

Charles Henry Gilbert (1859–1928), Naturalist-in-Charge: the 1906 North Pacific Expedition of the Steamer *Albatross*

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Introduction

Charles Henry Gilbert (1859–1928) was a pioneer ichthyologist and fishery biologist whose work is of particular significance to aquatic resources of the

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ABSTRACT—*Fishery science pioneers often faced challenges in their field work that are mostly unknown to modern biologists. Some of the travails faced by ichthyologist and, later, fishery biologist Charles Henry Gilbert (1859–1928) during his service as Naturalist-in-Charge of the North Pacific cruise of the U.S. Bureau of Fisheries Steamer Albatross in 1906, are described here, as are accomplishments of the cruise. The vessel left San Francisco, Calif., on 3 May 1906, just after the great San Francisco earthquake, for scientific exploration of waters of the Aleutian Islands, Bering Sea, Kamchatka, Sakhalin, and Japan, returning to San Francisco in December. Because the expedition occurred just after the war between Japan and Russia of 1904–05 floating derelict mines in Japanese waters were often a menace. Major storms caused havoc in the region, and the captain of the Albatross, Lieutenant Commander LeRoy Mason Garrett (1857–1906), U.S.N., was lost at sea, apparently thrown from the vessel during a sudden storm on the return leg of the cruise. Despite such obstacles, Gilbert and the Albatross successfully completed their assigned chores. They occupied 339 dredging and 48 hydrographic stations, and discovered over 180 new species of fishes and many new species of invertebrates. The expedition's extensive biological collections spawned over 30 descriptive publications, some of which remain today as standards of knowledge.*

American west. Appointed by President David Starr Jordan¹ as the first chairman of the Zoology Department of Leland Stanford Junior University in Palo Alto, California in 1891, Gilbert (Fig. 1) was an active investigator of America's fish fauna from Panama to Alaska (Dunn, In press; Pietsch and Dunn, In press). Gilbert was Naturalist-in-Charge of several exploratory cruises of the Steamer *Albatross* (1888–90, 1902, 1906),² as a temporary employee of the U.S. Fish Commission and, later, the Bureau of Fisheries (Hedgpeth, 1945; Dunn, In press). He was strongly devoted to his work and possessed a demanding personality (Dunn, 1996a; In press). Gilbert's scientific leadership of the 1906 expedition of the *Albatross* from San Francisco to the Aleutian Islands, Bering Sea, and waters off Kamchatka, Sakhalin, and Japan is an example of his success and devotion to duty in face of severe hardships.

This cruise was conducted in the latter part of the era of exploration and description of new faunas and fisheries. The *Albatross* had engaged previously in wide-ranging exploratory ventures

¹Jordan (1851–1931) was President of Leland Stanford Junior University from its founding in 1891 until he became Chancellor in 1913 (Myers, 1951). Earlier he had been Gilbert's major professor at Indiana University and became his mentor, colleague, and friend. Jordan was the pre-eminent ichthyologist of North America during the late 19th and early 20th centuries (Myers, 1951; Hubbs, 1964). His autobiography (Jordan, 1922) contains a treasure of information about early 20th century North American ichthyology and fisheries biology.

²Gilbert correspondence, National Archives (NA), Record Group (RG) 22, Entry (E) 63, Records of the *Albatross*.

throughout the Pacific Ocean (Hedgpeth, 1945). This particular 1906 cruise was a multifaceted operation, first exploring the salmon fisheries of Alaska waters, then conducting general surveys of fisheries resources of the western North Pacific Ocean. As the Bureau put it: "In May [1906] the *Albatross* was dispatched upon an extended cruise in the northwestern Pacific and Bering Sea to make certain investigations in the interests of the salmon fisheries of Alaska and the general questions of geographic distribution of Pacific fishes and the relations of the faunas of Alaskan and Japanese waters . . ." (Bowers, 1906).

Just before this expedition, the Russo-Japanese War of 1904–05, fought over Manchuria and Korea, had concluded, with Japan the victor (Garraty and Gay, 1981),³ but its lingering effects were evident to Gilbert and to the *Albatross*. Martial law was still in effect in Japan during that period, ports were closed to foreign vessels, and hundreds of floating mines from the conflict impeded the ship's progress and research. Severe storms interrupted the work, and typhoons caused damage and severe loss of life and property among commercial fishermen in the region. The captain of the *Albatross*, Lieutenant Commander LeRoy Mason Garrett (1857–1906), U.S.N. (Fig. 2), was lost

³The Japan-Russia war of 1904–1905 was fought over Korea, as was the Japan-China war of 1894–1895. Japan defeated Russia, and the ensuing Treaty of Portsmouth awarded Japan certain rights in Manchuria and southern Sakhalin. Japan formally annexed Korea in 1910 (Garraty and Gay, 1981).

at sea during a heavy storm as the vessel was returning to the United States. Yet, despite these setbacks, the expedition may be considered a significant success, based on discovery of many specimens new to science, extensive

biological collections, and the number of scientific publications resulting from the expedition.

The primary sources for this study are Gilbert's letters to his friend and mentor, David Starr Jordan.⁴ Additional

sources include annual reports of the *Albatross*^{5,6} and personnel records and correspondence of Captain Garrett.⁷ Positions for dredging and hydrographic stations for this cruise are contained in Bureau of Fisheries Document 621 (Anonymous, 1907).

The *Albatross* Expedition of 1906

Gilbert, as chief naturalist and ichthyologist of the *Albatross* (Fig. 3), was assisted in his scientific duties by Austin Hobart Clark,⁸ naturalist assigned to the vessel, and L. M. Tongue, captain's clerk. Accompanying the vessel were Stanford University professors Harold Heath⁹ and John Otterbein Snyder,¹⁰ Charles Victor Burke (1882–1958), one of Gilbert's graduate students, and another Stanford student, Michitaro Sindo (Snyder, 1912a), as well as Professor Harry Beal Torrey of the University of California (Anonymous, 1906a).¹¹ Garrett had served as captain of the *Albatross* since October 1904 (Hedgpeth, 1945).¹²

Various sampling gears were used, including beam trawls, handlines, ring

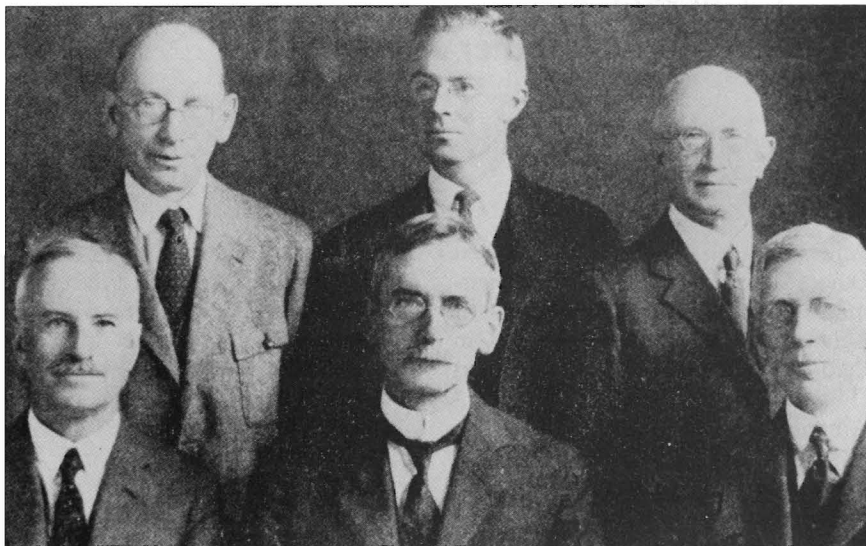


Figure 1.—Faculty of Zoology Department, Stanford University, in about the 1920's. From back row, left, are Edwin C. Starks, Walter K. Fisher, Charles H. Gilbert, John O. Snyder, Harold Heath, and George C. Price. Courtesy of Mark R. Jennings and the Department of Special Collections and University Archives, Stanford University, Calif.



Figure 2.—Lt. LeRoy Mason Garrett, front row left, aboard the USS *Marblehead* in 1899 (NH 46581). Courtesy of U.S. Naval Historical Center, Washington, D.C.

⁴Gilbert correspondence, NA, see footnote 2; Charles Henry Gilbert Papers (CHGP), Stanford University Archives (SUA), SC 58, Stanford, Calif.

⁵Annual Report, Fisheries Steamer *Albatross*, for the year ending 30 June 1906 (Lieutenant Commander L. M. Garrett, U.S.N., Commanding). NA, RG 22, E 63, Records, U.S. Fish and Wildlife Service, Box 6. Folder *Albatross*, Reports and Correspondence.

⁶Annual Report, Fisheries Steamer *Albatross*, for the fiscal year ending 30 June 1907 (Lieutenant A. J. Hepburn, U.S.N., Commanding). NA, RG 22, E 63, Records, U.S. Fish and Wildlife Service, Box 6. Folder *Albatross*, Reports and Correspondence.

⁷Correspondence of Lt. Commander LeRoy Mason Garrett, U.S.N. NA, RG 24, Bureau of Navigation Correspondence, Files 1699, 10–14.

⁸Clark (1870–1948), Curator of Echinoderms at the Museum of Comparative Zoology, Harvard University (Cattell and Cattell, 1938; Palmer, 1948), was aboard the vessel as a temporary employee of the Bureau of Fisheries. He also observed and collected birds during the expedition, saving over 180 skins and describing them in a paper (Clark, 1910) in which he also provides a succinct overview of the itinerary of the *Albatross* (see also Clark, 1907a, b).

⁹Heath (1868–1951) was a Professor in the Department of Zoology, Stanford University. His expertise was mainly in invertebrate zoology (Cattell and Cattell, 1938).

¹⁰Snyder (1867–1943) was a Professor in the Department of Zoology, Stanford University, whose main interest was in fishes (Hubbs, 1943).

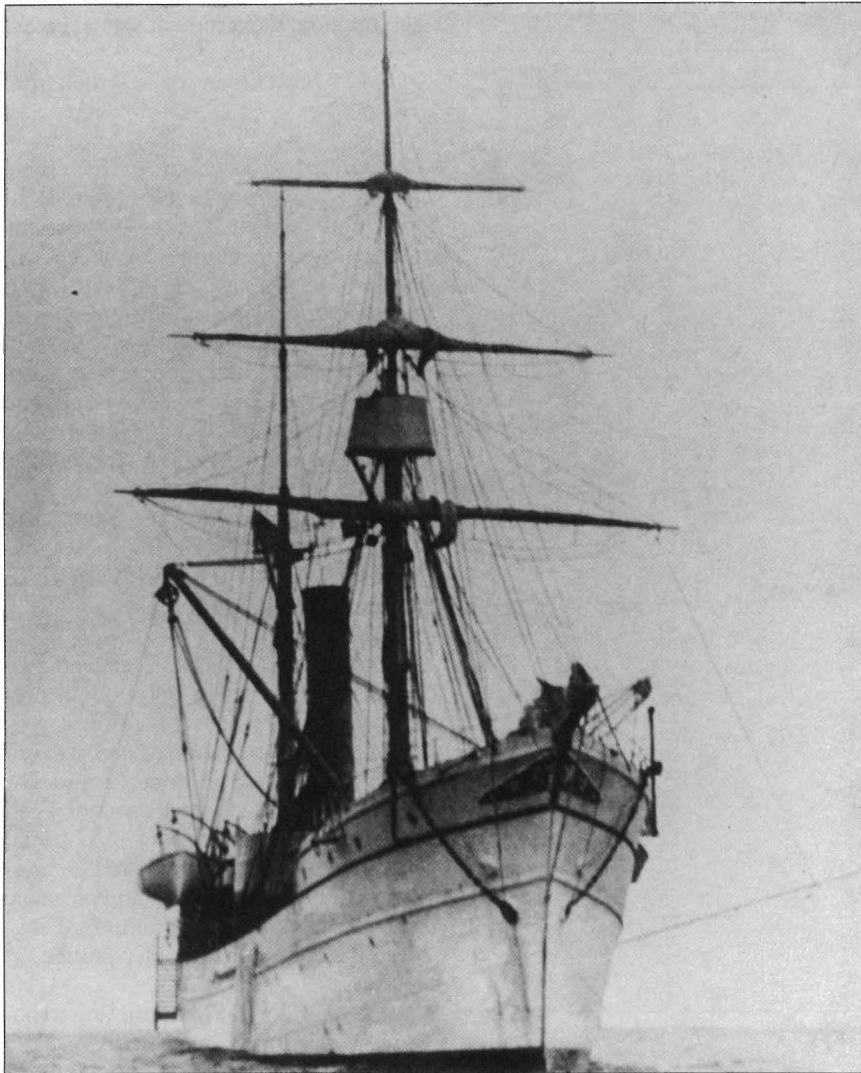


Figure 3.—U.S. Bureau of Fisheries Steamer *Albatross*. Courtesy U.S. National Archives, Washington, D.C.

nets, and various dredges, and plankton nets. Work included dredging and

¹¹Torrey (1873–1954) was a Professor at the University of California, Berkeley, whose expertise was in reproduction and taxonomy of invertebrates (Cattell, 1906).

¹²Garrett was an 1879 graduate of the U.S. Naval Academy, who served on a variety of naval vessels (and was previously assigned to the *Albatross* in 1883–85). He was promoted to lieutenant commander in 1901 (Hammersly, 1902). Garrett was appointed Captain of the *Albatross* in 1904 at the instigation of Alexander Agassiz (1835–1910), former director of the Museum of Comparative Zoology, Harvard University. Agassiz made the request to Senator Henry Cabot Lodge (1850–1924) of Massachusetts (Letter, Agassiz to Lodge, 13 August 1904, see footnote 6). For more on Agassiz, see Windsor (1991); a biographical sketch of Lodge appears in Malone (1933).

other sampling, collecting on shore at various locations, and hydrographic and meteorological observations (Anonymous, 1907). The expedition made significant collections of biological materials, including invertebrates, fishes, birds, and a few marine mammals.

After a 3 May 1906 departure, delayed by the great San Francisco earthquake,^{13,14} the *Albatross* steamed northward (Table 1, Fig. 4), arriving in Tacoma, Wash., on 9 May for a brief stay in drydock for cleaning and painting. On 11 May she moved to the U.S. Naval Shipyard at Bremerton, Wash., to fill vacant personnel positions from the Receiving Ship *Philadelphia*, and then left

for Seattle the following day to pick up fresh provisions and to receive Gilbert and Torrey, who had arrived from Palo Alto. After a coaling stop in Union Bay, British Columbia, from 13 to 17 May, the vessel proceeded to Dutch Harbor, Alaska, arriving the afternoon of 24 May.¹⁵

From 24 May to 16 June, the ship explored the Bering Sea, mainly off Bowers Bank and Petral Bank, and finally arrived off Petropavlovsk, Kamchatka, on 16 June (Table 1). Some 40 dredge and 27 hydrographic stations were occupied and several shore collecting expeditions were made during this initial leg of the cruise (Table 1; Anonymous, 1907).¹⁶ Collections, at times, were extensive as the captain's annual report noted during work on Petral Bank: "Richer ground for the trawl could hardly be found, for two hauls of the 12' Tanner [net] fairly swamped the Laboratory, operations in this line being suspended for a time until the scientific staff could clear decks once more for action."¹⁷

Three days were spent in Petropavlovsk for ship maintenance and to draw fresh water before continuing the expedition to the southwest. A five-vessel American cod fleet hailing from San Francisco was fishing in the Okhotsk Sea, and according to the Captain of the *Castle*, fish were so plentiful in this region that there had so far been no need to fish elsewhere.¹⁸

¹³The *Albatross* was pressed into emergency service after the great earthquake in San Francisco on 18 April 1906, and her departure was delayed. The ship carried fresh water and food from the Naval Paymasters Stores at Fort Mason, Calif., to those in need, and transported refugees and their effects. She was relieved from this duty on 28 April and finally departed San Francisco on 3 May. NA, RG 22, E 63, Box 6 (see footnotes 5 and 6).

¹⁴Snyder, Burke, and Sindo joined the ship in San Francisco. Gilbert and Torrey boarded the vessel later in Seattle. NA, RG 22, E 63, Box 6 (see footnote 5).

¹⁵NA, RG 22, E 63, Box 6 (see footnote 5).

¹⁶After departing Dutch Harbor on 28 May, the vessel passed near the Bogoslof Islands. A volcano had recently erupted and Garrett wrote that "a large volume of steam was seen apparently rising from the water midway between the two islands, Fire and Castel. As the islands were approached, it was seen that a new cone had been thrown up, which was hidden by clouds of vapor from a more distant view as the wind from the S.W. drifted the vapor toward the ship." NA, RG 22, E 63, Box 6 (see footnote 5).

¹⁷NA, RG 22, E 63, Box 6. See footnote 5.

¹⁸NA, RG 22, E 63, Box 6. See footnote 5.

Table 1.—Route of the Steamer *Albatross* in 1906, showing number of stations sampled (D = dredge station, H = hydrographic station), based on Anonymous (1907).

Dates	Route	No. of stations	Chart location
3–18 May	San Francisco to Union Bay, British Columbia	1D	1
19–24 May	British Columbia to Dutch Harbor, Alaska	5D	2
25–29 May	Dutch Harbor to Atka Island, Alaska	3D	3
29–31 May	Atka Island to Bowers Bank, Bering Sea	2D	4
1–3 June	On Bowers Bank	9D, 3H	5
4–5 June	From Bowers Bank to Petral Bank, Bering Sea	6H	6
5 June	On Petral Bank	6D, 12H	6
5–7 June	From Petral Bank to Agattu Island	2D, 6H	
9 June	Agattu Island to Attu Island	2D, 3H	7
11–12 June	Attu Island to Komandorskiye Islands ¹	2D, 3H	
14–16 June	Komandorskiye Islands to Bering Island	7D	8
16 June	Bering Island to Petropavlovsk, Kamchatka	1D	9
20 June	Petropavlovsk to west coast of Kamchatka	4D, 1H	10
21 June	On Codfish Banks, Sea of Okhotsk	2D	11
22 June	Codfish Banks to Kuril Islands	1D	12
24–27 June	Kuril Islands to Hakodate, Hokkaido, Japan	6D	13
16–18 July	Hakodate to Sado Island, Sea of Japan	11D	14
19 July	Sado Island to Nanao, Hondo, Japan	4D	15
21–23 July	Nanao, Hondo to Tsuruga, Hondo, Japan	14D, 2H	16
24–25 July	From Tsuruga to Dogo Island, Sea of Japan	6D	17
26–28 July	Dogo Island to Matsu Shima, Sea of Japan	10D, 1H	18
30 July–1 Aug.	Matsu Shima to Nagasaki, Japan	14D	19
2 Aug.	Korea Strait, vicinity Oki Shima	11D	20
8 Aug.	From Nagasaki to Kagoshima Gulf, Japan	7D	21
9–11 Aug.	10–20 miles SW of Goto Islands, East China Sea	15D	22
11–12 Aug.	10–20 miles SW of Koshika Islands, East China Sea	11D	23
13 Aug.	About 90 miles WSW of Kagoshima Gulf, East China Sea	6D	24
14–15 Aug.	In Colnett Strait	11D, 3H	
16 Aug.	Off Kagoshima Gulf, East China Sea	4D	25
16–17 Aug.	In Kagoshima Gulf	9D	
20–23 Aug.	Kagoshima to Kobe, Japan	15D	26
17 Aug.–1 Sept.	From Kobe to Yokohama, Japan	20D, 1H	27
19–20 Sept.	From Hakodate to Otaru, Japan, Sea of Japan	9D	28
21–22 Sept.	Otaru to Korsakov, Sakhalin Island	7D	29
23 Sept.	Gulf of Tartary, off SW coast of Sakhalin Island	8D	30
24 Sept.	Aniwa Bay, near Korsokov, Sakhalin Island	6D, 1H	31
25 Sept.	Korsokov to east coast Sakhalin Island	3D	32
26–27 Sept.	Off eastern coast of Sakhalin Island, Okhotsk Sea	12D, 2H	32
28–29 Sept.	Okhotsk Sea	5D	33
30 Sept.	North entrance to Yezo Strait	3H	
30 Sept.	In Yezo Strait	3D, 1H	34
1 Oct.	Eastern end Hokkaido, Pacific Ocean	2D, 1H	35
2–3 Oct.	South coast Hokkaido	10D, 1H	36
10 Oct.	Hokodate to Yokohama, Japan	7D	37
12–16 Oct.	Suruga Gulf, Japan	23D	38
17 Oct.	Entrance to Suruga Gulf	2D, 2H	38
19–20 Oct.	Off Omai Saki Light	7D	39
23–25 Oct.	Sagami Bay, Hondo, Japan	5D	40
26 Oct.	Uruga Strait, Gulf of Tokyo	6D	40

¹Commander Islands.

Hakodate, Japan, was reached at noon on 27 June (Table 1; Fig. 5). During this period of about 56 days out of San Francisco, some 53 dredging and 34 hydrographic stations had been occupied, and many shore collections were made as opportunities arose. The published record (Anonymous, 1907) reveals that the dredging gear was torn or otherwise damaged on 12 occasions.

The first part of the expedition, through the Aleutian Islands, Bering Sea, and around Kamchatka, was considered relatively smooth, and trawl collections were beyond expectations. The Captain wrote:

“The collections thus far made have been in advance of the most sanguine

expectations. The collections have grown so bulky that it will be necessary to box them and either ship or store them here [Hakodate] in order to make room for further work when the vessel again starts out, which should be in a week or ten days.”¹⁹

On 28 June, Gilbert and Sindo went to Tokyo “to confer with the Japanese authorities and to expedite, if possible, the authorization necessary for the vessel to continue the cruise.”²⁰ They returned to the vessel on 10 July, bringing news that a satisfactory answer from

¹⁹NA, RG 22, E 63, Box 6. See footnote 5.

²⁰NA, RG 22, E 63, Box 6. See footnote 5.

the Imperial Government was to be expected at any time.²¹

On 11 July Gilbert wrote Jordan from Hakodate:

“We had a fairly successful cruise across [the] Bering Sea, stopping at all the points indicated in the instructions and enjoying a number of successful hauls in shallow water. In deep water, our efforts were in vain. We have a number of apparently undescribed forms and have secured much needed new material in species represented by only one or two specimens.

There is no end to the Liparids!”²²

Gilbert also described his attempts to secure permission from Japanese government officials to fish in their territorial waters:

“We reached this ‘promised land’ two weeks ago but are as yet without permission to take up our work.”²³ I proceeded at once to Tokyo, and worked through the U.S. Embassy and Dr. Mitsukuri. Everyone is most cordial and helpful, but the inertia of the official machine is apparently beyond computation. It needs your name and presence to make things move promptly. However, the delay cannot long continue.”²⁴

After further delay attempting to obtain such permission, Gilbert ordered the vessel to proceed. As Captain Garrett wrote:

“On Saturday, July 14, the Commanding Officer decided to get underway the following Monday and, in default of any word from Tokyo, to work down the west coast of Nippon as far as Nano. Accordingly, early in the morning of the 16th, a telegram announcing our movements was sent to the American Embassy in Tokyo, and the *Albatross* got

²¹Heath joined the vessel in Hakodate on 10 July. NA, RG 22, E 63, Box 6 (see footnote 6).

²²Gilbert to Jordan, 11 July 1906, CHGP, SUA, SC 58, Stanford, CA.

²³Snyder and Sindo left the vessel on 11 July to collect samples on shore. NA, RG 22, E 63, Box 6 (see footnote 5).

²⁴Gilbert to Jordan, 11 July 1906, CHGP, SUA, SC 58 (see footnote 22).

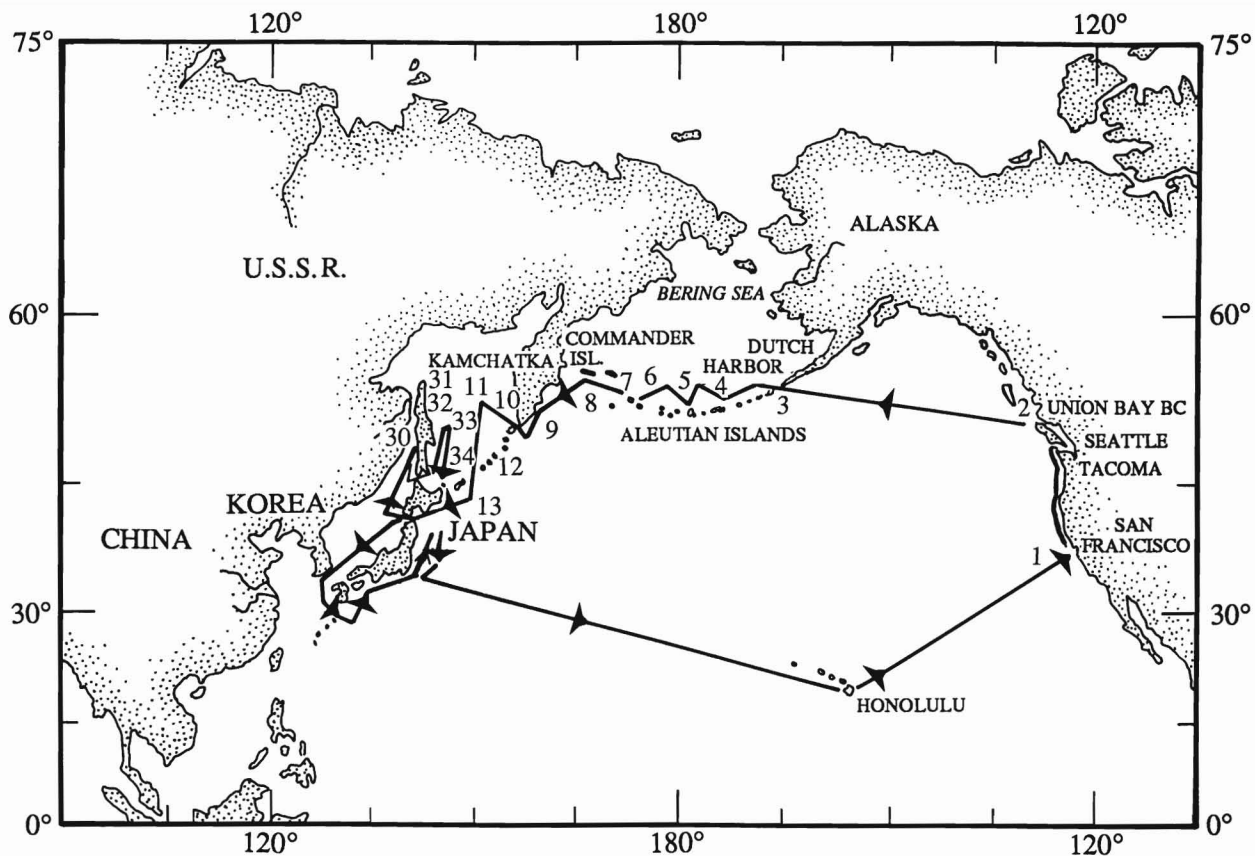


Figure 4.—Schematic route of the Steamer *Albatross* to the Japanese archipelago and return to the United States in 1906.

underway and proceeded out through the Straits of Tsugaru into the Sea of Japan. Formal authorization for the *Albatross* to operate was received from the Japanese Foreign Office on 19 July while the vessel was in anchorage at Ebisu Byochi.”²⁵

Gilbert wrote to Jordan on 20 July. In the letter he described the problems which had delayed the vessel’s progress:

“After waiting nearly three weeks at Hakodate for the final word of assent of the Japanese authorities we put to sea without it and began our work four days ago. You may judge how far we are behind our schedule. It will be necessary to work later in the fall than we had planned and also to omit some of the itinerary. I fear the off-lying islands to the southeast cannot be visited by the ship. Another vexatious feature which

occasions delay in this first part of the cruise is the menace from floating mines. We learn of six steamers which have been sunk during the last few months and thus consider it wise to cut down our running at night to a minimum.”²⁶

Concerning the danger from these mines, the Captain recorded:

“It was known from the official notices published by the Japanese Government that several hundred floating mines, planted by both Japanese and Russian forces during the recent war, were adrift in the Sea of Japan, and a sinister emphasis was given to this information by the reports, from time to time, of mines being stranded along the western coast of Japan, or of vessels damaged or destroyed through collision

with them at sea. Navigation of these waters, under the circumstances, possessed an element of excitement not usually attendant upon dredging alone; and it was deemed advisable to slow down to steerage way after dark, or anchor for the night when possible. This course was followed for awhile, an extra vigilant lookout being kept, until it was found that the necessary progress could not be made by dredging all day and lying practically stopped all night.”²⁷

Finally, the Captain noted that as the vessel proceeded south the chances of any mines left “up stream” grew slim. Hence, after leaving Nanao, “full speed was used as freely by night as by day.”²⁷

The vessel proceeded southward from Hakodate through Tsuruga Straits into the Sea of Japan. Sampling in the Sea of Japan continued in a southwest-

²⁵NA, RG 22, E 63, Box 6 (see footnote 6).

²⁶Gilbert to Jordan, 20 July 1906. CHGP, SUA, SC 58.

²⁷NA, RG 22, E 63, Box 6 (see footnote 6).

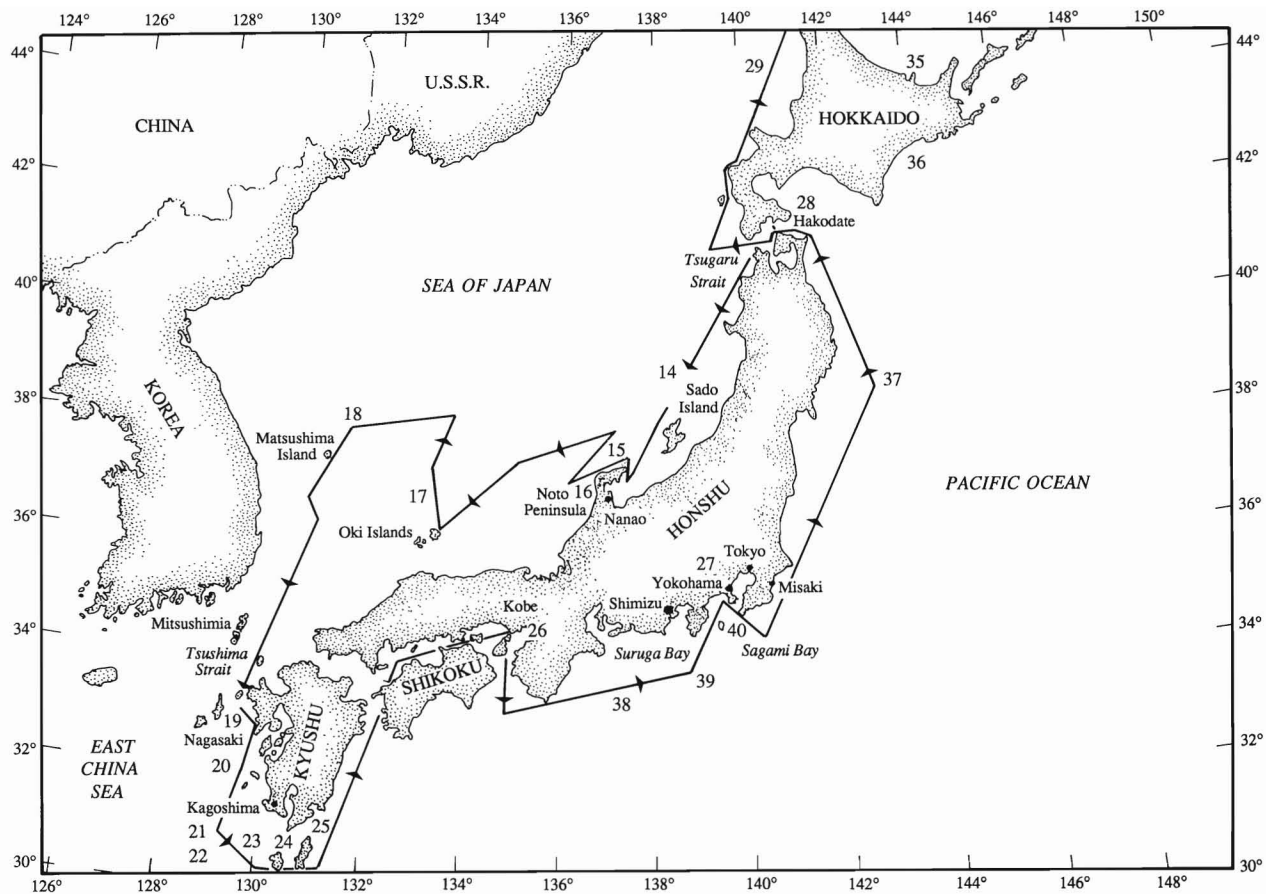


Figure 5.—Schematic route of the Steamer *Albatross* in Japanese waters in 1906.

erly manner to near Sado Island, the Noto Peninsula, the Oki group of islands off Korea, and then north, reaching Nagasaki on 3 August. The solicitous and helpful attitude of Japanese officials was noted by Captain Garrett:

“At 5:00 o’clock [12 July] in the evening the *Albatross* came to anchor off Tsuruga. The customs and police officials, courteous at all times, were more than usually so at this port, offering every kind service in their power and going so far even as to investigate the prices demanded by the various merchants from whom we were purchasing provisions and stores in order to prevent any overcharge.”²⁸

The trawling was successful, as some 59 dredging stations were occupied be-

tween mid-July and 1 August (Table 1).^{29,30} Gilbert noted that collections made in Tsugaru Straits and at Sado Island resembled Arctic fauna, consisting of liparids, cottids, and zoarcids. None of the characteristic bathybial forms were taken, but many undescribed species were collected.³¹

In a further communication to Jordan from Nagasaki on 6 August, Gilbert expressed his disappointment in the depauperate fauna:

²⁹Gilbert and colleagues collected at on-shore sites wherever possible; for example, they visited the fish market at Sado Island on 19 July, in Saigo Harbor, Dogo Islands, on 25 July, and at Matsu Shima on 29 July. NA, RG 22, E 63, Box 6 (see footnote 6).

³⁰Goto and Higurashi of Tokyo joined the vessel at Tsuruga, Japan, on 23 July. NA, RG 22, E 63, Box 6 (see footnote 6).

³¹Gilbert to Jordan, 20 July 1906. CHGP, SUA, SC 58 (see footnote 26).

“We failed to connect with any floating mines in the Sea of Japan, and arrived here duly a few days ago. The Sea of Japan was incredibly barren at all points below the warm surface waters, and even with regard to these, I can assure you a shipwrecked mariner would starve to death hunting sea growth on the beach at either Dogo or Matsushima Islands.”³²

After departing Nagasaki on 8 August,³³ the *Albatross* explored waters to the southwest and westward, then moved to the Gulf of Kagoshima, arriving 16 August. Off the Korean coast, Gilbert found the number of individual fishes collected to be greater than elsewhere, but the as-

³²Gilbert to Jordan, 6 August 1906. CHGP, SUA, SC 58.

³³Harold Heath left the ship on 8 August and proceeded by rail to Yokohama and then by ship to San Francisco. NA, RG 22, E 63, Box 6 (see footnote 6).

²⁸NA, RG 22, E 63, Box 6 (see footnote 6).

semblage was "a modified Bering Sea fauna down to Tsushima Straits."³⁴

On August 16, Gilbert reported to Jordan: "We left Nagasaki on the eighth and have thus had eight days experience with the fauna of Southern Japan. Nowhere can be found a more absolute contrast than between the two deep faunas separated by Tsushima Straits. I do not recall a single species common to the two areas."³⁵ He noted that the southern Japanese fauna was rich in deep-water fishes. Further, since leaving Nagasaki, he had added some 40 or 50 species of fishes to the known Japanese fauna, several of which were "doubtless new." He commented on the oppressive heat (from 82°F at night to 88°F during day), but the seas were "phenomenally calm all the same, so we can drift about at night and take up our work wherever we find ourselves next morning."³⁵ Gilbert was concerned, however, about the possibility of typhoons as the vessel headed toward Yokohama.

Sampling continued off the southwest of Kyushu Island through 20 August, then the vessel proceeded northeast into the Japan Current. She arrived off Kobe on 23 August, avoiding contact with typhoons the whole time, although sampling was hindered somewhat by inclement weather. The vessel reached Yokohama on 3 September.

On 4 September Gilbert wrote Jordan from Tokyo:

"We have reached this point in our round up, after having spent some interesting days dodging typhoons in the middle of the Kuro Shiroo [Kurishio].³⁶ One passed a short distance to the eastward of us and struck Tokyo and Yokohama with much force. Another lingered for days in the Loo Choos, constantly threatening, but finally went up the Formosa and China route, into the Sea of Japan, and out by Hokkaido. Our good fortune has been phenomenal. We worked four days in the middle of the

typhoon season, off Shiroo Misaki, the most dangerous cape of the Japanese coast, and weather which permitted dredging, notwithstanding the danger signals flying from every flagstaff."³⁷

Dredging in this region proved difficult, Gilbert explained:

"The Kuro Shiroo is fully as rich as we thought it would prove, but far more difficult to investigate, owing to the great rapidity of the surface current and the differential motion of the lower strata. During our first two days, we did not succeed in getting our trawl on the bottom at all, and in subsequent work more than half the hauls have been unsuccessful. Time passes rapidly, I fear it will be a reconnaissance instead of a thorough investigation — but the results will be rich, if not exhaustive."³⁷

Gilbert indicated that the ship would leave for Hokkaido and Sakhalin in about 10 days. They planned to spend 30 days sampling enroute.³⁷

Gilbert next wrote Jordan from Yokohama on 12 September. The ship was stormbound because of a "raging typhoon" and, Gilbert wrote, "we had nearly two months of extreme heat, however, with the mercury never below 82° at night and ranging to 90° in the day and the air was mostly saturated!"^{38,39}

The ship left Yokohama on 14 September enroute to Hakodate, and on 18 September proceeded to the west through the Straits of Tsugaru. Sampling was conducted to the west and north of Hokkaido to Sakhalin, and then returned to Hakodate on 4 October.

Upon the completion of the cruise around northern Hokkaido and southern Sakhalin on 5 October, Gilbert wrote Jordan from Hakodate:

"Making this so late in the season, we were threatened with storms and

disaster, but the customary good fortune of the ship prevailed. We had regular "Indian Summer" weather and were able to dredge industriously fourteen out of the sixteen days we were away from Hakodate."⁴⁰

Gilbert reported to Jordan that they intended to finish as rapidly as possible the work off Matsushima Bay and in Suruga and Sagami Bays, as they were pressed for time, as usual. He noted that after the completion of the work around the end of October, the *Albatross* would quickly refit for the voyage to San Francisco and should arrive the middle of December.⁴⁰

In mid-October, Gilbert wrote Jordan from Shimizu:

"We came down the coast from Hakodate with a northerly gale piping in the rigging, the first storm we have experienced on our cruise. And now we have dredged four days on the lower slopes of Fuji San. We find the district better for scenery than for dredging. The bottom of the Bay is green mud, of extreme tenacity and barrenness..."⁴¹

Gilbert closed his letter by noting they would finish their work in just 11 days. He indicated that he would return to San Francisco by mail steamer.⁴¹

In early November, Gilbert reported to Jordan from Yokohama. Concerning the completion of the cruise, he wrote:

"We ran in here a few days ago, having taken our last dredge haul in Uruga Channel at the entrance to Tokio [Tokyo] Bay. So many known forms had not come to our nets, so much more valuable work was left unfinished. I found it hard to bring the investigation to a close."⁴²

Gilbert further noted the tragic effect of stormy weather that merely delayed the *Albatross*:

³⁴Gilbert to Jordan, 6 August 1906. CHGP, SUA, SC 58 (see footnote 32).

³⁵Gilbert to Jordan, 16 August 1906. CHGP, SUA, SC 58.

³⁶The Kuroshio is the current flowing northeast between Formosa and lat. 35°N (e.g., Sverdrup et al., 1942).

³⁷Gilbert to Jordan, 4 September 1906. CHGP, SUA, SC 58.

³⁸Gilbert to Jordan, 12 September 1906. CHGP, SUA, SC 58.

³⁹Torrey left the ship on 10 September to return to San Francisco on the S.S. *Magnolia*. Goto and Higurashi returned to Tokyo on 11 September. NA, RG 22, E 63, Box 6 (see footnote 6).

⁴⁰Gilbert to Jordan, 5 October 1906. CHGP, SUA, SC 58.

⁴¹Gilbert to Jordan, 16 October 1906. CHGP, SUA, SC 58.

⁴²Gilbert to Jordan, 4 November 1906. CHGP, SUA, SC 58.

“But the weather turned suddenly capricious and worse. It was during this time that a storm capsized fishing boats off the Goto Islands and drowned over seven hundred men. We were storm bound day after day. And then, when work was possible, we found to our disgust that these Bays are the least adapted for our kind of investigation of any Japanese territory we have attempted to work.”⁴²

Gilbert reported to Jordan that he would work in the fish collection at the Imperial University in Tokyo for a few days. He planned on sailing by steamer to San Francisco, arriving by the middle of December.⁴²

The *Albatross* made her last dredge haul on 26 October in Sagami Bay. She had completed 339 dredge stations and 48 hydrographic casts during the expedition. The officers and members of the scientific staff of the *Albatross* were hosted at a luncheon in Tokyo in their honor on 5 November at the Imperial University (now University of Tokyo).⁴³ The vessel then proceeded to Yokohama to prepare for the run to San Francisco. Gilbert remained in Tokyo to work on collections of fishes at the Imperial University before returning to the U.S. by mail steamer.⁴³

Tragedy at Sea: The *Albatross* Returns to San Francisco

The *Albatross* sailed from Yokohama on 10 November enroute to San Francisco via Honolulu. The ship encountered moderate weather for the first 3 days of her transit only to later encounter a tremendous storm. Lieutenant Arthur Japy Hepburn⁴⁴ reported, that “after five days of the most violent motion of the vessel, with decks continually awash and the living quarters only occasionally dry, all hatches and skylights battened down until it was a question whether one grew unconscious at night from sleep or from suffocation, all hands had reached about the limit of endurance.”⁴⁵

⁴³NA, RG 22, E 63, Box 6 (see footnote 6).

⁴⁴Lieutenant Arthur Japy Hepburn, U.S.N. (1877–1964) was second in command aboard the *Albatross* in 1906. He also served aboard the *Albatross* in 1902. Record of Officers, U. S. Navy, Arthur Japy Hepburn, Military Service Records, M1328, vol. 30, p. 89, NA. For more on Hepburn, see Anonymous, (1968) and Dunn, (1996a).

⁴⁵NA, RG 22, E 63, Box 6 (see footnote 6).

At about 1930 hours on the night of 21 November, when the vessel was about 500 miles from Honolulu, Captain Garrett was apparently sitting alone “on the poop, in a long reclining deck chair on the port or weather side...” of the ship. As the recorded proceedings of a Board of Inquest indicate (summarized by Hepburn):

“A sudden unusually violent lurch of the vessel to the starboard shot the chair across the slippery painted canvas deck with great velocity, bringing [it] up against the starboard rail with such force that the end of the chair was wrecked and a panel of wire lattice work between the deck and the rail was completely carried away, opening up like a door, no less than twelve good copper-wire seizings holding lattice to the battens being parted. Through the opening thus made, or, more probably, over the dangerously low rail itself, Captain Garrett went overboard.”⁴⁶

A plaintive cry from Garrett was heard, followed by shouts of “man overboard.” Hepburn rushed up to the poop-deck and found the broken chair sticking through the rail. A life buoy was thrown in the water where the captain may have gone in.⁴⁷

Hepburn assumed command of the vessel and initiated an immediate search, steaming in a complete circle around the buoy with the searchlight on. The search continued all night to no avail and, as recorded by Hepburn, “At daylight the next morning, about 6:10 a.m., I abandoned the search and continued on our way to this port [Honolulu], arriving inside at 10:30 a.m. this day [November 24].”⁴⁷

Upon arrival in Honolulu, Hepburn immediately submitted his report of inquest to the commandant of the Naval Station, Rear Admiral S. W. Very. Admiral Very “ordered the Naval Station flag to fly at half-mast and at noon fired seven minute guns in memorium.”^{47,48}

⁴⁶Record of proceedings of a Board of Inquest convened on board the U.S.F.S. *Albatross* in the case of LeRoy Mason Garrett, Lieutenant Commander, U.S. Navy, 22 November 1906. NA, RG 24, Files 1699, 10–14 (see footnote 6).

⁴⁷NA, RG 22, E 63 (see footnote 6).

The *Albatross* remained in Honolulu for repairs and cleaning until 2 December, when she departed for San Francisco. The run took 8 days, 10 hours, with the ship arriving off Black Point in San Francisco Bay at about 2200 hours on 10 December 1906,⁴⁹ marking the conclusion of a remarkable exploratory voyage of the Fisheries Steamer *Albatross* (Anonymous, 1906b).

Epilogue

The cruise of the *Albatross* to the North Pacific Ocean may be considered a marked success from both exploratory and biological standpoints. The expedition resulted in extensive biological collections. The ship’s annual report noted that 90 cases of samples were loaded onto a railroad freight car in Sausalito, Calif., for transport to Palo Alto.⁵⁰ Much of the material was ultimately shipped to the U.S. National Museum for distribution to various specialists for future study. These samples formed the basis for a number of publications mainly describing new species, but also providing the basis for revisions of genera and families (Table 2). Gilbert authored or coauthored four of such works on fishes; others were authored by Burke, Snyder, and by Carl Levitt Hubbs, then a student of Gilbert’s. Collectively these authors described about 180 new species of fishes taken on this cruise. The collections also contributed to a definitive review of the fishes of Japan by Jordan et al. (1913).

The expedition also provided specimens that resulted in publications on sea birds, siphonophores, isopods, and echinoderms, as well as other invertebrate taxa (Table 2). Descriptions of about 203 new species resulted from these studies. Samples from this cruise remain today for further study.

This voyage of the *Albatross* was just one of many important research cruises undertaken by the vessel. As Hedgpeth (1945) noted, the published works based

⁴⁸A “minute gun” is a cannon fired at intervals of a minute as a signal of distress or in a military funeral ceremony (Random House, 1987).

⁴⁹NA, RG 22, E 63 (see footnote 6).

⁵⁰NA, RG 22, E 63 (see footnote 6).

Table 2.—Selected publications resulting in whole or in part from collections made aboard the *Albatross* on its 1906 research cruise to the Bering Sea, Kamchatka, and Japan.

Author	Subject	Comments
On Fishes		
Burke (1911)	Distribution of Liparidae	Relation between color of specimens and bathymetric distribution
Burke (1930)	Revision of Liparidae	1 new genus and 1 new species
Gilbert (1913)	Lantern fishes of Japan	12 new species
Gilbert and Burke (1912a)	List of fishes from the Bering Sea and Kamchatka	8 new genera and 35 new species
Gilbert and Burke (1912b)	Liparid fishes from Japan	58 new species
Gilbert and Hubbs (1916)	Japanese macrurid fishes	10 new species
Hubbs (1915)	Flounders and soles collected off Japan	2 new genera and 9 new species
Hubbs (1918)	Flounders of Japan	Further observations
Jordan, et al. (1913)	Revision of the Fishes of Japan	Review of 1,230 species
Snyder (1908)	New fishes from Japan	2 new genera and 18 new species
Snyder (1909; 1911)	New fishes from Japan	5 new genera and 37 new species
Snyder (1912a; 1912b)	Shorefishes of Japan	Checklist and distribution
Other than fishes		
Agassiz and Clark (1907a, b, c; 1909)	Systematic review of echinoderms	1 new genus and 26 new species
Bartsch (1907)	Parasitic mollusk	1 new species
Bigelow (1913)	Medusae and siphonophores	6 new species
Clark (1907a)	Birds of Kamchatka	Distribution
Clark (1907b)	New species of birds	1 new genus and 18 new species
Clark (1907c, d, e, f, g)	New species of crinoids	Five papers, 58 new species
Clark (1910)	List of birds observed and collected	Distribution and life history notes
Clark (1912)	Echinoderms	Distribution and diagnosis
Dall (1913)	Diagnoses of various mollusks	1 new genus and 21 new species
Nutting (1912)	Descriptions of soft corals	2 new genera and 40 new species
Pilsbry (1911)	Barnacles of Japan and Bering Sea	6 new species
Richardson (1909)	Isopods collected	3 new genera and 28 new species

on *Albatross* collections fill an extensive list of titles, her major achievements lying in the field of marine fisheries.

For Gilbert, this expedition marked his last work aboard the *Albatross*. He became interested in the biology of Pacific salmon, *Oncorhynchus* spp., around 1909, and by 1912, to the detriment of his systematic work, he was directing most of his attention to these fishes (Dunn, 1996b). Gilbert later became the preeminent authority on Pacific salmon and an early fishery biologist.

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