear to be considerably overdrawn as the species remains too common to support belief in such wholesale destruction. Danforth reports that specimens he collected in the summer of 1927 were parasitized by round worms.

J. H. Fleming has specimens from Sánchez, Caña Honda, and Samaná collected by Verrill. J. L. Peters secured 19 near Monte Cristi and Sosúa, and describes nests seen in "post cactus" in the lower Yaqui Valley. He found 25 birds congregated in one tree on one occasion. Kaempfer examined a heavily incubated egg at Constanza the middle of July. W. L. Abbott prepared skins at Laguna on the Samaná Peninsula August 7 and 8, 1916, and Sánchez September 24, October 20 and 23, 1916, and February 11, 1919.

Wetmore, in 1927, observed the woodpecker occasionally on May 1, in traveling from Comendador to Azua. On May 4 in crossing by motor car from Santo Domingo City to San Francisco de Macoris it was fairly common wherever there was forest growth. Two were seen resting side by side on the trunk of a palm attentively examining a nest hole. Near Sánchez they were common from May 6 to 13. Numbers were seen in the mangrove swamps on the lower Barrancota

¹⁶ See Aldrich, J. M., Ann. Ent. Soc. America, vol. 16, 1923, p. 308.

and in the swampy woods along the Yuna. On May 9 near the town one was flushed from a nest 10 meters from the ground in a trunk of a palm. In the forested hills the woodpecker was the most prominent bird as it was heard calling and hammering on every side. Curiously enough in all his experience on the island he did not hear these birds make the rattling drum, so prominent a habit in other woodpeckers during the breeding season. From La Vega to El Río May 17, and on the return journey May 30, many were seen along the trail. At Constanza from May 19 to 28 they were common but did not range extensively through the great forests of pine, preferring the deciduous growth.

In Haiti Saint-Méry, writing in 1797, tells us that the woodpecker was found near Port-de-Paix, and on a later page says that it was observed by Abbé Madoulé and two companions on February 1, 1788, on the summit of La Selle. Descourtilz recorded it at Gonaïves April 16, 1799. A. E. Younglove collected specimens near Port-au-Prince April 14 and May 7, 1866. Cory secured skins near Pétionville in February and March 1881. In April 1917, Bartsch recorded it near Jérémie, Trou des Roseaux, Miragoane, Petit Goave, Port-au-Prince, Trou Caïman, Gloré and Thomazeau.

Abbott secured specimens at Jérémie November 18, 19, 20, and 22, Rivière Bar February 10, 12, 16, and 17, and Bombardopolis March 22, during 1917. At Jean Rabel Anchorage the same year he found the birds nesting in holes excavated in the trunks of tree cacti, and collected four sets of eggs. These are white in color with a slight gloss. A single egg was secured on May 30 from a hole 13 inches deep, 7 feet from the ground in a tree a foot in diameter. This egg measures 25.8 by 18.3 mm. On June 2 two sets were taken. One of four eggs came from a nest hole "16 inches deep, 7½ feet from the ground." These measure 22.5 by 19.3, 23.5 by 19.4, 23.6 by 19.4 and 23.8 by 20.0 mm. Five eggs from a hole "13 inches deep, 6½ feet from the ground" measure 24.5 by 18.5, 24.8 by 18.8, 25.6 by 19.3, 25.7 by 18.9, and 25.7 by 19.1 mm. Four eggs from a set of five secured June 3 in a cavity "18 inches deep, 7 feet from the ground" measure 28.7 by 19.6, 29.2 by 20.3, 29.5 by 20.0 and 29.6 by 20.4 mm. From these figures a considerable variation in size is evident. Abbott says in his notes that he did not find the woodpecker on Tortue, nor does he mention it from Gonave. In 1925 G. S. Miller, jr., secured skeletons near St. Michel. Beebe brought living birds in 1927 for exhibition by the New York Zoological Society.

Wetmore, in 1927, recorded the woodpecker at Damien March 29. L'Arcahaie March 30, where it was common among the enormous cacti, perching on the flat pads, Mont Rouis March 30, Fonds-des-Nègres March 31 to April 5, where it was observed feeding on berries, Aquin April 3, L'Acul April 4, La Tremblay April 7, the

summit of La Selle April 9 to 15, Las Cahobes, April 20, Maissade April 21, Hinche April 22 to 24, and Caracol April 26 and 27. Danforth in the summer of 1927 says that he found them nesting in large cacti. Poole and Perrygo secured specimens at St. Michel December 23, 26, and 29, 1928, Dondon January 18, St. Raphael January 12 and 13, Fort Liberté February 7 and 8, St. Marc February 25 and Cerca-la-Source March 22 and 23, 1929.

An adult male taken by Wetmore at Fonds-des-Nègres April 2, 1927, had the maxilla and tip of mandible dull black; rest of mandible neutral gray; iris bright yellow; tarsus and toes greenish gray.

W. deW. Miller¹⁷ has given a detailed discussion of the structural characters of this woodpecker and has segregated it in the genus *Chryserpes* distinct from other species of its group. On critical examination we find the Hispaniolan woodpecker generally similar to *Centurus carolinus*, the type of the genus *Centurus*, but with culmen more sharply ridged, feathers of crown and nape shorter and stiffer, upper tail coverts much shorter, and the tuft of the oil gland shorter. Other characters are of minor importance but aid to indicate the generic distinctness of the species.

Miller examined a fair series of these birds and gives it as his opinion that "there is little doubt that *Chryserpes striatus* consists of two or three races differing chiefly if not wholly in size." Kaempfer¹⁸ believed that birds from 800 to 1,000 meters altitude and above differed from those of the lowlands in being larger with heavier bills. We have compared an excellent series and find considerable difference in size individually and some seasonal variation in color due to plumage wear in birds from arid localities but can not correlate this variation with geographic locality. We consider it entirely individual. Difference in wing measurement in birds from one locality may be as much as ten millimeters, and the size and strength of the bill may vary in equivalent amount.

The Hispaniolan woodpecker is a robust bird from 225 to 265 mm. in length, yellowish green on the back heavily barred with black, wings black barred with dull yellow, tail black above, yellowish olive below, rump and nape red, breast brownish yellow and abdomen olive yellow. The male has the crown red while in the female it is black.

SPHYRAPICUS VARIUS VARIUS (Linnaeus)

YELLOW-BELLIED WOODPECKER, CHARPENTIER

Picus varius LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 176 (Carolina).

Sphyrapicus varius, LÖNNEBERG, Fauna och Flora, 1929, p. 98 (Haiti).

Sphyrapicus varius varius, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 505 (Gonave and Tortue Islands).

¹⁷ Bull. Amer. Mus. Nat. Hist., vol. 34, 1915, pp. 517-520.

¹⁸ Journ. für Ornith., 1924, p. 179.

Migrant from North America; apparently rare.

R. H. Beck secured a female yellow-bellied woodpecker on Loma Tina, Dominican Republic, January 3, 1917, that was molting into breeding dress, and on February 10 of the same year shot another of the same sex in full breeding plumage. On March 6, 1920 W. L. Abbott collected a female near Anse à Galets on Gonave Island, noting that it was extremely fat. Bond reports the species from Trou Louis on Gonave Island, and from Tortue. Lönnberg writes that the specimen he records as taken by Dr. E. L. Ekman was secured on Tortue in March, 1928.

The yellow-bellied woodpecker is a little smaller than the Hispaniolan woodpecker, and is black above, mottled with white on the wings and buffy white on the back, with a broad band of white across the wing coverts. Below it is yellowish with sides streaked with brown and a broad shield of black on the breast. The throat is whitish in the female, and the crown either red or black. Throat and crown are red in the male.

Subfamily PICUMNINAE

NEOCTITES MICROMEGAS (Sundevall)

HISPANIOLAN PICULET, FLAUTERO, CHARPENTIER-CAMELLE, CHARPENTIER-BOIS

Picumnus micromegas SUNDEVALL, Consp. Av. Pic., 1866, p. 95 ("Brasilia"= Hispaniola).

Petit pic olive de Saint-Domingue, BUFFON, Hist. Nat. Ois., vol. 7, 1780, pp. 29-30 (description).

?*Bucco cayennensis*, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (identity not certain).

Picus passerinus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).—HARTLAUB, Isis, 1847, p. 610 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic).

Chloronerpes passerinus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 234 (Higuëy).

Picumnus lawrencii CORY, Bull. Nuttall Ornith. Club, 1881, p. 129, pl. 1, (Described as new; type from Jacmel, Haiti); pp. 153-154 (Jacmel, Pétionville).

Picumnus lawrencii, CORY, Birds Haiti and San Domingo, July, 1884, pp. 109-110, col. pl. (Samaná, Rivas, Pétionville, Jacmel, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 318, 322 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 360 (Sánchez, Samaná).

Picumnus micromegas, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 96 (Dominican Republic, Haiti).—TRISTRAM, Ibis, 1884, pp. 167-168 (Dominican Republic, specimen); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 100 (Samaná, specimen).

Nesocitites micromegas, HARGITT, Cat. Birds Brit. Mus., vol. 18, 1890, pp. 552-553, 3 figs. (description of new genus; specimens).—CORY, Cat. West Indian Birds, 1892, p. 103 (Haiti, Dominican Republic).—CHERRIE, Field

Columbian Mus., Ornith., ser., vol. 1, 1896, pp. 20-21 (Santo Domingo City, Catarrey, Aguacate, specimens).—PETERS, Bull. Mus. Comp. Zoöl., vol. 16, 1917, p. 412 (Estero Balsa, Sosúa, Los Toritos, specimens).—KAEMPFER, Journ. für Ornith., 1924, pp. 183-184 (Sánchez, specimens).—LÖNNBERG, Fauna och Flora, 1920, p. 104 (Haiti).

Nesocites micromegas micromegas, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 505 (Miragoane, Port-au-Prince, Fond Parisien, Trou Forban, Ennery, Massif du Nord, Plaine du Nord).—DANFORTH, Auk, 1929, pp. 369-370 (recorded).

Resident, locally common.

The piculet is a shy inhabitant of forests where it creeps about in such cover that it is seen with difficulty. Little is known at present of its habits.

Most of the available records pertain to the Dominican Republic. Sallé speaks of it as very rare in the forests near Higuëy. He lists another bird as "*Bucco cayennensis*"¹⁹ that is supposed to be the present species which he says he found in deep forest. Cory collected specimens at Samaná June 2, and September 1, 3, 4, 5, and 8, and at Rivas August 24, in 1883. Tristram received a female from Samaná, collected in 1883 by C. McGrigor. Cherrie says that he secured a series of 25 at Santo Domingo City, Catarrey and Aguacate. Verrill writes that he obtained it only at Samaná and Sánchez. Peters collected four in the spring of 1916 at Estero Balsa, Sosúa and Los Toritos. He describes its song as a series of six whistled notes from which the species derives its local name of flautero. Beck took specimens near Sánchez May 28, October 9 and 10, and November 4, 16, 17 and 23, 1916.

Abbott found the piculet common at Laguna on the Samaná Peninsula, and says that though not shy it was difficult to see because of its inconspicuous coloration. He collected specimens there on March 9, and August 11, and 13, 1919. On March 30 of that year his boy, John King, brought him a set of four eggs from a hole in an alligator pear tree 12 feet from the ground, reporting that he had a good view of the parent bird as it left the nest. These eggs, which proved to be very hard set, are rounded oval in form and white in color with a distinct gloss. They measure 19.1 by 17.0, 19.4 by 16.6, 19.8 by 16.5 and 20.0 by 16.6 mm. A single egg also secured by John King near Laguna May 19, 1919 measures 21.1 by 16.2. This specimen was heavily incubated. Skins were obtained at Rojo Cabo August 30, 1916, Port Rincón August 17, 18, and 19, 1919, and at Pimentel January 22, 1921. In a female taken at Port Rincón Abbott has marked the iris as reddish brown and the feet greenish slate.

¹⁹ Proc. Zool. Soc. London, 1857, p. 234.

Kaempfer secured two birds partly grown near Sánchez. Danforth in 1927 records this species as locally common in woods near the Río Yaqui del Norte in the vicinity of Monte Cristi, and also near Seibo. He found a few at Bonaó, Laguna del Salodillo, and east of Azua. One taken at Monte Cristi had eaten a centipede, many ants, three earwigs and many small beetles. He describes the call as "a rolling trill with a deep flycatcher-like tone resembling somewhat that of *Tolmarchus taylora*." At Seibo July 4 a female was observed excavating a hole in a partly rotted fence post.

In Haiti A. E. Younglove collected two near Port-au-Prince April 25 and May 9, 1866. Cory reports two, a male from Jacmel January 16, and a female from Pétionville March 4, 1881. He says that the piculet has the habits of a woodpecker and utters a short, sharp note, generally while flying. Danforth reports it from the Citadelle Hill above Milot in 1927. Bond records it as common in arid sections along the coast but rare inland. He found it at Miragoane, Port-au-Prince (specimen, February 1, 1928), Fond Parisien, Trou Forban northwest of L'Arcahaie, Ennery, in the Massif du Nord, and on the Plaine du Nord. He remarks that "the notes are loud and of woodpecker quality and resemble the syllables *kuck-ki-ki-ki-ke-ku-kuck*."

The piculet of Hispaniola was first described by Sundevall as *Picumnus micromegas*. He was told that his specimen came from Brazil from which the true range of the bird was not suspected, so that when Cory collected specimens in Haiti in 1881 he named them *lawrencii* in honor of George N. Lawrence. Bryant in 1863 correctly identified *micromegas* of Sundevall as from Hispaniola, but as he made no comment as to why he had done so his action was overlooked, until in 1884 Tristram went into the matter carefully indicating that *lawrencii* of Cory is a synonym of *micromegas* of Sundevall.

The piculet is a small bird little larger than a sparrow, measuring only 145 to 160 mm. in length. Though woodpeckerlike in form the tail feathers are short and soft at the ends as the bird does not brace with the tail in climbing. The plumage is yellowish olive green above with a patch of golden yellow on the crown, and yellowish white below streaked and spotted lightly with blackish. The male has a spot of red in the center of the yellow crown patch.

NESOCITITES ABBOTTI Wetmore

GONAVE PICULET

Nesocitites abbotti WETMORE, Proc. Biol. Soc. Washington, vol. 41, October 15, 1928, p. 167 (La Mahotiere, Gonave Island, Haiti).—LÖNNBERG, Fauna och Flora, 1929, p. 104 (Gonave).

Nesocittes micromegas abbotti, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 505 (Gonave Island).—DANFORTH, Auk, 1929, p. 370 (Gonave).

Gonave Island; common resident.

Dr. W. L. Abbott, in whose honor this species is named, found the Gonave piculet common in dense scrub on the hillsides, and usually encountered it in pairs. In all he secured 14 specimens taken February 20, 21, 23, 24, and 27, 1918, and March 8, 9, 10, and 14, 1920. The latter were shot near Anse à Galets. The specimen selected as type is a male taken February 24, 1918. The soft parts are said to be similar in male and female, the iris being reddish brown, upper mandible blackish above and leaden beneath, and tarsi greenish lead color.

Danforth found it common on Gonave in 1927 and says "it is almost abundant in the brushy woods, and its characteristic callnote is heard on every side. We collected five specimens. The stomach contents of one consisted exclusively of the seeds and pulp of some fruit."

Bond writes that the piculet is "very common on Gonave Island, its abundance being due perhaps to the absence of the much larger *Chryserypes*. In habits and notes it is similar to the mainland form. Six specimens were secured.

"A nest was found in June. It was placed about 12 feet above the ground in arid growth. It was apparently empty. The nesting hole was of downy-woodpecker size."

This form is generally similar to *Nesocittes micromegas* (Sundevall) but is very much paler both above and below, the under surface being white, with only a very faint tinge of yellowish on the breast, and the upper surface much grayer. The white of the sides of the neck is more extended and the yellow of the crown in the male is more restricted.

Following are measurements (in millimeters) of the series obtained:

Eight males, wing 65.9–68.4 (67.7); tail 36.5–42.8 (39.5); culmen from base 15.8–17.2 (16.5); tarsus 17.0–18.3 (17.4).

Six females, wing 69.3–73.2 (71.2); tail 37.0–41.5 (39.9); culmen from base 17.0–17.7 (17.5); tarsus 17.3–18.5 (17.8).

Type, male, wing 68.0; tail 42.8; culmen from base 16.5; tarsus 17.9.

In general the Gonave Island bird is similar to that of the main island, but the differences, mainly those of paler coloration, seem so distinct that it is considered a species apart from *micromegas*.

Order PASSERIFORMES

Suborder TYRANNI

Superfamily TYRANNIDES

Family TYRANNIDAE²⁰

TYRANNUS DOMINICENSIS DOMINICENSIS (Gmelin)

GRAY KINGBIRD, PETIGRE, PITIRRE, TITIRI, PIPIRITE

Lanius dominicensis Gmelin, Syst. Nat., 1788, vol. 1, pt. 1, p. 302 (Hispaniola).

Titire, ou Pipiri, BUFFON, Hist. Nat. Ois., vol. 4, 1778, pp. 573-577 (habits).

Tyrannus intrepidus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

Tyrannus matulinus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (Dominican Republic).

Tyrannus griseus, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, pp. 76-77, pl. 46 (habits, description).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 90 (Dominican Republic, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti).

Tyrannus Dominicensis BRISSON, Ornith., vol. 2, 1760, pp. 394-395, pl. 38, fig. 2 ("S. Domingue").

Tyrannus dominicensis, CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti, specimens); Birds Haiti and San Domingo, July, 1884, pp. 77-79 (Puerto Plata, specimens; Samaná, eggs); Cat. West Indian Birds, 1892, p. 108 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 124 (Rivas, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18 (Dominican Republic, specimens).—CHRISTY, Ibis, 1897, pp. 327-328 (Dominican Republic, nesting).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (Dominican Republic).—KAEMPFER, Journ. für Ornith., 1924, p. 180 (Dominican Republic).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).

Tyrannus d. dominicensis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, pp. 67, 222 (Haiti).—EKMAN, Ark. för Bot., vol. 22 A, No. 16, 1929, p. 7 (Navassa).

Tyrannus dominicensis dominicensis, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 414-415 (Monte Christi, Sosúa, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 506 (Caracol, nest).—DANFORTH, Auk, 1929, p. 370 (common).

Tyrannus curvirostris curvirostris, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 319 (Moca, specimens).

²⁰ Salvadori in Atti Soc. Ital. Sci. Nat., vol. 7, 1864, p. 153, described a small fly-catcher under the name *Anaeretes cristatellus* that he says "è indicato come proveniente da Haiti." Selater and Salvin after examining his type specimen report in the Proc. Zool. Soc. London, 1868, p. 175 (footnote) that this is *Serpophaga subcristata* (Vieillot), which ranges in South America from Pernambuco and Piauhy south into Argentina as far as the Rio Negro, and does not occur in the Greater Antilles. Salvadori's locality is therefore erroneous.

Resident, common; not found in heavily forested sections.

The gray kingbird is almost universally distributed in the cultivated sections of Hispaniola, occurring everywhere about fields and pastures but not penetrating the forests. Wetmore did not find it on the heights of La Selle, though it ranged on the north face of that range above the Rivière Jaquisy, but in the Valley of Constanza, at a slightly lower altitude than La Selle with a climate equally cold, the bird was fairly common. He observed it in the mangroves bordering the Yuna and Barrancota, and on the little wooded islets on the southern shores of Samaná Bay, seeming exceptions to the statement that the species is not found regularly in forested sections until it is remembered that open stretches of water in these haunts afforded favorable feeding grounds comparable to the open lands frequented elsewhere. It comes into the suburbs of towns and villages, and ranges in semi-arid and humid sections alike. Abbott collected specimens on Gonave and Tortue Islands, and from September 12 to 18, 1919, found it common on Saona. He saw two or three pairs on Catalinita Island September 10 to 12 of the same year.

The gray kingbird rests on open perches to watch for passing insects, flying out to secure these on the wing. Its flight is direct, performed with rapid beats of the wings, and can be fairly rapid. The bird is belligerent and delights in pursuing other kingbirds or individuals of other species, its victims ranging in size from the red-tailed hawk down, all, regardless of stature, fleeing from its angry attacks. From an economic standpoint it is one of the most useful species found on the island and should be protected as it is fitted to thrive in connection with developing agriculture. If properly guarded it should increase in numbers as the forests are cleared and more land comes under cultivation.

Present definite records of its occurrence are as follows:

Dominican Republic: Comendador to Azua, San Francisco de Macoris (Wetmore); Rivas (Tristram); Caña Honda, El Valle, Cayo Levantado, Samaná (Verrill); Rojo Cabo, San Lorenzo (Abbott); Sánchez, La Vega, (Verrill, Wetmore); La Vega to Jarabacoa (Wetmore); El Río, Constanza (Abbott, Wetmore); Santiago (Wetmore); Moca (Ciferri); Puerto Plata (Cory); Monte Cristi, Sosúa (Peters); Saona and Catalinita Islands (Abbott).

Haiti: Jérémie (Abbott, Bartsch); Trou des Roseaux, Miragoane, Petit Goave (Bartsch); Aquin, L'Acul, Fonds-des-Nègres, Étang Miragoane, Carrefour, Damien (Wetmore); Port-au-Prince (Younglove, Bartsch, Beebe, Wetmore); Trou Caïman, Thomazeau, Gloré (Bartsch); Fonds Verettes (Abbott); Mont Rouis, Las Ca-

hobes, Hinche to St. Michel, Cap-Haïtien (Wetmore); Caracol (Wetmore, Bond); L'Atalaye, St. Michel, St. Raphael, Fort Liberté, St. Marc, Cerca-la-Source (Poole and Perrygo); Rivière Bar, Bombardopolis, Jean Rabel Anchorage, Moustique, Tortue Island (Abbott); Gonave Island (Abbott, Danforth, Poole and Perrygo); Navassa Island (Ekman).

The gray kingbird outside the breeding season gathers frequently at night in central roosts to which many individuals may come. As the birds congregate in the evening they utter continual vociferous calls, often rising to circle in the air, and then settle again in the tree tops where they spend the night. At day break they are very noisy again for a time and then disperse to their feeding grounds for the day.

The principal nesting season appears to come from April to June, though Vieillot reports that they nest irregularly. He records the number of eggs as three to four. Cory reports a nest April 18, 1883, with three fresh eggs, and another May 20 with two eggs. Christy observed nests with young during June. The last two authors describe the nest as constructed of small twigs loosely placed together.

At Baie des Moustiques on May 8, 1917, Abbott collected three sets, two of two and one of three eggs. One of these came from a nest in a mangrove ten feet above high water mark, and another from an acacia ten feet from the ground. A nest that he took here eight feet above high water in a mangrove is a flat structure of small twigs about 240 mm. in diameter by 70 mm. high with an inner cup, composed of long fine strands of rootlets coiled in a circular manner, 85 mm. in diameter by 35 mm. deep. The three sets of eggs taken measure as follows (in millimeters) 26.0 by 18.3, and 26.0 by 18.7 (one broken egg not measured); 23.5 by 17.8, and 24.3 by 17.7; 26.5 by 17.7 and 26.9 by 17.3. On June 1, 1917 he collected a set of two, from a nest ten feet from the ground in a low tree near the seashore, that measure 24.7 by 18.0 and 27.2 by 18.0. Two eggs secured on Tortue Island May 19, 1917, from a slightly built nest of twigs 8 feet from the ground in a mangrove have the following dimensions: 22.7 by 17.5 and 23.5 by 17.7. There is a further set of four eggs from Haiti without definite date or locality that measure as follows: 23.6 by 17.2, 25.3 by 18.4, 25.5 by 18.5 and 25.8 by 18.5 mm. The eggs are elliptical oval in form and in color vary from white tinged with ivory yellow to very pale pinkish buff, spotted boldly with vinaceous russet, burnt umber, natal brown, and purplish gray, the markings being heaviest about the larger end.

On May 6, 1927 Wetmore saw a gray kingbird carrying nesting material into a mangrove near Sánchez, and on May 26 near Constanza he observed an occupied nest 40 feet from the ground on the

limb of a pine. Bond describes a nest containing three eggs found in a mangrove swamp near Caracol, May 26, 1928.

Abbott describes the bill and feet in this species as black and the iris as dark brown.

The gray kingbird, 225 to 235 mm. long, is dark gray above, with blackish wings and tail, the former edged with whitish, a blackish band through the eye, white underparts with a wash of gray on the breast, light yellow under wing coverts, and a concealed patch of orange and yellow on the crown.

TOLMARCHUS GABBII (Lawrence)

HISPANIOLAN PETCHARY, MANJUILA, PIPIRIT, TÊTE POLICE

Pitangus Gabbii LAWRENCE, Ann. Lyc. Nat. Hist. New York, vol. 11, 1876, p. 288 (Hato Viejo, Mao River, Province of Santiago, Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 76-77, col. fig. (Magua, Pétionville, specimens); Cat. West Indian Birds, 1882, p. 108 (Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 17 (Honduras, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (Miranda).

Tyrannus (part), BRISSON, Ornith., vol. 2, 1760, pp. 391-392 ("S. Domingue").

Tyrannus intrepidus?, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 90 (considered error for *Tolmarchus*).

Tyrannus tyrannus, CORY, Birds West Indies 1889, p. 132 (listed); Cat. West Indian Birds, 1892, p. 108 (Dominican Republic).—RIDGWAY, U. S. Nat. Mus. Bull. 50, vol. 4, 1907, p. 691 ("Haiti").

?*Muscicapa cayenensis*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

?*Muscicapa flava*, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 69 ("Saint-Domingue").

Tolmarchus gabbii, RIDGWAY, Proc. Biol. Soc. Washington, vol. 18, Sept. 2, 1905, p. 209 (listed).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 415 (Monte Cristi, Bulla, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 180 (Túbano).

Tolmarchus gabbii, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, pp. 683-684, (description, range).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141 (living specimen in Zoological Park).—DANFORTH, Auk, 1929, p. 370 (local).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 319 (San Juan, specimen).

Tolmarchus caudifasciatus gabbii, HELLMAYR, Cat. Birds Amer., Field Mus. Nat. Hist., Zool. ser., vol. 13, April 11, 1927, p. 158 (Port-au-Prince, Pétionville, Magua, Honduras, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 506 (La Selle, Morne Malanga).

Resident; local in occurrence.

The petchary though widely distributed is less common than the gray kingbird whose place it takes in areas of forest. It is found almost entirely amid heavy growths of trees, finding in coffee planta-

tions situations to its liking but usually not coming into the open. Though found throughout the entire island records of occurrence are rather few. It seems from present information to be more common in the southwestern peninsula of Haiti than elsewhere. It is quiet and retiring in habit and has been overlooked by many naturalists.

Cherrie secured one at Honduras April 2, 1895, the only one that he saw. Kaempfer found it only at Túbano where he says that it was known as manjuila. Verrill reports it only at Miranda; Cory collected two at Magua, January 26 and 31, 1883. Peters secured four males at Monte Cristi and Bulla, the latter not far from the type locality as Gabb collected the type specimen at Hato Viejo, on the Mao River. At Monte Cristi Peters found the petchary in the cactus grown scrub but it is less abundant in such situations than in denser forest. In the Dominican Republic Abbott collected it only near Constanza where he secured skins September 27, 28, and 29, 1916, and April 12, 1919. Wetmore in 1927 found a few on May 13 at an elevation of 450 meters in the forested hills east of Sánchez on the trail that crosses to Las Terrenas. At Constanza on May 19 he saw one calling from a perch high in the top of a pine, uttering a prolonged, rolling trill that terminated with several sharply explosive notes. Danforth recorded it in 1927 near Santiago June 18, Vásquez June 25, Monte Cristi June 20, Azua July 9, and San Juan July 10 and 11. Moltoni received one from Ciferri taken at San Juan, July 7, 1929.

In Haiti Cory secured two near Pétionville in February, 1881. Bartsch shot one near Jérémie April 16, 1917, and recorded the species north of Port-au-Prince April 21 and 22. Abbott found it rather numerous in the southwestern peninsula where he secured an excellent series, including specimens from Jérémie November 20, 28, 29, and 30, and December 9 and 11, 1917; Moron December 19, 20, and 23, 1917, and Moline January 29, 1918. Wetmore found the petchary common at Fonds-des-Nègres March 31 to April 5, and collected several specimens. The birds were mating at this period and were very noisy. Pairs were observed on several occasions flying in company low through the undergrowth, the male above and almost touching the female, snapping his bill loudly and continually, a flight that continued from fifty to one hundred feet. On April 17 he saw one at Chapelle Faure in Nouvelle Touraine, and on April 26 and 27 recorded others at Poste Charbert near Caracol. Danforth collected one at Fonds-des-Nègres July 23. Bond reports them from La Selle, and secured two males on Morne Malanga January 21 and 23, 1928.

Beebe reports that he has exhibited this bird alive in the Zoological Park in New York City.

In a female from Moron, December 19, 1917, Abbott notes the bill as black, somewhat brownish beneath, feet black, and iris dark brown. Another from Jérémie taken November 20 agreed in color of feet and bill. An adult female shot by Wetmore at Fonds-des-Nègres April 2, 1927, had the bill dull black, iris bone brown, tarsus and toes dusky slate.

The present species is included in Brisson's description of his *Tyrannus* of which he says that a specimen from Hispaniola was sent to de Reaumur by Chervain. His statement that it was migrant to Virginia and Carolina refers however to some other bird. Sallé seemingly reported this species under the erroneous name *Tyrannus intrepidus*, which applies properly to the common kingbird of the eastern United States known now as *Tyrannus tyrannus*. This reference appears to be the basis for the report of *Tyrannus tyrannus* from Hispaniola by later authors as there is no definite record for this bird, which migrates farther to the west, being known only casually from Cuba and the Bahamas.

We do not agree with Hellmayr in considering *gabbii* a subspecies of *Tolmarchus caudifasciatus* as its characters seem to entitle it to specific recognition.

Specimens taken in November and December in freshly grown plumage when compared with skins secured in April or later are darker above and have a brownish wash on the breast.

The type specimen in the American Museum of Natural History, Cat. No. 42,641 is marked "*Pitangus gabbii* Lawr. Type W. M. Gabb—St. Domingo Coll. Geo. N. Lawrence, Hato Viejo." It is in worn plumage and measures as follows: wing 99.4, tail 77.3, culmen from base 25.0, tarsus 20.2 mm.

The petchary in form and size resembles the gray kingbird but is much darker in color, being blackish brown above, almost black on the head, with wings and tail edged with rufous. Below it is white with a slight wash of gray or brown on the breast. There is a concealed patch of bright yellow in the crown.

MYIARCHUS DOMINICENSIS (Bryant)

HISPANIOLAN FLYCATCHER, MAROA, MAROITA, MANUELITO, ALOUETTE HUPPÉE, LOUIS, PIPIRIT GROS-TÊTE

Tyrannula stolidus (var., *dominicensis*) BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 90 (Port-au-Prince, Haiti).

Muscicapa flaviventris, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 70 (habits).

Myiarchus stolidus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti).

Myiarchus ruficaudatus CORY, Bull. Nuttall Ornith. Club, 1883, p. 95 (described as new from Puerto Plata, Dominican Republic).

Myiarchus dominicensis, CORY, Birds Haiti and San Domingo July, 1884, pp. 79-80, col. fig. (Rivas, Samaná, La Vega, specimens); Cat. West Indian Birds, 1892, p. 108 (Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 124 (Rivas, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed); Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 18 (Dominican Republic, specimens).—CHRISTY, Ibis, 1897, p. 328 (Sánchez, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 415 (Monte Cristi, Sosúa, Chocó, specimens).—DANFORTH, Auk, 1929, p. 370 (many records).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 319 (Haina, San Juan, specimens).

Myiarchus stolidus dominicensis, HELLMAYR, Cat. Birds Amer., Field Mus. Nat. Hist., Zool. ser., vol. 13, pt. 5, April 11, 1927, pp. 169-170 (Port-au-Prince, Pétienville, Jacmel, Santo Domingo City, Aguacate, La Vega, Rivas, Magua, Samaná, Catarrey, San Cristobal, Honduras, San José de Ocoa, Puerto Plata, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 506 (Haiti, Gonave, Tortue; nest).

Resident; common.

This flycatcher is distributed rather widely through the island both in arid and humid sections, being found in cactus-grown scrubs, mesquites, pine forests and other woodland. Wetmore did not record it on the high summit of La Selle but it is found regularly in the mountains near Constanza at a somewhat lower altitude. The bird occurs alone or in pairs watching for insect food from some elevated perch.

In the Dominican Republic Cherrie secured a large series so that his statement that it was "tolerably common" underestimates its abundance. He took specimens (according to records published by Hellmayr) at Santo Domingo City, Aguacate, Catarrey, San Cristobal, Honduras, and San José de Ocoa. Cory secured it at La Vega, Rivas, Magua, Puerto Plata, and Samaná. Near Samaná May 5, 1883, Cory collected four eggs from a hole in a tree 4 feet from the ground; he describes the nest as a soft structure of hair, moss and feathers. Christy found this flycatcher near Sánchez. Tristram had one taken at Rivas in 1887 by A. S. Toogood, and Verrill collected skins at Samaná February 23, and Sánchez March 3, 1907, that are now in the collection of J. H. Fleming. Peters collected specimens at Monte Cristi, Sosúa, and Chocó.

Abbott found this species generally common, collecting specimens at Laguna on the Samaná Peninsula August 13, 1916, and March 6, 1919, at Rojo Cabo, not far distant, August 30, 1916, and near Jara-bacoa, October 11 and 12, 1916. Wetmore observed a few between San Juan and Azua May 1, 1927, and at Sánchez from May 6 to 13 recorded it occasionally near the town and found it common in the wet forests that covered the hills at an elevation of 450 meters. Near Constanza from May 19 to 26 it was common, being found

here mainly in the forests of pine, often perching high above the ground. It was seen at El Río May 30. Danforth in 1927 found this flycatcher common between Santiago and Monte Cristi, and saw it also at Santo Domingo City, Seibo, and San Juan. On June 23 he collected a young bird recently from the nest. Bond saw one nest building at Lake Enriquillo April 15, 1928. Moltoni received skins from Haina and San Juan.

In the Dominican Republic this species is called *manuelito*, *maroa* or *maroita*, the two latter names reported only from the northern part of the Republic.

In Haiti the Hispaniolan flycatcher is somewhat more widely distributed than in the Dominican Republic, the dry scrubs and open forests of the western part of the island seeming especially suited to its needs. In 1866 A. E. Younglove collected specimens February 10, April 25, and May 8 and 10, which he forwarded to the Smithsonian Institution, a male shot February 10 serving as the type of the species from which Bryant prepared his description published in 1867. Cory collected this flycatcher at Pétionville and Jacmel in 1881. In April, 1917 Bartsch recorded it at Gloré, Trou Caïman, Petit Goave (specimen), in the vicinity of Jérémie, near Port-au-Prince and at St. Marc (specimen).

W. L. Abbott secured skins at Moustique March 4, 5, and 10, and Bombardopolis March 27, 1917. He collected a small series on Tortue Island February 1, 4, and 17, 1917, on Gonave Island February 19 and 24, 1918 and March 8, 1920, and one on Grande Cayemite Island January 10, 1918. On May 9, 1917, at Petit Port à l'Écu he found a nest in an old woodpecker hole cut into the trunk of a tree cactus about five feet from the ground. The nest was constructed of cottony down and contained three eggs of which one is broken. The other two measure 21.1 by 16.0 and 21.5 by 16.2 mm. At Jean Rabel Anchorage June 5, 1917 native boys brought him a set of two eggs together with the parent bird alive. These eggs measure 19.7 by 16.4 and 19.9 by 16.3 mm. The eggs are very pale ivory yellow, marked heavily with mars brown, warm sepia and deep quaker drab, the markings being heaviest at the larger end and tending to extend in a straight line along the longitudinal axis of the egg, many being so elongated as to suggest pen markings.

It will be recalled that in the nest of the crested flycatcher of the United States, which belongs to the same genus, shed snake skin is almost universally found in the nesting material. Abbott noted particularly that this peculiar material was not used in the nest that he examined.

G. S. Miller, jr., collected one of these flycatchers at St. Michel, March 24, 1925. In 1927 Wetmore found this flycatcher at a number

of points in Haiti. At L'Archaie March 30 several were observed in an arid cactus and mesquite scrub. The birds rested on open perches near the ground, in alert attitude enhanced by raised crests, and darted out to capture passing insects with a loud snap of the bill. Their call was a high pitched, somewhat sibilant note that may be written *whee-ee*, varied occasionally to *whit-a whit-a*. Two taken at Aquin April 3 in dry scrub back of the beach were near the breeding season. The species was recorded at La Tremblay April 7, Morne à Cabrits April 20, Hinche April 22 to 24, and Caracol April 26 and 27.

Danforth in 1927 found this flycatcher near the mouth of the Artibonite River, at Étang Miragoane, and on Gonave Island. Bond reports this flycatcher as abundant in the arid lowlands of Haiti, including Gonave and Tortue Islands. He found a nest near Port-de-Paix, April 1, 1928, placed in a natural cavity a little more than a meter from the ground, that contained two nearly fledged young. Poole and Perrygo secured specimens at St. Michel January 6, L'Atalaye January 8, St. Raphael January 12, Pont Sondé February 27, and Fort Liberté February 6 and 11, 1929. Danforth reports that one bird taken had eaten ten weevils (*Lachnopus*) and a butterfly; another a seed, three caterpillars, and a small chryso-melid beetle; a third seeds of Solanaceae; a fourth a fly (*Erax rufotibia*) and some coleoptera; and a fifth a Buprestid, a weevil (*Lachnopus*), a grasshopper (*Schistocercus*), and a fly (*Erax rufotibia*).

Four specimens from Gonave Island average very slightly paler on the dorsal surface than most birds from the main island but are matched in this respect by one skin from Tortue and by a few from the main island, so that we consider this difference as of individual nature. Birds in fresh plumage are blacker and those in worn dress grayer above. Measurements are almost identical as the following indicate.

Haiti and the Dominican Republic:

Males, seventeen specimens, wing 80.1–88.1 (84.0), tail 73.7–82.9 (78.0), culmen from base 18.2–21.8 (20.1), tarsus 19.3–23.1 (21.2) mm.

Females, six specimens, wing 78.0–84.9 (81.5), tail, 72.9–79.2 (76.1), culmen from base 18.0–21.3 (19.5), tarsus 20.0–21.3 (20.8) mm.

Gonave Island:

Male, one specimen, wing 83.8, tail 74.4, culmen from base 21.5, tarsus 20.2 mm.

Females, three specimens, wing 79.5–82.3 (80.6), tail 72.8–77.7 (75.5), culmen from base 19.0–19.4 (19.1), tarsus 20.3–21.3 (20.7) mm.

Hellmayr writes that the type of *Myiarchus ruficaudatus* Cory, a male, F. M. No. 31149, was taken at Puerto Plata, D. R., December 11, 1882.

The Hispaniolan flycatcher, while it measures from 180 to 195 mm. in length, is of slender form with long tail. It has the flat bill characteristic of its family. Above it is olive brown, darker on the head, light gray on the breast, and pale yellow on the abdomen. The primaries are edged with chestnut brown and the secondaries with whitish, and the inner webs of the tail feathers are margined with chestnut.

BLACICUS HISPANIOLENSIS HISPANIOLENSIS (Bryant)

HISPANIOLAN WOOD PEWEE, SIGUA, PIPIRIT TÊTE FOU

Tyrannula caribaca (var., *hispaniolensis*) BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Port-au-Prince, Haiti).

Muscicapa querula, RITTEB, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Haiti, specimen).

Contopus frazari CORY, Bull. Nuttall Ornith. Club, 1883, p. 94. (Puerto Plata, Dominican Republic, described as new); Birds Haiti and San Domingo, July, 1884, pp. 81-82 (discussion).

Contopus hispaniolensis, CORY, Birds Haiti and San Domingo, July, 1884, pp. 81-82, col. fig. (La Vega, Puerto Plata, Samaná, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Sayornis dominicensis CORY, Bull. Nuttall Ornith. Club, 1883, p. 95 (Magua, Dominican Republic; described as new); Birds Haiti and San Domingo, July, 1884, pp. 81-82 (discussion).

Blacicus hispaniolensis, CORY, Cat. West Indian Birds, 1892, p. 109 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 17-18 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 415 (Monte Cristi, Gaspar Hernandez, Río San Juan, specimens).—DANFORTH, Auk, 1929, p. 370 (Seibo, Santo Domingo City, San Juan).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (San Juan, Monte Viejo, specimens).

Blacicus caribacus hispaniolensis, HELLMAYER, Cat. Birds. Amer., Field Mus. Nat. Hist., Zool. ser., vol. 13, 1927, p. 205 (Santo Domingo City, La Vega, Aguacate, Honduras, Samaná, La Laguneta, Magua, Catarrey, Maiman, Puerto Plata, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 506 (Haiti).

Resident; fairly common, particularly in the forested hills of the interior.

The wood pewee is an inhabitant of thickets and woodlands where it rests quietly on open perches, usually near the ground but occasionally thirty or forty feet above it, and watches for its food of flying insects which it flies out and captures expertly with a snap of the bill, and then circles back to its perch. Aside from these sallies for food it is quiet and will pass unnoticed except to those of keen and attentive perception. It is most easily seen in early morning when it comes out into more open lands than at any other time as in the heat of the day it remains at rest, frequently in the shadow of dense coverts. The bird has the mannerisms of the wood pewees of

North America but in general seeks perches nearer the ground. In the Dominican Republic Cory found it abundant in the hills back of La Vega in July, 1883, and collected it also at Samaná September 10 and 11, and Puerto Plata November 22, 1882. Cherrie found it common in the southern part of the republic and took specimens at Santo Domingo City, Aguacate, Honduras, and Catarrey. Along the northern coast the species seems somewhat rare as in 1916 Peters secured only three specimens, at Monte Cristi, Gaspar Hernandez, and Río San Juan, and in addition observed only one other, which was seen at Estero Balsa. All except one were found amid mangroves.

W. L. Abbott found the wood pewee more common and secured an excellent series. On April 10, 1922 he collected one male at an elevation of 700 meters near Polo in the Bahoruco mountains. Three were taken at San Lorenzo on Samaná Bay July 28 and September 9, 1916, and March 19, 1919. One was shot at Jarabacoa October 14, 1916, two at El Río October 4 and 8, 1916 and six at Constanza September 25, 27, and 28, 1916, and April 10 and 12, 1919. In 1927 Wetmore secured one in the mangrove swamps at the mouth of the Arroyo Barrancota opposite Sánchez, and found them fairly numerous in the forested hills of the Samaná Peninsula at an elevation of 450 meters. Near Constanza from May 19 to 26 they were common, and others were recorded at El Río May 30. In the great forests of pine about Constanza he heard on many occasions a mournful call of considerable carrying power coming from the tops of the pine trees, a note of several syllables that may be written *pur pip pip pip*. After several days of search he traced it to the quiet little wood pewee, which was entirely unexpected as the author, but when this was once established the circumstance seemed quite natural as the call is suggestive of that of a North American flycatcher that resides in similar haunts, the olive-sided flycatcher (*Nuttallornis mesoleucus*). From further observation he found that the wood pewee of Hispaniola has other notes of a varied character so that its voice has considerable range in sound production. Danforth in 1927 collected two at Seibo July 4 to 6, saw others at Santo Domingo City, and collected one at San Juan July 11. Ciferri collected one at San Juan July 7, 1929, and two at an elevation of 1,200 to 1,500 meters on Monte Viejo, May 25 to 28, 1929, one of the latter being a young individual.

The type specimen of this species was secured in the hills back of Port-au-Prince, Haiti, in all probability somewhere above Pétionville, on June 6, 1866, by A. E. Younglove, and the bird was described by Dr. Henry Bryant in the following year. It is possible that the "Graukohliger Fliegenfänger" which Ritter lists in 1836

under the scientific name of *Muscicapa querula* may have been this same species but this is not certain. Cory does not seem to have found the wood pewee in the western republic so that the next information regarding it in Haiti comes from the collections of Abbott who secured five at Moron December 18, 19, 20, and 24, 1917, one at Moline January 26, 1918, and three at Moustique March 2, 3, and 11, 1917. Bartsch in 1917 observed it in the vicinity of Jérémie April 10 to 12, and 15 and 16, near Trou des Roseaux April 13 and 14, and in the vicinity of Port-au-Prince, mainly near the coast, April 24, 25, and 27. G. S. Miller, jr., secured it near St. Michel, March 29, 1925. In 1927 Wetmore found it fairly common near Fonds-des-Nègres from March 31 to April 5, and from specimens taken learned that the breeding season was near. At this time the birds were entirely silent so far as he observed. On La Selle they were seen April 12, 13, and 14, being especially common at the borders of the thickets where these joined the pinelands. They especially were in evidence in early morning when they came out of the coverts to rest in the warm rays of the morning sun. On April 27 he observed a pair at Poste Charbert near Caracol. Bond found it most common in the mountains but saw it also at the borders of mangrove swamps.

In a specimen taken by Abbott, marked questionably as a female, from Moron, Haiti, December 20, 1917, the upper mandible is indicated as dark brown or black and the lower as brownish yellow.

The Hispaniolan wood pewee is subject to some variation in color, birds in fresh fall plumage being decidedly darker than spring specimens especially on the back. Cory was misled by these differences and named two of these variants, calling one *Contopus frazari* and the other *Sayornis dominicensis*, the type of the first according to Hellmayr coming from Puerto Plata, and of the second from Magua. Later Cory, recognizing his error, indicated these properly as synonyms of *Blacicus hispaniolensis*.

The wood pewee is a bird of slender form, long tail and broad, flat bill that measures from 150 to 160 mm. in length. Above it is olive brown, blacker on crown, wings and tail, with paler edgings on the inner wing feathers. The breast is brownish gray and the abdomen brownish buff. The general tone of olive and warm brown, the small size, and quiet demeanor are characteristic.

BLACICUS HISPANIOLENSIS TACITUS Wetmore

GONAVE WOOD PEWEE

Blacicus hispaniolensis tacitus WETMORE, Proc. Biol. Soc. Washington, vol. 41, December 18, 1928, p. 201 (Anse à Galets, Gonave Island, Haiti).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Gonave).

Blacicus hispaniolensis, DANFORTH, Auk, 1929, p. 370 (Gonave Island).

Blacicus caribaeus hispaniolensis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 506 (part; Gonave).

Gonave Island; resident.

The present form was described from eight skins collected on Gonave Island by W. L. Abbott. Three of these, taken February 20 and 25, 1918, are marked simply Gonave Island. Four more, including the type come from Anse à Galets, March 7, 9, and 13, 1920, and Étroites, March 17, 1920. Danforth collected three in 1927 and reports that one had eaten a moth, a wasp (*Chalcis inserta*) and a small beetle.

This form is closely similar to the bird from the main island from which it differs in paler coloration, being grayer above and lighter buffier below on the abdomen. The breast is gray without a wash of brown. This form is similar in dimensions to the birds of the main island comparative measurements in millimeters being as follows:

Blacicus h. hispaniolensis

	Wing	Tail	Culmen from base	Tarsus
14 males.....	68.8-76.9 (73.4)	60.0-71.3 (65.8)	14.1-16.0 (15.2)	14.1-15.8 (15.1)
8 females.....	67.5-73.8 (71.1)	62.9-68.8 (65.9)	13.5-15.8 (14.6)	13.5-15.9 (14.8)

Blacicus h. tacitus

	Wing	Tail	Culmen from base	Tarsus
4 males.....	73.4-77.9 (75.5)	69.0-72.7 (70.6)	14.8-16.9 (15.5)	14.5-15.9 (15.0)
3 females.....	69.6-74.7 (72.6)	67.6-70.3 (69.1)	14.2-15.6 (14.8)	14.9-15.3 (15.1)

So far as known *tacitus* is confined to Gonave Island where Bond reports it as common.

ELAENIA ALBICAPILLA (Vieillot)

HISPANIOLAN ELAENIA

Muscicapa albicapilla VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 66, pl. 37 ("Saint-Domingue"=Hispaniola).

Tyrannula albicapilla, HARTLAUB, Isis, 1847, p. 609 (listed).

Elainca cherriei CORY, Auk, 1895, p. 279 ("Calare"=Catarrey, Dominican Republic).

Elainia cherriei, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 17 (Catarrey, Aguacate).

Elaina cherriei, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 361 (Miranda, specimen).

Elaenia cherriei, LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).

Elaenia fallax cherriei, HELLMAYR, Cat. Birds Amer., Field Mus. Nat. Hist., Zool. ser., vol. 13, pt. 5, April 11, 1927, p. 429 (Catarrey, Aguacate).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 507 (La Selle, Morne Basile).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (Monte Viejo, specimen).

Resident in the higher hills of the interior.

To see the little flycatcher known as the elaenia it is necessary to leave the heat of the lowlands and to climb by winding trails—often

over slopes so steep as to be almost precipitous—until one reaches the great pine forests of the interior mountains. In these cool altitudes above the rustle of wind in the pine needles one may hear a low chattering call from a little olive gray bird with a tinge of yellow on the under surface that may be hopping about among the branches or may be resting quietly on the lookout for insects. This is the *elaenia*, one of the interesting native birds, whose intimate acquaintance has come to few naturalists. Though partial to the extensive stretches of pines that cover broad areas of the poorer soil in the hills, the *elaenia* is somewhat remarkable for its catholic taste in habitat, as though often found in the tops of the highest trees where its tiny form is barely visible, it may come also within the borders of the dense rain-forests, or may be seen in thickets of guava or other low growth in more open country. Its call is a somewhat explosive *swee-o*, given rather abruptly, followed at times by twittering notes, or a mellow pleasantly modulated trill that is truly a song. In early morning when the sun shines through the chill of the mountain air the *elaenia* is most in evidence as then it comes freely into the open and rests in the warming rays. Once known, in spite of its unobtrusive coloration it is a species never to be forgotten.

To the present time the *elaenia* has been seen by few naturalists. It was first described in 1807 by Vieillot, who called it the "moucherolle a huppé blanche" from the white markings in the elongated feathers of the crown. Though his description and plate apply certainly to the present species which he says he found in "Saint-Domingue" his observations have been overlooked, so that when Cherrie collected one at Catarrey, January 31, 1895, and two others at Aguacate on February 22 and 27 of the same year Cory immediately described these as a new species *Elaenia cherriei* in honor of the collector, a name that the bird has borne in modern treatises but that must give way to *Elaenia albicapilla*, as Vieillot has long priority in description. Cherrie noted little of his birds except that they were found in the interior hills, and little more was added by A. H. Verrill who in 1907 collected one specimen at Miranda. W. L. Abbott, the first to observe the birds in numbers, found them one of the commonest birds in the upland pine forests in the Dominican Republic. His first specimen was taken near El Río on October 8, 1916. On a subsequent journey in 1919 he encountered them in numbers and collected a series at Constanza from April 9 to 13, shot one at Hondo May 4, and two more near El Río May 16 and 18. Beck secured a series on Loma Tina from January 3 to February 2, one at La Cañita February 22, one on Loma Ultimate Civil February 1, and a series on Loma Rucilla February 24 to March 16, 1917. An immature bird in juvenal plumage taken by Abbott at El Río October 8 resembles the adult in general but the olive of the

back is more grayish, the lower parts are not as yellowish, and the concealed white crown stripe is lacking. The feathers of the pileum are deep olive changing to deep gull gray basally with a light shaft streak. Over each eye are a few feathers of the adult plumage coming in, the secondaries are edged distally on the external margin with deep olive buff, and the abdomen is lighter than in the adult bird.

In 1927 on May 17 and 18 Wetmore found the elaeenia along the trail leading up from the Río Jimenoa beyond Jarabacoa to El Río and Constanza and recorded it again in retracing this journey on May 30. From May 19 to 27 the birds were common about Constanza and several were taken. Birds collected at this time were in breeding condition. Abbott in 1919 noted that specimens taken in mid April were not yet mating. At times they were found in the tops of the tallest pines and again were seen hopping about low down among the guava bushes. Ciferri secured one on Monte Viejo at 1,200 to 1,500 meters elevation in May, 1929.

The first specimen definitely recorded from Haiti is a male shot by Abbott near Furcy on June 13, 1920. In 1927 Wetmore found them common on La Selle, directly opposite Furcy, from April 9 to 15, taking one on the first date mentioned at an elevation of 1,500 meters below Morne Cabaio. Among the pines on the summit of the ridge the birds were common and were encountered daily. Here they were found mainly in the pine forests, and were seldom seen in the rain-forest. On one cool morning following heavy rains on the previous evening two were seen hopping about among weeds and fallen branches only a few inches from the ground, seeking the warmth of the rising sun. Bond found them common on La Selle, and also observed them at 1,500 meters altitude on Morne Basile in the Montagnes Noires of northern Haiti, collecting one there on March 6, 1928. He secured another on Morne Malanga January 22 of the same year.

In an adult female taken by Wetmore at Constanza May 27, 1927, the base of the mandible was pale brownish white, the remainder of the bill blackish, the iris Hay's brown and the tarsus and toes black.

We do not agree with Hellmayr that this species should be considered a race of *Elaenia fallax*.

The type specimen on which Cory based the name *cherriei* (Field Mus. Nat. Hist. no. 31844), a male collected by G. K. Cherrie at Catarray, D. R., January 31, 1895 (orig. no. 4706), is a bird in fresh plumage, very yellow on the abdomen, with the breast strongly washed with olive brown. It has the following measurements; wing 71.2, tail 68.0, culmen from base 12.5, tarsus 20.0 mm.

Hellmayr in vol. 5 of his Catalogue of the Birds of the Americas, 1927 (p. 429), gives "Gonave" as a locality for this flycatcher, which he informed Wetmore was based on two skins in the Tring Museum. Hartert writes (in a letter) that the two specimens in question were acquired in the Dalmas Collection and were collected by a Monsieur Guyon and not by Dalmas. They bear a little label on which is written on one side "Guyon, Oct. 1898" and on the other "Gonave, St. Domingue." The locality is in Hellmayr's hand-writing and is assumed to be based on verbal information received from Count Dalmas when Hellmayr was packing the collection for shipment to Tring. It seems certain that the locality is erroneously attributed to Gonave Island as there is no proper range for the *elaenia* on that island.

The *elaenia* is even smaller than the wood pewee of Hispaniola as it only measures from 145 to 160 mm. long. It has a long tail and is slender in form but is easily told from the wood pewee by its smaller, narrower bill and different coloration. Above it is greenish olive gray with the wings and tail dull black, the former with two whitish wing bars and whitish margins on the inner feathers, and the latter edged with greenish. Below it is light grayish on the breast and yellowish on the abdomen. When in the hand there may be noted a concealed spot of white at the bases of the feathers of the crown.

Suborder OSCINES

Family HIRUNDINIDAE

LAMPROCHELIDON SCLATERI (Cory)

SCLATER'S SWALLOW, GOLONDRINA, HIRONDELLE

Hirundo sclateri CORY, Auk, 1884, p. 2 ("Santo Domingo"=La Vega, Dominican Republic): Birds Haiti and San Domingo, March, 1884, pp. 45-47, col. pl. (La Vega, specimens): Cat. West Indian Birds, 1892, p. 115 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHRISTY, Ibis, 1897, p. 322 (La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 364 (La Vega).

Hirundo euchrysea (var. *dominicensis*?) BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (described as new from Port-au-Prince).

Tachycineta sclateri, CORY, Auk, 1886, p. 58; Birds West Indies, 1889, p. 72 (description, range).

Lamprochelidon sclateri, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 3, 1904, pp. 102-103 (Island of Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 507 (La Selle, La Hotte).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (Bonao, specimens).

Resident in the hills of the interior; local in occurrence.

This handsome swallow is found among the interior hills and is greeted with delight wherever seen from its graceful actions and

pleasing coloration. As one climbs over steep slopes in the mountains among dead trunks of pine a long-tailed swallow may come circling through the air to display in passing a white breast and glossy back. In its active evolutions it is certain to attract the eye and the traveler is sure to pause to observe its course as it circles quickly away. In choice of haunts and general habits it is suggestive of the violet-green swallow of North America.

In the Dominican Republic, Cory encountered Sclater's swallow near La Vega, and in July and August, 1883 prepared a series of specimens of which there are still twenty-three in the Field Museum collections including the type of the species. Four others secured at this time are in the United States National Museum. The type of *sclateri* (Field Mus. Nat. Hist. no. 10,874) is a male taken August 2, 1883, a bird in slightly worn plumage. It has the following measurements: wing 113.0, tail 53.0, culmen from base 6.0, tarsus 10.0 mm. Christy in 1895 also found this swallow near La Vega, and Verrill in 1907 reports it abundant there along the Río Camú. Abbott on October 13 and 14, 1916 collected three near Jarabacoa at 550 meters altitude, the lowest altitude at which he recorded it. Near El Río he took others October 4 and 7, 1916, and May 17, 1919, and at Constanza shot specimens September 27, 1916, and April 21, 1919. He reported that they were nesting in May. Beck secured specimens on Loma Rucilla February 27 and March 5, on Loma Tina January 10 and 24, and on Pico del Yaque February 24, 1917.

In 1927 Wetmore recorded these swallows at El Río May 18, and at Constanza May 18 and 27. On May 30 they were seen regularly from El Río to Paso Bajito on the trail to El Barrero but were not observed beyond this point. Near Constanza occasional birds came flying over the streets of the town, particularly during storms when the air above the village was clear while heavy fogs concealed the surrounding hills. The birds were regularly at home about knolls where standing trunks of dead trees afforded them nesting cavities. About such places they circled tirelessly, swinging gracefully out among the pines or over the dense stands of rain-forest, but returning always to more open localities. Birds that were assumed to be males uttered a pleasing song on the wing, a simple repetition of two notes given without much variation in tone. Ciferri collected skins at Puente Yuna near Bonao January 5 and 7, 1928.

From the fact that Cory, Christy, and Verrill found these swallows abundant near La Vega in late summer while Wetmore did not observe them there in May it seems probable that they nest in the higher hills and come down into the lowlands when their young are on the wing. This supposition is borne out further by the fact that Cory collected immature birds near La Vega in late July, 1883.

(Specimen in United States National Museum taken July 28.) Peters did not report this swallow from the north coast.

The first specimen known from Haiti is one taken by A. E. Younglove on June 7, 1886, which according to the collector was secured in the "mountains" near Port-au-Prince. This bird, an adult in full plumage, is the type of *Hirundo euchrysea* (var. *dominicensis*) of Bryant, a name antedated by an earlier *Hirundo dominicensis* of Gmelin so that the species is known from Cory's later description as *sclateri*.

Cory does not mention seeing the species in Haiti and the next records known to us for that republic are a female shot on the slopes of La Selle above Fonds Verettes by Abbott May 1, and a male taken on Morne Tranchant near Furcy May 29, 1920.

On April 8, 1927, as Wetmore came to Kenscoff on the trail from Pétionville a swallow came swiftly past to be recognized as the present species, which proved to be common over the slopes three miles to the eastward. At his camp on the Rivière Jaquisy on the following morning numbers were seen and one was taken, while on La Selle from April 10 to 15 they were observed regularly and several were collected. The open pinelands seemed especially suited to them while they ranged also over the open summits of Morne Cabaio and Morne La Visite and through the clearings and bush grown pastures of the Jardins Bois Pin. Always pleasing in appearance their soft calls added to their attractiveness. At this season they were mating and were busily examining old woodpecker holes and other cavities in dead trees in which they evidently nested. Often they were found resting on the limbs of the dead trunks containing their nesting sites. Several were observed on April 17 in crossing the slopes of the deep valley on the trail from Chapelle Faure in Nouvelle Touraine to Kenscoff. On April 24 two probably a pair were found at the Bassin Zime in the edge of the hills beyond Hinche, which suggests that they breed through the extensive tracts of open pine forests that cover the higher slopes beyond. The calls of this species are closely similar to those of the tree swallow of North America to which, as well as to the violet-green swallow, it is closely allied. Bond found them common on La Selle and La Hotte and notes a nest found June 5, 1928, in an old woodpecker hole in a dead pine 15 meters from the ground. He collected one on Morne Tranchant.

This swallow is of medium size, metallic green above, and pure white below, with the sides of the head dull black, this color infringing on the sides of the throat. The tail is fairly long and is notched at the end. The young in first plumage are duller above with a band of gray across the breast.

RIPARIA RIPARIA RIPARIA (Linnaeus)

BANK SWALLOW, GOLONDRINA

Hirundo riparia LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 192 (Sweden).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Haiti; specimen).

Migrant from North America; apparently very rare.

The only record of the bank swallow at present is that of Ritter who says that he secured a specimen in Haiti during his travels there in 1820 and 1821. The species is recorded as a migrant in Porto Rico, Cuba, and Jamaica so its occurrence in Hispaniola is to be expected.

The bank swallow is small in size, brown above, and white below, with a brown band across the breast. It will be confused with no other species of the region as the dark band across the light breast distinguishes it from all except the young of Sclater's swallow, which is larger and much darker, with a metallic gloss above.

HIRUNDO ERYTHROGASTER Boddaert

BARN SWALLOW, GOLONDRINA, HIRONDELLE

Hirundo erythrogaster BODDAERT, Tabl. Planch. Enl., 1783, p. 45 (Cayenne).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Bizoton).

Hirundo erythrogastra, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (listed).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (San Juan, specimens).

Hirundo rustica erythrogastra, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 507 (Fort Liberté).

Migrant from North America; fairly common on the coastal plain.

The only records for the Dominican Republic at present are those of Ciferri, who collected specimens for Moltoni at San Juan September 18, 1928, and September 7, 1929, and Abbott who found these swallows numerous at Catalinita Island from September 10 to 12, 1919, and says that he saw them flying southward over the ocean toward South America. He observed that they were common at Saona Island from September 12 to 18 of the same year.

In Haiti in 1917 Bartsch found the barn swallow at Petit Goave, April 8 and 9, near Trou des Roseaux, April 14, and about Jérémie, April 15 and 16. Abbott shot two females at Baie des Moustiques, May 5, 1917, and Beebe notes that three flew about his schooner anchored off the Bizoton wharves on February 20, 1927. On April 1, 1927, Wetmore recorded a dozen circling with native cliff swallows over marshy meadows at the Étang Miragoane, and on April 19 saw two at Bizoton. Bond saw several at Fort Liberté April 30, 1928.

The barn swallow, of medium size, is easily told from all others that occur on the island by the long, very deeply forked tail which is often expanded while the bird is in flight. The species is dark metallic blue above, with forehead and throat chestnut, and the remainder of the underparts deep buff.

PETROCHELIDON FULVA FULVA (Vieillot)

**HISPANIOLAN CLIFF SWALLOW, GOLONDRINA, HIRONDELLE FAUVE,
HIRONDELLE**

Hirundo fulva VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 62, pl. 32 (Hispaniola).

? Swallow, EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Petrochelidon fulva, CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Gonaïves, specimen); Birds Haiti and San Domingo, March, 1884, pp. 47-48, col. pl. (Gonaïves, Rivas, specimens); Cat. West Indian Birds, 1892, p. 115 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 12-13 (Santo Domingo City, breeding).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 364 (Dominican Republic).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Furcy).—LÖNNBERG, Fauna och Flora, 1929, pp. 105-106 (Haiti).

Petrochelidon fulva fulva, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 418 (Monte Cristi, Río San Juan, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 507 (Haiti, Gonave, Tortue).—DANFORTH, Auk, 1929, p. 371 (Santo Domingo City, Citadelle, Gonave Island).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (San Juan, specimens).

Resident; locally distributed; not found regularly at high altitudes.

The native cliff swallow nests in caverns, usually about water, from which it follows naturally that it is found in regions where limestone is exposed near the sea or along inland streams. Outside the nesting season the species wanders to some extent but even then is not commonly distributed. It is most abundant along the sea where rocky headlands project near the water.

The earliest record for the Dominican Republic appears to be that of Cory who reports a specimen from Rivas August 21, 1883. He says that he took another but does not state the locality, merely remarking that only a few flocks were seen. In 1895 Cherrie found these swallows nesting at Santo Domingo City April 24, when the breeding season appeared to be at its height. Verrill recorded the cliff swallow but gives no localities. Peters secured skins at Monte Cristi and the Río San Juan, saying that during February, 1916, they were common along the Río Yaqui del Norte near Monte Cristi, and abundant over the saline flats between the town and the landing. Abbott secured one at Rojo Cabo on the Samaná Peninsula August 26, 1916, and two at San Lorenzo on Samaná Bay March 19, 1919.

At the latter locality he found them breeding in crevices and clefts in the limestone rocks in the little islets that line the shore in this area. They nested at times in company with the martin. Many of their eggs were destroyed by grackles. Wetmore in 1927 observed a few cliff swallows flying over the houses of Santo Domingo City on May 3, and on Samaná Bay recorded them May 8 about the rocky islands opposite the mouth of the Arroyo Barrancota. On May 11 he observed them in numbers along the limestone cliffs, islets, and headlands from San Lorenzo west along the southern coast of Samaná Bay. On May 16, 30, and 31, and June 1 they were seen about La Vega. Danforth in 1927 found them nesting on a ledge overhanging the sea at Santo Domingo City, and reports that they had young the first week in July. Ciferri collected specimens at Sabana San Thomé, near San Juan, July 25, 1929.

Following are observations that pertain to Haiti. Vieillot, who termed this species *hirondelle fauve* and gave it the scientific name of *fulva*, says that he observed it once in the middle of May and collected one when a number flew into the open windows of a house and when driven out returned immediately. Cory in 1881 collected one at Gonaïves on February 10, and says that he observed several flocks flying about houses but these disappeared the following day and none were found subsequently. Bartsch in 1917 recorded them about Jérémie from April 10 to 16, collecting one April 14, at Trou des Roseaux April 13 and 14, and in the general vicinity of Port-au-Prince April 21, 22, and 24. Abbott secured a series of skins at Cap-Haïtien April 25 and 27, and one at Baie des Moustiques May 7, 1917. On July 7 he found them nesting on Tortue Island. Beebe records them on one occasion about the Gendarmerie station at Furcy which seems to be the highest altitude at which the species has been reported. The hills in that vicinity are generally bare and open so that there these swallows might easily come up from lower elevations. In 1927 Wetmore saw a few cliff swallows at Fonds-des-Nègres March 31, and found them common April 1 over the marshy meadows along the north side of the Étang Miragoane. At the Bassin Zime, in the hills beyond Hinche, on April 24 he found a considerable colony nesting in a cave back among the shadows near the entrance. An adult male was taken. At Cap-Haïtien on April 26 a flock of these swallows in much excitement busily gathered mud for their nests at the border of the sea, carrying it to the girders supporting a newly installed iron bridge across a tidal stream, a rapid accommodation to a change in their environment. Bond found them breeding in Christophe's Citadelle and also near Fort Liberté. He found them common on Tortue and Gonave. Poole and Perrygo

collected several at St. Raphael January 10 and 13, 1929. There is a skin in the Academy of Natural Sciences taken at Anse à Galets, Gonave Island July 20, 1927, by J. T. Emlen, jr. As indicated above, the cliff swallow nests ordinarily in caves and in clefts and crevices in cliffs. Related swallows elsewhere, with human settlement, have changed their primitive habits and now nest regularly about buildings and other structures erected by man. It is possible that Vieillot's birds that at the close of the eighteenth century flew into the windows of his house were in search of nesting sites, and it is probable that with coming modern developments this cliff swallow may change its nesting habits decidedly as is already the case with those found about the bridge at Cap-Haïtien. Cherrie in 1895 describes the lining of nests of this bird as a soft, cottony material from the seed pods of a native tree, which may be the same as the soft brownish white fiber that Abbott found in nests collected along the south side of Samaná Bay, west of San Lorenzo in April, 1921, which E. C. Leonard informs us appears to be from the fruit of a bombax (*Pachira emarginata* A. Rich.) These nests found by Abbott were built of mud placed in sheltered crannies, some only two or three feet above high water. He collected six sets, three of two eggs, and three containing three. The eggs are elongate oval, in color white, spotted rather boldly with mikado brown, warm sepia, and gray, the markings distributed over the entire surface with usually a greater concentration about the larger end to form a wreath that is more or less distinct according to the specimen. A few have the spots very fine and small. One egg examined has the ground color cartridge buff. Following are measurements in millimeters of those specimens that are entire: April 9, 1921, set of two, 19.6 by 13.5, 20.0 by 13.4; set of three, 18.5 by 14.2, 18.6 by 14.1, 19.7 by 14.2; April 12, 1921, set of two, 18.7 by 14.5, 19.5 by 14.3; set of two, 19.9 by 14.4, 19.9 by 14.5 and set of three, 19.2 by 14.3, 20.1 by 13.8, 20.2 by 14.2. On Tortue Island July 6, 1917, Abbott found many of these swallows nesting in a cave about half a mile inland from the coast and collected a set of two eggs, in form very long and pointed which measure as follows; 21.4 by 13.8 and 21.4 by 13.8 mm. In the cave above the Bassin Zime beyond Hinche on April 24, 1927, Wetmore found a considerable colony of these birds nesting in the darker shadows near the entrance. Their nests were constructed from dried pellets of mud built against the rock to form a cup that in some cases was enclosed above with a small entrance in the side. Other birds built up a mere ledge of earth with a bit of nesting material behind it. One pair had utilized a natural cavity of the proper size, filling in

the front except for the entrance hole. Most of the nests were out of reach but half a dozen to which he could climb were only partly completed. Another contained three heavily incubated eggs. While some of the nests were only six feet from the floor of the cave others were located in the ceiling sixty feet above. All were placed where they were obscured by shadows so that they were not easily seen. This species must be subject to heavy depredation from the barn owl which also inhabits caves.

Danforth in 1927 found large numbers nesting in the ruins of the Citadelle of Christophe on August 2 and 3. From July 18 to 20 he observed many flying over mangrove swamps on Gonave Island.

Ekman records numbers of swallows on Navassa Island, in October, 1928, that may have included the present species.

As there are few measurements available in literature of the typical *Petrochelidon fulva fulva* from Hispaniola, the type locality, the following (taken in millimeters) from our series will be of interest:

Eight males, wing 97.1–103.0 (99.5), tail 37.0–44.2 (41.6), culmen from base 7.4–8.3 (7.9), tarsus 11.3–14.7 (12.5).

Two females, wing 99.7–101.2 (100.5), tail 41.5–45.3 (43.4), culmen from base 7.4–8.3 (7.9), tarsus 11.3–14.7 (12.5).

These birds average slightly smaller than the size given by Ridgway²¹ in specimens from Cuba, and differ from the Cuban birds otherwise mainly in lesser extent of the chestnut area of the rump. The latter appears to be the principal character separating *Petrochelidon f. cavicola*²² of Cuba as a race apart from *fulva*. The series of eleven adults from Hispaniola shows considerable variation in depth of brown below, running from light to dark in different individuals, with the white varying also in extent, so that the character pointed out by the describers of *cavicola* of greater extension of brown below with the brown richer in color does not hold as this is noted in various individuals in our series from Hispaniola. The greater extent of the brown rump in Cuban birds is however easily seen.

The cliff swallow of Hispaniola is of medium size, from 120 to 130 mm. long, with short tail only slightly notched at the tip. The back and crown are dark, steely blue with a metallic reflection, while the rump, a band across the hind neck, and the forehead are chestnut. Below the bird is white on the abdomen, and elsewhere is light brown.

²¹ U. S. Nat. Mus. Bull. 50, pt. 3, 1904, p. 53.

²² *Petrochelidon fulva cavicola* Barbour and Brooks, Proc. New England Zool. Club, vol. 6, Jan. 13, 1917, p. 52. (Preston, Nipe Bay, Province of Oriente, Cuba.)

PROGNE DOMINICENSIS (Gmelin)

CARIBBEAN MARTIN, GOLONDRINA, HIRONDELLE, HIRONDELLE À VENTRE BLANC

Hirundo dominicensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 1025 ("in insula S. Dominici"=Hispaniola).—BRISSON, Ornith., vol. 2, 1760, pp. 493-494 ("S. Domingue").—VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, pp. 59-60, pl. 28 ("S. Domingue").—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).—HARTLAUB, Isis, 1847, p. 609 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 94 (Dominican Republic).

Golondrina, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, cap. 2; Reprint, Madrid, 1851, p. 442 (habits).

Grande Martinet noir à ventre blanc, MONTBEILLARD, in Buffon, Hist. Nat. Ois. vol. 6, 1779, pp. 669-670 ("Saint-Domingue").

Progne dominicensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (listed).—CORY, Birds Haiti and San Domingo, March, 1884, pp. 44-45, col. pl. (Samaná, specimens); Cat. West Indian Birds, 1892, p. 114 (Haiti, Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 205 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 364 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 418-419 (Sosúa, Río San Juan, specimens; Monte Cristi, Puerto Plata, Abreo, seen).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 507 (listed).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 507 (Lake Enriquillo).—DANFORTH, Auk, 1929, p. 371 (generally distributed).—LÖNNBERG, Fauna och Flora, 1929, p. 105 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 320 (Moca, specimens).

Breeding locally throughout the island; supposed to migrate in fall to some distant winter home.

The Caribbean martin is the largest of the native swallows and is found regularly in the towns so that it is easily seen. It is supposed to come to the island for the breeding season and then to migrate elsewhere for its winter home, as it does in Porto Rico, but the dates of its arrival and departure in Hispaniola are yet to be ascertained.

The earliest record historically for the Dominican Republic is that of Oviedo who describes a swallow that is evidently this species—as he notes that it is larger than the swallows of Spain—which he says in his day had already begun to build in the great church and the Dominican monastery in Santo Domingo City, truly a rapid adaptation to the coming of the Caucasian. Cory secured five specimens at Samaná June 25, 1882, and says that he saw it elsewhere but does not give the localities. Tristram received a skin from Samaná taken by C. G. McGrigor September 12, 1883, the latest record for fall available at this time. Abbott found the martin nesting in clefts of rock on islets near the entrance to San Lorenzo Bay but was not able to reach the cavities to obtain eggs. He secured five skins there on March 18 and 20, 1919. Peters collected males at Sosúa and the Río

San Juan, and saw others at Monte Cristi February 22 and about the fort at Puerto Plata February 26, 1916. He noted them also at Abreo.

In 1927 Wetmore saw four martins near the mouth of the Yuna opposite Sánchez May 10, and shot one that was flying about a woodpecker hole in the trunk of a palm. The birds came in flight to drink from the river and for a time alighted on a sandbar. On May 11 several were seen about the rocky islands at the entrance of San Lorenzo Bay. At La Vega the birds were fairly common in town being seen May 16 and 30 and June 1. They were found near the crossing of the Río Jimenoa at Jarabacoa May 17 and 30, and at El Río in the mountains May 18. Near Constanza from May 19 to 27 they were observed among dead pines on low ridges bordering the valley, or flying high above the forests. Danforth in 1927 observed the martin at Higuëy, Santo Domingo City, Monte Cristi, Laguna del Salodillo, and Comendador. Bond observed many flying over the marshes of Lake Enriquillo. Ciferri obtained skins at Moca August 20, 1928, and August 11, 1929.

The martin is fairly common in Haiti and has a long history there. De Reaumur received a specimen from Chervain which may have come from the western republic, though this is not certain, that was described by Brisson. Vieillot remarked in 1807 that the martin was found only from April to October so that its migratory habit has long been recognized. It is listed by Ritter in 1836, and by Tippenhauer in 1893. Bartsch in 1917 recorded a colony nesting in hollows in a tree near Trou Caïman April 4, and saw martins also near Jérémie April 15 and 16, and over the Cul-de-Sac Plain near Port-au-Prince April 24. Abbott recorded them on the southern peninsula of Haiti only at Petit Trou des Nippes. He collected one female on May 14, 1920, at Manneville on the Étang Saumâtre. In 1917 he secured several at Port-de-Paix February 12, at Moustique, at elevations of 750 to 900 meters, March 5 and 12, and at Jean Rabel Anchorage May 30. He found a large colony in Cap-Haïtien and says that in towns they nest in holes in the ends of houses where the decay of the end of a rafter has left a cavity or in similar openings. He found them common also in cliffs along the sea at Port à l'Écu and Côtes de Fer, in company with the cliff swallow. Wetmore found them in Haiti April 9, 1927, at 1500 meters altitude on the north slopes of Morne Cabaio, and April 17 on Morne St. Vincent, near Furcy. The call of this species is high in pitch and though cheerful is not so full and rolling as that of the purple martin of North America. Danforth in 1927 found them at Grand Goave, Aquin, Les Cayes and Cap-Haïtien. Perrygo recorded them at Fort Liberté February 7, 1929. The specimens obtained from Hispaniola do not differ from skins examined from Porto Rico.

Following are measurements from our series from the former island (Hispaniola):

Ten males, wing 139.6–146.4 (142.5); tail 69.1–77.3 (72.9); culmen from base 11.6–12.8 (12.0²³), tarsus 14.3–15.6 (14.9) mm.

Four females, wing 138.3–144.4 (140.9), tail 68.7–72.5 (71.1), culmen from base 11.7–12.7 (12.3²⁴), tarsus 13.8–14.9 (14.3) mm.

The male Caribbean martin is dark, steely blue throughout, except for the white abdomen and under tail coverts. Females are duller above, and have the dark colors of the underparts deep gray.

Family CORVIDAE

Subfamily CORVINAE

CORVUS LEUCOGNAPHALUS Daudin

WHITE-NECKED CROW, CUERVO, CORNEILLE

Corvus leucognaphalus DAUDIN, *Traité d'Orn.*, vol. 2, 1800, p. 231 (Porto Rico).—SALLÉ, *Proc. Zool. Soc. London*, 1857, p. 232 (Dominican Republic).—BRYANT, *Proc. Boston Soc. Nat. Hist.*, vol. 11, May, 1867, p. 94 (Dominican Republic).—CORY, *Bull. Nuttall Ornith. Club*, 1881, p. 153 (Gantier, specimens); *Birds Haiti and San Domingo*, July, 1884, pp. 74–75 (Gantier, Rivas); *Cat. West Indian Birds*, 1892, p. 109 (Dominican Republic).—TIPPENHAUER, *Die Insel Haiti*, 1892, pp. 319, 321 (listed).—CHERRIE, *Field Columbian Mus., Ornith. ser.*, vol. 1, 1896, p. 17 (Dominican Republic, common).—CHRISTY, *Ibis*, 1897, p. 327 (Río Yuna).—VERRILL, *Proc. Acad. Nat. Sci. Philadelphia*, vol. 61, 1909, p. 361 (San Lorenzo).—MEINERTZHAGEN, *Nov. Zool.* vol. 33, 1926, p. 94 (description, discussion).—DANFORTH, *Auk*, 1929, p. 371 (Bonao, La Vega).—LÖNNBERG, *Fauna och Flora*, 1929, p. 110 (Haiti).—MOLTONI, *Att. Soc. Ital. Scienc. Nat.*, vol. 68, 1929, p. 321 (San Juan, specimen).

Corvus erythrophthalmus WÜRTEMBERG, *Erst. Reis. nördl. Amer.*, 1835, p. 68 (described as new from "Nähe des Cibao-gebirges im ehemaligen Spanischen St. Domingo").—HARTLAUB, *Isis*, 1847, p. 609 (Hispaniola); *Naumannia*, 1852, pp. 54–55 (common).

Corvus leucognaphalus erythrophthalmus, RIDGWAY, *U. S. Nat. Mus. Bull.* 50, pt. 3, 1904, p. 279 (description, range).—PETERS, *Bull. Mus. Comp. Zoöl.*, vol. 61, 1917, p. 416 (Río San Juan, specimen; Monte Cristi, seen).—BEEBE, *Zool. Soc. Bull.*, vol. 30, 1927, p. 140; *Beneath Tropic Seas*, 1928, p. 222 (Haiti).

Corvus dominicensis CORY, *Auk*, 1886, p. 228. (Proposed as new from the Dominican Republic.)

Resident; locally common.

We have termed this bird the white-necked crow because though in life it appears wholly black when in the hand it is found that the feathers of the hind neck at the base are pure white, this color being entirely concealed by the black overlying feather tips. The present species is distinctly larger than the other crow of the island and utters higher pitched notes that are rather like those of the ravens

²³ Average of nine individuals.

²⁴ Average of three individuals.

of the north. It also flies frequently high in the air for long distances, and appears in life to have a longer wing, and a more graceful, sweeping wing stroke. As both species of crow are black, familiarity with them is required to make entirely certain of their identity.

In the Dominican Republic the white-necked crow is first definitely noted by Württemberg who wrote in 1835 that he had found it in the Cibao range, where according to a later report by Hartlaub he encountered it in noisy flocks of hundreds that came fearlessly about houses. Sallé recorded it in heavy forest, and Cory collected five at Rivas in August, 1883. One of these taken August 21, and another, shot September 10 at Samaná, are in the United States National Museum collections. Cherrie says that these crows band together in immense flocks that follow the ripening of fruits on which they feed. Christy observed them in the larger forests of the Yuna swamps, and Verrill reports immense flocks at San Lorenzo where the birds flew regularly morning and evening between their roosts in the mountains and their feeding grounds in the swamps, always passing at a great elevation. On the north coast Peters in 1916 found this crow very local, observing a few in the cactus forests near Monte Cristi, and in the extensive mangrove swamps at the mouth of the Río San Juan where he collected one female. Abbott found them very common at the mouth of the Río Yuna and along the southern shores of Samaná Bay, particularly at San Lorenzo. The older inhabitants at Samaná and Sánchez said that these crows had been common on the Samaná Peninsula years ago but in modern times had become more rare. Abbott however collected two at Port Rincón, August 16, 1919. Others were taken near Sánchez February 7, and at San Lorenzo March 18 and 19 of the same year. He shot one on Saona Island September 12, 1919. In 1927 Wetmore found a few at Comendador April 30, and near Constanza May 24. Danforth in the same year observed them at Bonao, and in the pine woods above La Vega; Ciferri collected one at San Juan October 1, 1928.

Though this crow is common in Haiti there are few published records for it. Cory found it at Gantier in 1881, Tippenhauer mentions it, and Beebe saw it in 1927. Wetmore found one in the mangroves at Sources Puantes March 29, noting the white of the hind neck as the bird turned its head. On the summit of La Selle the birds were common and seemed to congregate at night in a roost somewhere to the eastward of the Rivière Chotard. On several occasions a number came flying in early morning from that direction, on one occasion thirty being seen in company. They traveled in direct lines, usually high in air calling loudly, at times pausing to

circle in the warm rays of the sun. Others were seen at Las Cahobes April 20, and at Hinche April 20 to 23. A few were seen as far as St. Michel on April 21. An adult male taken April 22 had the iris deep brownish orange, and the bill, tarsi and toes black. On April 24 a pair was said to have a nest in the top of a palm where it could not be reached.

In 1927 Danforth saw them between Port-au-Prince and St. Marc, and on July 15 recorded one on Gonave Island. At Las Cahobes he took two females, one with the iris red and one with it yellow. Bond found them common in the pine forests of northeastern Haiti, and in smaller numbers about Hinche, St. Michel, and Ennery. A few were seen in Port-au-Prince. He records a nest in the crotch of a pine near Bois Laurence May 2, 1928. Poole and Perrygo obtained specimens at Dondon January 18 and Cerca-la-Source March 22, 1929. This crow, a fruit feeder, is considered a game-bird, and before the prohibition against firearms was hunted extensively, which with clearing of large areas of forests has probably brought about a reduction in numbers below its formerly reported abundance. The flesh is considered excellent eating. Natives in both republics interpret its gabbling calls as attempts at speech which are sometimes rendered in phrases not always polite in meaning. The country Haitian is firmly convinced that these crows converse in Spanish.

Though the white-necked crow of Hispaniola has been recognized by Mr. Ridgway as a race distinct from that of Porto Rico under the sub-specific name of *erythrophthalmus* Württemberg, it appears that the supposed differences were based on insufficient material in which the specimens did not have the sex properly marked. With the series of skins now available there is no apparent difference between birds of the two islands. Cory also tentatively separated the Hispaniolan bird under the name *dominicensis*.

Following are pertinent measurements:

Four males from Hispaniola, wing 298.8–317.0 (308.5), tail 192.0–200.0 (195.1), culmen from base 56.4–59.8 (58.4), tarsus 51.6–53.2 (52.5) mm.

Four females from Hispaniola, wing 285.0–292.0 (289.0), tail 178.0–186.2 (183.3), culmen from base 52.5–55.7 (53.9), tarsus 52.6–53.5 (53.1) mm.

Three males from Porto Rico, wing 300.0–312.0 (304.0), tail 192.5–202.5 (196.8), culmen from base 55.7–57.5 (56.9), tarsus 50.0–53.2 (52.1) mm.

Six females from Porto Rico, wing 288.0–298.0 (292.1), tail 177.0–193.5 (186.5), culmen from base 52.7–56.5 (54.5), tarsus 50.0–54.1 (52.1) mm.

As has been said the white-necked crow is jet black except for the concealed bases of the feathers of the hindneck which are pure white. The larger size which distinguishes it from the palm crow is indicated in the measurements above.

CORVUS PALMARUM PALMARUM Württemberg

PALM CROW, CAO

Corvus palmarum WÜRTEMBERG, Erst. Reis. nörd. Amer., 1835, p. 68 (Cibao Mountains, Dominican Republic).—HARTLAUB, Isis, 1847, p. 609 (listed).—RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 3, 1904, p. 276 (description, range).—BARTSCH, Smithsonian Misc. Colls., vol. 68, no. 12, 1918, fig. 44 (photo).—DANFORTH, Auk, 1929, p. 371 (habits, food).—LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).

? Corbeau, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, p. 37 ("St. Domingue").

? Corneille, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 78 (Port-à-Piment).

? *Corvus caribaeus*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (Haiti).

Corvus jamaicensis, SALLÉ, Proc. Zool. Soc. London, 1857, pp. 232-233 (between Banf and Azua).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 94 (listed).

Corvus solitarius "WÜRTEMBERG," HARTLAUB, Naumannia, 1852, p. 55 (new name for *C. palmarum*; Mirebalais "Escabobas"=? Las Cahobes, "Loma San Juan").—CORY, Birds Haiti and San Domingo, July, 1884, p. 75 (Gantier, specimens); Cat. West Indian Birds, 1892, p. 110 (Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 17 (San José de Ocoa).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 361 (Dominican Republic).

Corvus brachyrhynchos palmarum, MEINERTZHAGEN, Nov. Zool., vol. 33, 1926, p. 90 (description, discussion).

Resident, locally common.

Smaller size and entirely black color without concealed white on the hind-neck mark this crow from the companion species found on the same island. The two are easily told when examined in skin form but in the field some experience is necessary to distinguish them. In flight the wing of the palm crow appears shorter, and flight is accomplished by a steadier flapping than in the other form. The call of the palm crow is also different being a harsher caw, less musical than that of the white-necked species, resembling more the notes of the North American crow. The two forms often inhabit the same areas and will repay study by someone with leisure to become thoroughly acquainted with them. They seem to have been confused by some travelers so that relatively few definite records for them are available.

In the Dominican Republic, where this species is known as cao, the palm crow was first recorded by the Herzog von Württemberg who gave it its scientific name and says that he found it in the Cibao range without specifying a more definite locality. Sallé says that he observed it in the arid sections between Baní and Azua. Cherrie found it at San José de Ocoa, which goes under the colloquial name of Maniel. Verrill lists it but does not give any locality. Abbott collected a female at Polo, in the Bahoruco Mountains March 6, 1922, and found it common near Constanza, where he collected skins September 22 and October 2, 1916, and April 7 and 8, 1919. He notes that a pair taken April 7 had a newly finished nest ten meters from the ground in a pine tree. Others were building nests at this same time. At Lake Enriquillo from October 1 to 6, 1919, he found these birds common. In 1927 Wetmore found a few palm crows in the swamps at the mouth of the Arroyo Barrancota on Samaná Bay May 8, and recorded them as fairly common in certain sections near Constanza May 24 to 27. They were found in little groups that in company fed on the ground or rested in the trees. They were often resentful of human intrusion and at times came to scold vigorously at unusual actions. On one occasion three came with raucous calls within fifteen feet of the observer jerking their drooping wings and elevated tails vigorously. The tongue does not show at all between the mandibles while the bird is calling, being concealed in its normal position between the mandibles on the floor of the mouth. Danforth in the summer of 1927 found this crow common in June in the brushy region between Monte Cristi and Navarrete. They were molting at this time. They were also common in the rolling country about Las Matas. In three stomachs he found lizards, snails, Coleoptera (including *Prepodes* and *Calosoma*) caterpillars, a cicada, other Hemiptera, fruit pulp, and seeds.

In Haiti in 1829 Württemberg recorded this species from Mirebalais and from "Escabobas," the latter perhaps being the modern Las Cahobes. Cory collected specimens at Gantier on March 6, 1881, one of these being now in the United States National Museum. He says that the birds were shot as game, their flesh being considered a great delicacy. Paul Bartsch in 1917 found them at Thomazeau April 2, near Gloré April 3, Trou Caïman April 4, and near Petit Goave April 8 and 9. Others were recorded near Port-au-Prince April 21, 22, 25 and 27, and on April 24 he collected a fine set of four eggs on the Cul-de-Sac Plain at the base of Morne à Cabrits. These eggs are light Niagara green, covered rather evenly with diffuse spots of clove brown and dark olive, the spots being moderately large and somewhat uneven in outline. These eggs measure 36.7 by 26.2, 37.1 by 26.4, 37.6 by 24.0, and 38.2 by 24.8 mm. W. L. Abbott

collected one of these crows at Bombardopolis March 25, 1917, and two at the Étang Saumâtre March 6 and 9, 1918. In 1927 Wetmore observed them on the summit of La Selle on April 9, when a little flock scolded vigorously at his pack animals. At Hinche from April 22 to 24 these small crows were common among the trees lining the ravines cut below the level of the plain. They ranged in little flocks containing from four to six individuals, and were frequently observed about the tops of the royal palms where they seemed to be nesting. At any disturbance they gathered in groups like jays to clamour noisily. One little band mobbed a yellow-crowned night heron and drove it to cover. One bird was recorded at Caracol May 27. An adult female taken at Hinche April 22, 1927 had the iris deep brown, and the bill, tarsi and toes black. Danforth saw them in 1927 near Mirebalais, near St. Marc, about the sloughs near the mouth of the Artibonite, and east of Gonaïves. According to Dr. G. N. Wolcott these crows were seen eating sphingid caterpillars (*Celerio lineata*) in the cotton and sisal plantation at Hatte Lathan. Bond found them common on the plains and abundant in the pine forests of the north. He recorded them in June on La Selle, and collected one at Trou Caïman. He found them nesting in pines and palms high above the ground. Poole and Perrygo recorded this crow at St. Michel December 21, 1928, L'Atalaye December 28, 1928 and January 9, 1929, Dondon January 17 and 18, St. Marc February 25, and Cerca-la-Source March 18 to 24, 1929.

The small crows found on Hispaniola and Cuba are similar in size and seem to differ only in color, *palmarum* being more iridescent, and *minutus* a duller black. They seem best regarded as subspecies and will stand as *Corvus palmarum palmarum* Württemberg, and *Corvus palmarum minutus* Gundlach. Bangs and Peters agree in this treatment. Meinertzhagen in his review of the genus *Corvus*²⁵ has indicated these two as subspecies of *brachyrhynchos* of North America but in this is in error.

The palm crow was first described by Paul Wilhelm von Württemberg in 1835 from "Nähe des Cibao-Gebirges in ehemaligen Spanischen St. Domingo" so that the type locality is the Cibao range of the Dominican Republic. In 1852 Hartlaub published a note on this species in which he changed the name to *solitarius* from a manuscript designation by Württemberg, which is of course antedated by *palmarum*.

Measurements of *palmarum* from our series are as follows:

Four males, wing 250.0-264.0 (255.3), tail 143.6-149.0 (146.7), culmen from base 49.0-51.7, tarsus 50.1-51.0 (50.6) mm.

²⁵ Nov. Zool., vol. 33, 1926, pp. 90-91.

Nine females, wing 227.0–259.0 (246.6), tail 134.3–152.0 (146.6), culmen from base 44.2–49.4 (46.5), tarsus 48.4–50.2 (49.3) mm.

The palm crow is entirely black and is much smaller than the white-necked crow, as indicated by the measurements given above.

Family MIMIDAE

MIMUS POLYGLOTTOS DOMINICUS (Linnaeus)

HISPANIOLAN MOCKINGBIRD, RUISEÑOR, ROSSIGNOL, MERLE

Turdus dominicus LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 295 ("Dominica") = Hispaniola).

Ruiseñor, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, cap. 2; Reprint, Madrid, 1851, p. 443, (common).

Merle cendré, de Saint-Domingue, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, pp. 320, 325.—DAUBENTON, Planch. Enl., pl. 558, fig. 1.

Rossignol, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (Port-de-Paix).

Nightingale, WIMFFEN, Voy. Saint Domingo, 1817, p. 188–189 (habits).

Jamaica Nightingale or Mockingbird, WALTON, jr., Pres. State Span. Col. incl. partic. Rep. Española, vol. 1, 1810, p. 122 (recorded).

Merula dominicensis BRISSON, Ornith., vol. 2, 1760, pp. 284–286, pl. 27, fig. 1 (description).

Turdus orpheus, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 13–14 (description, habits).

Turdus polyglottus, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 156 (specimen).

Mimus gilvus, HARTERT, Nov. Zool., vol. 9, 1902, p. 293 (Sánchez, specimen).

Mimus dominicus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (Dominican Republic).—CORY, Birds Haiti and San Domingo, 1885, pp. 21–22 (Pétionville, St. Marc, Jacmel, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHRISTY, Ibis, 1897, pp. 319–320 (Sánchez, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (abundant).

Mimus dominicus, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 10–11 (abundant).

Mimus orpheus dominicus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (abundant).

Mimus polyglottus orpheus, CORY, Cat. West Indian Birds, 1892, p. 121 (Haiti, Dominican Republic).

Mimus polyglottus orpheus, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 415–416 (Monte Cristi, Sosúa, Chocó, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 180 (common).

Mimus polyglottus (var., *dominicus*), BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93 (Dominican Republic, Haiti).

Mimus polyglottus dominicus, RIDGWAY, U. S. Nat. Mus. Bull. 50, 1907, pp. 233–234 (description, range, synonymy).

Mimus polyglottus dominicus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, pp. 52, 67, 224 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 508 (Haiti).—DANFORTH, Auk, 1929, p. 371 (abundant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 321 (Moca, specimens).

Resident; common.

The mockingbird is both widely distributed and easily seen so that it is one of the prominent birds found on the island. It frequents open brush, or the borders of fields and pastures where there is a cover of thicket in which it may find shelter, but does not penetrate into heavy forest, though it may occur wherever there are little clearings. It is found abundantly all through the lowland regions of the island and is ubiquitous so that there is no necessity for citing localities at which it has been recorded. Wetmore found it abundant on the open slopes at Kenscoff and Furcy and observed it on the north slope of Morne La Selle to an elevation of 1600 meters but did not see it on the high summit of the range. It was not recorded in the mountain valleys about Constanza and El Río but may possibly occur there in small numbers as all conditions there except the cold of the night air are favorable to it. Abbott secured it on Tortue and Gonave Islands, and Danforth and Poole and Perrygo took it on the latter. The species is especially common in semi-arid sections grown with cactus, mesquite and logwood.

In traveling along country roads or trails one frequently observes a slender, long-tailed bird with gray back and white breast that shows a broad mark of white in the dark wings as it flies across in front of car, horse or pedestrian, or rises with slowly flapping wings to sing in the air above its haunt of thorny thickets. This is the mockingbird, ruiseñor, or rossignol, according to the language that one speaks. The song, clear and pleasing, is at its height in April and May, and the birds may then be heard on all sides. Their notes are similar to those of the mockingbird of the mainland, famous for its powers of mimicry, but the Hispaniolan race does not imitate other birds so constantly as its northern relative, principally because there are few species in its haunts with striking notes. Wetmore heard the mocker giving the song of the common vireo (*Vireo olivaceus olivaceus*) regularly, and occasionally copying the note of the gray kingbird, but no other species. The song is thus more truly that of the mockingbird than that heard in other regions. Vieillot many years ago noted this peculiarity as he observed that in Haiti this form is not a mimic, but in this he was not altogether correct as is indicated above. The species is recorded by many of the early travelers who wrote of the island from the days of Columbus and Oviedo, sufficient indication of the prominent place that it takes in the landscape.

At Baie des Moustiques W. L. Abbott secured a set of three eggs May 8, 1917 which have the ground color paler than pale glaucous green and are spotted heavily with army, cameo, and vandyke brown, large spots occurring over the entire surface but concentrating about the large end to form a broad, poorly defined wreath. Two of these

eggs measure 23.7 by 18.4 and 23.9 by 18.3 mm. The third is broken. On Tortue Island he collected another set of three from a nest made rather loosely of thorny twigs and lined with shreds of bark placed in an acacia about two meters from the ground. The date of collection is not given but is assumed to be about the middle of May, 1917. These eggs are more finely spotted than the ones just described, and have some of the markings coated by a shell deposit so that they appear purplish. All three have spots distributed over the surface with a heavy concentration about the large end. They measure 23.8 by 17.8, 23.9 by 18.2 and 24.6 by 18.3 mm. Cherrie secured young birds near Santo Domingo City from March 18 to May 2, 1895. Christy recorded young near La Vega in April and May, while Kaempfer reports that there may be no especial breeding season as he observed young in May, September, and December. He recorded nests as placed from two to four meters from the ground. Wetmore saw an occupied nest near Caracol, Haiti, April 27, 1927 placed two meters from the earth in a logwood. Danforth in 1927 found a nest containing young near Monte Cristi June 22. On Gonave Island he saw a nest containing two eggs and a newly hatched young July 16, and on July 18 one with large young and another with eggs. Most of the nests seen were in acacia trees but one was in a mangrove. Bond in 1928 found them nesting in northern Haiti in March and April but says that they breed later in the south. Poole and Perrygo secured a young bird recently from the nest at Fort Liberté February 16, 1929. The mockingbird is kept regularly as a cage bird especially in the Dominican Republic.

An adult male taken by Wetmore at Hinche, Haiti on April 22, 1927 had the iris deep yellow; bill, tarsi and toes dull blackish.

The mockingbird is from 230 to 255 mm. in length, slender in form, with a long tail. Below it is white and above gray, with wings and tail black. The outer tail feathers are white and there is a prominent band of white in the wing.

DUMETELLA CAROLINENSIS (Linnaeus)

CATBIRD

Muscicapa carolinensis LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 328 (Virginia or Carolina).

Casual migrant from North America.

The only record of the catbird is that of a male taken by Dr. W. L. Abbott on Tortue Island February 5, 1917. It winters regularly in Cuba and the Bahama Islands and may be expected to occur casually in Haiti.

This species is approximately 200 mm. in length, and is dark gray with black crown and chestnut under tail coverts.

MARGAROPS FUSCATUS FUSCATUS (Vieillot)

PEARLY-EYED THRASHER

Turdus fuscatus VIEILLOT, Hist. Nat. Ois. Amér. Sept., 1807, vol. 2, p. 1, pl. 57bis (Hispaniola; Porto Rico).—HARTLAUR, Isis, 1847, p. 609 (listed).

Margarops fuscatus, CORY, Birds Haiti and San Domingo, March, 1884, p. 22 (no record other than that of Vieillot); Cat. West Indian Birds, 1892, p. 121 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Margurops fuscatus fuscatus, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 266 (listed).—BEEBE, Zool. Soc. Bull. vol. 30, 1927, p. 141 (living specimen received from Haiti).

Status uncertain.

Vieillot in 1807 wrote of this species "La grive brune se trouve dans les grandes îles Antilles et particulièrement à Porto-Ricco et à Saint-Domingue. * * * De ma collection." Beebe obtained one in 1927 in a collection of living birds received direct from Haiti and placed it on exhibition in the zoological garden in New York City. The species is common in the Bahamas, Jamaica, and Porto Rico and extends through the northern Lesser Antilles. It is abundant on Mona and Desecheo Islands in Mona Passage only a short distance east of Hispaniola and is found on Inagua to the north. It is not particularly difficult to secure so that if it occurs regularly in Hispaniola it would seem that some of the many collectors who have visited Hispaniola since the days of Vieillot would have obtained it. Cory says specifically that he did not procure it, and Tippenhauer seems to have listed it from Cory. The species may be found on some of the outlying islets. The living specimen sent to Beebe may possibly have been brought from elsewhere since there is no definite information as to where it was secured. The species thus seems of uncertain status and may perhaps belong in the hypothetical list.

The pearly-eyed thrasher is from 250 to 300 mm. in length with rather stocky body. It is grayish brown above, the feathers being darker centrally so that it appears faintly scaled or spotted, and white below streaked with grayish brown, the sides and flanks being almost wholly brown. The tail feathers are tipped with white.

Family TURDIDAE

MIMOCICHLA ARDOSIACEA ARDOSIACEA (Vieillot)

HISPANIOLAN THRUSH, ZORZÁL, CALEÇON ROUGE, MERLE, ROSSIGNOL DE MONTAGNE, OUËTE-OUËTE, COUËTE-COUËTE

Turdus ardosiaceus VIEILLOT, Tabl. Encyc. Méth., vol. 2, 1823, p. 646 ("Saint-Domingue"—Hispaniola).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, pp. 92-93 (Dominican Republic, Haiti).

Caleçon rouge, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 298 (La Selle).

Merle, SAINT-MÈRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, pp. 717, 736 (Port-de-Paix, Tortue Island).

Merula Americana cinerea BRISSON, Ornith., vol. 2, 1760, pp. 288-290 ("S. Domingue").

Turdus plumbeus, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 2-3 (habits).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).—HARTLAUB, Isis, 1847, p. 609 (listed).

Galeoscoptes plumbeus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Santo Domingo City).

Mimocichla ardesiaca, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (hills near Port-au-Prince, specimens); Birds Haiti and San Domingo, March, 1884, pp. 18-20, 2 col. pls. (Pétionville, Puerto Plata, Magua, La Vega, Samaná, specimens); Cat. West Indian Birds, 1892, p. 122 ("San Domingo").—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 129 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 9 (Dominican Republic, specimens).—CHRISTY, Ibis, 1897, p. 319 (La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 366 (Dominican Republic).—KAEMPFER, Journ. für Ornith., 1924, p. 184, (Túbano).

Mimocichla ardosiaeca, LÖNNBERG, Fauna och Flora, 1929, p. 107 (Haiti).

Mimocichla ardosiaeca ardosiaeca, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, pp. 80-81 (Hispaniola).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 416 (Sosúa, Chocó, specimens).—BEEBE, Zool. Soc. Bull. vol. 30, 1927, p. 141 (living example in zoological park).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 508-509 (Haiti, Gonave, Tortue).—DANFORTH, Auk, 1929, p. 372 (habits, food).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 321 (San Juan, Monte Viejo, specimens).

Resident; common in forested areas, particularly in the interior. Found on Tortue and Gonave Islands.

This handsome thrush is robinlike in appearance and in actions but is shy and retiring so that it is not easily observed. It resides in thickets and woodlands, usually in those sections with abundant rainfall, or, in drier areas, near permanent water, and is recorded more regularly from its notes than from actual observation.

Sallé reported it in the vicinity of Santo Domingo City, where it was also observed by Cherrie, who found it in addition common in the interior. Cory obtained specimens at Puerto Plata, Magua, La Vega and Samaná. He reports the nesting season as December and January, and describes and figures in color a nest and eggs taken January 9 (1883) near Puerto Plata. The eggs were said to be dull bluish white, heavily blotched with brown measuring (in inches) "1.10 by 1.85". Tristram received a skin from C. McGrigor taken at Samaná in 1883. Christy reported this thrush from La Vega, and Verrill wrote that it was common but shy. Specimens that he collected, now in possession of J. H. Fleming, were secured at Sánchez March 6 and 9, and La Vega March 11, 13 and 18, 1907. A juvenile was secured March 9. Peters found this thrush rare on the north coast as he secured only two at Sosúa and Chocó, but records it at Monte Cristi and at Bulla as somewhat more numerous.

W. L. Abbott collected skins at Laguna August 9, 1916, and March 9, 1919, and Rojo Cabo, August 28 and 30, 1916, both localities being on the Samaná Peninsula. He secured one at El Río in the interior October 5, and one near Jarabacoa October 11, 1916. In 1919 he collected one May 4, near Hondo, below Constanza. Kaempfer reports the species as common at Túbano near the locality last mentioned.

In 1927 Wetmore recorded this thrush in small numbers between Comendador and Azua April 30 and May 1. At Sánchez May 7 to 13 it was found in some numbers, particularly in the forested hills inland. The birds were in molt at this time. On the trail from Jarabacoa to Constanza this thrush was seen frequently May 17, 18, 29 and 30, and at Constanza from May 19 to 27 it was common. A few were observed in the lowlands between La Vega and Santiago May 31. Danforth in the summer of 1927 observed it at Seibo, Santo Domingo City, Los Alcarrizos, Bonaó, La Vega and Monte Cristi. Ciferri obtained skins at San Juan and at 1200 to 1500 meters on Monte Viejo.

Writing of Haiti, Vieillot terms this thrush the *rossignol de montagne* and describes the eggs as "blancs et tachetés de noir," in which he was in error as will be seen by the description given below. Younglove collected several of these thrushes in April and May, 1866 which he sent to the Smithsonian Institution, while Cory reported them in 1881 as common at an altitude of 750 meters near Fort Jacques, and as seen occasionally in dense cover near Port-au-Prince. Bartsch in 1917 recorded this species at Thomazeau April 2, Gloré April 3, Trou Caïman April 4, Petit Goave April 8, Trou des Roseaux April 13, and near Jérémie April 15 and 16. Abbott secured specimens at La Grotte, December 8, Jérémie December 12, and Moron December 20, 1917. In the north of Haiti he obtained two near Bombardopolis March 21, and one at Moustique March 11, of the same year. On Gonave Island he found them fairly common securing specimens February 22 and 24, 1918, and March 3, 1920. Moreau de Saint-Méry wrote in 1797 that Pointe des Oiseaux on Tortue Island was named from the large numbers of birds particularly *merles* there found so that it is interesting to report that Abbott found the thrush common on Tortue in 1917, collecting a female on February 8. On May 20, 1917 a native brought him a nest of this species containing one egg, the nest being loosely constructed of banana fibres and some mud. The egg is pale glaucous-green covered with broad, poorly defined spots of cameo and walnut brown. It measures 32.8 by 22.3 mm. A second nest found May 22, placed in a mass of orchids about three and one half meters from the ground, contained two young and an addled egg, the latter being collected.

This egg is somewhat more heavily marked than the one described above and measures 30.2 by 21.8 mm. The eggs are strikingly and handsomely colored.

Wetmore in 1927 found this thrush very common in coffee plantations about Fonds-des-Nègres from March 31 to April 5. Males were singing and the breeding season was evidently in progress. On April 2 one rested for a time in the limbs of a tree holding a beak full of dead leaves, while it jerked its wings and tail nervously. Finally it flew to the side of a large epiphyte fifteen meters from the ground and deposited its burden on the foundation of a nest. The nest site was in a tree with foliage mainly at the tips of the branches so that the interior limbs were open. It stood at the edge of a clearing with a little house only a few yards away. On April 5 one was seen carrying food to young in another locality. On April 9 on the Rivière Jaquisy below Furcy one was singing, and from April 10 to 15 the species was common on the high summit of La Selle. The song of this thrush was one of the early bird songs heard about camp there and came to the ear at the first hint of day. The notes are labored in utterance but are given steadily, and, in spite of occasional harsh breaks, the whole is pleasing. The call note is a low *peep peep*. During the day when all was quiet these thrushes appeared near camp on the ground in the open. In their usual method of progression they ran rapidly for a few feet and then stopped abruptly with the head held erect. The mannerisms are wholly those of a robin. Where seen clearly the white under tail-coverts are prominent while in flight the white spots at the ends of the outer tail feathers are displayed plainly. The birds often perched in the tops of dead trees but at any alarm dropped quickly into the thickets below where they remained carefully concealed. The thrush was observed April 17 at Chapelle Faure in Nouvelle Touraine, and April 20 on Morne à Cabrits. On April 24 it was common at the Bassin Zime but none were seen in the immediate vicinity of Hinche. It was recorded April 26 and 27 at Poste Charbert near Caracol. In 1927 Danforth found it at Fonds-des-Nègres and near the Citadelle, and on July 18 saw an adult accompanied by young on the wing on Gonave. Bond found this species widely distributed in Haiti from sea level to the tops of the mountains, and on Gonave and Tortue. In 1928 birds were in breeding condition on Tortue in March, and nests were seen in southern Haiti in May and June. In an adult male taken by Wetmore at Fonds-des-Nègres April 2, 1927, the bill and free margins of the eyelids were coral red; tarsus, toes, and claws slightly paler red; iris reddish brown. Danforth records that in the stomach of one he found a seed and two cockroaches (one of them *Epilampra saublosa*), and in another four

seeds, a snail, a lamellicorn beetle (*Lachnosterna hogradi*) and a millipede.

The thrush is from 250 to 270 mm. in length with rather heavy body. In general coloration it is gray, darker above with wings and tail black and abdomen and under tail coverts white. The throat is white broadly streaked with blackish slate and the tail has the external feathers broadly tipped with white.

HAPLOCICHLA SWALESI Wetmore

SWALES' THRUSH, MERLE, OUÈTE-OUÈTE NOIR

Haplocichla swalesi WETMORE, Proc. Biol. Soc. Washington, vol. 40, June 30, 1927, p. 55 (Jardins Bois Pin, Massif de la Selle, Haiti, 1800 meters altitude).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1929, p. 509 (La Selle).—BEEBE, Beneath Tropic Seas, 1928, p. 11 (mentioned).

Haplocichla swalesii, LÖNNBERG, Fauna och Flora, 1929, p. 107 (Haiti).

Resident in Haiti on the high ridge of La Selle; not recorded elsewhere. The species ranges from 1500 to 2100 meters coming occasionally a little lower.

On April 11, 1927, as Wetmore came into the dense growth of rain forest jungle below the summit of Morne La Visite he heard a strange thrush note and a moment later had a glimpse of the songster within a distance of a few feet, recognizing it instantly as a species new to the known fauna of the island. Hours were spent in creeping cautiously through wet thickets, bound into almost impenetrable entanglements by long strands of creeping bamboo, but not until two days later did the first specimen of this beautiful bird come to hand. (Pl. 22.) The colors were such that at a distance the species was invisible to the eye in the dense shadows and when clearly seen individuals were usually so close at hand as to make it impracticable to collect them with ordinary loads, while their appearance was so brief as to make it impracticable to change to lighter shells before the birds had disappeared. Finally in a heavy rain several came out into an open trail apparently in enjoyment of the downpour and specimens were secured with comparative ease. On subsequent days numbers were observed and in all four were collected. In the Jardins Bois Pin this thrush was somewhat more familiar as here it lived near the huts of the country people and inhabited smaller sections of thicket adjacent to little clearings.

Swales' thrush spends much time on the ground where it has the habits usual to the robin-like thrushes, running with lowered head across little open spaces and then pausing abruptly with head thrown erect. In the dark shadows of its haunts its colors merge so perfectly with its background that it is extremely difficult to see at any distance except when in motion. At times it ran up on recumbent



SWALES' THRUSH (*HAPLOCICHLA SWALESI*) KNOWN ONLY FROM HIGH RIDGE OF LA SELLE

logs or rested among low branches, and while singing perched among limbs sometimes forty feet from the earth but always concealed among leaves. The song resembles somewhat that of the gray robin (*Mimocichla a. ardosiacea*) and suggests also that of the smaller thrushes (*Hylocichla*) of the United States. It is given slowly and clearly with decided intervals between the notes. From the other thrush of the island the notes are easily told since they are much more clear and distinct in utterance, and less broken. The alarm note is *wehury wehury wehury* repeated usually three times with great rapidity.

Abbott says that in May, 1920, when on the slopes of La Selle above Fonds Verettes he saw one of these thrushes but had no gun. On subsequent visits he was not able to find it again. Bond collected birds in breeding condition on La Selle in June, 1928.

Structurally the present species is characterized by long, slender tarsus and rounded wing, the wing tip being somewhat more rounded than in *Haplocichla aurantia* of Jamaica, which hitherto has stood alone in a monotypic genus. *Haplocichla swalesi* is so entirely different in color from *aurantia* as to preclude the idea of close association between the two other than their union in the same genus. They are evidently not geographic representatives of one stock as is so often the case with allied birds on West Indian islands.

Following is a description of the type specimen:

Mus. Cat. No. 264,707, adult male, collected in the Massif de la Selle (altitude 1800 meters), April 15, 1927, by A. Wetmore. Entire upper parts, including sides of head, deep black; chin white; throat and upper foreneck black streaked lightly with white; upper breast blackish slate with faintly indicated brownish edgings; sides of upper breast sepia; lower breast and sides bright hazel; abdomen white; flanks and under tail coverts blackish slate, the lower flank feathers and under tail coverts with light shaft streaks and edgings of white. Bill orange rufous, extreme base of mandibular rami and area about nostrils blackish; eye ring light orange; iris Rood's brown; tarsus Rood's brown with a line of honey yellow down the back; bare skin at back of tibio-tarsal joint honey yellow; toes somewhat lighter than tarsus; lower surfaces of toes honey yellow. (Colors from fresh specimen).

Measurements are as follows:

Males (five specimens), wing 126.7–131.5 (129.6), tail 102.5–105.5 (104.0), culmen from base 23.2–24.8 (24.2), tarsus 42.2–47.0 (44.0) mm.

Female (one specimen), wing 123.9; tail 97.7; culmen from base 22.4; tarsus 46.0 mm.

Type (adult male), wing 126.7; tail 102.5; culmen from base 24.7; tarsus 42.3 mm.

HYLOCICHLA MINIMA MINIMA (Lafresnaye)

BICKNELL'S THRUSH

Turdus minimus LAFRESNAYE, Rev. Zool., 1848, p. 5 (Bogotá).

Turdus aliciae, CORY, Birds Haiti and San Domingo, March, 1884, pp. 17-18 (Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 122 (Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 34 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 9 (Aguacate; Santo Domingo City, specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 366 (Sánchez, specimen).

Hylocichla, LÖNNBERG, Fauna och Flora, 1929, p. 98 (Haiti).

Hylocichla aliciae aliciae, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 60 (Santo Domingo).

Hylocichla aliciae bicknelli, A. O. U. Check-List, ed. 3, 1910, p. 360 (Haiti).

Hylocichla minima subsp.?, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 509 (Morne Malanga).

Winter visitant from North America; rare.

Thrushes of this type were first reported by Cory who secured specimens near Puerto Plata, Dominican Republic, taking a female, December 14, a male December 16, 1882, and a second female January 6, 1883. Cherrie collected two males near Aguacate February 22 and 25, and one at Santo Domingo City May 1, 1895. Verrill collected one at Sánchez.

In March, 1921, Swales and Richmond examined four specimens loaned by the Field Museum, including the male and female taken by Cory at Puerto Plata in December, 1882, and the two males secured by Cherrie at Aguacate in February 1895 and found them to be Bicknell's thrush. The three remaining skins listed have not been seen and may possibly include representatives of Alice's thrush. All records for the species are included here, however, on the basis of material actually identified. With regard to the female taken January 8, 1883, at Puerto Plata it may be noted that Cory gives the wing as 3.80 inches (equivalent to 96.5 mm.) and the other two from the same locality as 3.75 and 3.78 inches respectively. On this basis it seems probable that the third bird like the others which have been seen is Bicknell's thrush. Wetmore has examined the Verrill specimen from Sánchez in the Tring Museum and finds it to be this form.

Bond reports a thrush of unknown form from Morne Malanga, Haiti, January 19, 1928. This is probably the specimen recorded by Lönnberg, which he has informed us (in a letter) was taken by Ekman in January, 1928, and which is a Bicknell's thrush. This is the only certain record at present for Haiti. Further specimens should be taken to determine if both forms occur.

Bangs and Penard²⁶ have found from examination of the original specimen that the bird described by Lafresnaye as *Turdus minimus*

²⁶ Bull. Mus. Comp. Zool., vol. 63, June, 1919, p. 30.

from a specimen from "Bogotá" is a Bicknell's thrush. From this Bicknell's thrush, formerly called *Hylocichla aliciae bicknelli* Ridgway (named in 1882), becomes *Hylocichla minima minima* (Lafresnaye), while Alice's thrush, formerly *Hylocichla aliciae aliciae* (Baird), will be known as *Hylocichla minima aliciae* (Baird).

Bicknell's thrush differs from Alice's thrush (*Hylocichla minima aliciae*) in being slightly smaller and browner above. The wing in *aliciae* ranges from 99 to 109 mm. in males and 97 to 107.5 mm. in females, in *minima* from 88.5 to 98.0 mm. in males and 85 to 93 mm. in females.

Bicknell's thrush is olive with a slight tinge of brown above. It has a whitish eye-ring and grayish lores. Below it is white, tinged with cream-buff on the sides of throat and breast, spotted with black. The sides are brownish gray.

MYADESTES GENIBARBIS MONTANUS Cory

HISPANIOLAN SOLITAIRE, JILGUERO, MUSICIEN, OISEAU MUSICIEN

Myadestes montanus CORY, Bull. Nuttall Ornith. Club, 1881, p. 130 (near Fort Jacques above Pétienville, Haiti); Bull. Nuttall Ornith. Club, 1881, p. 151 (one specimen taken near Fort Jacques); Birds Haiti and San Domingo, March, 1884, pp. 52-53, col. pl. (Fort Jacques); Cat. West Indian Birds, 1892, p. 122 (Haiti); Auk, 1895, p. 279 (Dominican Republic, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 366 (Sánchez, Miranda).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 521 (mentioned).

Musicien, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 4, 1778, p. 290 (south Haiti).—SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, pp. 155, 262; vol. 2, 1798, p. 299, 506 (Mont Organisé, Dondon, Nouvelle Touraine, Trou Coucou, and above Jacmel).—HEARNE, Proc. Zool. Soc. London, 1834, p. 25 (mentioned).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152-153 (mentioned).

Cyphorinus cantans, SCHOMBURGK, Athenaeum, No. 1291, July 24, 1852, p. 798 (song).

Myadestes montanus?, CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 9-10 (Catarrey, Aguacate, specimens).

Myadestes genibarbis cherriei RIDGWAY, Smithsonian Misc. Colls., vol. 47, Aug. 6, 1904, p. 112 (described as new from Catarrey, Dominican Republic); U. S. Nat. Mus. Bull. 50, pt. 4, 1907, pp. 177-178 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 509 (La Hotte, La Selle, Montaignes Noir, Massif du Nord).—LÖNNBERG, Fauna och Flora, 1929, p. 107 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1928, p. 321 (Monte Viejo, specimens).

Myadestes solitarius (part), RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 174 (Fort Jacques, Haiti).

Resident in the hills of the interior; locally fairly common.

When riding mountain trails that pass dense growths of damp rain-forest one may hear occasionally a series of clear, whistled notes, like those of a flute, that come slowly through the air and then cease,

to be repeated at a short interval, or perhaps answered from a little distance. The countryman knows this disembodied voice as the jilguero or the musicien, according to whether one is traveling in the Dominican Republic or in Haiti, but is almost sure to state that it is supposed to be a bird but that by no possible chance can one ever be seen. By the superstitious the notes are believed to emanate from some spirit. The observant naturalist on penetrating the thicket may obtain a fleeting glimpse of a small gray bird with a reddish brown throat and under tail-coverts and will know that he has found the source of the mysterious voice in the solitaire.

Though common in many localities in the interior hills in Hispaniola comparatively few specimens have been taken until recently. Cherrie in 1895 obtained seven at Aguacate and three at Catarrey, and has written an interesting account of the bird and his impressions of the wonderful song. From February 20 to 28 at Aguacate he found them mating. He reports the food as fruits and insects, the latter taken frequently on the wing. Verrill in 1907 recorded them only from Sánchez and Miranda, though he reports that the song was often heard in the mountainous districts. R. H. Beck secured two on La Hotte June 22 and July 3, 1917. Kaempfer collected four which are in the Tring Museum.

Dr. W. L. Abbott secured a small series at the following localities: one male, Hato Viejo River, near Limón, on the Samaná Peninsula, April 23, 1921; four males near Constanza, April 10, 11, 13 and 29, 1919; four males Loma del Río Grande, above Constanza, April 18 and 22, 1919; one male, El Río May 14, 1919; and a pair at Loma del Cielo, in the Bahoruco Mountains March 13, 1922. Ciferri secured skins at 1200 to 1500 meters elevation on Monte Viejo August 25 to 28, 1929.

In 1927 Wetmore recorded the song of the solitaire on the trail to Constanza from the summit of El Barrero above the first crossing of the Rio Jimenoa near Jarabacoa where it was noted frequently. The bird was common in the rain-forest and was heard daily from May 17 to 30 during the entire period of work in the upland country. The birds sang from perches in the tree tops but always were concealed among the leaves. Though usually found in extensive tracts of dense jungle they sang at times from scattered growths of trees along streams passing through open mountain meadows. The song resembled the notes of a flute or occasionally of some one whistling, varying in tone in different individuals, but always of such a character as to be easily imitated. The first note was low, the second higher in scale, and the third low again like the first. At intervals with these clearer calls there came a ringing, double note. Occasionally a pair was observed in the dense growth hopping about alertly,

occasionally quivering the tips of the wings slightly. When the birds were at rest the tail hung straight down, at other times it was held at an angle. The light yellow tarsi were always prominent and were even noticed when birds flew over head. The natives knew the song of the jilguero but very few professed to have seen it so that the specimens collected attracted much interest.

In Haiti the musicien has been known to historians for many years. At the close of the eighteenth century Moreau de Saint-Méry wrote that Mont Organisé in the northeastern mountains was said to have been named because it was the favorite resort of this beautiful songster. He reported it also at Dondon, Nouvelle Touraine, and on the slopes of La Selle above Jacmel. Montbeillard in 1778 quotes records from Deshayes who found it in the high mountains of the south of Haiti. Hearne in 1834 wrote to the Zoological Society of London that he hoped to secure a specimen alive for the zoological gardens but apparently was not successful. The first specimen of which there is actual record seems to be the type collected by Cory near Fort Jacques, above Pétionville on March 3, 1881. Cory speaks of the solitaire as apparently rare and secured no others. It was reported to Abbott during his work in the southwestern peninsula but at that season was not singing so that he did not succeed in finding it. In 1927 Wetmore found it fairly common in the rain-forests on the slopes of La Selle recording its song on April 12, 13, and 16. An adult male taken April 12 had the bill black; iris bright reddish brown; tarsus and toes bright yellow; and claws dusky. The birds were found principally in the steep-sided ravines below the summit of the long ridge that forms the top of this range. In early morning their clear, flutelike notes came with indescribable purity to the listener resting on the brink of the great precipice that forms the face of Morne La Visite, a marvellously beautiful song and one never to be forgotten. One was heard on the summit of Morne St. Vincent near Furey on April 17. Bond in 1928 found them on La Hotte, and La Selle, in the Montaignes Noires, and in the Massif du Nord.

The excellent series of fourteen skins available enables the clearing away of confusion that has existed regarding the identity of the solitaires of Hispaniola. Cory in 1881 described his single specimen as *Myiadestes montanus*.²⁷ He gave no locality in the original description but elsewhere writes that it was taken "in the neighborhood of Fort Jacques." The skin, Field Mus. No. 26,988, a female, is labeled "Le Coup, Hayti," this being equivalent to the present day Pétionville. When Cherrie secured others in 1895 in the Dominican Republic he found that they differed somewhat from Cory's type

²⁷ Bull. Nuttall Ornith. Club, 1881, p. 151.

and suggested that there might be two forms, one in the western and one in the eastern part of the island. However in view of the fact that Cory's type which was not in too good condition was the only bird available from Haiti he followed Cory and called his specimens *montanus*. Ridgway was likewise impressed with the difference shown by the type specimen of *montanus*, which he identified erroneously as *Myadestes solitarius* of Jamaica, and named the birds collected by Cherrie in the Dominican Republic *Myadestes genibarbis cherriei* (type locality Catarrey). Wetmore has examined the type of *montanus* and finds that it is unquestionably the same form as all others taken in Hispaniola but is aberrant in having the malar stripe rufous below the gape while the white spot normally found on the chin is also obscured by rufous, the bases of the feathers here only being lighter. The ear coverts are streaked with white as is normal in the Hispaniolan bird. The rufous of the malar region occupies the same position as the white normally found in the Hispaniolan race. In several specimens from the Dominican Republic and Haiti now available there is a mixture of rufous in the white of the malar region while the white of the chin is also somewhat obscured. It appears that there is only one form of solitaire on Hispaniola which will be known as *Myadestes genibarbis montanus* Cory.

Following are measurements in millimeters of birds from Hispaniola.

Thirteen males, wing 86.5–92.8 (89.5); tail, 78.5–91.0 (84.4); culmen from base 11.3–12.3 (11.9); tarsus 21.4–24.2 (22.3).

One female, wing 89.0, tail 84.8, culmen broken, tarsus 22.0.

Type of *montanus*, female, wing 85.0, tail 85.2, culmen from base 13.0, tarsus 23.5.

Myadestes solitarius Baird of Jamaica, according to Ridgway²⁸ is larger the male having the wing 91.5 to 96.5 mm., and tail 92.0–99.0 and the female the wing 88.5–95.5, tail 86.5–95.0. The bird is also blacker on the side of the head.

A juvenile bird taken by James Bond on Morne Malanga, Haiti January 20, 1928 has some traces of the juvenal dress remaining, there being a few feathers on the crown that are tipped with black and spotted subterminally with cinnamon buff. The greater wing coverts are tipped faintly with whitish-buff, and there are tear-shaped spots of cinnamon buff on the shafts of the scapulars beyond which the tip of the feather is black. The lesser wing coverts have subterminal spots of whitish buff, there are a few feathers in the center of the abdomen that are whitish, barred narrowly with black at the tip, and a few on the upper breast that are dull cinnamon-

²⁸ U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 174.

buff margined distantly with black. Elsewhere the plumage is that of the adult.

The solitaire is from 185 to 195 mm. long of slender form with long tail. In general it is gray, darker above and paler below, with throat and under tail-coverts chestnut, chin and malar streak white and outer tail feathers tipped with white.

Family BOMBYCILLIDAE

BOMBYCILLA CEDRORUM Vieillot

CEDAR WAXWING

Bombycilla cedrorum VIEILLOT, Ois. Amér. Sept., vol. 1, 1807 (1808), p. 88, pl. 57 (Eastern North America)?

Ampelis cedrorum, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, pp. 320-321 (Bonaò, specimens).

Migrant from North America; abundance not certain.

Dr. Edgardo Moltoni of the Museo Civico di Storia Naturale in Milan writes that he has received three specimens of the cedar waxwing taken by the Ciferri brothers at Piedra Blanca near Bonaò, Dominican Republic, in January, 1926. There is no other record for the island.

The cedar waxwing from 140 to 160 mm. in length, is brownish fawn color, grayer on the back and still grayer on the wings, with the forehead, chin and a line through the eye black, the under tail-coverts white, and a yellow band across the end of the tail. Some individuals have small red tips that appear like bits of sealing wax at the ends of the secondary feathers and more rarely on the tips of the tail feathers. There is a distinct crest.

Family DULIDAE

DULUS DOMINICUS DOMINICUS (Linnaeus)

PALM-CHAT, SIGUA PALMERA, SIGUA DE PALMA, OISEAU PALMISTE, ESCLAVE

Tanagra dominica LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 316 ("Dominica"=Hispaniola).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 68 (Gonaïves).—LAFRESNAYE, Rev. Mag. Zool., 1851, pp. 585-590 (notes large feet; habits).

Palm-tree bird, WIMPFEN, Voy. Saint Domingo, 1817, p. 188 (listed).

Paxaro comuero, OVIEDO, Hist. Gen. Nat. Indias, Libr. 14, cap. 5; reprint, Madrid, 1851, p. 444 (nesting habits).

Esclave, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 4, 1778, pp. 263-264 (description).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 206 (listed).

Oiseau Palmiste, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 205-207 (evidently *Dulus*, though reference is made to Brisson's *Palmiste à tête noire*, which is a *Phaenicophilus*).

Tanagra, de St. Domingue, DAUBENTON, Planch. Enl., pl. 152, fig. 2 (col. plate).

Grive de la Guyane, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, p. 289 (description).

Passer maculosus FEUILLÉE, Journ. Observ. Phys., vol. 3, 1725, pp. 386-387 (Haiti).

Tangara dominicensis BRISSON, Ornith., vol. 3, 1760, pp. 37-38, vol. 2, fig. 4 (described from "S. Domingue").

Turdus gujanensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 809 (based on Buffon).

Turdus guianensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, pp. 152, 156 (specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 320 (listed).

Tanagra manicipium HERMANN, Tabl. Aff. Anim., 1783, p. 211 (based on the slave of Buffon).

Tangara dominica, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).

Dulus palmarum VIEILLOT, Nouv. Dict. Hist. Nat., vol. 10, 1817, p. 435 (description); Gal. Ois., pt. 2, 1824, pp. 237-238 (habits, description).

Dulus dominicensis, HARTERT, Nov. Zool., vol. 9, 1902, p. 293 (Sánchez).

Dulus dominicus, HARTLAUB, Isis, 1847, p. 609 (listed).—STRICKLAND, in Jardine's Contr. Ornith., 1851, pp. 103-104 (placed in family Ampelidae).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 92 (Dominican Republic, Haiti).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds belong. H. B. Tristram, 1889, p. 203 (Samaná, Rivas, specimens).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (habits); Birds Haiti and San Domingo, March, 1884, pp. 51-52, col. pl. (Samaná, Pétionville, specimens); Cat. West Indian Birds, 1892, p. 115 (Dominican Republic, Haiti).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 13 (habits).—CHRISTY, Ibis, 1897, p. 322 (habits).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, p. 39 (habits).—BUSCK, Proc. Ent. Soc. Washington, vol. 7, 1907, pp. 2-3 (parasitized by anthomyiid fly).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 364 (habits).—PETERS, Bull. Mus. Comp. Zool., 1917, pp. 417-418 (color, measurements, habits).—KAEMPFER, Journ. für Ornith., 1924, pp. 179-180 (habits).—CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (habits).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 509-510 (habits).—DANFORTH, Auk, 1929, p. 372 (recorded).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 321 (Moca, specimens).

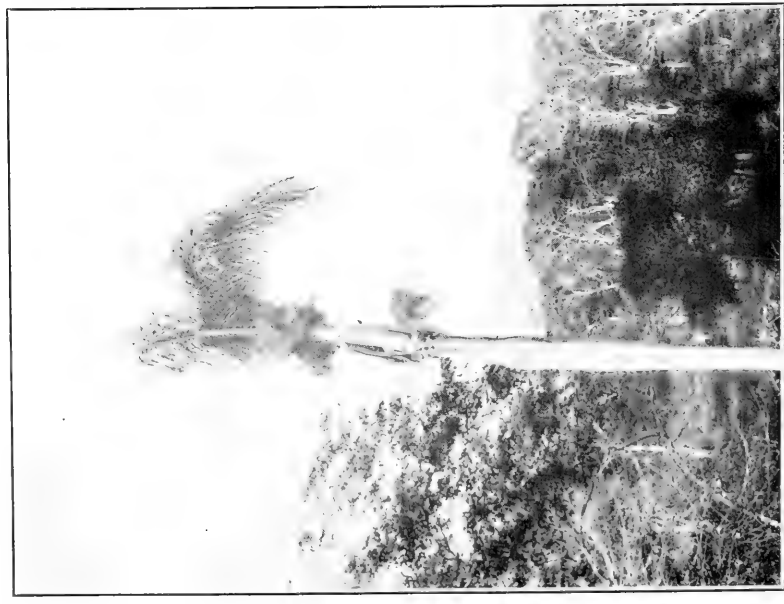
Dulus nuchalis SWAINSON, Anim. in Menag., 1838, p. 345 ("Brazil").—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 510 (= *dominicus*).

Resident throughout the island, except in the highest altitudes.

The palm-chat, restricted in range to Hispaniola, is one of the most peculiar as well as one of the most prominent of the smaller birds of the island. Distributed universally throughout the lowlands, the huge stick nests of this species, usually in the top of a palm, are a regular feature of the landscape, and attract certain attention to a bird that otherwise might not attain notice except by ornithologists on account of its plain coloration. (Pl. 23.) The palm-chat is common in both republics throughout the range of the royal palm, and extends into the mountains to altitudes of 1500 meters or more. It is absent therefore only on the highest peaks and



THE PALM-CHAT (*DULUS DOMINICUS DOMINICUS*)



TYPICAL NESTING SITE OF PALM-CHAT (DULUS D. DOMINICUS) IN ROYAL PALM
Fonds-des-Nègres, Haiti, March 31, 1927.



SECTION OF NEST OF PALM-CHAT (DULUS D. DOMINICUS) REMOVED FROM TREE TO PERMIT A NEAR VIEW
Fonds-des-Nègres, Haiti, April 5, 1927.

ridges and in areas grown with dense rain forest which are not suited to its requirements. It is seen in small numbers in the great valley of Constanza in the Dominican Republic but is not found on the high ridges above. In Haiti it is known on the open mountain slopes at Furcy and was observed by Bond at 1800 meters on the higher mass of La Selle opposite. It is not known to range to Tortue Island. The species is seen so universally that there is no necessity for listing points and dates of observation. We have before us an extensive series of skins and the partial synonymy at the head of this section will indicate the many references to the species in literature.

The palm-chat is a gregarious species that lives in little bands, each group being made up of several pairs, at the proper season accompanied by their young, and having as the center of its activities the communal nest, which serves as a resting place when the birds are not searching for food or otherwise engaged and as a roost at night. Their communal habits and nests have attracted universal attention from early travelers who came to Hispaniola from Oviedo down, so that the species is mentioned frequently in older works of travel.

Oviedo noted that this species built a communal nest as large as that of the stork in Spain, made of twigs closely interlaced, in which structure each pair had its separate compartment. Vieillot describes the nest in similar words, as does Sallé in an account furnished to Lafresnaye. The large size of the structure has been truthfully recorded by many observers but the number of individuals that frequent each nest, at least in modern times, is usually only eight to sixteen, and according to Wetmore's observations the largest bands seen did not include more than twenty individuals. Statements of various travellers that two hundred or three hundred were seen in company seem to be exaggeration.

The nesting season seems to extend mainly from March to June. At Fonds-des-Nègres, Haiti, April 5, 1927, Wetmore, with the assistance of Dr. C. H. Arndt, employed a man to climb to several nests and send them to the ground for examination. The method employed in climbing the smooth palm trunks was interesting. A double hitch was made around the trunk of the tree with two separate ropes, the free ends of each being tied together to form a sling. Through one of these the man thrust his leg until he rested on the thigh, while he placed the sole of his bare foot in the other. Standing on this foot he slipped the double hitch up the smooth trunk for two or three feet when he rested on his thigh and loosening the lower rope brought it to the level of the first one. Progressing thus he rapidly ascended the trunk cutting away the seed heads of the palm as he reached them, and in a short time climbed to the nest. Some of these were built entirely around the crown of the palm

supported by the lower fronds while others were placed around the trunk on the fruiting fronds a few feet below the crown of leaves. The nests were constructed of twigs from half the size of a lead pencil to a little larger, ranging from 250 to 450 mm. in length, with occasional twigs 600 to 750 mm. long. It seemed remarkable that a bird the size of the palm-chat, having the dimension of a cedar waxwing, could rise from the ground to a nest from twelve to fifteen meters from the earth with such burdens. The first nest examined was obviously under construction, and not yet complete. The twigs were interlaced rather loosely particularly at the sides and top. The structure was the size of a bushel basket and was evidently occupied by only a few pairs. There was a roughly defined central tunnel 100 to 125 mm. in diameter leading through the mass of sticks from side to side, opening at either end to the outside. Near the end was a slight accumulation of shredded bark that made a little platform on one of which had rested an egg, unfortunately broken. The nest padding was barely sufficient to protect the egg. This nest seemed to have been entirely newly formed and was evidently not yet complete. A second structure secured on this day was much larger and had evidently been used the year previous with much material recently added. Eight individual birds were observed flying away from it and it appeared to contain four separate units each 450 to 500 mm. in diameter with stick ends projecting in every direction, and the separate sections loosely interwoven about the trunk of the palm. In each unit a tunnel led to a central chamber 100 to 125 mm. across with the bottom well filled with fine shreds of bark and other soft materials to form a distinct cup. Though each nest was a separate unit with its own portal to the exterior there were roughly defined channels or passages running through the interlacing twigs at the top of the nests that could permit the birds to creep about under cover. The separate nests were very compact so that it was necessary to cut and break away the twigs to get at the interior. Subsequent examination of a number of other completed nests indicated that this was the normal type of construction, each communal structure consisting of several separate compartments opening separately to the outside. The twigs used in construction were usually slightly smaller in diameter than a lead pencil and were dead twigs of light wood, coffee and orange twigs being usual in the lowlands. The nest lining was always the smallest possible amount of fine grass and shredded bark that would serve to support the eggs. (Pl. 24.)

Though each pair occupied a separate domicile in a common structure, that may be likened to an apartment house, work on this domicile was carried on to some extent in common as it was not unusual

to see half a dozen of the birds resting near together, perhaps with two or three so close as to actually touch, all pulling and twisting at the sticks about them to work them more firmly into place. Occasionally birds clung back down to the bottom of the nest to pull and tug with much fluttering of wings at refractory bits of material. The twigs are carried into the trees in the bill of the bird and not in the feet as some have stated. The stick is held crosswise in the bill and the bird flies with steady direct flight at a sharp angle upward, often stopping to rest for a moment on some limb before reaching the nest. The stick nest is without question a safeguard against owls and other similar predators.

On March 10, 1919, Dr. W. L. Abbott secured four eggs as a set from a nest near Laguna on the Samaná Peninsula, that he describes as a meter and a half in diameter and the same in height. These eggs are oval, white with a faint gloss, spotted rather heavily with deep to dark heliotrope gray, the spots concentrating to form a more or less distinct wreath at the large end. One egg has the spots fewer and more distinctly outlined than is the case in the other three. They measure as follows: 25.2 by 19.7, 25.2 by 20.1, 25.3 by 19.7 and 25.7 by 19.5 mm. Bits of broken egg shell secured by Wetmore at Fonds-des-Nègres April 5, 1927, are similarly marked to the eggs described above. The only previous account of the egg that we have seen is that of Lafresnaye²⁹ who quotes Sallé in describing the eggs as white, evidently in error.

The palm-chat is most evident about its nest where it rests in sun or shadow depending upon the temperature of the hour or perches on the palm fronds or the projecting spike above. In feeding, the birds search through trees and shrubbery, usually two or three together, often seeming alert and vivacious with much character in pose and attitude though at rest with body erect and tail pointing straight down they appear rather stolid and heavy. They are eminently social and seek company, sidling along to perch beside a companion and often resting so near that their bodies touch. Mated pairs were especially attentive so that when one moved along the other immediately followed to crowd against its companion. The birds are very noisy and utter a variety of rather harsh chattering notes in chorus. Wetmore did not succeed in identifying anything that might be called a song.

Old nests regularly fall to the ground with the maturity and death of the palm fronds that support them, this probably being the foundation of the story that a band of two or three hundred gather together to tear out old structures and cast them to the ground, a tale for which there is little reason for credence.

²⁹ Rev. Mag. Zool., 1851, p. 588.

On the mountains near Furcy the palm-chat builds in pine trees, or other open trees and here makes smaller structures usually occupied by two pairs, as the open limbs are not fitted to support the large nest mass common in the lowland palms. Sometimes three or four separate nests were placed in one tree, and on one occasion Abbott found the nest of a grackle (*Holoquiscalus*) tacked on to the side of a nest of the palm-chat. Wetmore observed palm-chats investigating nests of the weaver-bird (*Textor c. cucullatus*) apparently through curiosity.

The food of the palm-chat so far as known is vegetable. Wetmore observed them eating blossoms of *Cordia serrata* and other flowering plants, biting them off and swallowing them piecemeal or entire. One bird swallowed four flowers of *Cordia*, twelve mm. in width in rapid succession, swinging head down and reaching far out to secure them or flying past a cluster of blossoms to cut one off in passage without the slightest hesitation and then alighting to swallow its catch. They also eat berries of various kinds in quantity. Danforth found palm berries in the stomachs of those that he shot. No complaint has been made of damage against them and at present the species is not known to have any particular economic importance. Baron de Wimpffen wrote in 1817 that the "flesh is said to be delicious" but it is not known that the palm-chat is regularly hunted.

The palm-chat is one of the birds of the island that is parasitized by a peculiar anthomyiid fly *Philornis pici* (Macquart) whose eggs are laid on nestling birds and develop in a sac under the skin of the head or wing. A. Busck³⁰ described the larva of this fly from a parasitized palm-chat shot September 8. The larva left the bird the same day, burrowed in earth and made a cocoon from which the adult insect emerged September 18. He found these parasites common at San Francisco, Dominican Republic, the infestation in small birds there amounting to nearly 90 per cent of the individuals examined. The insects did not seem to cause injury that was necessarily fatal as adult birds that he shot frequently showed a shrivelled larval sac indicating that they had been parasitized in early life. The iris in the palm-chat is reddish brown in both sexes.

An immature palm-chat taken by Abbott at Laguna on the Samaná Peninsula August 7, 1916, is fully grown but still retains the juvenal dress on head and body. The markings and colors in general are similar to those of the adult except that the feathers of the throat and foreneck are almost entirely dark with only faint lighter edgings and the rump is lighter being buffy brown.

³⁰ Proc. Ent. Soc. Washington, vol. 7, 1907, pp. 2-3.

The series of skins that we have examined shows much variation, those from Haiti as a whole seeming slightly lighter and less heavily streaked below than those from the Dominican Republic, particularly when compared with skins from the Samaná Peninsula which are especially dark and heavily marked. There is evident tendency toward geographic distinction in color but from the series examined this is not expressed with sufficient definition to warrant the naming of local races on Hispaniola proper, which may come later with more detailed studies of local conditions and larger sets of skins.

As few sets of measurements of this species have been published the following taken from an extensive series may be of interest:

Males, 17 specimens, wing 82.3-89.8 (86.3), tail 65.6-77.0 (69.8), culmen from base 13.5-16.5 (15.1), tarsus 20.3-24.4 (22.3) mm.

Females, 15 specimens, wing 83.4-90.0 (86.8), tail 63.5-77.4 (68.3), culmen from base 13.7-16.0 (15.0), tarsus 20.2-23.5 (22.2) mm.

The bird described by Swainson as *Dulus nuchalis*³¹ supposed to have come from "Brazil" said to be "above olive brown; nape with a transverse bar of white; beneath cream color, with distinct stripes of dark brown" has long been a puzzle since it has been believed that it might be a distinct species with habitat not known. Bond writes:³² "I have examined Swainson's type of *Dulus nuchalis* in the Cambridge (England) Museum. There is nothing remarkable about the bird, the only difference in coloration being an ill-defined and irregular spot of albinism on one side of the neck. *Nuchalis*, therefore, must be considered synonymous with *dominicus*."

The palm-chat is from 190 to 210 mm. in length with moderately long tail and fairly strong bill somewhat curved at the base. The bird is olive above with a greenish wash on the rump and upper tail-coverts, and edgings of the same color on feathers of wings and tail. The under surface is yellowish white broadly and distinctly streaked with sooty brown. The species may always be identified at its huge nests of sticks in the royal palms which differ wholly from the structures built by any other of the small birds of the island.

DULUS DOMINICUS OVIEDO Wetmore

GONAVE PALM-CHAT, OISEAU PALMISTE

Dulus dominicus oviedo WETMORE, Proc. Biol. Soc. Washington, vol. 42, March 25, 1929, p. 117 (Picmy Gonave Island, Haiti).

Dulus dominicus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 509 (Gonave; local).

³¹ Anm. Menag., 1838, p. 345.

³² Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 510.

Gonave Island, resident.

The palm-chat of Gonave Island is grayer brown, less olive above, has the rump and upper tail-coverts less extensively washed with green, and averages somewhat larger, with heavier bill than the form of the main island. The new race was described from seven specimens taken at Picny, a little village on the southeastern shores of La Gonave on July 5, 1920, by W. L. Abbott. The series is quite uniform in the characters noted and is approached in color and size by only a few of the many specimens examined from Hispaniola proper.

Following are measurements (in millimeters) of the Gonave series:

Males, five specimens, wing 90.4–92.2 (91.2); tail 72.3–80.7 (75.0); culmen from base 15.6–16.8 (16.2); tarsus 21.0–23.1 (22.3).

Females, three specimens, wing 88.3–94.1 (90.9); tail 72.0–74.8 (73.0); culmen from base 16.2–17.3 (16.9); tarsus 22.1–24.1 (22.9).

This race is named in honor of Capt. Gonzalo Fernandez de Oviedo y Valdés, first among the early historians of the New World, who in his *Historia General y Natural de las Indias*, begun in 1526, gave to the world many observations on natural history particularly from Hispaniola where he resided for years. His account of the *passaro comunero*, as he termed the palm-chat is highly entertaining.

Abbott writes that the palm-chat is local on Gonave as on his first visit he did not find it. On a later trip inland from Picny along a small stream where he found royal palms he located quite a large colony of the birds and there collected his specimens. Bond says that it is local in occurrence due probably to the few available palms and other nesting trees. Poole and Perrygo collected it at Massacrin on March 9, 1929.

Family VIREONIDAE

Subfamily VIREONINAE

VIREO CRASSIROSTRIS TORTUGAE Richmond

TORTUE VIREO, OISEAU CANNE

Vireo crassirostris tortugae RICHMOND, Smithsonian Misc. Colls., vol. 68, no. 7, July 12, 1917, p. 2 (Tortue Island, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 510 (Tortue; habits).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Haiti).

Resident on Tortue Island, Haiti; common.

Abbott writes that he found these birds in pairs in dense bush, but makes no further comment on their habits.

James Bond writes that this vireo "occurs abundantly throughout the island. In habits, song and nesting it resembles the northern white-eyed vireo (*V. griseus*). March appeared to be the height of

the breeding season, as many as five nests being found during my two weeks' stay on the island during that month. These were placed from about one to three feet above the ground, and contained one fresh egg, two fresh eggs, three heavily incubated eggs, and three young nearly ready to leave the nest, while one nest was empty, the young having but recently flown. A single egg secured March 18th measures 21.6 by 14.5 mm." A nest that he collected is a cuplike structure suspended, as usual in vireos, by the margin from a fork at the end of a limb. It is made of strips of bark with a lining and filling of leaves and other soft materials, with a very deep cup. The occurrence of this vireo on Tortue is of considerable interest since the species *crassirostris*, with four other geographic races, range through the Bahama and Cayman Islands to Old Providence in the Caribbean Sea. As Tortue is only fifty miles from Great Inagua the separation here is not great, it being more remarkable that the vireo has not crossed from Tortue to the coast of Haiti less than five miles away.

Vireo crassirostris tortugae differs from *Vireo c. crassirostris* in being tinged or washed with buff instead of yellow below, and in having the upper surface buffy brown rather than grayish. It does not require comparison with the other forms of *crassirostris* (*flavescens*, *alleni* and *approximans*) as these are brighter colored, being much more yellow. *V. c. tortugae* is subject to considerable plumage wear as the summer season advances, then appearing grayer than in fresh dress. Even worn specimens are browner, however, than *crassirostris*. The twenty-one specimens available were taken from January 30 to February 8, April 7 and 8, and June 29, 1917. Measurements from this entire series show no appreciable difference from *crassirostris*, the smaller size alleged in the original description disappearing when a larger series is measured. Dimensions of *tortugae* (in millimeters) are as follows:

Males, 17 specimens, wing 59.3–63.4 (61.5), tail 45.7–51.5 (48.9), culmen from base 12.2–13.8 (12.9), tarsus 18.3–20.8 (19.8).

Females, 4 specimens, wing 57.0–63.3 (59.5), tail 44.3–46.8 (45.9), culmen from base 12.4–13.6 (12.9), tarsus 19.5–20.3 (19.9).

Type, male, wing 62.7, tail 50.7, culmen from base 13.3, tarsus 19.8.

There is apparently some difference in eye color, due possibly to age as Abbott has marked this on different specimens as pale yellowish, grayish white, gray and dark gray. He indicates the bill as lead color, blackish above, and the tarsi as leaden.

This vireo is from 129 to 136 mm. long, dull buffy brown above, and whitish washed with buff (more heavily on the chest) below. A yellowish white line extends from above the eye to the lores, and there are two white wing bars.

VIREO OLIVACEUS OLIVACEUS (Linnaeus)

JAMAICAN VIREO, BIEN-TE-VEO, QUIEN FUË, JULIAN CHIVI, OISEAU
CANNE, PETIT BANACHE

Muscicapa olivacea LINNÆUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 327 (Jamaica).

Turdus hispaniolensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Haiti, specimen).—HARTLAUB, Isis, 1847, p. 609 (listed).

Muscicapa altiloqua, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 67 ("Saint-Domingue").

Tyrannula altiloqua, HARTLAUB, Isis, 1847, p. 609 (listed).

Vireo altiloquus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (listed).

Vireo altiloquus barbatulus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti).

Vireo calidris, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93 (Dominican Republic, Haiti).—CORY, Birds Haiti and San Domingo, March, 1884, pp. 49–50 (Pétionville, Samaná, specimens); Cat. West Indian Birds, 1892, p. 115 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 13 (Dominican Republic, specimens).—NICOLL, Ibis, 1904, p. 576 (specimen at sea near island).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (common).

Vireosylva calidris calidris, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 417 (Monte Cristi, Sosúa, specimens).

Vireosylva olivaceus, LÖNNBERG, Fauna och flora, 1929, p. 106 (Gonave).

Vireosylva olivacea, EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Vireo olivacea olivacea, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 510 (Haiti, Gonave, and Tortue).

Vireo olivaceus olivaceus, DANFORTH, Auk, 1929, p. 372 (habits, song, food).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 321 (San Juan, specimens).

A breeding form, found on Gonave and Tortue as well as on the main island.

The visitor to Hispaniola who is familiar with the birds of eastern North America recognizes at once the Jamaican vireo through its close similarity in song and habit to the red-eyed vireo of the North. The species inhabits woodland growths and mangrove swamps in both arid and humid sections, being rather universally distributed. In the highlands it does not occur in the pine forests, and on La Selle Wetmore did not record it on the summit of the high ridge of that mountain system, though he observed it on the north face of Morne Cabaio at 1,700 meters, and saw it also at Chapelle Faure in Nouvelle Touraine. At Constanza and El Río a few were found in groves of deciduous trees. Strangely enough though this vireo was seen at Las Cahobes and at Caracol none were found at Hinche on the central plain during Wetmore's stay there in April, though the birds must occur there at times as the mockingbirds about the experiment station, which so far as known are strictly resident, imitated its song constantly. Possibly the vireo passes through this

section in spring migration. The Jamaican vireo finds dense semi-arid scrubs much to its liking but at the same time ranges commonly through such humid forests as clothe the hills of the Samaná Peninsula where rain is of almost daily occurrence and the vegetation below the exposed tree tops never dries.

In Porto Rico the Jamaican vireo is migrant arriving in February and leaving in September. In the extensive series secured by Abbott in Hispaniola the earliest spring record is that of one from Tortue Island February 2, and the latest in fall one taken at Rojo Cabo on the Samaná Peninsula August 30. Hartert informs us that there is a specimen in the Tring Museum taken by Kaempfer in the Yuna swamps October 12, 1922. The species seems however to remain here through the year as in an extensive series secured by A. H. Verrill, now in the collection of J. H. Fleming, there are three skins marked as taken at Sánchez December 22, 25 and 26, 1906, two at Caña Honda January 7 and 12, 1907, two at El Valle January 14 and 17, and a series at Sánchez from January 21 to 30. Bond reports seeing two at Port-au-Prince December 26, 1927. Beck secured specimens at Santo Domingo City October 3 to 24 and at Sanchez November 3 to 18 and December 12, 1917. This matter of winter occurrence is curious since it is certain that this vireo is found in the Santa Marta region in Colombia at that season, and that it leaves Porto Rico in winter. We are inclined to believe that it is partially migrant in Hispaniola also, a supposition confirmed by a report of M. J. Nicoll who on February 27, 1904 secured one that flew about his vessel while passing to the south of the island en route from Porto Rico to Jamaica, a bird that would seem to be a migrant from the south. The matter of the occurrence of this bird is one that should be given attention by naturalists who are on the island during winter.

R. H. Beck secured four on Navassa Island, July 14 and 17, 1917, that are in worn breeding dress. They appear browner, less greenish than ordinary but are not in condition for proper comparison. Ekman recorded this species from Navassa in October, 1928.

The ordinary song of this vireo may be written as *cher chereo*, a couplet that after a short pause is again repeated. Occasionally this is varied somewhat but the bird has no extended repertoire. On the hills back of Sánchez Wetmore found them abundantly distributed through the forest each male having its territory where it moved about slowly or remained quietly perched uttering its song. In the swamps of the Yuna and Barrancota they were also common. Abbott secured a series on Gonave Island and another on Tortue, so that apparently the birds are found there in numbers. Danforth records them from Gonave reporting that the song there is different from that heard on Hispaniola proper.

On Tortue Island May 19, 1917, Abbott found a nest in a mangrove four meters from the ground that contained three small young. The nest is a cupped structure suspended by the margin in the fork at the tip of a limb. It is made of rootlets, mosslike materials, and bits of bark with rather thick walls, and is lined with brownish fibers. Sets of two and three eggs were collected on May 20 and 23, 1917, the eggs being white spotted very sparingly with minute to moderate spots of black and blackish brown, these being found mainly at the larger end of the egg. The individual eggs of these two sets were confused in cataloguing and may not now be separated. The two eggs that may be measured have the following dimensions: 22.6 by 16.4 and 23.5 by 15.7 mm. The nest of the set secured May 20, suspended like the one described above in the fork at the tip of a twig, is a much slighter structure than the first one and is made largely of shredded bark padded heavily with cotton so that it is conspicuously white. It was placed two meters from the ground. Danforth found numerous nests containing from one to three eggs on Gonave Island July 15 to 20, 1927, at heights of five to nine feet from the ground. An adult male of this vireo taken at Sánchez, May 9, 1927 by Wetmore had the maxilla and tip of mandible dull slaty brown; iris reddish brown, and tarsus gray number 6 (of Ridgway).

In the extensive series examined all specimens are referable to the typical form, birds from Hispaniola agreeing closely with those of Jamaica, those of Porto Rico averaging very faintly paler. Bangs and Penard³³ have shown that the specific name *olivaceus*, long in use for the red-eyed vireo, must replace *calidris* current for the present group, the appellation of the red-eyed vireo being changed to *Vireo vireescens*.

The Jamaican vireo is from 155 to 175 mm. in length, of slender form, greenish above, duller and grayer on the head, and whitish below, with a yellowish green wash on the sides and under tail coverts, a prominent light streak above either eye, a blackish malar stripe, and a grayish brown mark before the eye.

LAWRENCIA NANA (Lawrence)

FLAT-BILLED VIREO

Empidonax nanus LAWRENCE, Ibis, 1875, p. 386 ("St. Domingo"=Dominican Republic).—CORY, Birds Haiti and San Domingo, July 1884, pp. 82-83, col. fig. (description, figure of head).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Lawrencia RIDGWAY, Auk, 1886, p. 382 (new genus for *Empidonax nanus* Lawrence).

³³ Bull. Mus. Comp. Zool., vol. 67, 1925, pp. 205-206.

Lawrencía nanus, CORY, Cat. West Indian Birds, 1892, p. 109 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 361 (Miranda, specimen).

Lawrencía nana, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 4, 1907, p. 893 (description, allocation to oscines).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 416–417 (Sosúa, specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 511 (Gonave Island; northern Haiti).—DANFORTH, Auk. 1929, p. 370 (Gonave Island).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Gonave).

Resident, locally distributed in both republics; found on Gonave Island.

Though the present species was described as long ago as 1875 there is still little known regarding it. The type secured in the Dominican Republic by W. M. Gabb and preserved in the United States National Museum, bears neither date nor locality as these were matters considered at that day of no great importance. Verrill in 1909 wrote of this bird "extremely rare, found at Miranda only" but seems not to have collected any so that his record is open to doubt. The second specimen so far as record goes was not obtained until 1916 when J. L. Peters secured one at Sosúa, Dominican Republic, on April 8. He writes that the bird had "just flown across a little open stretch and alighted in a small tree through which it was searching in a most vireo-like manner when I shot it." W. L. Abbott found the species common on Gonave Island, Haiti, and there collected nine skins, four of them February 20, 21 and 24, 1918, marked Gonave Island and five March 6, 7 and 10 from Anse à Galets. He secured another at Port Rincón, on the Samaná Peninsula, Dominican Republic, August 16, 1919, and one at Mao, in the Yaqui Valley, February 24, 1921. He writes that the birds were common on Gonave, being found in dense brush near the foot of the hills, usually in pairs, and remarkably tame. Under date of September 2, 1919 he reports others seen near Sosúa, Dominican Republic, but did not secure them. Hartert (in a letter) says that there is a male in the Tring Museum taken by Kaempfer at Túbano, Province of Azua, Dominican Republic, at 300 meters altitude on July 24, 1923. Danforth in 1927 found it fairly common on Gonave where F. P. Mathews collected a male near Anse à Galets July 20, which "was perched on top of a bush, calling with a fairly loud, unmusical trill." James Bond in 1928 collected specimens in Haiti which are in the Academy of Natural Sciences in Philadelphia, a female at Magasin Caries, February 25, a breeding male and another with sex not indicated at Port-de-Paix March 12 and 13, and others from Gonave February 5 and 8. He writes that "*Lawrencía* in habits and appearance resembles the white-eyed vireos delighting as it does to creep about in low scrub, occasionally hopping about on the ground in search of food. Only once did I observe this bird fly at insects in the manner of a flycatcher, the snap

of its bill on this occasion being distinctly audible. * * * The notes of this vireo resemble a clear, whistled rather titmouse-like *wit-wit-wit-wit-wit*, sometimes varied to a more rapid "*wi-wi-wi-wi-wi*." Its note when scolding resembles that of *V. griseus*." He did not find nests but believed that they were breeding on the northern peninsula in March, and on Gonave in May and June. Poole and Perrygo collected one at Fort Liberté February 8, 1929. Wetmore in 1927 observed the flat-billed vireo at two localities. On March 30 with Dr. G. N. Wolcott near Mont Rouis as the motor car in which he rode stopped beside the road a slender little bird appeared in a scrubby tree, six meters away hopping and peering about in a leisurely way in its search for insects. It was typically vireolike in action differing only in the more slender form, and longer tail than ordinary in that group. The light eyes were easily evident. This individual disappeared into heavier brush and could not be found again. It was seen within 50 meters of the sea, near the base of a steep hill where dense scrub grew in a stony soil beneath taller trees which now were leafless. On May 7 at the summit of the hill above the town of Sánchez, Dominican Republic, one came out of a dense tangle of vines almost within reach in response to a squeak. It hopped about in leisurely manner and flew with quick, certain flight strongly suggesting a vireo. It disappeared soon in the dense tangle but later was located again and collected. A low, whistled song of two notes constantly repeated resembling *whewry whewry whewry whewry* and so on for six or eight repetitions that came constantly from the same dense tangles of vines he was inclined to attribute with some certainty to this species, though he failed to locate the singer, since he was familiar with the notes of other birds found at this point and recognized these as new to his experience. The one taken, an adult female about to breed, had the iris dull ivory white; base of mandible dull whitish, rest of bill dusky; tarsus and toes gray number 6 (of Ridgway).

From scanty information at hand it appears that this species is found principally among low limestone hills grown with scrub and that it may occur in humid or arid sections, being perhaps more common in the latter.

There are two color phases in this species, one in which the lower surface is strongly suffused with yellow, and one in which the underparts are white with only the faintest tinge of yellow in the center of the abdomen. The yellow phase seems to predominate as ten of twelve skins in the United States National Museum are of that color and only two, one of them the type of the species, are white. White and yellow birds are alike in size, and of the white phase one comes from Gonave and one from the main island. Birds from Gonave do

not differ appreciably from those of the main island. Following are measurements taken from our series:

Males, 6 specimens, wing 55.4–59.5 (56.7), tail 48.4–55.5 (52.9), culmen from base 9.5–10.4 (9.9), tarsus 18.5–20.9 (19.7) mm.

Females, 5 specimens, wing 54.5–57.0 (55.8), tail 51.2–53.1 (51.9), culmen from base 9.1–10.5 (9.8), tarsus 18.1–19.8 (19.1) mm.

Type, sex not known, wing 54.6, tail 49.7 culmen from base 10.2, tarsus 18.4 mm.

The affinities of this small bird have been a matter of some uncertainty. The species was described in 1875 by George Newbold Lawrence as *Empidonax nanus* and placed in the tyrant flycatchers, Tyrannidae, evidently because of its flat bill. In 1886 Ridgway separated it in another genus which he called *Lawrencia* in honor of Lawrence, remarking that "the type of this genus is exceedingly different in structure from any of the species of *Empidonax*." He suggested that in color it resembled "some of the *Vireones* especially *V. belli*." On reviewing the species³⁴ critically again in connection with his studies of the Tyrannidae Ridgway decided from examination of the wing structure and the form of the tarsal envelope and foot that *Lawrencia* belonged in or near the family Vireonidae though differing from recognized genera of Vireos in possessing a broad, depressed bill of markedly triangular form.

Among specimens forwarded by Dr. W. L. Abbott to the collections of the National Museum there is a complete specimen and a body in alcohol from Gonave Island. Dissection of the complete bird has afforded opportunity for a comparative study to determine more definitely the relationships of the species. These were examined by Wetmore some years ago and an account of his findings was presented before the A. O. U. meeting in Cambridge, Mass., in 1923. As for various reasons this account of the anatomy and affinities of this bird has never been published it is pertinent to include it here in some detail.

The alcoholic specimen examined had three rather prominent rictal bristles on either side of the bill while the tips of the feathers bordering the base of the maxilla were modified into setae. Both upper and lower eyelids were bare save for a single row of small marginal feathers on the upper lid and a double row on the lower lid that merged into the densely feathered region of the lores. A large roughly elliptical temporal space, characteristic of the oscinine Passeriformes occupied the side of the head posterior to the auricular opening. (Fig. 1.) The spinal and ventral tracts were differentiated on the side of the neck immediately below the ear

³⁴ Proc. Biol. Soc. Washington, 1906, pp. 12–13, and U. S. Nat. Mus., Bull. 50, vol. 4, 1907, pp. 339, 892–893.

where a rather broad apterium began. The spinal tract (*pteryla spinalis*) was somewhat narrowed between the shoulders, and then at the center of the scapulae, broadened gradually to form an enlarged tract. This contracted suddenly behind with abrupt lateral angles and a shallow posterior indentation on either side and continued in a double row of papillae to expand slightly once more behind the level of the femoral attachment on the pelvis, and finally terminated at the base of the large oil gland. The oil gland had a prominent naked nipple and was bare except for two or three scattered down feathers. There was no trace of a median apterium in the large dorsal rhombus of the spinal tract.

There were twelve rectrices. The upper coverts of all save the center pair were normal and lay above the bases of the quills at their

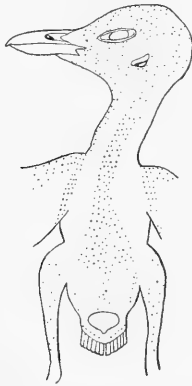


FIGURE 1.—DORSAL PTERYLOSIS OF THE FLAT-BILLED VIREO LAWRENCIA NANA. NATURAL SIZE.



FIGURE 2.—UPPER WING MUSCLES OF THE FLAT-BILLED VIREO LAWRENCIA NANA. $\times 2$

outer margins. The median coverts were represented only by slender filoplumes of which there were two on one side and three on the other all growing from the integument above the inner margin of the quill base on either side. There were thus ten fully developed coverts and a series of filaments that may be considered as the aborted remnants of two more. Other filoplumes were not found nearer than the lower part of the spinal tract above the oil gland.

The humeral tract was three rows of papillae wide. In the wing there were nine secondaries and ten primaries. The tenth (outermost) primary, while reduced in length and falcate in shape was one-half the length of the ninth and was similar in form and relative size to the tenth primary in the subgenus *Virco*. The wing was eutaxic. The ventral feather tracts beginning at the base of the bill proceeded backward, broadened somewhat and then divided at a point one-third of the total length of the neck above the shoulders. After passing on to the breast these tracts expanded broadly, this

lateral extension continuing to opposite the base of the knee where each tract was suddenly restricted and continued as a narrowed line down the side of the abdomen, the two converging finally to meet the circle of feathers surrounding the anal prominence.

The arrangement of the shoulder muscles was typical of that of the oscinine Passeriformes according to present knowledge. The *M. propatagialis longus* (fig. 2) was free from the shoulder for a short distance only before becoming tendinous. It received a very slender slip from the *M. cucullaris*. The *M. propatagialis brevis* was moderately strong in form, elliptically elongate and pointed. From the slightly prolonged lower point came a slender tendon that passed down and attached to the tendon of the *M. extensor metacarpi radialis longus*, and then separating again passed inward to insert on the ectepicondylar process of the humerus.

On the upper arm the *M. deltoideus major brevis* was strong and heavy extending practically the full length of the humerus to insert on the ectepicondylar process. The *M. deltoideus major longus* was likewise long and strong. It narrowed somewhat below, but did not become tendinous. It inserted in fleshy fasciae at the base of the ectepicondylar prominence behind the insertion of the tendon of the *brevis* portion of this muscle.

The *M. latissimus dorsi* was double, both anterior and posterior portions being present, of which the latter was slightly the stronger. The two were separated in origin as usual but converged rapidly and met immediately after passing out over the scapula. At the point where the two passed free from the *M. trapezius* toward their attachment on the humerus the anterior portion overlapped the posterior and continued partly superimposed upon it.

In the Tyrannidae the arrangement of these muscles is different. In *Tolmarchus gabbi*, a tyrannine form, the *M. propatagialis brevis* is more moderate in development, extending only half way down the humerus, with the lower end decidedly blunt. The slender tendon extends from the outer margin of the blunt termination and is attached below in the usual manner to the tendon of the *M. extensor metacarpi radialis longus*. The two tendons attach finally to the ectepicondylar process very near one another the point of attachment of the *brevis* lying above and external to the other. The disparity in size between the two tendons beyond their point of attachment is marked, that of the *brevis* being only about one third the bulk of the other. The other shoulder muscles exhibit marked differences from the condition described in *Lawrencia nana*. The *M. deltoideus major brevis* is quite heavy but extends only three-fifths of the length of the humerus to insert on the humeral shaft. There is no tendon proceeding down from it to the ectepicondylar process. The *M. deltoideus major longus* also is partly aborted as it thins out,

becomes attenuate below the middle of the humerus and finally passes on as a very slender tendon 5 millimeters in length that as usual inserts on the ectepicondylar process. The anterior and posterior portions of the *M. latissimus dorsi* arise far apart and converge but do not meet until after leaving the body to proceed toward their attachment on the humerus. Both are rather slender. In another New World flycatcher, *Myiarchus dominicensis*, the *M. latissimus dorsi* show the same conformation. In such oscinine species, however, as *Vireo virescens* and *Vireo crassirostris tortugae* the deltoid muscles are similar in development to those of *Lawrencina nana*. The *M. latissimi dorsi* also have the same overlapping arrangement as that described in *Lawrencina*.

The syrinx of *Lawrencina nana* is of the diacromyodian type. The intrinsic muscles insert on the dorsal and ventral end of the first bronchial semiring. The single pair of extrinsic muscles is very slender. In *Vireo flavifrons* the extrinsic muscles are likewise slender and attenuate. The intrinsic muscles are flattened. Dorsally their attachment is to the end of the second bronchial semiring and ventrally to the end of the first semiring.

For comparison a description of the anisomyodian type of syrinx found in the Tyrannidae is given. In *Tyrannus tyrannus* the extrinsic muscles are cylindrical and in contrast to those in the oscinine birds just described are strong and well developed. The intrinsic muscles form an enlarged rounded mass on either side. From this an elongation is inserted on the dorsal end of the second bronchial semiring alone. The development of these muscles in *Tyrannus verticalis* is the same.

The viscera in perching birds at present offer no known points of value for classification but may be described in *Lawrencina* to complete this account. The right lobe of the liver is slightly longer than the left but the two are nearly equal in bulk as the left portion has a somewhat broader lateral extension than the right. A gall bladder is present under the right lobe and there are two hepatic ducts that enter the ascending arm of the duodenum below its anterior end. The pancreas has a single lobe included in the loop of the duodenum but only loosely attached to the gut. The intestine as a whole measures 115 millimeters in length, while the long intestine, extending from the caeca to the anus is 8 millimeters long. The caeca are paired, ear-shaped lobes about 2.5 millimeters in length and 2 millimeters broad that project as rounded, nodular prominences from the sides of the ventral surface of the intestine. The stomach appears strong and muscular. The ventricular portion measures 8 millimeters by 10 millimeters.

In the skull of *Lawrencina* there is distinct agreement with the vireos in the form of the free end of the vomer which is not incised,

in the large single opening, forming the anterior passage from the orbit above the mesethmoid, in the shape of the transpalatines in which the outer margin curls upward as a scroll, and in the form and position of the foramina of the occipital veins.

From the other genera of vireos *Lawrencia* differs extremely in the broad, depressed, triangular bill the width of which at the frontal antiae is more than twice the depth at this point. The elongated, slender tarsus is also striking. In the skull the face is distinctly broader, the lower margin of the lachrymals extending outward only to the inner margin of the zygoma, and the outer margin of the processus maxillaris of the premaxilla being distinctly convex.

It is easily apparent that *Lawrencia* is a somewhat peculiar member of the Vireonidae.

The flat-billed vireo is from 125 to 135 mm. long with slender form and long tail. Above it is greenish olive gray, with whitish lores and a whitish ring around the eye. The wings are dusky, the feathers being margined faintly with whitish, with a broad band of white across the ends of the primary coverts. Below the bird is white or light yellow.

Family COEREBIDAE

Subfamily COEREBINAE

COEREBANIVORA BANANIVORA (Gmelin)

HISPANIOLAN HONEY-CREEPER, SIGUITA, SUCRIER, BANANISTE, PETIT SERIN, BANANE MURE

Motacilla bananivora GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 951 ("insulae S. Dominici"=Hispaniola).

Bananiste, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 332-334 (description).

Sucrier (part), MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 5, 1778, pp. 543, 545 ("Saint-Domingue").

Certhiola, HARTLAUB, Isis, 1847, p. 609 (listed).—SALLÉ, Proc. Zool. Soc. London, 1857, p. 233 (listed).

Certhia flaveola, RITTEB, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Certhiola Clusiae "Württemberg" HARTLAUB, Naumannia, 1852, p. 56 (Haiti).

Certhiola cluciaie, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (locally abundant).

Certhiola bananivora, BEYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 95 (Dominican Republic, Haiti).—CORY, Birds Haiti and San Domingo, March, 1884, pp. 41-43, col. fig. (description of nest; Puerto Plata, Samaná, Pétienville, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 218 (Samaná, Rivas, specimens).—CHRISTY, Ibis, 1897, p. 321 (Sánchez, description of tongue).—CIFERRI, Seg. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).

Coereba bananivora, CORY, Cat. West Indian Birds, 1892, p. 116 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 12

(nesting).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 423 (Monte Cristi, Sosúa, specimens).—KAEMPFER, Journ. für Ornith., 1924, p. 184 (Dominican Republic).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 511–512 (Haiti).—DANFORTH, Auk, 1929, p. 372 (generally distributed; Gonave).—LÖNNBERG, Fauna och Flora, 1929, p. 108 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 322 (Haina, San Juan, specimens).

Resident, locally common, more particularly in sections with plentiful rainfall; found on Gonave and Petite Cayemite Islands.

The honey-creeper is commonly distributed through the island being found especially where abundant rainfall produces suitable cover of vegetation. It ranges from sea-level to the tops of the mountains in both republics as it has been recorded from the summit of La Selle and from the mountains above Constanza and El Río. In the uplands it inhabits deciduous growths and does not range among the pines except where its usual habitat is afforded by trees and bushes growing along little streams. Wetmore did not record it during his brief stay near Hinche in 1927 but it is possible that it is found locally in areas of brush in that vicinity. Though usually common the bird is somewhat retiring so that it may be easily overlooked except by those familiar with its high-pitched, insect-like song. It seems especially common over the southwest peninsula of Haiti and the Samaná peninsula in the Dominican Republic. Abbott found it common on Gonave Island, and secured a male on Petite Cayemite Island January 13, 1918. Danforth in 1927 records it as fairly common on Gonave where he found a nest containing one egg July 17. Poole and Perrygo collected skins in 1929 at Plaine Mapou and Massacrin on Gonave.

These birds feed regularly at blossoms of many kinds being especially fond of the banana. Though much of the food is nectar they also consume quantities of minute insects and spiders. Peters reports that at Monte Cristi they feed extensively at the flowers of the agave.

The breeding season extends over a considerable part of the year. Peters secured young not more than two months old at Monte Cristi between February 7 and 21, and an incubating female at Sosúa March 30, 1916. Cherrie found male and female busily carrying nesting material at Santo Domingo City February 15, 1895, and Cory describes a nest found May 1, 1883 (probably at Samaná, though this is not stated) in deep woods, placed at the end of a long limb, containing two fresh eggs. On May 9, 1917 W. L. Abbott collected a set of three eggs (of which one was lost) at Petit Port à l'Écu. The nest, placed in a bush one and one-half meters from the ground, is the globular structure usual in this genus, roughly 100 mm. in diameter, entirely enclosed, with a small opening in

one side. This nest is constructed of weed stems, filaments of moss, grasses, and small leaves, mingled with occasional masses of spider webbing, lined with softer materials of the same kind. The nest wall is thickened at the side below the opening to form a sort of threshold being only half as thick elsewhere. The two elliptical eggs are dull white heavily marked with suffused markings of verona brown which while heaviest at the large end cover the entire surface concealing most of the light background. One of the eggs is broken so that it can not be measured, the other is seemingly a "runt" egg measuring only 14.9 by 11.2 mm. Another nest was collected by Abbott at Lajana, Dominican Republic, on the south side of Samaná Bay. This structure was placed at the tip of a limb in a thorny bush growing in a cleft in a limestone cliff a meter and a half above the sea. It is generally similar to the one described above but is made of coarser materials with very little spider webbing. It contained one egg colored like those described above but with the spotting confined mainly to the larger end of the egg with only scattered markings below. This egg measures 16.0 by 12.5 mm. Abbott remarks that nests of this bird are often suspended on lianas swinging over paths or open places in the woods from two to three meters from the ground. Wetmore found a nest May 11, 1927 at San Lorenzo, Dominican Republic suspended at the tip of a limb a little more than a meter from the ground in jungle on a steep hillside. The nest was a ball of grasses and bark shreds with a smooth, round entrance beneath. It contained three hard-set eggs only one of which could be properly preserved. This has the white background almost entirely obscured by suffused markings of natal brown and measures 17.5 by 13.0 mm. Bond records that he found the honey-creeper breeding for the entire period of his stay on the island from January to June 1928.

The honey creeper regularly uses the old nests as roosts. At the home of Dr. George F. Freeman in Port-au-Prince at the end of March and during April Wetmore observed one of these birds on a number of occasions as it retired for the night. Almost invariably it flew up from dense brush across the street to rest with flitting wings on a telephone wire for a few minutes and then suddenly pitched down into a casuarina and entered a nest six meters from the ground near the tip of a drooping limb where it was distinguished with difficulty from the abundant epiphytes that clothed the branches about it.

The honey-creeper measures from 100 to 112 mm. in length and has a short tail and a slender, strongly decurved bill. It is sooty brown above with a white line over the eye and a white spot on the wing, dark gray on the throat and foreneck, and yellow on the

breast. Immature individuals have the throat and line over the eye yellowish, and the underparts dull grayish white.

COEREBE BANANIVORA NECTAREA Wetmore

TORTUE HONEY-CREEPER, PETIT SERIN

Coereba bananivora nectarea WETMORE, Proc. Biol. Soc. Washington, vol. 42, March 25, 1929, p. 118 (Tortue Island, Haiti).

Resident on Tortue Island, Haiti.

The honey-creeper of Tortue Island differs from that of Hispaniola proper in having the throat and foreneck slightly darker gray. This difference was noted when the series from Hispaniola secured by Abbott was first examined, and was verified by a specimen secured March 23, 1928 by James Bond, now in the Philadelphia Academy of Natural Sciences. In other respects the Tortue bird seems similar to that of the main island. Following are measurements of the two males in the United States National Museum: Wing 58.0³⁵–58.5 (58.3), tail 33.9³⁵–35.3 (34.6), culmen from base 12.5–13.0³⁵ (12.8), tarsus 17.0–17.2³⁵ (17.1) mm.

A female in the Philadelphia Academy of Natural Sciences has the wing 58.1, tail 54.4, culmen from base 12.9 and tarsus 16.4 mm.

A nest collected by Abbott, not occupied at the time, is a ball made of the gray moss common in the trees of many localities, lined with weed stems and grasses.

Family COMPSOTHTLYPIDAE³⁶

MNIOTILTA VARIA (Linnaeus)

BLACK AND WHITE WARBLER, PETIT CHIT

Motacilla varia LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 333 (Hispaniola).

Black and white warbler, BECK, Nat. Hist., vol. 21, 1921, p. 41 (Loma Tina).

Ficedula Dominicensis varia BRISSON, Ornith., vol. 3, 1760, pp. 529–531, pl. 27, fig. 5 ("S. Domingue").

Sylvicola varia, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Haiti).

Mniotilta, HARTLAUB, Isis, 1847, p. 609 (listed).

Mniotilta varia, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti); Birds Haiti and San Domingo, March, 1884, pp. 23–24 (winter); Cat. West Indian Birds, 1892, p. 117 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic, specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 423 (Río San Juan, specimen; Sosúa).—BEEBE, Zool. Soc. Bull., vol.

³⁵ Type.

³⁶ The following apparently refers to wood warblers which may not be identified specifically.

Pivionets, Saint-Méry, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (Port-de-Paix).

30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Haiti, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (winter).—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 322 (San Juan, specimens).

Winter visitant from North America; fairly common.

The black and white warbler is one of the migrant horde of small birds that in fall swarms southward through the West Indies, coming regularly to spend the winter in Hispaniola. It is told easily from its relatives by its black and white streaked plumage, and by its habit of running over the limbs and trunks of trees where it clings easily to the bark with its sharp claws often from the under side of branches. It may occur anywhere through the island where there is suitable tree growth.

This species is another of the group that have Hispaniola as the type locality since Linnaeus based his Latin name for it on the account of Brisson who described a specimen sent by Chervain to de Reaumur.

The first definite record for the Dominican Republic seems to be a skin sent by C. McGrigor to Canon Tristram. Cherrie speaks of collecting nine in the southern part of the Dominican Republic from January 22 to April 21, 1895, but does not cite localities. In the collection of J. H. Fleming there are the following specimens secured by A. H. Verrill in 1907: Sánchez, January 21, February 28, March 6 and 9; Samaná, January 31, February 4 and 7, and Cayo Levantado, opposite Samaná, February 14. Beck reports the black and white warbler from Loma Tina in the high interior February 3, 1917, and collected one at Santo Domingo City September 27, 1916. Peters found it rather uncommon along the north coast, securing one at Río San Juan, and seeing a few others near Sosúa. W. L. Abbott collected a female at Laguna on the Samaná Peninsula March 7, 1919, and a male at Polo in the Bahoruco Mountains, February 26, 1922. Ciferri secured skins near San Juan at Sabana San Thomé September 29 and October 25, 1928, and at Corral de los Indios October 7, 1928.

Though it is probable that the specimen mentioned as collected by Chervain came from Haiti the first definite record from that republic is of two birds that A. E. Younglove secured at Port-au-Prince, March 7 and April 13, 1866, and sent to the Smithsonian Institution. Cory found this species in 1881, and Bartsch in 1917 recorded it at Thomazeau April 2, and Gloré April 3. Abbott reported it for Tortue Island, and Beebe records it as common in 1927 when he shot several. Wetmore in 1927 saw two on the outskirts of Port-au-Prince March 29, one at Fond-des-Nègres March 31, one at Étang Miragoane April 1, and one on the very summit of Morne La Visite in the Massif de La Selle at 2100 meters elevation on April 13. At

Hinche a male was taken April 20 and a female seen April 23. Bond records it at Port-au-Prince and on Gonave, and Poole and Perrygo collected specimens at St. Michel January 14, St. Raphael January 11, Dondon January 19, Fort Liberté February 16, Pont Sondé February 27, St. Marc February 25, Plaine Mapou, Gonave Island March 12, and Cerca-la-Source March 21 and 24, 1929; at the latter point it was plentiful. Ekman found it on Navassa Island in October, 1928.

The black and white warbler is from 115 to 130 mm. long with long, slender bill. The plumage is streaked black and white both above and below in the male, and white with faint dusky streaks on the sides in the female.

COMPSOTHYLPIS AMERICANA PUSILLA (Wilson)

NORTHERN PARULA WARBLER, PETIT CHIT

Sylvia pusilla WILSON, Amer. Ornith., vol. 4, 1811, p. 71, pl. 28, fig. 3 (Eastern Pennsylvania).

Sylvia torquata, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 38 ("Saint-Domingue").

Parula americana, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Gonaïves, Port-au-Prince); Birds Haiti and San Domingo, March, 1884, pp. 24-25 (winter).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 174 (Rivas, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Parula americana, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (Dominican Republic).—CORY, Cat. West Indian Birds, 1892, p. 117 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic, specimens).

Compsothlypis americana usneae, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 423 (Monte Cristi).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, pp. 53, 223 (Haiti, specimen).

Compsothlypis americana pusilla, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (Haiti, Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 322 (San Juan, specimens).

Winter visitant from North America; common.

The parula warbler is found in groves and forests where it works actively about in its search for insect food. It is common at times, particularly in the Dominican Republic.

Specimens sent to Tristram, in 1884 without locality by C. McGrigor, and from Rivas in 1887 by A. S. Toogood seem to be the earliest records for the Dominican Republic. Cherrie recorded it until April 2, 1895, but saw none after that date. He collected 18 and says that he observed it at all points that he visited except Maniel. Verrill took numerous specimens, now in the collection of J. H. Fleming, dates being as follows: Samaná, December 27, 1906, January 22, 26, 30 and 31, February 2, 3, 9, 18, and 20, and March 1 and 5, 1907; Caña Honda December 30, 1906, and January 1, 5, and 7, 1907; El Valle, January 15, 16 and 18, 1907; and Río San Juan

February 1, 1907. Peters saw only one, a bird shot at Monte Cristi February 10. Abbott shot a male at Sánchez October 23, 1916. Ciferri secured skins at Sabana San Thomé, near San Juan, October 21 and 23, 1928.

Vieillot at the end of the eighteenth century said that it was very common in "Saint-Domingue" his records probably referring to what is now Haiti. Cory recorded it at Gonaïves and Port-au-Prince in 1881, and Bartsch in 1917 saw one near the Étang Saumâtre on April 3, 1917. W. L. Abbott reports the bird as common in migration, and in 1917 secured one on Tortue Island January 30, and one near Jérémie November 24. Beebe collected one, and Wetmore in 1927 observed the species at Fonds-des-Nègres March 31, and April 5, taking one on the latter date, and one at L'Acul, April 4. Bond records it from Gonave Island without date. Poole and Perrygo shot specimens at St. Michel January 14, Pont Sondé February 27, and at En Café, Gonave Island March 6, 7, and 12, 1929.

The parula warbler is from 112 to 122 mm. in length with the upper parts grayish, and a greenish yellow patch on the back. The throat and breast are yellow, with a blackish cross band in males sometimes mingled with rufous, the abdomen is white and there are two white wing bars.

DENDROICA PETECHIA ALBICOLLIS (Gmelin)

HISPANIOLAN GOLDEN WARBLER, PETIT OISEAU MANGLIERS

Motacilla albicollis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 983 ("S. Dominici"=Hispaniola).

Motacilla chloroleuca GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 984 ("S. Dominici"=Hispaniola).

Ficedula Dominicensis BRISSON, Ornith., vol. 3, 1760, pp. 494-496, pl. 26, fig. 5 ("S. Domingue").

Ficedula Dominicensis minor BRISSON, Ornith., vol. 3, 1760, pp. 496-498, pl. 26, fig. 2 ("S. Domingue").

Figuier á Gorge Blanche, BUFFON, Hist. Nat. Ois., vol. 5, 1778, p. 287 (based on *Ficedula Dominicensis* Brisson).

Figuier Vert & Blanc, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 289-290 (based on *Ficedula Dominicensis minor* Brisson).

Sylvia aestiva, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 35 ("Saint-Domingue").—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

Dendroica p. petechia, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Haiti).

Dendroica petechia albicollis, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (separated as distinct race).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, October, 1917, pp. 421-423 (discussion); Proc. Biol. Soc. Washington, vol. 40, March 5, 1927, pp. 34-35 (description, synonymy).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (Port-au-Prince, Sources Puantes, Caracol, Fort Liberté, Tortue Island).—DANFORTH, Auk, 1929, pp. 372-373 (Monte Cristi, Port-au-Prince, Les Salines).—LÖNNBERG, Fauna och Flora, 1929, p. 108 (Haiti).

Resident locally in the coastal mangrove swamps.

The golden warbler is probably more common than present records indicate since it lives in mangrove swamps that few observers enter except to skirt the edges of the interlacing growth of roots and stems that stand in mud and water. Here in a humid atmosphere, cut off from cooling breezes, with the heat at times almost suffocating there may be heard a sudden outburst of song that often comes from such dense tangles that the singer may not be seen. At some alarm however a beautiful golden yellow bird may appear for a few seconds, gleaming amid the heavy green of the leaves behind which it disappears as soon as its curiosity is satisfied.

Peters, the first to record this bird in the Dominican Republic, secured three near Monte Cristi February 16 and 17, 1916, these being the only ones seen. Wetmore collected a male May 11, 1927, in mangroves at San Lorenzo Bay. Danforth says that in 1927 golden warblers were fairly common in mangroves at Monte Cristi, and in a dry creek bed near the sea between Monte Cristi and Dajabón.

Two of the older descriptions by Brisson, namely his *Ficedula Dominicensis*, and *Ficedula Dominicensis minor* are of uncertain geographic assignment as they are based on birds sent by Chervain to de Reaumur marked simply "S. Domingue." They may have come from the area known now as Haiti but this may not be certainly said. Vieillot, who confused this species with the yellow warbler of North America, also listed it from "Saint-Domingue" without giving certain locality.

The first specimen definitely assigned to Haiti is one listed by Ritter in 1836. There are two in the United States National Museum taken at Port-au-Prince March 3, 1866, by A. E. Younglove. Bartsch found the golden warbler near Jérémie April 15 and 16, 1917, and collected one near St. Marc April 21, and four near Port-au-Prince April 25. Beebe recorded it in 1927 without definite locality, and in that same year Wetmore saw one at Sources Puantes March 29, and found the bird common at Aquin April 3 and Caracol April 27, collecting an adult female at the latter locality. Abbott secured two at Port à l'Ecu June 26, 1917. Danforth in 1927 found a few near Port-au-Prince and numerous individuals near Les Salines. Bond records the golden warbler from Port-au-Prince, "Sulphur Springs" (=Sources Puantes), Caracol, and Fort Liberté and Tortue Island. Poole and Perrygo secured an excellent series on Tercero, Ratas, Toruru and Monte Chico Islands in the Seven Brothers group from January 29 to February 4, and collected one at Fort Liberté February 8, 1929.

The differences between the golden warblers of Hispaniola and of Jamaica, which according to J. L. Peters is to be know as *Dendroica*

petechia eoa (Gosse³⁷) were first indicated by Bartsch in July, 1917, and a few weeks later were discussed more fully by Peters. The more extended series examined by Wetmore bears out fully the distinctness of the Hispaniolan form, which differs from the bird of Jamaica in being lighter and more golden yellow, less olive yellow above, with the forepart of the crown more orange, and less rufescent, the yellow of the underparts more intense, and the size slightly smaller.

Following are measurements of our series of *albicollis*.

Eighteen males, wing 59.3–64.5 (62.5), tail 47.3–53.0 (50.5), culmen from base 11.0–13.3 (12.6), tarsus 19.9–22.0 (21.0) mm.

Five females, wing 57.8–63.0 (60.3), tail 47.8–50.2 (49.2), culmen from base 11.2–13.2 (12.4), tarsus 19.8–21.0 (20.6) mm.

The few localities now known at which the golden warbler has been found can hardly represent the true range of the bird in Hispaniola. It should occur along the coast wherever there are extensive growths of mangroves.

The golden warbler is from 130 to 145 mm. long. The male is rich yellow below, streaked more or less distinctly with bright reddish brown, and bright yellowish olive green above, with the forehead washed with deep orange. The inner webs of the tail feathers are yellow. Females are duller in color and do not have the streaks or the orange color on the crown. Young are whitish below.

DENDROICA PETECHIA SOLARIS Wetmore

GONAVE GOLDEN WARBLER, PETIT OISEAU MANGLIERS

Dendroica petechia solaris WETMORE, Smithsonian Misc. Colls., vol. 81, no. 13, May 15, 1929, p. 1 (Étroites, Gonave Island).

Dendroica petechia albicollis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (part, Gonave Island).—DANFORTH, Auk, 1929, pp. 372–373 (part, Gonave Island).—LÖNNBERG, Fauna och Flora, 1929, p. 108 (Gonave).

Gonave Island; resident.

We have before us nineteen specimens of *solaris* all collected by Abbott. Two are marked February 25, 1918, and come from La Mahotiere on the south coast. At Étroites specimens were secured March 16, 17, 18, 19, and 20, and at Picmy one was taken July 7, 1920. Danforth found young on the wing in July, 1927. Bond lists the golden warbler as found on Gonave Island, and it seems to be common where there are growths of mangroves suitable for it.

Birds from Gonave Island when compared in series with *D. p. albicollis* appear slightly lighter above, with the yellow less clear, and also a little paler below than those from the main island, this color difference being more evident in females than in males. Gonave

³⁷ See Peters, Proc. Biol. Soc. Washington, vol. 40, March 5, 1927, pp. 32–34.

birds in the series at hand are also very slightly larger as the following will indicate:

Ten males from Gonave Island, wing 64.2–68.0 (65.9), tail 50.0–57.0 (52.1), culmen from base 12.3–13.1³⁸ (12.8), tarsus 20.5–22.3 (21.3) mm.

Seven females from Gonave Island, wing 61.3–63.2 (62.2), tail 46.9–51.0 (48.9), culmen from base 11.5–12.9 (12.2), tarsus 21.2–22.0 (21.4) mm.

Type specimen, male, wing 67.0, tail 57.0, culmen from base 12.5, tarsus 21.5 mm.

In size and brighter color the present race shows approach to *D. p. eoa* of Jamaica but is less golden yellow, with the dark coloration of the anterior part of the crown rufescent rather than orange brown.

In the collection from Picmy, Gonave Island there is a bird in full juvenal plumage taken by Abbott July 7, 1920. Above this individual is light brownish olive, somewhat more yellowish on the crown; lores, a line over the eye and a line of feathers across the lower eyelid pale olive-buff; ear-coverts deep olive-buff; wing quills dull blackish, with proximal half of primaries margined with yellowish citrine; distal half of primaries and secondaries edged with whitish; greater wing coverts blackish tipped and edged with cartridge buff to form a wing bar; middle and lesser coverts light yellowish olive, the former edged with cartridge buff to form a second wing bar; rectrices blackish edged externally with olive-yellow, this color especially prominent toward the base; inner webs of rectrices strontian yellow; throat and under tail coverts olive-buff; breast deep olive buff; abdomen pale olive-buff; under wing-coverts and inner margins of primaries citron yellow. One adult female has patches of grayish white on the throat and chest. The type specimen of the race (No. 278738, U.S.N.M.) was taken at Étroites March 18, 1920.

DENDROICA TIGRINA (Gmelin)

CAPE MAY WARBLER, PETIT CHIT

Motacilla tigrina GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 985 (Canada).

? *Figuier à gorge jaune*, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 288–289 (“Saint-domingue”).

? *Ficedula Ludoviciana* BRISSON, Ornith., vol. 3, 1760, pp. 500–502, pl. 26, fig. 4. (“Saint-domingue”).

Sylvia tigrina, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2; 1807, p. 34 (migrant).

Sylvia maritima, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

Sylvicola tigrina, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Haiti).

³⁸ Average of nine.

Perissoglossa tigrina, TRISTRAM, Cat. Coll. Birds belong. H. B. Tristram, 1889, p. 174 (Dominican Republic).

Dendroica tigrina, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti); Birds Haiti and San Domingo, March, 1884, pp. 25-26 (winter).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).

Dendroica tigrina, CORY, Cat. West Indian Birds, 1892, p. 117 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 11 (specimens).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (believed to breed).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 421 (Monte Cristi, Jaibón, Sosúa, Arroyo Savana).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (migrant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 322 (San Juan, specimens).

Migrant from North America, very common.

Though the Cape May warbler is found through the Greater Antilles Hispaniola appears to be the winter metropolis of the species as the birds are found throughout the island often in considerable numbers. In fact their abundance in some localities is almost bewildering to one accustomed to their rarity as migrants in the eastern United States.

The species was known to the earliest collectors, as Brisson in 1760 and Buffon in 1778 both describe what appears to be this bird, though the species concerned in their notes is somewhat open to question. Vieillot recorded it certainly in 1807, and Ritter in 1836 reported a specimen shot in Haiti.

From the Dominican Republic Tristram received one from A. S. Toogood in 1887, while Cherrie found it in the southern part of that republic until April 6, 1895, taking 21 specimens. Verrill who collected a considerable series (now in the collection of J. H. Fleming) from December 27, 1906, to March 18, 1907, writes³⁹ that "there appear to be two forms; one, the common North American bird, the other, more richly colored, with distinctly chestnut breast, deep-yellow wing-bars, and rich—almost orange—yellow breast and belly. As young birds in nestling plumage, as well as females containing eggs ready for the nest. were obtained, I consider it possible to separate the resident bird from the northern form as a local variety or subspecies." We believe his observation as to breeding in Hispaniola certainly erroneous since the species nests only in the far north, reports of a breeding colony in the mountains of Jamaica being also due to a mistake on the part of the observer. Peters found the Cape May warbler common on the north coast and collected five specimens at Monte Cristi, Jaibón, Sosúa, and Arroyo Savana. Abbott secured one at Sánchez October 23, 1916, and one at Polo in the Bahoruco Mountains, March 4, 1922. R. H. Beck collected a fe-

³⁹ Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365.

male and another bird with sex not marked at Santo Domingo City, Dominican Republic, October 14 and 20, 1916. Moltoni received specimens from Ciferri taken near San Juan at Corral de los Indios October 7, 1928, and at Sabana San Thomé November 5 and December 28, 1928, and October 1, 1929.

In Haiti the Cape May warbler seems more common than in the eastern republic. Younglove collected two near Port-au-Prince February 20 and April 19, 1866, which are still in the collections of the United States National Museum. Cory in 1881 found the species "very abundant in February and March." Bartsch in April, 1917 recorded it at all points visited, collecting specimens at Gloré April 3, Trou Caïman April 4, Petit Goave April 9, Trou des Roseaux April 13, Jérémie, April 15, and Morne à Cabrits April 24. His last record is one seen near Port-au-Prince April 27. W. L. Abbott found the species common, taking specimens at Jérémie November 19 and 24 and December 1, 1917, La Mahotiere, Gonave Island February 22, 1918, Anse à Galets, Gonave Island March 6, 1920, and Tortue Island February 2, 1917. In 1927 Wetmore recorded the last one seen near Hinche April 22. He found the species common over the high summit of La Selle where it was often seen in weeds, bracken and other low cover near the ground; and observed it as well in the logwoods and mesquites of the hot lowlands. On April 7 near La Tremblay many were observed, a number gathering to scold sharply at burrowing owls resting in the scrub. Bond found the Cape May warbler on Gonave Island and reports it as common. Poole and Perrygo secured an excellent series of both sexes as follows: St. Michel December 29, 1928, L'Atalaye January 8, St. Raphael January 12, Dondon January 19, Fort Liberté, February 6, 7 and 13, Cerca-la-Source, March 26, and En Café, Massacrin, and Plaine Mapou on Gonave March 4, 7, 9, and 11, 1928. March specimens of both sexes are in partial molt on the throat.

The Cape May warbler is of ordinary warbler size being about 125 mm. long. The male is olive green above, more or less indistinctly streaked with black, with the rump yellowish, and a large patch of white on the wing coverts. There is a yellowish line over the eye and a black line through it. The sides of the head are rufous this being a character that marks it at once from all other warblers of the region. The sides of the neck and breast are yellow, the latter is streaked with black, and the abdomen is white. The adult female is similar but much duller. The young are dull grayish olive green above and whitish below, streaked indistinctly with dusky.

DENDROICA PINUS CHRYSOLEUCA *Griscom*

HISPANIOLAN PINE WARBLER

Dendroica pinus chrysoleuca GRISCOM, Amer. Mus. Nov., no. 71, April 30, 1923, p. 5 (Loma Tina, Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (La Selle, Cerca Cabrajal).—DANFORTH, Auk, 1929, p. 373 (La Vega).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 322 (Loma del Medio, specimen).

Dendroica pinus, CORY, Birds Haiti and San Domingo, March, 1884, p. 33 (La Vega, breeding).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—EKMAN, Est. Agr. Moca, Ser. B, Bot., No. 15, December, 1929, p. 10 (La Pelona).

Dendroica vigorsii, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Dominican Republic).

Resident in forests of pine; hence so far as known confined to the hills of the interior.

As one wanders through the beautiful pine forests of the highlands of Hispaniola, there comes suddenly to the ear a low, trilling song that to the uninitiated might be merely the stridulation of some insect but that in fact gives notice of the presence of the pine warbler. Gazing aloft, after careful watching the bird may be seen working actively among the branches at such an elevation above the ground that there is perceived merely a glint of the yellow breast. When familiar with the species and its habits one comes to expect its calls wherever pines are encountered though there may be only two or three scattered trees on an otherwise open slope. The birds are most common in the great stands of pine on the interior of the Dominican Republic.

The pine warbler was first recorded by Cory who secured several young birds near La Vega, in July, 1883, indicating that the species nested on the island. It was reported by Verrill as common in the pine forests, apparently in this same region, as this traveler entered the region of pines only at La Vega and Miranda. Abbott found it common in the pine forests at El Río and Constanza, collecting his first specimen, a male, at Constanza on September 24, 1916, and others on April 11 and 29, 1919. At El Río he collected three on May 13 and 15, 1919, noting that a female taken on the latter date contained a nearly formed egg. R. H. Beck found it in 1917 on Loma Tina and Loma Rucilla.

In 1927 Wetmore heard the songs of the pine warbler on May 18 as soon as he had entered the pine forests above La Vega and observed the birds frequently in suitable localities on the trail to Constanza. The species was fairly common at the latter point so that nine were prepared as skins between May 19 and 27. Often the birds were difficult to locate as they frequently ranged twenty meters from the ground among limbs that moved constantly in the wind. Occasion-

ally one or two flew out with quick, tilting flight and passed off over the trees in exactly the same manner that migrant warblers affect, but the pine warbler here is resident and all those taken were breeding. In early morning they were found at times among the lower branches of the trees, and when feeding worked about very actively. Often they rested quietly for many minutes, singing at intervals and dressing their plumage. Even at Constanza where there were great expanses grown with pines these warblers were often encountered where two or three pine trees stood in the open valley distant from the forests. Danforth found them June 29 and 30, 1927, in the pines above La Vega. Ekman found them in some numbers on the high slopes of La Pelona and collected one for Ciferri on Loma del Medio April 26, 1929.

The first definite report for the species in Haiti seems to be specimens secured by Wetmore in the pine forests on the summit of La Selle, where the birds were recorded from April 9 to 15, and four were taken April 10 and 13. The birds were fairly common and were heard singing regularly. They were seen at times in company with migrant warblers from North America. A breeding male was collected April 10. On April 17 at Chapelle Faure one was singing from two pines growing on a long slope otherwise barren of trees. James Bond collected a pair at Cerca Cabrajal May 3, 1928, where he says they are found in small numbers, and a male at Furcy June 7, 1928. He recorded them also on La Selle.

The pine warbler of Hispaniola was described as distinct by Mr. Griscom from three specimens collected by R. H. Beck, the type coming from Loma Tina January 10, 1917, and the other two from Loma Rucilla. The excellent series now available when compared with the pine warbler of the United States shows that *chrysoleuca* is distinguished by being slightly brighter yellow and clearer white below, with the light wing bars somewhat narrower.

Following are measurements of *D. p. chrysoleuca* from the series in the United States National Museum:

Males, 14 specimens, wing 65.9–71.8 (68.5); tail 50.0–58.2 (53.4), culmen from base 11.3–12.7 (11.8); tarsus 18.0–19.7 (18.8) mm.

Females, 4 specimens, wing 64.6–67.3 (65.6), tail 49.0–51.8 (50.3), culmen from base 11.4–11.8 (11.6), tarsus 17.8–18.8 (18.2) mm.

Stone⁴⁰ has shown that the specific name of the pine warbler is *pinus* of Wilson instead of *vigorsii* of Audubon.

The pine warbler is about 130 mm. in length, yellowish green above, with dusky wings and tail, and two whitish wing bars. Below it is bright yellow on the breast, lined faintly and indistinctly with greenish olive, and white on the abdomen.

⁴⁰ Auk, 1921, pp. 280–281.

DENDROICA CORONATA CORONATA (Linnaeus)

MYRTLE WARBLER, PETIT CHIT

Motacilla coronata LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 333 (Near Philadelphia, Pennsylvania).

Sylvia coronata, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

Sylvicola coronata, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic).

Dendroeca coronata, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti); Birds Haiti and San Domingo, March, 1884, p. 30 (Pétionville).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHRISTY, Ibis, 1897, p. 320 (Río Yuna, Sánchez).

Dendroica coronata, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (common).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 420-421 (Monte Cristi, Sosúa).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Haiti).

Dendroica coronata coronata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (migrant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 69, 1929, p. 322 (San Juan, specimens).

Migrant from North America, common.

The myrtle warbler apparently is more common in the eastern part of Hispaniola than in the west as the records of greatest abundance come from the Dominican Republic.

The species was first reported by Sallé who listed it without comment. W. M. Gabb received a specimen in alcohol taken by Charles A. Fraser at Puerto Plata that came later to the United States National Museum. (It bears no date but was entered in the catalogue on January 11, 1882). Cherrie, working in 1895 in the southern part of the republic, remarks of it merely "not common, and none seen after March 27." Christy found it common in undergrowth along the Río Yuna and near Sánchez but says that he seldom saw it in the interior. Verrill reported it as very common, a statement borne out by a long series of specimens that he secured in 1907, now in the collection of J. H. Fleming of Toronto. These include one from Caña Honda January 3, four from El Valle January 17 and 18, eight from Sánchez January 21, 23, 24 and 26, twenty-four from Samaná January 30 and February 4 to 20, and one from La Vega January 18. Of this long set it is interesting to note that eleven are males and twenty-seven females. Peters secured two females at Monte Cristi, where he found the species abundant both in the cactus forests and the other scrub, and at Sosúa. Their numbers here decreased by March 15 and by April 1 practically all had gone, though a straggler was taken at Sosúa April 10. Beck in 1917 secured specimens on Loma Tina Janu-

ary 20 and 24, on Loma Rucilla February 27, and at Túbano March 6. Ciferri collected three near San Juan at Sabana San Thomé October 1, 1929.

Records of the myrtle warbler for Haiti at present are comparatively few. Ritter lists a specimen in his work published in 1836. Cory in 1881 reported the bird as very common in the "neighborhood of Le Coup" (Pétionville). Bartsch in 1917 collected one "between St. Marc and Port-au-Prince" April 21, and saw others near Port-au-Prince April 25 and 27. Abbott secured one on Tortue Island February 4, 1917, and one on Grande Cayemite January 14, 1918. In 1927 Beebe reported two; and Wetmore recorded one on April 6 at the home of Dr. Geo. F. Freeman in Port-au-Prince. Bond found them common. Poole and Perrygo took two of four seen on January 31, 1929, on Tercero Island in the Seven Brothers group. Others were secured at Fort Liberté February 13 and 16, Pont Sondé February 27, and Cerca-la-Source March 26. Of ten specimens that they collected eight are females.

The adult male myrtle warbler is bluish gray above, streaked with black, and white below, with breast and sides heavily marked with black. The female and immature are similar but are browner with the streaks more obscure. In any plumage there are two white wing bars, and the birds are marked from all other warblers by the presence of four more or less distinct spots of yellow, one on either side of the breast, one on the rump, and one (usually partly concealed) on the crown. The bird is from 130 to 140 mm. long.

DENDROICA CAERULESCENS CAERULESCENS (Gmelin)

BLACK-THROATED BLUE WARBLER, PETIT CHIT

Motacilla caerulescens GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 960 ("S. Dominici"=Hispaniola).

Blue Flycatcher, EDWARDS, Glean. Nat. Hist., vol. 5, 1758, p. 91, pl. 252 (taken at sea near Hispaniola).

Fauvette bleuâtre de Saint-Domingue, BUFFON, Hist. Nat. Ois., vol. 5, 1778, p. 164 (brief description of male).

Figuier Bleu, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 304-305 (based on Edwards' blue flycatcher).

?*Parus coeruleus*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).

Sylvia caerulescens, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 26 (winter).

Sylvicola canadensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).

Dendrocca caerulescens, CORY, Birds Haiti and San Domingo, March, 1884, pp. 26-27 (winter).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Dendrocca caerulescens, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).

Dendroica caerulescens, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (migrant).

Dendroica caerulescens, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (specimens).

Dendroica c. caerulescens, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (Haiti, specimen).

Dendroica caerulescens caerulescens, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 421 (Chocó, Los Toritos, specimens).—PENARD, Auk, 1926, p. 377 (one at sea).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (migrant).—MOLTONI, Att. Soc. Scienz. Nat., vol. 68, 1929, pp. 322-323 (San Juan, specimens).

Winter migrant from North America; common.

The black-throated blue warbler is a common winter visitant in Hispaniola arriving after the middle of September and in October, and leaving northward by the end of April or the middle of May. The species inhabits woodlands from sea-level to the tops of the highest mountains.

The first note of this bird for the region is that of Edwards who describes and figures a male that he writes was "taken at sea, in November 1751, by the late Thomas Stack, M. D. and F. R. S. in his Voyage to Jamaica, as the ship lay becalmed, about eight or ten leagues distant from Hispaniola." Buffon described a male as the Fauvette bleuâtre de Saint-Domingue, the basis for Gmelin's *Motacilla caerulescens*, and also included in another place reference to Edwards' bird, terming it the figuier bleu. Vieillot found this species common on the island.

The first definite record for the Dominican Republic is that of Sallé who says that he found the black-throated blue warbler among the pine-covered hills of the interior. Tristram in 1884 received one from C. McGrigor, and Cherrie collected 49 specimens, stating that he found it the most common of North American migrants. Verrill obtained a series, now in the collection of J. H. Fleming, as follows: fifteen at Sánchez December 24, 1906, January 22 to 24, February 27, and March 7, 1907, and eight at El Valle, January 9 to 18, 1907. Peters collected birds at Chocó and Los Toritos reporting that on the north coast they were apparently mainly migrant as he saw the first March 11, while by March 25 they had reached their greatest abundance. None were observed after April 1. W. L. Abbott writes that in the Dominican Republic these warblers became abundant by the middle of September, 1916. He collected one near El Río, October 5, 1916, and one near Paradis, January 31, 1922. Specimens in the American Museum of Natural History were taken by Beck at Sánchez October 30 and 31, and November 3, 11 and 14, at La Vega December 4, 1916, and on Loma Rucilla March 16, 1917. All of these have been identified by Wetmore as true *caerulescens*.

Moltoni received skins from Sabana San Thomé, near San Juan, taken March 5, October 9, 21, 23 and 25, 1928.

From Haiti A. E. Younglove forwarded three males taken at Port-au-Prince to the Smithsonian, two secured on March 3, and one on April 13, 1866. Cory in 1881 reported them as abundant in February and March. Bartsch collected one at Pétionville April 1, 1917, and Abbott secured two near Jérémie, a female November 22, and a male November 29, 1917. He reported that he saw this species on Tortue Island until the middle of May, 1917. At sea on the morning of October 27, 1921 T. E. Penard found a male black-throated blue warbler on board his ship which had left Port-au-Prince the evening before, indicating a late date of arrival in fall migration. In 1927 Wetmore collected a male near Fonds-des-Nègres April 5, the only one seen at this point. From April 10 to 15 the species was common on the summit of La Selle being found in thickets and also in the low bracken that carpeted the ground in the pine-lands. The majority seen were females. He observed one male at the summit of Morne à Cabrits on the road to Mirebalais. Poole and Perrygo in 1929 collected specimens at St. Raphaël January 11, Dondon January 19, and Cerca-la-Source March 24 and 26. On Gonave Island they secured skins at En Café March 4 and 5 and Massacrin March 9.

The black-throated blue warbler is the same in size as the myrtle warbler. The male is grayish blue above, black on the sides of the head, throat, foreneck, and sides of the body, and white elsewhere below. The female is quite different, being greenish above and yellowish buff below. Both sexes are easily told by the prominent white spot near the center of the wing.

DENDROICA CAERULESCENS CAIRNSI Coues

CAIRNS' WARBLER

Dendroica caerulescens cairnsi COUES, Auk, 1897, p. 96 (Craggy Mountain, Buncombe Co., N. C.).

Migrant from North America; apparently very rare.

The only record for Hispaniola at present is that of a male collected at El Río, Dominican Republic, October 5, 1916 by W. L. Abbott. This form of the black-throated blue warbler is recognized as the bird that breeds in the mountains from Pennsylvania south to western North Carolina. The winter home is not definitely known except that one specimen has been taken at Matanzas, Cuba (February 14, 1900).

This race in the male is distinguished from *D. c. caerulescens* by darker coloration above, with extensive mixture of black in the back. The female is slightly darker. The race is poorly character-

ized since it is usual to find males throughout the breeding range of *caerulescens* with much mixture of black on the dorsum, and may after all represent merely an individual color phase rather than a race with distinct geographic range. Its status should be carefully investigated with proper series of breeding birds as it may finally be found not recognizable.

DENDROICA DOMINICA DOMINICA (Linnaeus)

YELLOW-THROATED WARBLER, CHARDONNET, PETIT CHIT

Motacilla dominica LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 334 (Hispaniola).

Ficedula Dominicensis cinerea BRISSON, Ornith., vol. 3, 1760, pp. 520-522 pl. 27, fig. 3 ("S. Domingue").

Cou-Jaune, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 165-169 (description, habits; said to breed).

Figuier cendre à gorge jaune, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 300-301 ("St. Domingue").

Gorge-jaune de St. Domingue, DAUBENTON, Planch. Enl., pl. 686, fig. 1 (figured).

Sylvia pensilis, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 20-21, pl. 72 (description).

Sylvicola pensilis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic).

Dendroica dominica, CORY, Birds Haiti and San Domingo, March, 1884, pp. 27-28 (common, winter).—TRISTRAM, Cat. Coll. Birds belong. H. B. Tristram, 1889, p. 177 (Rivas, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 32 (listed).

Dendroica dominica, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Dominican Republic, common).

Dendroica dominica dominica, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 420 (Bulla, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (Port-au-Prince, Gonaïves, Kenskoff).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 323 (San Juan, Monte Viejo, specimens).

Winter visitant from North America; locally fairly common.

The yellow-throated warbler is another North American species with the type locality in Hispaniola as the Latin name is based largely on the account of Brisson, who described a specimen sent by Chervain to de Reaumur. According to Buffon and Vieillot this species was believed to be resident on the island and to nest there but this seems to be in error as there is no record of it during the period of northern summer.

In the Dominican Republic the yellow-throated warbler is first recorded by Sallé who lists it without statement as to its abundance. Tristram received one from Rivas (formerly Almercen) taken in 1887 by A. S. Toogood. Verrill in 1907 found it common and se-

cured a series (now in the collection of J. H. Fleming) at the following localities: Caña Honda, one, January 4; Sánchez, four January 21 and 24, February 26, 27 and 28; Samaná, nineteen, January 30 and February 2 to 23; Río San Juan, one, February 1; and La Vega, one, March 13. Peters collected two at Bulla on February 12, 1916. Abbott obtained five at Constanza September 22, 23 and 26, 1916, one at El Río, October 9, 1916, and one at Mao, February 23, 1921. Beck secured two at La Vega, November 28, 1916. Moltoni received skins from Ciferri taken at Sabana San Thomé, near San Juan, October 23, 1928, and at 1,200 to 1,500 meters elevation on Monte Viejo August 26, 1929. The latter must represent early migrants and not breeding birds as he supposed.

In the Republic of Haiti Bartsch saw one a short distance north of Port-au-Prince, April 27, 1917. Bond records others at Port-au-Prince, Gonaïves⁴¹ and Kenskoff. Poole and Perryo collected a male at Massacrin on Gonave Island, March 9, 1929, this being the only Haitian specimen of which we have record.

The yellow-throated warbler is similar in size and form to other migrant warblers of the genus *Dendroica* found on the island. Above it is deep gray, with two white bars across a black wing, a blackish forehead, a white line over the eye that is yellow at the base of the bill, black cheeks, bright yellow throat, and the rest of the underparts white, with the sides streaked with black.

DENDROICA PALMARUM PALMARUM (Gmelin)

PALM WARBLER, BIMBELÉ, FAUSSE LINOTTE, 'TI BON AMI, PETIT CHIT

Motacilla palmarum GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 951 ("S. Dominici"=Republic of Haiti).

Le Bimbelé, ou La Fausse Linotte, BUFFON, Hist. Nat. Ois., vol. 5, 1778, pp. 330-331 (described from a painting by Deshayes).

? *Passer maculosus*, FEUILLÉE, Journ. Observ. Phys. Math. Bot., vol. 3, 1725, p. 386 (specimen, Les Cayes).

Sylvia palmarum, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 21 (supposed to be resident).

Sylvicola palmarum, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (listed).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).

Dendroeca palmarum, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (winter); Birds Haiti and San Domingo, March, 1884, p. 32 (winter).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHRISTY, Ibis, 1897, p. 321 (Sánchez, specimen).

Dendroica palmarum, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, 1909, p. 365 (Dominican Republic, abundant).

⁴¹ Mr. Bond states (in a letter) that this should be Gonaïves instead of Gonave as listed in his report, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512.

Dendroica p. palmarum, BEEBE, Zool. Soc. Bull., vol. 30 1927, p. 141; Beneath Tropic Seas, 1928, p. 223.—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Dendroica palmarum palmarum, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 420 (Bulla, specimen; Sosúa).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 512 (Gonave, Tortue, Caracol).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 323 (San Juan, specimens).

Winter visitant from North America; common.

Though inconspicuously marked the palm warbler is easily distinguished from the host of other migrant warblers (many of which are superficially similar in color) by its habit of constantly twitching the tail up and down whether in the trees or bushes or walking on the ground, a steady, wagging motion found among its relatives only in the water-thrushes, which are quite differently colored.

Gmelin's characterization of the palm warbler is taken from Buffon's account of the bimbelé or fausse linotte. Since Buffon's statement is made on the basis of a painting of the bird and a description of its habits supplied by Deshayes the type locality may be certainly restricted to the Republic of Haiti.

For the Dominican Republic the earliest report of this species is that of Sallé who makes no statement regarding it except to include it in his list. Cherrie reported it in 1895 as fairly common from February 12 to April 1. Christy obtained one near Sánchez, January 28, 1895. Verrill found it abundant, nine specimens of his collecting, now in possession of J. H. Fleming, bearing the following data: Caña Honda January 4 and 12; El Valle, January 17; Sánchez, January 23; Río San Juan, February 1; Samaná, February 4, 12, and 19; and La Vega, March 16, 1907. Peters says that in 1916 he noted a few at nearly every locality visited prior to March 15, but saw few after that date, though he records one at Sosúa April 10. He collected one at Bulla. Abbott secured one at Jarabacoa October 14, 1916, and one at Constanza April 7, 1919. Beck took specimens at Santo Domingo City October 5, 10 and 12, at Sánchez November 22, and at La Vega November 28 and 30, 1916. Ciferri obtained skins at Sabana San Thomé near San Juan May 12, and October 19 and 21, 1928.

Buffon writes in 1778 that he received a picture and a record of observations on the habits of the palm warbler from Chevalier Lefebure Deshayes, a naturalist resident in the old French colony that now is Haiti, the earliest record for the bird in the limits of Haiti, unless the *Passer maculosus* of Feuillée shot near Les Cayes in March, 1705, should be, as appears probable from the description, the present species. Vieillot in 1807 believed that the palm warbler was resident in Haiti, an error, shared by Deshayes, as the species nests only in North America. Both Vieillot and Deshayes state that

it is known as bimbelé or fausse linotte. A. E. Younglove secured one at Port-au-Prince, January 26, 1866, which is still in the collection of the United States National Museum. Cory in 1881 reported it as common, and Bartsch in 1917 found it at Petit Goave April 9 (specimen), Trou des Roseaux April 13 (specimen) and 14, near Jérémie April 15 and 16, and near Port-au-Prince April 25 (specimens) and 27. W. L. Abbott shot one at Jérémie November 18, 1917, and one on Grande Cayemite Island January 10, 1918. Further he secured one at Moustique March 5, 1917, and one at Tortue Island, February 1, 1917. Wetmore in 1927, found the palm warbler common in Haiti until near the end of April. On March 29 one was observed in the mangroves at Sources Puantes flitting alertly through low branches or walking on the ground. One was taken at Fonds-des-Nègres March 31, and another on April 1 at the Étang Miragoane where the birds were common in logwood scrub. Several were seen April 3 at Aquin, others at L'Acul April 4, Fonds-des-Nègres April 5, and La Tremblay April 7. On La Selle the palm warbler was common from April 13 to 15, being found on the highest summit as well as spread through the open pine-lands. At Hinche these birds were common from April 20 to 25.

Bond records the palm warbler as a common migrant found on both Gonave and Tortue in addition to the main island. He collected his last specimen near Caracol April 28, 1928. Poole and Perrygo secured skins at L'Atalaye December 28, 1928, St. Michel January 3, St. Marc February 25, and Cerca-la-Source March 26, 1929. Others were obtained on Gonave Island, at En Café March 4, 6, and 7, and Plaine Mapou March 11. Ekman found this species on Navassa Island in October, 1928.

The palm warbler, from 125 to 140 mm. in length, is grayish brown, faintly streaked with dusky above, and has two faintly outlined brownish white wing bars, a more or less distinct crown-cap of bright reddish brown (much obscured in young birds and females) and a whitish line above the eye. Below it is buffy whitish streaked indistinctly with dusky and in some specimens washed heavily with yellow. There are prominent white spots near the tip of the tail. As has been already noted its steadily wagging tail is an excellent field mark.

DENDROICA MAGNOLIA (Wilson)

MAGNOLIA WARBLER, PETIT CHIT

Sylvia magnolia WILSON, Amer. Orn., vol. 3, 1811, p. 63, pl. 23, fig. 2 (Little Miami, near its junction with the Ohio; in magnolias near Fort Adams on the Mississippi; near Philadelphia, Pa.).

Dendroeca maculosa, CORY, Birds Haiti and San Domingo, March, 1884, p. 29 (Puerto Plata, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Dendroeca maculosa, CORY, Cat. West Indian Birds, 1892, p. 118 (Hispaniola).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Samaná, specimen).

Winter visitant from North America; apparently rare.

The only records for the magnolia warbler are of one collected by Cory at Puerto Plata, Dominican Republic, December 14, 1882, one reported by Verrill as taken at Samaná, Dominican Republic, and one shot by Perrygo at Cerca-la-Source, Dominican Republic, March 28, 1929. The species is reported rarely from Porto Rico and Cuba.

The magnolia warbler, a typical tree-haunting wood warbler in size and habits, is easily told from its relatives by its black tail with a sharply defined white band across the center of its underside, as in other species the white markings in the tail are at the tip. The adult male has the crown bluish gray, cheeks and forehead black with a white line over the eye; back black with the feathers edged with greenish; a large patch of white on the wing coverts; rump yellow; under surface yellow streaked with black; under tail coverts white. The immature bird is olive green above with nearly concealed black spots, yellow rump, and two narrow wing bars. The tail is as in the adult.

DENDROICA DISCOLOR DISCOLOR (Vieillot)

PRAIRIE WARBLER, PETIT CHIT

Sylvia discolor VIEILLOT, Ois. Amér. Sept., vol. 2, 1807 (1809?), p. 37, pl. 98. (Eastern United States or Greater Antilles).

Sylvicola discolor, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Haiti).

Dendroeca discolor, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (winter); Birds Haiti and San Domingo, March, 1884, p. 31 (winter).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Dendroeca discolor, CORY, Cat. West Indian Birds, 1892, p. 118 (Haiti, Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith., ser., vol. 1, 1896, p. 11 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (common).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 420 (Monte Cristi, Sosúa, Río San Juan, specimens).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 224 (Haiti, specimen).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Haiti, Gonave, Tortue).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 323 (Haina, San Juan, specimens).

Winter visitant from North America; common.

The prairie warbler is found mainly in the coastal plain and lower hills and does not appear to go into the high, mountainous interior

of the island. It ranges usually in thickets and low trees, often feeding near the ground.

The earliest definite record for the Dominican Republic is that of Cherrie who found it near the south coast from February 13 to April 2 but says that it was not common at any time. Verrill reported it as common. Of specimens that he secured in 1907 eight now in the collection of J. H. Fleming of Toronto were taken as follows: Caña Honda, January 1; El Valle, January 17 and 18; Samaná, January 31, February 2 and 10; Río San Juan February 1, and La Vega, March 17. Peters shot five at Monte Cristi, Sosúa, and Río San Juan on the north coast, and says that they were more common in March when they were in migration than earlier during winter. He heard them singing at the end of March and in April. W. L. Abbott secured a female at Trujín near the southwestern coast of the republic February 8, 1922. R. H. Beck collected specimens at Santo Domingo City September 27 and 29, and October 2, 7, 10, 12 and 24, 1916, indicating an early fall arrival. Ciferri, obtained skins for Moltoni at Haina in December, 1925, near San Juan at Corral de los Indios October 7, 1928, and at Sabana San Thomé October 7, 21 and 28 and December 28, 1928.

In Haiti A. E. Younglove secured a female at Port-au-Prince March 4, 1866, which was reported in 1867 by Bryant and is still in the United States National Museum. Cory found this species not uncommon during the winter months. W. L. Abbott secured two on Gonave Island in 1920, one without definite locality on March 4, and one at Étroites March 16. He collected one on Tortue Island, January 31, 1917. In the same year Bartsch recorded the prairie warbler at Thomazeau April 2; near Gloré, on the Étang Saumâtre April 3 (specimen); Petit Goave April 9 (specimen); and near Jérémie April 10 and 11. Wetmore in 1927 recorded it at a number of localities. On March 29 in the outskirts of Port-au-Prince he observed several in mesquite scrub, working about in the bushes without uttering a sound. Others were seen at Carrefour on the same day, at Mont Rouis March 30, at Fonds-des-Nègres March 31 and April 5, and near the Étang Miragoane April 1. They were common in dry scrub near Aquin on the south coast April 3, and several were seen at L'Acul April 4, and La Tremblay April 7. The last were observed at Hinche from April 20 to 22, this being the latest date of record for the island. Bond records the prairie warbler as abundant and says that he found it common on Gonave and Tortue Islands. Poole and Perrygo collected a considerable series, dates and localities being as follows: St. Michel, December 26, 1928 and January 15, 1929, L'Atalaye, December 28, 1928, Tercero Island, in the Seven Brothers group, January 31, Fort Liberté, February 6 to 19, St. Marc, Febru-

ary 25, Pont Sondé, February 27, and Cerca-la-Source, March 24 and 27, 1929. On Gonave Island specimens were shot at En Café, March 4, 6 and 7, Massacrin, March 9, and Plaine Mapou, March 11, 1929. Birds from Gonave are in partial molt on the throat.

The prairie warbler is among the smallest species of its genus and though brightly colored is sometimes identified with difficulty by the novice. Above it is bright yellowish green with a slight mixture of chestnut, often nearly concealed, in the center of the back that marks it from its relatives. There is a light bar more or less evident in the wing, and the outer tail feathers are prominently white. Below it is bright yellow, this color covering the sides of the head and forming a line above the eye. There is a heavy black mark on the side of the head well below the eye, and prominent black streakings on the sides. The female is somewhat duller than the male.

DENDROICA PENNSYLVANICA (Linnaeus)

CHESTNUT-SIDED WARBLER

Motacilla pensylvanica LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 333 (near Philadelphia, Pa).

Dendroica pensylvanica, BARTSCH, Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, p. 132 (listed from Haiti).

Paul Bartsch recorded this species as seen at Port-au-Prince and St. Marc April 21 and 22, 1917, but as no specimens were taken and the species is not recorded from the West Indies, (except casually from the Bahamas), its southward migrations carrying it to the southwest through eastern Mexico, it is here included in the hypothetical list.

It is of usual warbler size as found in this genus, and is marked in breeding plumage by bright yellow crown and a chestnut streak on the sides, being otherwise pure white below. Immature birds are clear white below, and above are yellowish green indistinctly streaked with blackish.]

DENDROICA STRIATA (J. R. Forster)

BLACK-POLL WARBLER, PETIT CHIT

Muscicapa striata J. R. FORSTER, Phil. Trans., vol. 62, 1772, pp. 406, 428 (Fort Severn, West Coast of Hudson Bay).

Dendroica striata, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Gonave, seen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 323 (San Juan, specimens).

Winter migrant from North America; apparently rare.

The black-poll warbler so far as known was first obtained in Hispaniola by Kaempfer, who secured three specimens in the Yuna swamps on October 8, 18, and 22, 1922. We are indebted to Ernst

Hartert for these records and for the privilege of including them in this account. Ciferri collected six at Sabana San Thomé near San Juan September 27 and October 9, 19, and 23, 1928. James Bond records a small band of blackpolls on Gonave Island May 15, 1928, and states that he heard one utter its song.

The species is rare in migration elsewhere in the Greater Antilles.

The black-poll warbler is about the size of the myrtle warbler. The male has the crown black, ear-coverts white, nape streaked with black and white, the back and rump ashy gray streaked with black, and two white wing bars. Below it is white streaked on the sides with black. The female and immature birds are olive-green above, streaked with black, and white tinged with yellow below, with more or less distinct blackish streaks on the sides. The wing is marked as in the male.

SEIURUS AUROCAPILLUS AUROCAPILLUS (Linnaeus)

OVENBIRD, PETIT CHIT

Motacilla aurocapillus LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 334 (at sea about thirty miles from Hispaniola).

Grivelette de Saint-Domingue, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, pp. 317-318 (migrant).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 204 (part).

Petite grive de St. Domingue, DAUBENTON, Planch. Enl., pl. 398, fig. 2 (figured).

Golden-crowned Thrush, EDWARDS, Glean. Nat. Hist., vol. 5, 1758, pp. 91-92, pl. 252 (Hispaniola).

Passer maculosus (part), FEUILLÉE, Journ. Observ. Phys. Math. Bot., vol. 3, 1725, p. 387 (specimen, Les Cayes).

Turdus coronatus, VIELLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 8 (winter).

Siurus aurocapillus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (winter).

Seiurus aurocapillus, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).—CORY, Birds Haiti and San Domingo, March, 1884, p. 34 (Gonaïves, Jacmel).—Cat. West Indian Birds, 1892, p. 119 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 11 (recorded).—CHRISTY, Ibis, 1897, p. 321 (La Vega, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (migrant, abundant).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 420 (Sosúa, Arroyo Salado, specimens).—PENARD, Auk, 1926, p. 377 (at sea, near Haiti).—EKMAN, Ark. för Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).

Seiurus aurocapillus aurocapillus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Haiti, Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 323 (Haina, San Juan, Moca, specimens).

Winter visitant from North America; common and widely distributed.

The ovenbird is found in thickets and scrubs in both humid and arid sections, where it walks about on the ground in search for food, and though not conspicuous it is not so shy as it is in its northern breeding ground. The fact that it *walks*, coupled with its black striped crown and white streaked breast, identifies it readily.

The species was found first in the Dominican Republic by Sallé. Cherrie reported it common at all points that he visited in the south of the republic in 1895, Christy shot an adult female at La Vega April 19, 1895, and Verrill found it abundant. Specimens in the collection of J. H. Fleming secured by Verrill were taken at Sánchez December 23, 1906, and January 23 and 25, 1907, El Valle January 18, Samaná January 30 to February 20 (nineteen skins), and La Vega March 18. Peters found the ovenbird at Sosúa and Arroyo Salado. It is seemingly more common on the north coast during spring migration as he found it common after March 15, increasing in numbers to the end of the month and continuing in undiminished abundance to April 10. R. H. Beck collected one at Santo Domingo City September 27, 1916. W. L. Abbott secured a male at Sánchez February 17, 1919.

The Ciferri brothers collected it at Haina in November, 1925, at Sabana San Thomé near San Juan October 19 and 25, 1928, and at Moca October 12, 1929.

Records for Haiti date back to March, 1705, when Feuillée reports an ovenbird from near Les Cayes, describing its colors carefully but telling little about it otherwise. Another early record of interest is that of Edwards who figures one taken November 1, 1751, at sea about 10 leagues from the coast of Hispaniola by Tho. Stack en route from London to Jamaica. Vieillot said that this species was found in winter, his records presumably referring to Haiti. Cory found it common near Gonaïves and Jacmel in 1881, and Bartsch reported it as common about Jérémie April 11 to 16, 1917, and at Trou des Roseaux April 14. W. L. Abbott secured it on Tortue Island February 2 and 7, 1917, Gonave Island February 20, 1918 and at Jérémie November 24, 1917. T. E. Penard reports one aboard ship to the north of Haiti October 27, 1921, his steamer having left Port-au-Prince northward bound the night before, indicating a late migration date.

In 1927, Wetmore found one March 29 in the outskirts of Port-au-Prince, one April 7 at La Tremblay, one April 9 at an altitude of 1,500 meters below Morne Cabaio on the slopes of La Selle, and one April 13 at 2,100 meters on Morne La Visite in the latter range. The records indicated carry the species from sea-level to the tops of the mountains and indicate well its general distribution. On April 20 he collected one at Las Cahobes and secured others at

Hinche April 22 and 23. Two were shot and another seen near Caracol April 26. Two males from Hinche and a male and a female from Caracol had the sexual organs very little developed indicating a breeding season still distant so that from the dates mentioned they must have been individuals from far north in the breeding range of the species. Bond records the last one seen on Gonave Island May 18, 1928. Poole and Perrygo collected specimens at St. Raphael January 11, Cerca-la-Source March 21 and 24, and at Massacrin on Gonave Island March 8 and 10, 1929. Ekman has recorded the ovenbird on Navassa Island in October, 1928.

Charles W. Richmond has called our attention to a matter concerning the type locality of the ovenbird that may be considered here. *Motacilla aurocapilla* Linnaeus,⁴² is based on the following references, "Briss. av. 3, p. 504. Edw. av. 91. t. 252." Turning first to Brisson there is found the description of Le Figuier a teste d'Or de Pensilvanie *Ficedula Pensilvanica auro-capilla*, taken from Edwards (p. 91, pl. 252). Brisson wrote his description from Edwards' plate and did not have a specimen. In Edwards there is given a fair representation of the ovenbird in color prepared from a specimen "taken at sea, in November, 1751, by the late Tho. Stack, M. D. and F. R. S., in his Voyage to Jamaica, as the ship lay becalmed, about eight or ten leagues distant from Hispaniola." Edwards supposed it to be a bird of passage from North America. At the close of his statement he adds the following:

"P. S.—Since my writing the above descriptions, I have received two of these same birds from my good friend Mr. W. Bartram, of Pennsylvania, which confirms my opinion, that they are birds of passage: for he says, they arrive there in April, and continue all the summer; he says, the golden-crowned thrush builds its nest upon the ground, and always chooses the south side of a hill" and so on with other details. From this postscript Brisson took his statement. "Habitat aestate in Pensilvanie" which gave Linnaeus his "Habitat in Pennsylvania" and "near Philadelphia, Pennsylvania" has been the accepted type locality. It now appears that Edwards' plate, and description on which the account of both Brisson and Linnaeus were based, was taken from a specimen secured at sea off Hispaniola so that the latter must be accepted as the type locality of the ovenbird.

The ovenbird is 145 to 155 mm. or more in length, greenish above, with the center of the crown deep buff, bordered on either side by a streak of black. Below it is streaked on breast and sides with black. The feet are very light brownish white.

⁴² Syst. Nat., ed. 12, vol. 1, 1766, p. 334.

SEIURUS MOTACILLA (Vieillot)

LOUISIANA WATER-THRUSH, PETIT CHIT

Turdus motacilla VIEILLOT, Ois. Amér. Sept., vol. 2, 1807 (1808?), p. 9, pl. 65 (Kentucky).

Sirus ludovicianus, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti, specimens).

Seiurus motacilla, CORY, Birds Haiti and San Domingo, March, 1884, pp. 35-36 (Pétionville, Puerto Plata, La Vega, specimens); Cat. West Indian Birds, 1892, p. 119 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Dominican Republic).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Haiti, Gonave Island).

Migrant from North America; fairly common.

The Louisiana water-thrush is found principally along little fresh water streams but comes to salt water during its migration movements. It spends much of its time on the ground at the edge of the water, steadily wagging the tail up and down as it walks about. When disturbed it frequently flies to a tree-limb to rest a moment before going down again to the ground.

In the Dominican Republic the species is first reported by Cory from specimens taken at Puerto Plata November 17, 1882, and August 12 and 14, 1883. The latter dates which indicate very early arrival in fall migration from the north caused Cory to believe that the species was resident for which however there is no basis. Cherrie secured one near Catarrey January 22, 1895. Verrill reports it "common during migrations, but confined to the vicinity of salt water," in which he seems to have confused it with the other species of water-thrush, which is found only along the coast, the present bird being the one that regularly goes inland. A specimen in the collection of J. H. Fleming, taken by Verrill was collected at Samaná February 20, 1907.

In Haiti a bird of this species was secured near Port-au-Prince, February 26, 1866, by A. E. Younglove. Cory collected two, one of which was shot at Pétionville March 2, 1881. He does not give the locality for the second one. Wetmore in 1927 observed one among mangroves at the sulphur spring at Sources Puantes on March 29, where it was in company with the other water-thrush. He saw one at the coffee experiment station at Fonds-des-Nègres March 31, and on April 2 collected one in that vicinity on the Rivière Seche at about 375 meters elevation. James Bond reports one from Gonave Island.

The Louisiana water-thrush is from 127 to 140 mm. in length. It is olive above, with a prominent white line extending over the eye.

Below it is white, tinged with cream buff on under tail-coverts and flanks, streaked heavily with dusky, the throat being clear white without markings.

SEIURUS NOVEBORACENSIS NOVEBORACENSIS (Gmelin)

WATER-THRUSH, PETIT CHIT

Motacilla noveboracensis GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 958 (Louisiana and New York).

Figurier brun de Saint-Domingue BRISSON, Ornith., vol. 3, 1760, pp. 513-515, pl. 28, fig. 5 ("S. Domingue").—VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 26, 34 (listed).

Seiurus noveboracensis, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 11 (Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Dominican Republic, part).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Gonave).

Seiurus noveboracensis noveboracensis, PENARD, Auk, 1926, p. 377 (at sea).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (San Juan, specimens).

Seiurus n. novaeboracensis, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 224 (Furcy).

Winter visitant from North America: fairly common.

This species of water-thrush is found in Hispaniola on muddy shores in the lowlands, principally in localities where the water is brackish or salt. It is most common among mangroves, the open arches of the roots affording it excellent cover under which it may forage for food.

The two forms of this species, *S. n. noveboracensis* and *S. n. notabilis*, occur together in winter in the West Indies, and as they may not be distinguished except in the hand the published records pertaining to them are in many cases of uncertain application. Those reports in literature that are not known definitely to belong to *notabilis* are here assigned arbitrarily under *S. n. noveboracensis*.

The only specimens of true *noveboracensis* from Hispaniola examined are two males secured by Verrill on Cayo Levantado, opposite Samaná, D. R., February 15 and 16, 1907, which are in the collection of J. H. Fleming, one collected by Poole and Perrygo at Fort Liberté, Haiti, February 8, 1929, and a male collected by W. L. Abbott on Gonave Island, Haiti, March 4, 1920.

Vieillot records a water-thrush in 1807, and Bryant in 1867 reports this bird from both the Dominican Republic and Haiti. Cherrie found this species on February 24 and March 16, 1895. On the first date he was at Aguacate in the interior, on the latter he was apparently at Santo Domingo City. Ciferri secured specimens at Sabana San Thomé near San Juan September 4, and October 23, 1928, and October 1, 1929. Bartsch records the present species along the coast north of Port-au-Prince April 21 and 22, 1917. In 1927,

Wetmore saw four among mangroves at Sources Puantes on March 29, and heard one singing, the song being abbreviated but still reminiscent of the northern breeding season. Several were observed April 3 in a mangrove swamp at Aquin on the south coast. Beebe has reported one seen at Furcy which would seem to be most unusual as this is in the uplands.

The water-thrush is very similar to the Louisiana water-thrush differing in very slightly smaller size, somewhat less conspicuous light streak over the eye, and distinctly yellow rather than buff tinge of the under surface, with the throat streaked like the remainder of the underparts. The pale yellow under surface is easily recognized once the bird is known.

SEIURUS NOVEBORACENSIS NOTABILIS Ridgway

GRINNELL'S WATER-THRUSH, PETIT CHIT

Seiurus naevius notabilis RIDGEWAY, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 12 (Shores of Como Lake, Carbon Co., Wyoming).

Seiurus noveboracensis, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (Dominican Republic, part).

Seiurus noveboracensis notabilis, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 419-420 (Monte Cristi, specimen).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (San Juan, specimen doubtfully identified).

Migrant from North America; apparently fairly common.

Grinnell's water-thrush has exactly the same habits as the preceding race, and like it is confined to the coastal plain, principally to muddy shores on brackish and fresh waters. This race was first recorded for the island by Peters who collected a female near the beach at Monte Cristi. There is a male in the collection of J. H. Fleming shot by Verrill on Cayo Levantado opposite Samaná, D. R., February 16, 1907. Moltoni has doubtfully identified one secured by Ciferri at Sabana San Thomé, near San Juan, on October 9, 1928.

Abbott shot one February 1, 1917 on Tortue Island, and Wetmore collected a male at the Étang Miragoane, April 1, 1927, and a female among mangroves near the sea at Caracol April 27, 1927. Two birds of this species were seen at the Étang Miragoane, a fact worth recording since this lake has fresh water and lies back some distance from the sea. Poole and Perrygo secured one at Fort Liberté, Haiti, February 14, 1929.

From these few records it appears that Grinnell's water-thrush, which is the breeding form of the interior of North America, is more common in winter in the West Indies than has been supposed. Other specimens should be collected at every opportunity until the relative abundance of the two forms under discussion is determined.

This race is so nearly similar to true *noveboracensis* that it may be identified certainly only on comparison with specimens in museums. It is distinguished mainly by more sooty less brownish dorsal surface, paler yellow underparts, and usually by slightly larger size, especially of the bill. Color seems better as a distinguishing character than size.

MICROLIGEAL PALUSTRIS (Cory)

HISPANIOLAN GROUND WARBLER, SIGUITA, PETIT CHIT

Ligea palustris CORY, Auk, 1884, p. 1, pl. 1 (col.), 1 fig ("Santo Domingo"—Rivas, D. R.); Birds Haiti and San Domingo, March, 1884, pp. 38-39, col. pl. (Rivas, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Ligia, SHARPE, Cat. Birds Brit. Mus., vol. 10, 1885, p. 349 (emendation).—CORY, Birds Haiti and San Domingo, March, 1884, p. 38 (emendation).

Ligia palustris, SHARPE, Cat. Birds, Brit. Mus., vol. 10, 1885, pp. 349-350 (description, range).

Microligea CORY, Auk, 1884, p. 290 (new name for *Ligea* Cory, preoccupied).

Microligea palustris, CORY, Auk, 1884, p. 290 (type of *Microligea*); Cat. West Indian Birds, 1892, p. 119 (Dominican Republic).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 12 (Santo Domingo City, Honduras, specimens).—VERILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (El Valle).—CHAPMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, p. 331 (Loma Tina, Loma Rucilla, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 513 (Morne La Selle, Morne Tranchant, Morne Brouet, Crête à Piquants).—LÖNNBERG, Fauna och Flora, 1929, p. 107 (La Selle).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (Sitio la Maguana, specimen).

Geothlypis palustris, PALMER, Auk, 1900, p. 217 (considered representative of this genus).

Resident; locally common.

This ground warbler so far as at present known lives in the dense growths of damp thickets and woodland that are found in sections of abundant rainfall, where these conditions are encountered being fairly common, though so quiet that it is found only by those accustomed to search for the shyer species of birds. These birds creep and clamber about in the dripping foliage of moss grown thickets or dense clumps of ferns, moving rather slowly, usually near the ground, but at times coming to feed through the branches above the denser growth. Their call is a low complaining *chewp, chewp* heard only when within a short distance. At times they show some curiosity and come near at hand to look at a human intruder. The long tail gives them a tilting flight in the short distances that they cover on the wing.

The type specimen from which the species was described by Cory is found in the Field Museum (Cat. No. 26350) and is a male (original No. 3387) in fresh plumage but with wing and tail in partial

molt, taken at Almercen (now known as Villa Rivas), D. R., August 26, 1883. This bird measures as follows: Wing 68.5, tail 61.2, culmen from base 15.0, tarsus 22.8 mm. There is a second skin, a female (Cat. no. 26347) in the same collection, taken at the same locality August 24, 1883, that is marked "Type of female," that under modern usage is of course to be disregarded in considering the type specimen. Seven other skins from Villa Rivas taken in the same year were collected August 24, 25, 26, 27, 28 and 29. Cherrie reports that in 1895 he secured eight skins; of these six are at present in the Field Museum, four from Santo Domingo City, February 12 and April 30, and two from Honduras March 30 and 31. Cherrie says that the female taken April 30 was breeding. Verrill collected one, at El Valle, but did not find it elsewhere. There is a considerable series in the American Museum of Natural History shot by R. H. Beck at Santo Domingo City September 28 and October 5, 6, 16, and 17, 1916, on Loma Tina, a number from January 5 to 24, on Loma Ultimate Civil February 1, and on Loma Rucilla February 28 and March 5, 1917. Abbott forwarded skins from near Constanza September 27, 1916, and April 16, 18, and 19, 1919, and one from Trujín February 11, 1922. Wetmore in 1927 found this species fairly common near Constanza May 18 to 27. E. L. Ekman has forwarded to the United States National Museum skins taken in the Valle del Yaque at 1,500 meters elevation and in the Valle del Nuevo at 2,400 meters and says that he has found the species to 2,925 meters. He obtained a bird in immature dress near Constanza October 21, 1929, and presented one to Ciferri taken at Sitio la Maguana September 15, 1929. The species does not seem to be reported as yet from the Samaná Peninsula.

In Haiti this ground warbler is less widely distributed being known at present only from the line of mountains that traverse the southwestern peninsula to the break of the Cul-de-Sac plain. Abbott collected one above Fonds Verettes May 1, and another at Furcy May 31, 1920. Wetmore found them common in 1927 on the high ridge of La Selle on Morne La Visite and Morne Cabaio, in the ravine below the head of the Rivière Chotard, and about the clearings of the Jardins Bois Pin from April 11 to 15, collecting three specimens at the place last mentioned. He found them at times in growths of weeds bordering fields where they ranged with yellowthroats in the dense, wet cover. More were found, however, in the dense thickets bound together with long strands of climbing bamboo. In habits and appearance they frequently offer a curious suggestion of resemblance to the wren-tit (*Chamaea*). They are rather solitary in habit and though two or three may associate they do not roam about with flocks of migrant warblers. James Bond in 1928 found

them not uncommon in the Crete à Piquants group, and on Morne Tranchant and Morne Brouet in the neighborhood of Furey. He observed them in larger numbers on La Selle. He reports that they were breeding in June.

What appear to be young of the year have a greenish wash on the crown and hindneck. An adult male taken by Wetmore on La Selle April 12, 1927, had the iris bright red; maxilla grayish black, mandible neutral gray; tarsus neutral gray, with the toes somewhat paler.

This ground warbler is from 135 to 150 mm. in length, slender in form with long tail, rather short wings, and slender, pointed bill. It is greenish on wings, back and tail, and dull gray, often with a greenish wash, on hindneck and crown. Below it is grayish white, becoming nearly white on the center of the abdomen and much darker on the sides.

MICROLIGEIA MONTANA Chapman

CHAPMAN'S GROUND WARBLER, SIGUITA, PETIT QUATRE YEUX, PETIT CHIT

Microligeia montana CHAPMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, p. 330 (Loma Tina, Provincia de Azua, D. R.).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 513-514 (Morne Malanga, Morne Tranchant, Morne La Selle).—LÖNNBERG, Fauna och Flora, 1929, pp. 107-108 (La Selle).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (Sitio la Maguana, specimen).

Resident in the highlands; locally fairly common.

Chapman's ground warbler is resident in the higher elevations where it ranges in more open thickets than the other ground warbler, feeding rather actively among the branches and creepers in habits seeming to combine the mannerisms of warblers and vireos. (Pl. 25.) These birds are found alone or in pairs, seldom high above the ground, but on the other hand not searching as near the earth as the related species. Wetmore heard one utter a low chattering call, while Bond reports the note as a thin *tseep* not unlike that of the palm chat. On June 11, 1928 at 1800 meters elevation on La Selle Bond was shown a nest reputed to be of this species though he did not see the owners. The structure was globular in shape, composed of moss and grasses, lined with grass stems and feathers, placed in a bush five feet from the ground. The nest contained two fresh eggs (now in the Philadelphia Academy of Natural Sciences) which are plain, creamy white in color without markings. Bond gives the measurements as 21.6 by 15.5 and 21.7 by 15.5 mm.

This warbler was discovered by R. H. Beck, the type coming from Loma Tina, January 15, 1917. He secured a long series there from January 3 to February 3, one on Loma Rucilla February 24, and



CHAPMAN'S GROUND WARBLER (MICROLIGEIA MONTANA)

one at La Cañita March 9. W. L. Abbott secured a female at El Río, D. R., May 18, 1919, which is the only one that he recorded. In 1927 Wetmore observed one from the trail near El Río May 17. On May 19 he saw two at the edge of a clearing near Constanza and collected one. On May 21 he shot another as it fed actively in a tree growing in a dark ravine. E. L. Ekman in 1929 found this species in the mountains north of San Juan. The natives described the nest as oval with the entrance from beneath. Ciferri collected one at 1,200 to 1,500 meters altitude on Monte Viejo in August, 1929.

In Haiti Beck collected three on La Hotte June 20 and 22, 1917, one being a young bird molting into first fall dress with the chest washed with yellowish. Wetmore in 1927 found it on Morne La Selle. On April 14 two were shot in thickets among the clearings at the Jardins Bois Pin, and on April 15 another was seen in the same locality. James Bond in 1928 found these warblers in small numbers on Morne Malanga in the Crête à Piquants group (male taken January 19), on Morne Tranchant (one taken January 7), and on Morne La Selle, where he reports them as about as common as *Microligea palustris*.

An adult male taken by Wetmore on La Selle April 14 had the maxilla black, mandible gray no. 6, iris Hay's brown, tarsus and toes neutral gray. An adult female secured at the same time was similar.

This species differs structurally from *Microligea palustris* in much heavier bill and less fluffy plumage. Though Wetmore is inclined to consider from his personal experience that the two species under discussion belong in different genera he is not at this time prepared to separate them since, except as noted above, *palustris* and *montana* appear identical in structural characters.

Chapman's ground warbler is similar in size to the related ground warbler but appears somewhat more robust in life. The back and wing coverts are green, head and tail gray, with black lores and a white spot on either side of the forehead. (Pl. 25.) The wing feathers are black with a prominent white spot on the primaries extended along them as a streak. The underparts are white as are the tips of the outer tail feathers. The white wing marking is prominent in this species and serves as an excellent field mark.

GEOTHLYPIS TRICHAS TRICHAS (Linnaeus)

MARYLAND YELLOWTHROAT, PETIT CHIT

Turdus trichas LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 293 ("Carolina").

Winter visitant from the southeastern United States; abundance uncertain.

In a series of yellowthroats taken by Poole and Perrygo in the spring of 1929 there are five males that are referable to the present

form, these being the first recorded from Hispaniola. Two were taken at Fort Liberté February 8 and 11, and three at En Café on Gonave Island March 5, 6, and 7. One from Fort Liberté and two from Gonave are young birds with the black feathers of the facial mask just appearing. From examination of these it seems that the black comes in first on the cheeks and from there extends across the crown.

This form of the yellowthroat has been reported from Cuba and from various islands in the Bahamas so that it is to be expected to range to Hispaniola. It is closely similar to the northern yellowthroat, differing only in less extent of yellow below, slightly less greenish upper surface, and slightly smaller size. It may be distinguished only by careful study of specimens in the hand.

GEOThLYPIS TRICHAS BRACHIDACTYLA (Swainson)

NORTHERN YELLOWTHROAT, PETIT CHIT

Trichas brachidactylus SWAINSON, Anim. in Menag., 1838, p. 295. (Northern Provinces of United States.)

?*Sylvia pumilia* VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 39 (apparently female *Geothlypis*).

Geothlypis trichas, CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (Haiti); Birds Haiti and San Domingo, March, 1884, pp. 36-37 (winter); Cat. West Indian Birds, 1892, p. 119 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 12 (Dominican Republic, specimens).—CHRISTY, Ibis, 1897, p. 321 (La Vega, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (listed).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 514 (Gonave, Tortue).—EKMAN, Ark. für Bot., vol. 22A, No. 16, 1929, p. 7 (Navassa).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (Haina, San Juan, specimens).

Geothlypis trichas brachyactyla, BEEBE, Zool. Soc. Bull. vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, pp. 53, 224 (Haiti, specimen).

Geothlypis trichas brachidactyla, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 419 (Sosúa, specimens).—PENARD, Auk, 1926, p. 377 (one at sea).

Geothlypis trichas ignota, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 224 (specimen, Bizoton).

Winter visitant; common.

The yellow-throat is found in numbers at the proper season in weed-grown fields, and the borders of marshes in the lowlands, and also ranges widely into the higher altitudes where there is suitable cover for it. It lives near the ground concealed in the dense growths that it affects, coming out on open perches for a few seconds and then dodging back quickly out of sight, or flushing with tilting flight to fly for a few yards before disappearing again into its coverts. Attention often is directed to it by its harsh call note, a low *chimp*, as it scolds whenever disturbed.

The bird was first recorded for the Dominican Republic by Cherrie who secured one February 2, 1895 (at Catarrey). He reports that the yellowthroat was common the middle of March, and that it continued in numbers until he left the island on May 8. Christy shot one at La Vega April 19, 1895, and Verrill reports it as common in 1907. Four specimens of his taking in the collection of J. H. Fleming were secured at Samaná February 9, 19, and 20. Peters in 1916 found yellowthroats uncommon at Monte Cristi February 5 to 23; and at Sosúa February 25 to April 8. After March 15 they increased in numbers remaining common until he left that section on April 10. There is a series of eight in the American Museum of Natural History taken by R. H. Beck at Santo Domingo City September 30, October 4, 10, 12, 17, and 20, 1916, all referred by Wetmore to the present form. W. L. Abbott wrote on March 29, 1922 that yellowthroats were then common at Laguna Rincón. Ciferri secured specimens at Haina in November, 1925, and at Sabana San Thomé near San Juan November 5, December 28, 1928, and February 26, 1929. (Moltoni informs us that his published record of June 5 for a specimen from San Thomé is an error for November 5.)

In Haiti Cory reported the yellowthroat common in 1881 without giving localities for his observations. In 1917 Paul Bartsch recorded this bird at Thomazeau April 2 (specimen), near Gloré on the Étang Saumâtre April 3, Trou Caïman April 4, near Jérémié April 11, 14, 15, and 16 (specimen April 14), Trou des Roseaux April 13 and 14, and near Port-au-Prince April 21 and 22. Abbott shot a male at Trou Caïman, March 12, 1918, and a female on Gonave Island March 12, 1920. Penard observed one on board ship at sea near Haiti October 27, 1921. Beebe reports one taken and four seen in 1927. During that same spring Wetmore recorded several in the outskirts of Port-au-Prince in dry, thorny scrub far from any water. On April 1 at the Étang Miragoane these birds were so abundant in swampy meadows that about one hundred were seen. One was seen April 7 in dry scrub near La Tremblay, and on April 8 several were observed along the trail between Pétionville and Kenskoff. On La Selle the birds were common in patches of weed and bracken in the Jardins Bois Pin at 1800 meters altitude April 14, but were apparently in migration as there was noticeable decrease in their abundance the following day, and on April 16 only one was seen. One was recorded at Kenskoff April 17. On April 27 near Caracol one was taken in a weed-grown field, and that evening several were seen and one was taken at Poste Charbert. All observed on this day were females. This was the last date on which the species was observed that spring. Bond records them in 1928 as common, noting them on Gonave and Tortue Islands, and wrote that he saw the last

one in spring on May 1. Poole and Perrygo in 1929 secured specimens at St. Michel January 5 and 14, St. Raphael January 11, and Pont Sondé February 27. On Gonave Island they took three at En Café March 4 and 7, in company with the Maryland yellowthroat. Ekman found the yellowthroat on Navassa Island in October, 1928.

Sylvia pusilla of Vieillot⁴³ which he records from "Saint-Domingue" among other places, may perhaps be the female of the yellowthroat.

Five specimens in the United States National Museum represent the subspecies *brachidactyla*, as do five in the Museum of Comparative Zoölogy according to Peters, and the four taken by Verrill at Samaná (which have been examined by Wetmore through the courtesy of Mr. J. H. Fleming). Beebe has reported a specimen of the southern yellowthroat *Geothlypis trichas ignota* from Bizoton, Haiti, April 7, 1927, but after careful comparison Wetmore has determined it to be *G. t. brachidactyla*.

The northern yellowthroat is from 125 to 135 mm. long, being bright olive green above and bright yellow on the throat and breast, becoming yellowish white on the abdomen. The male has a mask of black extending from the ear region across the sides of the head and forehead, bordered on the forehead with white. The male is easily identified but the female is difficult. In the hand the yellowthroat is easily told by the fact that it has no rictal bristles.

SETOPHAGA RUTICILLA (Linnaeus)

REDSTART, PETIT CHIT

Motacilla ruticilla LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 186 (Virginia).

Redstart, BECK, Nat. Hist., vol. 21, 1921, p. 41 (Loma Tina).

Muscicapa ruticilla, VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 1, 1807, p. 66 ("Saint-Domingue").

Setophaga ruticilla, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Dominican Republic).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 91 (Dominican Republic, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 151 (winter); Birds Haiti and San Domingo, March, 1884, p. 40 (common); Cat. West Indian Birds, 1892, p. 120 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic); Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 175 (Rivas, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 12 (tolerably common).—CHRISTY, Ibis, 1897, p. 321 (Sánchez, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 365 (abundant).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 419 (Sosúa, Río San Juan specimens).—PENARD, Auk, 1926, p. 377 (at sea near Haiti).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 224 (Port-au-Prince).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 514 (Haiti, Gonave Island).—EKMAN, Ark. för Bot., vol. 22A, no. 16, 1929, p. 7 (Navassa).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (San Juan, specimens).

⁴³ Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, p. 39.

Migrant from North America; common.

The redstart frequents shrubbery, groves and forests, where it is a most active flycatcher, pursuing its living prey with dash and vigor among the branches with much display of its brilliantly marked, fan-shaped tail. It ranges from coastal thickets to the summits of the mountains, being so general in distribution that there is little object in detailing all of the numerous records. Peters reports that he saw comparatively few redstarts along the north coast during March and April, 1916, though Verrill in 1907 found them abundant in the region of Samaná Bay, collecting numerous specimens during January and February, which are now in the collection of J. H. Fleming. The earliest report of the species in fall is that of a female taken near Constanza, D. R., September 22, 1916, by W. L. Abbott. Beck collected specimens at Santo Domingo City September 27 and October 12, 18, and 24, and at Sánchez November 11 and 23, 1916. Wetmore observed the last one in the spring of 1927, near San Juan, D. R., May 1. Ciferri sent specimens to Moltoni from Sabana San Thomé near San Juan October 23 and 25, and November 29, 1928.

A. E. Younglove collected two near Port-au-Prince, Haiti, May 9, and May 10, 1866. James Bond, who found these birds abundant in Haiti, reported the last from Gonave Island, May 20, 1928. Poole and Perrygo in 1929 secured skins at St. Michel January 14, St. Raphael January 11, Dondon January 19, Fort Liberté February 16 and Cerca-la-Source March 24 and 26. On Gonave Island they took others at En Café March 4 and 6 and Massacrin March 10. Ekman found this species on Navassa Island in October, 1928.

The redstart is a small warbler with broad, flat bill. The adult male is jet black on the upper surface, throat and breast, with spots of pale orange or salmon-pink in the center of each wing, on either side of the breast, and across the center of the tail. The abdomen is white. In the female and young male the black of the back of the adult male is replaced by brownish gray, the breast is whitish, and the orange patches become dull yellow.

Family PLOCEIDAE

Subfamily PLOCEINAE

TEXTOR CUCULLATUS CUCULLATUS (Swainson)

BLACK AND YELLOW MANTLED WEAVERBIRD, MADAME SARAH

Oriolus cucullatus P. L. S. MÜLLER, Vollst. Natursyst. Suppl., 1776, p. 87 (Senegal).

Hyphantornis cucullatus, RICHMOND, Smithsonian Misc. Colls., vol. 72, no. 6, 1921, p. 47, fig. 59 (collected in Haiti by Abbott).—DANFORTH, Auk, 1929, p. 373 (recorded).

Hyphantornis c. cucullatus, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, pp. 215, 223 (Bizoton, Miragoane, Port-au-Prince).

Teator cucullatus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 510 (Miragoane, Port-au-Prince, Étang Saumâtre, Trou Caïman, Ennery).

Introduced into Haiti from West Africa; resident locally.

The first information of the presence of this weaver-finch in Haiti came from photographs of a group of unknown nests taken in 1917 by Paul Bartsch. He recorded colonies at Trou Caïman April 4, and 20 kilometers north of Port-au-Prince April 27.

In May, 1920 E. C. Leonard, botanizing near Fond Parisien, observed a colony of nests of a form strange to him which he called to the attention of W. L. Abbott who collected the first specimens on May 5. Others were taken May 8 and 12, and on May 16 one was secured at Manneville. In 1927 Wetmore made especial effort to obtain information on the distribution of the weaver, a quest in which he was greatly assisted by Dr. G. N. Wolcott, then entomologist for the Service Technique, who had located several colonies. Apparently the weaver-bird has its center of abundance in the Cul-de-Sac plain, extending beyond this to the north beyond St. Marc, as there is a skin in the Academy of Natural Sciences in Philadelphia taken near the mouth of the Artibonite River July 24, 1927, by J. T. Emlen, Jr., and to Ennery where it is reported by Bond. On March 30, near Mont Rouis Wetmore was shown a colony by Wolcott in two trees immediately back of the beach, the nests being the lowest seen, ranging from two and one half to seven meters from the ground. (Pl. 18.) They were not occupied at that time. In the Brigade Hospital grounds in Port-au-Prince there was a colony of 40 nests placed in the tops of two royal palms, a group that has been seen by many naturalists who have passed through the city in recent years. Along the north side of the southern peninsula the weaver has extended into the Leogane plain. Wolcott showed Wetmore one colony of 60 nests in a eucalyptus tree standing in a yard at Montfleury, and another group located in the tops of two Haitian oaks (*Catalpa longissima*) between Mariani and Gressier on March 29. Apparently the birds range even farther to the westward since Wetmore in April, 1927 secured bones of the weaver in barn owl pellets collected in a cave a short distance west of L'Acul. The barn owl may eat these birds rather regularly since weaver bones were also identified from owl pellets secured in the cave at Diquini. It will be recalled that Abbott recorded the weaver at Manneville and Fond Parisien. There is further a specimen in the Philadelphia Academy of Natural Sciences shot near Trou Caïman December 30, 1927, by James Bond, who reports the species at Miragoane, Port-au-Prince, Étang Sau-

mâtre, Trou Caïman and Ennery. He saw a colony of over 70 nests at Basin Generale. Poole and Perrygo collected two specimens at Pont Sondé February 26, 1929.

Wetmore observed one bird in the Ravine Papaye near Hinche on April 23, 1927, and on May 1, located a colony of thirty nests, most of them apparently occupied, a mile east of Comendador, D. R. on the road to San Juan. This colony was placed in a tree above a little hut at a native cane mill. The privilege of a shot was allowed and the collector secured a fine male at the first discharge greatly to the disappointment of observers who wanted him to continue the fusillade. The fifteen cents presented to the old negress living in the house pleased her greatly and no doubt gave the colony of birds an enhanced value in her eyes. It was said that this colony had been established here for many years.

The above outlines briefly the present known distribution of this bird. There are probably numerous other colonies and the species may have a wider distribution on the island than is at present suspected.

In palm trees the nests of this species are fastened to the long fronds often several being attached to one leaf. In deciduous trees the structures are usually clustered rather closely on the small branches at the top of the tree though occasionally they are grouped at the extremity of a long, projecting limb. Where the colony is large many limbs may be utilized, as near Gressier, where there were two groups of 40 and 75 nests respectively, placed from 10 to 15 meters from the ground. Small groups of nests were scattered through two royal palms and a jobo tree nearby.

The nests usually are constructed of strips of palm leaf woven to form a globular structure that is firmly attached to supporting twigs so that it hangs suspended from its upper part. The entrance is placed in one side slightly above the center, with the nest material arching out over it so that it is well protected, the opening often being entirely concealed from the side so that the bird seems to enter from below. The fibers used in weaving are from one to five mm. wide, occasionally a little broader, and the nest is from 90 to 130 mm. wide by 140 to 160 mm. deep. The walls are from 10 to 30 mm. thick and are fairly even throughout except that they are decidedly thicker above. The weaving though seemingly loose is compact so that there are few openings apparent between the strands. In the two nests taken by Abbott at Fond Parisien from which this description is written there is no definite nest lining. During building operations if in a palm the birds strip the leaves adjacent to their nests leaving the fronds badly shredded or even bare, and in

other trees pull away the leaves so that the nests are exposed without protecting shade. It was said that near St. Marc the birds had almost denuded a little clump of banana plants in securing building material from the leaves. The nests are woven of green materials but soon fade under the powerful sun to yellow. Colonies seem to be occupied for several years with new nests added regularly. The usual number of birds in a colony seemed to be twenty to thirty, possibly more in some cases as the birds come and go so constantly that it is difficult to estimate their numbers accurately. Colonies are noisy so that there is heard from them a steady, high-pitched chatter forming a monotonous volume of sound through which whistled calls or wheezing songs ring out clearly. At short intervals there is louder more excited outcry as the brilliantly colored males fly each to his nest and call vivaciously with outspread, slowly waving wings, often hanging suspended back downward, making a striking display. Males frequently rest below or beside the nest in the little patch of shadow cast by the structure. They were especially vociferous when females came flying overhead.

These weavers range over considerable territory in feeding and were frequently observed in parties of six to fifteen flying across country above the trees, the heavy body, broad wings and square tail causing them to be easily recognized. Away from their nests they are at times difficult to see in the dense cover that they affect, attention being drawn to their presence by their high pitched, squealing, creaking notes uttered in chorus.

As a species *Texor cucullatus* ranges across central Africa from Senegal to Abyssinia being divided in this region into five geographic races according to modern ideas.⁴⁴ The series from Haiti agrees perfectly with *Texor cucullatus cucullatus* and is identified as that race. The extent of black on the head and the generally yellow color of the upper breast in the males separates them from the eastern races, while the strong brown coloration of the flanks is a characteristic marking of the typical race.

Measurements (in millimeters) of our series are as follows:

Ten males, wing 86.2-90.3 (88.0), tail 49.5-56.8 (51.8), culmen from base 19.7-21.0 (20.5), tarsus 23.0-24.7 (24.0).

Four females, wing 77.1-80.7 (78.9), tail 44.1-46.2 (44.9), culmen from base 17.8-19.3 (18.5), tarsus 21.1-23.9 (22.2).

It is of interest to note that the present bird, like the two forms of weavers found in Porto Rico, the hooded weaver-finch (*Spermostes cucullatus cucullatus*) and the scarlet-cheeked weaver-finch

⁴⁴ See Sclater, W. L., and Mackworth-Praed, C., Ibis, 1918, pp. 435-436, and Reichenow, Mitt. Zool. Staatsinst. Zool. Mus. Hamburg, vol. 40, 1923, p. 64.

(*Estrilda melpoda melpoda*) is from western Africa, indication that it was probably introduced at the time slave-ships were plying between the West African coast and the West Indies. Though the weaver was not collected until 1920 it is so well established that there can be little doubt that it was introduced many years before, probably dating back to the period of French colonization.

The following quotations from that diligent historian Moreau de Saint-Méry indicate possibility of its escape from aviaries maintained at that time.⁴⁵

“A-peu-près depuis 1783, on a vu s’introduire au Cap, un goût que j’ai déjà loué; c’est celui d’avoir de charmantes volières, où des oiseaux fournis par le Sénégal, la Guyane le Mississipi & même par la Partie Espagnole de l’Isle, charment l’oeil & l’oreille. On est frappé surtout de la mutation qu’éprouvent les sénégalais qui changent totalement de nuances, sans changer de plumes, & l’homme sensible aime à penser que la vue & le soin de ces timides créatures, doivent inspirer des pensées aussi douces qu’elles.” On a later page⁴⁶ he writes

“J’ai vù en 1788, chez M. Le Sage, chirurgien aide-major de l’hospital, un cayman, de 11 pieds de long. * * *

“C’est chez le même que j’ai eu occasion d’admirer plusieurs fois plus de 200 oiseaux de différentes espèces, venant tous de Sénégal. Ils étaient petits & vêtus de robes, très-belles, & avec des couleurs plutot agreablement nuancées que vives. Les modulations de leurs gosiers flexibles avaient toujours pour mon oreille un charine nouveau. Quelques uns d’entréux changeaient de couleur sans changer de plumes.”

In a pleasant climate like that of Haiti a species like this weaver should have had little difficulty in establishing itself if set at freedom.

The weaver is a stocky bird 155 to 175 mm. long with strong, heavy bill, large, powerful feet, short tail and long wings. The adult males are bright yellow, marked with black on the back and chestnut on the hindneck and breast, with a wash of the latter color on the sides. The head is jet black, the wings dusky edged with olive yellow, and the tail olive green. The female is light yellow beneath becoming whitish on the abdomen, yellowish green on the head, and olive green washed with gray on the back, with the wings and tail as in the male.

⁴⁵ Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 300.

⁴⁶ Idem, vol. 2, 1798, p. 426.

Family ICTERIDAE⁴⁷

DOLICHONYX ORYZIVORUS (Linnaeus)

BOBOLINK

Fringilla oryzivora LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 179 (Cuba).
Dolichonyx oryzivorus, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 324 (San Juan, specimens).

Migrant from North America; rare.

The first record for this species is of one shot on Tortue Island, May 16, 1917, by W. L. Abbott. Abbott writes that this bird was taken from a flock of about one hundred. E. L. Ekman secured specimens in cornfields near San Juan, Dominican Republic, on September 21, 1929, collecting five on that date. Ciferri collected two at the same point September 28, 1929. The bobolink nests in the north from British Columbia and Montana to New England and winters from Brazil to Argentina so that it may be expected in Hispaniola only in passage during spring and fall.

The bobolink ranges from 155 to 185 mm. long, and is plump of body, with short, conical, sparrowlike bill, long tarsi, and sharply pointed tail feathers. In fall and winter dress in which it should be most frequently seen in Hispaniola it is brownish above, conspicuously streaked with black and buffy, and buffy or yellowish beneath, streaked on sides and flanks with black. The female retains this dress throughout the year, but the male in spring becomes a striking bird of jet black plumage with a large patch of buff on the nape, and the scapulars, rump and upper tail-coverts white tinged with gray.

AGELAIUS HUMERALIS (Vigors)

TAWNY-SHOULDERED BLACKBIRD, MERLE

Leistes humeralis VIGORS, Zool. Journ., vol. 3, November, 1827, p. 442. (Near Havana, Cuba.)

Agelaius quisqueyensis DANFORTH and EMLEN, Proc. Biol. Soc. Washington, vol. 40, December 2, 1927, p. 147 (Artibonite Sloughs, near St. Marc, Haiti).—DANFORTH, Auk, 1929, p. 373 (Artibonite).—LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).

Agelaius humeralis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 514-515 (Port-de-Paix, specimen).

Agelaius humeralis quisqueyensis, MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 325 (mentioned).

⁴⁷ The *sifleur* of Montbeillard, in Buffon's Hist. Nat. Ois., vol. 3, 1775, p. 230, recorded in part from "Saint-Domingue," refers possibly to some species of this family (possibly an oriole), but can not be identified with any of those known from Hispaniola.

Agelajus guirahuro, Hartlaub, Isis, 1847, p. 610, refers properly to an icterid of southern South America and can not be assigned to any species here under consideration.

Resident; found near Port-de-Paix and the mouth of the Artibonite River, Haiti.

The tawny-shouldered blackbird was unknown in Hispaniola until its discovery near the mouth of the Artibonite River, a short distance from St. Marc, Haiti, in the summer of 1927 by Stuart T. Danforth and John T. Emlen, jr. Five specimens, an adult and an immature male, and three females, were taken near some sloughs in the locality mentioned on July 29, two being in the private collection of Mr. Danforth in the College of Agriculture of the University of Porto Rico at Mayagüez, Porto Rico, and two in the Academy of Natural Sciences. These were described as *Agelaius quisqueyensis* under the impression that they represented a distinct species. Mr. Danforth recently has deposited the type in the United States National Museum. Danforth and Emlen report that they observed about twenty of these blackbirds on the date mentioned near sloughs along the Artibonite River, about eight miles from St. Marc, where they were in flocks of five to ten, resting in trees standing in water. Some were feeding young birds on the wing. Bond has reported the species from near Port-de-Paix where he secured one on March 13, 1928. He writes that the note is quite different from that of *Holoquiscalus*.

Through the courtesy of Dr. Witmer Stone and James Bond of the Philadelphia Academy of Natural Sciences, an adult female and an immature male taken by Emlen, with an adult male secured by Bond March 13, 1928, were sent to Washington for examination. On comparison with a considerable series of *A. humeralis* from Cuba in the United States National Museum the bird of Haiti, which was described as *Agelaius quisqueyensis* under the impression that it was new, is found to be identical with the bird of Cuba and must be recorded under the name *humeralis*. The color of the shoulder patch in this species is variable from light to dark so that the shade represented in the Haitian specimens is easily duplicated in many Cuban skins. No characters to support separation of two races are found after the most careful comparisons.

Following are measurements in millimeters from adult birds from Haiti:

Two males, wing 100.3–101.9,⁴⁸ tail 81.3–82.0,⁴⁸ culmen from base 17.0–18.1,⁴⁸ tarsus 24.3–26.3.⁴⁸

One female, wing 95.7, tail 80.8, culmen from base 16.9, tarsus 23.9.

The limited area from which this blackbird is known in Haiti, and the fact that it has not been recorded earlier suggest that it may have been established recently on the island by individuals come from Cuba. Abbott did not secure it during extensive travels on the island

⁴⁸ Type.

nor did Wetmore observe it during his work in the field so that it can hardly be wide spread in distribution since it is a bird that is conspicuous and easily seen when its haunts are visited.

The tawny-shouldered blackbird measures 200 mm. or a little more in length and is glossy black in color, with the bend of the wing, or "shoulder," deep brownish buff. Male and female are alike in color.

ICTERUS DOMINICENSIS (Linnaeus)

HISPANIOLAN ORIOLE, CALANDRA, SIGUA AMARILLA, SIGUA CALANDRIA, SIGUA CANARIA, BANANE MURE, DEMOISELLE

Oriolus dominicensis LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 163 ("Dominica"=Hispaniola).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Merle à Gorge Noire de Saint-Domingue, MONTBEILLARD, in Buffon's Hist. Nat. Ois., vol. 3, 1775, pp. 382-383 (immature individual in molt to adult plumage).—DAUBENTON, Planch. Enl., pl. 559 (in color).

Troupiale, de St. Domingue, appelé le Siffleur, DAUBENTON, Planch. Enl., pl. 236 (apparently immature of *I. dominicensis* though Boddaert calls it Balthimore oriole).

Carouge (part), MONTBEILLARD, in Buffon's Hist. Nat. Ois., vol. 3, 1775, p. 245 ("Saint-Domingue").

Carouge de St. Domingue, DAUBENTON, Planch. Enl., pl. 5, fig. 2 (adult).

Icterus minor viridis BRISSON, Ornith., vol. 2, 1760, pp. 113-115, pl. 10, fig. 2 (immature).

Xanthornus Dominicensis BRISSON, Ornith., vol. 2, 1760, pp. 121-123, pl. 12, fig. 3 (description).—HARTLAUB, Naumannia, 1852, p. 53 (Haiti, common).

?*Oriolus xanthornus*, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Icterus flavigaster, HARTLAUB, Isis, 1847, p. 609 (listed).

Icterus dominicensis, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (nesting).—BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 94 (Dominican Republic, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (common); Birds Haiti and San Domingo, July, 1884, pp. 71-72, col. pl. (Pétionville, Puerto Plata, La Vega, specimens); Cat. West Indian Birds, 1892, p. 110 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 250 (Samaná, Rivas, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 319-320, 321 (listed).—CHERIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 16-17 (habits).—CHRISTY, Ibis, 1897, pp. 325-326 (common).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (common).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, pp. 423-424 (Monte Cristi, Sosúa, Arroyo Salado, specimens).—CIFERRI, Segund. Inf. An. Est. Nac. Agr. Moca, 1927, p. 6 (listed).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 140; Beneath Tropic Seas, 1928, p. 222 (recorded). BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 515 (Haiti, common; description of nest and eggs).—DANFORTH, Auk, 1929, p. 373 (generally distributed).—LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 325 (Haina, Moca, San Juan, specimens).

Resident; locally common.

As the oriole lives amid the leaves of trees, it is found usually in the smaller branches where though not particularly shy it keeps well

under cover. The call is a harsh *chur-r-r-r* while the whistled song is clear and pleasant. Where it frequents palms in its search for food it is more easily observed but even here with its slow leisurely movements it often escapes detection. Its calls frequently betray its presence where the bird itself escapes detection. As it flies across open spaces the yellow shoulders and under tail-coverts are in prominent contrast to the black of the rest of the plumage. The slender form and long tail also are notable when the bird is on the wing.

Wetmore did not observe the oriole on the higher slopes of La Selle but found it in small numbers at Constanza and El Río so that it does not fear the cold air of the mountains. Abbott collected a number on Tortue Island where it is reported also by Bond, the latter stating that a few are found through the higher hills of Gonave Island as well. Bond secured a female on Gonave February 10, 1928 which is now in the collection of the Philadelphia Academy of Natural Sciences.

Following is a digest of the definite records for this species:

Dominican Republic: Duvergé (Abbott); San Juan, Bonaó, Sánchez (Wetmore); Santo Domingo City, (Sallé); Laguna (Abbott); Samaná, (Verrill, McGrigor); Caña Honda, La Valle, Río San Juan (Verrill); Rivas (Toogood, Abbott); La Vega (Cory, Verrill); Vásquez (Danforth); Monte Cristi, Arroyo Salado, Sosúa (Peters); Puerto Plata (Cory); Jarabacoa (Abbott); Constanza, El Río (Wetmore); Haina, Moca, San Juan (Ciferri).

Haiti: Jérémie (Abbott, Bartsch); Moline (Abbott); Trou des Roseaux, Petit Goave, Gloré (Bartsch); Fonds-des-Nègres (Wetmore); Port-au-Prince (Younglove, Bartsch, Wetmore); Pétionville (Cory); Fond Parisien, Rivière Bar, Moustique (Abbott); Montfleury, Las Cahobes, Hinche, Caracol (Wetmore); St. Michel (Miller); Gonave Island (Bond, Poole and Perrygo); Tortue Island (Abbott, Bond). St. Raphael, Fort Liberté, Cerca-la-Source (Poole and Perrygo).

The oriole has been reported in flocks by several observers, as many as fifty having been seen in company. These birds feed regularly about flowers especially those of the orange and agave, coming to such blossoms with honey-creepers, hummingbirds and woodpeckers.

A nest secured by W. L. Abbott on Tortue Island, June 19, 1917, was placed twenty feet from the ground on the under side of a leaf of a coconut palm. The nest is a shallow basket composed of fibers apparently stripped from a palm leaf, woven firmly together to form an openwork frame which is well padded with cotton. The whole is fastened to the palm leaf at either end by having long fibres passed through slits made in the leaf for this purpose, the support coming mainly at two points at each of which from twelve

to twenty fibres are involved. The four eggs have a white background spotted very finely with russet, the spots being distributed over the entire surface of the egg but more numerous about the large end. The eggs measure as follows: 20.9 by 15.9, 21.2 by 16.2, 21.8 by 15.9, and 21.8 by 16.6 mm.

James Bond reports a nest found at Fort Liberté April 28, 1928, placed fifteen feet from the ground at the end of a branch in an almond tree, being woven into the leaves. Two of the eggs were on the point of hatching. The third, which was saved, measured 22.7 by 16 mm. The egg is white with a very faint bluish tinge, marked with fine spots of russet and mars brown spread rather evenly over the surface, fusing over the large end to form a distinct cap.

An adult male shot by Wetmore at Hinche, Haiti, April 22, 1927, had the bill black; iris bone brown; tarsi and toes dull neutral gray; claws black. An immature female taken at the same time had the same colors.

Birds from Hispaniola, Gonave and Tortue do not seem to differ appreciably in color or size. Following are measurements of our series:

Males, twenty-one specimens, wing 88.9–101.0 (96.0), tail 82.0–94.2 (86.2), culmen from base 19.2–23.8 (21.5), tarsus 21.7–24.8 (23.5) mm.

Females, five specimens, wing 87.0–91.4 (89.0), tail 82.3–84.8 (83.6), culmen from base 19.9–20.9 (20.4), tarsus 22.6–24.5 (23.5) mm.

This oriole is from 195–220 mm. in length, with slender form. Adult male and female are black with rump, shoulder, abdomen and under tail-coverts clear yellow. Birds in immature dress are olive green, more yellowish below, and often show varying numbers of black feathers as the adult dress grows in among the other plumes.

HOLOQUISCALUS NIGER NIGER (Boddaert)

HISPANIOLAN GRACKLE, CHINCHILIN, MERLE, MERLE DIABLE

Oriolus niger BODDAERT, Table Planch. Enl., 1783, p. 31 ("St. Domingue" = Hispaniola).—DESCOURTILZ, Voy. Nat., vol. 2, 1809, p. 68 (Gonaïves).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Troupiale noir, MONTBEILLARD, in Buffon's Hist. Nat. Ois., vol. 3, 1775, p. 220 (food).

Troupiale noir, de St. Domingue, DAUBENTON, Planch. Enl. No. 534 (colored figure).

Icterus niger BRISSON, Ornith., vol. 2, 1760, p. 104, pl. 10, fig. 1 ("Saint-Domingue").

Gracula quiscula, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 155 (specimen).

Quiscalus sericcus, HARTLAUB, Isis, 1847, p. 610 (listed).

Quiscalus barita, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (Dominican Republic).

Quiscalus ater, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 94 (Jérémie).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 153 (Haiti).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic).

Quiscalus niger, CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1866, p. 407 (Jérémie).—CORY, Birds Haiti and San Domingo, July, 1884, p. 73, col. pl. (Pétionville, Puerto Plata, Samaná); Cat. West Indian Birds, 1892, p. 111 ("San Domingo").—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 17 (Catarrey; Aguacate, Santo Domingo City, specimens).—CHRISTY, Ibis, 1897, pp. 326–327 (habits).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (habits).—KAEMPFER, Journ. für Ornith., 1924, p. 180 (distribution; albinos).

Holoquiscalus niger, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 424 (Sosúa, specimens; Monte Cristi).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 222 (noted).

Holoquiscalus gundlachi niger, EKMAN, Fauna och Flora, 1929, p. 110 (Haiti).

Holoquiscalus niger niger, PETERS, Auk, 1921, pp. 444–445 (synonymy, distribution).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 515 (Haiti, Gonave Island).—DANFORTH, Auk, 1929, p. 373 (common).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 325 (Bonaò, San Juan, specimens).

Resident; locally common.

The grackle is widely distributed in both republics being found about marshes, savannas, open fields bordered by trees, semi-open groves, and even in open pine forest. It does not feed far from water, though any mud hole, particularly if surrounded by thick brush may harbor a few. Peters notes that in the arid Monte Cristi region the birds were confined to the marshes along the Río Yaqui del Norte. In Haiti the grackle ranges across the summit of La Selle, as Wetmore observed it there in some numbers from April 9 to 16, both in the clearings of the Jardins Bois Pin, and through the open forest of pines above. He recorded it in pairs at the Rivière Jaquisy below Morne Cabaio April 9, and on the slopes above to 1,500 meters. It was observed also at Chapelle Faure April 17. In the Dominican Republic, however, it does not appear to range to such high elevations. Neither Abbott nor Wetmore found it near Constanza, and Kaempfer does not report it above 700 meters. Abbott secured two at Jarabacoa October 12, 1916, and Wetmore recorded the species as common along the Río Camú near La Vega but not among the hills above.

Montbeillard, writing in 1775, gives some account of the habits of this species, probably from notes furnished by Deshayes, saying among other things that the stomach is muscular, and is filled ordinarily with scarabaeids and other insects. At Sánchez Christy saw them visiting nests of the palm-chat to rob them of their eggs. The birds feed on the ground where this is open, walking about in pairs or in little groups. Albino individuals seem to be fairly common in this species and attract the attention usual with "white blackbirds,"

as the natives frequently report having seen them, and W. L. Abbott collected two, both females, one at the eastern end of Lake Enriquillo, D. R., October 2, 1919, and one at Fond Parisien May 6, 1920. In both the body plumage is mainly white with a mixture of dark feathers, while wings and tail are black with small tippings of white. William Beebe reports that he has exhibited this grackle alive in the Zoological Park in New York City.

Following are definite records of occurrence for this species:

Dominican Republic: Santo Domingo City, Aguacate, Catarrey (Cherrie, Danforth); Sánchez (Christy, Verrill, Abbott, Wetmore); Samaná (Cory); Rojo Cabo, Samaná Peninsula (Abbott); Sosúa, Monte Cristi (Peters); Puerto Plata (Cory); Santiago, (Wetmore); La Vega (Verrill, Wetmore, Danforth); Jarabacoa (Abbott); Seibo, Hato Mayor, San Pedro de Macoris, Haina, Vásquez, Laguna del Salodillo, (Danforth); Bonao, San Juan (Danforth, Ciferri).

Haiti: Jérémie (Uhler, Bartsch, Abbott); Moline (Abbott); Trou des Roseaux, Trou Caïman, Gloré, Thomazeau (Bartsch); Pétionville (Cory); Fond Parisien (Abbott); Port-au-Prince, (Wetmore, Bond, Danforth); Carrefour, Sources Puantes, La Tremblay, Chapelle Faure, Las Cahobes, Hinche, Caracol (Wetmore); Fonds-des-Nègres, Étang Miragoane (Wetmore, Danforth); Summit of La Selle (Wetmore, Bond); Gonaïves (Descourtilz); Moustique, Tortue Island (Abbott); Gonave Island (Poole and Perrygo, Bond); Dondon, Pont Sondé, Fort Liberté, Cerca-la-Source (Poole and Perrygo); Kenskoff, Gonaïves (Danforth).

Abbott collected three sets of eggs of this species, these having a ground color decidedly paler than pale king's blue spotted with blackish and pearl blue, some of the markings being fine, while some are heavy blotches, many being arranged as irregular lines as though scrawled by a careless pen. A set of four taken May 8, 1917, at Baie des Moustiques came from a nest placed in mangroves 2.5 meters above high-water mark. These eggs measured 27.2 by 19.5, 28.4 by 20.0, 28.4 by 20.1, and 28.8 by 19.9 mm. Three more from the same locality, without definite date, were taken from a nest made of Spanish moss with an internal cup of mud, placed in an acacia tree about three meters from the earth. These measure 26.1 by 20.1, 26.6 by 20.3, and 26.9 by 20.2 mm. On May 30, 1917, four eggs were taken from a nest loosely constructed of Spanish moss and banana leaf fiber placed in a coconut palm. These eggs measure 26.7 by 19.8, 27.1 by 20.0, 27.5 by 19.4, and 27.5 by 19.5 mm.

Danforth found six pairs nesting in trees along the sloughs near the mouth of the Artibonite River July 29, 1927, when one nest had eggs and the others young. Bond has reported a nest with one egg from Tortue Island in March. Near Sánchez, on May 6, 1927,

Wetmore found young out of the nest and observed the birds in family parties that usually contained three young in addition to the parents. Others were nesting at this time about the rocky islets on the south shore of Samaná Bay and among the palms in the savannas of the lower Yuna, where males walked back and forth with drooping wings and spread tail along the horizontal leaf ribs.

From a few observations it appears that these birds may gather at evening in central roosts when they are not nesting. On March 29, 1927, Wetmore observed two flying high above Port-au-Prince in early morning, and at dusk of the same day near Carrefour observed little bands passing to the westward along the coast until more than one hundred had been counted. Abbott noted large numbers congregated in the marshes near Lake Enriquillo October 1 to 6, 1919. The usual call of the grackle is a high-pitched *whees-see-ee*, and the song, a wheezing effort, is variable.

An adult male taken by Wetmore April 2, 1927, at Fonds-des-Nègres had the bill and tarsus black, under side of toes dusky, and iris light yellow. Male and female taken at Sánchez May 9 were similar to the one just described except that the under side of the toes was slightly yellowish. A young male taken with them had the iris light brown.

The keel on the lower face of the palate (in the roof of the mouth), so prominently developed in grackles of the genus *Quiscalus*, in the present species is represented by a rounded ridge that projects below the level of the cutting edge of the mandibles and slopes gradually into the level of the palate in front.

A pair taken by Abbott at Jarabacoa October 12, 1916, and one from Lake Enriquillo October 2, 1919, are molting wing and tail feathers. In a juvenile shot by Wetmore at Sánchez May 6, 1927, the ninth and tenth primaries are only partly grown.

Range in measurement in these birds is considerable but so far as can be ascertained is entirely individual. Birds from Tortue and Gonave do not differ appreciably from those of the main island. Following are dimensions from the series at hand:

Twelve males, wing 125.1–143.7 (135.7), tail 104.8–124.8 (117.7), culmen from base 30.3–34.8 (32.2), tarsus 32.0–37.7 (34.5) mm.

Twelve females, wing 108.5–119.3 (114.4), tail 91.4–107.0 (100.3), culmen from base 26.4–29.4 (27.9), tarsus 29.5–33.0 mm.

The grackle is from 265 to 305 mm. long, males being decidedly larger than females, and is glossy black in color. The tail is plicate, i. e. is formed like an open V the lower ridge or angle being capable of great extension downward in the males. The young are duller colored when they first leave the nest but soon assume the dress of the adults.

Family THRAUPIDAE

Subfamily THRAUPINAE

SPINDALIS MULTICOLOR (Vieillot)

HISPANIOLAN SPINDALIS, MOUNEDÉLÉ⁴⁹

Tanagra multicolor VIEILLOT, Tabl. Encyc. Méth., vol. 2, 1823, p. 775 ("Florides, les îles Bahama et de Saint-Domingue"=Hispaniola).

Grivelette de Saint-Domingue, DESCOURTILZ, Voy. Nat., vol. 2, 1809, pp. 204-206 (in part; hunting, eggs).

Tanagra dominicensis BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 92 (New name for *Tanagra multicolor* Vieillot from Hispaniola).

Spindalis multicolor, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Dominican Republic, specimens).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti, specimens); Birds Haiti and San Domingo, March, 1884, pp. 54-55, col. pl. (Pétionville, Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 114 (Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic).—TRISTRAM, Cat. Coll. Birds belonging H. B. Tristram, 1889, p. 220 (Samaná, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHRISTY, Ibis, 1897, p. 323 (Sánchez, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 363 (Sánchez, specimens).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 13 (Catarrey, Aguacate, specimens).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 425 (Bulla).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 516 (Haiti).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, pp. 325-326 (Monte Viejo), specimens).

Resident; common.

This handsomely variegated tanager is common among the hills in the better watered localities where thickets and low jungle abound, but is found only casually in more arid country. The birds delight in the low growth that appears along fences extending through clearings, or in the bushes that border more open trails, but also search busily through dense, wet jungle flying from perch to perch with a heavy rattle of wings common among many birds in the quiet of such damp haunts. Often the spindalis is seen in passage overhead traveling with bounding flight, and if the birds be males with much display of bright color. This species feeds on seeds, berries and fruits of various kinds, traveling at times to congregate in abundance where some fruit is ripening. They are very silent and seldom call, their note then being low and faint. Wetmore heard one utter a weak, sibilant song that may be written *tsee see see see see*, in so low a tone that it was heard with difficulty, which agrees with Verrill's notes that the song is feeble and insect-like. Sallé's record that the spindalis has "un chant agréable" is seemingly erroneous.

⁴⁹ So named in the La Hotte region according to Dr. E. L. Ekman.

The earliest definite date for the spindalis from the Dominican Republic seems to be one taken by Cory at Puerto Plata, December 2, 1882. Later McGrigor sent one to Tristram that was collected at Samaná January 12, 1884, and Christy obtained one at Sánchez February 25, 1895, remarking that the stomach was filled with soft dark purple berries. Verrill writes that early in his collecting he saw none but on January 22, 1907, he collected one at Sánchez. In the week following February 26 he obtained more than sixty in a radius of one hundred yards where they assembled to feed on reddish purple berries. When the supply of berries was consumed the birds disappeared. Cherrie obtained several at Aguacate and Catarrey in January and February 1895 when the birds were found in overgrown clearings feeding on berries. Peters saw one at Bulla but observed no others. Abbott secured numerous specimens which may be itemized to indicate the dates of occurrence. Polo, Bahoruco Mountains, February 28, 1922, female; Pilon de Azucar, Samaná Peninsula August 12, 1919; El Río October 7, 8 and 9, 1916, and May 14 and 18, 1919; vicinity of Constanza April 7, 9, 10, 11, and 16 and May 7, 1919. He speaks of them as common on the north shore of the Samaná Peninsula, and in the high pine woods in the vicinity of Constanza. Specimens taken at El Río May 14, 1919, were breeding. Wetmore, on May 13, 1927, collected one in the forest at the summit of the hills back of Sánchez. At Constanza he found them common from May 19 to 27, securing specimens May 24 and 27. Ciferri collected specimens at 1,200 to 1,500 meters on Monte Viejo, August 25 to 28, 1929.

The spindalis is common through the hills of Haiti. Possibly Descourtilz included this species in part in his description of the *grivelette de Saint Domingue*, though his reference to Daubenton's plate is to a picture of the ovenbird, as he describes this bird as common so that it was sought eagerly as game, being considered highly desirable for the table, and speaks of it as feeding extensively on fruits. He describes the eggs which he secured as bluish, spotted at the large end with reddish brown. His account is uncertain in application and must not be accepted with finality. Younglove collected four spindalis at Port-au-Price June 8 and 10, 1866, these apparently being the first skins of this species to come to the United States. Cory collected two at Pétienville March 3, 1881. Abbott secured two at Jérémie December 2 and 14, 1917, and a series at Moline January 25, 26, and 29, and February 1, 1918. He took others on Morne St. Vincent, near Furey, June 12, 1920, at Fonds Verettes April 27, 1920, and at Moustique March 9, 1917. Wetmore found them common on the ridge of La Selle from April 9 to 15, securing one at 1,500 meters below Morne Cabaio April 9, and seeing one near Chapelle Faure April 17. Bond speaks of them as common

on the slopes of La Hotte, La Selle, Montaignes Noir (Morne Basile), and the Massif du Nord (Haut Piton, Morne Salnave). He found them also near sea level in the arid scrubs of Gonave Island, collecting specimens there on February 14 and 16, 1928.

A female collected by Wetmore May 27, 1927, at Constanza had the maxilla and tip of the mandible black; base of mandible neutral gray; iris Rood's brown; tarsus and toes neutral gray; claws blackish. In an adult male taken by Abbott October 8, 1916, at El Río it was noted that the bill was black above, and leaden color beneath, while the iris was dark brown.

The *spindalis* is from 162 to 186 millimeters in length, being a little larger than an ordinary sparrow. The male is one of the brilliantly colored birds of the island as it has the head black with a white streak above the eye, hind-neck bright yellow, back olive yellow, rump orange brown, wings and tail black—the former with two white wing bars, and latter with spots of white—chin white, this color extending back on either side as a malar stripe, center of throat bright yellow, sides of throat black, upper breast chestnut, lower breast yellow, and abdomen white. The female is grayish green above, dull whitish below with indistinct streaks of dusky, an indistinct white wing bar with a second spot of white, and wing edgings of greenish.

PHAENICOPHILUS POLIOCEPHALUS POLIOCEPHALUS (Bonaparte)

GRAY-CROWNED PALM TANAGER, QUATRE YEUX, OISEAU QUATRE YEUX

Dulus poliocephalus BONAPARTE, Rev. Mag. Zool., 1851, p. 178 ("Hispaniola"=Haiti).

Merula Palmarum BRISSON, Ornith., vol. 2, 1760, pp. 301-303, pl. 29, fig. 1 ("Cayenne").

Phoenicophilus dominicensis CORY, Bull. Nuttall Ornith. Club, 1881, p. 129 ("Haiti"=Jacmel); p. 152 (Jacmel, specimens); Birds Haiti and San Domingo, July, 1884, p. 58, col. pl. (Jacmel, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Phoenicophilus dominicanus, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 363 ("Miranda").

Phoenicophilus palmarum, SCLATER, Proc. Zool. Soc. London, 1856, p. 84 (part; supposed female); Syn. Av. Tanagr., 1856, p. 22 (part).

Phoenicophilus poliocephalus, CORY, Cat. West Indian Birds, 1892, p. 114 (Haiti, Dominican Republic).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).

Phaenicophilus poliocephalus poliocephalus, RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, p. 107 (mentioned).

Phoenicophilus poliocephalus poliocephalus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 516-517 (Morne la Casière).

Southwestern Haiti, resident; ranging from Jacmel west to the end of the southern peninsula.

The only definite records pertain to the area above mentioned since this species is not known at present on the main island east of the pass leading from Grande Goave to Jacmel, called by Bond the Trouin Valley. It is strange that it does not range on the great ridge of La Selle since the break of the Cul-de-Sac Plain would seem to form a more natural boundary.

Bonaparte in his original description says that his type came from "Hispaniola" which must be interpreted as Haiti in view of our present information on distribution. Brisson in 1760 figures one that he says came from Cayenne which is certainly in error. It is more probable that it was taken by Chervain, and may possibly indicate a clue to the region where that collector worked. Cory in 1881 named this species *Phoenicophilus dominicensis*, overlooking Bonaparte's earlier name, having before him four specimens taken near Jacmel, and stating definitely that he observed none except at that point. His statement in his Catalogue of West Indian Birds, 1892, p. 114 that it ranged in "Haiti and San Domingo" is certainly erroneous. Verrill includes this species under the name *Phoenicophilus dominicanus*, saying of it "rare; only found at Miranda," which seems an error since he does not indicate that he collected any specimens. All certain records come from the area in Haiti above indicated.

Paul Bartsch reported this species near Jérémie on April 10 and 12, 1917. Beck collected specimens on Morne La Hotte June 20, and 22, and July 3, and 4, 1917. Abbott in the same year secured a good series at Jérémie Nov. 19, 25, 28, and 30, and December 1, 2, 8, 9, 25, and 26, two at Moron December 20, and two at Moline January 25, and 27, 1918. He also took one on Grande Cayemite Island January 14, 1918. James Bond reports it is common on the southern peninsula being rare in the eastern part of its range on Morne La Casière. He says that the note of this species is shorter than that of its relative *Phaenicophilus palmarum*.

The specimen that Abbott secured on Grande Cayemite is very slightly paler and a little larger than those from Jérémie and the vicinity, in this approaching *coryi* of Gonave Island, but with only one skin in hand the difference is hardly to be considered notable. The specimen has the following measurements: wing 87.0, tail 70.1, culmen from base 19.1 and tarsus 21.7 mm.

Curiously enough several specimens with only a lesser amount of black on the forehead than usual and a greenish wash on the crown, hindneck, throat and upper breast, which are assumed to be in a first fall dress, have the wing shorter than in birds in full plumage, the difference holding in both true *poliocephalus* and in *P. p. coryi*.

Following are measurements from specimens in adult plumage:

Eight males, wing 83.7–87.7 (85.4), tail 65.4–68.9 (67.3), culmen from base 18.0–19.9 (18.8), tarsus 21.5–24.0 (22.4) mm.

Four females, wing 80.7–84.8 (83.8), tail 64.5–69.0 (66.5), culmen from base 18.4–19.3 (18.9), tarsus 21.7–22.9 (22.3) mm.

This species is from 170 to 190 mm. in length, and has the head and neck, except as noted below, and the underparts deep gray, the throat and a streak along the side of the head, the lower eyelid, and two spots one above and one in front of the eye white, the sides of the head and not more than the anterior third of the crown deep black, and the back, wings and tail bright yellowish green.

PHAENICOPHILUS POLIOCEPHALUS CORYI Richmond and Swales

GONAVE PALM TANAGER, QUATRE YEUX, OISEAU QUATRE YEUX

Phaenicophilus poliocephalus coryi RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, p. 107 (Gonave Island, Haiti). Danforth, Auk, 1929, p. 374 (Gonave, common).

Phoenicophilus poliocephalus coryi, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 517 (Gonave, nest).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).

Gonave Island, Haiti; resident.

The present form is represented in the United States National Museum by fourteen skins collected by W. L. Abbott, four taken near La Mahotiere February 19, 20, and 22, 1918, eight from Anse à Galets March 4, 5, 7, 9, and 11, 1920, one from Étroites, March 17, 1920, and one from Picmy July 5, 1920.

Bond reports that this bird is abundant, occurring throughout the island. He found many nests during the latter part of May and in June, reported that they were frail structures, like the nest of the scarlet tanager, but deeply cupped, placed from seven to thirty feet above the ground.

Danforth says that this form is common, living in dense brush near the ground. In five stomachs vegetable matter (a seed) amounted to 5 per cent, and animal matter to 95 per cent, the latter including Orthoptera, Lepidopterous larvae (mainly noctuids), Hemiptera, and Coleoptera.

According to notes made by Wetmore from the actual specimens in the Bond collection a set of four eggs taken May 19, 1928 are decidedly paler than pale glaucous green, marked uniformly with drab to cinnamon drab, the markings being suffused without sharp outline, tending toward longitudinal distribution, varying in extent on the different eggs. Bond's measurements are as follows: 26.1 by 17.0, 25.0 by 17.3, 25.3 by 17.4, and 24.4 by 17.5 mm. A set of two taken May 14 are pale bluish white with obscure wash spots of drab.

and occasional short scrawling lines and spots of blackish brown. They measure 23.2 by 17.7, and 23.1 by 17.6 mm. (Bond). A single egg taken May 21 is similar to the last but has the ground color dull green. It measures 22.7 by 17.2 mm.

This race differs from the form of the mainland in larger size and paler color, the center of the abdomen and breast being white, usually lighter under tail-coverts, and slightly brighter yellowish green above.

Following are measurements of birds in adult plumage:

Seven males, wing 84.5–93.0 (89.6), tail 65.0–71.7 (68.3), culmen from base 19.0–22.0 (21.1), tarsus 23.8–24.9 (24.4) mm.

Three females, wing 88.3–89.0 (88.7), tail 69.5–71.4 (70.1), culmen from base 20.5–21.5 (21.0), tarsus 22.8–24.8 (24.0) mm.

Type, male, wing 92.0, tail 67.6, culmen from base 21.7, tarsus 24.6 mm.

PHAENICOPHILUS PALMARUM PALMARUM (Linnaeus)

**HISPANIOLAN PALM Tanager, SIGUA DE CABEZA PRIETA, SIGUA
MAIMONERA, SIGUA AMARILLA, CUATRO OJO**

Turdus palmarum LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 295 ("Habitat in Cayennae Palmis"—Hispaniola).—VIEILLOT, Hist. Nat. Ois. Amér. Sept., vol. 2, 1807, pp. 16–17, pls. 69–70 (common).—RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (Hayti, specimen).

Palmiste, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, pp. 400–401 (description).

Palmiste, de Cayenne, DAUBENTON, Planch. Enl., No. 539, fig. 1 (in color).

Merula Palmarum atricapilla BRISSON, Ornith., vol. 2, 1760, pp. 303–305, pl. 29, fig. 2 ("Cayenne").

Arremon palmarum, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 92 (Dominican Republic, Haiti).

Phoenicophilus palmarum, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (habits).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti, abundant); Birds Haiti and San Domingo, March–July, 1884, pp. 56–57, col. pl. (Pétionville, Puerto Plata, specimens); Cat. West Indian Birds, 1892, p. 114 (Haiti, Dominican Republic).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 222 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 14 (Dominican Republic, abundant).—CHRISTY, Ibis, 1897, p. 323 (Sánchez, La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 363 (Dominican Republic).—PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 424 (Monte Cristi, Bulla, Sosúa, Chocó, Río San Juan, specimens).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 223 (listed).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 518 (Haiti, habits).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 326 (Haina, Bonao, San Juan, specimens).

Phaenicophilus palmarum, DANFORTH, Auk, 1929, pp. 373–374 (abundant).

Resident; common. Not known at present from Tortue or Gonave Islands, or from the southwestern peninsula of Haiti west of Grand Goave and Jacmel.

This palm-tanager inhabits thickets and growths of forest in both humid and arid sections. It is found usually in fairly heavy cover where it moves about in slow and leisurely manner, occasionally twitching its tail, hopping through the branches in search for food, and regularly clambering over the trunks and larger limbs of the trees where it clings to the rough bark as easily as a pine warbler or black and white warbler, holding with strong feet and occasionally fluttering the wings slightly to help over some difficult spot. The call is a low *chep*; no song has yet been recorded. The ordinary names of *quatre yeux* and *cuatro ojo* are taken from the white spots on either side of the forehead which give the appearance of an extra pair of eyes.

The first record of the species for the Dominican Republic is that of Sallé who gives a few brief notes on its habits. Cory obtained a number from Puerto Plata November 17, 1882, and January 2, 1883. Tristram received one from C. G. McGregor taken at Samaná, in 1884. Cherrie collected a very large series and says that it was probably the most abundant species at the localities that he visited. He reports that it feeds on fruit and insects, and says that he obtained breeding birds but found no nests. Christy found it common at Sánchez, and at La Vega, and Verrill reported it as abundant. Specimens that he secured at Sánchez, Caña Honda, El Valle, Samaná, and La Vega are in the collection of J. H. Fleming. There is a specimen in the United States National Museum taken in the San Francisco Mountains August 28, 1905, by A. Busck. Peters in 1916 obtained them at Monte Cristi, Bulla, Sosúa, Chocó, and Río San Juan. Abbott collected a series as follows: Polo, Bahoruco Mountains, February 28, 1922; Laguna, Samaná Peninsula, August 7 and 9, 1916; San Lorenzo, July 30, 1916; El Río, October 7 and 8, 1916; and Constanza, September 28, 1916, and April 10 and 16, 1919. In 1927 Wetmore observed this species between Comendador and San Juan May 1, at Los Alcarrizos May 4, in the hills above Sánchez May 7 and 13, near Constanza May 19 to 27, and at El Río May 30. Danforth in the summer of 1927 collected specimens at Seibo, Santo Domingo City, Haina, Monte Cristi, and San Juan. Three stomachs that he examined contained seeds and drupes alone. Two others in addition to such vegetable matter held remains of a large brown tree cricket, a small orthopteran, a Bibionid fly, a wasp, and a Coreid bug (*Catorhintha guttula*). Ciferri obtained skins at Haina, Bonao and San Juan.

In Haiti Vieillot found this bird rather common in woodlands. A. E. Younglove collected a number near Port-au-Prince February 7 and 16, April 6, 13, and 15, and May 3, 1866. Cory found them very common at Pétionville from February 25 to March 9, 1881. Abbott collected specimens at Fond Parisien May 5, and above Fonds Verettes April 20 and 26, 1920, at Rivière Bar February 17, 18, and 22, 1917, and near Moustique March 7 and 9, 1917. He observes that the species was common near Port-au-Prince, but that he did not find it on Tortue Island. Beebe obtained living specimens which he exhibited in the New York Zoological Park. Wetmore in 1927 found it at Port-au-Prince March 29 and April 6, Sources Puantes March 30, La Selle April 11 to 15, Hinche April 21 to 24, and Caracol April 26 and 27. On April 28, 1928, James Bond found a nest near Caracol, that he attributed uncertainly to this species, placed in a bush in open scrub growth and containing three young. Poole and Perrygo secured specimens at St. Michel December 23, 1928, L'Atalaye January 8, St. Raphael January 12, Dondon January 18, Fort Liberté February 6, 10, and 19, and Cerca-la-Source March 24 and 26, 1929.

The present species so far as now known ranges throughout the island except for the western part of the southwestern peninsula west of Grande Goave and Jacmel inhabited by *Phaenicophilus poliocephalus*. Apparently the two species do not mingle. *P. palmarum* is not known from Gonave Island.

An adult male secured by Wetmore on the summit of La Selle April 13, 1927, had the maxilla and tip of mandible black, rest of mandible gray no. 6, iris reddish brown, tarsus and toes neutral gray.

Following are measurements of a series in the United States National Museum:

Twelve males, wing 88.3–96.1 (92.3), tail 67.5–74.2 (71.7), culmen from base 18.6–22.0 (20.5), tarsus 22.2–25.7 (23.8) mm.

Eleven females, wing 81.8–89.0 (85.1), tail 66.2–70.2 (68.4), culmen from base 19.2–21.8 (20.7), tarsus 22.3–24.0 (23.3) mm.

This species is similar to the other palm tanager except that the black of the head extends over the entire crown.

PHAENICOPHILUS PALMARUM EUROUS Wetmore

SAONA PALM TANAGER

Phaenicophilus palmarum eurous WETMORE, Smithsonian Misc. Colls., vol. 81, no. 13, May 15, 1929, p. 3 (Saona Island, D. R.)

Saona Island; resident.

This form is known from the type alone, a male collected by Dr. W. L. Abbott on Saona Island, September 13, 1919. This bird resembles closely the palm tanager of the main island adjacent but is

lighter in color, being brighter green above, with the gray of the hindneck paler, and more extensively white below, with the under tail-coverts paler.

The type, a male, has the following dimensions: wing 90.0, tail 67.5, culmen from base 20.7, tarsus 22.5 mm.

Subfamily TANAGRINAE

TANAGRA MUSICA (Gmelin)⁵⁰

HISPANIOLAN EUPHONIA, OISEAU GRAND PÈRE

Pipra musica GMELIN, Syst. Nat., vol. 1, pt. 2, 1789, p. 1004 ("S. Domini"=Hispaniola).

Organiste, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 4, 1778, pp. 290-291 (described).

Organiste, de St. Domingue, DAUBENTON, Planch. Enl., pl. 809, fig. 1 (figured).

Euphonia musica, SALLÉ, Proc. Zool. Soc. London, 1857, pp. 231-232 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Pétionville); Birds Haiti and San Domingo, July, 1884, pp. 61-63, col. pl. (La Vega, Magua, Pétionville, specimen); Cat. West Indian Birds, 1892, p. 113 (Haiti, Dominican Republic); Auk, 1895, p. 279 (Dominican Republic, specimen).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 219 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 13 (Honduras, San José de Ocoa, specimens).—CHRISTY, Ibis, 1897, p. 324 (La Vega, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 363 (Sánchez, specimens).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).

Tanagra musica, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 92 (Dominican Republic, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 515-516 (Haiti, Gonave).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 325 (San Juan, Monte Viejo, Río Manade, specimens).

Resident, locally fairly common; found mainly among the hills.

The euphonia lives in forests in the upper limbs of the trees, and is so small and frequents such dense cover that it is found regularly only by those who have become familiar with its notes. Both male and female utter a plaintive whistle followed by a rapidly repeated double note that forms a rapid, chattering twitter, given sometimes on the wing but more usually as the birds rest in trees. When this is heard careful scrutiny of the trees ordinarily reveals clumps of mistletoe, and on watching these attentively the euphonias may be detected hopping about among them to feed on the mistletoe

⁵⁰ The following may refer to the euphonia:

Dame Anglaise, Saint-Méry, Descrip. Part. Franç. Île Saint-Domingue, vol. 2, 1798, p. 506. According to this statement, on the slopes of La Selle above Cayes Jacmel "les dames anglaises étalent leur robe dans les bois fourrés."

Evêque, Saint-Méry, idem, vol. 1, 1797, p. 717. Listed from near Port-de-Paix, without description.

berries, which form the bulk of their food. At a distance these birds are so tiny that they show only a yellow breast and a dark back so that one is astonished at the lovely colors of one in the hand. Occasionally birds are seen flying overhead, but are detected in the trees often only after prolonged watching, so that familiarity with their calls is the principal criterion on which to determine their abundance. As said above they are dependent for food mainly on the mistletoe berry, the viscous-coated seeds of which drop from mouth and vent as recently killed birds are handled. They are probably the principal disseminators of their own food supply by carrying the seeds from place to place.

Sallé first records the euphonia from the Dominican Republic, but is mistaken when he says of its whistling notes "le chant en est magnifique et très fort" as the calls of this bird do not carry far. Cherrie secured eight at Honduras and one at Maniel (San José de Ocoa). Verrill obtained specimens near Sánchez, the first on February 26, 1907, and says that he found them only in one tree to which they came regularly to feed on the berries of a mistletoe. One that he collected here March 6 is in the collection of J. H. Fleming. Tristram received one from Samaná taken September 10, 1884, by C. G. McGrigor. Near La Vega Cory secured a series August 6, 12, 14 and 15, and September 7, 1883. Christy obtained a pair here May 2, 1895, and Beck one December 8, 1916. Cory took another at Magua January 27, 1883. Abbott shot a male at El Río May 19, 1919, and reports that he saw others. Wetmore observed one at this point May 29, 1927, and May 19 to 27 saw them regularly at Constanza where they were common in high deciduous forest. He collected three May 24. Ciferri obtained it at San Juan February 3, 1929, on Monte Viejo at 1,200 to 1,500 meters August 25 to 28, 1929 and also at Río Manade in the Province of Azua on the dates last mentioned.

In Haiti the first record is that of A. E. Younglove who secured a male at Port-au-Prince May 9, 1866. Cory collected an immature bird at Pétienville March 9, 1881. On December 14, 1917, W. L. Abbott saw several in the hills four miles south of Jérémie at an altitude of 450 meters and collected a pair. In north Haiti he obtained two March 7 and 11, 1917, at 360 meters near Moustique, and reports that he saw others near Rivière Bar, near sea level.

In 1927 Wetmore found them fairly common at Fonds-des-Nègres and collected a male April 5. On La Selle he recorded one at 1,500 meters on the north slopes of Morne Cabaio April 9, and found others April 14 at the Jardins Bois Pin at 1,800 meters. James Bond collected an immature male on Gonave Island February 12, 1928. He

states that he did not observe it on Tortue Island. Poole and Perrygo in 1929 secured a male at L'Atalaye January 8, and a female at Cerca-la-Source March 24.

Following are measurements from a small series in the United States National Museum:

Seven males, wing 61.2–64.3 (62.5), tail 35.2–37.3, culmen from base 6.7–7.9 (7.3), tarsus 13.3–14.9 (14.3) mm.

One female, wing 59.9, tail 35.4, culmen from base 7.8, tarsus 15.2 mm.

The euphonia is a tiny bird being only from 120 to 125 mm. long. The male is deep steel blue on wings, tail, back, throat, and sides of head, light blue on crown and hindneck, and orange yellow on rump, forehead, and underparts. The female has the forehead yellow, crown and hindneck light green, rest of upper surface dull green, and entire under surface greenish yellow.

Subfamily CALYPTOPHILINAE

CALYPTOPHILUS FRUGIVORUS FRUGIVORUS (Cory)

HISPANIOLAN CHAT-TANAGER

Phoenicophilus frugivorus COBY, Quart. Journ. Boston Zool. Soc., October, 1883, p. 45. ("Santo Domingo"—Rivas, D. R.)

?Merle olive de Saint-Domingue, MONTEBELLARD, in Buffon, Hist. Nat. Ois., vol. 3, 1775, pp. 403–404 (description).

?Merle, de St. Domingue, DAUBENTON, Planch. Enl., pl. 273 (col. pl.).

?*Merula olivacea Dominicanensis* BRISSON, Ornith., vol. 2, 1760, pp. 296–297, pl. 27, fig. 2 ("St. Domingue").

Calyptophilus CORY, Auk, 1884, p. 3, 1 fig. (new genus for *Phoenicophilus frugivorus* Cory).

Calyptophilus frugivorus, CORY, Auk, 1884, pp. 3–4 (replication of original description); Birds Haiti and San Domingo, July, 1884, pp. 59–60, col. pl. (Rivas, specimens); Cat. West Indian Birds, 1892, p. 114 (Dominican Republic); Auk, 1895, p. 279 (Dominican Republic, specimen).—TRISTRAM, Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 222 (Arenoso, Rivas, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, pp. 14–15 (Aguacate, specimens).—CHRISTY, Ibis, 1897, p. 323 (La Vega, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 364 (La Vega, Miranda).—MILLER, Auk, 1918, pp. 356–357 (placed in Tangaridae).—KAEMPFER, Journ. für Ornith., 1924, p. 184. (Cotuf, specimen).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Haiti).

Calyptophilus frugivorus frugivorus RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, p. 107 (mentioned).

Resident; of local occurrence.

The present species was described by Cory in 1883 from the Dominican Republic as a species of *Phaenicophilus* but was recognized a year later as generically distinct and placed by the original describer in the genus *Calyptophilus*. Possibly this is the form

described by Brisson as the *Merula olivacea Dominicensis* from a bird sent to de Reaumur by Chervain, and the *Merle olive de Saint-Domingue* of Montbeillard figured by Daubenton as *Merle, de St. Domingue*, but of this there is no definite certainty. Daubenton's plate while suggestive of the chat-tanager does not show sufficiently diagnostic characters to indicate definitely that it is that bird, otherwise the species would need to be named from *Turdus Indicus* P. L. S. Müller,⁵¹ based on the figure in question. Müller's locality of "Ostindien" is in error as he has confused the geographic sources of the two species depicted on the plate in question. *Turdus virens* Boddaert,⁵² (not Linnaeus, 1758) also refers to this same plate.

Cory described this species as a tanager but it is so aberrant in appearance that Ridgway was uncertain as to its affinities, finally placing it provisionally in the Mimidae.⁵³ Cory in a scheme of classification for his Catalogue of Birds of the Americas⁵⁴ lists it as "Calyptophilidae" placing it between the Cinclidae and Mimidae remarking in a footnote, "the monotypic genus may later be considered to represent a subfamily." DeWitt Miller⁵⁵ finds that *Calyptophilus* has only nine fully developed primaries instead of the ten recorded by Ridgway, which removes it from the Mimidae. He restores it tentatively to its old position in the family of tanagers where it may remain for the present.

In the Field Museum there is a considerable series of this bird which Cory had before him when he described the species. These include eleven skins from "Almercen," now Villa Rivas, shot August 21 to 29, 1883, including the type specimen, a male bird, taken August 29, 1883. The type, formerly mounted but now in the skin series, is in fresh, bright plumage, and has the following measurements: wing 92.0, tail 88.0, culmen from base 20.0, tarsus 28.0 mm. A pair come from Samaná, taken April 16, 1883, the female being marked "Type of ♀." Two females were taken at La Vega, July 9, 1883. Cory's statement, therefore, in the Birds of Haiti and San Domingo, 1885, p. 60, that "all the specimens were taken in the swamps near Almercen, and none were observed elsewhere" is incorrect. Cory reported it as retiring in habits, remaining among the densest thickets.

The species is next recorded by Canon Tristram who received a male from C. G. McGrigor taken at Arenoso, Dominican Republic, March 23, 1884, and another from "Almercen" collected in 1887 by

⁵¹ Vollst. Natursyst. Suppl., Reg. Band, 1776 (p. 145).

⁵² Table Planch. Enl., 1783, p. 16.

⁵³ Birds North and Middle Amer., pt. 2, 1902, p. 1, and pt. 4, 1907, pp. 180, 181, 182, 278-279.

⁵⁴ Cat. Birds Amer., pt. 2, no. 1, Field Mus. Nat. Hist., Zool. ser., vol. 13, March, 1918, p. 16.

⁵⁵ Auk, 1918, p. 357.

A. S. Toogood. Christy shot a male in thick underbrush in forest near La Vega April 19, 1895, and Cherrie collected three at Aguacate, Dominican Republic, February 26, 1895. He reports that at daybreak near his camp he noted daily a pleasant song, the first of the bird notes to be heard with the coming of dawn, that he attributed to the common palm tanager (*Phaenicophilus palmarum*) but that he learned finally was the present species. When the sun came up the birds were quiet. Verrill observed the species at Miranda and La Vega only. Abbott saw one at El Río in 1919, and in 1921 searched for the species carefully near Villa Rivas where the original series had been collected but failed to find any, though he did observe one in low ground near Cotuí, which he did not collect. Kaempfer⁵⁶ writes that he took a few near Cotuí but in this seems to have written in error since Hartert writes that the five secured by Kaempfer, including four males and a female, were shot at Villa Rivas from January 1 to 3, 1924. Ekman writes that the chat-tanager is rare in the mountains north of San Juan but that he found it in abundance on the Sierra de Ocoa ranging to an elevation of 2,000 meters.

There are as yet no records for the typical race in Haiti.

The chat-tanager, a trifle larger than the palm tanager, has rounded wings and tail and a fairly straight, compressed bill. Above it is olive brown, darker on the head, with a spot of yellow in front of the eye, and a yellow margin on the bend of the wing. The throat, breast, and abdomen are white, and the flanks and under tail coverts dull brown.

CALYPTOPHILUS FRUGIVORUS ABBOTTI Richmond and Swales

GONAVE CHAT-TANAGER

Calyptophilus frugivorus abbotti RICHMOND and SWALES, Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, p. 107 (La Mahotiere, Gonave Island, Haiti).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 516 (habits).—DANFORTH, Auk, 1929, p. 374 (Gonave Island).—LÖNNBERG, Fauna och Flora, 1929, p. 106 (Haiti).

Gonave Island; resident, fairly common.

W. L. Abbott, the first to find this bird on Gonave Island, writes that near La Mahotiere he saw several keeping near the ground in dense jungle where they were so shy that they were difficult to see, and so were probably more common than his notes indicate. He secured a male, the type of this race, on February 18, and a female on February 26, 1918. Danforth reports that in July, 1927, these birds were "probably not uncommon on Gonave, but rather difficult to observe on account of the dense undergrowth in which they live,

⁵⁶ Journ. für Ornith., 1924, p. 184.

though they were not especially shy. Their song was a rather buzzy, whistled *wce-chee-chee-chee-chee*. I collected two males. Parasitic nematodes were found under the skin of the breast and belly of one of them. Their stomachs contained 10 per cent vegetable matter (two seeds in one stomach), and 90 per cent animal matter (a moth; an ant *Pheidole megacephala*; two hairy spiders, a thrips and the oötheca of a cockroach).” James Bond writes that he found the Gonave chat-tanager common in arid scrubs, and that it was not so shy as the form of Hispaniola proper. The song was weaker than that of the Haitian bird. He writes that he collected two specimens.

The Gonave chat-tanager is decidedly paler in color than that of the main island, being grayer and less brown above, with the sides and flanks more extensively white, and the under tail-coverts lighter. The yellow of the under wing coverts and axillars is distinctly lighter. In addition the bird is slightly smaller, the bill in particular being shorter and slighter. In fact it appears so different that did not an occasional specimen from Hispaniola proper approach it in size of bill it might well be considered a distinct species rather than a subspecies. Certainly the two forms concerned have progressed far in differentiation from one another.

Following are measurements of the four specimens seen:

Males, three specimens, wing 80.5–92.1 (87.1), tail 78.0–95.2 (87.9), culmen from base 20.1–21.3 (20.6), tarsus 24.9–28.4 (26.6) mm.

Female, one specimen, wing 76.9, tail 76.7, culmen from base 18.4, tarsus 25.0 mm.

Type, male, wing 80.5, tail 78.0, culmen from base 20.3, tarsus 28.4 mm.

CALYPTOPHILUS TERTIUS TERTIUS Wetmore

LA HOTTE CHAT-TANAGER, CORNICHON ⁵⁷

Calyptophilus tertius WETMORE, Smithsonian Misc. Colls., vol. 81, No. 13, May 15, 1929, p. 2. (Higher slopes of Morne La Hotte, Haiti.)

Resident; known only from the higher slopes of Morne La Hotte, southwestern Haiti.

The present species is another of the high mountain forms of Haiti whose presence has been wholly unexpected. It is at present known only from seven skins collected by R. H. Beck from June 20 to July 4, 1917, during the Brewster-Sanford expedition for the American Museum of Natural History. All of the birds were secured on the higher slopes of Morne La Hotte in the region back of Les Anglais. From the collector's journal, which Wetmore has examined through the courtesy of Doctors Chapman and Murphy, it appears that these specimens were taken in dense, trackless jungle on the high ridges

⁵⁷ A name applied in the region of La Hotte according to Dr. E. L. Ekman.

leading to the actual peak of La Hotte so that it would appear that they were found at 2,000 meters altitude or higher. The birds were breeding at this time. The tips of the wing and tail feathers were worn and abraded in most of the specimens.

Following are measurements of the series secured by Beck:

Five males, wing 92.5–104.0 (98.9), tail 96.5–108.0 (101.2), culmen from base 23.7–27.4 (24.9), tarsus 32.5–35.0 (33.4) mm.

Two females, wing 84.4–91.5 (88.0), tail 83.9–89.0 (86.5), culmen from base 22.8–23.6 (23.2), tarsus 30.8–31.1 (31.0) mm.

Type, male, wing 100.0, tail 100.2, culmen from base 24.5, tarsus 32.8 mm.

This bird is decidedly larger, with much heavier bill than *Calyptophilus frugivorus* found elsewhere in the island, and is also much darker in color, the wings and tail being deeply rufescent. It also lacks the narrow line of yellow feathers found about the eye in *frugivorus*.

CALYPTOPHILUS TERTIUS SELLEANUS Bond

LA SELLE CHAT-TANAGER

Calyptophilus frugivorus selleanus BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 81, October 3, 1929, p. 473 (Morne Malanga, Haiti).

Calyptophilus frugivorus frugivorus, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 516 (Morne La Selle, Morne Brouet, Morne Tranchant, Crête à Piquants).

Resident locally in the ranges of the Massif de la Selle.

The only records for this form are those of James Bond who reports it from Morne La Selle, Morne Brouet, Morne Tranchant, and Crête à Piquants. He says that the bird is mainly terrestrial in habits and that it is very shy. He found them breeding in June but did not succeed in locating a nest. He writes that this "is one of the best songsters in the Republic. The loud startling notes of this bird are rather wrenlike in character and may be recalled by the syllables "chip-chip-chip-swerp-swerp-swerp" or as a variation "swerp-swerp-swerp-chip-chip-chip." Its callnote is very unlike that of *Phaenicophilus* and resembles the tick of a cheap watch." Two of the five skins that he collected, which are in the Academy of Natural Sciences of Philadelphia, were taken on Morne Tranchant January 6 and June 3, 1928, while three more were shot on Morne Malanga January 20 and 22. The type specimen (Acad. Nat. Sci. No. 82,384), a male, was collected on Morne Malanga, near the western end of the Massif de la Selle, on January 22, 1928.

Comparison of available skins indicates that the peculiar chat-tanagers of Hispaniola divide into two species, each of which has two geographic races. *Calyptophilus frugivorus* is characterized by grayish olive-green dorsal surface, this color being nearly uniform from

crown to tail, while *Calyptophilus tertius* is much darker above, with the tail and upper tail-coverts very deep brown, decidedly different in color from the remainder of the dorsal surface. The known forms of this genus in view of present information should be arranged as follows:

Calyptophilus frugivorus frugivorus, Dominican Republic.

Calyptophilus frugivorus abbotti, Gonave Island.

Calyptophilus tertius tertius, Morne La Hotte.

Calyptophilus tertius selleanus, Massif de la Selle.

Though each form is known from a distinct geographic region there is no evidence as yet of intergradation between *frugivorus* and the two forms of *tertius* from the southwestern peninsula of Haiti so that it is considered that two species are represented.

Following are measurements taken by Wetmore from the series of *selleanus* collected by James Bond:

Three males, wing 95.0–99.0 (97.3), tail 99.5–104.0 (102.2), culmen from base 22.6–25.7 (23.9), tarsus 29.7–33.0 (31.2) mm.

Type, wing 99.0, tail 104.0, culmen from base 23.5, tarsus 31.0 mm.

Two females, wing 83.0–84.2 (83.6), tail 87.0–90.0 (88.5), culmen from base ⁵⁸ 23.2, tarsus 29.4–32.1 (30.7) mm.

The form described by Bond as *selleanus* is easily distinguished from *tertius* of La Hotte by deeper olive coloration of dorsal surface and sides, and by smaller size.

Family FRINGILLIDAE ⁵⁹

Subfamily RICHMONDENINAE

HEDYMELES LUDOVICIANUS (Linnaeus)

ROSE-BREADED GROSBEEK

Loxia ludoviciana LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 306 (Louisiana).

Migrant from North America; apparently rare.

The first report for this species is of a male shot by W. L. Abbott on Gonave Island, February 21, 1918. The bird was obtained at the edge of an old clearing at 300 meters altitude. One was seen by Wetmore at Poste Charbert, near Caracol, Haiti, April 26, 1927. As the species migrates to the Bahamas, Cuba, and Jamaica it may be expected in Hispaniola at least occasionally.

This grosbeak is from 165 to 180 mm. in length and is of stocky form with a strong, heavy bill. The adult male has the head, throat,

⁵⁸ One specimen.

⁵⁹ The following references pertaining apparently to birds of this family from Hispaniola are not definitely identified.

Verderin, Montbeillard, in Buffon, Hist. Nat. Ois., vol. 4, 1778, p. 185 ("Cet oiseau se trouve à Saint-Domingue").

Verdier, de St. Domingue, Daubenton, Planch. Enl., no. 341.

wings, tail and back black, the upper breast and under wing coverts bright rose-red, the rest of the underparts white, and the wings spotted with white. The female is grayish brown above with the feathers margined with buff, a whitish line over the eye, and a distinct buff line down the center of the crown, the under wing coverts orange, and the under parts buffy streaked with dark brown. Adult males in winter dress are brown instead of black.

TIARIS OLIVACEA OLIVACEA (Linnaeus)

YELLOW-FACED GRASSQUIT, SIGUITA, PETIT Z'HERBES

Emberiza olivacea LINNAEUS, Syst. Nat., ed. 12, vol. 1, 1766, p. 309 ("Dominica"=Hispaniola).

Olive, MONTBEILLARD, in Buffon, Hist. Nat. Ois., vol. 4, 1778, pp. 363-364 ("Saint-Domingue").

Emberiza Dominicensis BRISSON, Ornith., vol. 3, 1760, pp. 300-302, pl. 13, fig. 5 ("S. Domingue").

Passerina olivacea, HARTLAUB, Naumannia, 1852, p. 53 (Haiti).

Fringilla olivacea, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93 (Dominican Republic, Haiti).

Phonipara olivacea, SALLÉ, Proc. Zool. Soc. London, 1857, p. 232 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 65-66, col. pl. (La Vega, specimen).—TRIPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).

Phonipara lepida, TRISTRAM, Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 232 (Rivas, specimen).

Euethia lepida, CORY, Cat. West Indian Birds, 1892, p. 113 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 16 (Dominican Republic).

Euethia o. olivacea, BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 222 (Haiti).

Tiaris lepida, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (La Vega, El Valle).

Tiaris olivacea, LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).

Tiaris olivacea olivacea, PETERS, Bull. Mus. Comp. Zoöl., vol. 61, 1917, p. 425 (Monte Cristi, Santiago, Sosúa, Chocó, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 518 (Haiti).—DANFORTH, Auk, 1929, p. 374 (abundant).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 326 (Haina, San Juan, specimens).

Resident; common.

This grassquit is distributed commonly through Hispaniola, except that it has not been recorded on the Samaná Peninsula in spite of the extensive collections that have been made during fifty years past at Sánchez and Samaná. Possibly it has been overlooked since it is known from Pimentel and Villa Rivas immediately to the west, and is recorded from the south side of Samaná Bay at Sabana de la Mar and El Valle. Abbott says that he did not see it on Tortue Island but Bond indicates that he found it there.

This tiny grassquit is one of the most abundant species of native birds on the island, in many localities seeming to outnumber any other form twenty to one. It inhabits thickets and growths of weeds, coming out in flocks of twenty-five to one hundred to feed quietly on open turf where seeds and other food may be found. The general color of the plumage is a peculiar gray green that is inconspicuous in the glaring light of the sun even when the birds are on the wing so that their tiny forms escape detection except by the most observant in spite of their abundance. They range from semi-arid open lands into the higher mountains wherever there is open ground suitable for their needs. Across the summit of La Selle they were found amid the bracken of the pine-lands and in the weeds of abandoned fields. At Constanza they were frequent among the open thickets of guava bushes. Though frequently quarreling petulantly they are social and feed in flocks, and when startled often fly up to perch in trees and bushes in close proximity. The song of the male is a sibilant, buzzing trill that at fifty yards is barely audible. The species is one that can maintain itself with increase in agriculture and will remain in abundance when some others of the native birds have become very rare as it delights in canefields, plantations and pastures. Following is a brief summary of recorded occurrence:

Dominican Republic: Monte Cristi, Sosúa, Chocó (Peters); Santiago (Peters, Wetmore); Villa Rivas (Tristram, Abbott); Pimentel (Abbott); El Valle (Verrill); La Vega (Cory, Verrill, Beck); Jarabacoa (Abbott); El Río, Constanza (Abbott, Wetmore); Comendador to Azua (Wetmore); Santo Domingo City, (Beck, Danforth); Loma Tina (Beck); Bonao (Danforth); Haina, San Juan (Ciferri).

Haiti: Moustique (Abbott); Caracol, Hinche, Maissade, Las Cahobes, Morne à Cabrits (Wetmore); Port-au-Prince (Younglove, Wetmore); La Selle, Kenskoff, Chapelle Faure, Fonds-des-Nègres, Aquin, L'Acul (Wetmore); Jérémie (Bartsch, Abbott); Grande Cayemite Island (Abbott); Tortue Island (Bond); St. Michel, St. Raphael (Poole and Perrygo); Gonave Island (Danforth, Poole and Perrygo).

Cory describes a nest taken August 15 (locality and year not given) that contained two fresh eggs, in color dull white, heavily blotched with brown on the large end and faintly spotted elsewhere with the same color. The eggs measured ".66 by .48" inches. "The nest is usually built in the branches of a low tree, and is made of grass very loosely put together."⁶⁰

Danforth records a nest at Hato Mayor, Dominican Republic, July 7, 1927, placed a foot above the ground in a small bush and says

⁶⁰ Cory, *Birds Haiti and San Domingo*, 1885, p. 66.

that the "five eggs were spotted with red, especially at the larger end." Another nest on Gonave Island July 17 contained four eggs.

A male shot by Wetmore at Fonds-des-Nègres April 1, 1927, had the maxilla blackish; mandible dusky neutral gray; iris bone brown; tarsus and toes grayish brown.

This grassquit is only 110 to 115 mm. long, and is rather stocky in form with a thick, heavy bill. The male is dull grayish green above, with an orange yellow line extending from the base of the bill above the eye and a patch of the same color on the throat. The breast and foreneck are extensively black and there is a line of the same color about the gape and on the forehead. The rest of the underparts are dull white becoming dull gray on the sides. Females are dull grayish green, lighter below, becoming whitish on the abdomen, and have a dull yellowish line over the eye and a hint of yellow on the throat.

TIARIS BICOLOR MARCHII (Baird)

MARCH'S GRASSQUIT, PETIT Z'HERBES

Phonipara Marchii BAIRD, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 297 (Jamaica).

Phonipara zena, CORY, Birds Haiti and San Domingo, July, 1884, pp. 63-64, col. pl. (Samaná, specimens).—TIPPENHAUER, Die Insel Haiti, 1892, p. 321 (listed).—CHRISTY, Ibis, 1897, p. 324 (nest and eggs).

Fringilla zena (var. *Marchii*), BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93 (Port-au-Prince, specimens).

Carduelis bicolor, HARTLAUB, Isis, 1847, p. 609 (listed).

Phonipara bicolor, CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti).—TRISTRAM, Ibis, 1884, p. 168 (Dominican Republic, specimen).

Euethia bicolor, CORY, Cat. West Indian Birds, 1892, p. 113 (Haiti, Dominican Republic).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, p. 16 (Dominican Republic, specimens).

Tiaris bicolor, VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (Dominican Republic).

Euethia bicolor marchii, RIDGWAY, U. S. Nat. Mus. Bull. 50, pt. 1, 1901, pp. 541-542 (Haiti).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 222 (Bizoton, Haiti).

Tiaris bicolor marchi, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 518 (Gonave, Tortue).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 326 (San Juan, specimen).

Tiaris bicolor marchii, DANFORTH, Auk, 1929, p. 374 (recorded).—LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).

Resident; common.

The present form of grassquit frequents similar localities to the yellow-throated species, but in Hispaniola is much less abundant. It is widely distributed through semi-arid and humid sections and like its relative thrives in canefields and pastures where there is the slightest cover to give it shelter. The heat of the coastal plain and the cold, bracing air of the high mountain slopes are equally agree-

able to it, and it will probably increase in all situations as continued developments in agriculture clear away the land. The song is harsher and louder than that of the related species.

The earliest specimen from the Dominican Republic seems to be one received in alcohol at the United States National Museum from Prof. William Gabb, collected at Puerto Plata by Charles A. Fraser. The exact date of capture is uncertain but comes between 1869 and 1878. Tristram obtained one from C. G. McGrigor in 1884, and Cory reports two taken at Samaná September 4, 1883. Cherrie found this species common in the southern part of the republic in 1895, and says that he secured specimens at all the localities visited. Christy reports that in late June he found several nests placed among the spines in the tops of pineapple plants. The eggs at the larger end were marked with pale rust-colored spots and blotches. Verrill says that he found this grassquit common, and collected specimens at Sánchez January 14, 21, and 26, February 27, and March 1, 6, and 7, and at Samaná February 18, 1907, which are now in the collection of J. H. Fleming. R. H. Beck secured skins for the American Museum of Natural History at Santo Domingo City October 5, 6, 17, and 19, 1916, and May 29, 1917, and at Sánchez October 27 and 30, and December 13, 1916. W. L. Abbott collected this form only near Constanza in 1919, where he obtained skins April 16, 21, and 22 on the Loma Río Grande, and May 5 near Hondo. In 1927 Wetmore found several at Los Alcarrizos May 4, and collected a breeding male at Sánchez May 9. He observed several at the same point May 13, and recorded a male near Constanza May 19. Danforth in the summer of 1927 recorded them at Santo Domingo City, Haina, Bonao, and Las Matas. Ciferri shot one at Sabana San Thomé, near San Juan, October 19, 1928.

In Haiti A. E. Younglove shot specimens near Port-au-Prince April 31, May 4, and June 1. Bartsch recorded them near Jérémie April 11, 15, and 16, near Trou des Roseaux April 13 and 14, and between Port-au-Prince and St. Marc April 21 and 22. Abbott collected two at 900 meters above Fonds Verettes April 21 and 22. Beebe found them at Bizoton in 1927. Wetmore in the same year secured an adult male on La Selle April 14, and recorded several more in the weed-grown fields of the Jardins Bois Pin on the following day. He observed them at Chapelle Faure April 17, at Maissade April 20, and near Hinche April 22 and 23. Danforth in the summer of 1927 found them at St. Marc, Gonaïves, Cap-Haïtien, the Citadelle, and on Gonave Island. James Bond reports them as common on Gonave, and as found on Tortue Island. He writes that he found many nests near Furcy. Poole and Perrygo collected one at

St. Michel December 29, 1928, and a series on Gonave Island, at En Café March 5, and Plaine Mapou March 11.

An adult male taken by Wetmore at Sánchez May 9, 1927 had the bill blackish slate, becoming slightly brown at the base of the mandible, tarsus and toes light brown, and claws dusky.

Compared with an excellent series from Jamaica, loaned by the Museum of Comparative Zoölogy, the birds from Hispaniola offer no appreciable differences. They are very faintly grayer above in series but the difference is too slight for consideration. Following are measurements of the series at hand from Hispaniola:

Nine males, wing 51.3–54.4 (53.1), tail 39.6–44.8 (41.7), culmen from base 9.1–10.5 (9.8), tarsus 16.3–17.8 (16.9) mm.

Two females, wing 52.4–52.4 (52.4), tail 40.5–41.2 (40.9), culmen from base 8.9 (one specimen), tarsus 15.7–16.2 (16.0), mm.

This little bird is from 110 to 120 mm. in length with the same heavy, sharply pointed bill found in the related species. The male is dark grayish green above, with the sides of the head, foreneck, and breast black, the sides of the body grayish green, and the rest of the underparts dull white. The female is dull greenish brown above, a little paler on the breast and foreneck, and whitish on the abdomen. It is distinguished mainly from the female of the other grassquit by lack of the faint superciliary stripe and the yellowish on the throat.

Subfamily CARDUELINAE

LOXIGILLA VIOLACEA AFFINIS (Ridgway)

HISPANIOLAN BULLFINCH, CALANDRA, GALLITO, PRIETO, CHICHIGUA, OISEAU-COQ, MAÎTRE-COQ, MAJOR-COQ

Pyrrhulagra affinis "(Baird)" RIDGWAY, Auk, 1898, p. 322. (Port-au-Prince, Haiti.)

Bouvreuil, SAINT-MÉRY, Descrip. Part. Franç. Île Saint-Domingue, vol. 1, 1797, p. 717 (Port-de-Paix).

Loxia dominicensis, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (listed).

Loxia violacea, RITTER, Naturh. Reis. Westind. Insel Hayti, 1836, p. 156 (specimen).

? *Loxia haitii*, RICORD, Rev. Zool., 1838, p. 167 (part ?; described from "toutes des Indes occidentales * * * bords de l'Orenoque, * * * en Virginie.)

Loxia violacea, BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93 (Dominican Republic, Haiti).

Guiraca violacea, HARTLAUB, Isis, 1847, p. 609 (listed).

Spermophila noctis (*Loxia haitii* Ricord?), HARTLAUB, Isis, 1847, p. 609 (listed).

Pyrrhulagra violacea, CORY, Cat. West Indian Birds, 1892, p. 112 (Dominican Republic, Haiti).—CHERRIE, Field Col. Mus., Ornith. ser., vol. 1, 1896, pp. 15–16 (Santo Domingo City, Catarrey, Aguacate).

Pyrhulagra violacea affinis, PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 425 (Monte Cristi, Sosúa, Arroyo Salado, specimens).—BEEBE, Zool. Soc. Bull., vol. 30, 1927, p. 141; Beneath Tropic Seas, 1928, p. 222 (Bizoton).—DANFORTH, Auk, 1929, p. 375 (fairly common).—LÖNNBERG, Fauna och Flora, 1929, pp. 109–110 (Haiti).

Loxigilla violacea, SALLÉ, Proc. Zool. Soc. London, 1857, p. 231 (Dominican Republic).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Haiti); Birds Haiti and San Domingo, July, 1884, pp. 69–70, col. pl. (Rivas, Samaná, specimens).—TRISTRAM, H. B., Ibis, 1884, p. 168 (Dominican Republic, specimen); Cat. Coll. Birds, Belonging H. B. Tristram, 1889, p. 231 (Samaná, specimen).—TIPPENHAUER, Die Insel Haiti, 1892, pp. 320, 321 (listed).—CHRISTY, Ibis, 1897, p. 325 (Sánchez, specimen).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (Dominican Republic).

Loxigilla violacea affinis, BOND, Proc. Acad. Nat. Sci. Philadelphia, 1928, p. 519 (Haiti, Gonave).

Resident; common and widely distributed except in the more arid sections.

The soberly plumaged bullfinch lives in thickets or heavy rain-forests where it has shelter and can avoid being seen when it so desires. It is regularly found in pairs or in little groups of half a dozen—that may be family parties—feeding in the tops of low trees or bushes, or, in the mountains, coming out in early morning into the sunshine at the borders of the rain forest to dodge quickly back at any alarm into heavy cover. When the observer is resting quietly in heavy growth the birds often work about through the branches near at hand, flying from perch to perch with a loud rattle of the wings. They have considerable curiosity and are attracted by squeaking but keep in the background behind some cover. The song uttered from dense cover of leaves in the top of a low tree, is odd and curiously accented.

This form is one that is widely distributed through the small off-lying islands. It is common on Gonave, and Abbott has recorded it from Catalina Island, and from Saona Island. The latter appeared to him somewhat different from those seen on the mainland, but as he did not obtain specimens this can not now be demonstrated. Though considered ordinarily a shy denizen of thickets not given to prolonged flights across open spaces the bullfinch may however traverse considerable distances as indicated by the statement of Beebe⁶¹ that “two individuals of this unmistakable species, in full color, apparently males, came to the schooner and perched quietly on the ratlines until a gun was loaded, when then they flew straight out across the Gulf and were not seen again.” As the schooner was anchored off the Bizoton wharf the birds must have had the distant shores of Gonave Island or of the opposite side of the broad bay as an objective.

⁶¹ Zool. Soc. Bull., vol. 30, 1927, p. 141.

Following are records of occurrence for this bird:

Dominican Republic: Santo Domingo City (Danforth, Cherrie); Catarrey, Aguacate (Cherrie); Haina (Danforth); Rivas (Cory); Sánchez (Christy, Verrill, Abbott, Wetmore); Samaná (Tristram, Cory); Laguna, Samaná Peninsula, San Lorenzo (Abbott); Caña Honda, El Valle (Verrill); Monte Cristi, Sosúa, Arroyo Salado (Peters); Constanza (Abbott, Wetmore); El Río (Wetmore).

Haiti: Moline (Abbott); Jérémie (Bartsch); Port-au-Prince (Younglove, Bartsch, Wetmore); Furey (Abbott); La Tremblay, Morne La Selle, Morne á Cabrits, Limonade (Wetmore); Môle St. Nicolas (Abbott); Port-de-Paix (Saint-Méry); St. Marc, Pont Sondé, St. Michel, Fort Liberté, Cerca-la-Source (Poole and Perrygo); Gonave Island (Abbott, Danforth, Bond).

Danforth, recording observations made in 1927 says "On July 17 at Étroites, Gonave Island, Emlen found and photographed a nest. It was a domed affair, placed three feet from the ground in an open bush, and contained four white eggs spotted with brown, especially at the larger end." In the Spanish speaking part of the island the bullfinch is known usually as *gallito*, though Verrill heard the males called *prieto* and the females *chichigua*. The breeding season seems to vary. Peters notes two birds in juvenal dress taken at Monte Cristi February 9, 1916. Abbott secured fully grown young in this same immature plumage at Laguna on the Samaná Peninsula August 6, 1916, and near Constanza September 24, 1916, and April 16, 1919. A male shot by Wetmore near Sánchez May 10, 1927, is molting into adult dress.

Considerable uncertainty has attached to the bird described by Ricord as *Loxia haitii*⁶² but as will be seen by the extract from the original description to be given presently the supposed species is a composite with nothing to indicate which of a number of New World grosbeaks is intended. The author writes that he saw the bird in all of the West Indies, on the Orinoco, and in Virginia, the only indication of Hispaniola being in his choice of *haitii* as a specific name. It does not appear practicable to decide which of several forms involved is the principal one as perusal of the following abstract will indicate:

"Note sur le Gros-Bec Père-Noir, *Loxia haitii*, Ricord, par M. Alexandre Ricord.

Le plumage de la femelle du Gros-bec père-noir est, pendant la première et la seconde année, d'un gris tacheté de roux feuille-morte et de noir, ce n'est qu'à la troisième mue qu'elle prend la livrée que je vais décrire.

Toute la partie supérieure est d'un roux feuille-morte; la partie inférieure et le cou d'un gris cendré; les plumes annales d'un roux clair; bec: mandibule

⁶² Rev. Zool., 1838, p. 167.

supérieure brune; l'inférieure blanchâtre; pieds gris; taille du Moineau-franc. . . .

J'ai rencontré cet oiseau dans toutes les Indes occidentales où je l'ai étudié pendant les huit années que j'y ai séjourné; je l'ai aussi observé à la Terre-Ferme de l'Amérique espagnole, sur les bords de l'Orénoque; enfin je l'ai aussi vu au continent de l'Amérique du nord, en Virginie.

Ces oiseaux fréquentent le voisinage des habitations et vivent deux à deux. La femelle fait son nid très-grossièrement dans les halliers. Elle y pond de cinq à sept œufs, de la couleur des œufs de nos moineaux; ils prennent tous deux soin des petits, avec lesquels ils passent plusieurs mois.

Bien que ce genre d'oiseaux soit de l'ordre des Granivores, il se nourrissent presque exclusivement de fruits et préfèrent la pomme-rose. Ce fruit sert de nourriture aux petits. La femelle du Père-noir a des mœurs douces, est très-attachée et fidèle à son mâle et ne s'en éloigne pas; ces oiseaux ne sont point querelleurs. Leur chant monotone est un sifflement que l'on peut rendre par: pist-pist-pist . . . pist."

Birds from Gonave Island in immature dress are very slightly grayer above than those from the main island, but adults appear identical. The difference is too slight to merit description on the present material. The following measurements include specimens from the main island and from Gonave:

Sixteen males, wing 71.9–79.2 (76.7), tail 61.7–69.3 (65.3), culmen from base 14.2–16.5 (15.2), depth of bill at base 11.0–12.9 (12.3), tarsus 19.2–23.4 (21.1) mm.

Nine females, wing 67.2–75.8 (71.2), tail 59.8–67.0 (63.5), culmen from base 12.6–14.3 (13.6),⁶³ depth of bill at base 10.4–11.8 (10.9), tarsus 19.7–22.3 (21.0) mm.

The bullfinch is from 155 to 180 mm. in length with rounded wings and very heavy, conical bill. The adult male is deep black, with the throat, line over the eye, and under tail-coverts chestnut. The female is deep blackish slate with similar chestnut markings. The young are dull gray green, paler below than above, with more or less reddish brown on throat, above the eye, and on under tail-coverts.

LOXIGILLA VIOLACEA MAURELLA Wetmore

TORTUE BULLFINCH, 'TI-COQ

Loxigilla violacea maurella WETMORE, Smithsonian Misc. Colls., vol. 81, no. 13, May 15, 1929, p. 4 (Tortue Island, Haiti).

Loxigilla violacea affinis, BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 519 (Tortue Island; nest and eggs).

Resident on Tortue Island.

The present race of the bullfinch is confined so far as known to Tortue Island off the north coast of Haiti. It is distinguished from *L. v. affinis* of the main island by greater size and larger bill, the

⁶³ Average of eight.

greater bulk of the Tortue birds being more readily evident on direct comparison of skins than from examination of the measurements that follow:

Three males, wing 82.4–84.3 (83.4), tail 70.2–71.9 (71.2), culmen from base 16.2–16.8 (16.4), depth of bill at base 12.9–13.8 (13.3), tarsus 22.1–22.8 (22.4) mm.

One female, wing 77.7, tail 65.8, culmen from base 15.5, depth of bill at base 11.9, tarsus 22.9 mm.

Type, male, wing 82.4, tail 71.9, culmen from base 16.8, depth of bill at base 13.8, tarsus 22.8 mm.

Abbott speaks of the Tortue bullfinch as common, a statement corroborated by the observations of Bond. Abbott secured two sets of eggs with nests on June 20, 1917, brought to him by natives which are evidently correctly identified as of this species. The first nest is approximately 140 mm. in diameter by 100 mm. deep, and is made of moss, fine twigs and a few leaves, lined with finer materials, the nest cavity being very deep. This nest contained six eggs of which one was broken. The remaining five have the ground color very pale bluish white, spotted with irregular markings of Verona brown, and warm sepia, these being confluent at the larger end of the egg. There is some difference in style of marking in these five eggs and it seems possible that the native who collected them may have combined two sets in the one nest. Following are measurements of four of these eggs, one being badly cracked: 20.6 by 15.1, 21.5 by 16.2, 22.4 by 16.0, and 25.3 by 16.7 mm. The second nest is composed of coarser twigs and contains many more entire leaves, several of these comprising the actual bottom lining. Like the first this nest is very deeply cupped. The coloration of the three eggs does not differ from those already described. Measurements are as follows: 20.9 by 16.4, 21.1 by 16.4 and 22.8 by 16.6 mm.

James Bond describes a nest found May 19, 1928, as placed about three feet from the ground, with a domed top.

LOXIMITRIS DOMINICENSIS (Bryant)

HISPANIOLAN SISKIN, SIGÜITA

Chrysomitris dominicensis BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93, text-fig. (Port-au-Prince, Haiti).—CORY, Bull. Nuttall Ornith. Club, 1881, p. 152 (Pétionville, specimens).

Loximitris BRYANT, Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, p. 93, text-fig. (Type by monotypy *Chrysomitris dominicensis*).

Fringilla dominicensis, GRAY, Hand-list Birds, vol. 2, 1870, p. 81 (listed).

Loximitris, EKMAN, Est. Agr. Moca, Ser. B, Bot., No. 15, December, 1929, p. 7 (Loma de Medianfa).

Loximitris dominicensis, CORY, Birds Haiti and San Domingo, July, 1884, pp. 67–68, col. pl. (Pétionville, specimens); Cat. West Indian Birds, 1892, p. 111 (Haiti, Dominican Republic).—TIPPENHAUER, Die Insel Haiti, 1892, pp.

320, 321 (listed).—CORY, Auk, 1895, p. 279 (Dominican Republic, specimens).—CHERRIE, Field Columbian Mus., Ornith. ser., vol. 1, 1896, p. 16 (Aguacate, Catarrey, specimens).—CHRISTY, Ibis, 1897, pp. 324-325 (La Vega).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, p. 362 (La Vega).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, p. 39 (mentioned).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 518-519 (La Selle, Morne Tranchant, specimens).—LÖNNBERG, Fauna och Flora, 1929, p. 109 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 326 (Loma del Medio, specimen).

Resident in the interior hills; locally common.

In traveling through the higher mountains of Haiti and the Dominican Republic siskins are flushed occasionally from near the ground in patches of weeds or about old gardens. As they fly the eye is instinctively drawn to them by the brilliant, contrasting plumage of the males with its flashes of yellow and black, though the duller colored females are inconspicuous. When once known the birds are at times observed in the tops of pines or flying in little flocks overhead. They are most abundant about the higher ridges above 1,500 meters elevation, but seem to be irregular in distribution as they have not been reported from areas in the northwest of Haiti, where they might be expected. From his personal observations Wetmore believed that the present species nests in the region of pines and following the breeding season wanders more or less to other localities.

The first specimens recorded from the Dominican Republic seem to be those taken by Cherrie at Aguacate and Catarrey in 1895. He secured adults and immature birds of both sexes. Christy found the siskin near La Vega in the same year, and in 1907 Verrill reported it as abundant in certain localities in that vicinity. He observed it in flocks in the open pasturelands. W. L. Abbott collected skins at El Río October 7, 1916, and May 13 and 14, 1919. Above Constanza at the clearing known as Bohokali on the great ridge of the Loma Río Grande he found it in abundant flocks from April 15 to 23, and collected an excellent series of specimens. Young males taken were in molt from immature to adult plumage. He noted that the birds were not breeding. In 1927 Wetmore found the siskin common near Constanza from May 20 to 26, mainly among the higher branches of the pines where because of their tiny size they were detected with difficulty except when they were moving about. The males sang low, chattering, trilling songs, composed of confused notes that at times were suggestive of the notes of the American goldfinch and again of the warblings of a ruby-crowned kinglet. The breeding season at this time was near. He observed a few near El Río May 30. Ekman presented a skin to Ciferri taken on Loma del Medio September 26, 1929.

The type specimen of this species was collected June 3, 1866, by A. E. Younglove in the mountains back of Port-au-Prince, Haiti, in all probability somewhere above Pétionville, where Cory secured specimens February 28 and March 2 and 7, 1881. Bartsch recorded the siskin from near Jérémie April 10 and 11, 1917, but did not take specimens. Abbott collected three on June 10, 1920, on Morne St. Vincent near Furey. In 1927 Wetmore recorded a flock of twenty-five on April 12 on the high ridge of La Selle at 1,800 meters, feeding on seeds of dock in an abandoned clearing, and on April 14 found numerous flocks about the clearings of the Jardins Bois Pin, where the birds fed on weed seeds near the ground, the groups being scattered about at random, working quietly, but when disturbed flying up with low notes resembling *chut chut*, or a higher pitched *swee-ee*, or *chit chit*, *chee-ee-o*. He recorded them near Furey April 17, and also observed one on Morne Rouge on the road to Las Cahobes on April 20. Bond found them abundant on Morne La Selle, and also collected specimens on Morne Tranchant near Furey January 6 and 7, 1928.

An adult male taken by Wetmore on La Selle April 12, 1927, had the bill light honey yellow, iris bone brown, and tarsus and toes dusky brown. A female shot at the same time had the bill color duller, with the tip of the maxilla dusky, but otherwise was similar. The male was molting and renewing the lesser wing coverts.

Following are measurements from adult birds in our series:

Males, four specimens, wing 64.3–65.8 (65.0), tail 40.5–43.2 (41.6), culmen from base 8.8–10.2 (9.7), tarsus 14.2–16.2 (15.1) mm.

Females, five specimens, wing 61.7–65.2 (63.4), tail 39.3–42.1 (40.5), culmen from base 9.3–9.9 (9.7), tarsus 13.8–14.7 (14.3) mm.

The siskin is a tiny bird from 110 to 120 mm. long with strong, heavy, pointed bill. The male has the entire head, including the throat, black, the wings and tail black, the back olive green, and the rest of the plumage brilliant yellow. The female has the wings and tail as in the male, the upper surface dull grayish green, and the lower parts dull yellowish white faintly and obscurely streaked with dusky.

LOXIA MEGAPLAGA Riley

HISPANIOLAN CROSSBILL, PERIQUITO, PIQUITO EN CRUZ

Loxia megapлага RILEY, Smithsonian Misc. Colls., vol. 66, no. 15, December 1, 1916, p. 1 (El Río, Dominican Republic).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, pp. 37–38, fig. 39 (notes from Abbott).—CHAPMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, pp. 331–333 (Loma Rucilla, Loma Pelona, D. R., specimens); Amer. Mus. Journ., vol. 17, 1917, p. 584 (possible origin).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 519 (Morne La Selle).—EKMAN, Est. Agr. Moca, Ser. B., Bot. no. 15, December, 1929, p. 5 (local name).



HISPANIOLAN CROSSBILL (LOXIA MEGAPLAGA)



Crossbill, BECK, Nat. Hist., vol. 21, 1921, pp. 48-49 (high slopes of Loma Pelona).

Resident in higher mountains; local in occurrence.

On his first trip to the valley of Constanza in the fall of 1916, when he had reached the high pine forests above Jarabacoa, W. L. Abbott was told of a very small parrot that lived in flocks among the pines and fed on the cones. He suspected at once that this bird might prove to be a crossbill, a supposition that was verified when he collected a pair of the birds at El Río on October 7, 1916, at an elevation of 1,250 meters. Not only was the bird a crossbill but one with white banded wings, a type that in North America does not come regularly as far south as does the companion red crossbill. (Pl. 26.)

In February and March, 1917, R. H. Beck, collecting in this same highland country but somewhat farther west, secured a series of thirty-one crossbills which came to the collections of the American Museum of Natural History. He obtained his first specimen February 23 on the south face of Loma Rucilla at the head of the Río Yaque del Sur. Ten more were taken on March 2 and 5, and others were shot at the same point on March 10, 16, and 19. He also encountered the bird on Loma Pelona March 15. Fifteen of his specimens are in streaked, immature dress, and one taken March 5 was evidently only a few days from the nest as the tail was only partly grown. The collector recorded in his journal on February 24 that the ground was covered with white frost so that these birds nest under conditions of cold as in the north. In May, 1927 Wetmore made extended search for the crossbill in the great pine forests on the mountains bordering the Valley of Constanza but without success. He believes that like the crossbills of the north the Hispaniolan form wanders from place to place with variation in food supply. Numerically it is probably not abundant. He found that the birds were known to some of the country people who called them periquitos. Abbott was told that they came at times to the pine forests about Jarabacoa.

On April 10, 1927, in traversing a stand of open pines on Morne La Selle at an altitude of 2,000 meters Wetmore heard a bird call uttered steadily and insistently that may be written *chu chu chu chu* given in a high pitched tone, and suggestive of the calls of some young woodpecker in its steady reiteration. His eye caught sight of the stocky form of a sparrowlike bird resting in the sun on a dead limb sixty meters from the ground and in another moment a fine male crossbill was in his hand. No others were seen but apparently the birds occurred here regularly since he found their bones in barn owl pellets from the nearby sinkhole known as the Trujin. Bond reported that a flock of birds seen flying above the pines in this same

vicinity were probably crossbills but of this he was not certain. There are no other records at present for Haiti.

Of the extensive series at present in the American Museum of Natural History from the Beck collection eleven skins are immature birds, fully grown in that they were on the wing, but not yet fully adult as the primaries are not quite at maximum size and in some the bill is not fully developed. The youngest is a female taken March 10, 1917, which has the bill only one half as large as in the adult. This bird is more sharply and definitely streaked below than adult females, with the light areas whiter and more extensive. The crown is dusky, mottled heavily with white. The wing bars appear as in the adult. One taken March 5 has the tail only partly grown. The juvenal plumage just described seems of brief duration, following which there is molt over the body into first fall plumage. The rectrices and remiges are retained from the juvenal stage. Two males are molting from juvenal dress into a plumage showing much orange on the head and under surface of the body. They have as yet no deep red though the molt is not complete. Four adult males show the usual variation in crossbills of this sex from deep red to orange in different parts of the plumage or in different individuals. One is almost entirely orange.

Following are measurements of adults, examined by Wetmore:

Males, six specimens, wing 85.5-90.2 (88.2), tail 56.3-60.8 (58.5), culmen from base 19.0-20.3 (19.7), tarsus 17.5-18.2 (17.7) mm.

Females, five specimens, wing 81.8-84.2 (82.9), tail 52.8-56.3 (54.8), culmen from base 18.2-19.8 (18.8), tarsus 17.0-18.1 (17.6) mm.

Type, male, wing 85.5, tail 57.0, culmen from base 19.0, tarsus 17.8 mm.

The degree of relationship to be accorded the three principal forms of white-winged crossbills now known, *bifasciata* of northern Europe, *leucoptera* of northern North America, and *megaplaga* of Hispaniola is at present uncertain. *Loxia leucoptera* is a smaller form with small, delicately formed bill and extensive white in the wing bars. *Loxia bifasciata* is larger, with much larger bill and less extent of white in the wing markings, according to the few specimens seen. *Loxia megaplaga* of Hispaniola combines the bodily dimensions of *leucoptera* with the restricted white wing bars of *bifasciata*, and has a bill even heavier than in the European bird. Obviously the three are from a common stock but since intergrades are not definitely known, in view of the geographic separation of their ranges the three are here accorded full specific rank. The coming of the crossbill to Hispaniola may be believed to date back at least to the Pleistocene.

The crossbill is from 150 to 160 mm. long and is distinguished from all other birds of the island by the twisted bill with the tips of the mandibles passing one another, to facilitate the extraction of seeds from hard, stiff pine cones. The bill tip crosses indifferently to the right or to the left in different individuals. The adult male is generally dusky, washed to a greater or less extent on the foreparts of the body with yellowish and deep red, the amounts of these colors showing much variation. Females are dusky with a wash of yellowish on the chest, and the immature are obscurely streaked on the breast. All have two prominent bars of white across the wing coverts.

AMMODRAMUS SAVANNARUM INTRICATUS Hartert

DOMINICAN GRASSHOPPER SPARROW

Ammodramus savannarum intricatus HARTERT, Bull. Brit. Ornith. Club, vol. 19, April 29, 1907, p. 73 (El Valle, Dominican Republic).—VERRILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 61, 1909, pp. 362-363 (El Valle).—PETERS, Bull. Mus. Comp. Zool., vol. 61, 1917, p. 426 (Arroyo Savana, specimens).—BOND, Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, p. 519 (Northern and Central Plains).—DANFORTH, Auk, 1929, p. 375 (Hato Mayor).—LÖNNBERG, Fauna och Flora, 1929, p. 110 (Haiti).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol 68, 1929, p. 326 (San Juan, specimens).

Ammodromus savannarum, TRISTRAM, Cat. Coll. Birds Belonging H. B. Tristram, 1889, p. 233 (Rivas, specimen).

Resident; found locally in lowland savannas.

The first report of the grasshopper sparrow for the island is that of Tristram who received a specimen taken in 1887 by A. S. Toogood, at Almercen, known now as Villa Rivas, Dominican Republic, though this is antedated by a skin in the Academy of Natural Sciences taken by W. L. Abbott at Sabana la Mar, June 25, 1883. Verrill found the birds common in the grassy savannas near El Valle in 1907, and collected two pairs which were secured by the Tring Museum and from which Hartert discovered that a distinct race was to be distinguished. Verrill records the song as an insectlike trill like that of the grasshopper sparrow of the United States. Peters obtained nine specimens at Arroyo Savana twenty-five miles southwest of Cabrera on the north coast, reporting that from March 8 to 10, 1916 the birds were singing and that the breeding season was near.

Abbott found the grasshopper sparrow common at Rivas January 11 to 16, 1921, collecting a series of eight individuals. At Pimentel he shot two males on January 22, and at Cotuí February 1, 2, and 5 secured three more, a young bird in juvenal dress being taken on February 1. Danforth found these birds common near Hato Mayor July 4 to 7, 1927, and observed two others between Belladère and La Cahobes July 12. Ciferri collected them near San Juan May 8

and 12, 1928. At Hinche, Haiti, in 1927, Wetmore found a few near the Experiment Station and collected four males on April 20 and 23. The plains here are burned annually so that there is very little cover to which the birds may resort until new growth has come. In April the cover was very scant. The majority of the grasshopper sparrows seen were about bare, gravelly knolls where they were found on the open ground. Often when approached they turned their backs when the streaked markings of the dorsal surface rendered them quite inconspicuous. Again when they were in mats of dead grass they remained hidden until almost beneath the collector's feet. At times they flew into low bushes to perch and then were easily approached. The breeding season was near and a few were heard singing the usual insect-like song. James Bond secured three at St. Michel March 3, 1928. He writes that he found the birds common on the Northern and Central Plains.

The seasonal variation in color in this form is considerable, birds in fall dress being much darker than those taken at the approach of the breeding period.

Following are measurements of specimens in the National Museum, Academy of Natural Sciences, and the Museum of Comparative Zoölogy:

Eighteen males, wing 55.8–59.3 (57.7), tail 40.3–45.9 (42.4), culmen from base 12.0–13.0 (12.5), tarsus 18.8–25.0 (21.1) mm.

Five females, wing 52.7–56.0 (54.5), tail 36.9–41.7 (39.3), culmen from base 12.1–12.7 (12.4), tarsus 19.5–21.5 (20.6) mm.

The grasshopper sparrow is from 120 to 135 mm. in length with short tail, rounded wings, and strong, heavy bill. The crown is dull black, with a buffy line down its center, and a yellow line extending from the bill to above the eye. The feathers of the hind-neck are light brown margined with gray, while those of the back and wing coverts are black or light brown margined with gray and buff. There are two indistinct light wing bars and the tail feathers, which are narrow and pointed, are blackish margined with buff. The abdomen and lower breast are white, and the rest of the lower surface is buff. The young have the chest streaked with black.

Subfamily EMBERIZINAE

BRACHYSPIZA CAPENSIS ANTILLARUM Riley

CONSTANZA SONG SPARROW, SIGUA, SIGUITA

Brachyspiza antillarum RILEY, Smithsonian Misc. Colls., vol. 66, no. 15, December 1, 1916, p. 2 (Constanza, D. R).—RICHMOND, Smithsonian Misc. Colls., vol. 66, no. 17, 1917, p. 38 (mentioned).

Mountain sparrow, BECK, Nat. Hist., vol. 21, 1921, p. 46 (above Túbano).

Brachyospiza capensis antillarum, CHAPMAN, Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, pp. 333-334 (Loma Tina, Loma Rucilla, Las Cañitas, specimens).—MOLTONI, Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, p. 326 (specimen).

Brachyospiza, EKMAN, Est. Agr. Moca, Ser. B, Bot., no. 15, December, 1929, p. 7 (Loma de Medianía, La Pelona).

Resident in the higher mountains of the central Dominican Republic.

In the autumn of 1916 when W. L. Abbott sent to the Smithsonian Institution the first known specimens of this sparrow, which as a species ranges in a large number of geographic races from southern Mexico to the Straits of Magellan, but which had been wholly unsuspected previously in the West Indies, there became known another of the strange and unexpected forms of birds of the higher mountains of Hispaniola. Abbott secured skins near Constanza and El Río in 1916, and in 1919 obtained it at Hondo at a slightly lower altitude. Beck in 1917 collected it on Loma Rucilla and Loma Tina in January, February, and March, and on Loma Ultimate Civil, near Loma Pelona, February 1. Wetmore in 1927 found it from the summit of the great hill known as El Barrero where the Constanza trail climbs from the Río Jimenoa, near Jarabacoa, to El Río and Constanza. Ekman reports it from Loma de Medianía and La Pelona and presented a specimen to Ciferri taken on Loma del Medio. The bird from present data seems mainly confined to the high portion of the Cordillera Central in the general area about the great Valley of Constanza. It is common in this circumscribed range. Under date of December 2, 1929, E. L. Ekman has written that he has observed it from the Río San Juan through Constanza to the head waters of the Río de los Cuevas, Río Yuna and Río Nizao. Wetmore searched for it carefully on the Massif de la Selle in Haiti without success.

This song sparrow is found in thickets along little streams in open valleys, at the borders of the deciduous forests, or less commonly, scattered through growths of bracken in the pine lands, where it lives a secluded life, being shy and retiring in habit. When disturbed one may appear for an instant on a prostrate tree trunk, skip rapidly along it, and then, after a slight pause, drop out of sight on the opposite side to disappear completely since it is difficult in most instances to flush them a second time. The flight is tilting and on the wing they appear very dark in color. When they do come out in the open at the slightest alarm they pitch into cover, coming up occasionally into low branches to peer about with nervous twitchings.

The song of the Constanza form while similar in general to that of the many races of the species that are found in South America lacks some of the pleasing tones of the southern birds. It seemed somewhat more subdued also but is nevertheless a pleasing and agree-

able offering of music, whose attraction is not lessened by the fact that it is necessary to search out the singer and approach near to hear to best advantage. On May 19, 1927, Wetmore observed a female collecting nesting material, and May 27 the breeding season was fully at hand. Abbott collected young in streaked immature dress near Constanza September 23 to 25, 1916.

Following are measurements from a considerable series in the United States National Museum:

Twenty-two males, wing 62.6–69.7 (66.3), tail 57.3–69.6 (65.3), culmen from base 12.1–14.0 (13.0), tarsus 22.2–24.9 (23.5) mm.

Five females, wing 61.5–64.1 (62.6), tail, 58.4–68.0 (62.0), culmen from base 12.8–13.2 (13.0), tarsus 23.0–24.5 (23.5) mm.

Type, male, wing 68.2, tail 65.7, culmen from base 12.8, tarsus 23.4 mm.

The Constanza song sparrow is from 150 to 165 mm. long, with long tail and slender form. Male and female are alike in color. The head is dark gray, with a light line above the eye, and a broad streak of black down either side of the crown. The upper surface is dull brown, with the back streaked with black, a chestnut collar around the hind neck, chestnut brown edgings on the wings and two narrow light wing bars. The central part of the under surface is white, with dull brown sides and a band of black across the lower foreneck. The young have the black neck band indistinct, and the underparts streaked with black.

BIBLIOGRAPHY

The list of titles that follows includes those that have been of importance in the preparation of the present account, though there has been no attempt to cite in it many books that contain random references to the work in hand. The authors' names are arranged alphabetically; where more than one title appears under the name of a writer the papers are given in chronological sequence.

Although considerable time has been devoted to search through early works of travel and general natural history for notes on birds this field is considered as still a fertile one for investigation, particularly in the case of certain periodicals that have not been available. Moreau de Saint-Méry⁶⁴ mentions a number of magazines and papers published in the French colonial period in Haiti which have not been found in the libraries in Washington but which may be preserved in Haiti or in France. It is possible that valuable notes on birds may be contained in them.

The Gazette de Saint Domingue according to Saint-Méry was established by M. Monceaux in Cap-Haïtien on Feb. 1, 1764 as an 8 page quarto that appeared weekly. On August 29, 1764 its title was changed to Avis divers & Petites affiches Américaines, while on January 1, 1766 it was again altered to Affiches Américaines. On March 23, 1768 the place of publication was transferred to Port-au-Prince where there was added a supplement called first Avis du Cap, then Avis du Cap, Supplément aux affiches américaines and finally Supplément

⁶⁴ Descrip. Part. Franç. Île Saint-Domingue, vol. 1797, pp. 506–511.

aux affiches américaines. The editor died August 21, 1768 and was succeeded by M. Duchemin Despaletz who died January 9, 1771. In 1777 a supplement was published in Cap-Haïtien, continuing until October 3, 1778, when the printing of the main journal was transferred once more to Cap-Haïtien with a supplement in Port-au-Prince. This continued to July 3, 1784, when the place and manner of printing were again reversed. Complete sets were unobtainable in 1782.

An Almanach de Saint-Domingue was printed in Cap-Haïtien in 1765 in duodecimo size. In 1767 this was changed to sextodecimo, and after 1769 was printed in Port-au-Prince. After 1778 there were two volumes annually, one from each of the two places mentioned.

The Journal de Saint-Domingue was begun by M. Despaletz in November, 1765, in Cap-Haïtien, and appeared monthly in duodecimo size with 64 pages in each number. It continued until January, 1767 and then failed through lack of support. It was said to contain observations on natural history as well as many other matters of interest. The first volume, which we have seen, ended in March, 1766, and is devoted to discussions of agriculture and general topics with much poetry. There are in it several general articles on natural history but with only general reference to birds.

About the same time there appeared a small sheet called the Iris américaine devoted to poetry.

Eight numbers of a Gazette de Médecine were printed in Cap-Haïtien when the enterprise failed through lack of subscribers. This was a quarto published on the first and fifteenth of the month, beginning November 1, 1778 and running to February, 1779.

Saint-Méry mentions also a Société des Sciences & Arts, indicating that the members were devoted to the study of medicine, chemistry, botany, and other matters. He writes (p. 678) that this was founded in 1784. On page 63 he mentions the first volume of memoirs of this society, and on p. 775 refers to its publication as Mémoires de la Société des Sciences & Arts du Cap-François.

Saint-Méry mentions also an organization called the Cercle des Philadelphes, composed of persons resident in Haiti interested in various phases of science before which Deshayes presented a paper on the Colibri. We have seen indefinite reference to a volume of memoirs of this society published in 1788, possibly the same as the publication mentioned in the preceding paragraph. It is said to have articles on the diseases and natural history of the island.

There is further reference⁶⁵ to a work on l'Histoire Naturelle de Port-à-Piment by M. Gauché, dated 1785, from which Saint-Méry quotes a phrase regarding silver mines worked by the Spaniards, but gives no other indication of its content.

There is also indefinite reference to a Journal des Officiers de Santé de St. Domingue, conducted by a M. Trabuc and others, which was intended to cover medicine, surgery and natural history. Four or more numbers are said to have appeared about 1793.⁶⁶

ACOSTA, JOSEPH DE :

Historia Natural y Moral de las Indias, en que se tratan las Cosas Notables del Cielo, y Elementos, Metales, Plantas, y Animales dellas: y los Ritos, y Ceremonias, Leyes, y Gouierno, y Guerras de los Indios. Sevilla, 1590, pp. 1-535, index.

Very general account of birds, including Hispaniola, pp. 280-282, 284-286.

⁶⁵ Saint Méry, Moreau de, Descrip. Part. Franç. Île Saint-Domingue, vol. 1798, p. 83.

⁶⁶ From data supplied by Dr. C. W. Richmond.

BARTSCH, PAUL:

Additions to the Haitian Avifauna. Proc. Biol. Soc. Washington, vol. 30, July 27, 1917, pp. 131-132.

Porzana flaviventris hendersoni described as new. Twelve other forms noted as new to the island.

— Biological Explorations in Cuba and Haiti. Smithsonian Misc. Colls., vol. 68, no. 10, January 16, 1918, pp. 40-48, figs. 42-48.

Travel with J. B. Henderson in Haiti from St. Marc to the Cul de-Sac region and Jérémie for mollusks, with notes on birds.

BECK, ROLLO H.:

Bird Collecting in the Highlands of Santo Domingo. Nat. Hist., vol. 21, 1921, pp. 37-49.

Popular account detailing search for crossbills and other rare birds.

BEEBE, WILLIAM:

Notes on the Birds of Haiti. Zool. Soc. Bull., vol. 30, September-October, 1927, pp. 136-141, 4 figs.

List of 81 forms observed during 1927, with 13 given as exhibited alive in the Zoological Park in New York.

— List of Haitian Birds Observed. Appendix D, in Beneath Tropic Seas, 1928, pp. 216-224.

Reprint of list in Zool. Soc. Bull., 1927, pp. 136-141. Other bird notes are scattered through the text of this volume (see pp. 11, 27, 28, 51, 52, 53, 67, 69, 70, 108, 167-168 and 215).

BOND, JAMES:

A remarkable West Indian Goatsucker. Auk, 1928, pp. 471-474, pl. 16.

Habits, nest and eggs of *Siphonorhis brewsteri*.

— The Distribution and Habits of the Birds of the Republic of Haiti. Proc. Acad. Nat. Sci. Philadelphia, vol. 80, 1928, pp. 483-521.

Annotated list of 153 forms, with important notes on distribution, nesting and habits.

BRISSON, M.:

Ornithologie ou Méthode contenant la Division des Oiseaux en Ordres, Sections, Genres, Espèces & leurs Variétés. A laquelle on a joint une Description exacte de chaque Espece, avec les Citations des Auteurs qui en ont traité, les Noms qu'ils leur ont donnés, ceux que leur ont donnés les différentes Nations, & les Noms vulgaires. 6 vols., 1760, vol. 1, pp. 1-xxiv, 1-526, 1-xxiv, 37 pls.; vol. 2, pp. 1-516, 1-lxviii, 46 pls.; vol. 3, pp. 1-734, 1-xcii, 37 pls.; vol. 4, pp. 1-576, 1-liv, 46 pls.; vol. 5, pp. 1-544, 1-lvi, 42 pls.; vol. 6, pp. 1-530, 1-lxvi, 46 pls.; Supplement, pp. 1-146, 1-xxiii, 6 pls.

Descriptions of various species from Hispaniola.

BRYANT, DR. HENRY:

A List of the Birds of St. Domingo, with Descriptions of some New Species or Varieties. Proc. Boston Soc. Nat. Hist., vol. 11, May, 1867, pp. 89-93.

Records 79 species of which *Tyrannula stolidus* (var. *dominicensis*), *Tyrannula caribaea* (var. *hispaniolensis*), *Tanagra dominicensis*, *Mimus polyglottus* (var. *dominicus*), *Chrysomitris dominicensis*, *Loximitris* and *Hirundo euchrysea* (var. *dominicensis* ?) are described as new.

BUFFON, GEORGES LOUIS LECLERC:

Histoire Naturelle des Oiseaux. 9 vols., 1770-1783, illustrated, written in part by Montbeillard, vol. 1, 1770, pp. 1-xxiv, 1-496 by Buffon; vol. 2, 1771, pp. 1-560 by Buffon; vol. 3, 1775, pp. 1-443 by Montbeillard, pp. 444-502 by Buffon; vol. 4, 1778, 1-57, 236-304, 400-438, 462-590, by Buffon,

BUFFON, GEORGES LOUIS LECLERC—Continued.

pp. 58–235, 305–399, 439–461 by Montbeillard; vol. 5, 1778, pp. 117–321, 337–361 by Buffon, pp. 1–116, 322–336, 362–528 by Montbeillard; vol. 6, 1779, pp. 1–304, 419–435 by Buffon, 305–418, 436–702 by Montbeillard; vol. 7, 1780, pp. 1–554 by Buffon; vol. 8, 1781, pp. 1–498 by Buffon; vol. 9, 1783, pp. 1–438, table, pp. 1–284 by Buffon.

Descriptions of a number of birds from Hispaniola, with original observations contributed by Deshayes. See also Daubenton, *Planches enluminées*.

CASSIN, JOHN:

A Second Study of the Icteridae. Proc. Acad. Nat. Sci. Philadelphia, 1866, pp. 403–417.

Notes on *Holoquiscalus* from Jérémie.

CHAPMAN, FRANK M.:

Descriptions of New Birds from Santo Domingo and Remarks on Others in the Brewster-Sanford Collection. Bull. Amer. Mus. Nat. Hist., vol. 37, May 14, 1917, pp. 327–334.

Oreopcleia leucometopius, *Microsiphonorhis brewsteri*, and *Microligea montana* described as new.

— [Notes on Crossbill.] Amer. Mus. Journ., vol. 17, 1917, p. 584.

Reprinted from Bull. Amer. Mus. vol. 37, 1917, pp. 332–333.

CHARLEVOIX, PIERRE-FRANÇOIS-XAVIER DE:

Histoire de l'Île Espagnole ou de S. Domingue. Ecrite particulièrement sur des Memoires Manuscrits du P. Jean-Baptiste Le Pers, Jesuite, Missionnaire à Saint Domingue, & sur les Pièces Originales, qui se Conservent au Dépôt de la Marine. 4 vols. Amsterdam, 1733. Birds, vol. 1, pp. 38–43.

Mention of a few birds, the accounts taken mainly from previous authors.

CHERRIE, GEORGE K.:

Contributions to the Ornithology of San Domingo. Field Col. Mus., Ornith. Ser., vol. 1, no. 1, March, 1896, pp. 1–26.

Annotated records of 83 species, with introduction describing the localities visited, and difficulties of work.

CHRISTY, CUTHBERT:

Field-notes on the Birds of the Island of San Domingo. Ibis, July, 1897, pp. 317–343.

Notes on 59 species with interesting notes on the majority.

CIFERRI, R.:

[Colecciones de la Estación], in Segundo Informe anual de la Estación Nacional Agronómica de Moca, 1926, (publ. 1927), p. 6.

Collection of 56 specimens of 14 species determined by Prof. E. Moltoni of Milan. Includes ruddy duck.

CLARK, AUSTIN H.:

The West Indian Parrots. Auk, 1905, pp. 337–344.

— The Greater Antillean Macaws. Auk, 1905, pp. 345–348.

CORY, CHARLES B.:

List of the Birds of Haiti, taken in different parts of the Island between January 1, and March 12, 1881. Bull. Nuttall Ornith. Club, vol. 6, 1881, pp. 151–155, map.

List of 65 species, briefly annotated.

— Descriptions of Four New Species of Haitian Birds. Bull. Nuttall Ornith. Club, vol. 4, July, 1881, pp. 129–130, Plate 1.

Description of *Picumnus lawrencii*, *Phoenicophilus dominicensis*, *Parra violacea*, and *Myiadestes montanus*.

CORY, CHARLES B.—Continued.

— Descriptions of New Species of Birds from Santo Domingo. Bull. Nuttall Ornith. Club, vol. 8, April, 1883, pp. 94–95.

Description of *Contopus frazari*, *Sayornis dominicensis*, *Myiarchus ruficaudatus*, and *Strix dominicensis*.

— Descriptions of three new species of birds from Santo Domingo. Quarterly Journal Boston Zool. Soc., vol. 2, Oct. 1883, pp. 45–46.

Phoenicophilus frugivorus, *Rupornis ridgwayi*, and *Ædicnemus dominicensis*.

— Descriptions of Several New Birds from Santo Domingo. Auk, 1884, pp. 1–5, 1 pl. (col.), 2 figs.

Ligea palustris, *Hirundo sclateri*, and *Calyptophilus*.

— The Generic Name *Ligea*. Auk, 1884, p. 290.

Microligea proposed to replace *Ligea*.

— The Birds of Haiti and San Domingo, Boston, pp. 1–198, 1 map, 22 pls. (in color). Published originally in parts; pt. 1, pp. 17–56, 6 pls., March, 1884; pt. 2, pp. 57–112, 6 pls., July, 1884; pt. 3, pp. 113–160, 6 pls., Dec., 1884; pt. 4, pp. 1–16, 161–198, 5 pls., March, 1885.

Includes 111 species.

— Notes on West Indian Birds. Auk, 1891, pp. 41–46.

Includes notes on *Cichlherminia* (= *Margarops*) *fuscata*, and *Mimus polyglottos orpheus* from Santo Domingo.

— Catalogue of West Indian Birds, containing a list of all species known to occur in the Bahama Islands, the Greater Antilles, the Caymans, and the Lesser Antilles, excepting the Islands of Tobago and Trinidad. Boston, 1892, pp. 1–163.

— Description of two new species of birds from San Domingo. Auk, 1895, pp. 278–279.

Description of *Hyetornis fieldi* and *Elainea cherviei*, with record of a few other species.

CROSSE, H.:

Faune Malacologique Terrestre et Fluviale de l'Île de Saint-Domingue. Paris, 1891, pp. 1–143, 3 pls.

Gives itinerary of various collectors, including Sallé.

DANFORTH, STUART T.:

Snowy Plover in Haiti and Porto Rico. Auk, 1929, pp. 231–232.

Near St. Marc, Haiti.

— Notes on the Birds of Hispaniola. Auk, July, 1929, pp. 358–375.

Annotated list of 121 forms seen in the Dominican Republic and Haiti, including Gonave Island.

DAUBENTON, EDMÉ LOUIS:

Planches enluminées d'histoire naturelle, 1765–1781.

1,008 plates in color, principally of birds, prepared to accompany Buffon's Histoire Naturelle des Oiseaux. Figures a number of birds from Hispaniola, a number of them however erroneously attributed to that island. The authors' name is written by some as D'Aubenton.

DESCOURTILZ, E.:

Voyages d'un Naturaliste, et ses Observations Faites sur les trois règnes de la Nature, dans plusieurs ports de mer français, en Espagne, au continent de l'Amérique septentrionale, à Saint-Yago de Cuba, et à St. Domingue, ou l'Auteur devenu le prisonnier de 40,000 Noirs révoltés, et par suite mis en liberté par un colonne de l'armée française, donne des détails circon-

DESCOUBERTILZ, E.—Continued.

stanciés sur l'expédition du général LeClerc. Paris, 3 vols., 1809, pp. i-lxiv, 1-365, 1-470, 1-476.

His account of the birds is found in vol. 2, pp. 177-265, comprising about 56 species.

DURLAND, WILLIAM DAVIES:

The Forests of the Dominican Republic. Geogr. Rev., vol. 12, 1922, pp. 206-222, 8 figs.

Divides the republic into seven ecologic types. (1) Evergreen Hardwood forest, (2) Partially Evergreen Hardwood, (3) Pine Forest, (4) Thorn Forest, (5) Savana, (6) Mostly Deciduous, (7) Littoral Woodland.

EKMAN, E. L.:

Botanizing in Haiti. U. S. Naval Med. Bull., vol. 24, July, 1926, pp. 483-497.

An account of the faunal divisions of the island.

— A Botanical Excursion in La Hotte, Haiti. Svensk. Bot. Tidskr., vol. 22, 1928, pp. 200-219, 9 figs.

Ascent of Morne Formon, one of the high peaks of La Hotte, at the end of 1926, with account of the vegetation.

— Plants of Navassa Island. Ark. för Bot., vol. 22A, No. 16, 1929, pp. 1-12, 2 pls.

Includes notes made in October, 1928, on twenty species of birds.

— En Busca del Monte Tina. Est. Agr. Moca, Ser. B, Bot., no. 15, December, 1929, pp. 3-17, 1 map.

A general account of the higher mountains of the Cordillera Central, with occasional notes on birds.

— Excursion Botanica al Nord-este de la Republica Dominicana. Est. Agr. Moca, Ser. B, Bot., No. 17, January, 1930, pp. 11, 12, 13.

Birds seen on Monte Grande, Tercero and Ratas in the Seven Brothers Group.

GABB, W. M.:

Notes on the vegetation of Santo Domingo. Amer. Journ. Sci., ser. 3, vol. 2, Aug., 1871, pp. 127-129.

— On the Topography and Geology of Santo Domingo. Trans. Amer. Philos. Soc., vol. 15, 1881, pp. 49-259, 2 maps.

GOODE, G. BROWN:

The beginnings of Natural History in America. Proc. Biol. Soc. Washington, vol. 3, 1886, pp. 35-105.

Notes on early explorers in Hispaniola.

GOULD, JOHN:

(Exhibition of specimens). Proc. Zool. Soc. London, 1835, p. 105.

16 species from Haiti received from John Hearne, including a hummingbird.

— [Description of a new Ibis from Haiti] Proc. Zool. Soc. London, 1838, p. 127.

Ibis erythrorhyncha.

GRISCOM LUDLOW:

A Review of the West Indian Black Swifts. Auk, 1924, pp. 68-71.

HARTERT, ERNST:

Aus den Wanderjahren eines Naturforschers. Pt. 3, Dominican Republic. Nov. Zool., vol. 9, 1902, pp. 293-294. (Reprinted as a separate work under the title Aus den Wanderjahren eines Naturforschers, 1901-1902, where the above is found on pp. 273-274.)

A day at Sánchez in 1892.

HARTERT, ERNST—Continued.

- [Description of a new subspecies of *Ammodramus* from Santo Domingo.]
Bull. Brit. Ornith. Club, vol. 19, No. CXXXIII, April 29, 1907, pp. 73-74.
Ammodramus savannarum intricatus.

HARTLAUB, G.:

Den heutigen Zustand unserer Kenntnisse von Westindiens Ornithologie.
Isis (of Oken), 1847, pp. 608-610.

Compilation of records for Hispaniola including a number of doubtful species.

- Ueber einige neue oder weniger bekannte Vögel Amerika's. Aus brieflichen Mittheilungen des herzogs Paul Wilhelm von Württemberg mitgetheilt. Naumannia, vol. 2, Heft 2, 1852, pp. 50-56.

Includes notes on birds collected in 1829 in Hispaniola.

[HEARNE, JOHN]:

(Letter from.) Proc. Zool. Soc. London, 1834, p. 25.

Mentions solitaire.

- [A letter accompanying a donation to the Society from the Island of Haiti.] Proc. Zool. Soc. London, 1834, p. 110.

Mentions *Columbia passerina* Linnaeus and *Columbia mystacea* Temminck forwarded alive from Port-au-Prince.

- [Notice of a collection of bird skins, 16 species, formed by him in Haiti.] Proc. Zool. Soc. London, 1835, p. 105.

JEFFERYS, THOMAS:

The Natural and Civil History of the French Dominions in North and South America. Giving a particular account of the Climate, Soil, Minerals, Animals, Vegetables, Manufacturers, Trade, Commerce, and Languages, together with The Religion, Government, Genius, Character, Manners and Customs of the Indians and other Inhabitants. London, 2 vols., 1760, pp. 1-168, 1-246, several maps.

In Part 2 there is account of hunting of parrots and pigeons by Indians (p. 12), and (pp. 168-172) a general account of birds, described mainly without geographic locality.

KAEMPFER, EMIL:

Ueber das Vogelleben in Santo Domingo. Journ. für Ornith., 1924, pp. 178-184.

A running account of birds seen and collected in various localities.

KENT, L.:

The Guinea Fowl as Game. Forest and Stream, vol. 20, 1883, p. 68.

LABAT, PÈRE:

Nouveau Voyage aux Isles de l'Amérique. Vol. 5, 1724, pp. 52-305.

Account of journey in Hispaniola, with casual mention of a few birds.

LAFRESNAYE, M. DE:

Sur l'oiseau nommé par Brisson Tangara de Saint-Domingue, *Tanagra Dominicensis*, *Tanagra Dominica*, par Linné, figuré par Buffon, pl. enl., 156, f. 2, et dont Vieillot a fait son genre Esclave (*Dulus*), sous le nom de *Dulus palmarum*. Rev. et Mag. de Zool., 1851, pp. 585-590.

Discussion of size of the feet and probable cause, with original notes by Sallé, and quotations from other authors.

LAWRENCE, GEORGE N.:

Description of a new Species of Bird of the genus *Pitangus*. Ann. Lyc. Nat. Hist. New York, vol. 11, Nov., 1876, pp. 288-290.

Pitangus gabbii from Hato Viejo, Mao River, Province of Santiago.

LEONARD, E. C.:

Botanical Exploration in Northern Haiti. Smithsonian Misc. Colls., vol. 78, no. 7, 1927, pp. 118-123, figs. 126-131.

Work on Central Plain, at Ennery and north to St. Raphael, Dondon, and Marmelade.

LÖNNBERG, EINAR:

A new Nightjar from Haiti. Ark. för Zool., vol. 20, no. 6, March 18, 1929, pp. 1-3, 2 figs.

Description of *Antrostomus ekmani*.

— Några ord om en samling fåglar från Haiti. Fauna och Flora, 1929, pp. 97-112, 1 fig.

Popular account of a collection of 200 skins of 107 forms made by Dr. E. L. Ekman in Haiti, including Navassa, Gonave, and Tortue Islands.

MACQUAET, J.:

Notice sur une nouvelle Espèce d'Aricie. Diptère de la Tribu des Anthomyzides. Ann. Soc. Ent. France, 1853, pp. 657-660, pl. 20 (col.).

Description of *Aricia pici*, an anthomyid fly with larva parasitic on *Chryserpes striatus*, collected near Santo Domingo City by A. Sallé.

MAXON, W. R.:

Botanical Exploration of the Dominican Republic. Smithsonian Misc. Colls., vol. 74, no. 2, Sept. 27, 1922, pp. 62-63.

Work of Dr. W. L. Abbott on Quita Espuela, and southern portion of Province of Barahona.

— Botanical Exploration in the Dominican Republic. Smithsonian Misc. Colls., vol. 76, no. 10, 1924, pp. 43-47, figs. 42-46.

Work of Dr. W. L. Abbott in Samaná Bay region, mainly southern shore.

— and RICHMOND, C. W.:

Biological Exploration in Haiti. Smithsonian Misc. Colls., vol. 72, no. 6, 1921, pp. 43-47, figs. 56-59.

Work by Dr. W. L. Abbott and E. C. Leonard on Gonave Island, and Cul-de-Sac plain and at Furcy.

MILLER, JR., GERRIT S.:

Exploration of Haitian Caves. Smithsonian Misc. Colls., vol. 78, no. 1, 1926, pp. 36-40, figs. 37-42.

Bone deposits at L'Atalaye.

— and KRIEGER, HERBERT W.:

Expedition to Samaná Province, Dominican Republic. Expl. and Field-work Smithsonian Inst. 1928, Smithsonian publ. 3011, 1929, pp. 43-54, figs. 33-44.

Exploration of caves at San Lorenzo, and kitchen middens on the Samaná Peninsula, with large collections of bird bones.

MILLER, WALDRON DE WITT:

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Review.

— The Systematic Position of *Calyptophilus*. Auk, 1918, pp. 356-357.

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MOLTONI, EDGARDO:

Primo Elenco degli Uccelli dell'Isola di Haiti. Att. Soc. Ital. Scienz. Nat., vol. 68, 1929, pp. 306-326.

Report on 113 forms collected in the Dominican Republic by Raffaele and Ermanno Ciferri between 1925 and 1929, with first records for *Dendrocynna viduata*, *Tryngites subruficollis*, and *Bombycilla cedrorum*.

MONTBEILLARD, GUENEAU:

See Buffon, Histoire Naturelle des Oiseaux.

NICOLL, M. J.:

On a collection of birds, made during the Cruise of the "Valhalla" R. Y. S., in the West Indies (1903-4). *Ibis*, 1904, pp. 576-577.

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[NICOLSON, le père]:

Essai sur l'Histoire Naturelle de l'île de Saint-Domingue avec des Figures en taille-douce. Paris, 1776, pp. i-xxxii, 1-374.

No birds mentioned.

OBERHOLSER, HARRY C.:

A revision of the Subspecies of the Green Heron (*Butorides virescens* [Linnaeus]). *Proc. U. S. Nat. Mus.*, vol. 42, Aug. 29, 1912, pp. 529-577.

——— A Revision of the Forms of the Great Blue Heron (*Ardea herodias* Linnaeus). *Proc. U. S. Nat. Mus.*, Dec. 12, 1912, vol. 43, pp. 531-559.

OEXMELIN, ALEXANDRE-OLIVIER:

Histoire des Aventuriers Flibustiers qui se sont signalés dans les Indes. Nouvelle édition, 4 vols. 1775.

Vol. 1 has brief account of woodpecker, booby, and man-o'-war bird, and paroquet, pp. 355-358.

D'ORBIGNY, ALCIDE:

Voyage Pittoresque dans les deux Amériques, etc. Paris, 1836, pp. 11-24.

Brief account of visit to Haiti in May and June 1826.

OVIEDO y VALDÉS, GONZALO FERNANDEZ de:

Historia general y Natural de las Indias, Islas y Tierra-Firme del Mar Océano. Reprint edited by José Amador de los Ríos, Madrid, 1851. 4 vols. account of birds in vol. 1, Libro xiv, pp. 439-448.

Gives general account of birds of Hispaniola based on personal observation, with habits of *Dulus* and observations on bird migration made between 1515 and 1555.

PENARD, THOMAS E.:

Warblers at Sea. *Auk*, 1926, pp. 376-377.

Black-throated blue warbler, northern water-thrush, ovenbird, yellow-throat, and redstart aboard ship at sea near Haiti following a storm.

PETERS, JAMES LEE:

A New Swift from Santo Domingo. *Proc. New England Zoöl. Club*, vol. 6, November 23, 1916, p. 37.

Streptoprocne zonaris melanotis from Sosúa.

——— Birds from the northern coast of the Dominican Republic. *Bull. Mus. Comp. Zoöl.*, vol. 61, Oct., 1917, pp. 391-426.

Annotated list of 92 species.

PHILLIPS, J. C.:

Wild birds introduced or transplanted in North America. U. S. Dept. Agric. Techn. Bull. 61, April, 1928, pp. 1-63.

Guinea fowl and Cuban quail in Dominican Republic.

POBSCH O. and SASSI, M.:

Die Verbreitung der Kolibris nach politischen Gebieten geordnet. *Verh. Ornith. Ges. Bayern*, vol. 18, 1928, p. 7.

List of 3 species from Hispaniola.

RICHMOND, CHARLES W.:

The Earliest Name for the Nighthawk. *Auk*, 1917, pp. 88-89.

RICHMOND, CHARLES W.—Continued.

— Explorations in Santo Domingo. Smithsonian Misc. Colls., vol. 66, no. 17, 1917, pp. 36-39, figs. 38-39.

Work of Dr. W. L. Abbott at San Lorenzo, El Río and Constanza.

— Descriptions of two new birds from Haiti. Smithsonian Misc. Colls., vol. 68, no. 7, July 12, 1917, pp. 1-3.

Nyctibius griseus abbotti and *Vireo crassirostris tortugae*.

— and SWALES, BRADSHAW, H.:

Description of three new birds from Gonave Island, Haiti. Proc. Biol. Soc. Washington, vol. 37, March 17, 1924, pp. 105-108.

Saurothera longirostris petersi, *Calyptophilus frugivorus abbotti*, and *Phaenicophilus poliocephalus coryi*.

RIDGWAY, ROBERT:

Description of a new genus of Tyrannidae from Santo Domingo. Auk, 1886, pp. 382-383.

Lawrencia (type *Empidonax nanus* Lawrence).

— New Species, etc., of American Birds.—II. Fringillidae (continued). Auk, 1898, pp. 319-324.

Pyrrhulagra affinis described as new.

— Descriptions of Seven New Species and Subspecies of Birds from Tropical America. Smithsonian Misc. Colls., vol. 47, Aug. 6, 1904, p. 112.

Myadestes genibarbis cherriei from Santo Domingo.

— Diagnosis of a new genus of Buteonine Hawks (*Coryornis* gen. nov.). Auk, 1925, p. 585.

For *Rupornis ridgwayi*.

RILEY, J. H.:

Three Remarkable New Species of Birds from Santo Domingo. Smithsonian Misc. Colls., vol. 66, no. 15, Dec. 1, 1916, pp. 1-2.

Asio noctipetens, *Loxia megaplaga*, and *Brachyospiza antillarum*.

RITTER, KARL:

Naturhistorische Reise nach der westindischen Insel Hayti auf Kosten Sr. Majestät des Kaisers von Oesterreich. Stuttgart, 1836, pp. 1-206.

The birds (pp. 150-157) listed include 78 species (not all identified with birds known to occur in the island) of which he indicates that he collected specimens of 52.

ROCHEFORT, CHARLES DE:

Histoire Naturelle et Morale des îles Antilles de l'Amérique. Enrichie de plusieurs belles figures des Raretez les plus considerables qui y sont d'écrire. Avec un Vocabulaire Caraïbe. Rotterdam, 1618, pp. 1-527, numerous plates.

Brief account of the hunting of the flamingo in Hispaniola, pp. 151-152.

SAINT-MÉRY, M. L. E. MOREAU:

A Topographical and Political Description of the Spanish Part of Saint-Domingo; containing general observations on the climate, population, and productions; on the character and manners of the inhabitants; with an account of the several branches of the government. Translated from the French by William Cobbett. Philadelphia, 1798, vol. 1, pp. i-liv, i-314, vol. 2, pp. 1-318.

Casual reference to birds.

— Description Topographique, Physique, Civile, Politique et Historique de la Partie Française de l'île Saint-Domingue. Avec des Observations Générales sur sa Population, sur le Caractère & les Moeurs de ses divers Habitans; sur son Climat, sa Culture, ses Productions, son Administration,

SAINT-MÉRY, M. L. E. MOREAU—Continued.

&c. &c. Accompagnées des détails les plus propres à faire connaître l'état de cette Colonie à l'époque du 18 Octobre 1789; et d'une nouvelle Carte de la totalité de l'île. Vol. 1, 1797, pp. i-xx, 1-788, with map; vol. 2, 1798, pp. 1-viii, 1-856.

Occasional mention of birds.

SALLÉ, A.:

[Description of *Ornismia Catherinae*]. Rev. Mag. Zool., 1849, pp. 498-499. Original description. Author's name incorrectly spelled "Salé."

—— Liste des Oiseaux Rapportés, et Observés dans la République Dominicaine (Ancienne Partie Espagnole de l'île St. Domingue ou d'Haiti) pendant son voyage de 1849 à 1851. Proc. Zool. Soc. London, 1857, pp. 230-237.

61 species briefly annotated.

—— Liste d'Oiseaux a vendre provenant des chasses faites en Amérique. (Sales Catalogue), Paris, March, 1861.

Includes the following from "Île de Saint Domingue ou d' Haiti"; *Trogon roseigaster* Vieillot, *Sporadinus elegans* Audebert, *Setophaga ruticilla* Linnaeus, *Dendroica canadensis* Linnaeus, *Dendroica pensilis* Gmelin, *Icterus dominicensis* Linnaeus, *Columba leucocephala* Linnaeus, *Geotrygon montana* Linnaeus, *Chamaeopelia passerina*, *Aramus scolopaceus* Vieillot, *Butorides virescens* Linnaeus, *Gallinula galeata* Lichtenstein.

SCHMIDT, KARL PATTERSON:

The Herpetology of Navassa Island. Bull. Amer. Mus. Nat. Hist., vol. 44, December 23, 1921, pp. 555-559, 2 pls., 5 text-figs.

SCLATER, PHILIP LUTLEY:

Notes on an Unnamed Parrot from the Island of Santo Domingo, now living in the Society's Gardens; and on some other Species of the same Family. Proc. Zool. Soc. London, 1857, pp. 224-226, pl. cxxvii.

Description of *Chrysotis sallaei*.

STRICKLAND, H. E.:

On the Type of the Genus *Dulus* Vieill. Jardine's Contr. Orn., 1851, pp. 103-104.

THOMPSON, FRANK J.:

The *Ædicnemus dominicensis* in Confinement. Auk, 1885, p. 110.

Two juvenile birds at Zoological Gardens, Cincinnati, Ohio.

TIPPENHAUER, L. GENTIL.

Die Insel Haiti, vol. 1, Allgemeiner Theil, pp. i-xvi, 1-365. Vol. 2, Besonderer Theil, pp. i-ix, 366-693, separatabdruck für Haiti in zwei Banden, Leipzig, 1892, many plates.

List of birds compiled mainly from literature with a few original observations (pp. 317-323), some of the records being uncertain. Bibliography.

—— Die Insel Haiti, 1 vol. Leipzig, 1893, pp. i-xviii, 1-693, 65 pls.

Reprint of two volume edition with change in dedication, slight addition to preface, but no other apparent changes in text.

TRISTRAM, H. B.:

On a Collection of San Domingo Birds. Ibis, 1884, pp. 167-168.

Twenty-nine species collected by Mr. C. McGrigor without localities.

—— Catalogue of a collection of birds belonging to H. B. Tristram, D.D., LL.D., F.R.S., 1889, pp. i-xvi, 1-278.

Specimens from Hispaniola listed.

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