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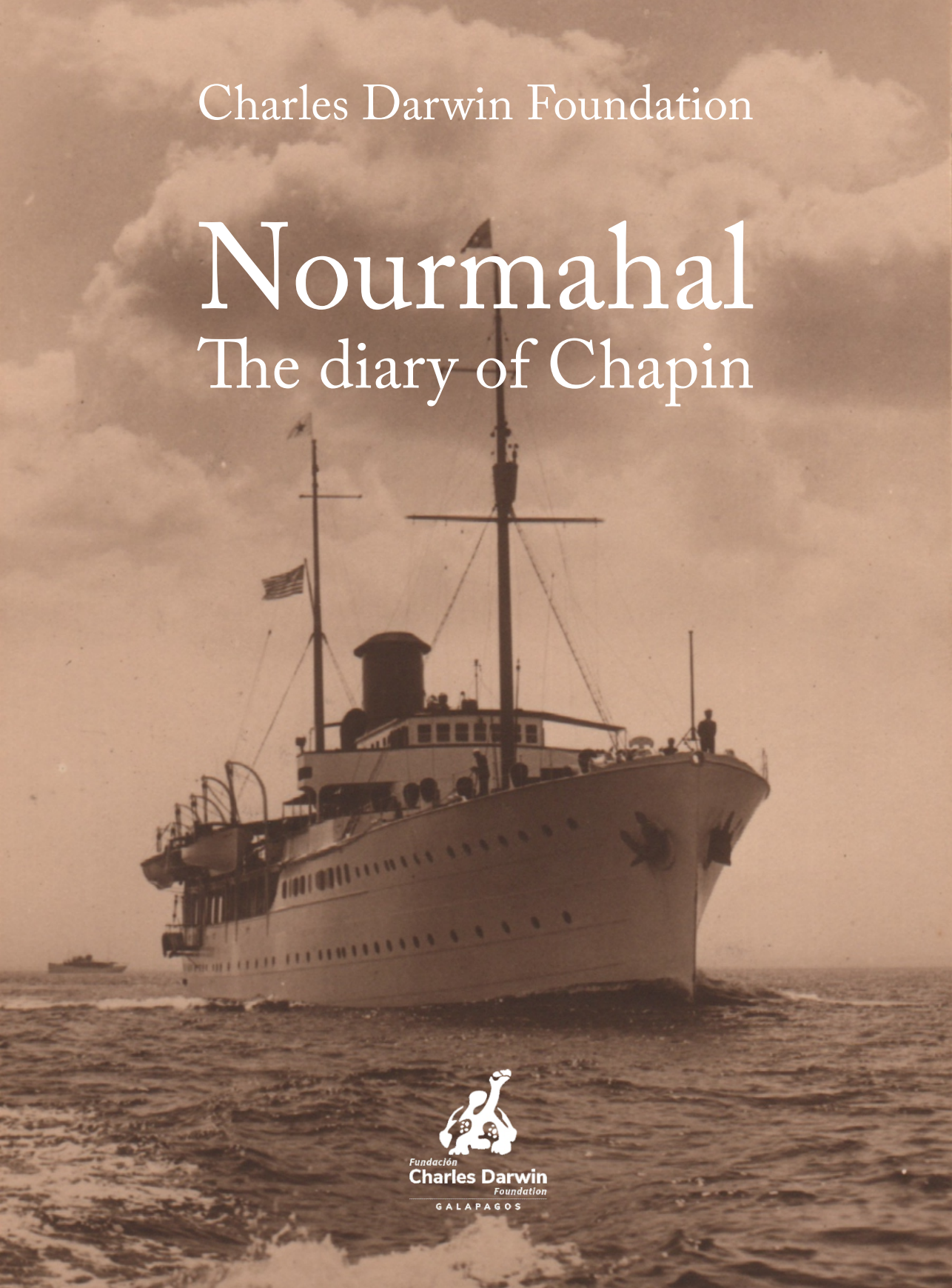
# Nourmahal

## The diary of Chapin



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Charles Darwin Foundation

# Nourmahal
## The diary of Chapin

Text and edition by Edgardo Civallero

Series "Memorias de la FCD" n° 23

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Library, Archive & Museum
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# INTRODUCTION

## A myriad of arrivals

The progressive recognition of the Galapagos Islands, their landscapes and their biodiversity throughout the history of the archipelago was inevitably associated with the amazement that their discoverers and visitors felt when encountering a unique biological reality.

The first document in the Galapagos bibliography, the letter to King Charles I from Bishop Tomás de Berlanga (1535), official discoverer of the islands and the first to leave a written record of their existence, already included a brief description of animals and unique places. His testimony was replicated, in greater detail, by British and French sailors (17th and 18th centuries) who, on piracy or hunting journeys through the waters of the South Sea, stopped at the Encantadas and described, in their logs and diaries, the particularities of the space they were traveling and getting to know.

Such was the case of the American David Porter (1813), who docked in the archipelago in the middle of a vehement crusade to

clean the Pacific waters of British whalers. He was followed by the visits of the *Briton* and the *Tagus* (with the later chronicles of Shillibeer) in 1814, the voyages of Amasa Delano (1800 and 1817), and those of Ben Morrell, author of exaggerated personal narratives.

The early biological and geological brushstrokes included in these narratives, simple and almost sketchy, were expanded and deepened in the reports of the first naturalists who set foot in the Galapagos. Their words ended up inspiring a cohort of colleagues determined to thoroughly study such a "lost paradise" in the middle of the waters of the Pacific Ocean.

Throughout the 19th century, scientists who managed to reach the shores of the Galapagos Islands did so as part of much larger exploration expeditions, with objectives that sometimes had nothing to do with science. Among those voyages were those of Basil Hall's *Conway* (1822), the *William & Ann* with Scouler on board (1825), Lord Byron's *Anson* (1825), and the *Potomac* (1834).

A turning point in the list came from the unforgettable visit of FitzRoy's *Beagle*, with Charles Darwin on deck (1835). It would be followed by the arrival of the *Vénus* of Petit-Thouars (1838), the *Herald* and the *Pandora* (and the chronicles of Seeman) (1846), the Swedish ship *Eugenie* (1852), the ornithologist Simeon Habel

(1868), the *Reindeer* (1873), the *Peterel* (1875), the *Triumph* (1880), the Italian corvette *Vettor Pisani* (1884) and the *Albatross*, which dropped anchor in the Encantadas on several occasions (1889, 1891, 1904...).

It was probably from the visit of the Swiss-American biologist and geologist Jean Louis Rodolphe Agassiz in 1872, aboard the *Hassler*, when a new type of exploration began: academics and scholars who, moving in ships adapted to the situation, traveled specifically to the islands and their surroundings to investigate. And, above all, to collect biological samples and specimens that would feed the voracious appetite of zoos and private collections. The trail marked by Agassiz was followed by George Baur's Salisbury Expedition (1891), the Webster-Harris Expedition aboard the *Lila & Mattie* with Rollo H. Beck among the participants (1897), and the Hopkins-Stanford Expedition (1898).

Beck would return to the Galapagos in 1901 aboard the *Mary Sachs*, on a voyage financed by Lord Walter Rothschild. And it was that trip, right at the turn of the century, that seems to have firmly established a kind of modification in the paradigm of expeditions. One that would extend at least during the first half of the 20th century. Many of them began to be supported by philanthropic magnates with a deep interest in natural history. The organization could fall to academic institutions, but the objectives, budget and even infrastructure were usually defined by such patrons. There

were, of course, self-organized travels: a clear example was that of the Lack-Venables Expedition of 1938-9, whose members were forced to assume (and suffer) a long series of constraints and limitations. But in general, that was the exception rather than the rule.

Among the expeditions organized by strong organizations in Europe and the United States were the voyages of the *Albatross*, of the US Fish Commission, and that of the California Academy of Sciences, aboard the *Academy* (1905). And among those that had private support, those of Wiliam Beebe stood out aboard the *Noma* (1923) and the *Arcturus* (1925), alongside that of the millionaire William K. Vanderbilt on the *Ara* (1926), that of Allan Hancock aboard the *Oaxaca* (1927), the Cornelius Crane Pacific Expedition financed by Vanderbilt himself aboard the *Illyria* (1929), and that of the magnate Vincent Astor with the *Nourmahal* (1930).

The *Vagabondia* of William Mellon and the *Mizpah* of Eugene McDonald, both millionaires, arrived in the Galapagos the same year that the *Nourmahal*. But Astor had the idea of taking a group of American scientists with him. They left a set of magnificent testimonies of their work, including articles, travel diaries, and a beautiful photo album.

The present work, divided into two parts, presents the aforementioned collection of images, and the transcription of one

of the scientific diaries of the *Nourmahal* expedition: that of the American ornithologist James P. Chapin.

## An old manuscript

The "Journal Galapagos" is currently preserved in the special collection of the Charles Darwin Foundation (CDF) Library, Archive and Museum, located at the Charles Darwin Research Station (CDRS) on Santa Cruz Island, Galapagos, Ecuador.

It is a typed copy of an original manuscript — its origin, or the story on how it arrived to Galapagos being so far unknown.

The text is authored by James Paul Chapin (New York, July 9, 1889 - April 5, 1964), an American ornithologist and curator of the American Museum of Natural History (AMNH).

One of the most regarded ornithologists of the 20th century, he received a Bachelor's degree in 1916, a Master's degree in 1917, and a PhD in 1932, all of them at the Columbia University. Then he began his lengthy career at the AMNH. As an undergraduate, he was part of a 6-year AMNH expedition to the Belgian Congo (1909-1915) working as an assistant; there, he made a number of significant discoveries. From 1915 to 1919, he acted as an assistant to the ornithology department of the AMNH, then became the

assistant curator (1919-1923), and later the associate curator (1923-1948).

He travelled to Panama (1923) and Belgian Congo and Eastern Africa (1926-1937), and between 1932 and 1954 he published his best-known work *Birds of the Belgian Congo* in 4 volumes.

His "Journal Galapagos" presents a very personal narrative of the expedition — from the perspective of an ornithologist. There are countless notes on birds, their flights, habits and songs. However, the author also pays attention to latitudes, longitudes, weather and runs; to natural phenomena, as the phosphorescence in the middle of the ocean; to the landscapes he approaches, the vegetation and the fauna; and, of course, to his companions and their adventures during the trip.

Chapin's diary, in combination with the album of photographs of the expedition, allows us to learn that the *Nourmahal* set sail from Miami on March 23, 1930, crossed the Caribbean Sea and passed through the Panama Canal around the 28th of the same month, with a stop at the Tapia River, in the vicinity of Panama City. Then it continued its journey and arrived at Santa Cruz Island, in the Galapagos, on March 31. After exploring the neighborhoods of Academy Bay (where the town of Puerto Ayora is currently located) and the forested upper part of the island, the ship circumnavigated it to the east (April 10) to head for the Seymour

Islands and Daphne Major, where scientists recognized the fauna of the crater that characterizes this last island. On April 11 the ship returned to Academy Bay sailing west of Santa Cruz, sighting Pinzón, Rábida and Santiago islands. From that point, the expedition headed to Floreana Island (April 12), where it took an image of a post office box placed on Black Beach by the Ritters, with whom the crew had lunch, and from there it returned to Academy Bay (April 13). The *Nourmahal* revisited the Seymour Islands (April 14) and then headed to Genovesa Island (April 15).

After that, the ship abandoned Galapagoan waters and headed north (April 16). It passed through Cocos Island (Costa Rica) between April 17 and 20, and through the Pearl Archipelago (Señora Island, Pedro González Island, Panama) between April 21 and 22, and then arrived in Balboa, Panama. From that point the scientists visited Frijoles by land (April 23) and from there they went to the Barro Colorado Island scientific station. That same day they boarded the *Nourmahal*, which was crossing the Panama Canal, and went out to the Caribbean Sea. Surrounding the island of Cuba to the west, they stopped at several Dry Tortugas cays (April 27), south of Florida. The ship docked in Miami on April 28, and there the graphic story in the album ends. However, the voyage continued until May 2, when the *Nourmahal* finally dropped anchor in New York City.

Chapin wrote his journal from a clear position as an academic naturalist. Although he expanded on several personal anecdotes (fishing a marlin, an accident in the middle of a storm...), he focused on describing the nature around him, especially the ornithological fauna. Thus, his account is devoid of extensive mention of the human presence in the territories he visited, especially in the Galapagos. However, small details can be recovered that allow readers to discover the activities of the settlers on Santa Cruz Island (Norwegians hunting on Barrington Island, crops in the current area of Bellavista, tortoises tied up on a road, the old fish cannery at Academy Bay, inhabited houses) and even the early presence of invasive species (goats, pigs, donkeys...).

## The characters

Besides James Paul Chapin, recognized members of the voyage aboard the *Nourmahal* were Vincent Astor, Eugene Pool, C. Swydan Cutting, Robert Huntington, Kermit Roosevelt, Clarence Leonard Hay, E. R. Sanborn, C. H. Townsend, Wilfrid S. Bronson, and Henry K. Svenson.

About Vincent Astor, the ship's owner, a book could be written. Born in 1891 in New York, he lost his father in the sinking of the *Titanic* and, from that moment on, becoming a rich heir, he abandoned his studies at Harvard and devoted himself to business

and philanthropy. He died in 1959, leaving his entire fortune to a foundation.

About Eugene Pool, C. Swydan Cutting and Robert Huntington, no further information has been found; they probably were Astor's personal friends. Kermit Roosevelt, a member of the famous dynasty of politicians, was a businessman and explorer, participated in a large number of expeditions, and between 1937 and 1939 he was vice-president of the Zoological Society of New York. For his part, Clarence Leonard Hay worked at the American Museum of Natural History as a botanical curator, and Elwin Roswell Sanborn was the first official photographer of the New York Zoo, and probably the author of most of the photographs in the album. Sanborn worked with Charles Haskins Townsend, a famous American zoologist and naturalist, who at the time of the *Nourmahal* expedition was the director of the New York Aquarium, and who traveled to the Galapagos on several occasions.

Wilfrid Swancourt Bronson was a natural history writer and artist, and at the time of the trip he was working for the Brooklyn Botanic Garden. Henry K. Svenson was an American botanist born in Sweden who also worked at the Botanical Garden, and who produced an article on the flora of the Galapagos after the expedition; additionally, he continued investigating the relationships between the flora of the islands and those of South America.

## The text

Even if typed, the transcription of the original document presented a number of challenges.

Whenever particular words were not clearly understood, a question mark was inserted ([?]) between brackets. Also between brackets were added some late comments from the author (adding details or clarifying some obscure passage), and some symbols, like the ones traditionally used for "male" and "female".

Temperatures were kept in Fahrenheit degrees, and the author's formats and structures, although sometimes irregular, were respected. Original scientific names were maintained, and a number of footnotes were provided whenever necessary, to correct or add context. Minor typos were correctly at once. Onomatopoeias (particularly those of bird songs) were preserved in English, as were the names of the different islands of the Galapagos archipelago.

There are some references to the photos taken during the expedition; most of them can be found at the other part of this work, which focuses on the expedition's picture album.

Times and distances were kept and corrected whenever possible. They are important because they provide valuable information

about the difficulties to travel —especially when moving on a harsh terrain as the Galapagos— and because Chapin sometimes indicates distances based on "walking times from the coast."

## Paths to the future

The recovery, digitization and presentation of this text and its associated documents represent only a first step in the analysis of the items produced during the *Nourmahal* expedition.

It is necessary to undertake the search, compilation and comparison of other texts (diaries, notes, reports) written during the same trip, and to carry out studies about the landscape changes in the visited territories, the first reports of the presence of species in specific places, and even human activity, particularly in the Galapagos Islands.

We hope that this first step will encourage others to follow this path.

## Bibliography

Svenson, Henry K. (1935). Plants of the Astor Expedition, 1930 (Galapagos and Cocos Islands). American Journal of Botany, 22(2), pp. 208-277.

# JOURNAL GALAPAGOS

[late Dr. James P. Chapin
American Museum of Natural History, N.Y.]

Galapagos 1930
Cocos
Pearl Is.

On yacht *Nourmahal* [of Vincent Astor] to Galapagos Is.

# THE JOURNAL

## Friday, 21 March, 1930

One of the busiest days of my life. Bought canvas shoes and visited bank on way to Museum[1], then answered a few letters, packed a few things in trunks, but how they went in was a mystery. DeSola[2] called and talked Galapagos. In early afternoon I started to cut silhouettes for Kidong group, aided by Bert Butler. Constant interruptions. Dr. Sanford[3] dropped in a moment. Then just before 4 [p.m.] came Dr. Fred T. Murphy. Delivered baggage to Hotel Pennsylvania, returned to Museum, said goodbye to Noble and Gregory.

After dinner visited R. H. Pentz, [my dentist,] and then wrote letters until 1:30 a.m.

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[1] The American Museum of Natural History (AMNH), in New York.

[2] Probably C. R. DeSola, colleague of Chapin at the AMNH, and author of several papers on Galapagos' biodiversity.

[3] Probably Leonard Cutler Sanford, American ornithologist and a trustee of the AMNH.

## Saturday, 22 March, 1930

Left New York in special car on the "Miamian"[4] at 9:40 a.m. Elizabeth and Elliott [Chapin], with Elliott Jr.[5] drove me to the ferry, for I was laden with gun, DeVry[6] [camera], and suitcase. 7 trunks and boxes had been checked, and 4 more went ahead by boat to Miami.

We occupy a whole compartment car: Vincent Astor, Dr. [Eugene] Pool, Huntington, Kermit Roosevelt, C. Swydan Cutting, Clarence Hay, Dr. C. H. Townsend, E. R. Sanborn, Bronson, Dr. Svenson, Mr. Astor's Valet, and J. P. C.

There was little to look at from the train, so we talked. Will Beebe[7], Prohibition, sapsuckers damaging trees in New Hampshire, the climate and vegetation of the Galapagos and the future of the Republican Party, these were only a few of the topics.

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[4] A seasonal long-distance train service on the Atlantic Coast Line, specially serving the vacationers' market between northeast USA and the South.

[5] Probably siblings and nephew.

[6] Nicknamed "the lunchbox", it was a portable filming camera invented by German Herman A. DeVry in 1912.

[7] William Beebe, American naturalist who travelled to Galapagos on board the *Noma* and the *Arcturus*, and who published a number of works based on both expeditions, including the famous *Galapagos: World's End*.

## Sunday, 23 March, 1930

Woke up as the train stood in Jacksonville[8]. At least this is where I got up, for after about a week of going to bed after 1 a.m. I wanted to be lazy.

Soon after Jacksonville we saw one young brown pelican, a few gulls (including one Bonapartes[9]). Country exceedingly flat all day, of pine barren type, palmettos, and many larger fan-palms. Mockingbirds and crows common. One loggerhead shrike, 2 Florida jays, another young pelican at Stuart, more Bonapartes gulls, fish hawks (2 nests), turkey vultures, 2 black vultures, American egrets, little blue and great blue herons, cormorants 2 (Double-crested or Florida?)[10]

Arriving at Miami, 6 p.m., we [were] taken in auto to the Municipal Pier, and at 6:50 [p.m.] we set sail. Saw R. Deckert at Miami. Sea smooth, and the *Nourmahal* more than magnificent.

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[8] A city in Northern Florida, USA.

[9] The Bonaparte's gull (*Chroicocephalus philadelphia*) (*Wikipedia*).

[10] The loggerhead shrike (*Lanius ludovicianus*), the Florida scrub jay (*Aphelocoma coerulescens*), the fish hawk or osprey (*Pandion haliaetus*), the turkey vulture (*Cathartes aura*), the black vulture (*Coragyps atratus*), probably a great egret (*Ardea alba*), the little blue heron (*Egretta caerulea*), the great blue heron (*Ardea herodias*), and the double-crested cormorant (*Nannopterum auritum*) (*Wikipedia*).

At night many spots of brief phosphorescence close to ship, some larger glows, deeper down, near screws.

## Monday, 24 March, 1930

Tonnage (or displacement) of the *Nourmahal* varies from 2,700 to 3,200 tons. Carries 72,000 gallons of water. Position at noon 23°07'N, 79°0'W. Clear all day, rather warm, with a fresh breeze, a few clouds in sky especially in afternoon. Saw one frigate bird (*Fregata m. rothschildi*[11]) in morning, also a small flock of terns (*S. fuliginosa*[12]?) During afternoon four more frigate birds, two flocks in distance of what may have been sixty terns, and one black and white shearwater (*P. puffinus*[13]). Fair numbers of flying fish all day, sometimes in flocks of 40-50. They seemed all alike, moderate size, perhaps 6-8 inches, silvery with dusky backs, fins pale and translucent, pelvic fins rather well developed. No small flying fish seen beneath bow. Small patches of gulf-weed frequent. At night moderate sparking of phosphorescence in agitated water close to ship.

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[11] The magnificent frigatebird (*Fregata magnificens rothschildi*) although the correct scientific name today is just *Fregata magnificens* (Datazone).

[12] The sooty tern (*Onychoprion fuscatus*, prev. *Sterna fuliginosa*) (*Wikipedia*).

[13] Also known as the Manx shearwater (*Puffinus puffinus)* (*Wikipedia*).

## Tuesday, 25 March, 1930

Position at noon, 20°0'N, 74°10'W. Day's run, 340 miles. Speed, 14-17 knots. Clear all day, sea fairly smooth till 5 p.m., wind then increasing from S or SE. Some seasickness toward supper time.

Toward noon one white booby with black wing tips but whole tail looking white to me, feet seemingly red. Must have been *Sula p. piscatrix*[14], of which I saw one in intermediate dress (whole rump and tail white) in late afternoon. 8 other boobies flying S in a long file seemed to be immature of *piscatrix*.

About 5 p.m. one adult *Sula leucogastra*[15] passed us going southward. A half hour earlier I saw what seemed to be a tropic bird[16], first on wing, then alighting on water. Too far off to recognize species.

## Wednesday, 26 March, 1930

Position at noon 14°69'N, 76°40'W. Day's run, 336 miles. Clear weather, ship rolling a little, a fair breeze.

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[14] The red-footed booby (*Sula piscatrix piscatrix*) although nowadays the correct scientific name is *Sula sula (websteri)* (*Wikipedia*, Datazone).

[15] The brown booby (*Sula leucogaster)* (*Wikipedia*).

[16] A species of the family Phaethontidae (*Wikipedia*).

Few birds: a young booby of some sort, mostly dull brownish; and from 4 to 5 p.m. a small party of pomarine jaegers[17] flew around the ship or followed in our wake. I counted four, Bronson[18] said he saw six. One at least was in full adult plumage, with longer median rectrices, twisted vertically. One or two others were similarly colored but lacked lengthened rectrices, while one was more brownish below, and showed irregular white patches on upper side of wings — especially near bases of primaries and on outer wing-coverts.

At night the usual sparks from *Noctiluca*[19] (?) along the sides of the ship and in the wake much larger flashes from some other creatures.

## Thursday, 27 March, 1930

10°05'N, 79°40'W. Day's run, 343 miles. Weather a little hazy in morning, later clear. During the morning we saw what seemed to be 3 species of flying fish: (1) ordinary silvery ones with whitish fins, size about 6-8 inches. (2) very small ones, similarly colored, I think also with large pelvic fins. They seem to be about 3 inches

[17] The pomarine jaeger (*Stercorarius pomarinus*) (*Wikipedia*).

[18] Wilfrid Swancourt Bronson, a natural history writer and artist, working at the time for the Botanical Gardens of Brooklyn (*Wikipedia*).

[19] *Noctiluca scintillans*, a marine species of dinoflagellate known for its ability to bioluminesce (*Wikipedia*).

long. Once a school of fully 50 got up together. (3) a large species, perhaps 9-10 inches, dark colored on back, and pectoral fins dark reddish brown with white posterior margin. Only 2 seen today.

Toward noon a *Sula dactylatra*[20] in adult dress (secondaries and wings black), soon joined by another, and then a third. All three circled about ship and dove many times for fish. One pomarine jaeger in early afternoon.

Arrived off Colon[21] about 3 p.m., entered Canal[22] toward 4, and reached Balboa[23] at 10:30 p.m.

A few large terns (royal?)[24] at Colon.

Night fell about Gamboa, came through Gaillard Cut[25] after dark.

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[20] The masked booby (*Sula dactylatra*) (Datazone).

[21] Colón, a city and seaport in Panama, beside the Caribbean Sea, lying near the Atlantic entrance to the Panama Canal (*Wikipedia*).

[22] The Panama Canal.

[23] Balboa is a district of Panama City, located at the Pacific entrance to the Panama Canal (*Wikipedia*).

[24] The royal tern (*Thalasseus maximus*) (*Wikipedia*).

[25] The Gaillard Cut, today known as Culebra Cut, is an artificial valley that cuts through the Continental Divide in Panama (*Wikipedia*).

## Friday, 28 March, 1930

Balboa-Panama-Tapia R[iver]. After seeing J. F. Patterson (Hydrographic Office) and Humphreys (Quartermaster) went to Panama and visited Wm. Patterson and A. La Guardia. Then hired a car and drove with Dr. Svenson[26] to La Guardia's house at Tapia River[27]. There has been considerable building on the east side of Panama City, and now in the dry season the vegetation is less attractive than during the rains.

At Tapia the house and dairy farm are the same as in 1923, but the woods between the house and the river have all been cut down. High grasses now grow where our night monkeys made their home. Plenty of basilisk and lizards along the river. Water low, no current, many minnows. Here I saw a chestnut-sided warbler, 2 kingbirds (*T. tyrannus*) and shot 1 mourning warbler[28]. Plenty of large Tejid lizards[29] in grass at edge of trees that line the river.

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[26] Henry K. Svenson, a Sweden-born, American botanist who worked at the Botanical gardens of Brooklyn.

[27] River Tapia, a small river in the east part of Panama City.

[28] The chestnut-sided warbler (*Setophaga pensylvanica*), the Eastern kingbird (*Tyrannus tyrannus*) and the mourning warbler (*Geothlypis philadelphia*) (*Wikipedia*).

[29] Members of the family Teiidae, native to the Americas, known as whiptails or racerunners (*Wikipedia*).

Returned to Panama and took W. Patterson to ship. Then back to visit Panama.

Sailed from Balboa 5:35 p.m. Many pelicans and frigate birds in bay.

## Saturday, 29 March, 1930

Position at noon, 5°41'N, 82°13'W. Day's run, 261 miles. Clear weather, sea unusually smooth. Flying fish fairly common, most of them seemed of fair size with dark pectoral fins, one small one seemed to have variegated fins.

*Sula dactylatra* the commonest bird, several seen sitting on floating logs, 2 flying over a school of porpoises. At 5 p.m. there was a whole tree afloat, and on it sat 10 boobies, some whites, others brown (immature *dactylatra*?) 6 or 8 petrels seen, blackish with a good deal of brown on wing-coverts, apparently no white on rump, probably *Oceanoderma melania*[30]. 2 petrels, probably the same Leach's[31], followed our wake a long time. All were about the size of Leach's petrel, or slightly larger if anything, and had the same erratic flight.

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[30] The black storm petrel (*Hydrobates melania*, prev. *Oceanoderma melania*) (*Wikipedia*).

[31] The Leach's storm petrel or Leach's petrel (*Hydrobates leucorhous,* prev. *Oceanodroma leucorhoa*) (*Wikipedia*).

One tern seen sitting on log, looked gray, with darker crown, throat and sides of neck very white.

Several school of porpoises, 6 to 8 mostly, but one of fully 50-60, at 3 p.m. These were of plain dusky color, with sharp snouts (see photo of school).

Water today not so deep blue as in Caribbean. Less phosphorescence in wake of ship than yesterday.

## Sunday, 30 March, 1930

Position at noon, 2°17'N, 86°35'W. Day's run, 336 miles, speed 14.0 knots. Partly cloudy, with shower about 1:30 p.m. Few birds seen, a flock of 25-30 boobies, in afternoon, were hovering over some porpoises, most of these boobies were brownish (immature?) but a few white with black wing feathers — no doubt *dactylatra*. Later one young booby of dull brownish color throughout circled about boat.

Late in the afternoon I saw one shearwater, white below, dusky above; and a small petrel, very blackish save on rump, which there was a patch of whitish not very conspicuous. Its flight very erratic,

wobbling from one side to the other. Probably *Oceanodroma tethys*, but possibly *O. castro*[32].

Flying fish seen today all seemed to have dark pectoral fins, dark brown with perhaps a reddish tinge. Pelvic fins also show in flight and are pale in color.

Relative little phosphorescence in water tonight. A rather strong swell coming from SE.

## Monday, 31 March, 1930

Sighted Chatham Island and Kicker Rock[33] early this morning, then Indefatigable Island[34]. Passed between Barrington[35] and Indefatigable. Many small shearwaters and a few *Sula dactylatra*. 2 sea lions[36] jumping like porpoises.

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[32] Gender *Oceanodroma* is currently deprecated. The mentioned species are the wedge-rumped storm petrel (*Hydrobates tethys*) and the band-rumped storm petrel, Madeiran storm petrel, or Harcourt's storm petrel (*Hydrobates castro*) (*Wikipedia*).

[33] Known as San Cristóbal and León Dormido in Spanish.

[34] Known as Santa Cruz in Spanish.

[35] Known as Santa Fe in Spanish.

[36] The Galapagos sea lion (*Zalophus wollebaeki*) (Datazone).

Indefatigable had some clouds over it, but nearly all summits visible. Instead of looking dry and brown, it showed bright green, especially down near shore where arborescent cacti were conspicuous as we neared it. Black lava along shore varied by small patches of yellow sand. Passed a small island[37] and anchored in Academy Bay — rather well off shore.

Went ashore at 1:30 p.m., and found old fish cannery[38] deserted. One house seemed occupied, another empty. Old manure from horse, one trail leads northward, so Kermit Roosevelt and Swydam Cutting[39] walked up it for about 3 miles. No sign of inhabitants. Mosquitos became bad at nightfall. We caught some water-striders at the dock.

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[37] Probably Caamaño islet.

[38] Part of the buildings built by the Norwegian colonists arrived to Academy Bay on board the *Ulva* in 1926. They were abandoned in 1927.

[39] Kermit Roosevelt, a member of the famous lineage of politicians, was a businessman and explorer, participated in a large number of expeditions, and between 1937 and 1939 was the vice-president of the New York Zoological Society. C. Swydan Cutting was probably a personal friend of Astor.

## Tuesday, 1 April, 1930

Last night very uncomfortable. Only 3 mosquito nets. Roosevelt slept upstairs in the cannery. Cutting, Hay, Svenson, Townsend[40], and I in empty house. Hay named it "Cozy Cot." Townsend slung hammock on porch, the rest made beds on floor till I found a 6 inch centipede[41] where I was about to spread blanket. Hammocks were now strung up in strangest ways. Little sleep because of heat and mosquitos.

Set traps near houses and caught 2 rats[42]. Look somewhat like gray rats, but probably are not. Long search with flashlights for geckos was fruitless.

We decided that Roosevelt, Cutting, and I would go up trail to north, prepared to spend a night, and look for farm in the interior. The others wished to accompany us part way and come back to the bay for the night. Svenson and Hay took turns carrying a large

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[40] Clarence Leonard Hay worked at the American Museum of Natural History as a curator of botanical subjects. Charles Haskins Townsend was a celebrated American zoologist and naturalist; at the time of the expedition was the director of the New York Aquarium, and traveled to Galapagos on several occasions.

[41] The Galapagos centipede (*Scolopendra galapagoensis*) can reach enormous sizes (Datazone).

[42] Probably the Galapagos rat (*Aegialomys galapagoensis*) (Datazone).

canteen of water, which was to be left on the road. We all took our small canteens as well.

Left Academy Bay at 9:45 a.m., at 12:50 p.m. we were at 600 feet elevation. Here Townsend, Hay, and Svenson turned back. About 1:35 [p.m.] we came to a plantation with bananas, sugar cane, elephant-ear, and squashes. Found an Ecuadorian (Elias Sanchez[43]) who took us on to house (780 ft. by aneroid). We had left our packs near the large canteen on road, so Roosevelt, Cutting, and Sanchez went back for them. Cramps in legs prevented me. So I found small rails (*Creciscus*[44]) and shot 2.

Spent night in house where Sanchez lived — mosquitos (brown, rather large) outside, not inside.

***[The following two paragraphs repeat the previous narrative, and were crossed out]***

March 30, 1930. Position at noon 2°17'N, 86°35'W.

March, 31 Landed at Academy Bay about 1:30 p.m. Wandered about deserted fish factory in afternoon. Terrible night —

[43] Elías Sánchez was one of the first Ecuadorian colonists to inhabit the highlands of Santa Cruz, between 1917 and 1934.

[44] Genus *Creciscus* is not present in the islands. Maybe a Galapagos rail (*Laterallus spilonotus*) (Datazone).

mosquitos, centipede, swinging hammocks. Caught salt water striders at dock.

*[The following ten paragraphs repeat the previous narrative, but since they provide more details, they were not crossed out]*

April 1. All up early for breadfast [sic]. Left at 9:45 a.m. At 10:25 [a.m.] climbed a bit of a cliff[45], altitude at top 200 ft. by aneroid. View back to to [sic] beach.

11:05 [a.m.] alt. 300 ft. a cast snake-skin found.

April 1, 1930. 11:20 a.m. Altitude 390 feet. Sat down and rested for half hour. Numbers of birds assembled around us.

12:15 [p.m.] 490 ft., left packs. Many *Certhidea*[46] and other birds.

12:50 [p.m.] 600 ft. Townsend, Hay, and Svenson turned back.

1:00 [p.m.] 670 ft.

1:25 [p.m.] at 700 ft, view of mt ahead, perhaps we are half way to it. Soon we come to some old second growth, then plantation of

[45] That cliff is one of the main landmarks in today's Puerto Ayora.

[46] A gender of Darwin finches with two species (*fusca* and *olivacea*) and several subspecies in Galapagos (Datazone).

bananas, squashes, sugar cane, at 2 p.m. we find a man hiding behind a banana stalk and Kermit reassures him in Spanish. He is the farmhand (Elias Sanchez) of some Norwegians, and leads us to a little house at 780 ft. altitude, where we arrived at 2 p.m.

After some talking with the man we started back with him to get our packs. Both my thighs got cramps and I had to quit, so I sat down along the path in some low tangled vegetation of an old clearing.

Mockingbirds[47] came within a yard to investigate me, and as I sat there I noticed something gray in the path under a low tangle of vines about 5 feet away.

At first I thought it was a rat, but as it took a few steps in my direction I saw that it was a small rail (*Creciscus*) with gray head and neck, red eye, brown back and wings, with some very small light spots on wing-coverts. It saw me, and instead of continuing along the path it turned off into the vegetation. At this I made a wild dive and tried to fall on it. But my cramps immediately returned, and I lay there writhing in pain. The bird of course escaped. Although I sat there some time longer, the rail did not return.

[47] The Galapagos mockingbird (*Mimus parvulus*) (Datazone).

*[The narrative continues]*

After writing this I began to hear a sort of cackle ("kikikikaaah") a little higher in pitch than the call note of the mockingbird, and trailing off differently at the end. It seemed to come from underneath the lower growth, and then the bird moved into the narrow pathway. I could see it was a rail of the same kind.

Now another cackled near where I had been sitting, so I followed it and saw a second rail climbing about on the horizontal stems matted together a little above the ground. Again I tried to fall on it without success. So I went back to the house for my pistol, and on returning heard the cackle beneath a thicket a few yards from the path. Crawling in I finally saw the bird on the ground and shot it. 5 minutes later the other cackled some 12 yards away but could not be seen.

Going back toward house, I heard another under a thicket, crawled in and shot an immature bird (iris dull orange). Then another cackle issued from same spot, so I crawled in and shot and adult at nearly same spot. Meanwhile 2 mockingbirds hopped around on ground and in bushes close by (at 2-3 yards) and showed no concern, even at shot of gun.

Spent night in house. Lots of mosquitos outside, door and windows screened, but lots of chinks in walls, yet no mosquitos came in.

No owl or goatsucker heard.

*[The format of the dates changes from here onwards]*

## April 2

At Fortuna, aneroid at 7 a.m., showed 795 ft. Norwegian fishing bacalao at Bariito (Barrington) Island, on the Indefatigable side, in a sailboat.

Name of man at Fortuna when we came is Elias Sanchez. Started down at 8:20 a.m. Heard 2 or 3 rails in under growth. At 9:12 [a.m.] we reached spot where large canteen lay (and where packs were left yesterday). Canteen had leaked considerably. Altitude here 470 ft. Left again at 9:24 [a.m.].

9:45 [a.m.] See first cactus with oval leaves (*Opuntia*[48]) at altitude 350 pt. Soon we caught a garter snake[49].

[48] Genus *Opuntia* has 11 species and several subspecies in the islands (Datazone).

[49] Any of the two local species belonging to genus *Pseudalsophis* (Datazone).

10:25 [a.m.], reached top of cliff, where we can see houses on shore. Alt. 175 ft.

## April 2 *[repeated]*

Sat down a few minutes, then Kermit caught a snake on the rocky road down the cliff. Continued on to landing on Academy Bay, where we arrived about 11:20 a.m. Aneroid then read 100 feet. At 5:40 p.m. it read 200 feet on 2nd floor of house, where the 100 ft. reading was taken at 11:20 [a.m.] This is scarcely 30 feet above sea level, where I set the aneroid on April 1.

## April 3

Academy Bay, or as Clarence Hay named it, Hangman's Rest. There is a derrick[50] on the little jetty that look strangely like gallows. Mosquitos last night innumerable. Cloudy at dawn, soon clearing. Set out to shoot birds at 9:15 a.m. *Nourmahal* took us to Barrington Island toward noon, where we found K. Edwardsen Stampa, and Gordon Wold[51], brought them to Academy Bay.

Astor, Huntington, Pool, Roosevelt, Cutting, and Hay went out to tortoise grounds. It took all day to get there and back, but is only 3

[50] A trunk of *matazarno* tree erected there by the Norwegians colonists in 1926 and that stood at the end of the dock for many years.

[51] Both of them were colonist living in the Academy Bay area.

hrs. of steady walk each way. It is at 500 ft. and there are swamps with dirty fresh water. Open grassy glades, no cactus. They say 1 tortoise of about 300 lbs., as well as many skeletons.

Townsend and Sanborn went out as far as the first cliff and photographed and shot birds. I collected about 6 birds near the houses.

## April 4

Had dinner and slept on *Nourmahal*. A few mosquitos, though we lay 1 mile off shore.

## April 5

Left houses at 12.20 p.m. Set aneroid at 0 as we left, it was reading previously about 100 ft.

12:50 [p.m.] arrived at first cliff, which is about 50 ft. high. Aneroid at top 160 feet.

12:55 [p.m.] stopped to rest, aneroid 200 ft.

1:05 [p.m.] started on again.

1:30 [p.m.] arrived at point where trail to tortoise ground branches off to left. Aneroid 310 ft. Rested till 2 p.m.

April 5 (cont.) Found our large canteen, which had been left along road, had leaked and was half empty. Kermit cut wrist with machete. After several more rests —for we were very heavily laden— we reached Fortuna, and Svenson and Cutting saw a rat on banana plantation. It was brownish, of stocky build, with short tail.

Aneroid at occupied house at Fortuna, 5 p.m. read 750 feet.

We set out to cut a trail to the unoccupied house, about 700 yards away, to eastward. Wold followed a rather roundabout course, and it took over an hour to reach the house. Terribly dense second growth, perhaps 3-4 years old. Kermit was cut on the back of leg in the operations. Saw a rat in a thicket, but it seemed to escape down a hole in the ground.

After supper at Wold's house, Cutting and I went over to sleep in the unoccupied house. As we undressed, about 10 p.m. we heard a curious "shreeee" note, and once in a while a sort of low "huh-uh", which reminded me of a barn owl. So I lifted the trap-door to the attic and found a number of owl pellets and a couple of mouse

skulls. This seemed to confirm the barn-owl theory[52]. There is a long opening between the galvanized roof and the wooden wall, both in front and back of house. But searching outdoors with the flashlight I could not see the owl. It must be shy of the light.

[The evening of April 1 I thought I heard a not like a screech owls just once, near Wold and Stampa's house at Fortuna. Tonight Svenson told me he heard a similar call once. Can there be an *Otus* here?] No!

Aneroid at unoccupied house (Horneman's[53]) 11 p.m. 800 ft.

## April 6

About 20 minutes is needed to walk from one house to the other. Went over for breakfast, shot some finches, and spent better part of day skinning them. Roosevelt, Cutting, Hay, and Wold spent whole day cutting trail up toward mountain. The size of the area covered with second growth is very large. Wold says there was a

[52] Probably a short-eared owl (*Asio flammeus*) (Datazone).

[53] Horneman was another colonist in Santa Cruz. Many of them, as seen in the text, had houses both in the coast and in the highlands (the agricultural zone).

penal colony here years ago[54]. Road near Academy Bay seems to confirm this. The vegetation seems too thick to date only from the Norwegian occupation. I think it is worse than any I saw in Africa.

Saw 3 or 4 rails today, heard a number of others but shot only 1.

Listened for owl at Wold's house, heard none. Returned to our hose about 8 p.m., and soon heard barn owl call near it. "Shreeee" is a good imitation. It is varied by a gruff "huh" repeated about 4 times. Finally I saw this owl sitting in a large tree about 20 yards from house and shot it. I think there was only one, none called later.

The hawks[55] are our continual laughing stock. Sometimes 8 or more in the same tree. Easily snared with a noose, and if a pole is pushed up against their breast they often perch on it rather than fly, and can be lowered almost to ground. Small birds and doves[56] perch in same tree, and seem not to fear hawks, yet yesterday we saw a hawk feeding on a dead mockingbird.

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[54] There is no historical proof of such an event, although records show that some workers from the plantation of Manuel Cobos in San Cristobal Island were "exiled" to Santa Cruz as a form of punishment.

[55] The Galapagos hawk (*Buteo galapagoensis*) (Datazone).

[56] Probably the Galapagos dove (*Zenaida galapagoensis*) (Datazone).

I have not heard the doves coo at all, or make any other sound. In flight their short tails, rather rounded wings and relatively long neck give them a parrot-like appearance.

Temperature on screened verandah of house this morning at 6 a.m. was 70°, at 1:30 p.m. (highest of day) 84°, at 11 p.m. 78°.

## April 7

All but I went up to continue cutting trail. They reached 1600 ft. according to Cutting's aneroid. Svenson reports a marked change of vegetation trees scarcely over 10 ft. high.

At 10:30 a.m. I left for Academy Bay. Saw 3 turtles tied near junction of roads. Arrived about noon. Killed and skinned barn owl (*punctissima* Gray?) female, but no large ova to be laid. Apparently 1 follicle from egg laid some time before. Oviduct still much thickened. S. C. [stomach content], pieces of large insects.

The *Geospiza* with very large bill[57] thus far seen only within 1 half hour of shore. *Cactornis*[58] scarcely noted beyond 1½ hrs. from shore.

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[57] Probably the large ground finch (*Geospiza magnirostris*) (Datazone).

[58] Probably referring to the common cactus finch (*Geospiza scandens*). *Cactornis* is a deprecated genus (Datazone).

Apparently no termites on island[59].

Left for Fortuna again about 3:45 p.m. Arrived 6:15 [p.m.]

It rained 3 times today at Fortuna: a shower toward 10 a.m., a heavier one toward 5:30-6:15 [p.m.], and a heavy rain at 10 p.m. Good for our drinking water supply which is all caught from roof of Wold's house.

Photographed hawks being taken down on rake. The hawks are inquisitive and in the woods often come and light in a tree overhead. I saw a mocker scolding one at a yard or two and it finally struck hawk on back.

Rails very noisy this morning after the rain. In their cackle they sometimes interpolate a "chowny" reminiscent of *Linnocorax*. Once I heard the cackle run into a sort of excited trill. The rails are heard for about an hour toward shore, after that they seem to be lacking. Temperature at 6:15 [a.m.] this morning 77.5°, at 11 p.m. 76°.

[59] Actually, there are two species belonging to the genus *Incisitermes* (Datazone).

Set 4 mouse traps near Wold's house, and at 10:30 [p.m.] set 11 more near our house. Of these 11, 8 held small rats next morning! Bait oatmeal and bacon on about two thirds, as well.

## April 8

Left Gordon at Wold's house at 10:20 [a.m.] Got 4 more rats. Aneroid there 700 ft. Followed up gully.

11:00 [a.m.] Rails with 2 chicks. Doves nest on ground with 2 white eggs.

Followed ravine, now with a little running water and many pools, to 1450 feet. Here thick bush, with small trees, 20 ft. high draped with brown tufts of *Jungermannia* or related[60].

Now thru thick bush and up a little ridge with bracken and melastomataceans trees. 2 photos at 1670 ft. Lunch at 1800 ft. (photo).

1800 ft. nest of *Certhidea* with 2 eggs in bush (probably *Miconia*[61], says Svenson). Mockers, vermillion flycatcher *Myiarchus*[62], and

[60] Genus *Jungermannia* is not present in Galapagos; probably referring to one of the two species of *Odontoschisma* (Datazone).

[61] The Galapagos miconia (*Miconia robinsoniana*) (Datazone).

[62] The Galapagos flycatcher (*Myiarchus magnirostris*) (Datazone).

*Creciscus* all here. *Nesopelia*[63] flying over. No black finches seen above 1400 ft.

Photo at 1900 ft. of [...] and trees draped with [...].

Reached 2100 ft. about 2:30 p.m. No change in vegetation, nor does there seem to be as far up as we can see.

Vermillion flycatcher and *Certhidea* shot at 1900 [feet]. 1 *Platyspiza*[64] singing at 1750 ft. escaped. No *Geospiza* or *Cactornis* seen up here.

Hurried down gully again seeing a number of rails and many doves and mockers. Many steep drops which are evidently waterfalls after heavy rains.

Reached Fortuna just before nightfall (about 6 p.m.) Kermit had shot a rat at about 1200 ft.

Pigs had torn open canvas bag and eaten bacon and 1 corner of a box of Swedish bread. We dined well, on bacon which was left, tongue and chicken (from jars).

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[63] Genus *Nesopelia* is now genus *Zenaida* (Datazone).

[64] The vegetarian finch (*Platyspiza crassirostris*) (Datazone).

Aneroid at our house 7:15 [p.m.] read 850 ft. It rained a little at 4 p.m. and again toward 8 [p.m.] [Altitude of summit of Indefatigable was later determined by Templeton Crooker (in 1932) as 2690 ft., the charts gave 2296 [feet]].

## April 9

Left our house for Academy Bay 12 n[oon]. Photo of *Scalesia*[65] forest about ½ way, alt. 500 ft. by aneroid, probably 450 ft. in reality.

Arrived at old fish cannery (Academy Bay) about 4:15 [p.m.] or an hour later by ship's time, which seems to be that of New York.

A few *Certhidea* are seen within half an hour of shore, but practically none at the shore. [Saw one at shore April 11]. I have never heard the voice of this bird, which looks and acts as a warbler.

Several of the black finches, as well as the *Platyspiza* have songs of 2 syllables or parts, which seem to me like "trulee, trulee," or "shanty, shanty," while females or young males give a long drawn

[65] Any of the many species of that genus, locally known as *lechoso* (Datazone).

wheeze, or something a little hoarser, reminding me a little of the notes *Textor cucullatus* [village weaver, Africa] gives about its nest.

The *Nourmahal* came in a little after 5 [p.m.] and we went aboard for dinner. Aneroid in my cabin tonight read about 30 ft.

## April 10

Townsend and Svenson went ashore this morning to go up to the spot where our 6 tortoises were caught. I made a brief visit ashore and then ship sailed at 10 [a.m.] (NY time).

As passed between Barrington and Indefatigable there was a large flock of the common small shearwaters sitting on the water perhaps 150.

In 3 hours we had rounded Seymour Is. and stopped opposite the passage between North Seymour and South Seymour. Here there is a low sandy islet[66] with several patches of rocks where the sea lions abound.

Most of us visited it by launch. 3 y[oun]g sealions were caught. Saw a few small *Tropidurus*[67] lizards on the island. Also oyster-

[66] Known as Mosquera islet in Spanish.

[67] Today they are considered to belong to the genus *Microlophus*, and there are 9 species in Galapagos (Datazone).

catcher, a yellow crowned night heron, 2 *Larus fuliginosus*, 1 *Butorides striatus*, a flock of 10 sanderlings, a turnstone, 4 wandering tattlers, pelicans and blue-footed boobies[68] flying over.

We then went on to where the *Nourmahal* had anchored off, a beach to the southward, and later went ashore. Land iguanas[69] were under the trees close to beach. Caught 7. Craters of old turtle nest numerous in sand.

Vegetation back of beach much more often and grassy than at Academy Bay. Goat tracks numerous. Doves, mockers, and 2 kinds of black finches common here.

Saw [male] dove lean forward, swelling chest, tail raised, and wings quivered close to body. A [female] came and stood beside him. They locked bills and swayed heads from side to side. Male mounted [female] and then both preened. I have never heard a coo or any other sound from this dove.

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[68] The American oystercatcher (*Haematopus palliatus*), the yellow-crowned night heron (*Nyctanassa violacea*), the lava gull (*Larus fuliginosus*), the striated heron (*Butorides striata*), the sanderling (*Calidris alba*), the ruddy or the black turnstone (*Arenaria interpres* or *melanocephala*), the wandering tattler (*Tringa incana*) and the blue-footed booby (*Sula nebouxii*) (Datazone).

[69] The Galapagos land iguana (*Conolophus subcristatus*) (Datazone).

Two nests of *Geospiza fortis*[70] in low trees near beach — the larger of the 2 species collected here. Saw [female] enter nest. Each nest had 2 eggs, white, with brown spots forming also a heavy wreath about large end. Nests bulky, entrance at side, built of old dry grass and rubbish from beach, so they looked old and probably deserted.

A few frigate birds flew over. 4 pelicans, yellow-crowned night heron, 1 oyster-catcher, 2 *Larus fuliginosus*, 2 hawks both very dark, looking black at distance — shot one.

On way back to ship saw 4 or 5 *Oceanites gracilis*[71] flying about over water behind and to port side of ship. Flight very like *O. oceanicus*. Shot 2. Ship lay at anchor for night.

A fishing boat from California, the *Stella di Genova*, is anchored near ashore. Makes a trip of about 1 month down here for tuna.

## April 11

Started for Big Daphne Is.[72] in launch at 10 a.m. Reached it in a little less than an hour. Got ashore easily on southerly side and climbed round to lowest rim of crater (on E. side).

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[70] The medium ground finch (*Geospiza fortis*) (Datazone).

[71] The storm petrel (*Oceanites gracilis*) (Datazone).

[72] Better known as Daphne Major.

As we neared island several tropic birds[73], blue footed boobies, white boobies (with black secondaries and rectrices nearly pure white) flew about, and on the low cliff near the landing place stood a half dozen fork-tailed gulls with black heads (*C. furcatus*) and one spotted young gull of same species.

Climbing the slopes we noted many *Nesopelia*, and found 5 nests always beneath rocks. Usually they held 2 white eggs, but in one case there seemed to be 2 nests under a single rock, each with one egg (this I did not see myself).

There were number of black-finches, all apparently of one kind, and the males gave a song of the usual type which sounded like "sweechy sweechy." About 6 martins[74] were feeding overhead. No mockingbirds noted.

Very open vegetation, almost no trees, cacti relatively low. The rock is not hard lava, but granular and friable, and the slope so steep that the blocks are always ready to slide.

Outside the crater rim were several *Sula dactylatra* with their young. The main floor of the crater is about 100 feet below the lowest part of the rim, the highest part of the rim being about 300-

[73] Probably the red-billed tropicbird (*Phaethon aethereus*) (Datazone).

[74] One of the 4 species of the genus *Progne* present in Galapagos (Datazone).

400 ft. above the sea, and perhaps 100 feet higher than the low point in the rim.

The crater is double, with an easterly portion about half as deep as the main crater, and this is edged with a low rim of rock. On the floor of the main crater is a large nesting colony of blue-footed boobies, many were sitting on 2 eggs, some on only one, there were also a number of downy young, sometimes 1, sometimes 2. Sitting birds gave 2 very different calls, according to their sex. Some whistled, others gave a goose-like "akng." I estimate that 210 pairs were nesting in this colony.

Two tropic bird nests were found in deep cavities beneath rocks. One was high up on crater rim, the other down near landing place. Both birds attracted attention by a loud screech, like call of common tern but much louder and harsher. Each had a single egg, brownish and perhaps motted.

One short-eared owl was flushed by Kermit on outer slope.

A yellow crowned night heron had nests in a small grotto near landing place, 2 eggs, and one young nesting.

We left again about noon and returned to ship. Then the ship steamed round to Academy Bay, arriving 5:39 p.m.

Dr. Townsend, Sanborn and Svenson had been to the tortoise grounds and came in about 7 p.m. (ship's time 6 p.m.) They reported that 3 more tortoises had been brought part way in, and Dr. Townsend had seen another one too large to transport.

I saw a small *Puffinus* of common kind fly into inlet and disappear in a crevice in rocks.

## April 12

The *Nourmahal* sailed at daybreak for Charles Is. which soon appeared ahead, and in about 3 hours we were steaming along it to Black Beach.

Went ashore about 10 a.m., found that the spineless cactus near landing had been destroyed, and that fire had swept over the vicinity perhaps 6-7 months ago.

Dr. Ritter and Frau Dore have set up an inverted metal bucket on a post as their mail box.

They live a half hour's walk inland.

Vegetation here consists of clumps of acacias[75] with many little paths between them are probably made by burros one hears braying in distance and by cattle. Cacti are few but we saw both *Opuntia* and *Cereus*[76].

Birds few in species, 2 black finches, a *Myiarchus*, vermilion flycatcher, *Dendroica aureola*[77], heard a *Coccyzus*[78] with voice like our yellow-bill three times but could not see it.

No hawk, dove, mockingbird, *Certhidea*, no small lizard seen.

Along shore pelicans, *Sula nebouxii*, a few frigate birds flying.

After the whistle was blown at lunch time, Dr. Ritter and lady friend came down to shore and were brought on ship. Two cranks who talk about their garden to be — seeds were brought [to] them by *Nourmahal*. They do not eat meat or drink wine, coffee, or tea. Ritter said he was a doctor or dentist in Berlin.

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[75] A number of genera, but specially the 4 species of genus *Vachellia* (Datazone).

[76] Probably current genera *Cereus* and *Jasminocereus* (Datazone).

[77] The mangrove warbler (*Setophaga petechia aureola*) (Datazone).

[78] A genus with 3 species known as cuckoos, present in Galapagos (Datazone).

Went ashore again about 3:30 [p.m.] with Svenson and walked up trail about ½ mile.

Both species of *Geospiza* here singsongs like those of Indefatigable. The smaller one "chanty chanty," the larger one "sweechy sweechy," I am not sure I can distinguish them, tho I saw black males of both singing and even a few immature males. Nests of *Geospiza* numerous, I could not reach most of them and did not find any eggs. All nests look old, because of dry materials used. Entrance always at side.

## April 13 (Sunday)

Spent night at anchor off Black Beach. After breakfast I went out with chief engineer in a sea sled toward Post Office Bay. We looked at house there[79] from sea but did not go ashore. Saw a light brown dog on shore a little S. of Post Office Bay.

Shot 4 *Oceanites gracilis*, of which we saw about 25. They resemble [*O.*] *oceanicus* closely in habits and flight, and the whitish belly can only be rarely seen as they turn. As we returned to ship about 14 of them were hovering and slipping over an oily area some 200 yds. from ship.

[79] Probably the first scientific station of the islands.

I spread cod liver oil over the greater part of the way to Post Office Bay, but on our return it was hard to see the effect. Perhaps one *Oceanodroma* (either *tethys* or *castro*), which I missed, was following the oily slide we had made.

Only 2 *Puffinus* were noticed, and we could not approach them in spite of our speedy little boat.

A few frigates birds were soaring over, only white-headed young came within range. A few noddies[80], many *Sula nebouxii* and some *Sula dactylatra* flew by.

One of the latter was shot.

We sailed from Black Beach about noon, and arrived in Academy Bay about 3 p.m. Went ashore and spent afternoon. Heard *Coccyzus* once, sounded like our yellow-bill. Relatively few hawks left, perhaps only 8 today, of which I snared 3. One slipped out of noose 3 times, but was caught the 4th time.

Temperature on upper floor of fish house at 3 p.m. (sun time) was 83°. At 10 p.m. in my cabin on ship it was 81° (ventilators not blowing), and at 7 a.m. the next morning it was 80° in my cabin.

[80] The brown or common noddy (*Anous stolidus*) (Datazone).

In a small salt pond[81] east of the houses there was a flock of 5 Galapagos teal[82]. One was an adult male, with scarlet patches on beak and iris rather light reddish brown. Another was probably an adult [female] and had scarcely a trace of any light color on bill. The 3 remaining were perhaps y[oun]g males, as they had faint patches of pinkish on bill. They were very tame, but scarcely allowed one to approach closer than 6 or 8 yards. Several times they took wing but did not leave pond.

Shot 1 adult pelican[83]. Svenson snared mockingbird. As I pushed stick with snare toward a *Myiarchus*, it flew up and lit on end of stick. Tried to snare lizards, but they always flicked — when noose of thread touched them, so as to knock it off.

Mosquitos thick at sundown, as usual. Here only small black ones. At Fortuna there were large brown ones.

Vermilion flycatchers fly up in air, and there hover a while in the nearby same place, with a weak attempt at song. *Myiarchus* calls like a small imitation of *M. crinitus*[84]. Mockers have sharp call notes of several kinds, and occasionally try to sing but the best they

[81] These salt ponds are still present in the area known as Playa de los Alemanes, to the east of the current town of Puerto Ayora.

[82] One of the several species of the genus *Anas* present in Galapagos.

[83] The brown pelican (*Pelecanus occidentalis californicus*) (Datazone).

[84] The great crested flycatcher (*Myiarchus crinitus*) (*Wikipedia*).

can do is like a poor catbird song. Doves not yet heard to coo or make any noise whatever. Hawks occasionally soar and call much like our red-shoulder. Otherwise they are silent.

## April 14

Sailed at dawn from Academy Bay, around W. side of Indefatigable to the beach near Seymour Is. Reached there about 10 [a.m.] Photos of Duncan Is., Indefatigable from W. with mountain on coast in foreground, Jervis and part of James, Daphne Major.

Toward 11 [a.m.] we went ashore and caught some more land iguanas. I had noticed 2 nests of *Geospiza* in trees on beach, each of which last time had 2 eggs. One was now empty. The other I collected, after shooting a [female] close to nest and then a [male] which seemed about to enter. When I went to take eggs another brown bird flew out. From observation in April 10 I am sure both the nests were those of the same species I shot today.

Sailed again right after noon, and reached Darwin Bay about 3 p.m. As we entered bay some 50-60 frigate birds came out and sailed over ship for about half an hour. Practically all had white breasts, and most were young with white heads.

This bay is a crater with low wall, very deep over greater part, and 1 mile to 1½ miles wide. Entrance nearly 1 mile wide. On the west side is some low shore, with a breeding colony of frigate birds. We went ashore in late afternoon and looked them over. Saw a few doves, a mockingbird, a *Certhidea*, and a turnstone, as well as the sea birds.

Several *Puffinus obscurus*[85], several *Oceanites gracilis*, and what seemed to be an *Oceanodroma* on the bay. 4 to 6 tropic birds flew around.

From the ship we could see the red balloons of at least 8 or 10 male frigate-birds as they sat on the bushes and now and then one would be noticed in flight with the sac fully blown up. It seemed as though he were carrying a toy balloon beneath his beak. Others showed a long flabby sac hanging down as they flew, but not inflated.

Boobies of 2 kinds (*dactylatra* and *piscatrix*) are here, and their brown young are puzzling. Moreover there are light gray young with red feet and blue green bills (*piscatrix*) that act like adults. I did not note any *S. nebouxi*.

[85] Supposedly, the dusky shearwater, which is not present in Galapagos. Could be confused with the sooty shearwater (*Puffinus griseus*) (Datazone).

Fork tailed gulls (*C. furcatus* have young. There are also a number of *Larus fuliginos[us]*.

One adult sea lion swam out of a large pool in the rocks. Went aboard at sundown, and did not notice many mosquitos. 3 came into my cabin in the night.

## April 15. Tower Is.

Went ashore after breakfast rowing a sea-sled, which goes so well with a motor, but so slowly with oars.

The fork-tailed gulls seemed shyer than yesterday, there were about 30 in all, and their voice is an ordinary gull cackle. *Larus fuliginosus*, which fed along the shore where we landed, was represented by about 20 individuals whose voice is hoarser, and at times almost like the caw of a crow. These two gulls do not mingle, the sooty species keeping pretty much in parties of 6-10. A few of them were dark brown young, whereas the majority of the fork-tailed species were fully adult. There were 3 or 4 spotted young, but some of the adults were sitting on eggs, up among the large lava boulders. Nesting material was wanting, and one egg seemed the rule, light gray-green thickly spotted with dark purplish brown.

Yesterday a sitting [female] was pinned down by a fallen branch of cactus and taken alive. This morning I found an egg under the cactus.

7 rat-traps set last night among the lava boulders, baited with oatmeal, were thoroughly cleared of bait this morning. Some were sprung but a single crab claw was the only catch.

The tide was very low —the full moon having just passed— and there were many tide-pools with little fish, hermit crabs, etc. Hay busied himself with these.

Sanborn, Cutting and I photographed in the frigate bird colony. Most of the birds were so tame that they could be picked off the nests, and the females were more so than the males. They would often reach out to peck as one neared them.

The males frequently give a most unexpected note, a bubbling "whoh-how-how-how-how..." (each note very short, perhaps "wha-h-h-h-h-h-h-how" is better) usually with bill raised nearly to vertical. Pouch may be inflated and wings spread at the time, but neither is essential. If one male calls several others often join in the noise.

Males and females both incubate, and neve[r] have more than one white egg. Many birds were simply perching on bushes or on

empty nests. I saw no young in down, but many white-headed birds that could fly.

It takes the male a long time to inflate or deflate his sac. One I caught with sac inflated, and killed by pricking the cerebellum. He died with sac fully inflated and it lost air only slowly after death. The skin is deep red, almost a light crimson when inflated, and rather duller when deflated.

A few *Sula dactylatra* (young and old) sat around on rocks or bushes, but their nesting time seemed past. May more *S. piscatrix* were there, but few were in white plumage, most in the light brown-gray dress. Some sat on trees, or even on nests in small trees some way back from shore but none seemed to have eggs or nestlings.

Doves, mockers, and an occasional *Certhidea* were seen near frigate-bird colony, but no finches.

Went back to ship for lunch, and then returned to shore as tide was rising.

Took some more photos. Both birds of a pair sometimes sit together, one on the nest, the other close to it. Saw male birds come carrying a small stick in beak, if possible they will steal sticks from other nests.

Late in the afternoon I went in a little way to collect birds. Vegetation of bushes and low trees very often, easy walling.

A small *Geospiza* is common[86], also mockers, 2 species of finch with large bills[87], less numerous as is also *Certhidea*.

## April 16

Day spent at sea. Heavy rain at lunch time and early afternoon. One penguin died this morning — would not eat.

## April 17

Sighted Cocos about 7 a.m. Anchored in Chatham Bay toward 10 [a.m.] A few white terns[88] (*Gygis*) (perhaps 10) and many small noddies (about 160) flying about Bay, also many *Sula s. brewsteri*[89], and many frigate birds.

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[86] Probably the Genovesa ground-finch (*Geospiza acutirostris*) (Datazone).

[87] Probably the large ground finch (*Geospiza magnirostris*) and the large cactus finch (*Geospiza conirostris propinqua*) (Datazone).

[88] The common white tern (*Gygis alba*) (*Wikipedia*).

[89] The red-footed booby (*Sula sula websteri*) (Datazone).

Woods in Cocos island rather thick, with bad undergrowth full of vines, many coconut palms and tree ferns. Went ashore before lunch and again in afternoon.

Fairy terns (*Gygis alba*) perch in tall trees near shore, and there I shot one. When they fly out over the water they generally keep 100-150 ft. above water, seldom more than 4 of them together. They frequently go in twos, and a pair will make a curved flight that brings them low down over the surface of the water. They keep side by side, and sail on bowed wings, seemingly at a steep "bank" so that this evolution is particularly graceful — as they fly about the trees on shore they give a hoarse "kah, kah," repeated several times. The black feathering about the eye increases its apparent size. Basal part of the bill is bright blue.

The small noddies[90] (*Megalopterma minutus*) fly about over the bay in flocks of 30-100, and now and then a few, or even most of the flock, fly up a ravine, where they evidently perch in the trees. They come shooting down again singly or in twos or threes, to resume their coursing over the water.

[90] The scientific name is wrong. Could be referring to the small or black noddy (*Anous minutus*), which is not present in Galapagos (*Wikipedia*).

Lunched on ship and went ashore in afternoon. *Cactornis* (*Pinaroloxias*)[91] is rather common in woods close to shore, hopping about in undergrowth at times like a warbler, but often like a titmouse[92], as it explores the bank of boughs and upright stems, often leaning way over to reach the underside. Did not hear it sing, the call note is short, a nasal "pa" or "cha."

This morning I shot a cuckoo[93] (*Coccyzus ferrugineus*) in low trees close to beach. Did not hear its voice. Attitudes etc. like our yellow-bill.

During afternoon I climbed most of the way up a grass-grown hill that is conspicuous from the anchorage. First one climbs through woods, then up a slope with coarse grasses about 5 ft. tall with cutting edges. A few trees, including what seems to be the balsa[94], some *Cecropia*, and groups of tree ferns.

Over the top of the hill a flock of about 20 barn swallows[95] was feeding. Some of them I could see well enough for certain

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[91] The genus *Piranoloxias* has one species, the Cocos finch (*P. inornata*). It is here confused with the old, deprecated genus *Cactornis*, used for some of the current *Geospiza* species in Galapagos.

[92] It refers to any species of the genus *Baeolophus* (*Wikipedia*).

[93] The Cocos cuckoo (*Coccyzus ferrugineus*) (*Wikipedia*).

[94] The balsa tree (*Ochroma pyramidale*) (*Wikipedia*).

[95] The barn swallow (*Hirundo rustica*) (*Wikipedia*).

identification. A female frigate bird perched in a nearby tree seemed to be colored exactly like those of Tower Island, and had some brown area on wing-coverts.

The little *Anolis townsendi*[96] simply swarms in woods near shore, climbing on boughs, running on ground, males nodding their heads or expanding their dull orange fans.

There are few if any red-footed, black-faced, or blue-footed boobies here. I have seen no white adults, whereas the brown booby (*S. s. brewsteri*) is very abundant. No tropic-birds seen here, either.

It did not rain today. Tide very low when we went ashore, surf not bad, but sea sleds are poor for this purpose. Sanborn's got turned around in a breaker, throwing him out and wetting all his cameras. Coming ashore again in afternoon a wave again washed over the bow and wet DeVry camera so it jammed and a spool of film had to be thrown out. In fact Sanborn got thoroughly wet three times today. In afternoon the tide came in and made surf much worse. The tide is perhaps 12 ft. or more and the beach unusually level.

[96] The Townsend or Cocos Island anolis (*Anolis townsendi*) (*Wikipedia*).

## April 18

Last night the *Nourmahal* lay at anchor, in Chatham Bay, and at 7 a.m. Dr. Pool, Roosevelt and I started off to fish from a launch with Louis. Sky overcast, sea calm.

To the east of the ship a large flock of brown boobies, perhaps 100, was sitting on the water, those in middle much agitated, flapping their wings, while a flock of nearly a hundred frigate-birds hovered over them, many swooping down into the middle of the boobies.

As we approached, few of the birds left, and we saw that the boobies were attacking a dense school of fish that looked brownish above. The fish were milling around, tightly packed, and from time to time a porpoise back and fin would rise close to them, or almost directly among them. There were apparently 3 or 4 porpoises, which seemed to keep the fish at the surface, while the boobies gobbled them up, and the frigate birds swooped right down to the water in an attempt to seize some.

Another similar party of birds was feeding to the northward, but in about a quarter of an hour both parties broke up, and we did not see them gather again.

Dr. Pool soon caught a tuna, then Kermit caught a bonito — very like a small tuna, but with no yellow on it. Instead beautiful

opalescent tints of blue, green, and pink. Fishing was good, we ran around the point to the westward, where a cave is invaded by the surf, and looked into Wafer Bay. A few more bonito were caught. Dr. Pool gave me his rod and I caught one too. We used a lamp-with bait with large hook.

As we turned back toward the ship a storm darkened the eastern sky. Wind was coming up, but lines were kept in the water. I ought to have mentioned that a "tarperine" or imitation fish was also dragged a little way behind the launch.

We had rounded the point and were within a mile of the *Nourmahal*, when both Pool and Roosevelt had bites. Pool landed a bonito, but Kermit's line evidently had something bigger on it. Presently we saw a large marlin jump twice — just like sail-fish group in Museum. But as the line seemed to reach in a different direction, we did not realize for a minute or so, that this marlin was on Kermit's hook.

When we saw the line straighten in the direction where the fish had jumped, we understood, and began to wonder whether he could be landed. He would run out a lot of line, and then allow it to be reeled in. Then he would make another dash, and once in a while jumped clear of the water. (Marlin often jump in the same fashion when not hooked, we saw them do it 2 or 3 times from the ship in this bay).

Soon the line got tangled up in our propeller, not tightly, but so that it could run over it. The effort of Louis and Dr. Pool with a brat-hook failed to disentangle it, and as the fish was not puling at the time, Louis caught the line and held it, while I cut it and Dr. Pool reunited the two ends with a simple square knot. Now Kermit could play the fish again and Louis managed to keep the line over the bow.

Dr. Pool and Kermit took turns with the rod. The wind freshened, our launch rolled, but the fish was tiring. He could no longer jump clear of the water.

The sky blackened, it began to rain. The line only once ran out again as far as the knot was tied. I doubt if more than 300 or 400 ft. of line ever went out. The fish had been hooked about 8:30 [a.m.] (ship's time) or really about 7:40 [a.m.]

The rain was chilly, but the fish was getting closer to the boat. I was told to shoot it when it showed on the surface —with a ball cartridge from the Norwegian lampoon gun— caliber about .45. Finally it could be seen glimmering beneath the water on the port side, then it came round to the starboard, a pale blue patch — or patches, because sea was rough. It showed its belly at the surface a moment, but I could not shoot! Then it came up right aside, and I gave it a bullet in side of neck. Down it went but soon came up lying on right side, and got a bullet on heart region from below. It

was dead when Louis gaffed it, and by putting a cord around tail, a hook in lower jaw, and the gulf in side of body, we pulled it aboard jubilantly. Saw a shark sucker of pale color on side of neck as we did this, but quickly forgot it. Was this the one later found in gills? How we did this was a mystery, for when it was weighed later it was found to be 298 lbs. and to measure 8 ft. 8½ inches from tip of beak to middle of tail-fin. To the tips of tail fin it would have been over 9 ft. (*Makaira marlina*)[97] said C. H. Townsend.

While getting the fish aboard, we noticed that the *Nourmahal* had weighed anchor and was going to sea. This was to avoid possible slipping of the anchor in the squall. So now we followed the ship at our best speed, and were soon drenched with salt water. Shower baths, fresh and salt, the salt a little warmer.

It was about 9:30 [a.m.] by ship's time when we rejoined the *Nourmahal*, now stationary again, and were hoisted directly aboard.

We had only a cup of coffee before departure, and now over a copious breakfast we told our story. The jumping of the marlin had been seen from the ship, so they knew the reason of our delay.

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[97] One of the old scientific names of the black marlin (*Istiompax indica*) (*Wikipedia*).

I noticed this morning that the noddies and white terns are later in rising than boobies and frigates. They first appeared on the bay about a half hour after sunrise (say 6:30 [a.m.] or perhaps 6:45 [a.m.] by sun time).

At Tower Island Dr. Pool hooked a blue-faced booby (immature) when it dove for his hook. He told me that a flock of boobies had followed them there while they were trolling and dove frequently after the bait. One was finally hooked in the skin of the face, and then practically all the boobies quit trying to snatch the bait — as they had learned a lesson.

The morning a number of brown boobies followed us for some time, evidently watching the lines. Once or twice a booby settled on the water and then made a weak attempt to reach under after the bait, but none made a good dive from the air. Sometimes this species does dive from the air for fish. Most of the morning the sky remained cloudy. We went back to the anchorage in Chatham Bay, but there was such a swell that Wafer Bay was believed to be more sheltered, so we went around there and anchored toward noon opposite a high waterfall dropping over the cliff.

An early lunch was served, and we went ashore for the afternoon. The beach at the head of the bay is very flat, largely covered with rounded stones and a sizable brook flows in from a rather deep valley. Along shore, the east side of the brook, stand two old

dilapidated shanties of corrugated iron, amid the fringe of coconut palms. The old dwelling house, as I found later, was about 120 yards inland, and also made of corrugated iron. It has tumbled in completely. Near it stands a large brown tree and also two tiny papaya trees without fruit. The fruit of the large brown tree litter the ground. They are untouched by the pigs whose tracks and rooting are seen everywhere.

Large trees grow near the shore, many of them laden with tillandsias and ferns. Here and there between patches of low trees are open spaces with low green herbaceous vegetation. In one of these I was surprised to see a blackish bird with white rump fly up. As it went it gave a familiar "pirk" and as it lit in the top of a bushy tree I saw it was a male bobolink[98] in fresh nuptial dress, the feathers still edged with brown. I felt no desire to collect such an old friend.

*Cactornis* was common in the woods near the shore, about one in five being a black adult male. This seemed a higher ratio than in *Geospizas* in the Galapagos.

A pair of *Nesotriccus*[99] was soon found in the low woods that look so like African second growth and as they were nearly as tame as

[98] The bobolink (*Dolichonyx oryzivorus*) (*Wikipedia*).

[99] Probably the Cocos flycatcher (*Nesotriccus ridgwayi*) (*Wikipedia*).

the *Cactornis*, I shot both but could only find the male. I must have searched for the other nearly half an hour, but without success.

A *Coccyzus* was easily secured in the same woods, but was not heard to call. White terns came to light in the trees, but the small noddies fly farther inland.

Both *Anous* and *Megalopterma* fly about this bay, but the latter are more numerous. I doubt if there were more than eight or ten large noddies. They alight frequently on the patch of stones showing at low tide, poking their beaks down between the stones and these were joined sometimes by three or four small noddies.

*Dendroica aureola* rather common in woods near shore, nearly as tame as *Cactornis* and that is considerably so. The call of the *Dendroica* is a weak "chip," its song very like our yellow warblers.

*Cactornis* has a nasal "fa" or "cha" as a call, but I am not sure I heard its song. One black male only gave a sort of "chee" as it prepared to fly and repeated it two or three times as it flew away.

In addition to the many hermit crabs, hiding especially beneath fallen sheet-iron, there were many [?] crabs of several species.

Sat down in the open wood on the damp ground just back of [?], and soon one bird with red legs and bluish body appeared in numbers. Each sat near the opening of its burrow, and disappeared as one approached. Any decided stir made them all disappear. Their red legs made them conspicuous when all was quiet.

Another bird with a projecting spur alongside the eye ran on the sandy beach, where it also had deep burrows to which it retreated most successfully.

Svenson caught still another large reddish land crab which escaped in the launch, and climbed up back of a lark beneath the seat, where it long escaped recapture.

In the break were at least four kinds of fish, and Hay Roosevelt, and Swydam Cutting spent a long time in their pursuit. The largest looked like a catfish, and was very sluggish. Then there were small brown ones with the ventral fins forming a sucker. They rested on the bottom. In addition two kinds of silvery fish — one with black and white bars on tail swam in small schools.

The lava rock here is more dense than most of that in Galapagos. There are cliffs with cleavage like trap. Perhaps an original covering of lava has all been weathered off.

Went back to ship about 5 p.m. We spent night at anchor in Wafer Bay.

## April 19

Going ashore after breakfast, I decided to look for *Nesotriccus*. No luck all morning. Saw however one spotted sandpiper[100] (spring plumage) along the brook and two wandering tattlers. Also a fish hawk flying over the bay.

White dots on the cliffs just S. of waterfall seem to be young brown boobies in juvenile down.

Svenson and Hay started up brook for interior.

Saw no inscriptions on rocks here — as there are many in Chatham Bay, but many recent ones cut on coconut trunks. Also one in Japanese on tree just in front of one of the old shacks.

"Squeaking" proved useful on Galapagos to bring birds close, and so it has here. *Cactornis* comes first, looks one over, and goes on feeding in titmouse fashion. I saw one hang by one foot, holding some small object in the other. Then it seized this titbit with beak,

[100] The spotted sandpiper (*Actitis macularius*) (*Wikipedia*).

and finally flew off. Yellow warblers also come readily to squeak, and so does *Nesotriccus*, if it is around.

After lunch on ship I went ashore again. Saw one more cuckoo (3rd in all) late in afternoon but it escaped. Finally at about 4 p.m. I found one immature *Nesotriccus*.

Svenson and Hay returned about 4:30 p.m. and reported they had climbed about 1000 ft. to the edge of plateau, where brook was very small. They brought back a number of prawn with blue claws and often some blue on body. No change in vegetation —said Svenson— up highest point reached. They saw one pig in woods.

In sand near shack on shore I found one cicada nymph, and in a bromeliad one old dead cicada, all wet and decayed. Heard or saw no adult cicada. Will[iam] Beebe says he saw a hawk on Cocos. I noticed none save fish hawk.

Finally at 5 p.m. we waded out to our armpits and get into sled with Astor, then to launch and ship. Sailed off just before sunset.

## April 20

Sailing for Pearl Islands. No land visible until about 5 p.m., when [?] (S. of Ceibal) Island was visible on the northern horizon.

[The water in Wafer Bay was of as bright a blue as I have ever seen. Lighter and bluer than about Galapagos.

In the inlet at Academy Bay the water was a bright light green and when the sun shone this was reflected on lower side of birds flying by. A *Sula nebouxi* a little way off looked like some green roller (*Coracias*)[101], young pelicans became green-bellied.]

Today I skinned birds and looked little out over water. Thus I saw no birds at all.

Position of ship at noon 6°26'N, 83°18'W. 226 miles since leaving Cocos Island.

## April 21

Passed Cape Mala about 6 a.m. At 9 a.m. we could see Cerro Picacho, looking their 3700 ft. on port beam. One of the Pearl Islands just visible on starboard low.

At this time several shearwaters were flying about, sometimes in our wake. They were white bellied, dark brown on back, wing tips darker than back, sides of neck apparently brownish. Size about

[101] The species could not be identified.

that of greater shearwater (*Puffinus creatopus*[102] says R. S. Murphy) [later, not on trip.]

Numbers of storm petrels (medium size, perhaps a little larger than Wilson's petrel[103]) were flying along with us on starboard side. Then a few crossed our wake, and I could see that they were dark brown with white rump. Looking to the port, I saw a couple of enormous [?] of the same petrels rise from water. Their white rumps could be seen through glass, though they were 1/8 to 1/4 mile away. Otherwise they flew in such a dense mass that they formed a solid brown patch low over the water (below horizon). Soon they settled again on water in four or five patches. Each of these patches had at least a thousand, and I am inclined to estimate their number at 10,000. This may be far too low.

Very soon I noticed 10 or 12 petrels of another species, larger, with the shape and erratic flight of Leach's petrel. Some followed our wake. They had no white on rump, and were a little more blackish than the smaller species (*Oceanodroma melania*).

Two immature brown boobies (*Sula s. brewsteri*) were now noted, and 20-40 terns, mostly medium sized, pearl gray and white, some of them with black and brown forehead.

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[102] The pink-footed shearwater (*Ardenna creatopus*) (*Wikipedia*).

[103] The Wilson's storm petrel (*Oceanites oceanicus*) (*Wikipedia*).

At 10:50 a.m., as we came abreast of one of the Pearl Islands, just to the southeast of Pedro González (where we are heading) two adult laughing gulls in full dress are following the ship.

We had lunch at 12:30 [p.m.] and then went ashore on Pedro González. Saw two crocodiles on beach of a small island nearby, and two more floating in water near them. Visited several houses, or rather open sheds with green roofs; but inhabitants had disappeared, although dogs, fowls, pigeons, were about the place. A few bananas growing, some land being cleared.

General type of vegetation is a sort of open woods, like those around Old Panama. Few really large trees. Now it is the dry season and most of the trees thinly leaved. Dead dry leaves lie on ground beneath, great deal of clearing for cultivation, and when they cut down a new area, they try to burn it off, but most of the trunks and limbs remain.

We saw no one. Bronson says the people here are blacks, and from the miserable abodes they make, he may well be right.

All about this place are nesting trees of brown pelicans, everything white-washed beneath. The nests are small and inconspicuous in the upper branches of large to medium sized trees. But the young birds, many in down, other half-grown, are very conspicuous and noisy, sitting usually in twos. A few adults were usually perched in

each tree; and every time one arrived, the event was greeted by all the young in that tree with noisy pleadings for food.

Along a small rocky brook we saw a few basilisks, and in it I found an old skull of a small crocodile — also saw one northern water-thrush[104].

Where this brook formed a tidal inlet there were 2 or 3 black-crowned night herons, 1 adult yellow-crowned night heron, 1 large egret with yellow bill, and 2 white ibises[105].

One agouti[106] ran along edge of clearing.

Other birds noted on island[107]:

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[104] The northern water-thrush (*Parkesia noveboracensis*) (*Wikipedia*).

[105] The yellow-billed egret (*Ardea brachyrhyncha*) and the American white ibis (*Eudocimus albus*) (*Wikipedia*).

[106] One of the many species of genus *Dasyprocta* (*Wikipedia*).

[107] The list includes the following species: probably the speckled pigeon (*Columba guinea rufina*), the spotted sandpiper (*Actitis macularius*), the white ibis (*Guara alba*), the American egret (*Herodias egretta*), the snowy egret (*Egretta thula*, prev. *candidissima*), the black-crowned night-heron (*Nycticorax nycticorax*), the yellow-crowned night heron (*Nyctanassa violacea*), the brown booby (*Sula leucogaster etesiaca*), the Neotropic cormorant (*Phalacrocorax brasilianum*, prev. *Nannopterum vigua*), the magnificent frigatebird (*Fregata magnificens*), the turkey vulture

| | |
|---|---|
| *Columba rufina* | 2 |
| *Actitits macularia* | 1 |
| *Guara alba* | 4 |
| *Herodias egretta* | 2 |
| *Egretta candidissima* | 1 |
| *Nycticorax nycticorax* | 4 |
| *Nyctanassa violacea* | 1 or 2 |
| *Sula etesiaca* | a few |
| *Phalacrocorax vigua* | perhaps 60 |
| *Fregata magnificens* | 10 to 20 (one chasing a cormorant) |
| *Cathartes aura* | several |
| *Catharista urubu* | 1 |
| *Milvago chimachima* | 2 (beak pale, face bare, color brown, broadly streaked with buff on chest) |
| *Phaethornis* (*longirostris*?) | 1 (several smaller green hummers ant-shrike colored somewhat like *Nigrita canicapilla* - 1) |

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(*Cathartes aura*), the black vulture (*Coragyps atratus*, prev. *Catharista urubu*), the yellow-headed caracara (*Milvago chimachima*), probably the long-billed hermit (*Phaethornis longirostris*), the grey-headed nigrita (*Nigrita canicapillus*), the Eastern kingbird (*Tyrannus tyrannus*), the yellow warbler (*Setophaga petechia*, prev. *Dendroica erithachorides*), the bananaquit (*Coereba flaveola*, subsp. *mexicana*), the blue-gray tanager (*Thraupis episcopus*, subsp. *cana*), and the crimson-backed tanager (*Ramphocelus dimidiatus*) (*Wikipedia*).

| | |
|---|---|
| *Tyrannus tyrannus* | 3 (eating small fruits of tree resembling *Cecropia*) |

Several other kinds of flycatchers

| | |
|---|---|
| *Dendroica erithachorides* | 1 [male] |
| *Coereba mexicana* | 3 or 4 |
| *Thraupis cana* | 2 |
| *Ramphocelus dimidiatus* | 1 |

Svenson found a cave on beach where bats flew out and hung in overhanging vines. I shot a .22 shot cartridge up into vines without aiming. Down dropped a leaf-nosed bat[108] with several streblid flies[109] (straw-colored) on wings! Went back to ship about 6 p.m.

Water near Pearl Island, dull bluish gray, the same all the way into Balboa. Not bright blue as in deeper part of ocean.

## April 22

Rain in early morning. Went to Señora island about 9:45 a.m. with Astor and Cutting. Open woods with large trees, no cultivation. Many pelicans there. One large tree with 30-40 nests

[108] One of the many species of the family Phyllostomidae, the New World leaf-nosed bats (*Wikipedia*).

[109] Bat flies, members of the family Streblidae (*Wikipedia*).

of *Phalacrocorax vigua*. Saw one or perhaps 2 *Tigrisoma cabanisi*[110] on large trees along shore. Sat on boughs 20-50 ft. up. Took two photos of cave on northerly side.

Many cormorants, pelicans and frigate birds about.

A large arboreal termite nest with [?] and ordinary workers.

One great-tailed grackle[111], various flycatchers, a few *Coereba mexicana*.

Returned to ship at 11:30 [a.m.] About 60 laughing gulls (majority in breeding dress) hovering about stern and sitting on water.

Sailed for Panama at noon. (Photos of Señora Island). Several laughing gulls followed us most of time. Saw one submarine just after start.

Reached anchorage off Flamenco at 3 p.m. At least 150 or 200 laughing gulls gathered near ship. Also brown pelicans, which are continually flying about here, and a number of frigate birds ([males] have blackish throat, white chest).

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[110] The bare-throated tiger-heron (*Tigrisoma mexicanum*, prev. *cabanisi*) (*Wikipedia*).

[111] The great-tailed grackle or Mexican grackle (*Quiscalus mexicanus*) (*Wikipedia*).

Heavy rain before sundown. Photos looking towards Flamenco and entrance to Canal, also one toward highest hill or mt. toward west.

Stayed on ship during afternoon and evening. 1 letter from home. 1 radio from Zeteh.

## April 23

Moved into dock at Balboa arriving at 6:45 a.m. On mud flat opposite dock 7 white ibises, 6 little blue herons, 2 Lousiana herons[112]. Many laughing gulls near ship.

Zeteh came to meet us at 7:30 [a.m.] Left by private gas-car at 8:45 [a.m.] Along route: several great-tailed grackles, 1 small grebe. Vegetation looks green. Rains have doubtless begun.

Stopped at summit and gave Higgins pieces of *Opuntia helleri* (Tower I.) and *O. myriacantha* (Indefatigable).

Arrived Frijoles 10 a.m. Caught 1 gecko on tree trunk. Zeteh had telephoned here from Balboa, and canoe from island had carried back word; but due to a misunderstanding, the launch did not

[112] Originally the Louisiana heron (*Ardea ludoviciana*), today known as the tricolored heron (*Egretta tricolor*) (*Wikipedia*).

come till 12. So we waited and finally got a very large dugout and tried to paddle it out. Steered horribly, sides so high they caught wind and we zigzagged interminably. Before we got out to inlet, launch appeared so we left canoe tied to a stump. Donato runs launch, it has outboard motor.

The wind on the lake would have made it impossible for us to paddle the dugout across. The biological station is at the head of a small bay, most of buildings 120 ft. above water, reached by cement steps. Track and cable to pull up baggage.

A large 2-storey building with spacious room below where meals are served. Upstairs more laboratory space and room to place cars, etc. Chapman's house the highest, to the southward. A dead hummingbird found on table inside.

Water tank supplied from roof. Recording rain-gauge. Other meteorological instruments beneath Chapman's house. Site of Shannon shack, lower down, now occupied by a small house being enlarged.

Menagerie had a collared peccary, 2 marmosets, an agouti, 1 night monkey, a Galapagos turtle had been sent to Florida. Woods came close down behind Chapman's house. No oropendola tree in sight, it had been to N. of laboratory. Saw 1 *Legatus* and heard its prolonged whistled "peee." Also, 1 *Amazilia tzacatl* with [?] in

beak. One *Iridoprocne albilinea* flying over water as we approached island[113].

Lunch was soon served — soup, chicken stew, vegetables, papaya, bananas, cocoa. Then we walked up trail to tower at highest point of island. A wooden structure (redwood) about 40 ft. high. View of canal. Atlantic can be seen on clear days.

Photos on way of the [?] and looking down trail (with palms).

Svenson and Zeteh looked at trees and plants. "Beefsteak" heliconia[114]. Also a heliconia somewhat like an *Aframomum*[115]. Many plants suggesting *Phrynium*. Two kinds of *Passiflora*, one with splendid deep red flower, long petals, other greenish flowers, fruit like a purple grape. *Cecropias* of 3 or 4 species, all hollow and inhabited by ants, says Zeteh.

The woods along this trail are good, but large trees not numerous. Undergrowth very open, quite a lot of palms, including tall slender ones with stilt roots. Many others with long spines.

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[113] The piratic flycatcher (*Legatus leucophaius*), the rufous-tailed hummingbird (*Amazilia tzacatl*), and probably the mangrove swallow (*Tachycineta albilinea*) (*Wikipedia*).

[114] The beefsteak heliconia (*Heliconia mariae*) (*Wikipedia*).

[115] *Aframomum* is a genus in the ginger family, Zingiberaceae, with around 50 species (*Wikipedia*).

Woods on far side of island from laboratory said to have many more large trees, the best virgin forest on island. Saw an iron relic of French work, apparently an overturned box of a Decauville car[116] for carrying earth. Not terribly corroded yet.

Saw no leaf cutting ants, but a column of driver ants with whitish heads. Not aggressive. Scooped a lot into a film tube and was not bitten.

Termites swarm here, and Zeteh had put many kinds of posts in ground to test resistance of woods, treated with chemicals and untreated. No wood entirely immune, he says. We saw no termites on Galapagos or Cocos, though there are many of them on Pearl Is.

One *Sporophila aurita*[117] on steps up to laboratory. Ticks very abundant in woods, mostly rather small but not minute. 2 large ones crawled off a climbing bamboo onto Zeteh's hand. Removed with balls [?] of beeswax and pine oil.

Returned to laboratory about 4 [p.m.] We were to board *Nourmahal* off island if she appeared, otherwise to take train for Colon at Frijoles at 5:25 p.m. Just as we crossed channel the

[116] Decauville was a French manufacturing company of light railways (*Wikipedia*).

[117] The variable seedeater (*Sporophila corvina*) (*Wikipedia*).

*Nourmahal* appeared in distance (4:30 p.m.) She had entered Canal about 1 [p.m.] Hay stood up in bow with flag and waved it. Ship stopped and with much awkwardness we climbed up a Jacob's ladder. Said goodbye to Zeteh who was to try for 5:14 [p.m.] train for Balboa.

My breeches and leggings had kept out ticks, so that I found them only in my clothes. Good luck! Many laughing gulls, the majority in full plumage, flying on this part of lake.

Went through Gatun locks, and reached end of canal just as night was falling. Wireless masts at Colon have light purplish red lights on top like those at Darien. On way down we saw a flock of bats fluttering near one of these lights at Darien.

Roosevelt, Cutting, and Sanborn came across from Panama by afternoon train and now came aboard. We set out at once into Caribbean, slightly roughened by wind. Very different from quiet bay of Panama and neighboring Pacific.

Water in Gatun lake — dull greenish, but not brownish as in so many rivers elsewhere in tropics.

Zeteh says they have 2 crocodilians: 1 caiman, 1 *Crocodylus*. Today he shot an *Ameiva*[118] with reddish throat and chest, and caught a brown tree-frog. There are caecilians on Barro Colorado, also a *Peripatus*[119] (discovered there).

## April 24

Fairly smooth sea, water deep blue again. We are going to west of Cuba and then to Dry Tortugas. Skinned birds today on deck — and saw none on the water. Position of ship at noon: 12°57'N, 80°22' W. 216.5 miles from Colon.

A short-eared owl skinned today had about 10 round worms, 36-50 mm. long beneath skin of cheeks, especially just below ear.

Doves had eaten seeds of shape of small castor oil beans. I showed some to Svenson the other day, and he agreed that they were almost undoubtedly seeds of *Croton*[120].

The ground finches with long bills (*Cactornis scandens*) are almost always soiled on forehead with some gummy substance, which does

[118] *Ameiva*, commonly called jungle-runners, is a genus of whiptail lizards that belongs to the family Teiidae (*Wikipedia*).

[119] A genus of velvet worms in the Peripatidae family (*Wikipedia*).

[120] Probably the Galapagos croton (*Croton scouleri*) (Datazone).

not wash off. Can it come from cactus? Several kinds of ground finches at Academy Bay had eaten small hard seeds, dark brown of irregular shape — or perhaps these were broken pieces of the shell. Svenson thought they might be seeds from the cactus *Cereus*.

One dove today had a gray tick clinging firmly to skin of lower throat. I also saw several ticks on feet of basilisk from Pedro González Island.

## April 25

Clear in morning, hot, little breeze. Breeze freshened, and sky became overcast towards noon. At 1 p.m. a barn swallow was flying parallel to the ship, going northward. About mid-April the range of this species extends from New England to Cocos Is., at least.

Position of ship at noon — 17°54'N, 82°33'W. Day's run — 328 miles.

The afternoon became increasingly warm. A little before 5 o'clock [p.m.] it was 84°. Little or no breeze even on sofa at stern. Then the horizon turned blue-black ahead. It looked like a thunderstorm, and the black clouds had a clear-cut margin as we approached. No marked cumulus above them, no lightning. In the whole course of the storm I saw only one weak flash of lightning,

and heard no thunder. The squall came suddenly, about 5 p.m. The thermometer dropped to 70°, but there was only a light rain. Sea became rough, white caps breaking, but as the wind came from dead ahead, the *Nourmahal* did not roll, nor did she even pitch. Spray blew from the waves, it looked like the North Atlantic in a winter storm, but was only agreeable cool.

By 6 o'clock [p.m.] the sky had begun to clear, shafts of sunshine broke through, and the waves soon stopped breaking at the crest.

## April 26

Clear weather all day, light breeze, sea calm until nightfall, then a trifle rougher.

About 9 a.m. a palm warbler[121] (throat and under tail-coverts yellow, but breast without yellow) appeared on board, and all day it flitted about the ship, alighting on rail, hopping on deck, catching flies —there are quite a few on the boat now— and evening spending a half hour in the library. Very tame, silent. Last sun about 6:30 p.m.

Water deep blue all day. At 9:30 [a.m.] we came to a long band of gulfweed and the ship hove to for an hour, moving only just

[121] The palm warbler (*Setophaga palmarum*) (*Wikipedia*).

enough to bring the gulfweed along the port side where sailors scooped it up with [?] net attached to a long pole, and with a rope pulled ahead by a second man. Another sailor put a large shark-hook on a rope and threw it into the weed with fair result. Others tried to use the casting net. Finally they gathered enough weed to fill a dozen buckets, but most of it was thrown on the deck near the scuppers and hooked over there.

Dr. Townsend suggested Astor that it be gathered for the marine iguanas. This gave Hay, Svenson and me —as well as several sailors— the chance to look through it for animals. The first creature I saw was a small crab, spotted with brown in excellent imitation of the weed.

Soon we were finding numbers of these crabs —also paler colored ones—, shrimps and goose-barnacles. But it was a little while before we found a tiny Sargasso fish[122]. Although a number were found, none was an inch long. A single pipe-fish was all we could discover. As I looked down on the weed through my glass, and noted a floating bottle or two, a banana peel, and a piece of paper, I also noticed a round bluish disc with white center, ¾ to 1 inch

[122] The sargassum fish, anglerfish, or frog fish (*Histrio histrio*) (*Wikipedia*).

across. This was a colonial coelenterate near *Porpita*[123], of which we later secured 2 small examples.

Many of the crabs, shrimp, and some Sargasso fish were put in a small glass aquarium with some gulfweed, but they died in a few hours. Only a few crabs survived for about 7 hours. A few of the fish were also living after 7 hours, but they all died in about 9. The fish use their fins almost like hands to climb about with.

At 10 a.m. while we were fishing up gulfweed, a laughing gull flew about the stern.

1:45 p.m. We passed Cape San Antonio, the western end of Cuba. A few flying fish with whitish wings were noted about this time.

I did not keep a good lookout for birds today and noticed only one petrel-like bird, a little larger than Leach's petrel — gray above, whitish below, flying low over water at some distance.

The wind came up a little at night, and ship rolled slightly toward midnight.

[123] A genus of hydrozoans in the family Porpitidae (*Wikipedia*).

## April 27

At 8 o'clock this morning we anchored off the Dry Tortugas, near the island with the old fort (Garden Key Island, Fort Jefferson) while on the opposite side is the one with the lighthouse, Loggerhead Key. Not far away is the low islet, Bird Key, with an enormous cloud of sooty terns and noddies hovering over it. No noddies came near the ship, however, and only 3 or 4 sooties. Over the fortified island hung a dozen frigate birds, and they stayed in the same place for 2 hours. Three other low islands (or sand bars) are visible to the eastward.

A few laughing gulls and one larger gull like a 2nd-year herring gull[124] flying close to ship. Water a rather light blue, not bright, small bits of gulfweed in lines here and there. Sun shining clear.

After breakfast several of the party went fishing, but did not get a strike, and caught only gulfweed. With Huntington, Hay and Bronson I went first to Port Jefferson on Garden Key. A large brick fort for heavy artillery, built about Civil War time and some large warehouses doubtless added when it was used as a base in Spanish War. Roofs are torn by hurricanes, but masonry remarkably preserved. In the center the parade ground has now palms (date?)

[124] The American herring gull or Smithsonian gull (*Larus smithsonianus* or *Larus argentatus smithsonianus*) (*Wikipedia*).

and other trees, and a marble gravestone to a man and a child who died of yellow fever in 1867. Vegetation mainly xerophytic, *Ipomea pes-caprae* on beach (photo), *Euphorbia*, a small *Poinsettia*[125], grasses include *Cenchrus*.

A large launch with a party from Florida awaiting smoother sea for return. A small schooner at anchor.

Birds seen: Brown pelicans, 2 of them perched on spar buoys; frigate birds, about 10; Maryland yellowthroat, 1 [male]; redstart, 1 [male], displaying on a beam in one of the warehouses; ovenbird, 1 amidst bushes in garden; sharp-shinned hawk, 1 adult flying about everywhere; bluebird, 1 and prairie warbler, 1, both in grass and bushes on beach; hooded warbler, 1 [male] just outside fort[126].

Went back to ship, got Dr. Townsend at 11 o'clock [a.m.], and then to Bird Key. Great flock of terns (perhaps 2500-3000) still hovering over Key and alighting in numbers at its western end. At first, on approaching, one sees mostly sooty terns, seemingly 10 of them to 1 noddy. Then, coming closer, the noddies increase to

[125] A subgenus derived from the genus *Euphorbia* (*Wikipedia*).

[126] The common or Maryland yellowthroat (*Geothlypis trichas*), probably the American redstart (*Setophaga ruticilla*), the ovenbird (*Seiurus aurocapilla*), the sharp-shinned hawk (*Accipiter striatus*), bluebirds (genus *Sialia*), the prairie warbler (*Setophaga discolor*), and the hooded warbler (*Setophaga citrina*) (*Wikipedia*).

about 1 to 5. From which birds the babble of shrill cries came I am not sure, but I think the noddies are silent. On a piece of driftwood sat a duck hawk[127], which flew at our approach. Terns paid no attention to it. We landed on the middle of the south side of the key, noting that there was a flock of perhaps 150 large gray-and-white terns with black heads (royal or Sandwich?) sitting on the sand at the easterly point.

Sanborn and I advanced on the main body of terns, and found both species rather tame. First we came to noddies sitting in low plants and bushes, but without eggs. They would sometimes remain sitting at 6 to 8 ft. farther on, the sooties predominated, sitting in a great patch on sand amid low herbage, while a dense mass fluttered overhead. A few sooties were sitting on a single speckled egg each, and these were loath to leave, even at 6 ft.

I took a half-dozen Kodak pictures, and then turned toward the other end of the beach. But the terns there had departed, and it was time to get into boat again. We reached the *Nourmahal* a little before noon, had lunch; and then Astor decided to leave for Miami, because he feared rough water on account of our menagerie, and did not wish to run ship too fast.

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[127] The peregrine falcon (*Falco peregrinus*), commonly known as duck hawk in North America (*Wikipedia*).

The beaches here are beautifully white, largely of coral debris and calcareous algae, ground up fine. Many beautiful conchs, *Pinnas*[128], and other shells, as well as bits of white coral, sea-fans, and limy algae.

Hermit crabs abound, and often bide under old boards, etc.

The old fort is decorated (?) inside with all sorts of names, ships ("ARA" among them) and "nuts," quotations, jokes, and addresses. We saw and old 11-inch muzzle loader like those on top of Castle William, hardly rusted at all. The preservation of brick, plaster, and paint is striking. The moat around the fort is in excellent state. Spent afternoon on way toward Miami.

## April 28

At 7 a.m. we were off Miami. Soon the pilot came off in a launch and we started in the channel between two low breakwaters built of large irregular blocks of stone. Tide high, breakwater almost covered.

[128] The noble pen shell or fan mussel (*Pinna nobilis*) (*Wikipedia*).

One Caspian tern[129] flying about near end of breakwater, not in very good plumage, but bill orange red. Forehead a little whitish, I thought. Tail of course short.

As we went in I counted about 50 least terns[130] (in breeding plumage: bills yellow, patch on forehead white) and about 6 brown pelicans. Also one Florida double-crested cormorant flying.

Docked about 8 [a.m.] at Municipal Pier No. 1. Went with Dr. Pool and Svenson to post office and telegraph office. Sent letters to Murphy and Suzanne by air-mail, telegram to Dr. Chapman telling him we hope to reach New York Thursday morning.

A ship which was beached during hurricanes now serves as an aquarium (admission 10 [cents], but we did not have time). Taxis very scarce, we had to telephone for them. As the sun rose higher it became rather warm.

We sailed again at 10:20 a.m. Weather clear all morning, but towards 11 [a.m.] the sky darkened in west, and afternoon cloudy with rather fresh breeze from NE. Blowing against Gulf Stream, it kicked up a rough sea. Position at noon not posted, we were a little outside Miami. In the early afternoon one small warbler —possibly

[129] The Caspian tern (*Hydroprogne caspia*) (*Wikipedia*).

[130] The least tern (*Sternula antillarum*) (*Wikipedia*).

a yellow palm— flew along beside ship. At 3 p.m. I saw 2 birds like greater shearwaters[131], same pattern (dark crown, very white rump). Under side of wings dark gray with white band in region of the greater under coverts. They were too far off to see much of shape of bill, and only the whiteness of the rump or upper tail — coverts suggests that they may have been black-capped petrels[132].

Toward evening the sea became rougher, blue water often covering the posts of my cabin. Wind increased to about 45 miles, coming from NE. A little after 8 [p.m.] we went up to dinner, all of us except Bronson and Svenson.

The tablecloth was wet to keep dishes from sliding, the table was always screwed to the floor. The soup rocked in our plates, and a couple of glasses overturned, but we got through the fish course without mishap. Just as the chicken was being served the ship gave a violent lurch top ort, the side where Huntington, Roosevelt and I were sitting. Dishes and glasses came sliding toward us, and suddenly the whole table came loose and piled over on us as our chairs tipped backward. Behind us was a sideboard, and I think we must have slid under the table, or I for one would have been squeezed. The table was heavy, must have weighed 200 lbs., so there was no stopping it.

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[131] The great shearwater (*Ardenna gravis*) (*Wikipedia*).

[132] The black-capped petrel (*Pterodroma hasitata*) (*Wikipedia*).

Now the ship rolled to starboard and freed us three, the tabled rolled over upside down, floor covered with broken crockery and glasses. Everyone was skipping about dodging chairs, etc., when suddenly a steward found that Dr. Townsend was lying on the floor on the port side of the saloon. His seat was at the after end of the table, and at the first lurch he seems to have been thrown half across the saloon, striking his head on the angle of a baseboard or molding near the floor.

He was unconscious for a few minutes, and had a cut on the left eyebrow, another on the side of the head high up, and a third smaller one on back of head. Also a bruise on lower side of left forearm.

The ship was turned to meet the sea more squarely. Dr. Townsend was laid on the floor of dining saloon, and Dr. Pool secured a pillow and instruments, bandages, etc. while Herman (2nd steward) boiled the instruments.

Dr. Townsend came to, noticed the blood on the floor, and asked what was the matter. Very courageous and calm, not a whimper. Dr. Pool took 2 stitches in the eyebrow, and in the cut on side of head. Bandaging followed. Then Dr. Townsend walked down to his cabin, only assisted by two of us holding his arms.

5 chairs were badly broken, and the meal ended there. I had a cup of coffee later, but no one seemed to be hungry after the spill.

The ship was slowed down for a while to 4 or 5 knots. Sea continued very rough all night but our speed was increased to 10 knots before midnight.

## April 29

Rough sea and strong NE wind continued all morning. Table had been fastened down again with larger screws, but we thought many times of last night as we took breakfast and lunch.

Dr. Townsend stayed in bed, but made no complaint. Ate an orange for breakfast, and coffee, toast, and marmalade at lunch.

At noon we were off to St. Augustine. Some small flying fishes of common sort (with whitish fins, pelvis visibly elongated as well as pectorals) seen this morning and afternoon, also one larger flying fish with reddish pectorals in early afternoon.

Sea still rough in evening, and fairly so throughout night.

Position of ship at noon, April 29, 29°46'N, 78°58'W. Day's run, only 238 miles.

## April 30

Morning clear, with a few white clouds on sky. Wind moderate, sea falling.

At 8:45 a.m. we passed a gathering of birds which included 10 or 12 birds which may have been black-capped petrels and fully 2 dozen sooty terns.

The black-capped petrels flew rather like shearwaters, skimming and tacking, sometimes rising 30 ft. above water, sometimes sailing low over it. The white collar was well marked, white at base of tail very prominent. Area about eye seemed blackish, back slaty blackish; could not see shape of bill well, but doubt if these were greater shearwaters.

The sooty terns flew higher as a rule, and came close enough for me to hear their voice. Considerable gulfweed in small patches or strips.

At 9:50 [a.m.] a petrel flew across our bow, looking very like Wilson's petrel. It had white rump. The date seems early, could it be Leach's. Wings did not seem long enough. No, it was a Wilson's for at 12:45 [p.m.] there were 8 or 10 of them following in our wake, and they could be seen well. Feet projected beyond tail, and flight was typical. It is more direct and well-sustained that

Leach's, although there does seem to be a slight rocking of the body, as though left and right wings were turned slightly different (cf. flight of swifts).

A little after 3 p.m. we watched 2 middle-sized cetaceans jumping like porpoises — blackfish[133], said Huntington. They had the pointed dorsal fins like porpoises, but were much larger. Now a porpoise headed in toward our bow, but when I looked down there were nine swimming there. Huntington said he counted 15 beneath the bow a few days ago.

He also said he saw a Portuguese man-of-war today, and several just after we left the Dry Tortugas. Bronson also saw one washed up on the shore of Bird Key, but I have seen none during our whole cruise.

At 3:30 p.m. we were passing some large patches of gulfweed, occasionally they would be 15 x 30 feet. Here was a party of at least 20 shearwater-like birds which I take to be black-capped petrels. Scarcely close enough to see bill well, but they were all colored like those of this morning. With them was one tern of usual grey color above with black crown, not identified satisfactorily.

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[133] Common name for a series of fish and cetaceans. Among the latter there are pilot whales (Globicephala), the melon-headed whale, the false killer whale and the pigmy killer whale (*Wikipedia*).

A little later I saw a black-capped bird with a *Puffinus puffinus*. The latter was all blackish above, white beneath. The two species seemed about equal in size, and very much alike in shape and flight. One more *P. puffinus* seen in afternoon, and several blackcaps, one even at 5 p.m.

Between 4 and 5 o'clock [p.m.] 2 pomarine jaegers, one in distance, one closer, so that lengthened rectrices were visible. Very blackish above, white below.

Wilson's petrels followed in our wake during most of afternoon, often 8-10 together. They only disappeared after night had all but fallen.

One pomarine jaeger with very long tail-feathers, very white below and black above flying about 120-150 feet over water, at 6:15 p.m.

Many flying fish seen today. One small one seemed to have pink fins, especially pelvics. Others all white-finned.

Dr. Townsend took dinner with us again this evening, his recovery has been remarkable.

Phosphorescence good this evening, better than I saw around Galapagos. Small sparks along ship's side, and larger glows behind propellers, as well as small ones.

## May 1

Much cooler this morning, as we are about opposite Cape Charles, thermometer 69°. Clear weather, horizon hazy, calm sea. 6 or 8 Wilson's petrels over our wake all morning, others seen off at sides of ship, singly.

Photos of menagerie on upper deck. Bronson drawing legs of tortoise (suspended). Ship's carpenter holding sea-lion.

At 3:15 p.m. several Wilson's petrels still flying over wake, and one immature herring gull near ship. We are about 80 miles off northern coast of Maryland, near Delaware boundary.
4 p.m. 2 Wilson's petrels behind ship.

Water since this morning has been dull gray-green, for we have left Gulf Stream, and this coastal water flows southward to [Cape] Hatteras. At 4:15 [p.m.] or so we shall cross the 100-fathom curve. Color of water not primarily due to depth.

Wilson's petrels had disappeared before 6 p.m. A pomarine jaeger with long rectrices seen between 5 and 6 [p.m.], and a barn swallow was flying about our stern at 6:40 p.m.

Position of ship at noon today, 37°41'N, 73°12'W. Run: 321 miles.

At 11 p.m. the phosphorescence near our stern was as brilliant as yesterday — only the large flashes in the wake were lacking. Plenty of small but bright flashes near ship's side, and whole wake, beginning at screws, very luminous.

## May 2

At 5:30 (standard time) [a.m.] we were passing Sandy Hook, sunny but hazy, smooth water. Changed watch to daylight saving time, now in force in New York, South Beach, Fort Wadsworth, etc., still in same old place. A few herring gulls, mostly immature, the only birds seen as we entered Narrows[134] and came up the bay.

One of New York's skyscrapers stuck its top out of smoky haze, but Liberty[135] remained invisible till we were very close.

The old dredge *Navesink* was sucking mud close to the spot where she sank a couple of years ago. Her sister ship *Atlantic* passed us going out through Narrows. *Navesink* looks dingy and dark as though something had happened to her.

Docked at Pier 1, close to Aquarium at 8 a.m.

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[134] The Narrows is the tidal strait separating the boroughs of Staten Island and Brooklyn in New York City (*Wikipedia*).

[135] The Statue of Liberty, on Liberty Island, in New York Harbor.

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