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Nos. 15-16

ABSTRACT

OF THE PROCEEDINGS OF THE

LINNÆAN SOCIETY

OF

NEW YORK

For the Year ending March 10, 1903

AND

For the Year ending March 8, 1904

Containing

- FIELD NOTES ON THE BIRDS AND MAMMALS OF THE
COOK'S INLET REGION OF ALASKA *By J. D. Figgins*
- SOME NOTES ON THE PSYCHOLOGY OF BIRDS *By C. William Beebe*
- SOME APPARENTLY UNDESCRIBED EGGS OF NORTH
AMERICAN BIRDS *By Louis B. Bishop*

Date of Issue, December 19, 1904

*The Society meets on the second and fourth Tuesday evenings
of each month at the American Museum of Natural History,
77th Street and 8th Avenue, New York City.*

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 10, 1903.

THIS is the fifteenth in the series of "Abstracts" published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society, but published elsewhere, are given by title only, with proper reference to place of publication.

March 25, 1902.—The President in the chair. Eight members and four visitors present.

The Secretary read a letter of resignation from Mr. Wm. F. Sebert.

Dr. Dwight, as chairman of the committee appointed to confer with a committee from the Audubon Society regarding lectures on birds to teachers, reported that the committees had met and arranged for a series of lectures to be given at the American Museum of Natural History on Saturdays during April and May. The American Museum had heartily seconded the scheme arranged by the joint committee and had agreed to prepare notices to be sent to the principals of all public schools in New York City.

Dr. J. A. Allen presented a paper entitled "Notes on Some Patagonian Mammals," being a list with notes on geographical distribution, nomenclature, etc., of the mammals collected by the Princeton University Expedition to Patagonia, 1896-1899. He exhibited specimens collected by Mr. Barnum Brown and others.

Dr. Allen also spoke of three valuable collections of birds and mammals recently received at the American Museum, one from Alaska made by Messrs. A. J. Stone and M. P. Anderson, one from Northeastern Siberia made by Mr. N. G. Buxton, of the Jesup North Pacific Expedition, and a very large collection from Chiriqui, Panama, made by Mr. J. H. Batty.

April 8, 1902.—No quorum present.

April 22, 1902.—The President in the chair. Seven members and nine visitors present.

The Secretary read letters of resignation from Mrs. H. W. Miller, Mr. and Mrs. L. B. Gillet, Mr. Theo. L. Debinus, Mr. H. L. Utter, and Dr. Benjamin Lord.

The names of Miss Julia G. McNutt and Miss Sarah J. McNutt were proposed by Mrs. Parker Morrison for resident membership in the Society.

Mr. J. D. Figgins presented "Field Notes on the Birds and Mammals of the Cook's Inlet Region of Alaska." [Published in full at the end of this Abstract.]

Mr. Barnum Brown read a paper entitled "Field Notes on Animal Life in Patagonia," illustrated by lantern slides. He spoke of the various forms of life, both animal and vegetable, which came under his observation during a year's collecting in Southern Patagonia and the island of Tierra del Fuego, in connection with the Princeton University Expedition of 1896-1899. Of especial interest were his remarks upon the Guanacos and Rheas which exist there in countless numbers, and upon the Pumas, which are still very common, notwithstanding the efforts of the ranchmen to exterminate them.

May 13, 1902, May 27, 1902, and October 14, 1902.—No quorum present. Mr. Thomas Steele of Sydney, N. S. W., was present as a visitor on October 14th.

October 28, 1902.—The President in the chair. Ten members and thirty-five visitors present.

Mr. Frank M. Chapman presented "Bird Studies with a Camera during the Season of 1902," illustrated by lantern slides. Among the most interesting were those of the Black Skimmer (*Rynchops nigra*) and of Terns in flight taken on the coast of Virginia, and others of the Bahama Islands showing the last year's nests of a colony of the Flamingo (*Phœnicopterus ruber*).

November 11, 1902.—No quorum present.

January 13, 1903.—The President in the chair. Five members present.

Miss Julia G. MacNutt and Miss Sarah J. MacNutt were elected Resident Members of the Society.

Mr. B. S. Bowdish was proposed by Dr. Dwight for resident membership.

January 27, 1903.—The President in the chair. Eight members and twelve visitors present.

Mr. B. S. Bowdish was elected a Resident Member of the Society.

Mr. C. W. Beebe presented the first paper of the evening entitled "Some Notes on the Psychology of Birds." [Published in full, at the end of this Abstract.]

Commenting on Mr. Beebe's paper, Dr. Bishop spoke of Great Horned Owls, near New Haven, Conn., which on two occasions destroyed their nests after they had been discovered, keeping their young meanwhile in the crotch of the tree formerly occupied by the nest.

Mr. Dutcher had observed that Herring Gulls displayed much more maternal feeling toward the end of incubation than at the beginning. The Clapper Rail also exhibited this trait, he said.

The second paper of the evening was by Dr. L. B. Bishop, and was entitled "Some apparently undescribed Eggs of North American Birds." [Published in full, at the end of this Abstract.]

Remarks on the subject of unusual nests followed the paper, and Dr. Bishop placed on record the following observations on the Barred Owl (*Syrnium varium*) and Red-shouldered Hawk (*Buteo lineatus*) laying in the same nest.

At a meeting of the Linnaean Society held April 23, 1901, I reported finding, in company with my brother, Herbert M. Bishop, near New Haven on April 13 of that year, three eggs of the Red-shouldered Hawk and one of the Barred Owl in the same nest, on which the owl was sitting. Incubation was begun in the hawk's eggs but that of the owl was fresh. On that day, I saw no Red-shouldered Hawks in these woods, where they have bred for years, and neither hawks nor owls on April 22, though on this date I found the broken shell of an owl's egg lying on the ground about ten feet from the tree.

On April 1, 1902, I found in the same woods a nest containing two eggs of the Red-shouldered Hawk and one of the Barred Owl, with the hawk sitting. Incubation was somewhat advanced in all the eggs. This nest was about 300 yds. from that containing the combined set of last year, and at the farther end of the small grove of heavy timber which is all that now remains of a once extensive woodland, where I have in past years found both species breeding in separate nests. Both nests were in large trees without branches of any size below the nests, at an elevation of 41 and 39 ft., and as neither tree showed any evidence on the bark of having been climbed, I feel confident that the eggs were laid where I found them. On April 3, I searched this woodland thoroughly, but though I heard the hawks crying could find no trace of the owls.

My explanation is that the destruction of the surrounding woodland had reduced the available building sites to such an extent that a contest arose between the birds. The owl was probably the aggressor in both instances, as the second nest was undoubtedly built by the hawk, and (though the first nest had been deepened by the owl) that the hawk's eggs were the first laid was proved by their more advanced incubation.

February 10, 1903, and February 24, 1903. — No quorum present.

March 10, 1903. — Annual Meeting. The President in the chair. Eleven members and fifteen visitors were present.

The business part of the meeting having been postponed

until later, Mr. Andrew J. Stone presented "General Natural History Work in Arctic North America," illustrated by lantern slides. Of especial interest were views of the region inhabited by Goats, Sheep and Caribou, and a few pictures of wounded animals.

Two forms of ungulates, *Ovis stonii* Allen, and *Rangifer osbornii* Allen, were discovered by Mr. Stone. His work in these parts, mostly in the interest of the American Museum, had extended over a period of eight years.

The Secretary then read his annual report as follows :

During the past year the Society has held but six meetings, two in March, one in April, one in October, and two in January. On several occasions the Secretary was unable to announce titles of papers either in the Scientific Alliance Bulletin or on the special cards sent to members, and to this fact may probably be attributed the failure of the Society to hold more meetings.

The total attendance during the year was 111, of which number 45 were members and 66 visitors. The average attendance at each meeting was 19, of which 8 were members and 11 were visitors. The largest attendance at any one meeting was 45 members and visitors. Although the total attendance naturally shows a falling off from the year previous, the average attendance is somewhat greater.

Three resident members have been elected, six have resigned, four have been dropped and two, Mr. Eli Whitney Blake and Mr. Curtis Clay Young, have been lost by death. Membership in the Society now stands: Resident, 122; Corresponding, 34; Honorary, 2, — a total of 158.

Seven papers have been presented at the various meetings divided, by subjects, as follows: ornithology, four; mammalogy, one; herpatology, one; general natural history, one.

"Abstract of Proceedings, No. 13-14" for the years ending March 12, 1901, and March 11, 1902, was issued under one cover. The abstract contained "Notes on the Mammals of Long Island, N. Y.," by Arthur H. Helme; "The Mammals of Westchester County, N. Y.," by John Rowley, and "Some Food Birds of the Eskimos of Northwestern Greenland," by J. D. Figgins, constituting altogether, with index, a pamphlet of seventy pages. Five hundred copies were printed and the usual distribution made to members and exchanges.

Exchange publications to the number of about 200 have been added to the Library of the Society.

The Treasurer read his annual report showing a balance on hand of \$726.15.

The Chair appointed as a committee to audit the Treasurer's report Dr. J. A. Allen and Mr. F. M. Chapman.

The following officers were elected for the ensuing year :

PRESIDENT, Dr. Jonathan Dwight, Jr.

VICE-PRESIDENT, Mr. John Lewis Childs.

SECRETARY, Mr. Walter Granger.

TREASURER, Mr. Lewis B. Woodruff.

The Chair appointed the following standing committees for the ensuing year :

Publication, J. A. Allen ; Walter Granger.

Finance, William Dutcher ; J. A. Allen ; H. C. Bumpus.

Nominations, F. M. Chapman ; William Dutcher ; Walter Granger.

Papers, Walter Granger ; C. W. Beebe ; R. L. Ditmars ; L. H. Chubb.

Lectures, F. M. Chapman ; J. A. Allen ; C. W. Beebe

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 8, 1904.

THIS is the sixteenth in the series of "Abstracts" published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society, but published elsewhere, are given by title only, with proper reference to place of publication.

March 24, 1903. The President in the chair. Eight members and three visitors present.

The Auditing Committee reported that the Treasurer's accounts had been examined and found correct.

Dr. Dwight presented a paper entitled "Some recently described North American Birds." He exhibited a series of skins, including Horned Larks, Sapsuckers and Parula Warblers, and pointed out the characters on which some new subspecies were based.

April 14, 1903.—No quorum present.

April 28, 1903.—The President in the chair. Seven members and nine visitors present.

Owing to the difficulty in securing papers it was voted by the Society to suspend the meetings during May.

Mr. William Dutcher presented, "The Economic Status of the Meadowlark." [Published as Educational Leaflet Number 3, of the National Committee of Audubon Societies.]

May 12 and 26, 1903. — Meetings suspended by vote of the Society on April 28.

October 27, 1903. — The President in the chair: Ten members and forty-one visitors present.

Mr. Frank M. Chapman presented the paper of the evening, entitled "Western Bird Studies," illustrated by lantern slides. He described briefly the character of the country in California and the islands on the coast visited by him during the past summer, and told of the bird life of the various regions. Many excellent photographs of birds were shown, taken by Mr. Chapman in the field.

The advisability of having but one meeting a month during the ensuing year was discussed at some length, and it was finally voted that the first meeting in November be suspended.

Mr. Chapman recorded the appearance of an immature Pine Grosbeak (*Pinicola enucleator canadensis*) at Englewood, N. J., on Oct. 25, an unusually early date even for this irregular bird.

November 10, 1903. — Meeting suspended by vote of the Society at its last meeting.

November 24, 1903. — The President in the chair. Six members and twelve visitors present.

The Secretary read a letter of resignation from Dr. E. A. Goodridge, also a letter from Mrs. S. P. Avery, offering to present to the Society a rare engraved portrait of Linnæus, an autograph letter and a medal struck in his honor. The Secretary was instructed to reply to Mrs. Avery's letter, accepting her offer.

The name of Miss H. Hamma was proposed by Dr. Dwight for resident membership in the Society.

It was voted to suspend the second meeting of the Society in December.

Mr. Geo. K. Cherrie presented "Some Impressions of Bird-Life in French Guiana." Mr. Cherrie's observations were made mostly in and about the city of Cayenne, although one trip to the interior was mentioned. Birds were abundant about the city, and in addition to those collected in the ordinary way, Mr. Cherrie obtained many specimens through the local markets, where many varieties of birds are sold as food.

Interesting accounts were given of the habits of Tanagers, Cotingas, Tyrant Flycatchers, Kingfishers, Jacamars, Hoatzin, and Hang-nests which breed unmolested in colonies in the heart of the city, and of a species of Woodpecker which has a sticky substance on its feet, allowing it to climb about with impunity on the trunks of trees infested with ants.

Mr. Cherrie disagreed with the popular idea that tropical birds are as a whole notably more brilliant in plumage than northern birds, and correspondingly inferior in singing powers. A large percentage of the birds of French Guiana are dull of plumage, he said, while in volume and quality of song he thought some of the Ant-thrushes, Wrens, and true Thrushes equalled the best northern songsters.

The paper was illustrated by skins of many of the birds mentioned.

Dr. Dwight called attention to the singular abundance of Chickadees (*Parus atricapillus*) in the city during the end of September and beginning of October, even in the yards of city houses.

Mr. Dutcher spoke of the work accomplished during the past summer by the A. O. U. Committee on Bird Protection.

December 8, 1903. — The President in the chair. Seven members and nine visitors present.

Miss H. Hamma was elected a Resident Member of the Society.

Dr. Jonathan Dwight, Jr., presented a paper entitled "Some Variations in North American Thrushes." He enumerated the various species and subspecies of the thrushes, and by means of blackboard illustration pointed out the geographical distribution of the group as it now stands. Recently described races were discussed and their validity discussed. A full series of skins of the various thrushes was shown.

Mr. Wm. Dutcher read a letter received recently by the U. S. Dept. of Agriculture from a resident of Farmington, Me., stating that during the past summer Rose-breasted Grosbeaks (*Habia ludoviciana*) had been particularly abundant in that vicinity and that because of their fondness for green peas a war had been waged for their extermination by the gardeners of the town and a great many of the adult birds had been killed during the breeding season. The writer mentioned finding one nest of orphaned fledgelings and of taking them to his home and rearing them by hand.

Mr. Dutcher spoke of the great good which these birds do in destroying the Potato Beetle. In some sections these pests have been almost exterminated by the Grosbeaks.

December 22, 1903.— Meeting suspended by vote of the Society on November 24.

January 12, 1904.— The President in the chair. Seven members and six visitors present.

Dr. Jonathan Dwight, Jr., presented "Some Notes on New York Birds." The birds chosen for discussion were those arranged in the A. O. U. Check-List between the end of the Warblers and the beginning of the Thrushes. The talk was informal and was taken part in by several members.

It was voted to suspend the second meeting in January.

January 26, 1904.— Meeting suspended by vote of the Society at its last meeting.

February 9, 1904.— Owing to the absence of both the President and the Vice-President, Mr. C. G. Abbott was

asked to take the chair. Eleven members and forty-three visitors were present.

Dr. E. B. Southwick presented a paper entitled "Haunts of Animals," illustrated by one hundred and forty-five excellent lantern slides. The paper was general in scope and contained many interesting facts regarding the life-histories of Mammals, Birds and Insects.

February 23, 1904. — The President in the chair. Nine members and eighteen visitors were present.

Mr. A. H. Helme was proposed by Dr. Dwight for resident membership in the Society.

The paper of the evening was by Mr. Clinton G. Abbott, entitled "Some Birds of the English Breck and Fen District." Mr. Abbott explained the situation in the eastern part of England of the so-called "fen district" — a low marshy section — and the "breck" — a sandy, flint covered upland immediately adjoining. The former offers splendid breeding grounds for a great variety of Waders and Swimmers, while the latter region (especially protected as a game preserve) is a particularly favorable one for certain upland birds.

A set of lantern slides, photographs taken by Mr. Wm. Farren and Mr. P. H. Bahr, residents of Cambridge, England, and by Mr. Abbott himself, showed about twenty species of birds in their natural haunts, many of them with their nests of eggs or with fledgelings.

Of exceptional interest were a series of photographs by Mr. Farren of the timid Stone Curlew (*Edicnemus scolopax*), and a picture of the nest and eggs of the Great Bustard (*Otis tarda*), an extinct resident of England which has been recently reintroduced.

Mr. F. M. Chapman commented on the fact that this paper was the Society's first introduction to British birds.

March 8, 1904. — Annual meeting. The President in the chair. Six members and one visitor present.

Letters of resignation were read from Miss E. A. Foster, Miss Julia G. MacNutt and Mr. R. L. Ditmars.

Mr. A. H. Helme was elected a Resident Member of the Society.

The Secretary presented his annual report as follows:—

“There have been held by the Society during the past year nine meetings. The meetings for May were suspended by vote of the Society, as were also the first meeting in November and the second meetings in December and January. On two occasions there was a failure to secure a quorum.

The attendance has been somewhat above the average for recent years, the most at any meeting being 11 members and 43 visitors, and the total attendance for the year 74 members and 156 visitors.

Seven new members have been elected, four have resigned and one, Mr. Wm. Ellsworth, has been lost by death.

Membership list now stands: Resident 118; Corresponding, 34; Honorary, 2. Total 154.

Seven papers have been presented, treating mostly of ornithological subjects.

The Society's publication, the “Abstract of Proceedings,” was omitted this year, it being intended to publish two years under one cover, as was done last year.

About 200 exchange publications have been added to the Library.”

The Treasurer read his annual report showing a balance on hand of \$1020.92.

The Chair appointed as a committee to audit this report, Dr. J. A. Allen and Mr. Wm. Dutcher.

It was voted to omit the second meeting in March.

Dr. Dwight moved that the collection of birds of L. S. Foster belonging to the Linnæan Society be transferred to the American Museum as a gift; which motion was carried.

Mr. Dutcher presented the two following Preambles and Resolutions which were passed by the Society and ordered sent to the proper authorities by the Secretary.

(1.) Relative to the Protection of Game in Alaska:

WHEREAS, there was introduced in the Senate of the United States, on February 8, 1904, a bill (No. 4166) “To repeal ‘An Act for the protection of game in Alaska, and for other purposes’ approved June 7, 1902, and to protect deer, moose and caribou in Alaska”; and,

WHEREAS, if said bill becomes a law it not only leaves the big game at the mercy of the market hunter and head hunters, but removes *all* protec-

tion from birds, thus leaving the great breeding grounds of the water fowl, where are hatched the ducks and geese which migrate to the United States, without any legal protection ; and,

WHEREAS, all of the non-game birds, which have for years been mercilessly slaughtered by plumé hunters, will also be left without any legal protection ; and,

WHEREAS, the sentiment of all thinking people is in favor of more rigid and complete protection to wild animals and birds ; and,

WHEREAS, only a very limited class of people, governed by selfish personal interests, desire to have protection removed from wild birds and animals, therefore be it

RESOLVED, that the Linnæan Society of the City and State of New York most emphatically but respectfully protests against the passage of Senate Bill No. 4166 as against the best interests of the great majority of the citizens of the United States.

RESOLVED that a certified copy of this Resolution be forwarded to his Excellency, Hon. Theodore Roosevelt, President of the United States, and also to each member of the Committee on Territories to whom the bill was referred, and also to the Honorable Senators representing the State of New York.

(2.) Relative to the open duck-shooting season in New York state :

WHEREAS, the Linnæan Society of New York City has learned that a bill was introduced in the Assembly of the State of New York by Mr. Hubbs for the purpose of making the open season for shooting ducks, geese and swans from September 15th to April 1st ; and,

WHEREAS, the said bill if it becomes a law will repeal the present admirable law which permits the killing of ducks, geese, and swans only from September 15th to January 1st ; and,

WHEREAS, the Linnæan Society which has for its object the study of natural history and the preservation of all the natural resources of the State and Country ; and,

WHEREAS, the said Society believes that no game or other bird should be shot in the spring of the year or just prior to the breeding season, therefore, be it

RESOLVED, that we, the members of the said Linnæan Society of the City and State of New York, in meeting assembled, do most emphatically and respectfully protest to his Excellency, the Honorable Benjamin B. Odell, Governor of the State, and the Honorable, the Senate of the State, against the passage of the Hubbs bill or any other bill that will lengthen the open season for killing ducks, geese and swans or permit the killing of said species of birds between January 1st and September 15th.

RESOLVED, that the Secretary of the Society be directed to send a certi-

fied copy of this Resolution to Governor Benjamin B. Odell and to the Honorable Elon R. Brown, Chairman of the Senate Fish and Game Committee.

The election of officers for the ensuing year resulted as follows:

PRESIDENT, Dr. Jonathan Dwight, Jr.

VICE-PRESIDENT, Mr. Walter W. Granger.

SECRETARY, Mr. Clinton G. Abbott.

TREASURER, Mr. Lewis B. Woodruff.

The Chair appointed the following standing committees for the ensuing year:

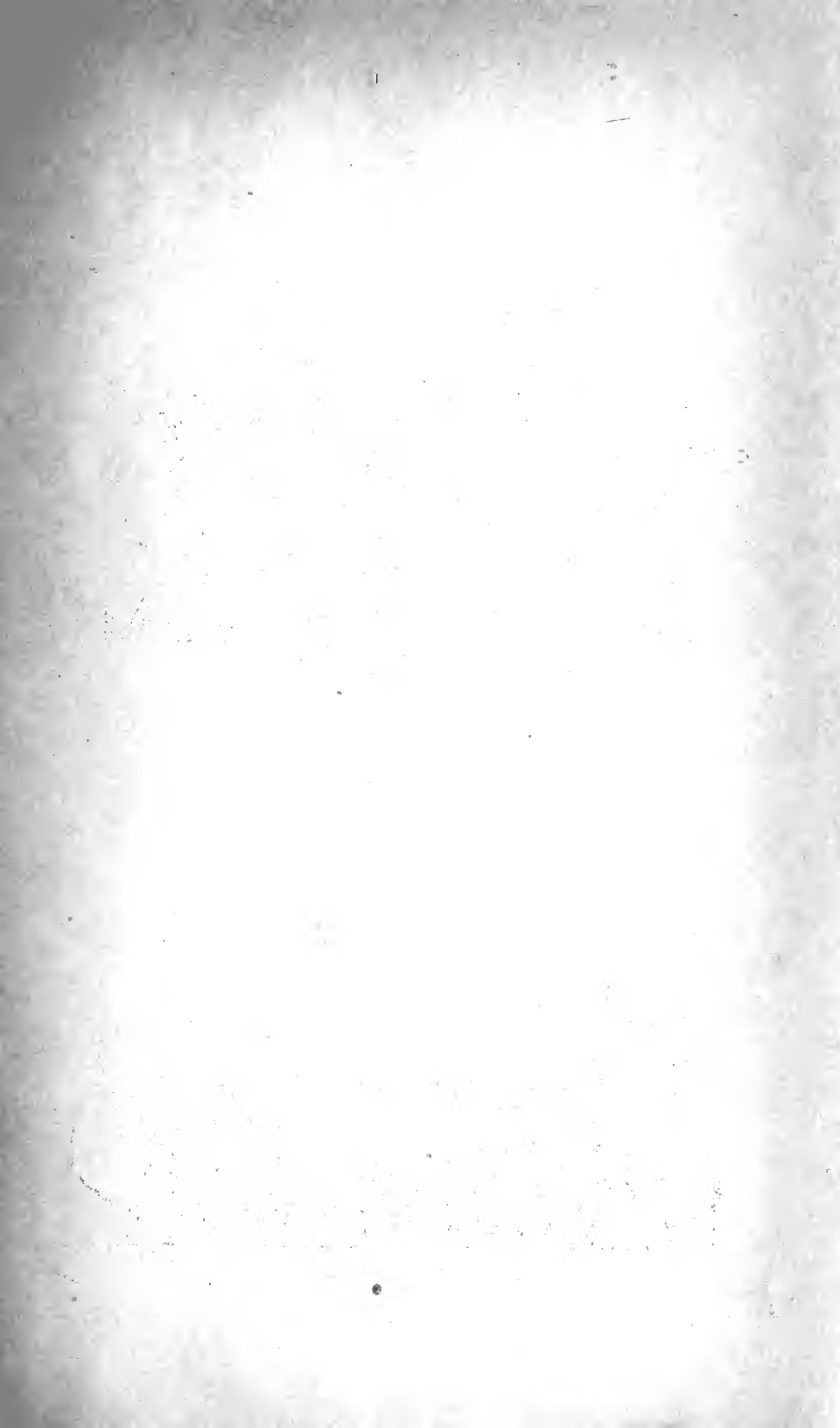
Publication, J. A. Allen; F. M. Chapman; C. G. Abbott.

Finance, Wm. Dutcher; H. C. Bumpus; L. B. Woodruff.

Nominations, Walter Granger; Wm. Dutcher; C. G. Abbott.

Papers, Walter Granger; F. M. Chapman; C. G. Abbott.

It was decided to omit the Committee on Lectures, as it was unlikely that the Society would offer any lectures during the coming year.





KENAI MOUNTAINS FROM CHUGACHIK BAY, ALASKA.



EDGE OF TIMBER, KENAI MOUNTAINS, ALASKA.

Field Notes on the Birds and Mammals of the Cook's Inlet Region of Alaska.

BY J. D. FIGGINS.*

(Revised September 1, 1904.)

AN expedition was organized in 1901 by the American Museum of Natural History for the purpose of collecting the mammals and birds of an interesting portion of Alaska and it was my good fortune to be one of the party. Landing at Homer, on the south side of Cook's Inlet, the latter part of June (June 21), my first impressions were of surprise — at the mildness of the climate, the heavy growth of timber on the mountain sides, the tropical appearance of the lowlands and the countless thousands of water fowl on the adjoining bay. Indeed, I found that from the mildness of its climate and the almost subtropical growth of its vegetation, the Cook's Inlet region was called by the early Russian settlers the "summer land" of Alaska.

Chugachik Bay, upon which Homer is situated, is about twenty-five miles in length, bordered on the north side with miles of shallows, which at low tide become mud-flats, and on the south side with numerous islands, which afford the birds safe retreats during the breeding season and an abundance of food throughout the year. These islands have very abrupt cliffs at the water's edge — in some instances more than one hundred feet in height — and are literally covered

* [Many of Mr. Figgins' notes have been already published (see J. A. Allen, "List of Mammals collected in Alaska by the Andrew J. Stone Expedition of 1901," and F. M. Chapman "List of Birds, etc.," Bull. Amer. Mus. Nat. Hist., XVI, 1902, pp. 215-230, 231-247) and only such additional matter as seems worthy of record is here included.—Ed.]

with birds during the breeding season, while the shallows on the north are alive with small fishes and crustaceans.

The Kenai Mountains extend nearly due east and west along the southern side of the Kenai Peninsula (formed by Cook's Inlet on the north and the Pacific Ocean on the south) and their base is covered with a dense growth of spruce and cottonwood.

The country between the mountains and inlet is a low tableland, seldom attaining an altitude exceeding twelve hundred feet. In most places it is covered with a dense growth of grass, which in favorable localities reaches between seven and eight feet in height. This grass is so thick and rank that all signs of the ground are obliterated for miles, the dead grass of former years having formed a compact mass several feet in thickness. Spruce, birch and cottonwood are abundant along the steep hillsides and ravines, but will eventually be crowded out by the ever-present grass, which thrives quite as well in the deep shade as in the open. Extensive patches of berries are to be found, including the red raspberry and red and black currant, the former two being of the finest quality. The highest ridges of this tableland are covered with a low scrub willow, with an occasional open patch of moss and muskeg tundra. It is there the Moose winters, as the willow is its principal food. Ptarmigan also repair to open patches where an abundance of blueberries and similar food may be obtained during the winter.

The Kenai Mountains and the tableland are separated by a low, wide valley, through which winds Sheep Creek, having its source in the extensive glaciers about thirty miles from the head of Chugachik Bay, into which it empties its waters. It is a very turbulent stream and constantly changes its course by cutting into the low banks of glacial sand and gravel, undermining trees and forming extensive log-jams on the shallows. As may be imagined, these jams, together with innumerable snags and ever-present quicksands, make the

navigation of Sheep Creek a most arduous undertaking—especially as the current runs eight miles an hour. In fact it is only possible to attempt the task with a small boat and the use of a “track” line.

Near the source of the creek the country becomes much broken on the south by the foothills of the Kenai Mountains, which are heavily wooded and carpeted with the softest moss. In such localities dogwood and blackberries are found, but so dwarfed they hardly deserve the name. The stems of both grow beneath the moss and send up only an occasional leaf and blossom.

The timber-belt extends to an altitude of about two thousand feet, where it ceases very abruptly and is replaced by alder thickets for about three hundred feet higher. These alders somewhat resemble our black alder of the east, and in places are so thick as to be almost impenetrable to all but the bears which infest them. Heavy winter snows have borne the bushes to the ground, where the main stems send forth numerous branches, which in turn produce other branches, and thus form a very compact mass of trunks and limbs to a height of about fifteen feet. As they lie with the tops down hill, it is next to impossible to work up against them. The ground, succeeding the alders, is almost covered, for the next one thousand feet in altitude, with flowers in the greatest profusion. It seems incredible that they can thrive on these otherwise barren mountain sides, yet they do thrive and with a luxuriance that is astonishing. Dozens of acres will be covered by a solid mass of flowering plants, among them lupine, columbine, three species of daisies, bluebells, buttercups, forget-me-nots, wild violets, and many others with which I am not acquainted; while in the low swampy places purple iris and pond lilies are abundant.

Within this belt the flowers are not in the least dwarfed; in fact they are quite the contrary. Columbine attains a

height of four feet, with blossoms twice the size of our eastern plants, and six to nine inch clusters of lupine blossoms are the rule. Vegetation starts to sprout as soon as the first bare patches of ground appear in the spring; and as the snow recedes more plants spring up, with the result that all stages of vegetable life, from plants in seed to those that are just appearing through the ground, may be seen at the same time. This is especially noticeable in the case of a certain plant which has a blossom resembling our strawberry. It is not unusual to see this flower in bloom within three feet of a melting snow bank and with frozen ground five inches below the surface.

Still higher, some of these plants are found, but in a dwarfed condition. Here the more boreal forms flourish wherever there is moisture and soil enough to afford a footing. Several species of berries are also found within this belt, one of which remains fresh throughout the year and until another crop has ripened. This berry is the principal food of the Kenai Ptarmigan, which can exist there only through this provision of Nature. A little short, coarse grass and an occasional willow not more than a few inches in length and growing flat on the ground may be found in favorable places.

At an altitude of about 4,500 ft. perpetual snow is encountered and the mountains at that height become so rugged and broken as to form an almost impassible barrier. Cañons with almost perpendicular walls contain distorted glaciers or roaring torrents from the melting snow and ice above. The view from these higher mountains is magnificent and unbroken—across the miles of tableland and across Cook's Inlet to the Alaskan chain of mountains beyond, with its gigantic snow-capped peaks. Among them are Redoubt, Illeawua and Chinnebora, all of which are more or less active volcanoes, while on clear days Mt. McKinley may be seen with its 20,464 feet of rock and perpetual

snow, towering above the stretch of tundra to the east, more than three hundred miles away. Such is the clearness of the atmosphere of Alaska!

The southern base of the Kenai Mountains is washed by the waters of the great Japan Current, which affects all of the Pacific coast of North America south of the Alaska Peninsula. It tempers the atmosphere and is the cause of the mildness of the climate and luxuriance of the vegetation. The warm, moisture-laden air, rising from the Pacific and coming in contact with the icy winds of the mountains, produces very heavy fogs, which at times wrap the mountains in an almost nocturnal gloom. At other times while the mountains are bathed in the brightest of sunlight, the lowlands will be shrouded in fog, producing a beautiful billowy effect when viewed from above. The winters on the coast are perhaps not more severe than the average winter in New York City, although the heavy snowfall and protracted gales make them appear so.

On the southern coast of the extreme end of the Alaska Peninsula the climate is much the same as the Cook's Inlet region, except that it is not quite so cold, and the snowfall is not so heavy and seldom remains for more than a few days. Gales of extreme severity are of weekly occurrence, however. But the vegetation of the Alaska Peninsula is quite different from that of the Kenai. The peninsula is of comparatively recent formation, and timber has not as yet obtained a footing. Alder is abundant on the lower ground, and, like the occasional willow, is much dwarfed. Considerable grass and many species of flowers are found near the coast, being much the same as those found on the barren grounds of the Kenai Peninsula.

The mountains of the Alaska Peninsula are a continuation of the Alaskan chain—high, rugged in the extreme, and snow-capped throughout the year, while several volcanoes add to their wildness and beauty.

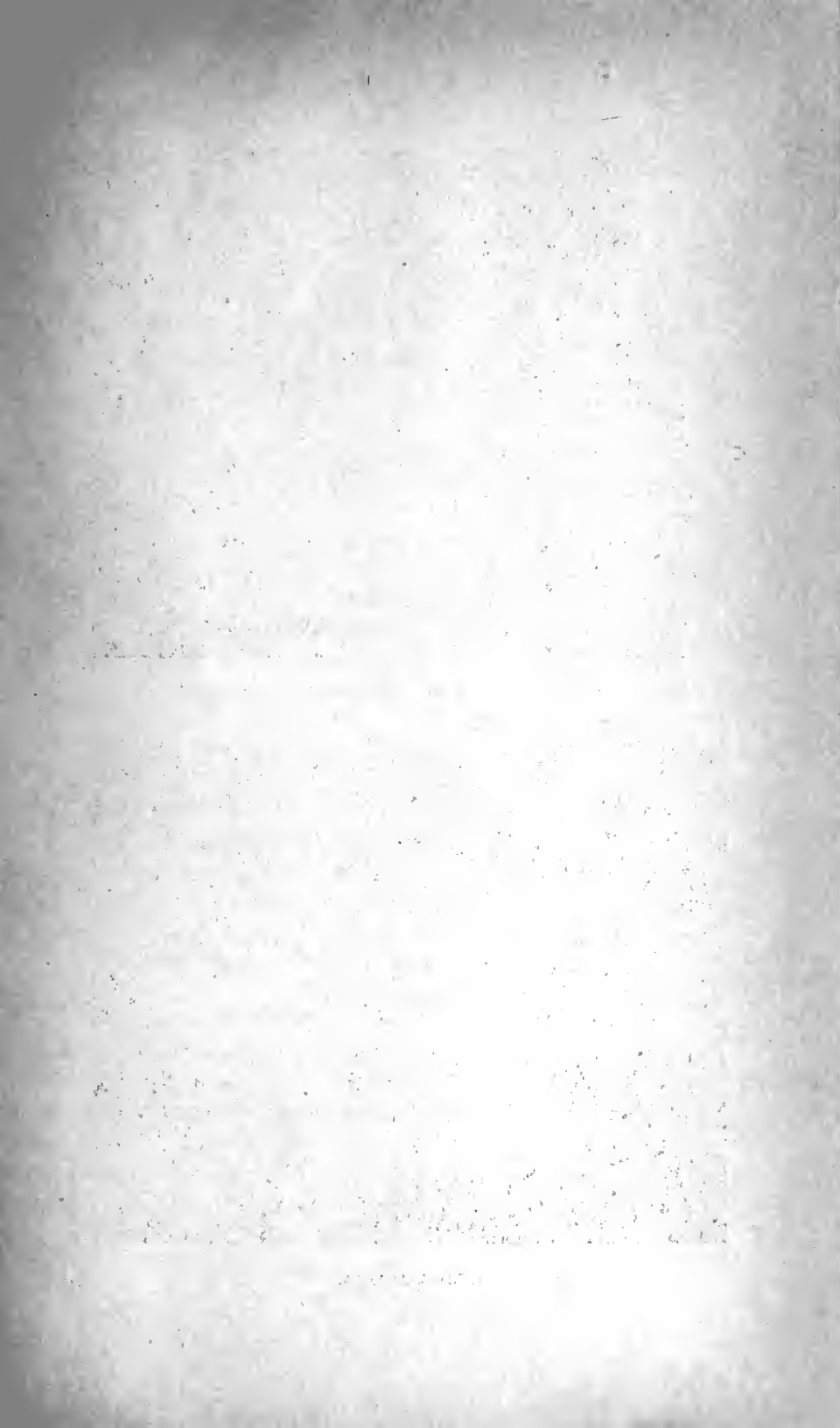
It was under such favorable conditions, from the collector's standpoint, that I began the ascent of Sheep Creek on June 28, accompanied by two white companions and two Siwash Indians.

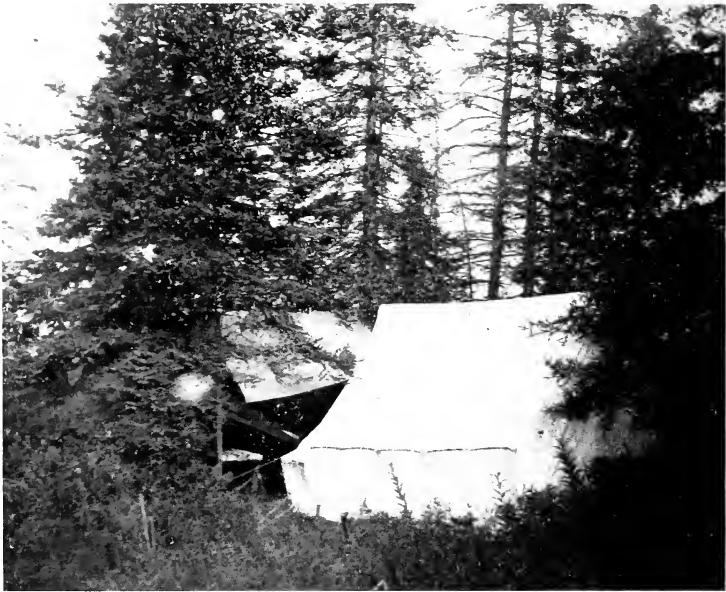
It would be hard to find a more interesting piece of country than that lying on either bank of the creek for twenty-five miles from its mouth. Heavily wooded with alder, willow, cottonwood, etc., with here and there open stretches of grassy meadow-land, sandy beaches along the inner bends of the creek, and numerous ponds of water, it is an ideal locality for the collector, as both birds and mammals are abundant. At the time of my expedition, however, it was almost next to impossible for a human being to remain there for any length of time. Mosquitoes swarmed about the stagnant, marshy places in clouds, and only those who have labored on the end of a "track" line — dragging a heavily loaded boat through ice-cold rapids and over log-jams and innumerable snags can thoroughly appreciate the blood-thirsty viciousness of these little pests.

Four days were consumed in ascending the stream to about twenty-five miles from its mouth. There it became impossible to drag the boat farther, and camp was established in a park-like grove of cottonwoods, surrounded by high, heavily wooded hills, from which poured many clear streams of ice-cold water.

Birds of many species were numerous on the low stretches of land adjoining the creek, while the Pileolated Warbler and Spruce Grouse were abundant on the hillsides. The Grouse for the most part sit stupidly motionless, or sun themselves at the base of some uprooted tree, where they spend much time in taking dust baths and preening their plumage. Fortunately, mosquitoes gave us but little trouble here and several days were profitably spent in collecting.

Mammals were scarce, however, and after trapping with indifferent results, our supplies were removed to the upper





CAMP WINSER, KENAI PENINSULA, ALASKA.



VALDEZ, ALASKA.

edge of timber and a temporary camp was made, from which it was possible to make daily excursions into the barren grounds of the mountains.

The country traversed in reaching this camp is the most difficult it has been my fortune to encounter. The hills near the creek rise very abruptly to about six hundred feet — in places so steep that it is a wonder how the spruce and other trees retain a footing — while the sides of the cañons cut by the streams consist of oozing quagmires which are only prevented from sliding into the stream below by the heavy growth of alder and other plants. Even this vegetation is not always sufficient to hold the soft earth, as landslides are of frequent occurrence, carrying all before them and leaving the frozen ground beneath exposed. Travel about these cañons is an arduous if not a dangerous undertaking, as one is constantly sinking into the soft mud, which exhibits a tendency to precipitate itself into the valley below.

After reaching the top of the ridge, an extensive tableland is encountered, which stretches with a gradual rise to the barren grounds. It is all heavily wooded with spruce and large cottonwoods or broken by morasses, where one is compelled to proceed with great care. Or again, one may meet with long stretches of alder thickets, in penetrating which it is necessary to use an axe. Were it not for an occasional view of the snow-capped mountains beyond, it would be hard to realize that one was within a subarctic latitude.

Birds were seldom seen in this stretch of country, as they prefer the more open regions. Mosquitoes, however, were in evidence, and in addition to their persistent attentions the sun beat down with tropical fury, while beneath the dense vegetation there was a total lack of the slightest refreshing breeze. The joys of carrying heavy packs under the circumstances can be better imagined than described!

After much valuable material had been secured about the mountains and upper stretches of timber we returned, about

August 15, to Sheep Creek and began our preparations for the descent, an undertaking which we all dreaded, as we realized it was chiefly a matter of trusting to the current. Fortunately the task was safely accomplished after many narrow escapes from rocks and snags. Five hours were consumed in descending, whereas four days of toil were required in making the ascent.

A couple of weeks was spent at Homer in collecting shore and water birds, after which we set out in quest of Moose on August 31 which were then ranging the higher ridges of the tableland on the north side of the peninsula. On account of the grass, but few small animals were secured. Birds, which were then migrating, were plentiful and several species not previously seen were taken.

Returning to Homer on October 4, passage by steamer was taken for Popof Island of the Shumagin group, near the extremity of the Alaska Peninsula. Here we were storm-bound for a week, finally crossing Unga Strait in small open boats to the mainland on the 26th, where a fine collection of Grant's Caribou (new to science) was secured, as well as many other small mammals and birds.

Upon returning to Popof Island November 10, a large collection of birds, voles and shrews was made while awaiting the already long overdue steamer for Valdez and Seattle.

The steamer finally arrived and the seven months' trip was at an end on January 2, 1902.

BIRDS.

The following is a list of birds secured or observed on the Alaska and Kenai Peninsulas between June and December 1901, and the accompanying field notes throw some light on the food, the habits and the environment of the several spe-

cies. Many others might have been secured but birds were considered of secondary importance to the mammals. The collection contains sixty-eight species and subspecies represented by 302 specimens.

Gavia imber? LOON.

Occasionally observed about Coal Bay (a northern arm of Chugachik Bay) but no specimens were secured. The remains of one was found near Homer, which left no doubt as to identification.

Gavia lumme. RED-THROATED LOON.

Immature specimens were secured during August. It is resident throughout the year at Homer and was usually seen about the shallows of Coal Bay feeding in company with cormorants.

Brachyramphus marmoratus. MARBLED MURRELET.

Birds were usually seen just off the point of Homer spit during a change of tide, when it was next to impossible to manage a boat in the swift current. They were seldom seen between tides and no doubt came to the point mentioned for the purpose of feeding. Said to breed on Kadiak Island.

Uria troile californica. CALIFORNIA MURRE.

An extremely common resident breeding on the innermost islands, on the south side of Chugachik Bay. Young were observed during the latter part of August.

Stercorarius parasiticus. PARASITIC JÆGER.

Rissa tridactyla pollicaris. PACIFIC KITTIWAKE.

This gull is by far the most numerous member of the family found on the Pacific coast of Alaska. It was very abundant and breeds at all suitable points.

Larus glaucescens. GLAUCOUS-WINGED GULL.

Common at Homer, but as there are no cliffs and as I have never seen it nesting elsewhere under two hundred feet above the water level it probably does not breed.

Larus brachyrhynchus. SHORT-BILLED GULL.**Larus philadelphia.** BONAPARTE'S GULL.**Phalacrocorax pelagicus robustus.** VIOLET-GREEN CORMORANT.

Found very abundantly about the bays near Homer and at all other places visited north of Sitka, especially on the low rocky shores of islands. It is resident wherever found.

Another species having white patches at the base of the tail was observed at Homer, but no specimens were secured.

A specimen of a much larger species was seen at Homer.

Anas boschas? MALLARD.

One pair found breeding on a small lake on the barren grounds of the Kenai Peninsula, was all I noted.

Nettion carolinensis. GREEN-WINGED TEAL.**Harelda hyemalis?** OLD-SQUAW.

During late fall this duck became extremely common, and hundreds were to be seen at almost any time. They are restless and seldom remain in one spot more than a few minutes even when undisturbed.

They were especially numerous about the Kadiak Islands, flying in an unbroken line a few feet above the surface of the water. Dozens of such lines of ducks, each containing hundreds of individuals, could be seen hourly, passing to the southward. Their approach was always announced by their peculiar notes, which are unmistakable.

Histrionicus histrionicus? HARLEQUIN DUCK.

Very abundant during the late fall about the protected bays of the Alaska Peninsula. It was also noted as far south as Valdez (Discovery Harbor).

Somateria v-nigra? EIDER DUCK.

A species of Eider Duck was common about the bays near Homer, but no specimens were secured for identification. However, a female on her nest near Homer permitted a near approach and identification was reasonably sure. The bird is reported as breeding there regularly. The nest I observed was in the grass within forty feet of a railroad used for hauling coal, with trains passing daily. While I was waiting for the completion of the set of eggs, the nest and contents were destroyed.

Oidemia deglandi? WHITE-WINGED SCOTER.

Abundant on Coal Bay during August and September, and like the foregoing species may breed on the islands of Chugachik Bay.

It is unfortunate that I was unable to spend much time on these islands — especially Kadiak — which is near the entrance of the bay. They are reported as being unusually rich in bird life, and would no doubt have yielded much interesting material.

Oidemia perspicillata. SURF SCOTER.

Very common about Homer during the fall but hard to approach.

Tringa canutus. KNOT.**Tringa couesi.** ALEUTIAN SANDPIPER.**Tringa bairdi.** BAIRD'S SANDPIPER.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.

One specimen obtained.

Ereunetes occidentalis. WESTERN SANDPIPER.

By far the most numerous of the shore birds; in fact I think their numbers would equal all other species of shore birds combined. Large flocks were seen daily during migration, some of them containing hundreds of individuals. A single shot into such a flock resulted in the killing of sixty-four specimens.

They arrive at Homer about the middle of August and remain until late October.

Calidris arenaria. SANDERLING.**Totanus melanoleucus.** GREATER YELLOW-LEG.**Heteractitis incanus.** WANDERING TATLER.**Actitis macularia.** SPOTTED SANDPIPER.

Breeds commonly along Sheep Creek.

Numenius borealis. ESKIMO CURLEW.

One was taken on the barren grounds of the Kenai Mountains and it was fairly common at Homer during August.

Squatarola squatarola. BLACK-BELLIED PLOVER.**Charadrius dominicus fulvus.** PACIFIC GOLDEN PLOVER.

At Homer, several specimens were taken during August; on Popof Island, December 15.

Ægialitis semipalmata. SEMIPALMATED PLOVER.

Found breeding about the glacial morain on the south side of Chugachik Bay.

***Arenaria interpres.* TURNSTONE.**

Uncommon at Homer during migration.

***Arenaria melanocephala.* BLACK TURNSTONE.**

Common at Homer during migration.

***Canachites canadensis osgoodi.* ALASKAN SPRUCE GROUSE.**

In all the timbered region visited, this grouse was found more or less commonly and breeding. The birds are stupid in the extreme, and during the summer seldom move when approached, unless the young are very small and unable to fly. At such times their actions are precisely those of the domestic hen, as with feathers ruffled and wings and head lowered they attack the intruder. The young are able to fly a short distance not many days after hatching and are, in addition, wonderfully protectively colored. They are then entirely capable of caring for themselves when danger approaches.

As soon as the young are sufficiently strong these grouse repair to the barren grounds or the more open sections where berries are abundant. But with the approach of winter they return to the spruce forests and subsist almost entirely upon spruce needles. When the ground is covered with snow they become very shy, as their color offers them no protection during the winter.

***Lagopus lagopus.* WILLOW PTARMIGAN.**

This ptarmigan assumes its protectively colored plumage only during the fall. Its appearance in summer with the white of the wings and bright rufous of the body renders it a very conspicuous object. Indeed at this season the bird's plumage is actually in strong contrast to its surroundings. Furthermore its notes are very loud; all of which leads me to

believe that its conspicuous color and actions are for the protection of its young.

When approached, the parent birds perch upon a rock or hillock where their plumage makes them prominent, and by loud cackling, much after the manner of the domestic hen, and by short runs back and forth, endeavor to attract the intruder's attention. In the meantime the young birds attempt to slink to cover unobserved: If their brood is hard pressed, the adults will approach within a few feet, exhibiting every sign of distress. When the young have reached secure cover, the parent birds immediately fly off in the opposite direction, emitting a series of notes which so resemble a deep human laugh as to be positively startling when heard for the first time.

The color of the young protects them, and when they reach a clump of alder it is quite useless to follow, as they sit motionless and are practically invisible.

When they have assumed the white plumage of winter and there is no snow, the ptarmigan become very shy and it is next to impossible to approach within gun-shot of them. When, however, there is snow, they lose all fear and at such times it is almost possible to pick them up in one's hands.

Lagopus leucurus peninsularis. KENAI WHITE-TAILED
PTARMIGAN.

This most interesting ptarmigan — new to science — is born and lives its life far above timber-line, where the bleak and barren mountain sides afford only the rocks for its protection. Indeed, it is astonishing how the birds exist amid such inhospitable surroundings.

Their color is an exact imitation of their rocky surroundings and when they remain at rest it is quite impossible to distinguish them, though they may be only a few feet distant. To make the deception complete, they have two partial moults and a complete one during the spring, summer and fall.

Before the spring moult is complete, they begin, when all vegetation is dead and gray, to moult into the vermiculated plumage of the fall, and finally they assume the pure white plumage of winter.

When approached they crouch as closely to the ground as possible (usually near some boulder) and remain in this position while the intruder is in motion; but if he stands still, they try to steal away, and thus reveal their presence. As soon as another movement is made they resume their former position, and if cautiously approached may, in some cases, be picked up in the hand. They depend almost entirely upon their color for protection, and can seldom be forced to take wing.

A low cackling when the young are disturbed was the only utterance I heard. Berries and the short grass of the region form their entire food supply.

Circus hudsonius. MARSH HAWK.

Hawks are not common in the Cook's Inlet region and this species was probably the most abundant.

Accipiter velox. SHARP-SHINNED HAWK.

Aquila chrysaëtos? GOLDEN EAGLE.

An eagle was seen on the Kenai Mountains feeding upon the carcass of a sheep, and from its general appearance and flight I believe it to be referable to the above species, though of course I am not positive.

Haliaëetus leucocephalus? BALD EAGLE.

Very common all along the timbered stretches of the coast. It was especially numerous about Juneau, where it was feeding upon the offal from the town, or upon dead fishes along the beach. Its habits and appearance remind one of the vultures, and inspire only disgust. Its carrion-eating habits

are from choice, as there was an abundance of ducks and other water-fowl in the neighborhood.

Falco peregrinus anatum. DUCK HAWK.

Falco columbarius. PIGEON HAWK.

Scotiaptex cinerea? GREAT GRAY OWL.

While no specimens were observed by me, I have no doubt that it is a regular visitor at Homer during the winter. The natives described a bird that could have been no other species.

Nyctea nyctea? SNOWY OWL.

Like the above species, I have in the case of this bird only the observations of others, who assure me that it is seen nearly every winter about Homer spit.

Surnia ulula caparoch. AMERICAN HAWK OWL.

I secured one specimen.

Asio accipitrinus? SHORT-EARED OWL.

Three specimens were seen and the remains of one were examined at Sand Point, Popof Island. It is said to be very common there during the summer.

Dryobates villosus leucomelas. NORTHERN HAIRY WOODPECKER.

Dryobates pubescens nelsoni. ALASKAN DOWNY WOODPECKER.

This was the most numerous of the Woodpeckers.

Picoides americanus alascensis. ALASKAN THREE-TOED WOODPECKER.

Empidonax traillii. TRAILL'S FLYCATCHER.

Otocoris alpestris arctica. ALASKAN HORNED LARK.

Pica pica hudsonica. AMERICAN MAGPIE.

My observations led me to believe that this bird inhabits only the barren grounds. A few were seen above timber on the Kenai Mountains, and it was very common along the coast and islands about the Alaska Peninsula.

It becomes a nuisance in the settlements of the latter region, and many are shot and poisoned during the winter months.

Cyanocitta stelleri borealis. KENAI JAY.

This Jay, described as new by Mr. Chapman, is generally distributed throughout the Kenai Peninsula, but nowhere abundant.

Perisoreus canadensis fumifrons. ALASKAN JAY.

Corvus corax sinuatus? RAVEN.

During the summer and fall many ravens were seen about Homer spit, where they feed along the beaches or about the buildings of the settlement.

Corvus caurinus? NORTHWEST CROW.

Found along the coast as far north as Valdez. They were very common on the flats and beaches near Juneau, in company with eagles and gulls. They were observed at Valdez as late as December 26th, and no doubt winter there.

Scolecophagus carolinus. RUSTY BLACKBIRD.

Pinicola enucleator alascensis. ALASKAN PINE GROSB
BEAK.

Loxia curvirostra minor? RED CROSSBILL.

Very common about the upper edge of timber on the Kenai Mountains but I doubt if it breeds in that locality, as it was not seen later in the season.

Loxia leucoptera? WHITE-WINGED CROSSBILL.

Several individuals were seen on the Kenai Mountains which I believe were referable to this species, though no specimens were taken and I am not positive of their identity.

Spinus pinus. PINE SISKIN.**Passerina nivalis?** SNOW BUNTING.

A pair of Snow Buntings were seen several times, on the barren grounds of the Kenai Mountains during the summer, and several at Valdez the latter part of December; but no specimens were taken, and I am unable to say positively to what species they belonged.

Ammodramus sandwichensis alaudinus. WESTERN SAVANNA SPARROW.

Breeding on Homer spit.

Zonotrichia leucophrys. INTERMEDIATE SPARROW.**Zonotrichia coronata.** GOLDEN-CROWNED SPARROW.

This species was not seen until late in August, when it became quite common about the hills to the north of Homer.

Spizella monticola ochracea. WESTERN TREE SPARROW.**Junco hyemalis.** SLATE-COLORED JUNCO.

Melospiza cinerea kenaiensis. KENAI SONG SPARROW.

Melospiza cinerea. ALEUTIAN SONG SPARROW.

Common resident about the beaches of Popof Island. Its song greatly resembles that of the Song Sparrow of the east and is heard throughout the year, regardless of the weather.

Passerella iliaca unalascensis: SHUMAGIN FOX SPARROW.

Passerella iliaca annectens. YAKUTAT FOX SPARROW.

Lanius borealis. GREAT NORTHERN SHRIKE.

Helminthophila celata lutescens. LUTESCENT WARBLER.

Dendroica æstiva rubiginosa. ALASKAN YELLOW WARBLER.

Dendroica coronata. MYRTLE WARBLER.

Dendroica striata. BLACK-POLL WARBLER.

Dendroica townsendi. TOWNSEND'S WARBLER.

Seiurus noveboracensis grinnelli. GRINNELL'S WATER-THRUSH.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.

The commonest species of warbler.

Anthus pensilvanicus. AMERICAN PIPIT.

Cinclus mexicanus? WATER OUZEL.

While on the Alaska Peninsula during November, I saw two of these interesting birds, but did not secure them. They were found along a rocky stream and were very shy.

Parus hudsonicus columbianus. COLUMBIAN CHICKADEE.

Regulus satrapa olivaceus. WESTERN GOLDEN-CROWNED KINGLET.

Hylocichla aliciae. GRAY-CHEEKED THRUSH.

Hylocichla ustulata almæ. ALMA'S THRUSH.

Ixoreus naevius. VARIED THRUSH.

MAMMALS.

Contrary to expectations, small mammals were very scarce on the whole of the Kenai Peninsula and the number of species was very limited. A survey of the country, however, readily explains their absence.

The two main causes are the nature of the climate, and the condition of the vegetation. The greater part of the peninsula is subjected to conditions which render its climate that of a temperate zone within a subarctic zone. The result is that most boreal forms of mammals are excluded. Furthermore, to the south rises a barrier which prevents the migration of more southern species. For the coast southwest of Prince William Sound (the southeastern boundary of the Kenai Peninsula) is an almost unbroken chain of rugged snow-capped mountains, cut by countless glaciers of great extent — among them the Muir glacier, which is more than sixty miles in width. The Kenai Mountains extend from the western extremity of the peninsula to the barren grounds on the east, thus forming an unbroken barrier which of course prevents a movement to the Kenai region of species which would naturally favor the conditions it presents. In any event, the dense nature of the vegetation over the greater

part of the peninsula would account for the absence of small mammals in any quantity.

I am unable to account, however, for the lack of small rodents on the barren grounds. "Signs" were everywhere abundant, in the form of burrows, etc., but they were for the most part old. Extensive stretches of ground were literally honey-combed by what appeared to be vole burrows, yet the most persistent trapping was void of results. Several species which are very common in similar locations, both to the north and south, were not indicated even by old "signs," and I am at a loss to account for their absence.

On the Alaska Peninsula and the adjacent islands just the opposite conditions prevailed. At the time of my visit there, the majority of the rodents were hibernating and but few species were secured; but there was every indication that many other species were very numerous.

Lagenorhynchus obliquidens. STRIPED DOLPHIN.

One dead specimen was found on the rocks at Swan Point near Valdez, and secured.

Many other marine animals were seen during the passage from Seattle to Homer, but as their identification would be a matter of guess-work I have not included them in this list.

Paralces gigas. ALASKA MOOSE.

These monsters of the ungulate family are very abundant about the tableland of the Kenai Peninsula. During the summer they range the lower ground about the streams, where timber affords the young protection, and in such localities "signs" are everywhere apparent.

Many of the sand bars on Sheep Creek were a mass of moose tracks, reminding one of tracks of domestic cattle about a pasture. Upon the approach of the rutting season, they repair to the higher ridges and more open ground, there to remain during the winter.

Their food consists almost entirely of the young growth of willow, the growth of the year. Willows are often found on their "runways" which have been stripped of the young growth year after year, until each limb ends in a cluster of scores of clipped twigs, resembling a broom.

The young are born about May and remain with the parent throughout the year. Twins often occur.

Rangifer stonei. STONE'S CARIBOU.

This species will possibly be the first to disappear, as there are only a very few left at present and they inhabit the easily accessible tableland of the Kenai Peninsula.

Rangifer granti. GRANT'S CARIBOU.

Previous to our securing specimens on the Alaska Peninsula, this caribou was new to science. It is quite common there, but is being ruthlessly slaughtered for its flesh, and will soon be exterminated in the more accessible localities.

Fortunately, its range is very rugged and difficult to reach, and isolated bands will no doubt thrive for many years to come. Caribou are killed more extensively than any other Alaska animal, and only the most stringent laws — and laws that are *enforced* — will prevent their total extermination.

Ovis dalli kenaiensis. KENAI WHITE SHEEP.

Found very abundantly on the Kenai Mountains at the head of Sheep Creek.

They inhabit the higher parts of the range, coming down only a few hundred feet for food, which consists of the short coarse grass previously mentioned. They formerly ranged over the entire mountain chain but are gradually being driven to the eastward, where it is becoming more and more difficult to secure them. Their extinction is but a matter of time.

Sciurus hudsonicus. HUDSON BAY RED SQUIRREL.

Appears to prefer the more open timber, especially about the lower lands.

Arctomys pruinosus. HOARY MARMOT.**Evotomys dawsoni.** DAWSON RED-BACKED MOUSE.

It is a very abundant species in timbered localities throughout the North.

Microtus kadiacensis. KADIAK VOLE.**Microtus miurus.** ALASKA MOUNTAIN VOLE.**Microtus unalascensis popofensis.** POPOF ISLAND VOLE.**Erethizon epizanthus myops.** ALASKA PORCUPINE.

Quite common near tidewater on the south side of Chugachik Bay, and occasionally seen about the higher timbered country of Kenai Peninsula. It was also found on the Alaska Peninsula, usually near the coast, where alder is abundant and the overhanging banks of small brooks afford a safe retreat.

Lepus americanus dalli. DALL VARYING HARE.

Two specimens taken on Sheep Creek were all I noted on the Kenai Peninsula. Tracks of a hare were seen on the Alaska Peninsula.

Phoca richardsi. HARBOR SEAL.

Common about the bays of Cook's Inlet. Several were seen stranded on the mud flats near the mouth of Sheep Creek.

Vulpes alascensis. ALASKA RED FOX.

Vulpes kenaiensis. KENAI FOX.

Represented in the collection by two skulls picked up at a deserted Indian hut on Chugachik Bay.

Canis occidentalis? WOLF.

While no live specimens were seen, yet this wolf inhabits the Kenai region, as tracks were seen along Sheep Creek. A dry skin was also seen at Homer, which had been killed the previous winter near the head of Chugachik Bay.

Ursus merriami. BIG ALASKA BEAR.

Said to be common on the north side of the Alaskan Peninsula. Two dry skins were secured from a native.

Ursus horribilis alascensis. ALASKA GRIZZLY BEAR.

Common on the Kenai Peninsula. Many large tracks were seen along Sheep Creek which may have been made by this species.

Ursus americanus. BLACK BEAR.

Very abundant on the Kenai Peninsula.

Putorius arcticus kadiacensis. TUNDRA WEASEL.**Mustela americana actuosa.** ALASKA MARTIN.

A skull obtained.

Gulo luscus. WOLVERINE.

One specimen was taken, and another seen, on the barren grounds of the Kenai Mountains.

Sorex obscurus shumaginensis. SHUMAGIN ISLANDS
SHREW.**Sorex obscurus alascensis.** ALASKA SHREW.

Sorex personatus streatori. STREATOR'S SHREW.

The Alaska, and Streater's Shrew were the most abundant of the small mammals of Kenai Peninsula. They were confined almost entirely to the timber-belt and the alder patches adjoining the barren grounds. One specimen taken at an altitude of about 3000 feet was the only exception.

Some Notes on the Psychology of Birds.*

BY C. WILLIAM BEEBE.

EVEN a superficial study of the psychology of birds compels us to attribute to them a highly developed intellectual and emotional life. Some examples may make this more evident, and I will mention a few which entail rather complex psychic processes.

Birds have remarkable memories. It is said a pigeon will remember a person after many months, and a bullfinch has been known to recognize a voice after a year's time. I have seen an immature Bald Eagle show decided recognition of a lady who had raised the bird from the nest by hand, even after a year's absence from her and association with a dozen other eagles. The bird came to her and permitted familiarities which he would not allow from any other person.

Birds, apparently, often dream, as is evidenced by their frequently singing or chattering in their sleep.

There are few species of birds which do not show the emotions of love and sympathy, and many even exhibit a sincerity of affection that is strong enough to cause them to mate for life — a trait which is very rare among mammals. Even in those species which pair for only a year, their mutual sympathy is so great that one of the two will sometimes pine and die with grief at the loss of its mate. Indeed, *sympathy* is the key-note in the growth of the higher intellectual and social qualities which find their culmination in man, and Professor Shaler is right when he attributes to birds a higher development of this emotion than to any other creatures below man. Reptiles can be trained to know their keeper,

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and an alligator will defend her buried eggs; dogs are unusually affectionate animals, and the higher monkeys have many sympathetic habits and emotions, but birds lead them all. This is not remarkable when we consider the wonderfully important place which the *family* holds in this class of vertebrates. The building of the nest, the comparatively long incubation of the eggs, and the patient feeding and complex education of the young birds are all duties in which both parents often share. It is this continued association, this "bridging over of generations," which has made sympathy so prominent a factor in the minds of birds. In what other class of animals are vocal signals of fear, distress, or terror so widely understood, or so willingly met with efforts of assistance?

To me it seems puerile to try to believe that a bird's affection for her young, so great that she will often give her life in their defense, can be correlated with an *instinct*, if that word be used in the common acceptance of the term. It is no more an instinct in the sense of an uncontrollable emotion than is the analogous action of an heroic human being. Altruism, or something very like it, has governed the action of more than one bird under my observation, and that, too, in some instances, between birds of different species. Three instances come to mind: a female Red-winged Blackbird which carried a mouthful of worms to a nestful of young Red-wings near by, before passing on to brood her own eggs, as yet unhatched; a Loon which voluntarily risked his life to free a Pied-billed Grebe from an ice-trap, that almost proved fatal; a Great Crowned Pigeon which assumed the care of a nestling Ring-dove that had been deserted by its parents.

Another aspect of the mental processes of birds shows us examples of revenge being taken after long and patient waiting for a favorable opportunity. Similarly, crows have been known again and again to sit in judgment upon one of their number, and to sentence and punish it with death.

The language of birds is most complex, and all, from the marvellous song of the Nightingale and the imitative powers of the Mocking-bird, to the apparently meaningless chirps of our city sparrows, tell of mental powers striving for expression. In man the various emotions depend largely upon language and the expression of the face for their outward demonstration, and it is interesting to compare with this the state of affairs among birds. These creatures, though handicapped by a vocal language very inferior to our own and by faces that are for the most part sheathed in expressionless masks of horn, yet are able by movements of their feathers, limbs and other portions of the body, to express a wide range of emotions and to communicate clearly even delicate shades of meaning.

The mention of these finer qualities which show the high mental position of birds as a race, suggests a factor common to all animals, but which in birds is very important, and developed to a remarkable degree — that of extreme *individuality*. It is this wide variation on the already high level of knowledge that gives to birds the numerous chances for new *accidental opportunities*, as we may call them, stepping-stones on the road of deduction to some new and higher expression of psychic power. Every-day accidents in the search for food may be instantly seized upon by the quick perception of birds and turned to good account. Birds had early learned to take clams or mussels in their beaks or claws at low tide, and carry them out of the reach of the water so that at the death of the mollusk the relaxation of the adductor muscle would permit the shell to spring open and afford easy access to the inmate. Probably it needed only the accidental dropping of a few shells on the hard rocks, and a taste of the appetizing morsels within, to fix the habit which, by imitation, has spread so widely among birds at the present day. To how trivial an accident might the beginning — the psychic *anlaga* — of many a world-wide trait of birds be traced, if we could but read the past clearly!

Play and courtship, which go hand in hand, so to speak, afford opportunity for the vast resources of variation to be abundantly expressed. Groos, in his admirable "*Spiele der Thiere*," has given five separate classes under the head of courtship:

1. Love-plays among young animals.
2. Courtship by arts of movement.
3. Courtship by display of unusual or beautiful colors and forms.
4. Courtship by means of noises and tones.
5. Coquetry in the female.

In the Zoological Park each spring, and indeed during almost every month of the year, many examples of these courtships and plays can be observed. The dances of the cranes and eagles, the ostentatious show of the pheasants and ducks, the screaming of the parrots and the many songs, vibrant with sentiment, by which birds strive to outdo each other in the estimation of the female, show how greatly the spirit of emulation in their respective accomplishments inspires the suitors. We should also realize how pronounced must be the discriminative power and æsthetic appreciation of the females. The display of the Peacock combines the qualities of movement, color, and noise: for the beauty of its argus-eyed feathers is made more effective by their being raised in a halo above the bird, while the shivering of its wing-quills forms a castanet accompaniment.

A genuine delight is taken in these various displays. So far from being intuitive or mechanical exercises, they are conscientiously practiced for weeks beforehand, and are continued long after the period of courtship and nesting is over. For instance, in the Zoological Park, when a Peacock in early spring timidly erects his plumes before an unappreciative Crow, it is for practice in anticipation of his later performances in competition with his rivals. After the period of courtship, when he struts back and forth before a line of

admiring people, the exercise is from pure delight and appreciation of his own beauties. The Germans in their finely discriminating language, express the delicate shade of meaning in these acts by *Vorübung* and *Ausübung*. Even in birds which pair for life, I have noticed a coquetry and pretended courtship, spring after spring.

One more interesting fact about courtship among birds — another indication, perhaps, of their individuality — is that it is not always the most highly decorated suitor, nor the one victorious in combat, who wins the female for whom he is putting forth his utmost efforts. I have seen a Peahen show a very decided preference for, and ultimately pair with a young bird who had but a small train, and was almost spurless. An amusing instance also noticed in the Park was that of some Mallard Ducks. Three drakes vied with each other for the favor of a little brown duck. One of the drakes seemed to put but faint hope in his splutterings and bowings, and little wonder, for tail feathers with the graceful curl, one of the decorations of his sex, had been shot away, and shot-scars had spoiled the symmetry of other parts of his plumage. The other two were large and beautiful birds, bred in the Park. The iridescent emerald of their heads and necks and their immaculate, shining collars made them incomparably more conspicuous than the smaller wild bird. Nevertheless, all their efforts were in vain, and the occasional pitiful attempts of the handicapped suitor to spread an imaginary tail and declare his everlasting devotion prevailed. He was accepted, and the pair were inseparable until the nest was finished and the duck began sitting on her eleven eggs.

Turning from the birds in the collection to our wild native birds which make the Park their home or pay it frequent visits, we find much of interest in their changed habits and dispositions. The sight of so many birds flying unharmed in the flying cages or walking about their ranges and swim-

ming on the various ponds undisturbed, although in close proximity to man, is fraught with significance to the quick perceptions of wild birds, large and small. Their keen perceptions and superior powers of intelligence tell them that such unwonted altruistic conditions must offer advantages. The result is an almost immediate recognition of their security in the Park which is truly remarkable, and birds which seldom show themselves within sight of civilization have come again and again, and exhibited a tameness which deceives many people into thinking they must be escaped birds. The honored visitation of Canada Geese will long testify to the truth of this fact. Wild sea-gulls not infrequently drop from the loose flocks passing overhead, and consort for a few days with their wing-clipped kindred. When they leave, the young gulls which have been hatched in the Park usually accompany them, but return in a few hours to their home and flock. Ducks, herons, and hawks show a similarly quick realization of their immunity from danger in the Park. Green Herons creep like feathered phantoms among the branches of the trees overhanging the water, while Great Blue, and Black-crowned Night Herons, forgetting all shyness, clamber over the arches of the big flying cage in broad daylight, and in sight of hundreds of people, peering down at their brethren inside and uttering envious squawks as they see the bountiful repast of fish and shrimps prepared for those fortunate ones.

The manner in which the tame Crows raised from the nest are treated by their wild relations offers an interesting psychological study. Casual notes of mine show that the condition of affairs is about as follows: The tame individuals are a source of great concern to their wild friends. That no gun will be turned against them these latter birds soon learn, but the absolute familiarity with man exhibited by the tame Crows — for they closely accompany the attendants during every important alteration of cages or changing

of birds, and often alight on their very heads or shoulders — this the wild Crows, viewing from a distance, seem to think is evidence of a disordered mind, and they forthwith use every wile, every stratagem in their power, to entice the tame birds back to their ranks. Often in summer when I arrive early at the Park I surprise a company of them “having it out” — the tame bird surrounded by a ring of his fellows, who are all talking at once, and giving him no chance for argument. But their trouble is the only reward for their pains, for his is a life of unnumbered daily meals, not to mention the opportunities for stealing and hoarding sundry keys, knives, and other bright plunder — the occupation dearest to a corvine heart!

The psychology and the growth of young birds is a field as yet almost untouched by careful workers. I offer the following facts which came to my notice in rearing from eggs in an incubator individuals of the Common Tern (*Sterna hirundo*), Least Tern (*S. antillarum*), Laughing Gull (*Larus atricilla*), Black Skimmer (*Rynchops nigra*) and Green Heron (*Butorides virescens*).

1.—The call, food and alarm notes of Common Terns, Black Skimmers and Laughing Gulls are instinctive — not taught by the parents nor learned by imitation.

2.—The remarkable disparity in the length of the mandibles in the adult Black Skimmer is foreshadowed even in the embryo and in the newly-hatched bird.

3.—My experience with a dozen terns and gulls showed that these individuals prefer fresh water to salt.

4.—There is absolutely no “instinctive” fear of man or other objects which enter quietly into the environment of the young birds; but a sudden shadow or loud noise causes them to perform certain acts — wholly instinctive — which have for their object an escape from supposed danger. Under such conditions the tern (which is not so protectively colored as the skimmer) takes time to run to the dark-

est corner or shadow before squatting, while the skimmer crouches instantly, and with two or three instinctive flicks of feet and legs, almost buries himself.

5.—The sight of small but entire fish excites a newly-hatched skimmer much more than does macerated fish. Terns at first readily eat macerated fish and are not excited by the sight of entire fish until after the first week. These facts would seem to indicate that young terns are fed, for a few days at least, upon regurgitated fish; but the sharp mandibles of a young skimmer merely cut macerated fish in two, so skimmers are doubtless fed from the first on entire fish.

6.—The act of pecking is instinctive to a certain extent, but is acquired very slowly in this way. By imitation it is learned quickly, and is performed successfully within a few minutes.

7.—The art of flying is wholly instinctive, the terns learning the use of their wings as soon as the primaries are large enough to support them.

The Eggs and Breeding Habits of Some Comparatively Little Known North American Birds.

BY LOUIS B. BISHOP, M. D.

ALTHOUGH the eggs described in this paper may be in some instances well known to oölogists, they have apparently escaped description, probably because the subspecies to which they belong have only recently been recognized as distinct. Of several, however, the first sets taken, as far as I am aware, are here reported.

Rallus crepitans scottii. SCOTT'S RAIL.

To our knowledge of the habits of this large rail, which dwells in the salt-water marshes of western Florida from Charlotte Harbor at least to the Suwannee River, I can add but little to that given by its discoverer in *The Auk* for April, 1889; but though, no doubt, Mr. Scott found the eggs of this bird he does not describe them, saying only "The nesting habits do not materially differ from those of the other forms of salt-water rails that I am acquainted with, and the number of young in a brood is about the same as with *crepitans*."

At the mouth of the Anclote River stretches a wide marsh overgrown with a cylindrical, sharp-pointed rush, stiff and sharp enough to bring blood after passing through several thicknesses of cloth. As these rushes die and bend over new ones take their place, resulting in a breast-high tangle through which it is difficult to force one's way, and even dangerous on account of one inhabitant of this marsh with which I became acquainted. Channels of varying width intersect the reeds, becoming at low water small stretches of

sand flat. This is the home of Scott's Rail, and he clings closely to it, not flying unless driven to cross some narrow opening, and then burying himself rapidly in the tangle beyond. Even these open spaces he prefers, under ordinary circumstances, to cross by running.

His harsh notes, similar to those of the Clapper Rail, could be frequently heard in this marsh, sometimes increasing to a chorus of discordant cackles, but I never saw a rail leave the shelter of the rushes of his own free will, nor did I find it as tame as Mr. Scott declares. But his experience was vastly more extensive than mine.

The only method, that I found successful, of collecting these rails without the aid of a dog, was to wait at one of the openings while an assistant beat the marsh toward me. Then, if luck favored, a shot might be obtained as a bird tried to cross the open channel. Even then most of the birds would double or hide, and not until we caused fire to act the part of the beater did I succeed in getting more than one or two birds.

But another inhabitant of this marsh that the fire disclosed dulled my enthusiasm for Scott's Rail.

One day in early March, 1897, after Mr. Wyatt Meyer and I had shot several of these birds by this means, I forced my way through a small, tangled island of rushes while Meyer, having set fire to this isolated portion, followed in my footsteps and took his place near me. Hardly had he taken his position when I heard him shoot and then call to me. The game was a Cotton-mouth Moccasin (*Agkistrodon piscivorus*), 4 ft. 4 in. long, that had followed the path we had made in the rushes, and within a few feet of which we must have stepped. As the fire had burned but a short distance it is not probable it had frightened this snake, and it seemed more likely to us both that it was following us with no friendly purpose—a habit this species is said to have. I was told these moccasins feed on the rail. Cory says of this

species "fully as venomous as the rattlesnake, and much more vicious"; and whether that snake intended to attack us or not, I confess that never without a feeling of dread did I crush my way through another thicket of this marsh, in utter ignorance of what I might step upon.

Although I looked for nests of Scott's Rail on each trip that we made to this and other marshes, as it was evident they were laying, it was not until March 31 that I found my first and only nest. This was on a small, mangrove island in the Anclote River near its mouth. Surrounding the mangroves was a narrow belt of the same rushes that composed the marsh, and the nest was situated on the ground in the rushes about ten feet from shore, where they jutted into the mangroves, one of which shaded the nest. The nest was a mass about one foot in height composed of small pieces of dead rushes carelessly piled together, lined with fragments of the same, and only slightly hollowed. There were seven eggs in the nest and the same number on April 2, when I collected them, so, although fresh, they were doubtless a full set. On neither occasion did I see or hear the parent, but there can be little doubt of the identification, as Scott's is the only large Rail I found near Anclote.

The eggs are similar to those of *R. crepitans*, cream-buff to grayish cream color, spotted and blotched with vinaceous-rufous, dark hazel, and pale grayish lavender. These markings are scattered over the entire shell, but are most abundant at the larger end of the eggs. An average of the measurements of these seven eggs is 1.71 inches in length by 1.17 in breadth, with extremes of 1.72 by 1.18 and 1.69 by 1.19.

Rallus crepitans waynei. WAYNE'S CLAPPER RAIL.

Although the eggs of this subspecies have been described under the head of *R. crepitans* further notes on its breeding-habits may be of value.

With this bird I have become well acquainted at Pea Island on the coast of North Carolina. Pamlico Sound is separated from the Atlantic by a belt of drifting sand and mud-flats, that broadens in places sufficiently to support trees and bushes, and narrows in others to but the ocean beach backed by a mile of sandy flats, where may frequently be seen in position the stumps of trees that grew there in past centuries. The sound side of this belt is bordered here and there by meadows of salt marsh, some of these quite similar to the wetter marshes of the New England coast, and covered like them with a coarse grass or sedge, while others are densely grown with rushes evidently closely related to those that compose the salt marshes of western Florida. These marshes are the home of Wayne's Rail, and at evening or in cloudy weather you will hear their harsh cackle, and occasionally see one of the birds walking along the margin of an inlet, ready to run quickly to the grass at the slightest sign of danger. In winter apparently the great majority go farther south, the true Clapper Rail occurring at this season in about equal numbers; but in May the marshes are filled with these birds, and the Clapper Rail is rare.

At all times Wayne's Rail is a shy and secretive bird, never flying if it can help it, but an adept at running, dodging and hiding, and can seldom be forced from the grass without the aid of a dog. On the island just described are a pair of Chesapeake Bay dogs, one of which from long practice is an expert at catching rail. Keeping to leeward of a marsh until he scents a rail, "Jack" will trail it through the more open grass until it takes refuge in a clump of rushes. Then he runs rapidly through this patch, back and forth, trying to catch the bird or force it to flight, and, failing in this, will jump several times a couple of feet into the air, hoping to frighten it into leaving its hiding place. Sooner or later the rail will be flushed or driven to the windward side of the marsh and attempt to seek safety by flight. Against the

wind it cannot fly, and even with the wind its progress is slow and seldom sustained for more than one hundred yards. With a fresh breeze blowing I have seen a rail roll over and over when it attempted to alight on the hard sand. The moment it leaves the ground the dog is after it, and though it should fly one hundred yards he is little behind when it strikes the ground, and then, unless the cover is unusually dense, you have another specimen to add to your collection.

Although I have taken incubated eggs by May 2, the greater number of rails do not begin to lay until about this date, and some postpone this duty until the latter half of the month. The nests are scattered everywhere over the marshes, the bases of some resting in water, and of others on dry ground. In the rushes a spot is selected under a thick mass of semi-prostrate stems; in the coarse marsh grass as thick a clump as possible is chosen, and the tips of the grass seem to be bent over as a canopy to the nest. This bending over of the tops of the grass is sometimes sufficiently evident to draw one's attention to the spot. The nest is a slightly hollowed heap of small pieces of dead rush or grass stems.

From nine to twelve eggs constitute the usual setting, these numbers representing the extremes of incubated sets which I have found. They are similar in size, color and markings to those of *R. crepitans* and *scottii*, though none show as much yellow in the ground-color as a set of *crepitans* in my collection that was taken in New Jersey. The markings, although scattered irregularly over the shell, are most abundant at the larger end; but on one egg, out of a series of 120, they are chiefly in the form of a ring at the apex. An average of the measurements of eight eggs selected from four sets of which the parent was taken is 1.68 inches long by 1.17 broad, with extremes of 1.75 by 1.15 and 1.59 by 1.19.

Not until the set is complete is one likely to find a Wayne's

Rail on the nest, but then both sexes assist in incubation and few birds sit closer. On May 20, 1901, I was collecting these rails and Macgillivray's Sparrows in a marsh where the coarse grass grew rather thinly and few clumps were over a foot in height. Here I fired several shots at a sparrow, and tramped back and forth to flush it or find the nest I thought was there. Failing, I went to another part of the marsh, but returned shortly to the same spot with two other men and the dog I have mentioned and fired another shot or so from my auxiliary barrel. Suddenly the dog pointed, and from between another man and myself, who were standing about two feet apart, flew a Wayne's Rail. She had remained on her nest through all this confusion in a cover so scanty that from where we were standing we could see the eggs as soon as she left them. This bird flew about one hundred and fifty yards and was caught by the dog almost as soon as she touched the marsh. The twelve eggs were heavily incubated.

***Agelaius phoeniceus floridanus*. FLORIDA REDWING.**

This subspecies has been reported breeding in western Florida and Louisiana, but I am not aware that its eggs have been described.

Mr. Scott states that it winters near Punta Rassa on the west coast and Mr. Wyatt Meyer and I found it common at Lake Flirt on our arrival there on March 20, 1897, but did not see it at Anclote until March 29, after our return there. On these dates the males greatly outnumbered the females at both places, which would seem to indicate that the birds had recently arrived from a more southern winter habitat. The habits, so far as I noticed them, were those of the Red-winged Blackbird, but they were not nearly as shy and restless as are the first spring arrivals at our northern marshes.

Two eggs of this species taken for me by Mr. Meyer at

Anclote in April, 1899, are similar to those of *phœniceus* in color and markings, but much smaller and rounder, with the less abundant markings chiefly at the larger end. They measure .85 inches by .69 and .87 by .71. Unfortunately Mr. Meyer sent no description of the nest with these eggs.

Agelaius phœniceus fortis. NORTHERN REDWING.

This form, recently described by Mr. Ridgway, proves to be the breeding Redwing of the Turtle Mountain and Devil's Lake region of North Dakota. It nests in abundance in the same marshes as the Yellow-headed Blackbird, its black and crimson plumage contrasting beautifully with the black and orange of the latter. But while the Yellow-headed Blackbird selects the higher reeds growing in deeper water in which to place its nest, the Redwing takes a tussock on the edge of the slough, or, rarely, fastens its nest in a clump of marsh grass. The nest is similar to that of the Red-winged Blackbird. Its notes and habits are the same as those of the eastern bird, but its plumage always impresses me as more brilliant and the male seems more fond of showing his crimson shoulders.

This Redwing reaches Towner County usually by the middle of April, and breeds in early June. Four eggs is the usual nest-complement, but I have once found five, and in one nest four of this species and one egg of the Sora (*Porzana carolina*). This nest was elevated several inches above the water and fastened in a clump of marsh grass, which rendered the presence of the Sora's egg the more remarkable. This egg was fresh while the blackbird's were almost hatched.

The eggs closely resemble in color, markings and shape those of *A. phœniceus*, and the average of the measurements of twelve eggs is .97 inches by .66 with extremes of 1.08 by .79 and .92 by .56.

Probably the eggs of the Red-winged Blackbird that Mr.

Thompson Seton describes, and which he collected near De Winton in Manitoba, June 11, 1882, belonged to this subspecies, but I have not seen birds from this locality, and it is not included by Mr. Ridgway in the breeding range of this form.

Ammodramus nelsoni. NELSON'S SPARROW.

Tolerably common in fall on the salt marshes of southern Connecticut and occurring more rarely in spring, wintering commonly in the marshes of the coastal sand belt of North Carolina, and thinly scattered in the breeding season through the north central portion of the United States, this little bird shuns observation everywhere. It dwells amongst the high grass, sometimes running on the bundles of stalks bent by the wind or tide. When one approaches it usually drops quietly to the ground and disappears, or when flushed, flies a short distance with somewhat twisting flight, then drops to the ground and runs, and is with difficulty flushed a second time. In late September and October it comes with the Acadian Sparrow to the wild rice growing at the mouths of creeks that empty into Long Island Sound, and for an hour after sunrise, if the tide is low, both these birds will run about the mud flats within a few yards of the rushes. A series of over one hundred and twenty-five skins of these two forms that I have collected has convinced me they are specifically distinct from *A. caudacutus*.

In northern North Dakota, where this species breeds, I have not seen over half a dozen in three seasons' collecting, and the majority of these I was unable to identify before I had the bird in my hands. Extensive marshes of shallow water overgrown with a slender, tall grass are common in parts of North Dakota, and in such places I have most frequently found this species. On July 19, 1901, I saw a bird which I believe was Nelson's Sparrow fly into the air from such a marsh, uttering a song similar to that of our Sharp-

tailed Sparrow's flight-song; on July 1, 1902, at the same marsh a male of this species settled on the top of a reed only a few feet from where I was sitting, and sang several times a wheezing, almost whispered, "o-whee-oo." These are the only times I have heard Nelson's Sparrow utter any notes except a sharp "chip" when frightened, and a gentle twitter when running on the mud flats.

My search for the nest has been in vain, but one day in June, 1902, as Mr. Charles W. Bowman of Devil's Lake, North Dakota, was passing over some rather low prairie covered with a heavy growth of grass near a small slough that lies near an arm of Sweetwater Lake, a small bird flew up at his feet. He soon found the nest and five eggs, but their identity was a question; they were evidently nothing with which he was acquainted. He returned to the nest on several occasions, but as he approached the female would start from the nest and after a short flight hide in the grass from which she could not be dislodged. On June 12, he shot her as she flew from the nest, and found her to be a Nelson's Sparrow. The nest was large and bulky, of fine dry grass, well woven together, and was sunken in the ground. It measured externally $2\frac{1}{2}$ inches in depth by $3\frac{1}{2}$ in breadth, and internally, 2 inches in depth by $1\frac{7}{8}$ in breadth. The five eggs were almost hatched, and what remains of them, as well as the female and nest, are now in my collection, thanks to the kindness of Mr. Bowman.

These eggs resemble those of *A. caudacutus*, but are much smaller, with the markings redder, more regularly confluent at the larger end and less concealing the ground color over the rest of the shell. The ground color is bluish white, which is thickly speckled with dots and scratches of walnut brown. The three whose measurements can be taken give .69 inches by .55, .69 by .54 and .70 by .54.

The eggs of this species have been described before, but, I believe, this is the first instance in which the parent has been collected, thus rendering their identification certain.

***Ammodramus maritimus macgillivraii*. MACGILLIVRAY'S
SEASIDE SPARROW.**

An abundant summer resident of the salt marshes lying east of Pamlico Sound, North Carolina, and occurring there rarely in winter. The eggs of this sparrow seem so far to have escaped observation, and the bird itself was unrecognized from Audubon's time until Mr. Chapman described the adult a few years ago. A series of thirty adults which I have collected in the breeding-ground of this sparrow convinces me that this form is well worthy of recognition.

In habits and song Macgillivray's Sparrow is indistinguishable from the Seaside Sparrow, but it frequents wetter marshes than that bird favors; its nest is frequently constructed of different materials and the eggs are usually distinct.

On May 20 and 21, 1901, I collected six sets of this species on Pea Island, North Carolina, three of them consisting of four eggs each, two of three, and one of two — the last probably incomplete. As all these eggs, except one set of three, were fresh, and as most of the birds I had taken earlier in the month had not laid, this probably represents the beginning of the breeding season. These nests were all situated several inches from the ground in small tussocks of coarse grass growing in the standing water of a marsh. They were rather loosely built of coarse grasses lined with fine; and whereas in the case of two of them a good deal of dried, white eel-grass had been used in construction, that containing two eggs was composed of little else. I do not remember ever finding this substance in the nest of *A. maritimus*. The eggs resemble those of *maritimus* but they average smaller and are less heavily marked, the contrast between the ground color and markings being more pronounced. In one set of three the markings are in the form of fine spots and scratches, abundant only toward the base, and a set of four

have distinct wreaths near the larger end: the others closely resemble in markings average eggs of the Seaside Sparrow. The average measurements of twenty eggs are .82 inches long by .61 broad, with extremes of .89 by .63 and .76 by .85.

Telmatodytes palustris marianæ. MARIAN'S MARSH
WREN.

Originally described from the west coast of Florida and believed to be resident there and restricted to that locality, it has only recently become evident that the real home of Marian's Wren is in the salt marshes that fringe the coast of North Carolina. There it is common in spring, breeds, and occasionally remains in winter, as I took one on Pea Island—thirty miles north of Hatteras—on Feb. 8, 1901, and found it tolerably common there in January, 1904. At the mouth of the Anclote River, Florida, where Mr. Scott discovered this bird, I found it fairly common in February and March, 1897, and singing, but could not find any nests anywhere on the marshes, nor did any bird taken give evidence of being about to breed. Mr. Meyer has not succeeded in finding this bird breeding there, nor has he sent me any skin taken after April 15.

The habits and song of Marian's Wren are practically those of the Long-billed Marsh Wren, but it is much more shy, keeping well out of sight in the reeds. I do not remember ever having seen one except as it took a short flight from one bunch of grass to another, although I have heard its song and its scolding notes very close to me.

Males that I took on Pea Island in May, 1902, showed that the breeding season was near, and I devoted what time I could to a search for their nests.

This was a rather difficult matter as there were not more than one or two birds to several acres of marsh, and these kept in the thickest part of the rushes. But I noticed that

each bird kept close to some particular spot in the marsh, soon returning there if frightened away, and on May 4 I found three fresh, but empty nests, in a region frequented by one bird, and at another spot a single incomplete nest. On May 6 I found four more fresh but empty nests near the first three, and have no doubt all were made by the same bird. No females were taken or seen during my stay, and as with *T. palustris* also I have found these nests before the females are present in any number, I am inclined to suspect they are built chiefly by the males.

These nests were similar to those of *T. palustris*, but smaller, unlined and less compact, and were situated about one foot from the ground against the stalks of the coarse cylindrical rushes. None of them contained eggs when I left on May 12, and I asked Mr. J. B. Etheridge, manager of the Pea Island Club, to watch them for me. On June 10 he wrote me "I found to-day a Marian's Marsh Wren's nest with two eggs in it. I send you the eggs and nest. . . . The nests that you found I have been watching, but the birds failed to lay." Unfortunately this nest and eggs arrived after I had gone to North Dakota, and the eggs are consequently unblown. On June 23, 1903, Mr. Etheridge collected for me two other nests of this subspecies containing four and five eggs. The set of five was advanced in incubation and as Mr. Etheridge wrote me the other nest had contained four eggs for several days, both may be considered full sets.

The three nests are similar to those of *T. palustris*, but slightly smaller, measuring about 6 inches in height by 4 in breadth, and are loosely woven of coarse grass and rushes and lined, in two instances, with a few feathers. The eggs are similar to those of the Long-billed Marsh Wren, having a ground tint of fawn-color, finely speckled with drab in the set of four, and coarsely spotted with Mars-brown and chocolate on the others, these markings in all becoming confluent toward the larger end.

The average measurements of the eleven eggs is .61 inches by .47 with extremes of .64 by .51 and .57 by 48.

***Hyllocichla ustulata almæ.* ALMA'S THRUSH.**

Although a common summer resident of the Upper Yukon, I failed in 1899 to find there a nest of Alma's Thrush with eggs. A nest with four just-hatched young which I found at Caribou Crossing on June 25, resembled that of *H. u. swainsonii*, and was situated eight feet from the ground in a thicket of young spruces. Many empty nests were noticed in similar situations at from six to ten feet from the ground.

The song of Alma's Thrush is to my ear vastly superior to that of the vaunted Hermit Thrush and closely resembles that of the Russet-backed and Olive-backed Thrushes. Like most of its family it is shy and retiring in its habits, frequenting tangled thickets and damp woodland from the mountains of southern British Columbia to the Arctic Circle. It is quiet during most of the day but its sweet song can be heard at all hours of the short, summer nights.

At Sicamous in the Cascade Mountains of British Columbia Dr. Jonathan Dwight, Jr., and I found this bird tolerably common in early July, 1903. A nest which it was my good fortune to find on July 3, securing both parents, was six feet from the ground in the central fork of a deciduous sapling in a thicket at the side of an overgrown cart-path on a wooded hillside. It contained four eggs advanced in incubation one of which was unfortunately broken. A nest on which the bird was sitting, found by Dr. Dwight on the following day, was about twenty feet up in the horizontal limb of a slender spruce growing not far from a path in a thick wood. We did not investigate the contents of this nest, mosquitoes making existence in its vicinity unendurable.

The nest taken is composed chiefly of fine moss mixed with a few dry leaves and grasses, and covered externally with

dry leaves, grass and weed-stalks; outside measurements are 3 inches in height by $5\frac{1}{2}$ in breadth, inside measurements $1\frac{1}{2}$ inches in depth by $2\frac{1}{2}$ in breadth. The three eggs closely resemble those of *H. ustulata*, with a pale Nile-blue ground color, rather heavily spotted with pale lavender, raw umber and mace-brown, their markings being most abundant toward the base. The measurements are .88 inches by .67, .89 by .68, and .86 by .67.

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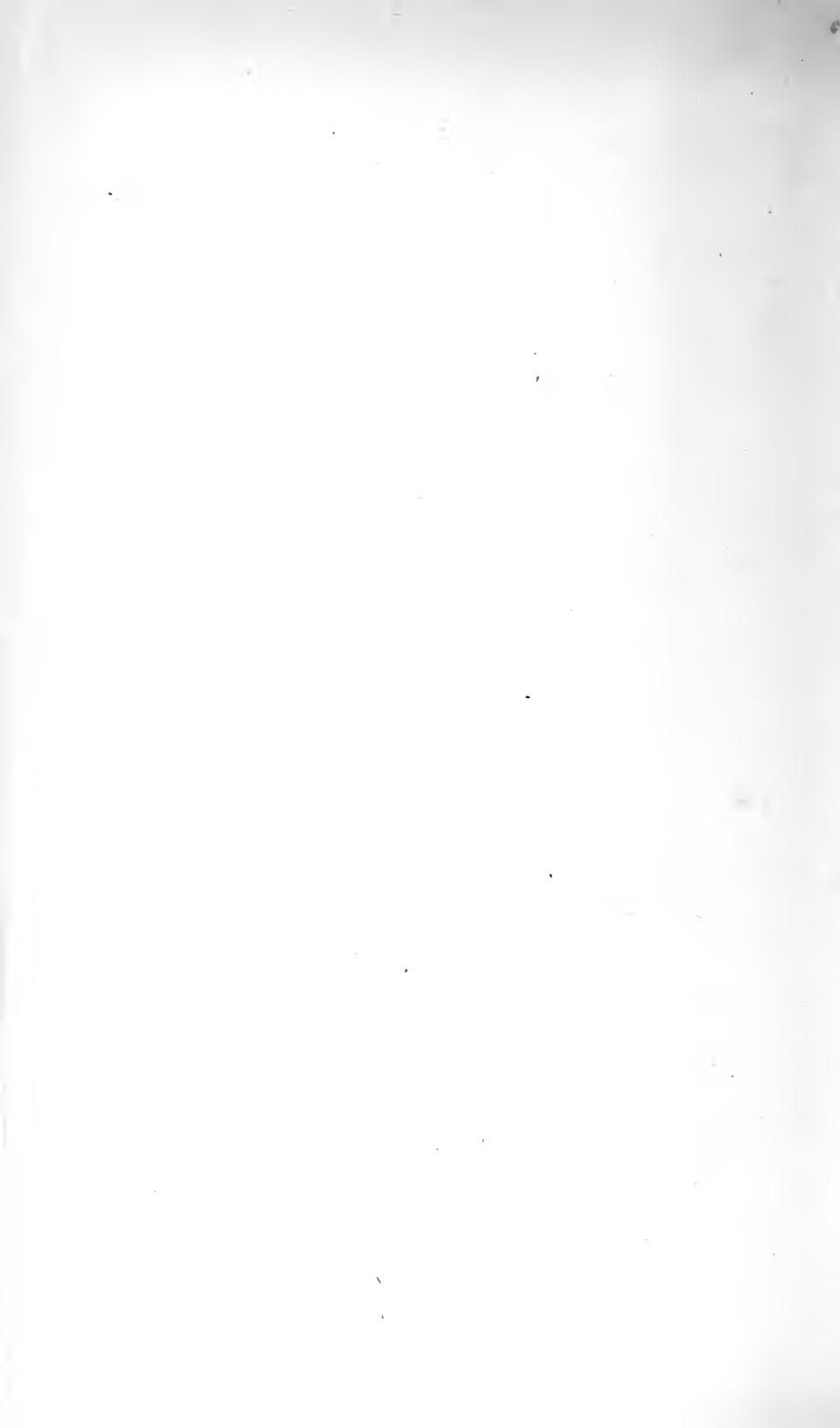
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No. 2, for the year ending March 7, 1890, 10 pages, 25 cents.

NOTES ON THE CAROLINA PAROQUET IN FLORIDA.
By **FRANK M. CHAPMAN.**

No. 3, for the year ending March 6, 1891, 11 pages, 25 cents.

No. 4, " " " " 2, 1892, 8 " 25 "

No. 5, " " " " 1, 1893, 41 " 50 "

MILICETE INDIAN NATURAL HISTORY. By **TAPPAN ADNEY.**

No. 6, for the year ending March 27, 1894, 103 pages, 75 cents.

RECENT PROGRESS IN THE STUDY OF NORTH AMERICAN MAMMALS.
By J. A. ALLEN.

A CONSIDERATION OF SOME ORNITHOLOGICAL LITERATURE WITH
EXTRACTS FROM CURRENT CRITICISM. By L. S. FOSTER.

No. 7, for the year ending March 26, 1895, 41 pages, 50 cents

NOTES ON CUBAN MAMMALS. By JUAN GUNDLACH.

SALAMANDERS FOUND IN THE VICINITY OF NEW YORK CITY, WITH
NOTES UPON EXTRA-LIMITAL OR ALLIED SPECIES.
By WM. L. SHERWOOD.

No. 8, for the year ending March 24, 1896, 27 pages, 50 cents.

THE SNAKES FOUND WITHIN FIFTY MILES OF NEW YORK CITY.
By RAYMOND L. DITMARS.

No. 9, for the year ending March 9, 1897, 56 pages, 50 cents.

THE FISHES OF THE FRESH AND BRACKISH WATERS IN THE VICINITY
OF NEW YORK CITY. By EUGENE SMITH.

No. 10, for the year ending March 8, 1898, 27 pages, 50 cents.

THE FROGS AND TOADS FOUND IN THE VICINITY OF NEW YORK
CITY. By WM. L. SHERWOOD.

No. 11, for the year ending March 14, 1899, 32 pages, 50 cents.

THE TURTLES AND LIZARDS OF THE VICINITY OF NEW YORK CITY.
By EUGENE SMITH.

No. 12, for the year ending March 13, 1900, 9 pages, 25 cents.

No. 13, " " " 12, 1901, } 70 " 50 "
No. 14, " " " 11, 1902, }

NOTES ON THE MAMMALS OF LONG ISLAND, N. Y. By ARTHUR H. HELME.

THE MAMMALS OF WESTCHESTER COUNTY, N. Y. By JOHN ROWLEY.

SOME FOOD BIRDS OF THE ESKIMOS OF NORTHWESTERN GREEN-
LAND. By J. D. FIGGINS.

No. 15, for the year ending March 10, 1903, }
No. 16, " " " 8, 1904, } 70 pages, 50 cents.

(See front cover for contents.)

All publications free to Members of the Society at the date of issue.

For any information concerning the publications, address the SECRETARY OF
THE LINNÆAN SOCIETY OF NEW YORK, care of American Museum of Natural
History, New York City.

1904-1907

Nos. 17-19

ABSTRACT

OF THE PROCEEDINGS OF THE

LINNÆAN SOCIETY

OF

NEW YORK

For the Year ending March 14, 1905

For the Year ending March 27, 1906

AND

For the Year ending March 12, 1907

CONTAINING

A List of the Birds of Long Island, N. Y.

By WILLIAM C. BRAISLIN, M. D.

Date of Issue, October 22, 1907

The Society meets on the second and fourth Tuesday evenings of each month at the American Museum of Natural History, 77th Street and 8th Avenue, New York City.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 14, 1905.

THIS is the seventeenth in the series of "Abstracts" published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society, but published elsewhere, are given by title only, with proper reference to place of publication.

April 12, 1904. The President in the chair. Eight members and fourteen visitors present.

The Auditing Committee reported that the Treasurer's accounts had been examined and found correct.

Dr. L. B. Bishop read a paper entitled "Further Notes on the Winter Birds of Pea Island, North Carolina." The paper dealt with a visit made by Dr. Bishop to Pea Island from Jan. 13 to Jan. 25, 1904, and supplemented a previous account presented by Dr. Bishop to the Linnæan Society on April 23, 1901, of a visit made in the winter of that year. In 1904 Dr. Bishop observed 52 species on the island and mainland immediately adjoining, as against 42 in 1901.

Dr. Bishop showed the Society the skin of a female domestic

Mallard which had acquired many of the characteristics of the male plumage. The bird was said to have been sixteen years old, and was still entirely healthy and fertile. He also exhibited the skin of a male Buffle-head (*Charitonetta albeola*) whose tongue had become caught in a rent in the bill, causing the bird to starve to death.

Mr. William Dutcher then spoke of the "Work of the National Committee on Bird Protection." His remarks were illustrated by lantern slides.

May 10, 1904.—The President in the chair. Eight members and eight visitors present.

The Secretary read a letter from Dr. H. C. Bumpus, Director of the American Museum, thanking the Society on behalf of the Museum for its gift of the L. S. Foster collection of birds.

Mr. C. G. Abbott presented the first paper of the evening entitled "Birds observed on Columbia University Campus." The list comprised forty-five species of common birds observed by the speaker during four years of academic work.

The paper was followed by remarks from several members on the subject of seeing birds in crowded sections of the city. Mr. Dutcher spoke of seeing Woodcock (*Philohela minor*) and Meadowlarks (*Sturnella magna*) from his house in Manhattan Avenue and Dr. Dwight recorded seeing a Woodcock at Fifth Avenue and 40th St., also a Quail (*Colinus virginianus*) and several of the small migrants in City Hall Park. He also mentioned the fact that a Woodcock had been seen this spring in front of the American Museum of Natural History. Mr. Bowdish told of seeing a Woodcock (*Philohela minor*) in Trinity Churchyard.

Mr. Dutcher exhibited an especially fine pair of Ivory-billed Woodpeckers (*Campephilus principalis*) recently secured from Florida.

Dr. Jonathan Dwight, Jr., presented the second paper of the evening entitled, "Some New York Birds and their Plum-

ages." As it was the height of the spring migration, he took the commoner warblers as his subject, and illustrated his remarks with a large series of skins of the species described.

Mr. S. H. Chubb read notes showing the progress of the migration in Central Park.

October 25, 1904.—The President in the Chair. Sixty-two members and visitors present.

The name of Rev. Walter E. Clifton Smith was proposed by Mr. S. H. Chubb for resident membership.

Mr. F. M. Chapman recorded seeing a Woodcock (*Philohela minor*) on October 24 flying rapidly south at a height of about sixty feet, at the foot of West 42nd Street, New York City.

Mr. F. M. Chapman lectured on "Florida Bird Life," with stereopticon views. Of especial interest was the fact that for some unknown reason the Brown Pelicans (*Pelecanus occidentalis*) did not return in 1904 to Pelican Island, Fla., their long-frequented nesting place, but settled in greatly reduced numbers upon two or three smaller neighboring islands. The chief object of Mr. Chapman's last visit to Florida was to determine as far as possible the present status of the Carolina Paroquet (*Conurus carolinensis*). He saw but two small flocks and found no nests. Of the Ivory-billed Woodpecker (*Campephilus principalis*) he did not even see one specimen.

November 8, 1904.—Meeting omitted on account of Election Day.

November 22, 1904.—The President in the chair. Eight members and twelve visitors present.

Rev. Walter E. Clifton Smith was elected a resident member of the Society.

The names of Miss Edith Fowler, Miss Roxy R. Greer, Mr. John T. Roberts, Jr., Mr. Max Heller, and Mr. Eugene Smith were proposed by the Secretary for resident membership.

Mr. S. H. Chubb reported seeing two Long-eared Owls (*Asio wilsonianus*) in Central Park on November 10.

Mr. Wm. Dutcher presented the paper of the evening, entitled, "Bird Protection Work of the National Association of Audubon Societies during the Season of 1904." It consisted of abstracts from the annual report prepared for presentation at the A. O. U. Congress. (Published in *Bird-Lore*, vol. vii, 1905, pp. 58-120). Mr. Dutcher reported that the Pelicans had just returned to nest on Pelican Island, which they had deserted the previous year. Their desertion, it was thought, was due to the size of a warning notice which had been placed on the island. The paper closed with an exhibition of lantern slides illustrating birds in protected colonies, and birds becoming extinct or requiring especial protection.

December 13, 1904.—The President in the chair. Thirty-five members and visitors present.

Miss Edith Fowler, Miss Roxy R. Greer, Mr. John T. Roberts, Jr., Mr. Max Heller and Mr. Eugene Smith were elected resident members of the Society.

Mr. B. S. Bowdish presented the paper of the evening, entitled, "Photography in Nature Study." It was illustrated by a large number of lantern slides from photographs by the author, taken partly in Puerto Rico, but chiefly close to New York City. Of especial interest was a photograph of a nest of the Black-throated Green Warbler (*Dendroica virens*) taken at Demarest, N. J., in a singularly low situation, the stem of a skunk cabbage.

December 27, 1904.—Mr. Wm. Dutcher in the chair. Forty members and visitors present.

The name of Mr. J. A. Weber was proposed by the Secretary for resident membership.

Mr. C. G. Abbott presented a paper entitled, "A Week with the Ospreys on Gardiner's Island." The visit described extended from July 4 to 11, 1903. Admirable protection is extended by the owner of the island to the large colony of Ospreys (*Pandion haliaetus carolinensis*) which annually nest there, with the result that some of the birds place their nests

actually upon the ground. The speaker exhibited a series of lantern slides representing the Ospreys and their young and nests. Other bird-inhabitants of the island were also pictured, such as Spotted Sandpiper, Piping Plover, Pheasant, Wilson's Tern, etc. The preliminary part of the paper dealt with a short visit to Montauk Point prior to the Gardiner's Island trip.

January 10, 1905.—The President in the Chair. Twenty members and visitors present.

Mr. J. A. Weber was elected a resident member of the Society.

Dr. Dwight reported Dovekies (*Alle alle*) recently driven ashore on Long Island in numbers. Mr. S. H. Chubb reported seeing a Black-backed Gull (*Larus marinus*) in New York Harbor on January 2.

Dr. Jonathan Dwight, Jr., presented "The Gulls of New York and their Plumages" (Published in part in *Auk*, xxiii, 1906, pp. 26-43, col. pl.).

January 24, 1905.—The President in the chair. Sixteen members and visitors present.

Dr. Dwight reported the continued occurrence of Dovekies on the Long Island coast, three having been sent to him from there since the last meeting. He said that the birds were in a very emaciated condition, which applied also to many of the ducks which had recently come into his hands.

Dr. Robert T. Morris reported large numbers of American Coots (*Fulica americana*) observed by him at the eastern end of Long Island last November. At least one thousand were seen on Great Pond alone, which was considered no unusual number by the inhabitants of the region.

Dr. Jonathan Dwight, Jr., presented a paper entitled "Some of the Rare Birds of New York State." He divided his subject into purely accidental visitors, stragglers from the north, and stragglers from the south. He described some thirty species, of which skins were shown, and in some cases commoner birds with which they might be confused were compared and the distinguishing features pointed out.

February 14, 1905.—The President in the chair. Eight members and three visitors present.

The Secretary read a letter from Mr. J. de Lagerberg, presenting to the Society a photograph of the home of Linnæus in Hammarby, Sweden, with some pressed flowers picked at that place. The Secretary was instructed to express to the donor the thanks of the Society.

The name of Mr. John T. Nichols was proposed by the Secretary for active membership in the Society.

Mr. Walter Granger presented a paper on "Fossil-collecting in the Western Bad-Lands." He described his experiences in connection with various expeditions from the Museum of Natural History and showed by lantern slides how the remains of prehistoric animals are found, excavated and transported. The subject was especially pertinent seeing that the Brontosaurus skeleton had just been placed on exhibition in the Museum, with the discovery and mounting of which Mr. Granger had been closely identified.

February 28, 1905.—The President in the chair. Twenty-eight members and visitors present.

Mr. John T. Nichols was elected a resident member of the Society.

Mr. S. H. Chubb reported the abundance of the Tufted Titmouse (*Bæolophus bicolor*) on Staten Island, and spoke of its habit of storing superfluous food in crannies like the Chickadee.

Mr. C. G. Abbott reported seeing 18 species of birds at Rockaway Beach on February 22, among them Canada Goose (*Branta canadensis*), Bonaparte's Gull (*Larus philadelphia*) and Ipswich Sparrow (*Passerculus princeps*). Also a dead Red-legged Black Duck (*Anas obscura rubripes*), probably killed by a Duck Hawk (*Falco peregrinus anatum*). He also reported seeing a Long-eared Owl (*Asio wilsonianus*) in Central Park on February 19, and a Rough-legged Hawk (*Archibuteo lagopus sancti-johannis*) at the Overpeck Creek, near

Leonia, N. J., on February 26. At the same place a Black-backed Gull (*Larus marinus*) was seen, although it was some distance from open water.

Dr. Dwight reported skinning a Horned Grebe (*Colymbus auritus*) which was in an emaciated condition and of which the stomach contained nothing but a number of the small india rubber bands usually found on desks.

Mr. B. S. Bowdish reported that a Brown Thrasher (*Toxostoma rufum*) had been spending the winter in Morningside Park, the statement being confirmed by Mr. J. T. Roberts, who added that the bird gave no evidence in its plumage of having escaped from captivity.

Several members then spoke of the Towhee (*Pipilo erythrophthalmus*) which until the blizzard of February 9 was to be seen daily in the north end of Central Park.

Mr. R. E. Stackpole reported the return on February 26 of the male European Chaffinch (*Fringilla caelebs*) to the spot in Central Park which has been favored by apparently the same bird for the past two years.

The paper of the evening was by Mr. Frank Edgar Johnson and was entitled "Observations on Prince Edward Island Bird Life." A complete list of the birds seen was given, with supplementary observations. A series of lantern slides showed the appearance of the country and illustrated the home-life of many of its bird inhabitants.

March 14, 1905.—Annual Meeting. The President in the chair. Twenty-nine members and visitors present.

The Secretary read letters of resignation from several members and named others whom it had been found necessary to drop from the rolls of the Society on account of arrears in dues.

The Treasurer read his annual report, showing on hand a balance of \$1036.85.

Mr. Wm. Dutcher and Dr. J. A. Allen were appointed by the President as a committee to audit this report.

The Secretary read his annual report, which was as follows:

The Society has held during the past year eleven meetings. The first meeting of November was omitted owing to its falling on Election Day, and in four other months one of the meetings was suspended by vote of the Society.

The total attendance has been 275 members and visitors, making an average attendance at each meeting of 25 persons. Of these about one half have been members. The largest number present at any one meeting was 62. All of the figures for attendance show an increase over the last few years. In no case was there a failure to secure a quorum.

Nine members have been elected during the past year, ten have resigned, ten have been dropped, and three — Messrs. Samuel P. Avery, S. H. Robbins, and Robert R. Willets — have been lost by death.

The membership roll now stands: Resident, 96; Corresponding, 31; Honorary, 2 — a total of 129.

Twelve papers have been presented before the Society during the year, mostly upon ornithological subjects. Of these five were illustrated by lantern slides.

"Abstract of Proceedings, No. 15-16," for the years ending March 10, 1903 and March 8, 1904, was issued under one cover and distributed among the members and exchanges. The abstract contained "Field Notes on the Birds and Mammals of the Cooke's Inlet Region of Alaska," by J. D. Figgins; "Some Notes on the Psychology of Birds," by C. William Beebe; and "Some apparently undescribed Eggs of North American Birds," by Louis B. Bishop.

The usual exchange publications have been added to the Library of the Society.

The election of officers for the ensuing year resulted in the re-election of the present incumbents in office, namely:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, Walter W. Granger.

SECRETARY, Clinton G. Abbott.

TREASURER, Lewis B. Woodruff.

The President reappointed the following standing committees for the ensuing year.

Publication, J. A. Allen, F. M. Chapman, and L. B. Woodruff.

Finance, W. Dutcher, H. C. Bumpus, and L. B. Woodruff.

Nominations, W. W. Granger, Wm. Dutcher, and C. G. Abbott.

Papers, W. W. Granger, F. M. Chapman and C. G. Abbott.

The work of the Committee on Lectures, should any arise, was vested in the Committee on Papers.

Under observations, Mr. C. G. Abbott reported seeing in Central Park on March 5 a flock of Snow Buntings (*Passerina nivalis*), which remained there for several days.

Dr. L. B. Bishop reported the taking of a Short-eared Owl (*Asio accipitrinus*) at New Haven, Conn., in the middle of February. He also recorded the capture at Danbury, Conn., of a Holboëll's Grebe (*Colymbus holboëlli*), which had its bill incased in a solid ball of ice and was starving to death. The bird lived for a few days in captivity and then died.

Mr. Wm. Dutcher described a recent trip he had made to the South, including a visit to Pelican Island on Feb. 5, 6 and 7, where everything was found to be in a prosperous condition. He was successful in prosecuting a man who was shooting Ivory-billed Woodpeckers (*Campephilus principalis*). Pileated Woodpeckers (*Ceophlæus pileatus*) he found to be common. He remarked on enormous flocks of Robins (*Merula migratoria*) seen and stated that of the many gulls observed on the sea coast a large proportion were immature Herring Gulls (*Larus argentatus*). In his opinion the younger birds travel further south in the winter than the adults, which accounts for their comparative scarcity in the latitude of New York.

Mr. Dutcher also exhibited to the Society a number of interesting relics collected by him from an Indian shell-heap at Sebastian, Fla.

Dr. Louis B. Bishop presented two papers to the Society. The first was entitled "The Direction of Flight in the Fall Migration at New Haven." (Published Auk, xxii, 1905, pp. 372-378.) The second was entitled "Notes from Connecticut," and consisted of extracts from the complete list which Dr. Bishop is preparing of the birds of Connecticut. A number of the more unusual species were discussed. Of especial interest was the fact that Passenger Pigeons (*Ectopistes migratorius*) have been observed in Connecticut as recently as 1902.

At the close of Dr. Bishop's papers, Dr. Dwight exhibited to the Society a collection of original bird and animal sketches by Allan Brooks.

ABSTRACT

OF THE PROCEEDINGS OF THE

LINNÆAN SOCIETY

OF

NEW YORK,

FOR THE YEAR ENDING MARCH 27, 1906.

THIS is the eighteenth in the series of "Abstracts" published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society, but published elsewhere, are given by title only, with proper reference to place of publication.

March 28, 1905.—The President in the Chair. Thirty-five members and visitors present.

Mr. Dutcher reported great flocks of Robins, Bluebirds and Meadowlarks, also ten Canada Geese, recently observed in Michigan.

Dr. Dwight reported the Chipping Sparrow (*Spizella socialis*) observed by Mr. W. De W. Miller at Plainfield, on March 26.

The paper of the evening was by Mr. Barnum Brown, entitled "Travels in Patagonia." Mr. Brown was a member of the expedition sent out to this region by the American Museum of Natural History in conjunction with Princeton University in 1898. Lantern slides, showing views of the country, the people, and the animal life were shown. It was learned that

consumption is now making great ravages among the Patagonian Indians and that in comparatively few years the race is certain to be extinct.

April 11, 1905.—The President in the chair. Ninety-two members and visitors present.

The Auditing Committee reported that the Treasurer's accounts had been examined and found correct.

Mr. C. G. Abbott presented a paper entitled "A Bird-Lover in the Scottish Highlands." It treated of a three weeks vacation in the northern part of Scotland, the Orkney and the Shetland Islands, taken during the summer of 1902. About one hundred lantern slides were exhibited, mostly illustrating the bird-life of the region. Several of the slides showed something of the great seabird colony on the island of Handa, off the coast of Sutherland.

April 25, 1905.—The Vice-President in the chair. Seventy-two members and visitors present.

The name of Mr. Maunsell S. Crosby of New York City was proposed by the Secretary for resident membership.

Mr. C. G. Abbott recorded finding in Central Park the nest of a Cardinal (*Cardinalis cardinalis*) on April 23 with young already hatched.

The first paper of the evening was by Mr. C. William Beebe, entitled "A Naturalist's Camping Trip in Old Mexico." Many valuable observations and interesting anecdotes were recorded, and a number of photographs and bird-skins were exhibited. (The material has since been incorporated in Mr. Beebe's published volume, "Two Bird-Lovers in Mexico.")

The second part of the evening's programme was an exhibition of lantern slides by Mr. Wm. Dutcher. Among them were some new views of the Pelican colony on Pelican Island, Indian River, Fla., made by Mr. Dutcher during a recent visit, also pictures of Scaup Ducks which with protection become wonderfully tame at Tampa.

May 9, 1905.—The President in the chair. Seventy mem-

bers and visitors present. Mr. Maunsell S. Crosby was elected a resident member of the Society.

Mr. Frank M. Chapman presented "A Contribution to the Life History of the Flamingo," illustrated with lantern slides (Published, "Country Life in America," vol. 8, 1905, pp. 41 ff.)

May 23, 1905.—The President in the chair. Twenty-three members and visitors present.

The Secretary read a letter from Mr. J. de Lagerberg which contained a clipping from a Swedish newspaper and its translation by the writer to the effect that, following the custom of placing commemorative tablets upon the trunks of the great trees of the Yosemite Valley, an appropriate tablet in memory of Linnæus had recently been fastened to a tree 350 feet tall.

Mr. C. G. Abbott presented a paper entitled "The Birds of an Orchard." Lantern slides were exhibited showing birds or nests of about twenty species, all of which had been found by the speaker nesting in one orchard.

October 10, 1905.—The President in the chair. Five members and four visitors present.

The names of Mr. and Mrs. Browne H. Lewis of Edgewater, N. J., and Dr. Elton Perry of New York City, were proposed for resident membership.

It was voted to suspend the first meeting in November because the dinner of the A. O. U. Congress falls upon the same date. The matter of the Society's providing luncheon for the delegates to the Congress was discussed.

Mr. B. S. Bowdish told of his experiences during the past summer in photographing birds about his home in Demarest, N. J., particularly Blue-winged (*Helminthophila pinus*) and Hooded Warblers (*Wilsonia mitrata*).

Mr. S. H. Chubb recorded a great migratory movement of Hawks — probably Broad-winged (*Buteo platypterus*), observed by him from the Museum on September 23. One flock of the birds seemed to form almost a compact mass, in which Mr. Chubb estimated that there were as many as one

thousand individuals. He also described a roost of Chimney Swifts (*Chætura pelagica*) in the chimney of a church at 153rd Street. He had observed that the hour at which the birds came forth and retired was influenced largely by the weather.

Dr. Dwight gave some account of the experiences of the delegates to the Fourth International Ornithological Congress held in London, England, in June, 1905.

Dr. Perry spoke of Texas bird-life, and Mr. Abbott recorded the continued presence of the Bartramian Sandpiper (*Bartramia longicauda*) as a nesting species at Montauk Point, L. I., where he had found it during the past summer.

October 24, 1905.—The President in the chair. Forty members and visitors present.

Mr. and Mr. Browne H. Lewis and Dr. Elton Perry were elected to resident membership.

Mr. B. S. Bowdish, Secretary of the West Side Natural History Society, reported that that Society had courteously arranged its meetings to fall in alternate weeks with those of the Linnæan Society, instead of in the same week as heretofore.

Mr. Wm. Dutcher, President of the National Association of Audubon Societies, extended a cordial invitation to all present to attend the exercises of the Audubon Societies' Convention in the Museum on October 31.

Dr. Robert T. Morris told of a canoe trip he had made during the past summer to the southwest part of Hudson's Bay, Canada. Here an eight foot fall in the tide exposes miles of clay flats and attracts innumerable Limicolæ, thousands of which breed along the shores. At the time of his visit, however, (August 1) all young had hatched, so no nests were actually found.

Dr. E. B. Southwick presented the paper of the evening, entitled "Some Winter Tales." A large series of lantern slides was shown, illustrating landscapes and animal life and the effect upon them of the season of frost and snow.

November 28, 1905.—The President in the chair. Thirty-nine members and visitors present.

Mr. Dutcher told of a visit to Moriches, L. I., on Nov. 17. He reported that ducks were more numerous in Great South Bay than ever before in his experience, owing, he thought, to the abolition of Spring shooting. He said he saw "great beds" of Bluebills, 2,000 Redheads, two flocks of Canvasbacks, and 2,000 American Coots.

Mr. J. A. Weber exhibited a skin of Townsend's Solitaire (*Myadestes townsendii*) taken by him at King's Park, L. I., on November 25. Being found so far from its natural habitat, it was suggested that the bird might have been an escaped cage-bird. But Mr. Weber said that the bird gave no evidence in actions or in plumage of recent captivity. Furthermore Mr. Dutcher stated that Townsend's Solitaire is a bird seldom caged. (Recorded by Dwight, Auk, xxiii, 1906, p. 105.) Mr. Weber also reported a flock of 50-75 Snowflakes (*Passerina nivalis*) observed at King's Park on the same afternoon.

Mr. William L. Finley presented "Oregon Bird Studies." About ninety colored lantern slides were shown illustrating incidents in the development of many bird-families from the egg to the full-grown bird. A number of the pictures represented the birds in striking or unusual poses, a thing for which Mr. Finley's photographs have become famous.

December 12, 1905.—The President in the chair. Seventeen members and visitors present.

A letter was read from the Secretary of the American Ornithologist's Union, thanking the Linnæan Society for its hospitality during the 23rd Congress.

Dr. Dwight reported the receipt of a Snowy Owl (*Nyctea nyctea*) from Amagansett, L. I., this being the third bird of this species to be received by him from Long Island this winter. From remarks by members it was gathered that Owls of all sorts are unusually common this winter.

Mr. Geo. E. Hix reported that on December 2 he saw thirteen Green-winged Teal (*Nettion carolinensis*) descend to a pool in Palisade Park, N. J., where they evidently spent the night.

Mr. C. G. Abbott presented a paper, entitled "The Snipe's Love-Song." He explained the result of certain experiments made by Mr. P. H. Bahr of England, by which it was determined that the "bleating" of Snipe in the nesting season was produced almost exclusively by the two outer rectrices. In support of this theory Mr. Abbott found it possible to produce a loud "bleat" by pinning a Snipe's (*Gallinago caelestis*) outer tail-feathers to a piece of wood and passing them rapidly through the air by means of a string. Tail-feathers from many closely allied forms and similarly formed feathers from the wings of Snipe failed to produce any such sound. Sketches by Mr. Bahr showing the position of the tail in the living bird at the moment of the "bleat" were shown.

A series of lantern slides was then exhibited showing something of the home life and habitat of the Snipe, and also of some of its near neighbors and relatives.

December 26, 1905.—The President in the chair. Nine members and visitors present.

Mr. Chas. E. Rogers said that Starlings (*Sturnus vulgaris*) had extended their range as far as Princeton, N. J. Mr. E. S. Woodruff recorded them from New Haven, Conn.

Mr. J. A. Weber told of finding a Starling's nest containing ten eggs last summer. It was not known whether this number represented the laying of more than one bird.

Mr. Walter Granger believed that some of the first nests of this species in America were made in the Museum Building, where he examined them in the spring of 1891 or 1892.

Mr. Geo. E. Hix reported three American Rough-legged Hawks (*Archibuteo lagopus sancti-johannis*) observed at Leonia, N. J., on December 17; also Myrtle Warblers (*Dendroica coronata*) at Rockaway Beach, N. Y., on December 24.

Mr. Rogers stated that European Goldfinches (*Carduelis carduelis*) were decreasing in numbers in Central Park, due it was believed to trappers. Mr. Woodruff recalled finding a European Goldfinch's nest in the same tree two successive years in Central Park some time ago.

Dr. Jonathan Dwight presented "Some Interesting Plumages of North American Birds." He discussed the plumages of common birds that were not very well known, such as immature or transition plumages. He also compared the plumages of different birds that might be confounded, illustrating his remarks with a series of skins.

January 9, 1906.—The President in the chair. Six members present.

Dr. Dwight reported visiting Rockaway Beach on January 4 together with Mr. E. S. Woodruff. Five Ipswich Sparrows (*Passerculus princeps*) were seen — three of which were collected. Robin (*Merula migratoria*), Myrtle Warbler (*Dendroica coronata*), Tree Sparrow (*Spizella monticola*) and Snowflake (*Passerina nivalis*) were the only other land birds observed.

Mr. C. G. Abbott reported seeing a Northern Shrike (*Lanius borealis*) in Prospect Park, Brooklyn, on January 7.

Mr. B. S. Bowdish spoke of the continued abundance of Myrtle Warblers this winter at his home in Demarest, N. J. Their presence, it was thought, was due to the mildness of the winter. Another evidence was the unusual abundance of Meadowlarks (*Sturnella magna*), as attested by the observations of Messrs. Bowdish, Weber and Abbott.

January 23, 1906.—The President in the chair. Eighteen members and visitors present.

The Committee on Papers reported that the following course of public lectures had been arranged, to be delivered, through the courtesy of the American Museum authorities, in the large lecture hall. All would be illustrated by stereopticon views.

February 21.—"The Tortugas Marine Laboratory of the Carnegie Institution; its Aims and Problems." By Alfred G. Mayer, Director of the Laboratory.

March 7.—"New Zealand Bird Life." By Edgar F. Stead of Christchurch, New Zealand.

March 14.—"A Naturalist's Camping Trip to Hudson's Bay." By Robert T. Morris, M. D., of New York City.

March 21.—"Bird Hunting with a Camera." By Clinton G. Abbott, of New York City.

Dr. E. A. Chapman told something of the bird-life of Jamaica, W. I., where he had just been making a short visit.

Mr. B. S. Bowdish presented the paper of the evening, entitled "Birds' Bills," with lantern slide illustrations. (Published in "Am. Homes and Gardens", vol. iii, 1906, pp. 33-37).

February 13, 1906.—The President in the chair. Twelve members and visitors present.

A letter was read from Dr. N. L. Britton, offering a proposition to the scientific societies composing the Scientific Alliance to affiliate with the New York Academy of Sciences, as chapters of that Society, while not surrendering their own identity. After some discussion the matter was laid upon the table.

As the date of the annual meeting of the Linnæan Society in March occurs on the evening previous to one of the special lectures, it was voted to omit the meeting of that date, holding the annual meeting on the next regular date for a meeting.

Mr. Dutcher presented the two following Preambles and Resolutions, relative to the protection of animal life in Government Reservations and in the District of Columbia, which were passed by the Society and ordered sent to the proper authorities by the Secretary.

(1) WHEREAS: President Theodore Roosevelt has, at the request of the National Association of Audubon Societies, set aside certain islands as public reservations and wild bird refuges, and,

WHEREAS: There are no Federal laws in force at the present time to prevent hunting and eggging on said reservations, and,

WHEREAS: State laws do not apply to such territory, the same being Federal lands;

Therefore be it,

RESOLVED: That the Linnæan Society of the City and State of New York heartily approves of and indorses Senate Bill No. 2966, introduced by Senator Perkins, which is entitled "A Bill for the Protection of Animals, Birds and Fish in the Forest Reserves, and for other purposes," and the Linnæan Society earnestly urges the Senators and Representatives in Congress from the State of New York to give favorable action on said bill, the said bill being a necessary and vitally important economic measure.

RESOLVED: That these resolutions be entered upon the minutes of this

Society, and that a certified copy of the same be sent to each of the Senators and Representatives in Congress from the State of New York.

(2) WHEREAS: Senator Gallinger has introduced in the United States Senate a bill (No. 3602). "To prohibit the killing of wild birds and animals in the District of Columbia," and the Hon. Joseph W. Babcock, has introduced an identical (No. 13193) in the House of Representatives, and,

WHEREAS: If these bills become a law it will practically make a Reservation of the District of Columbia, and,

WHEREAS: All Natural History Societies are in favor of wild bird and animal refuges,

Therefore be it,

RESOLVED: That the Linnæan Society of the City and State of New York respectfully urges upon the Senators and Representatives in Congress from the State of New York to give favorable action on the said bills, in the interest of wild bird and animal protection.

The Secretary read a letter from Mr. J. de Lagerberg of Passaic, N. J., kindly offering to present to the Society two silver medals of Linnæus, namely a small one struck by Count Carl Gustaf Tessin (the architect of the Royal Palace at Stockholm, Sweden) as a token of personal esteem; and a large one struck by command of King Gustavus III at the death of Linnæus on November 10, 1778, in memory of the loss sustained both by Sweden and the scientific world in general.

The President exhibited the medals, and a motion prevailed that a vote of thanks be offered to the donor for the generous and appropriate gift, and that the Secretary formally communicate the same to him. Mr. de Lagerberg was present and spoke a few words of acknowledgment.

Mr. Dutcher read a list of 47 species of birds observed by Mrs. Pillsbury at Passage Key Reservation, during the month of January, 1906.

The paper of the evening, entitled, "A Winter's Walk," by Mr. Eugene Smith, described the pleasures that can be derived by a Nature lover from a ramble at this season of the year, and abounded in interesting observations.

February 27, 1906.—The Vice-President in the chair. Five members and seven visitors present.

The paper of the evening, entitled "The Birds of Prospect

Park, Brooklyn," by Wm. C. Braislin, M. D., was read, in the absence of the author, by Mr. Walter Granger.

One hundred species were recorded as having been observed in the park by the author, and a brief description of the occurrence, characteristics and habits of each was given.

March 13, 1906.— Meeting omitted by vote of the Society on February 13.

March 27, 1906.— Annual meeting. The President in the chair. Seven members present.

The name of Mr. Harrison Sanford as proposed by Mr. L. B. Woodruff for resident membership.

The subject of the proposed affiliation of the Linnæan Society with the New York Academy of Sciences as a chapter, laid on the table at the meeting of February 13, was brought up and discussed at length. Upon motion duly carried, Dr. Dwight and Mr. Dutcher were then appointed a committee to have the matter under consideration and to be present at a meeting of the Council of the Scientific Alliance to be held in April for the consideration of this topic.

The Treasurer's annual report was presented and showed a balance on hand of \$1056.33.

Dr. J. A. Allen and Mr. Wm. Dutcher were appointed by the Chair a committee to audit this report.

The Secretary read his annual report, as follows:—

"The Society has held during the past year fifteen meetings, the only meetings omitted being the first in November which would have occurred during the A. O. U. Congress in New York, and the first in March which was suspended on account of the Society's Public Lecture Course which was then in progress.

The total attendance has been 484 members and visitors making an average attendance at each meeting of 32 persons. Of these about one half have been members.

The largest number present at any one meeting was 92. The figures for attendance show a notable increase over previous years, which is especially encouraging in view of the fact that many of the meetings have fallen upon inclement nights.

Sixteen papers have been presented before the Society during the year,

of which eight were illustrated by lantern slides. The topics have been chiefly ornithological, although general natural history and travel have been included.

In addition to the regular meetings, the Society, arranged a course of four public lectures, which were delivered in the large lecture hall of the Museum, as follows:

February 21, 1906.—The Tortugas Marine Laboratory of the Carnegie Institution; Its Aims and Problems. By Alfred G. Mayer, Director of the Laboratory.

March 7.—New Zealand Bird-Life. By Edgar F. Stead, of Christchurch, New Zealand.

March 14.—A Naturalist's Camping Trip to Hudson Bay. By Robert T. Morris, M. D., of New York City.

March 21.—Bird-Hunting with a Camera. By Clinton G. Abbott, of New York City.

The lectures were well attended.

The Society has issued no publications during the year.

Four persons have been elected to resident membership in the Society during the past year. There have been no deaths, nor resignations of members, nor has it been found necessary to drop any names from the roll for arrears in dues.

The Membership Roll now stands: Resident, 100; Corresponding, 31; Honorary, 2; a total of 133.

Exchange publications to the number of about 250 have been added to the Library of the Society."

The annual election of officers followed, which resulted in the present incumbents of the various offices being re-elected, as follows:

PRESIDENT, Dr. Jonathan Dwight, Jr.

VICE-PRESIDENT, Mr. Walter W. Granger.

SECRETARY, Mr. Clinton G. Abbott.

TREASURER, Mr. Lewis B. Woodruff.

The Chair re-appointed the following standing committees for the ensuing year:

Publication, J. A. Allen; F. M. Chapman; C. G. Abbott.

Finance, Wm. Dutcher; H. C. Bumpus; L. B. Woodruff.

Nominations, Walter Granger; Wm. Dutcher; C. G. Abbott.

Papers and Lectures, Walter Granger; F. M. Chapman; C. G. Abbott.

Two papers were presented by Dr. L. B. Bishop, the first

being entitled, "Notes on the Winter Birds of Pea Island, N. C.—Season 1906." Dr. Bishop's last visit to Pea Island was Dec. 31—Jan. 11, and his observations at this time formed an interesting basis of comparison with the two previous papers he has presented to the Linnæan Society on the birds of Pea Island.

The second paper was entitled "Notes on the Breeding Birds of Turtle Mountain, North Dakota." Dr. Bishop has visited this region four times, besides having correspondents in the field. Especially interesting was the comparison of the birds of the "mountains"—which are in reality only low rounded hills—and the adjoining prairie. Although there is no difference in temperature in the two regions, practically no difference in altitude, and although both have woods, of the 144 nesting species only 54 are common to both regions, while 25 are peculiar to the "mountains" and 65 to the prairie.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 12, 1907.

THIS is the nineteenth in the series of "Abstracts" published by the Linnæan Society of New York, and, like the preceding issues is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society, but published elsewhere, are given by title only, with proper reference to place of publication.

April 10, 1906.—Mr. William Dutcher in the chair. Eight members and visitors present. Mr. Harrison Sanford was elected a resident member of the Society.

Mr. C. G. Abbott reported seeing a Woodcock (*Philohela minor*) flying in West Seventy-third Street on April 10.

Mr. B. S. Bowdish reported capturing an emaciated Woodcock near Demarest, N. J., on March 17. He tried to feed it, but it died next day. He also reported flushing a Red-shouldered Hawk (*Buteo lineatus*) from its nest near Demarest on April 3, where it evidently already had eggs.

Mr. Wm. Dutcher, who had just returned from a visit to Atlantic City, N. J., described large flocks of Scoters and Red-breasted Mergansers (*Merganser serrator*) observed. He said that gunners were creating much havoc among these birds.

Great migratory movements of immature Herring Gulls (*Larus argentatus*) were also observed.

The paper of the evening, entitled "The Traffic in Foreign Game-Birds," was by Mr. Wm. Dutcher. By means of mounted skins and birds preserved in alcohol, he pointed out the impossibility of detecting American game-birds if mixed with a consignment of the foreign. He therefore opposed all legislation tending to favor the sale of foreign game in this country as likely to result disastrously for American game-birds.

Remarks followed from Mr. Wm. L. Sherwood.

April 24, 1906.— The President in the chair. Five members present.

The Auditing Committee reported that the Treasurer's accounts had been examined and found correct.

There was considerable discussion on the matter of the proposed affiliation of the Linnaean Society with the New York Academy of Sciences. It was finally moved and carried that the Secretary have copies of the proposition sent to each member of the Society and the matter be finally voted upon at the next meeting.

Dr. Jonathan Dwight, Jr., presented "The Distribution and Forms of the Juncos in North America." He exhibited an unusually fine series of skins, and by map and blackboard illustration pointed out the distribution of the various forms. He showed that intergradations could be traced between very diverse variations.

May 8, 1906.— The President in the chair. Nine members present.

Mr. Walter Granger proposed the name of D. D. Streeter for resident membership.

Mr. C. G. Abbott reported seeing a White-crowned Sparrow (*Zonotrichia leucophrys*) in Central Park on May 6.

Mr. Dutcher told of the establishment of a close season on the Heath Hen (*Tympanuchus cupido*) of Martha's Vineyard until 1911. He also reported the defeat of three bills opposed

to the best interest of bird-protection in New Jersey, and two in New York State.

The proposed affiliation of the Linnæan Society with the New York Academy of Sciences was discussed at length. A motion finally prevailed that the Society favored affiliation as set forth in the circular letter of the Academy, and the Secretary was instructed to communicate the decision to the Secretary of the Academy.

Remarks followed from Mr. S. Nicholson Kane.

October 23, 1906.—The President in the chair. Ninety-five members and visitors present.

Mr. D. D. Streeter was elected a resident member of the Society.

The name of Mr. Warren C. Tudbury was proposed by the Secretary for resident membership.

Mr. Frank M. Chapman and Mr. C. G. Abbott remarked upon the numbers of Black Terns (*Hydrochelidon nigra surinamensis*) which were to be seen in New York Harbor and surrounding waters during the end of August and September. Practically all were in the immature or winter plumage.

The paper of the evening, by Mr. Frank M. Chapman, was entitled "An Ornithological Reconnaissance in the West." It described the speaker's extended Western travels during the past summer and was illustrated by lantern slides. One of the results of the expedition was the securing of material for several new bird groups in the American Museum.

November 13, 1906.—Meeting omitted owing to conflict of dates with the A. O. U. Congress in Washington.

November 27, 1906.—The President in the chair. Eighty-three members and visitors present.

Mr. Warren C. Tudbury was elected a resident member of the Society.

The names of Mr. Isaac Bildersee and Mr. Frank Walters were proposed by the Secretary for resident membership.

Mr. Dutcher reported seeing a young Common Tern (*Sterna*

hirundo) last summer still too young to fly well on one of the islands of the Fire Island group. The bird had undoubtedly been raised on that beach and is the first record for many years of this bird's nesting on the south shore of Long Island.

Mr. Dutcher also reported a remarkable migratory flight of Red-breasted Nuthatches (*Sitta canadensis*) observed at Great Island, off the south shore of Long Island, which lasted for three days — September 23, 24 and 25.

Mr. B. S. Bowdish said he had found Red-breasted Nuthatches very numerous at Stone Harbor, New Jersey, on September 25.

Mr. William L. Finley, of Portland, Oregon, then presented "An Ornithologist's Cruise on the Lakes of Southern Oregon." An admirable series of lantern slides, which illustrated the paper, conveyed a vivid picture of the myriads of water birds which nest in the tulé lakes of the Klamath River region.

December 11, 1906.—The President in the chair. Seventeen members and visitors present.

Mr. Isaac Bildersee and Mr. Frank Walters were elected to resident membership in the Society.

Dr. Jonathan Dwight was elected to represent the Linnæan Society on the Council of the New York Academy of Sciences.

Mr. Dutcher reported that on December 1 there were on Pelican Island, Indian River, Florida, one thousand nests containing eggs.

He also reported seeing six Pine Siskins (*Spinus pinus*) on September 5 on the south shore of Long Island, eight miles east of Fire Island.

He further informed the Society that on September 25 Scaup Ducks began to arrive at Great South Bay in big flocks, but previous to that date only one bird had been observed.

Dr. Dwight reported the receipt of a European Widgeon (*Anas penelope*) taken on December 3 in Peconic Bay, Long Island.

The Secretary read a letter from Mr. J. de Lagerberg of

Passaic, N. J., telling of some of the preparations being made in Sweden to celebrate the two hundredth anniversary of the birth of Linnæus, which occurs on May 23, 1907. It was agreed that the Society should observe the occasion in a suitable manner.

Mr. H. H. Hann then presented a paper entitled "Some Interesting Marsh Birds found nesting in the Hackensack Meadows during the Summer of 1906." The paper included records of nests of Pied-billed Grebe (*Podilymbus podiceps*) and Florida Gallinule (*Gallinula galeata*) found within seven miles of New York City Hall, also of American Coot (*Fulica americana*) being seen in the same place in June, though no nest was found.

December 25, 1906.—Christmas Day; meeting omitted.

January 8, 1907.—The President in the chair. Forty-seven members and visitors present.

The names of Messrs. H. H. Hann and J. P. Callender, of Summit, N. J., Mr. J. de Lagerberg of Passaic, N. J., and Dr. E. A. Chapman of New York City were proposed by the Secretary for resident membership.

Mr. R. L. Ditmars presented a paper entitled, "Some Interesting Snakes." It was illustrated both by lantern slides and by a number of living snakes which the speaker brought with him from the reptile house in the New York Zoological Park.

January 22, 1907.—The President in the chair. Seventeen members and visitors present.

Messrs. H. H. Hann, J. P. Callender, J. de Lagerberg, and Dr. E. A. Chapman were elected resident members of the Society.

Mr. J. A. Weber reported securing from Washington Market, on January 22, two Razor-billed Auks (*Alca torda*), quite freshly killed, which were said to have been sent from Long Island.

Mr. H. H. Hann reported seeing a Myrtle Warbler (*Dendroica coronata*) in Summit, N. J., on December 30, 1906, and

January 1, 1907. It was the opinion of members that where bayberries are plentiful the Myrtle Warbler may be found all winter.

Mr. J. T. Nichols spoke of the increasing numbers of Starlings (*Sturnus vulgaris*) about New York, as observed at Great Neck, Long Island. He also mentioned the precision with which a large flock of these birds wheel in mid air with one accord, as though their action was governed by more than mere sight.

Mr. Geo. E. Hix reported seeing in Central Park on January 22 a Great Black-backed Gull (*Larus marinus*) on the large reservoir, also six American Mergansers (*Merganser americanus*) which remained on the reservoir for some three days. He also mentioned that a few Purple Grackles (*Quiscalus quiscula*) have spent the whole winter in the Park.

Mr. C. G. Abbott called attention to the fact that European Goldfinches (*Carduelis carduelis*) are again on the increase in Central Park, perhaps because the vacant lots where the trappers used to catch the birds are now being built up.

Dr. Jonathan Dwight, Jr., then presented "The Distribution and Variation of North American Thrushes." His remarks were confined to the perplexing genus *Hylocichla*, and were illustrated by maps and skins.

February 12, 1907.—The President in the chair. Forty-seven members and visitors present.

The name of Mr. Francis Harper of College Point, N. Y., was proposed by the Secretary for resident membership.

The following preamble and resolution was presented by Mr. Dutcher and was unanimously carried by the members present.

WHEREAS: The Linnæan Society of New York has learned with regret that the usual appropriation for the work of the Bureau of Biological Survey has been stricken out of the Agricultural Bill, and,

WHEREAS: The absence of such appropriation means the cessation of work by said Bureau, and,

WHEREAS: It is the sense of the Linnæan Society of New York, which has for its object the study of Natural History and the encouragement of

an intelligent interest in the same, that the work of said Bureau of Biological Survey is of the utmost importance, especially to Agricultural interests, and should not thus be brought to a close in the midst of its usefulness, and

WHEREAS: It lies in the power of the Senate to replace such appropriation in the Agricultural Bill,

Therefore be it

RESOLVED: That the members of the Linnæan Society of New York in meeting assembled do most emphatically protest against the proposed abandonment of the work of the Bureau of Biological Survey, and in the interests of Science, Agriculture, and Bird Protection do most urgently and respectfully request the Honorable Senators from the State of New York to use their influence in having the appropriation for said Bureau reinserted in the Bill, in order that the Bureau may continue the work which it has so admirably begun, and be it further,

RESOLVED: That the Secretary of the Society be directed to send a certified copy of the resolution to each of the two Honorable Senators representing the State of New York.

Mr. Geo. E. Hix reported an interesting ornithological day (February 12) on the Palisades, between Edgewater and Englewood in which he observed seventeen species of birds, including about 150 American Mergansers (*Merganser americanus*), about 36 Black Ducks (*Anas obscura*), 6 Mallards (*Anas boschas*), 3 Bald Eagles (*Haliaeetus leucocephalus*), a Red-shouldered Hawk (*Buteo lineatus*), a Red-tailed Hawk (*Buteo borealis*), a Duck Hawk (*Falco peregrinus anatum*) and a Carolina Wren (*Thryothorus ludovicianus*).

Mr. C. G. Abbott remarked on a European Chaffinch (*Fringilla caelebs*) — a naturally migratory bird — which is spending the winter in the northern end of Central Park.

Mr. Dutcher reported that some of the young Pelicans on Pelican Island, Florida, are already on the wing.

Mr. J. T. Nichols reported seeing two Vesper Sparrows (*Poocetes gramineus*) at Bellmore, L. I., on February 12.

The paper of the evening was by Mr. C. H. Townsend, Director of the New York Aquarium, and was entitled "The Fiji Islanders and other People of the South Seas." Mr. Townsend was formerly naturalist of the U. S. S. "Albatross," and told of his experiences during deep sea explorations in the

South Pacific Ocean. The paper was illustrated by lantern slides.

February 26, 1907.—The President in the chair. Thirty-four members and visitors present.

Mr. Francis Harper was elected a resident member of the Society.

Mr. H. H. Hann reported finding a nest of the Great Horned Owl (*Bubo virginianus*) containing two eggs at Point Pleasant, N. J., on February 23.

Mr. J. D. Figgins presented a paper entitled "A Naturalist's Rambles in the Region of Mount Olympus, Washington," illustrated by lantern slides. He told something of the animal life of the region and dwelt upon the ruthless slaughter of game and the denudation of the forests by the inhabitants. More stringent enforcement of the laws was urgently needed, he said.

March 12, 1907.—Annual meeting. The President in the chair. Ten members present.

The Secretary read a formal invitation from the University of Upsala, Sweden, to the Linnæan Society, requesting the appointment of a delegate to represent the Society during the bicentennial celebration of Linnæus' birth to be held at Upsala on May 23 and 24.

The selection of a delegate, if any, was laid upon the table until the next meeting.

Dr. Jonathan Dwight and Mr. J. de Lagerberg were appointed a Committee to have in charge the proper celebration of the event by our own Society.

The President then called for the Treasurer's annual report, which showed a balance on hand of \$1,346.43.

Dr. J. A. Allen and Mr. Wm. Dutcher were appointed a Committee to audit the Treasurer's report.

The Secretary then read his annual report, as follows:

"There have been held by the Society during the past year eleven meetings. One meeting was omitted because the date conflicted with the Congress of the American Ornithologists' Union, and another was omitted because it fell upon Christmas Day.

There has been a total attendance of 369 persons during the year, giving an average of about 34 persons per meeting. This is the highest average attendance in the history of the Society, but the Secretary feels that explanation should be made that numbers of persons who are excluded from the Public Lectures in the large lecture hall are advised of the Linnæan Society lectures and thus swell the audiences. Not more than one third of the total attendance at the meetings has been composed of members of the Society. Residents of New York who are deeply interested in ornithology seem to be few, but it is hoped that with the cooperation of all the present active members of the Society the number of true bird-lovers present at the meetings may gradually be increased.

Ten new members have been elected during the past year, four have been dropped from the rolls for arrears in dues, and two, Mr. S. Nicholson Kane and Mr. Walter S. Logan have been lost by death.

Membership list now stands, Resident, 104; Corresponding, 31; Honorary, 2; a total of 137.

Eleven papers have been presented before the Society, namely eight on ornithology, one on herpatology, and two on general subjects. Four of the papers were illustrated by lantern slides.

No publications have been issued by the Society during the past year, but it is proposed shortly to circulate "Abstract of Proceedings 17, 18, and 19."

The usual exchange publications have been added to the Library of the Society"

Proceeding to election of officers for the ensuing year, the Society unanimously elected the following:

PRESIDENT, Dr. Jonathan Dwight, Jr.

VICE-PRESIDENT, Mr. William Dutcher.

SECRETARY, Mr. Clinton G. Abbott.

TREASURER, Mr. Lewis B. Woodruff.

The Chair thereupon re-appointed the following committees:

Publications, Messrs Allen, Chapman and Abbott.

Finance, Messrs. Dutcher, Bumpus and Woodruff.

Nominations, Messrs. Granger, Dutcher and Abbott.

Papers and Lectures, Messrs. Granger, Chapman and Abbott.

Dr. Wm. C. Braislin reported seeing a flock of Redpolls (*Acanthis linaria*) in Prospect Park, Brooklyn, on March 5. From the experience of members it was gathered that these birds have been unusually common this winter.

Dr. Braislin then presented "The Birds of Long Island," which was a summary of the annotated list published herewith.

A List of the Birds of Long Island, New York.

BY WILLIAM C. BRAISLIN, M. D.

“All Nature is so full, that that district produces the greatest variety which is the most examined.” *White's Natural History of Selbourne.*

Long Island, New York, is about 120 miles long by from 8 to 18 miles broad, with a nearly straight coast-line on the south shore, along the ocean front, but broken on the north by the more or less abrupt indentures of Long Island Sound. Its general position is about parallel with the coast-line of the mainland, trending slightly northward from west to east. The north shore in general is abrupt and hilly, owing to a low range of hills termed the “backbone of the island,” which, in places along the Sound, form high, bold bluffs often 100 feet and more in height. The south shore fronts the Atlantic Ocean, forming an outlying beach separated, in great part, from the land by shallow bays and salt marshes. Except at its eastern extremity this beach is low and sandy, shifting somewhat year by year under the influence of the winds as well as by the action of the tides and waves.

At the western end of the island lies one of the largest cities of the world, and elsewhere are summering towns as well as a rapidly increasing permanent population. These influences are changing its natural aspect, but notwithstanding, its bird population will probably remain much the same as it is at present for a long time to come. Its bays and marshes are still famous as a resort for water-fowl, and its position in respect to the mainland — its eastern extremity jutting well seaward — makes it a frequent resort for waifs of bird life lost or driven off the coast by storms during the perilous semi-annual migrations. Of European water-birds recorded from Long Island the list is comparatively long; some birds from the far West have been

found here and a number of species of more southern and more northern distribution often wander to Long Island as a common meeting ground.

1. **Colymbus holboëlli.** HOLBELL'S GREBE.

A winter visitant, Nov. 11 (Rockaway Beach) to April 7 (Miller's Place). Seldom arrives until the coldest day of early winter, and rarely seen before Christmas.

2. **Colymbus auritus.** HORNED GREBE.

Of common occurrence during the winter months, but is most abundant in November, Oct. 15 (Rockaway) to May 15 (Rockaway).

Scattered individuals and small numbers forming loose flocks are at the times of their greatest abundance common along the outer beaches of the ocean front.

3. **Podilymbus podiceps.** PIED-BILLED GREBE.

Probably a rare permanent resident.

It has been found only in the bays and fresh water inlets, never like the preceding species, on the ocean beaches. It is well within the bounds of probability that this bird nests, if not regularly, at least occasionally, on Long Island. Chapman (*Birds of E. N. Am.*, p. 57) says of it:—'Uncommon transient visitant on Long Island from September to April.' The writer has found the species in mid-August at Centre Moriches, but can produce no positive evidence of its breeding. It appears most commonly in September.

4. **Gavia imber.** LOON.

A common winter visitor, Aug. 10 (Seaford) to May 31 (Amityville).

The loons are locally nicknamed "Wheelbarrows" on Shinnecock and East Bays from their apparently labored manner of flying. This is one of the birds most secure from the snare of the Long Island fowler. Wary and alert, it disappears under

water deep enough to cover it, while in flight it is equally suspicious of man and his inventions, being rarely deceived by a blind, however skilfully constructed.

5. **Gavia arctica.** BLACK-THROATED LOON.

Known on Long Island from a single specimen, captured at Sands' Point, April 29, 1893 (Dutcher, *Auk*, x, 1893, p. 265). It is a species of the far North and its occurrence here is casual.

6. **Gavia lumme.** RED-THROATED LOON.

A transient visitor, September 14 (Rockaway) to December 30 (Rockaway) and March 30 (Rockaway) to May 11 (Port Jefferson, Dutcher, *Auk*, v, 1888, p. 171).

It is, at times, a common bird along the ocean front, especially in autumn; but adults, with the bright chestnut patch on the throat, from which the bird takes its name, are rarely observed here. Most of those found, even in the Spring, have the throat gray.

7. **Fratercula arctica.** PUFFIN; SEA PARROT.

Giraud (*Birds of Long Island* 1844, p. 374) says: "It but seldom occurs, and only in winter on the coast of Long Island." His statement covers the case at present. Two recent records only are known to the writer: Centre Moriches, December 15, 1882 (Dutcher, *Auk*, v, 1888, p. 171) and Hither Plain Life Saving Station, Montauk, March 30, 1902 (Braislin, *Auk*, xx, 1903, p. 50). They appear to live at sea while off the Long Island shore, and here, lacking the needed shelter afforded them by their native cliffs, fall an easy prey to severe storms. An occasional specimen is thus washed up on the beach, either dead or so exhausted and bruised in the surf as to shortly succumb to its injuries.

8. **Cepphus grylle.** BLACK GUILLEMOT.

But one record exists for Long Island, namely, a specimen

in the Lawrence collection of the American Museum of Natural History, New York (Chapman, *Guide to Local Collection of Birds*, p. 14, 1894). Giraud includes this bird in his work, but makes no specific mention of having met with it.

9. **Uria lomvia.** BRÜNNICH'S MURRE.

Along the eastern end of the island, off the coast, it is of regular occurrence, and often common, in winter (Nov. 22 (Amityville) to March 24 (Southampton? Dutcher, *Auk*, ii, 1885, p. 8).

At this season nearly every severe easterly storm washes some ashore, some to be promptly buried by the surf-driven sands, a few to be picked up by the beach-patrol. They are less frequently and irregularly noted on the western end of Long Island and those, apparently, have all been seen in November and December. They have occurred regularly, to the writer's knowledge, for the past few years.

10. **Alca torda.** RAZOR-BILLED AUK.

Doubtless a regular winter visitor, Nov. 2 (Rockaway) to Feb. 6, (Southampton, Dutcher).

They are confused by the baymen and life-savers with the Brünnich's Murre, both of which are called by the name of "Sea-crow." Both species, in common with the Puffin, occur on the beach chiefly by reason of their being driven in by winds and surf. It is doubtful whether even a few survive this experience. They do not willingly approach the sands in mild weather, and in the fury of a gale, exhausted with their struggles and beaten by the surf, they probably nearly all succumb.

11. **Alle alle.** DOVEKIE; SEA DOVE.

Not common winter visitant, Nov. 18 (Rockaway and Amagansett) to March 1 (Rockaway); also recorded as late as March 24, 1884 (Dutcher, *Auk*, ii, 1885, p. 38).

This, the least of the Auks, occurring on Long Island, seems

most immune to stress of wind and water, though making its home on the ocean like the others. Comparatively few come ashore in storms. It is believed from the evidence furnished by Old-squaw gunners, who float their decoys sometimes several miles from the beach out in the ocean, that they are nearly as common as the "Sea Crow" (*Alca torda*).

12. **Megalestris skua.** SKUA GULL.

Casual. The only specimen from Long Island has been recorded by Mr. Dutcher (*Auk*, iii, 1886, p. 432). This bird was found in drift ice, back of the beach at Amagansett, on March 17, 1886, by a member of the life-saving crew, and may have been there for a considerable period.

13. **Stercorarius pomarinus.** POMARINE JAEGER.

A less common species than the Parasitic Jaeger, it nevertheless seems to be a regular migrant from August to November passing usually at a distance from the coast. It migrates southward from July to late October (Chapman, *Guide to Local Collection of Birds*, p. 15). Mr. B. H. Dutcher found both species common at Little Gull Island, Aug. 6 to 16, 1888, where they resorted in pursuit of blue-fish, and until fired at several times, were very familiar. They were likewise abundant from late in September until the beginning of November off the coast of Massachusetts in the same year, attracted by good fishing grounds.

14. **Stercorarius parasiticus.** PARASITIC JAEGER.

Apparently more common than the preceding species and similar in habits. April 30 (Rockaway); Aug. 6 (Gull Island, B. H. Dutcher, *Auk*, vi, pp. 125) to Nov. 9 (Amityville).

15. **Stercorarius longicaudus.** LONG-TAILED JAEGER.

Very rare or casual off the Long Island coast.

It has long been the custom to include this species in State and other local lists, probably properly so, though there is

little to confirm the belief that it is a regular migrant along the Atlantic seaboard. It was for a long time supposed to be a winter visitor. Dr. J. A. Allen however in "A Revised List of the Birds of Massachusetts" (*Bull. Am. Mus. Nat. Hist.*, vol. i, 1886) expressed the belief that it is found along this part of the coast in fall and spring only. This has been found to be the case with the Jaegers in general.

Of the few recorded specimens for the Atlantic coast, one is from "Oyster Bay South," Long Island, date not given, and another, a "young male shot in the month of October, 1842, on Gowanus Bay" (Giraud, *Birds of L. I.*, p. 365).

16. *Pagophila alba*. IVORY GULL.

Known on Long Island from a single specimen, shot by a farmer who was "rigged out for ducks in an ice hole on Great South Bay near Sayville" about Jan. 5, 1893 (Dutcher, *Auk*, xii, 1893, p. 290).

17. *Rissa tridactyla*. KITTIWAKE GULL.

A common winter visitor, Nov. 4 (Rockaway) to Feb. 27 (Rockaway). It arrives on Long Island a little later on the average than the Great Black-backed Gull, sometimes becoming abundant by the last of November.

18. *Larus glaucus*. GLAUCOUS GULL.

A rare winter visitor, Jan. 2 to May 1. Recent records are two March 11, 1884, (South Oyster Bay, Dutcher, *Auk*, ii, p. 37), January 11, 1891, (Far Rockaway, Howell and Foster, *Abstr. Proc. Linn. Soc. N. Y.*, no. 3, p. 5, 1891; same record, *Ornith. and Oöl.*, xvi, p. 61). Other records are, Jan. 2, 1901; Jan. 13, 1901; March 13, 1904; and May 1, 1904, all, Rockaway by Mr. Robt. L. Peavey of Brooklyn, the skins having been examined by writer:

19. *Larus leucopterus*. ICELAND GULL.

Very rare winter visitor. A recent record is Rockaway

Beach, February 6, 1898, a nearly pure white skin taken by Mr. R. L. Peavey, and examined by the writer, and later by Dr. Jonathan Dwight, Jr.

20. *Larus kumlieni*. KUMLIEN'S GULL.

Represented on Long Island by a single specimen, (Braislin, *Auk*, xvi, p. 190). This is an immature bird and was examined originally by Mr. William Brewster who was inclined to believe it of this species but deemed it wise to refer it to the former until sufficient data became available to determine the question without a doubt. This work has now been done and the status of this specimen determined by Dr. Dwight (*Auk*, xxiii, 1906, p. 37; see also Braislin, *Auk*, xxii, 1905, p. 168). It was shot by a gunner March 8, 1898, while stooling for Oldsquaws on the ocean, several miles from land.

21. *Larus marinus*. GREAT BLACK-BACKED GULL.

Common in winter, not usually arriving in numbers much before Christmas. Nov. 3 (Rockaway) to March 13 (Rockaway).

22. *Larus argentatus*. AMERICAN HERRING GULL.

Permanent resident, though not at the present time a breeding bird. Abundant from October to April. During late years the number of Herring Gulls which pass the summer on Long Island is increasing. The flocks noted contain birds of various ages and stages of plumage. Formerly a few were accustomed to summer at the eastern end of the island only, but during the past two years they are not rarely seen along all parts of the south shore during the summer. In winter an unnumbered multitude of these gulls passes the season here.

23. *Larus delawarensis*. RING-BILLED GULL.

A regular transient visitant; often abundant in autumn; rare or casual in winter and summer. Sept. 5 (Freeport) to Nov. 12 (Rockaway); and March 27 (N. Y. harbor) to May 15 (Rockaway).

24. **Larus atricilla.** LAUGHING GULL.

Now a rare summer resident; formerly abundant. Recent records are June 15 (Amityville) and Sept. 2 (Rockaway). At the former date the species was believed to be nesting.

25. **Larus philadelphia.** BONAPARTE'S GULL.

Regular winter visitor. Nov. 18 (Rockaway) to May 11 (Rockaway).

Called "Sea Pigeon" on Long Island. They seem erratic as regards their arrival and departure. They almost invariably occur with us in flocks of considerable size, their sudden appearance or their absence bearing no apparent relation to weather conditions but probably dependent on the abundance of small fish in our waters. They occur at any time throughout the winter. A large flock, strung out laterally, in rapid flight, each individual seemingly striving to outdo the others, is an occasional animating sight on our bays.

26. **Larus minutus.** LITTLE GULL.

This European representative of the gull family has been recorded twice from Long Island, these constituting the only two records for North America as well. They are, Fire Island, about Sept. 15, 1897 (Dutcher, *Auk*, v, 1888, p. 171) and Rockaway Beach, May 10, 1902 (Braislin, *Auk*, xx, 1903, p. 52).

27. **Xema sabinii.** SABINE'S GULL.

Casual on Long Island. Recorded from Raynor South, in the month of July, 1837 (Giraud, *Birds of L. I.*, p. 363), and again on Gardiner's Bay, Shelter Island, Oct. 6, 1899 (Worthington, *Auk*, xvii, 1900, p. 63).

28. **Gelochelidon nilotica.** GULL-BILLED OR MARSH TERN.

Rare autumnal visitor. Nesting as far north as Virginia, it sometimes wanders northward. Recent records are, South Oyster Bay, July 4, 1882 and Shinnecock Bay, July 8, 1884 (Dutcher, *Auk*, i, 1884, p. 4, and ii, 1885, p. 38).

29. *Sterna caspia*. CASPIAN TERN.

Of world-wide distribution, it occurs, probably, regularly as a transient during spring and fall migrations, though not noticed by Giraud. May 11 (Amityville); and Sept. 3 (Amityville) to Sept. 13 (Shinnecock). Recent records are, six specimens from Shinnecock Bay, Sept. 7-13, 1882 (Dutcher, *Auk*, i, 1884, p. 34) three, May 11, 1898, and two Sept. 3, 1898, at Amityville (Braislin, *Auk*, xvi, 1899, p. 40). They have been noted, almost invariably, in pairs.

30. *Sterna maxima*. ROYAL TERN.

Breeding as far north as Virginia, it is known on Long Island from a single specimen only, taken at Raynor South, Aug. 27, 1831, by J. F. Ward (*Chapman Guide to Local Collection of Birds*, p. 17).

31. *Sterna trudeaui*. TRUDEAU'S TERN.

Accidental wanderer from South America and evidence of its occurrence is open to doubt. It is included by Giraud in his work, the text leading to the inference that he had met with it. He mentions it as having been found commonly at Absecon Beach, N. J., on one occasion. Mr. Chapman probably refers to Giraud's record in stating that it has been taken once on Long Island (*Birds of E. N. Am.*, 1895, p. 80).

32. *Sterna forsteri*. FORSTER'S TERN.

Casual on Long Island, breeding chiefly in the interior of North America and on the coast as far northward as Virginia. It was twice recorded by N. T. Lawrence (*Forest and Stream*, x, 1878, p. 13 and p. 235).

33. *Sterna hirundo*. COMMON OR WILSON'S TERN.

The "Summer Gull" is a common summer resident at the eastern end of Long Island. It is said to have nested, formerly, along the whole south shore. May 20 (Amagansett) to Oct. 15 (Fire Island, Dutcher).

34. *Sterna paradisæa*. ARCTIC TERN.

Apparently a rare migrant. They nest as far south as the coast of Massachusetts (Mackay, *Auk*, xii, 1895, p. 43), occurring widely throughout the northern hemisphere and southward to South America and Africa (*Cat. Brit. Mus.*, xxv, 1896, p. 65). The only recent Long Island specimen known to the writer is one taken on Ram Island Shoals, by William Dutcher, July 1, 1884. (Chapman, *Guide to Local collection*, p. 18.)

35. *Sterna dougalli*. ROSEATE TERN.

A not common summer resident. It was found nesting with a large colony of Common Terns at the eastern end of Long Island, June 19, 1902, by the writer; also found at Little Gull Island Aug. 6 to 16, 1888, by Mr. B. H. Dutcher (*Auk*, vi, 1889, p. 127).

36. *Sterna antillarum*. LEAST TERN.

A rare migrant; formerly, abundant summer resident along the whole southern coast of Long Island. It nested as late as 1894, and probably does so in small numbers still, on Muskeget Id., Mass. (Mackay, *Auk*, xii, 1895, p. 44). "It arrives on Long Island in the month of May, and returns south in autumn" (Giraud, *Birds of L. I.*, p. 351).

37. *Sterna fuliginosa*. SOOTY TERN.

The only specimen of this species recorded on Long Island was taken by Mr. Chas. Earle at Lake Ronkonkoma, a small fresh-water lake in the centre of the island, during a gale, when a flock of considerable size was observed, all, presumably of the same species, September 13, 1878. (Dutcher, *Auk*, iii, p. 433). Numerous records exist for the species in New England, most of them for the years 1876, 1877 and 1878.

38. *Hydrochelidon nigra surinamensis*. BLACK TERN.

Common transient in the autumn. July 21 (Amityville) to Sept. 14 (Rockaway).

The writer has been able to obtain no spring records, but has met with it regularly on the south shore for several years, each autumn.

39. **Rynchops nigra.** BLACK SKIMMER.

It is probably a rare but regular summer visitor off the coast of Long Island.

"It is rarely seen with us except at midsummer" (Giraud, *Birds of L. I.*, p. 349). A specimen taken near South Oyster Bay, August 2, 1884, was recorded by Mr. George Bird Grinnell (*Forest and Stream*, xxiii, 1884, p. 24), and in the same communication he refers to "a remarkable flight one year ago along Long Island and the New England coasts." The writer believes that these birds are not so rare as dearth of recent records would lead one to suppose. Baymen who fish outside the inlets frequently report seeing birds they call "Flood Gulls" which in appearance and manner of flight are scarcely to be mistaken for anything else. Mr. A. Chichester, a most reliable observer, reported one off Amityville May 20, 1898, and another record which is regarded as reliable would extend the season of occurrence here to Oct. 12. It is not known as a nesting species north of the coast of southern New Jersey.

40. **Puffinus borealis.** CORY'S SHEARWATER.

Probably a regular summer visitor off our coast. Aug. 6 to Oct. 18. Its nesting place is unknown but is probably on some island or islands of the Southern Hemisphere. Six were reported at Amagansett on Oct. 18, 1887 (W. Dutcher, *Auk*, v, 1888, p. 173); at Gardiner's Bay in September and October, 1886 (Chadbourne, *Auk*, v, 1888, p. 202); at Little Gull Island Aug. 6-16, 1888 (B. H. Dutcher, *Auk*, vi, 1889, p. 128); and at Fire Island Inlet two were taken, Oct. 4, 1902 (Braislin, *Auk*, xxi, 1904, p. 287).

41. **Puffinus gravis.** GREATER SHEARWATER.

Occasionally seen off the Long Island coast, it is more familiar

to trans-Atlantic travellers and deep sea fishermen than to landsmen or even to coastwise sailors. It appears in early June, and is irregularly common until November (Chapman, *Guide to Local collection*, 1894, p. 19). It is called "Hagdon."

42. *Puffinus lherminieri*. AUDUBON'S SHEARWATER.

Rare transient or accidental visitor, and known on Long Island from but one specimen, taken at Bellport, August 1, 1897 (Dutcher, *Auk*, v, 1888, p. 173). This is likewise its most northern record.

43. *Puffinus fuliginosus*. SOOTY SHEARWATER.

A bird of the North Atlantic Ocean and rarely observed off the Long Island coast. A single specimen was shot at Quogue, in July, 1850 (G. N. Lawrence, *Ann. Lyceum Nat. Hist.*, v, 1852, p. 220). One was taken at Montauk, Aug. 15, 1907, by Mr. J. A. Weber.

44. *Æstrelata hasitata*. BLACK-CAPPED PETREL.

Normally of the warmer parts of the Atlantic. There is but one Long Island record, that of a specimen taken at Quogue, in 1850 (G. N. Lawrence, *Ann. Lyc. Nat. Hist.*, v, 1852, p. 220).

45. *Oceanodroma leucorhoa*. LEACH'S PETREL.

Apparently a rare migrant. It breeds from the coast of Maine northward and is also found commonly on the Pacific. A single specimen struck Fire Island Light, May 4, 1888 (Dutcher, *Auk*, vi, 1889, p. 131). It has been noted by observers along the coast also in July and August, but these observations seem not to exclude a possible confusion with the following species.

46. *Oceanites oceanicus*. WILSON'S PETREL.

This is the common petrel found off our coast in summer. July 20 (Rockaway, W. Dutcher, *Auk*, vi, 1889, p. 132) to Aug. 17 (Little Gull Island, B. H. Dutcher, *Auk*, vi, 1889, p. 128).

47. *Sula sula*. BOOBY.

There is but a single Long Island record, one bird taken at Moriches Bay (Dutcher, *Auk*, x, 1893, p. 270).

48. *Sula bassana*. GANNETT.

A comparatively common, regular transient visitor. March 23 (Montauk) to May 9 (Montauk) and October 5 (Montauk) to December 5 (Montauk) and December 4 (Rockaway). It is most common in November when large numbers are frequently observed, usually far outside the beach.

49. *Phalacrocorax carbo*. CORMORANT.

Apparently a rare transient visitor. Mr. William Dutcher records a specimen from Little Gull Island Light, Sept. 24, 1888. The keeper of the light who secured this bird wrote that they were apparently not rare at about that season but less common than the Double-crested Cormorant with which they were usually associated (Dutcher, *Auk*, vi, 1889, p. 133). The same observer has reported that on November 8 a number of cormorants was seen of which about one third were believed to be of this species (*Auk*, vi, 1889, p. 200).

50. *Phalacrocorax dilophus*. DOUBLE-CRESTED CORMORANT.

This species is a common migrant in the fall. Occasional in summer. Aug. 26 (Montauk) to Nov. 5 (Jamaica Bay) and April 20 (Jamaica Bay) to May 15 (Montauk). In flight these birds are doubtless often mistaken for wild geese, to which their manner of flying, in an apparently angled figure, bears a close resemblance. At a distance, at which their color is not distinguishable, they are, no doubt, often thus confused. Hence, doubtless, the name "Nigger Geese" by which they are called by the baymen on Long Island and elsewhere.

51. *Pelecanus erythrorhynchos*. AMERICAN WHITE PELICAN.

A specimen in the Long Island Historical Society is from

Long Island (Dutcher, *Auk*, x, 1893, p. 270). Another was killed at Roslyn, May 11, 1885 (*Forest and Stream*, xxiv, p. 328).

52. **Pelecanus occidentalis.** BROWN PELICAN.

A specimen taken off Sandy Hook, in 1844, constitutes the only record (DeKay, *Birds of New York*, 1843, p. 294).

53. **Fregata aquila.** MAN-O-WAR BIRD.

A straggler from the tropics, it has occurred as far north as Nova Scotia. One was shot, August 4, 1886, on Gardiner's Island (Dutcher, *Auk*, v, p. 173). Another was captured on Faulkner's Island, Long Island Sound, in 1859 (Grinnell, *Amer. Naturalist*, ix, p. 470).

54. **Merganser americanus.** AMERICAN MERGANSER.

A not very common winter visitor, November 4 (Amityville) to December 30 (Amityville). It comes southward in the fall much later than the Red-breasted species and a veteran bayman has stated to me that he never has seen it until the first ice has formed at the edges of the bay.

55. **Merganser serrator.** RED-BREASTED MERGANSER.

Abundant transient visitor.

As a migrant it is common, Oct. 15 (Amityville) to Dec. 25 (Rockaway) and March 25 (Amityville) to May 2 (Amagansett). It is occasionally seen on the bays in thousands. Occasionally small flocks or single birds are found in summer and large flocks are not unknown in winter. Eight were seen July 11 at Freeport by the writer. They do not breed on Long Island but they may occur here at any time of the year.

56. **Lophodytes cucullatus.** HOODED MERGANSER.

Common transient visitant, Nov. 5 (Montauk) to Dec. 14 (Amityville). Possibly a rare summer resident, for two adult females were collected in reedy sloughs at Canarsie June 13,

1891, by the late C. C. Young of Brooklyn. Rare in mid-winter. They are more common in November than any month. Rare in the spring.

57. **Anas boschas.** MALLARD.

Rather uncommon transient visitor. Oct. 3 to Dec. 24. March and April. They occur in small numbers here, usually in company with the Black Duck.

58. **Anas obscura.** BLACK DUCK.

Common permanent resident. Abundant in spring and fall. At Montauk Point the nest containing eggs has been found as early as April 5 (1905).

An observing bayman, Andrew Chichester of Amityville, informs me that he has many times taken specimens of the Black Duck which show decided traces of hybridism with the Mallard. One of these, sent me, showed distinct traces of both parents; wings and tail are those of the Mallard; back and breast are like the Black Duck; the cheeks and sides of the head glossed with green; the breast tinged with vinaceous.

59. **Anas obscura rubripes.** RED-LEGGED BLACK DUCK.

Rather common winter visitor. It is largely confused with the preceding, but the more observing baymen and gunners regard them as different (Braislin, *Auk*, xxi, 1904, p. 288).

60. **Chaulelasmus streperus.** GADWALL; GRAY DUCK.

A very rare or casual visitor. Giraud recorded it. Mr. William Dutcher gives records of two or more examples (*Auk*, v, 1888, p. 173). One is contained in the Long Island Historical Society collection (*Auk*, x, 1893, p. 270).

61. **Mareca penelope.** EUROPEAN WIDGEON.

Casual. Several examples of this species have been taken on Long Island. Giraud recorded a specimen, (*Birds of L. I.*, 1844, p. 309), three were secured, in 1901, 1902 and 1903, at

Gardiner's Island (Braislin, *Auk*, xxi, 1904, p. 288). N. T. Lawrence recorded one taken January 6, 1873 (*Bull. N. O. C.*, iii, 1878, p. 98) and another, Nov. 27, 1901, from Gardiner's Island (*Auk*, xix, 1902, p. 195).

62. **Mareca americana.** AMERICAN WIDGEON; BALDPATE.

Occasionally abundant in autumn, March 8 (Amityville) to April 16 (Montauk) and Oct. 10 (Montauk) to Feb. 5 (Gardiners Island). Sometimes it remains all winter. It is rarely seen in summer. One was shot in prime condition at Plum Island, Aug. 9, 1898, by Mr. A. H. Helme.

63. **Nettion crecca.** EUROPEAN TEAL.

Casual. This species was included without remark, in George N. Lawrence's "Catalogue of the Birds observed on New York, Long and Staten Islands" (*Ann. Lyc. Nat. Hist.*, viii, 1867, p. 297). Two specimens in company with a small flock of Green-winged Teal were secured at Merrick in December, 1900 (Braislin, *Auk*, xix, 1902, p. 145), and apparently constitute the only recent records for Long Island.

64. **Nettion carolinensis.** GREEN-WINGED TEAL.

Not common transient visitor. March 8 (Amityville). Oct. 2 (Centre Moriches) to Nov. 30 (Lynbrook and Lake Grove, A. H. Howell). Rare in winter and spring.

65. **Querquedula discors.** BLUE-WINGED TEAL.

Not common transient visitor. March 24 (Amityville) to April 21 (Moriches) and Aug. 28 (Long Beach) to Oct. 25 (Rockaway); Aug. 27 (Montauk).

66. **Spatula clypeata.** SHOVELLER.

Rare transient visitor. Oct. 25 to Nov. 29 (both Amityville).

67. **Dafila acuta.** PINTAIL;

Rather common transient visitant; rarely wintering. As a

rule, rare on the eastern end of the island (Montauk); on the western end sometimes common (Freeport). Occurrences, Sept. 13 (Shinnecock) to Oct. 25 (Amityville); March 3 (Montauk, A. H. Helme) to March 6 (Amityville). The local name is "Sprigtail."

68. *Aix sponsa*. WOOD DUCK.

A rare summer resident. May 2 (Jamaica) to Nov. 27 (Lake Grove, A. H. Howell).

69. *Netta rufina*. RUFOUS-CRESTED DUCK.

A specimen was found in Fulton Market, all the evidence pointing to its capture on Long Island (Ridgway, *Proc. U. S. Nat. Mus.*, iv, 1882, pp. 22-24).

70. *Aythya americana*. REDHEAD.

Locally common on eastern end of island, but rather rare transient visitor as a rule elsewhere. Sept. 30 (East Bay) to Jan. 9 (Great South Bay) and Feb. 15 (Montauk) to March 22 (Montauk).

71. *Aythya vallisneria*. CANVAS-BACK.

Rare transient visitor. Oct. 20 (East Bay) to Feb. 11 (Amityville).

72. *Aythya marila*. AMERICAN SCAUP DUCK; GREATER BROADBILL.

Abundant transient visitor, also common in winter. A few occasionally seen in summer. September 1 (East Bay) to April 22 (Great South Bay).

73. *Aythya affinis*. LESSER SCAUP DUCK; LITTLE BROADBILL.

Common transient visitant; also winters, but not commonly. Oct. 1 (Great South Bay) to April 28 (Great South Bay). Locally known as "Creek Broadbill."

74. *Aythya collaris*. RING-NECKED DUCK.

Casual. A specimen from Long Island is contained in the collection of the Long Island Historical Society (Dutcher, *Auk*, x, p. 270). A recent record is at Amityville, Nov. 3, 1898, (Braislin, *Auk*, xvi, 1899, p. 191).

75. *Clangula clangula americana*. AMERICAN GOLDEN-EYE;
WHISTLER.

Common winter visitor. Dec. 5 (Great South Bay) to April (Miller's Place, A. H. Helme).

76. *Clangula islandica*. BARROW'S GOLDEN-EYE.

An example of this species in the collection of the Long Island Historical Society was secured on Long Island (Dutcher, *Auk*, x, 1893, p. 270).

77. *Charitonetta albeola*. BUFFLE-HEAD.

Rather common winter visitant. December 8 (Amityville) to April 6 (Rockaway). The local name is "Butter-ball."

78. *Harelda hyemalis*. OLD-SQUAW.

Abundant winter visitor. October 15 (Rockaway) to May 1 (Rockaway).

79. *Histrionicus histrionicus*. HARLEQUIN DUCK.

Very rare winter visitor and chiefly on the eastern end of the island. There are records of about ten specimens secured during the past 25 years. One of a pair was killed at Montauk on December 6, 1900, by Capt. James Scott.

80. *Camptolaimus labradorius*. LABRADOR DUCK.

Probably most of the specimens of this extinct duck, now in the museums of America and Europe, were taken on Long Island. Mr. Akhurst has informed me that he sent many skins to European collectors in former years, at a time when definite labels with skins were not considered essential, all of

which were brought to him from the "south shore" by traveling baymen or peddlers. G. D. Rowley believed that the last specimen of this duck ever captured came from Long Island in the fall of 1874. (See J. A. Allen's review of Rowley's paper on "The Pied Duck," *Bull. N. O. C.*, iii, 1878, p. 79.)

81. *Somateria dresseri*. AMERICAN EIDER.

Rare winter visitor on the eastern end of Long Island. A specimen taken at Montauk, March 25, 1894, by Mr. Dutcher is recorded by R. P. Whitfield (*Auk*, xi, 1894, p. 323).

82. *Somateria spectabilis*. KING EIDER.

Apparently a rare but regular winter visitor. Nov. 13 (Amityville) to April 21 (Ditch Plain, *Auk*, v, 1888, p. 174).

83. *Oidemia americana*. AMERICAN SCOTER.

Common winter visitor and occasionally seen in summer. Nov. 3 (Amityville) to April 17 (Rockaway); one at Montauk, Sept. 17. They are locally known as the "Yellow-nosed Coot" and when immature as the "Booby Duck."

84. *Oidemia deglandi*. WHITE-WINGED SCOTER.

Common winter visitor and known as the "Coot." Oct. 15 (Rockaway) to April 13 (Rockaway). Mr. C. G. Abbott saw a bird of this species, probably previously disabled, at Gardiner's Island, July 4, 1903.

85. *Oidemia perspicillata*. SURF SCOTER.

Common winter visitor and known as the "Bald-headed Coot" or "Sea Coot." They begin to be common at Montauk by Sept. 1. Oct. 17 (Quogue) to Apr. 13 (Rockaway). Almost every summer one or several, probably because unable from wounds or age to migrate, pass the summer on Long Island.

86. *Erismatura jamaicensis*. RUDDY DUCK.

Not ordinarily a common winter visitor, occasionally, how-

ever, occurring in autumn in great numbers at favored localities. Oct. 17 (Quogue) to May 22 (Rockaway).

87. *Chen hyperborea nivalis*. GREATER SNOW GOOSE.

Rare autumnal migrant. Recorded at Shinnecock Bay, Oct. 8, 1881 (Dutcher, *Auk*, i, 1884, p. 34). At Point Lookout Life Saving Station on Nov. 24, 1901, several flocks were reported to the writer as seen during a heavy northeast gale, all going westerly, by a member of the life-saving crew. One flock contained 30 birds. One was noted by the writer Jan. 30, 1902, at Rockaway Beach. One was secured near Sag Harbor, Nov. 18, 1903 (Braislin, *Auk*, xxi, 1904, p. 287).

88. *Chen caerulescens*. BLUE GOOSE.

Casual visitor. One from Ponquogue, Shinnecock Bay, is contained in the Long Island Historical Society.

89. *Anser albifrons gambeli*. AMERICAN WHITE-FOOTED GOOSE.

Casual. Several specimens are in the collection of the Long Island Historical Society. One was killed at Sag Harbor, Oct. 18, 1889 (Braislin, *Auk*, xx, p. 52).

90. *Branta canadensis*. CANADA GOOSE.

Common transient visitant; less common in winter. Oct. 1 (Montauk) to Dec. 31 (Montauk) and Feb. 27 (Montauk) to April 28 (Montauk).

91. *Branta canadensis hutchinsi*. HUTCHINS'S GOOSE.

Giraud says of this species, "On the eastern extremity of Long Island this species is not uncommon. At Montauk it is known by the name of "Mud Goose," and is frequently observed in company with the preceding species, [Canada Goose] to which, in the general color of its plumage, it bears a strong resemblance. In size it is much smaller, though larger than the Brant, exceeding that species about three inches, [in length]

and having the white patch on the sides of the head similar to the Canada Goose" (*Birds of Long Island*, p. 292). By the baymen and gunners it is not distinguished from *B. canadensis* and probably is of occasional occurrence.

92. **Branta bernicla.** BRANT.

A common transient visitant. Nov. 18 (Rockaway) to Jan. 1 (Rockaway) and March 6 (Rockaway) to May 10 (Rockaway).

93. **Branta nigricans.** BLACK BRANT.

Several Long Island records. The Long Island Historical Society possesses a specimen. Another was killed on Great South Bay in the spring of 1889 (Dutcher, *Auk*, x, 1893, p. 266; also, *Auk*, x, p. 271).

94. **Branta leucopsis.** BARNACLE GOOSE.

This Old World species is known on Long Island from a specimen recorded by Mr. George N. Lawrence (*Bull. N. O. C.*, ii, 1877, p. 18).

95. **Olor columbianus.** WHISTLING SWAN.

Rare transient visitor. Several were reported a few years ago (Dutcher, *Auk*, v, 1888, p. 176). A recent occurrence at a near-by locality (Guilford, Conn.) is recorded in early November, 1893 (Bishop, *Abstr. Proc. Linn. Soc. N. Y.*, 1893-4, no. 6, p. 11). A specimen was recently obtained within the limits of Greater New York in a small tide-water creek of Jamaica Bay (Braislin, *Auk*, xx, 1903, p. 52).

96. **Guara alba.** WHITE IBIS.

A casual visitor. Giraud recorded two instances of its occurrence on Long Island (*Birds of Long Island*, p. 275). A specimen was seen at Milford, Conn., May 23, 1895 (Grinnell *Amer. Nat.*, ix, p. 470). A local name is "Spanish Curlew."

97. **Plegadis autumnalis.** GLOSSY IBIS.

A casual visitor. Two specimens are in the collection of the Long Island Historical Society, one from Southampton, the other from Jamaica Bay (Dutcher, *Auk*, x, 1893, p. 271).

98. **Tantalus loculator.** WOOD IBIS.

A casual visitor. A specimen was secured at East Marion, Long Island, June 21, 1890 (Dutcher, *Auk*, x, 1893, p. 266).

99. **Botaurus lentiginosus.** AMERICAN BITTERN.

Common transient visitant. Aug. 4 (Shinnecock) to December 11 (Rockaway) and April 16 (Sheepshead Bay) to May 5 (Montauk).

100. **Ardetta exilis.** LEAST BITTERN.

Common summer resident. June 5 (Rockaway) to Aug. 28 (Freeport).

101. **Ardea herodias.** GREAT BLUE HERON.

Observed at Gardiner's Island during first week in July, 1903, by Mr. C. G. Abbott. Probably a rare summer resident at this and other restricted areas; April 9 (Montauk) and April 13 (Rockaway) to May 21 (Amityville) and July 21 (Amityville) to Nov. 16 (Montauk). Rarely seen in winter (Foster, *Abstr. Proc. Linn. Soc. N. Y.*, 1892-3, no. 5, p. 2).

102. **Herodias egretta.** AMERICAN EGRET.

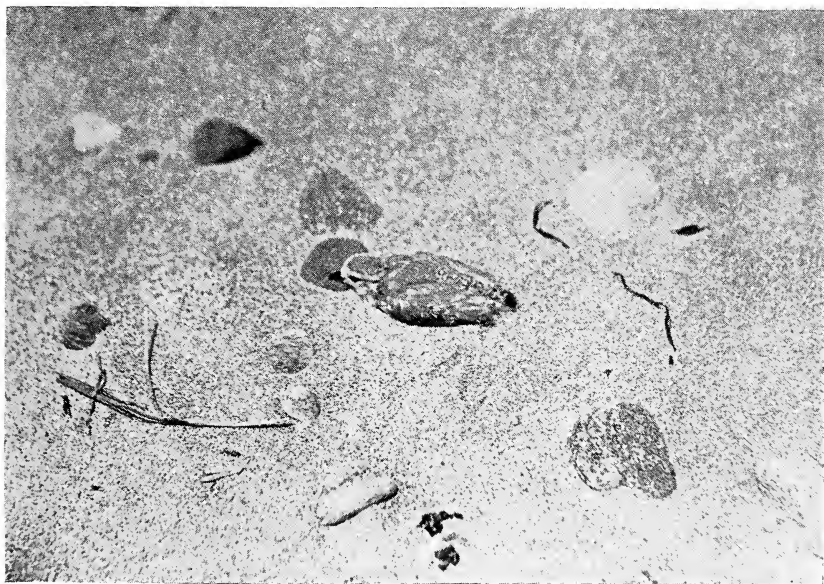
Rare autumnal visitor. It was recorded from South Oyster Bay, Aug. 3, 1882 (Dutcher, *Auk*, i, 1876, p. 32); from Jamaica Bay Oct. 1, 1897 (Braislin, *Auk*, xvii, p. 69); from Montauk, July 23, 1900 (Braislin, *Auk*, xix, p. 145). The writer has seen a number of mounted birds of this species taken on Long Island concerning which no data other than the evidence afforded by the skins, were available.

103. **Egretta candidissima.** SNOWY HERON.

Rare autumnal visitor. The occurrence of several specimens



OSPREY AND NEST, GARDINER'S ISLAND.



Photographs by C. G. Abbott.

YOUNG PIPING PLOVER, MONTAUK POINT.

was recorded July 11-17, 1881, and July 1-3, 1883, at South Oyster Bay by Mr. Dutcher (*Auk*, i, 1884, p. 32). On May 30, 1885, the same observer saw several at Sayville as if preparing nests (*Auk*, iii, p. 435). Mr. Louis A. Zerega recorded the capture of a specimen on Great South Bay, August 4, 1881. (*Bull. N. O. C.*, vi, 1881, p. 248). Latterly they seem to have become the rarest of the three species of white herons (counting the immature *Florida cærulea* as one) which occur.

104. **Hydranassa ruficollis.** LOUISIANA HERON.

Accidental visitant. Giraud says, "A single specimen, shot near Patchogue in the summer of 1836, is the only individual of this species that I have known to be procured in this vicinity." (*Birds of L. I.*, p. 282.)

105. **Florida cærulea.** LITTLE BLUE HERON.

Rare spring and fall migrant. There are a number of records for this species. It is believed by the writer that some have been observed every season for several years past. Recent records are, E. Rockaway, Aug. 1899; Hempstead Bay, Aug. 1900 (Braislin, *Auk*, xix, p. 146), and a flock of nine individuals, one of which was secured, seen at Seaford, Aug. 13, 1902.

106. **Butorides virescens.** GREEN HERON.

Common summer resident. April 16 (Sheepshead Bay) to Sept. 17 (Sheepshead Bay).

107. **Nycticorax nycticorax nævius.** BLACK-CROWNED NIGHT HERON.

Common summer resident. April 12 (Brooklyn) to September 29 (Brooklyn). It has also been noted in winter. There is an enormous colony at Roslyn.

108. **Nyctanassa violaceus.** YELLOW-CROWNED NIGHT HERON.

Casual visitor. One was captured alive in a swamp near Freeport in April, 1893 (Dutcher, *Auk*, x, 1893, p. 266).

Another was taken at Wading River in April, 1901, by Mr. A. Hoffmann, and is now in the collection of Mr. Arthur H. Helme. A third specimen has recently been recorded, observed at Orient (Braislin, *Auk*, xxiv, 1907, p. 187).

109. **Rallus elegans.** KING RAIL.

Probably rare summer resident. March 3 (Montauk Light, Dutcher) to Nov. 2 (Bayport, Dutcher). Giraud refers to but a single specimen known to him (*Birds of L. I.* p. 210) but Mr. W. Dutcher records the occurrence of five other specimens taken at various localities. The latter remarks, "As it is like all of the Rallidæ, partly nocturnal and extremely secretive in its habits it is probably overlooked and is more common than it is thought to be" (*Auk*, v, 1888, pp. 176-177). This belief is shared by the writer, as several instances, impossible of absolute identification, however, are known to him of rails, "larger and more brightly colored than the Clapper Rail," having been secured at the autumnal rail-bird "shoots," which are held at times of unusually high tides in certain parts of the island.

110. **Rallus crepitans.** CLAPPER RAIL.

Common summer resident and occasional during the remainder of the year; almost entirely confined, however, to the western end of the island. The bird seems to reach its normal northern limit at Long Island, for though repeatedly taken in the Connecticut marshes it is certainly rare there (Merriam, *Birds of Conn.*, 1877, p. 115) while it is accidental in Massachusetts (Allen, Revised List of Birds of Mass., *Bull. Am. Mus. Nat. Hist.*, i, 1886, p. 235). It arrives about the last of April; nests, first week in June and continues abundant to September. Collectors on the eastern end of the island have informed me that they have not taken it east of Shinnecock, where it is very rare. It abounds in the marshes of Jamaica and South Oyster Bays and a large part of the Great South Bay. Winter records

might be multiplied; specific references are Lawrence, *Auk*, ii, 1885, p. 274, Foster, *Abstr. Proc. Linn. Soc.*, no. 5, p. 2. It is commonly named "Meadow Hen" on Long Island.

111. *Rallus virginianus*. VIRGINIA RAIL.

Rather common summer resident. Arrives in April and May; nests the middle of June; common until last of September. One struck Montauk Light Oct. 30, 1900.

112. *Porzana carolina*. CAROLINA RAIL; SORA.

Rare summer resident. Common transient visitor; Apr. 28 (Brooklyn) to Oct. 23 (Brooklyn). Rare in winter (Robt. B. Lawrence, *F. and S.*, xxx, p. 6). Messrs. W. F. and John Hendrickson took a female Sora and a nest and eggs of this species at Long Island City, July 17, 1889.

113. *Porzana noveboracensis*. YELLOW RAIL.

Probably regular summer resident, though but rarely observed. Mr. Dutcher has recorded it from Oakdale, Apr. 29, 1887 (*Auk*, v, 1888, p. 177); Mr. Lawrence, from Far Rockaway Oct. 15, 1883 (*Auk*, ii, 1885, p. 274). Two other Long Island specimens are in the Long Island Historical Society's collection.

114. *Porzana jamaicensis*. BLACK RAIL.

Probably rare summer resident. Several specimens are recorded from various points on Long Island by Mr. Grinnell (*Forest and Stream*, xxiii, p. 24, Aug. 7, 1884). One of these was again recorded by Mr. R. Lawrence (*Bull. N. O. C.*, v, 1880, p. 117). It has been found nesting in Connecticut, July 10, 1876 (*Bull. N. O. C.*, ii, 1877, p. 22).

115. *Crex crex*. CORN CRAKE.

Accidental straggler from Europe. A specimen was taken "on an upland or dry meadow, in company with some Meadow Larks" about Aug. 15, 1885, near Amagansett (Dutcher, *Auk*, iii, p. 435). Another was "taken at the foot of the uplands,

where they join the meadows" at Oakdale, Nov. 2, 1880 (Dutcher, *Auk*, v, p. 177).

116. ***Ionornis martinica***. PURPLE GALLINULE.

Rare transient visitor. Giraud says of this species, "the occurrence of this elegant bird on Long Island is extremely rare" (*Birds of L. I.*, 1844, p. 198). One is contained in the collection of the Long Island Historical Society, taken at Indian Pond, Flatbush (Dutcher, *Auk*, x, p. 272). Another specimen has been recorded from Middle Island, summer of 1879 (Helme, *Orn. and Oöl.*, vii, 1882, p. 118).

117. ***Gallinula galeata***. FLORIDA GALLINULE.

Locally a summer resident. Messrs. W. F. and John Hendrickson of Long Island City, observed a pair of birds throughout the summer of 1903, near their home. They had been seen in previous years and one was taken several years ago on October 1. During the summer of 1905 the writer with the assistance of the Messrs. Hendrickson located a nest of this species at Long Island City. It had evidently been robbed by Crows for the eggs were mostly broken. Several adult birds occupied the vicinity all summer and young were seen in September (*Auk*, xxiii, 1906, p. 189). One was recorded from Shelter Island, Oct. 28, 1898 (Worthington, *Auk*, xvi, p. 85).

118. ***Fulica americana***. COOT; MUD HEN.

Common transient visitor and probably rare summer resident. March 23 (Montauk) to June 28 (Long Island City); and Oct. 17 (Quogue) to November 13 (Rockaway). One was observed by the writer at Moriches, August 15. Local names on Long Island are "Crow Duck," "Blue Peter" and "Blue Petie"; at Montauk, "Meadow Hen" and "Sea Coot."

119. ***Crymophilus fulicarius***. RED PHALAROPE.

Rare transient visitant. Apr. 30 (Montauk, Dutcher) to June 5 (Montauk) and Sept. 24 (Montauk) to Nov. 27 (Mon-

tauk). They migrate along the coast, rarely approaching land except in storms. Mr. William Dutcher has recorded numerous occurrences (*Auk*, i, 1884, p. 33, iii, p. 436; vi, p. 134 and *Abstr. Proc. Linn. Soc.* 1898-9, p. 4). Mr. Robt. Lawrence has recorded it also (*Bull. N. O. C.*, v, 1880, p. 117). The writer's collection contains four specimens which struck Montauk Light Sept. 24, 1903, and three Nov. 27, 1902.

120. **Phalaropus lobatus.** NORTHERN PHALAROPE.

Uncommon transient visitant. April 27 (Montauk) to May 29 (Montauk) and Aug. 5 (Montauk) to Oct. 22 (Ditch Plain, Dutcher).

121. **Steganopus tricolor.** WILSON'S PHALAROPE.

Casual. Three specimens are in the collection of the Long Island Historical Society, with scanty data. Mr. Dutcher records it from Shinnecock, Aug. 20, 1883 and Aug. 15, 1885, (*Auk*, i, 1884, p. 33 and iii, 1886, p. 436). It is recorded by Mr. Newbold T. Lawrence from Far Rockaway, Oct. 10, 1874, and from the East River, Oct. 15, 1879 (*Auk*, ii, 1885, pp. 273-4).

122. **Recurvirostra americana.** AMERICAN AVOCET.

Extremely rare autumnal visitant from the South. Two specimens in the Long Island Historical Society are from Ponquogue and Southampton, respectively (Dutcher, *Auk*, x, p. 272).

123. **Himantopus mexicanus.** BLACK-NECKED STILT.

Very rare or accidental autumnal visitant. Two specimens are in the collection of the Long Island Historical Society, taken by Col. Pike on Great South Bay and recorded by Mr. Dutcher (*Auk*, x, 1893, p. 272).

124. **Philohela minor.** WOODCOCK.

Rare summer resident; occasional in winter. April 12

(Quogue) to Nov. 21 (Quogue). Mr. W. F. Hendrickson has found it at Wyandance, as late as Dec. 1, 1903.

[? *Scolopax rusticola*. EUROPEAN WOODCOCK.

Though having been referred to in various works as taken on Long Island, no authentic record for this species has been discovered by the writer. The following books attribute without definite data the species to this region; Stearns and Coues, *New England Bird Life*, Boston, 1883, p. 194; J. A. Allen, Revised List of Birds of Mass., in *Bull. Amer. Mus. Nat. Hist.*, N. Y. 1886, p. 265. Dr. Allen has informed me that he believes the reference cited was erroneous.]

125. *Gallinago delicata*. WILSON'S SNIPE.

Common transient visitant. Occasional in winter. April 22 to 27 (Brooklyn) Sept. 16 to Oct. 17 (Brooklyn): Jan. 1, 1890 (Far Rockaway).

126. *Macrorhamphus griseus*. DOWITCHER.

Common transient visitant. One of the very earliest southward bound migrants to arrive in autumn. May 15 (Amityville) to May 30 (Rockaway) and July 12 (Freeport) to Sept. 29 (Freeport).

127. *Macrorhamphus scolopaceus*. LONG-BILLED DOWITCHER.

Rare autumnal migrant. Mr. William Dutcher has recorded specimens on the following dates; Sept. 19, 1882; Sept. 26, 1883; July 23, 1884; Sept. 26., Oct. 6th and 9th, 1885. (*Auk*, i, 1884, p. 32; ii, p. 37; iii, p. 436). Mr. N. T. Lawrence recorded one, Oct. 15, 1884 (*Auk*, ii, p. 273) and others March 20 and Aug. 7 to Oct. 13 (*Bull. N. O. C.*, v, 1880, p. 154). The March record may indicate that it begins the northward migration rather earlier than *M. griseus*.

128. *Macropalama himantopus*. STILT SANDPIPER.

Somewhat irregular autumnal visitant, as several years may

pass without its being observed. July 28 to Sept. 10 (Far Rockaway, Lawrence). The writer secured nine of about twenty seen, Aug. 8, 1901, at Freeport and six on Aug. 22, 1901. Other records are by N. T. Lawrence (Brewer, *Bull. N. O. C.*, iii, 1878, p. 148; *Auk*, ii, 1885, p. 273).

129. *Tringa canutus*. ROBIN SNIPE.

Not common transient visitant. May 20 to May 31 (Amityville) and Aug. 12 (Rockaway) to Sept. 26 (Freeport).

130. *Arquatella maritima*. PURPLE SANDPIPER.

Rare winter visitant. Recent records are, Gull Island in 1886, Jan. 23 and 24, Jan. 30, Feb. 1 to 10, Feb. 17-18, Feb. 23, March 3-5, March 25; Montauk, Dec., 1886; Gull Island, Feb. 10, 1887; Montauk, Nov. 1, 1887 (Dutcher, *Auk*, v, 1888, p. 178) and Amityville, Nov. 23, 1899 (Braislin, *Auk*, xix, 1902, p. 146).

131. *Actodromas maculata*. PECTORAL SANDPIPER.

Transient visitant; rare in spring, very common in the autumn. May 8 (Rockaway Beach); July 21 (Amityville) to Oct. 30 (Quogue). Local name is "Creeker," or "Short-neck."

132. *Actodromas cooperi*. COOPER'S SANDPIPER.

This bird is probably a hybrid. The type and only specimen ever secured was shot at Raynor South, May 24, 1883, by the late Wm. Cooper, and named and described by Prof. S. F. Baird (*Pacific R. R. Rep.* vol. ix, 1858, p. 716).

133. *Actrodomas fuscicollis*. WHITE-RUMPED SANDPIPER.

Rather common transient visitant in the fall. August 24 (Quogue) to Oct. 30 (Quogue). The White-rumped, the Least, and the Semipalmated Sandpipers are locally confused under the name "Ox-eye."

134. *Actodromas bairdii*. BAIRD'S SANDPIPER.

Very rare transient. Recorded in Sept. 1872, Aug. 26, 1873, Sept. 20, 1874 (N. T. Lawrence, *Forest and Stream*, x, p. 235); Sept. 20, 1880, Montauk (D. E. Moran, *Bull. N. O. C.*, vii, p. 60); Sept. 29, 1894, H. H. Taylor, (*Auk*, xii, 1895, p. 179); Sept. 17, 1896, Easthampton (C. Wheaton Vaughan, *Auk*, xiii, 1896, p. 80); Oct. 31, 1894, Quogue (Braislin, *Auk*, xvi, 1899, p. 191). Five were secured at Montauk, Aug. 14 to 17, 1907, by Mr. B. T. Van Nostrand and the writer.

135. *Actodromas minutilla*. LEAST SANDPIPER.

Common transient visitor. In autumn this is the very first migrant to appear, and it departs early. Locally known as "Ox-eye." May 3 (Rockaway) to May 23 (Flatlands); July 3 (Flatlands) to Sept. 22 (Freeport).

136. *Pelidna alpina*. EUROPEAN DUNLIN.

Casual. Once recorded from Long Island, the second North American record. (Young, *Auk*, x, 1893, p. 78.)

137. *Pelidna alpina pacifica*. RED-BACKED SANDPIPER.

A common transient visitant. May 19 (Amityville) to June 3 (Rockaway); Oct. 11 (Amityville) to Oct. 31 (Quogue). This bird is called "Frost Snipe" at some localities on Long Island.

138. *Erolia ferruginea*. CURLEW SANDPIPER.

Casual. This Old World species has been several times recorded at various parts of the Atlantic coast of North America. There is one for Long Island at Shinnecock Bay, May 23, 1883 (Dutcher, *Auk*, ii, 1885, p. 32).

138. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.

Abundant transient visitant, locally called "Ox-eye." May 20 (Rockaway) to May 31 (Amityville) July 12 (Freeport) to Sept. 26 (Freeport).

139. *Ereunetes occidentalis*. WESTERN SANDPIPER.

A not rare transient in the autumn. July 16 (Freeport) to Sept. 17 (Amityville). It associates with the former species on Long Island and at times it is found to preponderate in numbers in mixed flocks of the two species. It is not distinguished by the baymen from the preceding.

140. *Calidris arenaria*. SANDERLING.

Very common transient visitant. May 19 (Amityville) to June 3 (Rockaway); July 20 (Freeport) to Oct. 11 (Freeport). Called on Long Island almost invariably "Surf Snipe" but occasionally "White Snipe" and "Beach Plover." It is rarely met with in winter.

141. *Limosa fedoa*. MARBLED GODWIT.

Now extremely rare and a visitant in autumn only; formerly, apparently, more frequently met with. Mr. Dutcher found it at Shinnecock Bay, one on Aug. 12, 1881; three, Sept. 1 to 8, 1883; one, Aug. 25; two Aug. 31; one, Sept. 15, 1885 (*Auk*, iii, 1886, p. 436). Messrs. W. F. and John Hendrickson took one at Good Ground, Aug. 18, 1888.

142. *Limosa hæmastica*. HUDSONIAN GODWIT.

Rare transient visitant. Recorded as follows:—Five, Shinnecock, Sept. 12, 1882; four, Babylon, Oct. 5, 1882; six, Shinnecock, Sept. 1 to 8, 1883; one, Aug. 8, 1884; one, South Oyster Bay, Aug. 25, 1884; two, Rockaway, Aug. 29; one, Shinnecock, Sept. 19, 1884; one, Sept. 24, 1884; two, Aug. 26, 1885; two, Sept. 13, 1885; one, Oct. 9, 1885 (Dutcher, *Auk*, iii, 1886, p. 437); also one, Quogue, Sept. 23, 1896, taken by the writer, and two at Rockaway Aug. 30, 1903, by Mr. Robt. L. Peavey (Braislin, *Auk*, xxii, 1905, p. 167).

143. *Totanus melanoleucus*. GREATER YELLOW-LEGS.

Common transient visitant. Apr. 14 (Montauk) to June 6 (Canarsie); July 11 (Freeport) to Nov. 4 (Rockaway). One

extremely early specimen was noted at Montauk, March 23, 1903.

144. **Totanus flavipes.** SUMMER YELLOW-LEGS.

Common transient in the fall; rare in spring. April 25 (Montauk) to June 1 (Rockaway); July 15 (Amityville) to Oct. 1 (Rockaway).

145. **Helodromas solitarius.** SOLITARY SANDPIPER.

Rather common transient visitant. Found on fresh-water ponds and rivulets; very rarely on salt marshes. May 16 (Flatlands); Aug. 16 (Quogue) to Sept. 23 (Montauk).

146. **Symphemia semipalmata.** WILLET.

Rather rare transient. Aug. 10 (Rockaway) to Aug. 22 (Freeport); July 31 (Montauk) to Sept. 4 (Montauk). Formerly, probably a nesting species, though Giraud was not certain as to this (*Birds of L. I.*, p. 255).

147. **Pavoncella pugnax.** RUFF.

Accidental. Recorded from Long Island by Mr. G. N. Lawrence. (*Annals Lyceum of Nat. Hist.*, N. Y., vol. v, 1852, p. 220) and by Mr. Frank M. Chapman, "Two specimens of this bird in the Lawrence Collection in the American Museum of Natural History, N. Y., are labeled 'Long Island.'" (*Guide to Local collection* 1894, p. 35.) Lawrence in his catalogue includes the bird without remarks (*Ann. Lyc. Nat. Hist.*, N. Y., viii, 1867, p. 294). Baird states that it has been frequently killed on Long Island (*Pacific R. R. Rep.*, vol. ix, 1858, p. 737.)

148. **Bartramia longicauda.** BARTRAMIAN SANDPIPER.

Rare summer resident. April 19 (Montauk) to Sept. 17 (Montauk). It arrives about April 1 (Giraud) and according to the writer's experience is rarely observed after Aug. 30.

149. **Tryngites subruficollis.** BUFF-BREASTED SANDPIPER.

Very rare transient. Giraud (*Birds of L. I.*, p. 231) says,

“almost every season a few are observed” and mentions a flock of five secured at Gowanus, now a built-over part of Brooklyn. Four were taken at Far Rockaway in August and September in 1879 (Lawrence, *Forest and Stream*, x, 1893, p. 235); one, at Montauk, Aug. 26, 1880 (Berier, *Bull. N. O. C.*, vi, 1881, p. 126); one, at Long Beach, Aug. 31, 1894, by Mr. Frank E. Johnson, apparently not previously recorded; one, at Rockaway Beach, Sept. 11, 1904, by Mr. R. L. Peavey (Braislin, *Auk*, xxii, 1905, p. 169); another, Sept. 4, 1906, by same, Rockaway Beach.

150. *Actitis macularia*. SPOTTED SANDPIPER.

Common summer resident. April 27 (Flatbush) to Sept. 7 (Ronkonkoma). Nests, second week in June and later.

151. *Numenius longirostris*. LONG-BILLED CURLEW.

Very rare autumnal visitant. A specimen was secured at Far Rockaway on the outer beach Aug. 20, 1873; another Aug. 26, 1885 (N. T. Lawrence, *Auk*, ii, 1885, p. 273). Two are contained in the collection of the Long Island Historical Society, both labeled “Rockaway” (Dutcher, *Auk*, x, 1893, p. 272).

[*Numenius arquatus*. EUROPEAN LONG-BILLED CURLEW.

There seems to the writer no valid reason for opposing the belief of Mr. Dutcher, who has thoroughly sifted and presented all the evidence, that the specimen now contained in the New York State Cabinet of Natural History at Albany, was obtained on Long Island in 1853 (*Auk*, ix, 1893, p. 390).*]

152. *Numenius hudsonicus*. HUDSONIAN CURLEW.

Regular transient visitant. The bulk of the autumn migrants of this species pass Long Island during the latter half of July. April 28 (Montauk) to May 13 (Rockaway); July 10 (Far Rockaway, Lawrence, *Auk*, ii, p. 273) to Sept. 22 (Montauk). Locally called “Jack” or “Jack Snipe.”

[* The A. O. U. Committee has not taken this view.—ED.]

153. *Numenius borealis*. ESKIMO CURLEW.

The migrations of this bird are usually accomplished well off the coast but heavy easterly storms occasionally drive individuals or small flocks ashore, when they may resort to the uplands or the dryer parts of the salt-meadows to feed. In earlier days, and then at very long intervals, "flights" of many thousands have been seen on Long Island. Such are merely historical incidents, never to be repeated. During twelve years Snipe-shooting Mr. N. T. Lawrence met with it but four times, one, Sept. 12, 1875, one Sept. 10, 1876, and two, Sept. 26, 1884. (*Auk*, ii, 1885, p. 273). The records of one shot at Rockaway, Sept. 14, 1902, and one near Zach's Inlet, Aug. 29, 1903 (Braislin, *Auk*, xxi, 1904, p. 289) were erroneous, the birds proving on further examination to be young of *N. hudsonicus*. The local name is "Fute" or "Dough Bird."

154. *Vanellus vanellus*. LAPWING.

Accidental straggler from Europe. A single specimen was taken at Merrick, Dec. 18, 1884 (Dutcher, *Auk*, iii, 1886, p. 438). Another was shot late in the fall of 1905 at Watermill (Beebe, *Auk*, xxiii, 1906, p. 221).

155. *Squatarola squatarola*. BLACK-BELLIED PLOVER.

Common transient visitant. May 19 (Amityville) to June 17 (Rockaway); Aug. 5 (Shinnecock) to Nov. 4 (Amityville). It is rarely seen in July, but the writer has an immature bird taken at Freeport, July 11, 1901, and adults were reported July 1, 1903, and July 6, 1904, at Quogue (Kobbe, *Auk*, xxi, p. 79, and xxii, p. 211).

156. *Charadrius dominicus*. GOLDEN PLOVER.

Fairly common transient visitant. August 29 (Quogue and Rockaway) to Oct. 30 (Rockaway). The young of this species and the Black-bellied Plover, both called "Frost Birds" on Long Island formerly occurred in great abundance after the first north-east storm of early September. A local name is "Greenback."

157. *Oxyechus vociferus*. KILLDEER.

Now rather uncommon, probably never abundant. March 7 (Rockaway) to Nov. 10 (Rockaway). It has been recorded here in every month and is probably a rare summer resident.

158. *Ægialitis semipalmata*. SEMIPALMATED PLOVER; RING-NECK.

Abundant transient visitant. April 29 (Rockaway) to June 4 (Sheepshead Bay) July 15 (Amityville) to Sept. 18 (Amityville).

159. *Ægialitis meloda*. PIPING PLOVER.

Rare transient visitant and summer resident. March 24 (Shinnecock Bay, 1884, Dutcher, *Auk*, ii, p. 373) to Sept. 3 (Rockaway). The writer found it nesting at Ram Island Shoals, June 19, 1902.

160. *Ægialitis meloda circumcincta*. BELTED PIPING PLOVER.

The only recorded instance of the occurrence of this form is that of a specimen shot at Rockaway Beach, Apr. 30, 1873 (C. H. Eagle, *Bull. N. O. C.*, iii, 1878, p. 94) though individuals of *A. meloda* are frequently seen, closely approaching this subspecies.

161. *Ochthodromas wilsoni*. WILSON'S PLOVER.

Rare transient visitant. Three were taken at Far Rockaway, May 17, 1879, by N. T. Lawrence, (*Auk*, ii, 1885, p. 273); one at Shinnecock Bay, May 16, 1884, (Dutcher, *Auk*, iii, p. 438); and one at Good Ground, May 28, 1879 (Dutcher, *Bull. N. O. C.*, iv, 1879, 242).

162. *Arenaria interpres*. TURNSTONE.

Rather common transient visitant. May 1 (Rockaway) to June 5 (Rockaway); August 3 (Montauk) August 7 (Rockaway) to Sept. 14 (Rockaway). Also called by the names of "Brant Bird," "Calico-back" and "Calico Plover" on Long Island though at Shinnecock we have heard it named "Beach Plover" and at Montauk, "Sea Quail."

163. *Hæmatopus palliatus*. OYSTER-CATCHER.

Casual. In Giraud's time it was more frequent for he says of it; "Those which I have procured on the shores of Long Island have usually been single, or at the most at any one time, a pair, ranging between Raynor South and Babylon. The baymen recognize it by the name of 'Flood-gull.'" (*Birds of L. I.*, p. 222). This name is now applied to the Black Skimmer, (*Rynchops nigra*), by those baymen on Long Island, whom I have met, who know the latter bird. On May 28, 1877, a specimen of the Oyster-catcher was shot in New York Harbor (Robert Lawrence, *Bull. N. O. C.*, v, p. 117); one was obtained in June, 1882, at Greenport, and another, March 9, 1880, at Ponquogue (Dutcher, *Auk*, iii, p. 439).

164. *Colinus virginianus*. BOB-WHITE; QUAIL.

A common resident. Nests containing eggs have been found in May, June, July and August (A. H. Howell).

165. *Bonasa umbellus*. RUFFED GROUSE.

Not uncommon resident. Half grown young have been noted by the first of July (A. H. Howell).

166. *Tympanuchus cupido*. HEATH HEN.

This game bird had become almost, if not quite exterminated on Long Island at the time of the publication of Giraud's "Birds of Long Island" in 1844. It formerly found a congenial habitat on Long Island, especially on the Hempstead Plain, a large tract of country extending eastward from Jamaica partly covered with a scrubby growth of trees or shrubs.

167. *Ectopistes migratorius*. PASSENGER PIGEON.

The forest formerly occupying the ridge from Fort Hamilton into and beyond the present city of Brooklyn was once a favorite feeding and resting place for these birds. Verbal accounts of old residents point this out as having been a place of resort for

hundreds of sportsmen and pot-hunters in the autumn, when the pigeons resorted there regularly on their migrations. One specimen killed at Flatlands in 1878 by Col. N. Pike is contained in the Long Island Historical Society collection (*Auk*, x, 1893, p. 274).

168. **Zenaidura macroura.** MOURNING DOVE.

Rather common summer resident. March 25 (Rockaway) to Oct. 21 (Shelter Island).

169. **Cathartes aura.** TURKEY VULTURE.

Observed on numerous occasions on the western end of Long Island and once, as far east as Greenport (Dutcher, *Auk*, iii, p. 439).

170. **Catharista urubu.** BLACK VULTURE.

Accidental. Once observed on the adjacent shore of Sandy Hook (Robt. Lawrence, *Bull. N. O. C.*, v, 1880, p. 116). The only actual Long Island record seems to be that of a specimen found at Coney Island beach (de L. Berier, *Bull. N. O. C.*, vi, 1881, p. 126).

171. **Elanoides forficatus.** SWALLOW-TAILED KITE.

Accidental. Its occurrence near Raynor South in the summer of 1837 was noted by Giraud (*Birds of L. I.*, p. 13) and de L. Berier records one shot by Mr. J. Akhurst in 1845 (*Bull. N. O. C.*, vi, 1881, p. 126).

172. **Circus hudsonicus.** MARSH HAWK.

Probably a rare summer resident; common migrant; occasional in winter. As a migrant on the western end of Long Island it arrives in middle of March and again in autumn in latter August. Mr. Clinton G. Abbott found it at Gardiner's Island, July 4 to 11, 1903, where it had probably nested.

173. **Accipiter velox.** SHARP-SHINNED HAWK.

Rather rare summer resident, common during migrations,

rare in midwinter. March 17 (Montauk) to Dec. 29 (Flatlands). Found nesting the third week in May.

174. **Accipiter cooperii.** COOPER'S HAWK.

Rare summer resident, more common in migrations, occasional in winter (Fisher, *Hawks and Owls of U. S.*, 1893, p. 42). Found nesting, May 16 (A. H. Helme, *Abstr. Proc. Linn. Soc. N. Y.*, no. 11, 1898-9, p. 4); also by Mr. R. P. Brasher at Hollis, May 13, 1906.

175. **Accipiter atricapillus.** GOSHAWK.

Rare winter visitant. There are numerous records. Two specimens are contained in the Long Island Historical Society collection (Dutcher, *Auk*, x, 1893, p. 274). Two recent records are Rockaway Beach, Dec. 18, 1898, and Amagansett, March 21, 1899 (Braislin, *Auk*, xvii, 1900, p. 70, and xx, 1903, p. 53).

176. **Buteo borealis.** RED-TAILED HAWK.

Common permanent resident. Nests containing eggs may be found in May.

177. **Buteo lineatus.** RED-SHOULDERED HAWK.

Common permanent resident. Nests containing eggs may be found in early April.

178. **Buteo platypterus.** BROAD-WINGED HAWK.

Rare permanent resident. A nest was discovered by Mr. A. H. Helme at Miller's Place. Records for winter specimens from Long Island are contained in Fisher's "Hawks and Owls of the U. S.," 1893, p. 82.

179. **Archibuteo lagopus sancti-johannis.** ROUGH-LEGGED HAWK.

Common winter visitant. October 31 (Montauk) to April 8 (Montauk).

180. **Aquila chrysaetos.** GOLDEN EAGLE.

Casual. One is in the Long Island Historical Society collection from Canarsie (Dutcher, *Auk*, x, 1893, p. 274). Other

recent records are, Gravesend, Oct. 6, 1877 (F. E. Johnson, *Bull. N. O. C.*, iv, 1879, p. 189); Shelter Island Oct. 19, 1890 (Worthington, *Auk*, viii, 1891, p. 113).

181. *Helixæetus leucocephalus*. BALD EAGLE.

Rare summer resident. April 21 (Montauk) to September (East Bay). This species was noted locally on Long Island during the summer of 1904 and is believed to have nested. Messrs. F. H. and Roy Latham report having seen one at Orient Point, Dec. 24, 1905 (*Bird-lore*, viii, 1906, p. 19).

182. *Falco islandus*. WHITE GYRFALCON.

One specimen is contained in the collection of the Long Island Historical Society, obtained on Long Island in the winter of 1856 (Dutcher, *Auk*, x, p. 275).

183. *Falco rusticolus*. GRAY GYRFALCON.

Mr. Robt. Lawrence recorded a specimen from "Pond Quogue" [Ponquogue] in 1877 under the name of *Falco sacer* (*Bull. N. O. C.*, v, 1880, p. 117). The specimen has been referred to this form.

184. *Falco rusticolus obsoletus*. BLACK GYRFALCON.

A specimen was killed at Flushing, in the autumn of 1875 (Berier, *Bull. N. O. C.*, vi, 1881, p. 126). There are numerous New England records.

185. *Falco peregrinus anatum*. DUCK HAWK.

Common in autumn; rare at other seasons. Sept. 18 (Amityville) to Oct. 16 (Montauk); May 21 (Amityville).

186. *Falco columbarius*. PIGEON HAWK.

Common autumnal migrant; rare in winter; not common in spring. Sept. 5 (Rockaway) to April 30 (Rockaway).

187. *Falco sparverius*. SPARROW HAWK.

Not uncommon summer resident; common migrant; rarely

seen in winter. April 17 (Amityville) to Dec. 30 (Lake Grove, A. H. Howell).

188. *Pandion haliaëtus carolinensis*. FISH HAWK; OSPREY.

Locally abundant summer resident. March 24 (Rockaway) to Oct. 19 (Rockaway). At Gardiner's Island, where they are strictly protected, these hawks place their huge nests on the tops of bowlders, on out-buildings and even on the ground on clear spaces at the back of the beaches, as well as in trees.

189. *Strix pratincola*. BARN OWL.

A rare resident. There are numerous records and several instances of its breeding; once at Flushing, May 30, 1883, (Dutcher, *Auk*, iii, 1886, p. 439) and Mr. Dan Beard relates that they nested in the same place, formerly, for a number of years (*Auk*, xix, 1902, p. 498). Not previously recorded are two seen, one shot by Capt. Scott at Montauk, Feb. 18, 1903, and another, Sept. 25, 1901, same locality.

190. *Asio wilsonianus*. AMERICAN LONG-EARED OWL.

A rare summer resident. Common in spring and fall. April 16 (Sheepshead Bay) to Dec. 11 (Sheepshead Bay) 1887. It was found nesting at Selden, May 30, 1889. The nest was in a pine, about 25 feet from the ground, in a deserted squirrel's nest, apparently. It contained three young, all markedly dissimilar in size. (A. H. Howell, *Abstr. Proc. Linn. Soc. N. Y.*, no. 5, 1892-3.)

191. *Asio accipitrinus*. SHORT-EARED OWL.

Very rare summer resident; common during migration. Feb. 27 (Montauk) to Dec. 25 (Flatlands). It was found nesting at Shelter Island, May 7, 1891. (Worthington, *Auk*, x, 1893, p. 301.)

192. *Syrnium varium*. BARRED OWL.

Rare autumnal visitant. It has been twice recorded from

within the limits of Brooklyn (George Hayes Coues, *Bull. N. O. C.*, iv, 1879, p. 31; Braislin, Nov. 27 and 28, 1899, *Auk*, xvii, 1900, p. 70).

193. **Cryptoglaux acadica.** SAW-WHET OWL.

A rare resident. There are numerous records, viz.: Fire Island, Dec. 6, 1884; Merrick, Dec. 31, 1884; Train's Meadows, Queens Co., Nov. 15, 1884; Ravenswood, Dec. 27, 1884 and March 30, 1885; Creedmoor, Nov. 4, 1884; Port Washington, Feb. 28, 1885 (*Auk*, iii, 1884, p. 440, Dutcher); Montauk, Nov. 20, 1885 (N. T. Lawrence, *Auk*, ii, 1883, p. 272). The writer has once noted it in Prospect Park. Mr. Arthur H. Helme discovered a nest at Miller's Place in 1879.

194. **Megascops asio.** SCREECH OWL.

Not common, permanent resident.

195. **Bubo virginianus.** GREAT HORNED OWL.

A rare permanent resident. Its nest is occasionally discovered on Long Island.

196. **Nyctea nyctea.** SNOWY OWL.

Occasionally a rather common, but usually a rare, winter visitant. Nov. 7 (Sag Harbor) to February 6 (Montauk, Dwight, *Auk*, xix, 1902, p. 199). Some winters this owl may be termed common, at least in the vicinity of the beaches, and it is noticeable that its disappearance (presumably northward, for it is said to nest early), is nearly complete by January, for it rapidly becomes rare after the first of that month. Severe winters have no apparent influence on its presence here. Thus during the winters of 1903-04 and 1904-05 it was very rare and both were "hard" winters, while during the mild season of 1905-06 just passed it was rather abundant.

197. **Surnia ulula caparoch.** HAWK OWL.

A single specimen shot at Bay Ridge, contained in the mu-

seum of the Long Island Historical Society, is the only known, existing example from Long Island (Dutcher, *Auk*, x, 1893, p. 275). I have been informed by the late Mr. John Akhurst, through whom the specimen referred to reached the museum, that a considerable number of these birds were shot in the vicinity during the winter in which this one was secured, but that he had not before or since met with a specimen from Long Island.

198. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.

Common summer resident. May 30 (Flatbush) to Oct. 23 (Flatbush). Found nesting the second or third week of June.

199. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.

Common summer resident. May 15 (Flatbush) to Oct. 3 (Brooklyn).

200. *Ceryle alcyon*. KINGFISHER.

Common summer resident. April 8 (Montauk) to Nov. 7 (Stony Brook).

201. *Dryobates villosus*. HAIRY WOODPECKER.

Rare permanent resident. Its nesting range seems to be confined to the central and northern portions of the island, especially where pines are abundant. At all events, at the western end it is seen only in winter and then, rarely. A set of fresh eggs was found at Miller's Place, May 4, by Mr. Arthur H. Helme.

202. *Dryobates pubescens medianus*. DOWNY WOODPECKER.

Rather common, and fairly well distributed, permanent resident. Its call note may be heard at almost any time of the year in Prospect Park.

203. *Picoides arcticus*. ARCTIC THREE-TOED WOODPECKER.

Mr. Dutcher has recorded this bird from Sag Harbor, winter

of 1887-88 (*Auk*, vi, 1889, p. 136). There seems to be no reasonable doubt concerning the authenticity of this specimen.

204. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.

Rather common transient visitant. April 27 (Brooklyn) to May 1 (Brooklyn); Sept. 25 (Brooklyn) to Oct. 17 (Brooklyn).

205. **Ceophlœus pileatus abieticola.** PILEATED WOODPECKER.

Formerly rare; now extremely rare or accidental. Three specimens, the latest from Jamaica, in 1879, were recorded by Mr. de L. Berier. (*Bull. N. O. C.*, vi, 1881, p. 126.) Two specimens, lacking data, are in the collection of the Long Island Historical Society. (Dutcher, *Auk*, x, 1893, p. 275.)

206. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.

Rare summer resident. March 23 (Jamaica) to Sept. 27 (Lake Grove).

207. **Melanerpes carolinus.** RED-BELLIED WOODPECKER.

Very rare or accidental. Giraud evidently considered it a nesting species in his time and states that "laying commences about the first of May" (*Birds of L. I.*, p. 179). Stearns and Coues state, without giving the authority, that "it has been said to breed regularly though rarely on Long Island" (*New England Bird Life*, ii, 1883, p. 79). Three specimens from Long Island are known, the last taken in 1895 at Babylon, by Mr. Robert B. Lawrence (*Auk*, xiii, 1896, p. 82).

208. **Colaptes auratus luteus.** FLICKER; GOLDEN-WINGED WOODPECKER.

Abundant resident; also occasional in winter. March 14 (Rockaway) to Nov. 29 (Parkville). Winter records of the writer are Jan. 8 and Feb. 15. Nests about the middle of May.

Hybrids showing indications of crossing with the Red-shafted Flicker of the West have been taken at Fort Hamilton in three instances, by Mr. de L. Berier (*Bull. N. O. C.*, vi, 1881, p. 247).

209. *Antrostomus vociferus*. WHIP-POOR-WILL.

Locally, common summer resident. April 18 (Lake Grove) to Sept. 22 (Lake Grove, A. H. Howell). Less common in the nesting season than during the migrations, when its distribution, like that of all migratory land birds, is more general. An abnormally early nesting date was recorded, at Oyster Bay, April 26, 1885 (N. T. Lawrence, *Auk*, ii, 1885, p. 272).

210. *Chordeiles virginianus*. NIGHT HAWK.

Locally, common summer resident. April 25 (Montauk) May 8 (Brooklyn) to Oct. 12 (Brooklyn, Prospect Park).

At the eastern end of the island it nests on the gravel-strewn, sandy wastes about Napeague. Its eggs have several times been discovered on the roofs of houses in the heart of Brooklyn, and its call note, uttered while on wing is a familiar evening sound to the initiated ear. These urban nesting sites are invariably on roofs with a covering of tar and pebbles, which simulates not a little the characteristics of the nesting habitat supplied by Nature. The protective similitude of its eggs to the pebbles make their discovery on house-tops less easy than one would suppose.

211. *Chætura pelagica*. CHIMNEY SWIFT.

Common summer resident. April 27 (Brooklyn) to Oct. 6 (Brooklyn).

212. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD.

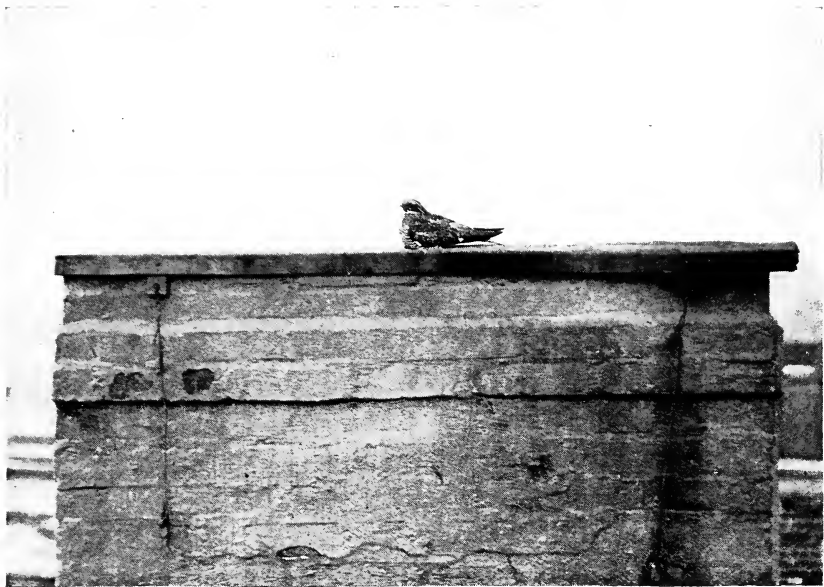
Not common summer resident. May 11 (Parkville) to Sept. 17 (Shinnecock). Nests the latter half of May.

213. *Tyrannus tyrannus*. KINGBIRD.

Common summer resident. April 30 (Lake Grove A. H. Howell) to Sept. 7 (Rockaway). Nests the first or second week in June.

214. *Tyrannus dominicensis*. GRAY KINGBIRD.

Accidental visitor from the southern states. There is but



NIGHT-HAWK ON CHIMNEY OF THE WRITER'S HOUSE IN BROOKLYN.
(The bird was nesting on the roof.)



Photographs by C. G. Abbott.

COMMON TERN'S NEST CONTAINING SIX EGGS, RAM ISLAND.

a single record for the bird namely, from Setauket (*Forest and Stream*, ii, July 23, 1874, p. 373).

215. **Myiarchus crinitus.** CRESTED FLYCATCHER.

Common summer resident. May 4 (Lake Grove) to Sept. 26 (Lake Grove). Nests the first or second week in June.

216. **Sayornis phœbe.** PHŒBE.

Common summer resident. March 23 (Parkville) to Oct. 26 (Parkville). Nests the last week of May or later.

217. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.

Not common transient visitant in fall; rare in spring. It has occurred May 24 (Jamaica, Harry F. Floyd) and Aug. 19 (Fire Island Light) to Sept. 26 (Jamaica). The writer has recorded several specimens (*Auk*, xiv, 1897, p. 99; xvi, 1899, p. 192 and xix, 1902, p. 147).

218. **Contopus virens.** WOOD PEWEE.

Common summer resident. May 16 (Jamaica) to Oct. 6 (Parkville). Nesting the second week in June.

219. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER.

Rather rare transient visitant. May 19 (Flatbush) to June 10 (Brooklyn) and Aug. 4 (Freeport) to Sept. 18 (Brooklyn). For specific records see Braislin, *Auk*, xvi, 1899, p. 192.

220. **Empidonax virescens.** ACADIAN FLYCATCHER.

Summer resident, rather common, locally, especially on the north side of the island, from Jamaica to Oyster Bay and on Gardiner's Island. May 19 (Jamaica) to July 11 (Gardiner's Island). Nests the second week in June.

221. **Empidonax traillii alnorum.** ALDER FLYCATCHER.

The only definite record is that of a specimen in the collection of Mr. Arthur H. Helme which was caught by his

house-cat. They are doubtless not so rare in migrations as one might suppose, from this seeming dearth of specimens but in their habits they are so unobtrusive that they probably pass unnoticed.

222. **Empidonax minimus.** LEAST FLYCATCHER.

Not uncommon summer resident but local in its distribution. May 12 (Jamaica) to Sept. 11 (Parkville). It is heard more frequently in the shade-trees of the "north side" village streets than elsewhere. Miss Charlotte E. Lee records it at Huntington in June. (*Bird-lore*, iii, 1901, p. 172.)

223. **Alauda arvensis.** EUROPEAN SKYLARK.

Apparently a permanent resident at Flatbush and vicinity. Its song may be heard from March throughout the summer, as late as Oct. 25, and perhaps at other times. It has been a continuous resident of this section since 1887 (Foster, *Forest and Stream*, xxix, 1887) and its nest has been several times found here (Dutcher, *Auk*, V, 1888, p. 180 and Proctor, *Auk*, xii, 1895, p. 390). Imported birds have been liberated in or about New York several times during the past quarter century. The blizzard of March, 1888, was supposed to have destroyed the colony and no birds were noted for several years. It was later found to be reestablished and therefore some question exists as to its having been actually exterminated. Birds from elsewhere may have become reestablished but it is more probable that a small number survived the rigors of that memorable season. It is possible in view of the seeming absence of birds in winter that they migrate southward, but where they move to, is not known. The possibilities of ultimate survival of this small colony, around whose chosen range residential streets are rapidly closing in, offers a field for interesting speculation.

224. **Otocoris alpestris.** HORNED LARK; SHORE LARK.

Abundant winter visitant. November 7 (Rockaway) to March 18 (Flatlands).

225. *Otocoris alpestris hoyti*. HOYT'S HORNED LARK.

Casual on Long Island. (Oberholser, *Proc. U. S. Nat. Mus.*, xxiv, 1902, p. 845; Dwight, *Auk*, vii, 1890, p. 143; and Bishop, *Auk*, xiii, 1896, p. 132.)

226. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.

Possibly, rare permanent resident. First found on Long Island, July 31, 1886, at Long Island City by Messrs. John and W. F. Hendrickson, and again Sept. 14, 1887 (Dutcher, *Auk*, v, 1888, p. 180). Two Horned Larks were seen July 2, 1903, at Montauk by Messrs. C. G. Abbott and P. H. Bahr, doubtless of this subspecies. There are frequently found, in winter, birds closely approaching this subspecies.

227. *Cyanocitta cristata*. BLUE JAY.

Common permanent resident.

228. *Corvus corax principalis*. RAVEN.

Rare or accidental visitor. Two records exist; a bird killed on Comac Hill in 1836 is in the collection of the Long Island Historical Society; and a specimen taken near Prospect Park in 1848, formerly in the collection of Mr. Philip Brasher, but now in the collection of the University of Vermont (Dutcher, *Auk*, x, 1893, p. 276).

229. *Corvus brachyrhynchos*. AMERICAN CROW.

Permanent resident, common. Nests, middle of April to middle of May. Woodhaven, Apr. 30, nest with 4 young; nest with 4 eggs; Lake Grove, nest with 5 eggs nearly hatched; May 30, young in nest (from data furnished by A. H. Howell).

230. *Corvus ossifragus*. FISH CROW.

Common summer resident. March 11 to December (Rock-away.) On the south side salt-meadows during summer it is the commonly observed crow. In winter, the writer believes it to be rare or irregular, but there are records, notably the

following: "Mr. Theodore Roosevelt shot a male at Oyster Bay, Long Island on December 30, 1874" (Zerega, *Bull. N. O. C.*, v, 1880, p. 205). Mr. William Dutcher has compiled a number of winter records for Long Island and adjacent territory (*Trans. Linn. Soc. N. Y.*, vol. i, 1882, pp. 107 to 111). Nests from May 1 (?) to the middle of June.

231. *Sturnus vulgaris*. EUROPEAN STARLING.

An introduced foreign species, now locally, a common permanent resident from Brooklyn easterly to Hicksville (Braislin, *Auk*, xxi, 1904, p. 289). They nest in church spires, towers and tops of tall buildings in Brooklyn. Ten years ago a large colony nested in a huge bird-box, which was evidently provided for the purpose, placed in a tall tree, near Kensington station, South Brooklyn.

232. *Dolichonyx oryzivorus*. BOBOLINK.

Common summer resident, especially on the upland grass-fields of the north side of the island. It is now of rare occurrence on the salt-meadows of the south side of the island. May 12 (Flatbush) to Oct. 10 (Rockaway).

233. *Molothrus ater*. COWBIRD.

Abundant summer resident. March 15 (Parkville) to Nov. 5 (Parkville). Occasionally occurs in winter. Two males were sent to me from East Quogue, Feb. 1, 1897.

234. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.

Common summer resident, locally abundant. February 25 (Montauk) to Nov. 6 (Flatbush). At Montauk, it is the most constantly present and conspicuous bird in the landscape; here, but never elsewhere, it has been seen by the writer chasing the Fish Hawk, after the manner of the Kingbird, from whom, likely, it has learned the habit. Nests in both May and June and perhaps later.

235. *Sturnella magna*. MEADOW LARK.

Common summer resident; March 7 (Rockaway) to Dec. 25

(Rockaway); not very rare in winter, especially on the salt marshes.

236. *Icterus spurius*. ORCHARD ORIOLE.

Not common summer resident. May 11 (Flatbush) to July 18 (Flatbush). Nests the first week in June. Full-grown young observed July 6.

237. *Icterus galbula*. BALTIMORE ORIOLE.

Common summer resident. May 3 (Lake Grove) to Sept. 7 (Lake Grove, A. H. Howell). Nests the last of May and later. Locally known as "Golden Robin," "Fire Bird," "Hang-nest," and "Golden Oriole."

238. *Euphagus carolinus*. RUSTY BLACKBIRD.

Common transient visitant. March 18 (Flatlands) to May 6 (Jamaica); Oct. 5 (Flatlands) to Nov. 19 (Montauk).

239. *Quiscalus quiscula*. PURPLE GRACKLE.

Common summer resident. Feb. 23 (Montauk) to Oct. 18 (Rockaway Beach). Nests in May.

240. *Quiscalus quiscula æneus*. BRONZED GRACKLE.

Apparently a very rare transient visitant. One was taken, Mr. Worthington informs me, at Shelter Island, June 16, 1886; and one at Jamaica South, from a flock of six or seven individuals Nov. 17, 1900 (Braislin, *Auk*, xix, 1902 p. 147). A strongly fixed, inland migration route seems to be responsible for its rarity on Long Island.

241. *Pinicola enucleator leucura*. PINE GROSBEAK.

At rare intervals this species is a fairly common winter visitant. During the winter of 1903-04 an incursion of a very large number of these birds occurred and they were found abundantly at certain points on Long Island from Dec. 14, 1903, to Feb. 19, 1904 (Helme, *Auk*, xxi, 1904, p. 280). Apparently no such

incursion had appeared here since 1844 (Dutcher, *Auk*, xxi, 1904, p. 281). Prior to that year they had not been observed since 1827 (Giraud, *Birds of L. I.*, p. 129).

242. **Carpodacus purpureus.** PURPLE FINCH.

Rare permanent resident; more common during migrations. It has been found breeding at Millers Place (Helme) and once at Westbury (Dutcher). At the former locality it is regarded as a regular but not abundant breeder (Howell, *Abstr. Proc. Linn. Soc.* no. 5, 1892-93, p. 14).

243. **Passer domesticus.** HOUSE SPARROW; ENGLISH SPARROW.

A species introduced years ago and now an abundant permanent resident. At Montauk Point these birds are partially migratory; that is, they leave during extremely cold weather and in 1901 they did not reappear until April 11. One frequently sees them in Prospect Park and elsewhere gathered into huge flocks as early as July first.

244. **Loxia curvirostra minor.** RED CROSSBILL.

Common in winter. Sept. 19 (Montauk) to April 23 (Prospect Park). Though occasionally seen in summer and once found nesting at Millers Place, April 10, 1883 (Helme, *Ornith. and Oöl.*, viii, p. 68) it is probably but rarely an all-the-year resident. Of six specimens seen at Mt. Sinai Harbor May 6, 1900, one appeared to be nesting (Helme, *Auk*, xvii, 1900, p. 296).

245. **Loxia leucoptera.** WHITE-WINGED CROSSBILL.

Rare winter visitant. Mr. A. H. Helme observed birds of this species almost regularly at Mt. Sinai Harbor from Nov. 7, 1899, until January of 1900, when the cones on which they fed became exhausted; and more rarely to Feb. 7, 1900 (*Auk*, xvii, 1900, p. 295). They were seen in Prospect Park during the same winter (Braislin, *Auk*, xix, 1902, p. 147).

246. *Acanthis linaria*. REDPOLL.

Not common winter visitant, of irregular occurrence. Mr. A. H. Helme has frequently met with it and his collection contains several specimens taken at or near Miller's Place.

247. *Astragalinus tristis*. AMERICAN GOLDFINCH.

Common permanent resident. Young birds in the nest have been found as late as October 3.

248. *Spinus pinus*. PINE SISKIN.

A common winter visitant; at times abundant. Oct. 16 (Flatlands) to May 1 (Flatbush).

249. *Passerina nivalis*. SNOWFLAKE; SNOW BUNTING.

Not uncommon winter visitant. Often abundant on the ocean beaches. November 1 (Montauk) to March 18 (Montauk and Rockaway Beach).

250. *Calcarius lapponicus*. LAPLAND LONGSPUR.

Rather rare winter visitant. There are numerous records, (*Auk*, iii, 1886, p. 444; v, p. 181; vi, 1889, p. 190; xix, 1902, p. 204). Unpublished occurrences are, Mr. A. H. Helme, winter 1901-2, and Mr. H. W. Floyd, Rockaway Beach Feb. 22, 1893.

251. *Calcarius ornatus*. CHESTNUT-COLLARED LONGSPUR.

Accidental. A single specimen taken in company with the preceding species was secured by Messrs. W. F. and John Hendrickson at Long Island City, Feb. 16, 1889 (*Auk*, vi, 1889, p. 190).

252. *Poœetes gramineus*. VESPER SPARROW.

Common summer resident; rarely found in winter (Dutcher, *Auk*, i, 1884, p. 31). April 1 (Sheepshead Bay) to Nov. 23 (Flatbush).

253. *Passerculus princeps*. IPSWICH SPARROW.

Common winter visitant; but found only on the ocean beaches. October 12 (Shinnecock) to Apr. 3 (Far Rockaway).

254. *Passerculus sandwichensis savanna*. SAVANNA SPARROW.

Permanent resident. Rare in winter, rather rare in summer; abundant in migrations. Only one nest known to the writer has been actually secured on Long Island, at Hicks Island by Mr. Worthington, but birds in worn nesting plumage have been found at Garden City by the writer in the middle of July, and on the salt-meadows of the Great South Bay it is not uncommon in May, June and July.

255. *Coturniculus bairdii*. BAIRD'S SPARROW.

Accidental. A single specimen has been taken by Mr. A. H. Helme at Montauk Point, Nov. 13, 1899 (*Auk*, xvii, 1900, p. 296).

256. *Coturniculus savannarum passerinus*. GRASSHOPPER SPARROW.

Abundant summer resident. April 21 (Lake Grove) to Sept. 30 (Flatlands). This is one of the most common nesting species of birds on Long Island. It is found in grass meadows and uncultivated fields everywhere throughout the island.

257. *Ammodramus henslowi*. HENSLOW'S SPARROW.

Rare transient visitant. It will probably be found a summer resident. A specimen was killed Nov. 20, 1901, on Shelter Island (Worthington, *Auk*, xix, 1902, p. 204).

258. *Ammodramus caudacutus*. SHARP-TAILED SPARROW.

Common summer resident on the salt marshes. Occasionally found in winter. April 28 (Flatlands) to Oct. 23 (Flatlands).

259. *Ammodramus nelsoni*. NELSON'S SPARROW.

I have never taken this bird on Long Island and have no record of it. It would therefore have been omitted but for the fact that it is found along the Atlantic coast as a regular migrant at least as far north as Connecticut. "In late September and October it comes with the Acadian Sparrow to the wild rice grow-

ing at the mouths of creeks that empty into Long Island Sound" (Bishop, *Abstr. Proc. Linn. Soc. N. Y.*, nos. 15-16, 1904, p. 55).

260. *Ammodramus nelsoni subvirgatus*. ACADIAN SHARP-TAILED SPARROW.

Rather common migrant, frequently found associated with the previous species. Oct. 7, 1901 (Shelter Island).

261. *Ammodramus maritimus*. SEA-SIDE SPARROW.

Common summer resident on the western end of the island where, like the Clapper Rail, it nearly reaches its northern limit of distribution. On the eastern end it is practically unknown. April 27 (Flatlands) to Sept. 30 (Flatlands).

262. *Chondestes grammacus*. LARK SPARROW.

An accidental visitant. Four or more specimens have been secured on Long Island. One was taken at Sayville in wet salt meadows, Aug. 20, 1879 (Earle, *Bull. N. O. C.*, vi, 1881, p. 58). Another recorded by Mr. A. H. Helme from Miller's Place, Nov. 27, 1899 (*Auk*, xvii, 1900, p. 296) and he has informed me of the taking of another at the same place about a year later which, I believe, is still unrecorded. A fourth specimen was shot at Shelter Island, July 28, 1902 (Worthington, *Auk*, xix, 1902, p. 403).

263. *Zonotrichia leucophrys*. WHITE-CROWNED SPARROW.

Rare transient visitant. April 10 (Parkville) to May 30 (Far Rockaway); Oct. 16 (Queens Co.) to Oct. 21 (Flatlands).

264. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.

Abundant transient and common winter visitant. Sept. 22 (Lake Grove, A. H. Howell) to May 20 (Jamaica South).

265. *Spizella monticola*. TREE SPARROW.

Abundant winter visitant. November 5 (Flatlands) to March 30 (Lake Grove).

266. *Spizella socialis*. CHIPPING SPARROW.

Common summer resident. April 1 (Lake Grove) to Oct. 26 (Bay Ridge). Nests the middle of June and in July. Young unable to fly, observed as late as August 22.

267. *Spizella pusilla*. FIELD SPARROW.

Common summer resident. March 27 (Rockaway Beach) to Oct. 26 (Lake Grove). Nests in June and July.

268. *Junco hyemalis*. JUNCO; SNOW-BIRD.

Common winter visitant. Sept. 26 (Parkville) to May 5 (Montauk).

269. *Melospiza cinerea melodia*. SONG SPARROW.

Abundant resident. Nests by April 22 (Flatbush). Probably this is the most generally distributed of our sparrows for it is found alike in rich, cultivated country, in wooded regions and on wind-swept, sandy islands where vegetation and shelter are meagre.

270. *Melospiza lincolni*. LINCOLN'S SPARROW.

Rare transient visitant. May 9 (Fire Island Light) to May 12 (Jamaica South) and Sept. 9 (Orient) to Nov. 29 (Parkville). Strange to say, Giraud did not credit this species to Long Island. It was met with by Mr. de L. Berier at Fort Hamilton, Oct. 8, 1880 (*Bull. N. O. C.*, vi, 1881, p. 126). Three which struck the Fire Island Lighthouse, the night of May 9, 1882, were recorded a few years ago (Dutcher, *Auk*, i, p. 31; also p. 175). It was met with at Parkville, Nov. 27, 1894, by Mr. F. E. Johnson, and the writer has taken specimens as follows, Parkville, Sept 28, 1895; Jamaica South, May 12, 1900; Flatlands, Sept. 29, 1900.

271. *Melospiza georgiana*. SWAMP SPARROW.

Uncommon summer resident, common transient visitant; rare in winter. April 16 (Flatlands) to Nov. 17 (Flatbush).

272. *Passerella iliaca*. FOX SPARROW.

Common transient visitant. March 7 (Prospect Park) to April 18 (Parkville, and Oct. 14 (Prospect Park) to December 25 (Flatbush).

273. *Pipilo erythrophthalmus*. TOWHEE; CHEWINK.

Common summer resident. April 23 (Parkville) to Oct. 23 (Flatlands). It occasionally winters (Floyd, *Auk*, xv, 1898, p. 190 and Hendrickson, *Auk*, xx, 1903, p. 216). Nests are sometimes found with eggs late in the season. At Lake Grove, Mr. Howell found two nests, each with four eggs on Aug. 4.

274. *Cardinalis cardinalis*. CARDINAL.

Rare summer resident. This bird like the Carolina Wren, is probably now much rarer than before the thorough clearing off of the extensive woodlands and undergrowth of the island, especially at the western end, where it was formerly common. Even in 1884 a nest was found in Prospect Park (Adney, *Auk*, i, 1884, p. 390). Several other recent records are, Far Rockaway Sept. 7, 1884 (R. B. Lawrence, *Forest and Stream*, xxiii, p. 144); Seaford, Dec. 1, 1890 (Dutcher, *Abstr. Proc. Linn. Soc. N. Y.*, 1892, p. 1). Two were seen at Prospect Park, April 11, 1902, by Mr. C. G. Abbott and on March 26, same year and place, a male was seen by the writer. On Long Island it seems, at present, to be extremely rare, though common in the lower Hudson River valley and found in Central Park, New York city.

275. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBREAK.

This species is apparently only an uncommon migrant. May 3 (Miller's Place, A. H. Helme) to May 12 (Jamaica South); Sept. 25 (Parkville). Though this territory lies within its breeding range, we have been unable to establish any data concerning its nesting here or its presence during the breeding season.

276. *Guiraca cærulea*. BLUE GROSBEEK.

Extremely rare casual visitor. Two specimens from Long Island have been recorded, one by Mr. E. P. Bicknell (*Bull. N. O. C.*, iii, 1878, p. 132), and another by Mr. Dutcher (*Auk*, x, 1893, p. 276). De Kay records a specimen taken on Manhattan Island, N. Y. City, May 15, 1838 (*Birds of N. Y.* 1843, p. 146).

277. *Cyanospiza cyanea*. INDIGO BUNTING.

Common summer resident. April 27 (Jamaica) to Oct. 1 (Flatlands). Nests have been taken in June.

278. *Cyanospiza ciris*. PAINTED BUNTING.

Several specimens were taken by the late Mr. Akhurst many years ago; two in Brooklyn and several others on the Long Island shore near the Narrows (Bicknell *Bull. N. O. C.*, iii, 1878, p. 132). These showed no evidence of being cage-birds, yet from the fact of this species being commonly caged, it is considered proper to include them in the list only as possible stragglers.

279. *Spiza americana*. DICKCISSEL; BLACK-THROATED BUNTING.

Accidental. Two specimens are recorded by Mr. Dutcher, taken at Miller's Place by Mr. Helme Sept. 29, and another at the same locality, Oct. 10, 1888 (*Auk*, vi, 1889, p. 137). Mr. F. E. Johnson shot a specimen at Parkville, August 25, 1890 (*Auk*, viii, 1891, p. 116). A curious fact connected with this species is that it was formerly a common summer resident on Long Island. Giraud so refers to it, stating the times of its arrival and departure (*Birds of L. I.*, p. 100).

280. *Calamospiza melancorys*. LARK BUNTING.

Accidental visitant from the Western Plains. A single specimen taken at Montauk Point, Sept. 4, 1888 (Evans, *Auk*, vi, 1889, p. 192).

281. *Piranga erythromelas*. SCARLET Tanager.

Common summer resident. May 8 (Cold Spring Harbor) to Oct. 12 (Fire Island Light).

282. *Piranga rubra*. SUMMER Tanager.

Rare casual visitor. A considerable number of records of this species exist; also one instance of its probable breeding at Long Island City (Hendrickson, May 16, 1883, *Auk*, i, 1884, p. 290). Most instances of its occurrence, however, have been at points on the eastern end of the island where its presence was perhaps due to its survival from long flights over the sea, where it had been driven by storms while migrating. The early dates of its occurrence on the eastern end of Long Island are about synchronous with its average spring appearance in Louisiana and Florida (*Auk*, xix, 1902, p. 148). The following are the records of occurrence; Sag Harbor, April 7, 1886, Bridghampton, May 1, Merrick, May 14, 1886 (*Auk*, iii, 1886, p. 442) Manor, April, 1886, Promised Land, April 1886 (*Auk*, i, 1888, p. 181) Setauket, Apr. 11, 1901 (*Auk*, xix, 1902, p. 291) all by Mr. Dutcher; Ditch Plain, Montauk, April 8, 1901, (Braislin, *Auk*, xix, p. 147); Shelter Island, Apr. 9, 1902 (Worthington, *Auk*, xix, p. 402). The specimen obtained April 8, 1901, was picked up, almost dead, on the beach by Capt. J. G. Scott. Its stomach contained only a little sand. It is probable that some birds, exhausted by their struggles to escape the sea succumb to hunger and cold even when their attempts to reach land have succeeded.

283. *Progne subis*. PURPLE MARTIN.

Locally a common summer resident. April 2 (Montauk) to Sept. 17 (Lake Grove).

284. *Petrochelidon lunifrons*. CLIFF SWALLOW.

Rare summer resident. August 2 (Shinnecock); August 29 (Centre Moriches). Mr. Worthington of Shelter Island in 1904 wrote me, "I can remember when about 50 pairs nested

under the eaves of our barn but now it is rare to see more than two or three nests together."

285. **Hirundo erythrogaster.** BARN SWALLOW.

Common summer resident. March 16 (Montauk) to Sept. 24 (Flatlands). Nest building by May 1, complement of eggs May 30.

286. **Iridoprocne bicolor.** TREE SWALLOW.

Locally, a rare summer resident. At Shelter Island where it formerly nested commonly, it is now, as at almost every other part of the island, only an abundant migrant. March 19 (Rockaway) to May 15 (Woodhaven) and July 28 (Rockaway) to Oct. 28 (Parkville); once seen at Miller's Place by Mr. Helme Nov. 25.

287. **Riparia riparia.** BANK SWALLOW.

Locally, common summer resident. Nest-building, April 28 (Montauk) to September (Rockaway Beach).

288. **Stelgidopteryx serripennis.** ROUGH-WINGED SWALLOW.

Rare summer resident. This species was found April 19, 1878, at New Utrecht (Berier, *Bull. N. O. C.*, vi, 1881, p. 126). It was found nesting at Shelter Island, June 3, 1893 (Sargent, *Auk*, x, 1893, p. 369) and likewise nesting at same place, June 16, 1893 and June 12, 1899 as reported to me by Mr. Worthington.

289. **Ampelis garrulus.** BOHEMIAN WAXWING.

Giraud states that several specimens were shot on Long Island in 1830 and 1832 (*Birds of L. I.*, p. 145). There are no recent records.

290. **Ampelis cedrorum.** CEDAR WAXWING.

Common permanent resident. Mr. A. H. Howell has found newly incubated eggs July 7. Locally known as "Cherry Bird."

291. *Lanius borealis*. NORTHERN SHRIKE.

Rather common winter visitant. Oct. 26 (Montauk) to March 19 (Prospect Park, Brooklyn).

292. *Lanius ludovicianus migrans*. MIGRANT SHRIKE.

Rare transient visitant. On Long Island it seems to occur with considerable regularity in August, for Mr. Helme informs me that he has frequently found it at Miller's Place during that month. Mr. Wm. Dutcher has recorded it at Springs, Aug. 28, 1888 (*Auk*, vi, 1889, p. 138).

293. *Vireo olivaceus*. RED-EYED VIREO.

Very common summer resident. May 5 (Prospect Park) to Oct. 31 (Miller's Place, A. H. Helme). It is found nesting by the first of June.

294. *Vireo philadelphicus*. PHILADELPHIA VIREO.

Rare transient visitant. It has been recorded from Far Rockaway, Sept. 25, 1879 (N. T. Lawrence, *Auk*, ii, 1885, p. 272); Montauk Light, Sept. 20, 1893 (Dutcher); Shelter Island, Sept. 18, 1901 (Worthington, *Auk*, xix, 1902, p. 89); Jamaica South, Sept. 14, 1900 (Cherrie, *Auk*, xix, 1902, p. 210).

295. *Vireo gilvus*. WARBLING VIREO.

Rare and local summer resident. May 8 (Parkville) to Sept. 16 (Parkville). It has been recorded as nesting at Parkville, June 11, 1900 (Braislin, *Auk*, xix, 1902, p. 148).

296. *Vireo flavifrons*. YELLOW-THROATED VIREO.

Not uncommon summer resident and regularly found in suitable localities. April 23 (Parkville) to Aug. 24 (Lake Grove). Huntington, June 1901 (Charlotte Lee, *Bird Lore*, iii, p. 172.)

297. *Vireo solitarius*. BLUE-HEADED VIREO.

Uncommon transient visitant. April 30 (Parkville) to May 7 (Parkville) and Oct. 11 (Flatlands).

298. *Vireo noveboracensis*. WHITE-EYED VIREO.

Common summer resident. May 8 (Cold Spring) to Sept. 13 (Lake Grove). Nests the first of June.

299. *Mniotilta varia*. BLACK-AND-WHITE WARBLER.

Common summer resident. April 19 (Prospect Park) to Oct. 1 (Prospect Park).

300. *Protonotaria citrea*. PROTHONOTARY WARBLER.

Accidental visitant. There are but two records; Montauk Point, Aug. 26, 1886 (Dutcher, *Auk*, v, 1888, p. 182), and Jamaica, May 1849 (Dutcher, *Auk*, x, 1893, p. 276).

301. *Helminthos vermivorus*. WORM-EATING WARBLER.

Rare transient. Not as yet found breeding or in the nesting season. A number of specimens have been secured; notably, five which struck Fire Island Light, Aug. 28, 1898. (Dutcher, *Abstr. Proc. Linn. Soc. of N. Y.*, no. 11, 1898-99, p. 5.); one, Prospect Park (Dutcher, *Auk*, x, 1893, p. 276); two have been taken at Miller's Place by Mr. Helme, Sept. 21, 1889 and May 16, 1892; and one, Parkville, Sept. 16, 1896 (Braislin, *Auk*, xiv, 1897, p. 100).

302. *Helminthophila pinus*. BLUE-WINGED WARBLER.

Common summer resident in suitable localities on the western end of Long Island; elsewhere rare. May 2 (Jamaica) to September ?

[*Helminthophila lawrencei*. LAWRENCE'S WARBLER.

This rare bird supposedly a hybrid has been but once secured on Long Island, namely at Cold Spring Harbor, May 8, 1902 (Braislin, *Auk*, xx, 1903, p. 53).]

[*Helminthophila leucobronchialis*. BREWSTER'S WARBLER.

Though somewhat less rare than the preceding, and like it a supposed hybrid between the Blue-winged and Golden-

winged Warbler, it has been once recorded from Long Island; a specimen secured by Mr. A. H. Howell, May 16, 1892, at Parkville (*Auk*, ix, 1892, p. 306).]

303. ***Helminthophila chrysoptera***. GOLDEN-WINGED WARBLER.

Rare transient visitant. The Lawrence Collection in the American Museum of Natural History, New York, contains a specimen, shot August 15, 1831, by J. F. Ward. A specimen was taken at Oyster Bay, May 10, 1878, by Mr. Theodore Roosevelt. Mr. A. H. Howell took one at Parkville, May 11, 1893 (*Auk*, xi, 1894, p. 83) and another was secured at the same locality by the writer, Aug. 29, 1896. Mr. A. H. Helme has obtained several at Miller's Place.

304. ***Helminthophila ruficapilla***. NASHVILLE WARBLER.

Rare transient visitant; possibly, summer resident. One specimen was taken at Miller's Place by Mr. Helme June 13, 1892. Other dates are, two on May 8, 1892, at Brooklyn (Howell, *Auk*, ix, 1892, p. 309); two at Jamaica May 6, 1898, and one at Jamaica Sept. 26, 1898, by the writer. One specimen from Prospect Park is contained in the collection of the Long Island Historical Society. (Dutcher, *Auk*, x, 1893, p. 277). Mr. Helme's dates besides the above are May 9, 10, 13, 15, 16, 24, 1882; May 15, Sept. 10, 1883; May 13, 1886; Oct. 15, 1888.

305. ***Helminthophila celata***. ORANGE-CROWNED WARBLER.

Accidental visitant. Mr. Howell secured a specimen at Flatbush Oct. 12, 1892 (*Auk*, x, 1893, p. 90); one is contained in the Collection of the Long Island Historical Society (*Auk*, x, 1893, p. 277) and one was met with by Mr. Helme in the autumn of 1893 (*Abstr. Proc. Linn. Soc. N. Y.*, 1894, no. 6, p. 11).

306. ***Helminthophila peregrina***. TENNESSEE WARBLER.

Rather rare transient visitant and only met with, thus far,

in autumn. The writer has obtained specimens as follows. Sept. 28, 1895, and Aug. 27, 1898, Parkville; Sept. 8, Sept. 26, 1898, Jamaica; Mr. Howell, Sept. 20, 1893 and Oct. 3, 1894 at Lake Grove. There are numerous other records.

307. *Compothlypis americana usnea*. NORTHERN PARULA WARBLER.

Locally common summer resident. Abundant transient visitant. May 2 (Flatbush) to May 22 (Jamaica) and Sept. 4 to Oct. 1 (both Jamaica); also Oct. 11 (Fire Island Light, *Auk*, i, p. 176). Mr. Arthur H. Howell found it breeding at Locust Grove (June 5, two nests), at Ronkonkoma in varying numbers from year to year; on Gardiner's Island it nests (Chapman, *Bird-Lore*, v, 1903, p. 179) and Mr. C. G. Abbott has also found it nesting commonly there.

308. *Dendroica tigrina*. CAPE MAY WARBLER.

Rare transient visitant. A specimen was taken at Shelter Island, May 11, 1893 (Worthington, *Auk* x, 1893, p. 303) and one at Canarsie, Sept. 12, 1894 (Braislin, *Auk*, xiii, 1896, p. 87). Several other specimens without data, are known to the writer.

309. *Dendroica æstiva*. YELLOW WARBLER.

Common summer resident. April 18 (Montauk) to Sept. 20 (Fire Island).

310. *Dendroica cærulescens*. BLACK-THROATED BLUE WARBLER.

Common transient visitant. May 7 (Parkville) to May 27 (Jamaica South); August 29 (Parkville) to Oct. 10 (Woodhaven).

311. *Dendroica coronata*. MYRTLE WARBLER.

Common transient visitant; Oct. 5 (Parkville) to May 15 (Flatbush). It is found the winter through at Rockaway

Beach. Its food, in winter, judging from the stomachs examined, is exclusively the fruit of the cedar and bayberry.

312. *Dendroica maculosa*. MAGNOLIA WARBLER.

Common transient visitant. May 5 (Parkville) to May 28 (Jamaica) and August 27 (Flatlands) to Oct. 12 (Flatlands).

313. *Dendroica cærulea*. CERULEAN WARBLER.

Accidental. One record, a single specimen in the collection of the Long Island Historical Society, taken at Crow Hill, Brooklyn (*Auk*, x, 1893, p. 277).

314. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.

Common transient visitant. May 1 (Jamaica South) to May 28 (Jamaica) and Sept. 12 (Jamaica) to Sept. 29 (Flatlands).

315. *Dendroica castanea*. BAY-BREASTED WARBLER.

Rare transient visitant. May 16 (Miller's Place, A. H. Helme) to May 29 (Flatlands) and Sept. 12 (Miller's Place, A. H. Helme) to Sept. 29 (Miller's Place).

316. *Dendroica striata*. BLACK-POLL WARBLER.

Common transient. May 11 (Parkville) to June 3 (Jamaica) and Sept. 9 (Fire Island Light) to Oct. 20 (Fire Island Light). Of 595 birds killed by striking Fire Island Light, the night of Sept. 23, 1887, 356 were of this species.

317. *Dendroica blackburniæ*. BLACKBURNIAN WARBLER.

Not uncommon transient visitant. May 6 (Jamaica) to May 28 (Parkville) and Sept. 5 (Jamaica) to Sept. 29 (Fire Island, Dutcher *Auk*, i, 1884, p. 178).

318. *Dendroica dominica*. YELLOW-THROATED WARBLER.

Accidental, one record, Brooklyn (Dutcher, *Auk*, x, 1893, p. 277).

319. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.

Rare summer resident, common transient visitant. On May 30, Mr. A. H. Helme found a pair ready to breed. They were on the hills near the shore of Long Island Sound. It has been found nesting on the opposite shore of the Sound at Saybrook Point by Mr. J. N. Clark.

320. *Dendroica vigorsii*. PINE WARBLER.

Common summer resident. April 7 (Lake Grove) to Aug. 2 (Canoe Place). Nests in the scrub pines. Nests containing eggs have been found by May 4 (A. H. Helme).

The town of Central Park, marks the western limit of the scrub pines and likewise, according to the writer's observation, the breeding range of this species on Long Island.

321. *Dendroica palmarum*. PALM WARBLER.

Rare transient visitant. Apr. 18 (Parkville); Sept. 7 (Montauk, Dwight) to Oct. 10 (Parkville).

322. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.

Not uncommon transient visitant. April 11 (Prospect Park, C. G. Abbott) to April 30 (Parkville); Oct. 11 (Flatlands) to October 30 (Sheepshead Bay).

323. *Dendroica discolor*. PRAIRIE WARBLER.

Rather common summer resident. May 2 (Jamaica) to September 11 (Parkville). Nests late in June.

324. *Seiurus aurocapillus*. OVEN-BIRD.

Common summer resident, generally distributed. April 30 (Parkville) to Oct. 3 (Parkville). Although found among the stunted trees nestling among the sand-dunes, in the near vicinity of the ocean, it nests more abundantly inland.

325. *Seiurus noveboracensis*. WATER-THRUSH.

Common transient visitant. May 7 (Flatlands) to May 27.

(Jamaica); Aug. 20 (Jamaica) to Oct. 11 (Flatlands) Aug. 14 (Fire Island Light, Dutcher, *Auk*, ii, 1884, p. 175).

326. ***Seiurus noveboracensis grinnelli***. GRINNELL'S WATER-THRUSH.

Rare transient or accidental visitant. Mr. A. H. Helme has a typical specimen of this race taken at Miller's Place.

327. ***Seiurus motacilla***. LOUISIANA WATER-THRUSH.

Rare summer resident. In several suitable localities along the north shore this species may be found in summer.

328. ***Geothlypis formosa***. KENTUCKY WARBLER.

Possibly a very rare summer resident. In the Lawrence Collection a specimen from Raynor South bears date of May 18, 1834; Mr. Dutcher has recorded but two specimens, viz.: Fire Island Light, Aug. 18, 1888 (*Auk*, vi, 1889, p. 139), and Flatlands, May (*Auk*, x, 1893, p. 277).

329. ***Geothlypis agilis***. CONNECTICUT WARBLER.

Not uncommon transient visitant; sometimes common, in autumn. Sept. 4 (Freeport) to Oct. 12 (Fire Island Light, Dutcher).

330. ***Geothlypis philadelphia***. MOURNING WARBLER.

Rare transient visitant. Giraud speaks of one having been obtained by Mr. Bell (*Birds of L. I.* p. 65) and one was obtained by G. B. Brainerd at New Lots, June, 1862 (Howell, *Auk*, xvi, 1899, p. 85).

331. ***Geothlypis trichas brachydactyla***. MARYLAND YELLOW-THROAT.

Common summer resident. May 1 (Jamaica) to Oct. 25 (Parkville). Nest, May 30.

332. ***Icteria virens***. YELLOW-BREASTED CHAT.

Locally common summer resident. May 2 (Miller's Place, A. H. Helme) to Oct. 2 (Montauk).

333. *Wilsonia mitrata*. HOODED WARBLER.

Rare visitant. Numerous records, (A. H. Howell, *Auk*, xi, 1894, p. 84; Dutcher, *Abstr. Proc. Linn. Soc. N. Y.*, 1898-9, no. 11, p. 5, etc.); Apr. 30 (Parkville, A. H. Howell) to May 16 (Shelter Island, Dutcher); Aug. 28 (Fire Island Light) to Sept. 2 (Parkville).

334. *Wilsonia pusilla*. WILSON'S BLACK-CAP WARBLER.

Rather rare transient visitant. Several have been obtained at Miller's Place by Mr. Helme, taken both spring and fall.

335. *Wilsonia canadensis*. CANADIAN WARBLER.

Common transient visitant. May 17 (Jamaica) to June 3 (Jamaica); August 21 (Flatlands) to Sept. 5 (Jamaica).

336. *Setophaga ruticilla*. REDSTART.

Common summer resident. May 7 (Flatlands) to Sept. 28 (Parkville). Nests the middle of June.

337. *Anthus pensilvanicus*. AMERICAN PIPIT; TITLARK.

Fairly common transient visitant. Apr. 12 (Flatlands); Oct. 8 (Flatlands) to Nov. 27 (Flatlands).

338. *Mimus polyglottos*. MOCKINGBIRD.

Rare visitant and probably very rare summer resident. Mr. de L. Berier found an immature specimen at Gravesend, Aug. 9, 1879 (*Bull. N. O. C.*, v, 1880, p. 46). Mr. Dutcher recorded it from Flatbush, November, 1884 (*Auk*, v, 1888, p. 183). It has been taken several times at Rockaway Beach (Braislin, *Auk*, xx, 1903, p. 53).

339. *Galeoscoptes carolinensis*. CATBIRD.

Common summer resident. Very rarely seen in winter. May 2 (Jamaica) to Oct. 26 (Greenwood). Nests last week in May.

340. *Toxostoma rufum*. BROWN THRASHER.

Common summer resident. Occasionally observed in winter. April 26 (Amityville) to Oct. 29 (Prospect Park).

341. *Thyrothorus ludovicianus*. CAROLINA WREN.

Rare permanent resident. Locally, as at Gardiner's Island, it seems fairly common (Chapman, *Bird-lore*, v, 1903, p. 178, C. G. Abbott). It has been recorded as nesting at Flushing and at Roslyn (Deane, *Bull. N. O. C.*, iv, 1879, p. 184; Conklin, *Auk*, xiv, 1897, p. 97). There are many recorded instances of its occurrence.

342. *Troglodytes aëdon*. HOUSE WREN.

Common summer resident. May 6 (Parkville) to Oct. 6 (Lake Grove, A. H. Howell).

343. *Olbiorchilus hiemalis*. WINTER WREN.

Rather common transient in fall and rare winter visitant. Sept. 25 (Parkville) to March 25 (Montauk).

344. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN.

The only unquestionable evidence of the occurrence of this species on Long Island has been obtained by Mr. A. H. Helme, who has one skin, taken at Miller's Place, in the autumn of 1901.

345. *Telmatodytes palustris*. LONG-BILLED MARSH WREN.

Locally abundant summer resident in the salt marshes. May 4 (Flatlands) to Oct. 8 (Springfield).

346. *Certhia familiaris americana*. BROWN CREEPER.

Common winter visitant, sometimes abundant in autumn. Oct. 6 (Parkville) to April 12 (Prospect Park).

347. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.

Common permanent resident, but rare in winter.

348. *Sitta canadensis*. RED-BREASTED NUTHATCH.

Rather common winter visitant. July 20 (Parkville) to April 20 (Selden, A. H. Howell).

349. *Bæolophus bicolor*. TUFTED TITMOUSE.

Apparently rather common in Giraud's day (*Birds of L. I.*, p. 78), it is now one of the rarest of the Long Island avifauna. Two recent records exist (Dutcher, Brooklyn, *Auk*, x, 1893, p. 277; and Braislin, Sheepshead Bay, March 14 and 15, 1898, *Auk*, xix, 1902, p. 148).

350. *Parus atricapillus*. CHICKADEE.

Common permanent resident. This species seems to be confined during the nesting season to the limit of the pine and scrub-oak flora of Long Island. In winter it is found generally distributed.

351. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.

Common transient and winter visitant. Oct. 10 (Parkville) to April 13 (Flatlands).

352. *Regulus calendula*. RUBY-CROWNED KINGLET.

Common transient visitant. April 5 (Flatlands) to May 7 (Parkville) and Sept. 25 (Parkville) to Oct. 12 (Flatlands).

353. *Polioptila cærulea*. BLUE-GRAY GNATCATCHER.

A specimen in the Long Island Historical Society taken at Canarsie in 1849 was reported by Mr. Dutcher (*Auk*, x, 1893, p. 277); a second specimen was recorded by N. T. Lawrence, taken at Far Rockaway, April 18, 1874 (*Auk*, ii, 1885, p. 272); De L. Berier reported one shot Oct. 11, 1879, at Fort Hamilton, (*Bull. N. O. C.*, vi, 1881, p. 272); Dr. Jonathan Dwight, Jr., recorded one taken at Montauk, Sept. 2, 1885, (*Auk*, v, 1888, p. 324).

354. *Myadestes townsendii*. TOWNSEND'S SOLITAIRE.

This is the latest species to be recorded of several of the

far western stragglers which are occasionally found on Long Island. An individual was taken at Kings Park, Nov. 25, 1905, by J. A. Weber (Dwight, *Auk*, xxiii, 1906, p. 105). The number of birds lost in migrations is illustrated by such waifs and stragglers, comparatively few of which ever fall under the observation of the ornithologist. Those destroyed at sea or lost on land probably reach an annual aggregate of large proportions for observers are so few and the area each can explore so small that the waifs actually recorded must be only a minute fraction of the total number.

355. *Hylocichla mustelina*. WOOD THRUSH.

Common summer resident. May 4 (Lake Grove) to Sept. 26 (Parkville).

356. *Hylocichla fuscescens*. WILSON'S THRUSH.

Not common summer resident. April 13 (Parkville) to Oct. 15 (Lake Grove).

357. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.

Common transient visitant. May 11 (Parkville) to May 30 (Jamaica); and Sept. 26 (Jamaica) to Oct. 12 (Flatlands).

358. *Hylocichla aliciae bicknelli*. BICKNELL'S THRUSH.

Not uncommon transient visitant. Sept. 18 (Shinnecock Light, A. H. Howell, *Auk*, x, 1893, p. 91) to Oct. 23 (Astoria).

359. *Hylocichla ustulata swainsonii*. OLIVE-BACKED THRUSH.

Common transient visitant. April 30 (Parkville) to May 17 (Jamaica) and Sept. 4 (Freeport) to Oct. 30 (Sheepshead Bay).

360. *Hylocichla guttata pallasii*. HERMIT THRUSH.

Common transient visitant. April 10 (Prospect Park) to May 6 (Parkville) and Sept. 14 (Montauk) to Dec. 1 (Prospect Park).

361. *Merula migratoria*. ROBIN.

Abundant summer resident. Feb. 23 (Parkville) to Dec. 23

(Rockaway). A few large, brightly colored Robins are to be seen in winter in favored localities.

362. **Ixoreus naevius.** VARIED THRUSH.

Accidental. G. N. Lawrence records one in his collection taken at Islip in the fall (Bd. Brew. & Ridg. Birds N. Am. 1874, i, 29, and Coues Bds. Colo. Valley, 1878, p. 19). Two recent specimens from Long Island are both due to the collecting zeal of Mr. A. H. Helme. The first was rescued from oblivion by his looking up the report of a strange bird caught in a rabbit-noose (Dutcher, *Abstr. Proc. Linn. Soc. N. Y.*, no. 2, 1890 p. 9). Mr. Helme in company with Mr. Geo. K. Cherrie discovered the wing and other portions of a second specimen at Millers' Place, November 19, 1905.

363. **Saxicola oenanthe.** WHEATEAR.

Accidental. There are several recent records. Dr. J. A. Allen has called attention to a specimen from Long Island in the D. G. Elliot collection (*Auk*, iii, 1886, p. 490). Another specimen is in the collection of the Long Island Historical Society, taken at Jamaica in 1885 (*Auk*, x, 1893, p. 277).

364. **Sialia sialis.** BLUEBIRD.

A not common summer resident. March 14 (Montauk) to Nov. 28 (Flatlands). It may be occasionally seen on Long Island in winter, though the writer has no midwinter records. At that season it bears no comparison to the frequency of its relation, the American Robin. In the Christmas bird-census compiled by the editor, Mr. Chapman, and published for several years past in *Bird-Lore*, the Bluebird is conspicuous by its absence. The interesting lists contributed by Miss Charlotte E. Lee from Huntington, Messrs. Selah B. Strong and Walter White from Setanket, Charles H. Rogers and Harold E. Porter from Rockaway Beach, Karl B. Squires from Greenport and Roy Latham from Orient Point, contain five observations with a total of 24 individuals of the Robin, while no observation of the Bluebird is included.

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- FLOYD, H. W. [Lapland Longspur (*Calcarius lapponicus*) at Rockaway Beach].—Abstr. Proc. Linn. Soc., No. 6, 1894, p. 2.
- FOX, C. Notice of some American birds.—Silliman's Amer. Journal of Science, xxxix, 1836, pp. 291-294.
Records "*Scolopax pygmaea*" [= *Erolia ferriginea*] on Long Island, May 27, 1835.
- FOREST AND STREAM. [Record of the Gray Kingbird on Long Island], ii, July 23, 1874, p. 373.
In editorial.
- FOREST AND STREAM. [Fringillidæ which breed on Long Island], xiv, 1880, p. 44.
Editorial, report of meeting of Linnæan Society at which Mr. S. D. Osborne reported the following species, Savannah Sparrow, Black-throated Bunting, Rose-breasted Grosbeak, Vesper Sparrow (said to be the most common), Sharp-tailed and Seaside Finch, Purple Finch (at Bayside); Goldfinch (fresh eggs on Aug. 18). Mr. Charles Earle reported the Sooty Tern and a Lark Finch at Lake Ronkonkoma, the latter on Aug. 20, 1879.
- FOREST AND STREAM. [Virginia Rail Wintering on Long Island], xxiv, 1885, p. 105.
Five shot Feb. 6 and Feb. 13.
- FOREST AND STREAM. [White Pelican on Long Island], xxiv, 1885, p. 328.
One killed at Roslyn, May 11, 1885.
- FOSTER, LYMAN S. Capture of an Eider Duck.—Forest and Stream, xxvii, Nov. 18, 1886, p. 323.
Somateria dresseri taken Nov. 8, 1886 at Centre Moriches.
- FOSTER, L. S. The English Skylark on Long Island, N. Y.—Forest and Stream, xxviii, 1887, p. 551.
- FOSTER, L. S. [Glaucous Gull (*Larus glaucus*) at Far Rockaway].—Abstr. Proc. Linn. Soc. (no. 3), 1891, pp. 5.

FOSTER, L. S. The winter birds of the vicinity of New York City.— Abstr. Proc. Linn. Soc. N. Y., no. 5, 1893, pp. 1-3.

Numerous references to localities on Long Island from which birds have been recorded.

FRASER, ALFRED A. Winter Rail on Long Island.— Forest and Stream, xxxvi, 1891, p. 105.

Rallus virginianus seen at Oakdale, Jan. 20, 1891.

GIRAUD, J. P., Jr. The Birds of Long Island, New York, 1844, 8vo. pp. i-xxii, 1-397.

GRINNELL, GEORGE B. Frigate Bird and White Ibis in Connecticut.— Amer. Naturalist, ix, 1875, p. 470.

Refers also to a Frigate-Bird taken on Long Island which is apparently not recorded elsewhere.

GRINNELL, G. B. Rare Birds on Long Island.— Forest and Stream, xxiii, 1884, p. 24.

Porzana jamaicensis, *Rynchops nigra*, *Herodias alba egretta* or *Garzetta candidissima*.

GRIFFING, MOSES B. Notes from Shelter Island, N. Y.— Ornith. and Oöl., vi, 1881, p. 82.

White-bellied Swallows as late as Oct. 25 and Nov. 23.

GRIFFING, M. B. Red-headed Woodpeckers [on Shelter Island].— Ornith. and Oöl., viii, 1883, p. 95.

GRIFFING, M. B. Ipswich Sparrow.— Ornith. and Oöl., viii, 1883, p. 22.

At Ram Island Beach.

GRIFFING, M. B. White-winged Crossbills.— Ornith. and Oöl., viii, 1883, p. 32.

On Long Island in November.

HARPER, FRANCIS. [Christmas Bird Census at College Point].— Bird-Lore, vi, 1904, p. 11; viii, 1906; p. 19.

HELME, ARTHUR H. Red-headed Woodpecker.— Ornith. and Oöl., vii, 1882, p. 107.

Reported in fall migration at Miller's Place, in large numbers.

HELME, A. H. Herons.— Ornith. and Oöl., vii, 1882, p. 118.

An adult Little Blue Heron reported.

HELME, A. H. Purple Gallinule.—Ornith. and Oöl., vii, 1882, p. 118.

At Middle Island.

HELME, A. H. Red Crossbills, Ornith. and Oöl., viii, 1883, p. 68.
Breeding at Miller's Place Apr. 10, 1883.

HELME, A. H. [Some of the rarer birds of Long Island].—Abstr. Proc. Linn. Soc., no. 7, 1895, p. 11.

Yellow-bellied Flycatcher (*Empidonax flaviventris*), the Golden-winged Warbler (*Helminthophila chrysoptera*, one Orange-crowned Warbler, (*Helminthophila celata*) and several Tennessee Warblers (*Helminthophila peregrina*) the two last species taken in the fall of 1893.

HELME, A. H. [*Carpodacus purpureus* breeding at Miller's Place].—Abst. Proc. Linn. Soc., no. 5, 1893, p. 14.

HELME, A. H. The Saw-whet [Owl] breeding on Long Island.—Nidologist, iii, 1896, p. 104.

Found nesting at Miller's Place.

HELME, A. H. [Catbird in winter at Miller's Place].—Abstr. Proc. Linn. Soc., No. 10, 1898, p. 6.

A bird seen in December, 1897.

HELME, A. H. [Cooper's Hawk nesting at Miller's Place].—Abstr. Proc. Linn. Soc., No. 11, 1899, p. 4.

HELME, A. H. [Least Sandpipers moulting in autumn].—Abstr. Proc. Linn. Soc., no. 12, 1900, p. 4.

Several taken on Long Island were moulting their quill-feathers.

HELME, A. H. Large flight of White-winged Crossbills on Long Island, N. Y.—Auk, xvii, 1900, pp. 295–296.

HELME, A. H. The Lark Finch and Baird's Bunting on Long Island, N. Y.—Auk, xvii, 1900, p. 296.

HELME, A. H. The Pine Grosbeak on Long Island, N. Y.—Auk, xxi, 1905, 280–281.

HENDRICKSON, W. F. Capture of the Summer Red Bird on Long Island.—Auk, i, 1884, p. 290.

HENDRICKSON, WILLIAM F. The Chestnut-collared and Lapland Longspurs on Long Island, N. Y.—Auk, vi, 1889, pp. 190–191.

- HENDRICKSON, W. F. A winter record for the Chewink on Long Island, N. Y.—Auk, xx, 1903, p. 216.
- H[ENDRICKSON], J. H. Wild birds nesting in New York.—Forest and Stream, lxvi, 1906, pp. 420 and 421.
Florida Gallinule, and Rails at Long Island City. Regards the American Coot as almost certainly a nesting species.
- HOLLICK, ARTHUR. Preliminary List of the birds known to breed on Staten Island. Proc. Nat. Sci. Asso. Staten Island, December, 1885. Extra No. 4.
Sixty-seven species are listed. Staten Island is only separated from Long Island by lower New York Bay.
- HOWELL, ARTHUR H. Ornithological reminiscences.—Ornith. and Oöl., xiii, 1888, p. 179.
Sharp-shinned Hawk nesting May 21 at Lake Grove.
- HOWELL, A. H. A day at Rockaway Beach.—Ornith. and Oöl., xv, 1890, pp. 170-171.
Several species recorded.
- HOWELL, A. H. Capture of Glaucous Gull.—Ornith. and Oöl., xvi, 1891, p. 61; also Abstr. Proc. Linn. Soc. (no. 3), 1891, pp. 5-6.
Taken at Far Rockaway Jan. 1, 1891. This specimen has been presented by Mr. Howell to the Museum of the Brooklyn Institute.
- HOWELL, A. H. Abnormal eggs of Chipping Sparrow.—Auk, ix, 1892, p. 395.
Taken at Lake Grove.
- HOWELL, A. H. Brief notes from Long Island.—Auk, ix, 1892, pp. 306-307.
Helminthophila leucobronchialis, *Sylvania mitrata*, and other warblers noticed.
- HOWELL, A. H. On the occurrence of three rare birds on Long Island, New York.—Auk, x, pp. 1893, 90-91; correction, p. 209.
Strix pratincola, *Helminthophila celata*, *Turdus aliciae bicknelli*.
- HOWELL, A. H. A Correction.—Auk, x, 1893, p. 209.

- HOWELL, A. H. [Pine Warbler, Long-eared Owl and Hairy Woodpecker breeding on Long Island].— Abstr. Proc. Linn. Soc., no. 5, 1893, p. 4.
- HOWELL, A. H. Some holiday trips.— Ornith, and Oöl., xviii, 1893, pp. 35–36 and pp. 58–9.
- Observations at Lake Grove.— Pine Warbler arrives first of April; Long-eared Owl, nest and three young, and Hairy Woodpecker, nest and three young, May 30, 1889.
- HOWELL, A. H. Notes on some Long Island Birds.— Auk, xi, 1894, pp. 82–84.
- Empidonax flaviventris*, *E. acadicus*, *Helminthophila chrysoptera*, *H. peregrina*, *Sylvania mitrata*.
- HOWELL, A. H. Notes on Two Rare Birds from Long Island, N. Y.— Auk, xvi, 1898, p. 85.
- JOHNSON, FRANK E. Capture of the Golden Eagle at Gravesend, L. I.— Bull. N. O. C., iv, 1879, p. 189.
- JOHNSON, F. E. American Barn Owl (*Strix pratincola*) on Long Island, N. Y.— Auk, viii, 1891, p. 114.
- JOHNSON, F. E. Black-throated Bunting (*Spiza americana*) on Long Island, N. Y.— Auk, viii, 1891, p. 116.
- JOHNSON, F. E. [*Mimus polyglottos* and *Molothrus ater* at Blythwood in winter].— Abstr. Proc. Linn. Soc., no. 5, 1893, p. 14.
- JOHNSON, H. R. (With E. G. Nichols and L. N. Nichols.) Christmas Bird Census in Brooklyn, Prospect Park and Greenwood Cemetery.— Bird-Lore, viii, 1906, p. 18.
- KOBBÉ, F. W. Black-bellied Plover and Hudsonian Godwit on Long Island, N. Y.— Auk, xxi, 1904, p. 79.
- KOBBÉ, F. W. Decrease of Purple Martins on Long Island, N. Y.— Auk, xxii, 1905, p. 211.
- LAWRENCE, GEORGE N. Catalogue of birds observed on New York, Long and Staten Island and the adjacent parts of New Jersey.— Ann. Lyc. Nat. Hist., New York, viii, 1866, pp. 279–300.
- 327 species included with annotations to many of the rarer Long Island specimens.

- LAWRENCE, G. N. Occurrence of the Barnacle Goose (*Bernicla leucopsis*) on Long Island, N. Y.—Bull. N. O. C., ii, 1877, p. 18.
- LAWRENCE, G. N. Ornithological notes.—Ann. Lyceum Nat. Hist., N. Y., v, 1852, pp. 220–223.
Procella meridionalis shot at Quoque, L. I., July, 1850; specimens of *Philomachus pugnax* from Long Island are recorded Oct., 1850, a bird of the year and an adult male in the summer of 1844; a Varied Thrush is spoken of.
- LAWRENCE, G. N. On the occurrence of the Caspian Tern (*Sylochelidon caspius*) in North America.—Ann. Lyc. Nat. Hist., v, 1852, p. 37–38.
 Specimens killed on the Long Island coast.
- LAWRENCE, G. N. Ornithological notes.—Ann. Lyc. Nat. Hist., N. Y., v, 1852, pp. 220–223.
- LAWRENCE, G. N. Ornithological notes.—Ann. Lyc. Nat. Hist., vi, 1858, pp. 7–14.
 Yellow-throated Vireo in summer of 1852.
- LAWRENCE, NEWBOLD T. The European Widgeon in the United States.—Bull. N. O. C., iii, 1878, p. 98.
 One of the two specimens recorded is supposed to have come from Southampton.
- LAWRENCE, N. T. The Ipswich Sparrow (*Passerculus princeps*) on Long Island, N. Y.—Bull. N. O. C., iii, 1878, p. 102.
- LAWRENCE, N. T. The Greater Long-beak, *Macrorhamphus scolopaceus* (Say).—Bull. N. O. C., v, 1880, pp. 154–157.
 Data on its migration.
- LAWRENCE, N. T. Notes on several rare birds taken on Long Island.—Forest and Stream, x, 1878, p. 235.
 Notes on fifteen species; Loggerhead Shrike and four Baird's Sandpipers first recorded here.
- LAWRENCE, N. T. Long Island, N. Y., bird notes.—Auk, ii, 1885, pp. 272–274.
 Eighteen species noticed.

- LAWRENCE, N. T. European Widgeon (*Mareca penelope*) on Long Island, N. Y.—Auk, xix, 1902, pp. 195–196.
One taken at Gardiners Island, Nov. 27, 1901.
- LAWRENCE, ROBERT B. Notes on some of the rarer birds of Long Island, N. Y.—Bull. N. O. C., v, 1880, pp. 116–117.
Eight species are referred to.
- LAWRENCE, R. B. Cardinal Redbird on Long Island.—Forest and Stream, xiii, 1884, p. 144.
One male Sept. 7, 1884.
- LAWRENCE, R. B. Occurrence of Turkey Buzzard on Long Island.—Forest and Stream, xxvii, Aug. 19, 1886, p. 64.
Observed at Flushing, Aug. 2, 1885; also *C. atratus* at Sandy Hook.
- LAWRENCE, R. B. Long Island bird notes.—Forest and Stream, vol. xxvii, Dec. 23, 1886, p. 428.
Notes *Tringa maritima*, *Somateria dresseri*, *Oceanites oceanicus* and *Nyctala acadica*.
- LAWRENCE, R. B. Ice-bound Rail.—Forest and Stream, xxx, 1888, p. 6.
Porzana carolina at Flushing, Dec. 23.
- LAWRENCE, R. B. A new Long Island, N. Y., record for the Red-bellied Woodpecker (*Melanerpes carolinus*).—Auk, xiii, 1896, p. 82.
- LATHAM, FRANK, HARRY AND ROY. [Christmas bird census at Orient Point].—Bird-Lore, vi, 1905, pp. 26–27; viii, 1906, p. 19.
- LATHAM, HARRY AND ROY. [Christmas bird census at Gardiners Island].—Bird-Lore, viii, 1906, p. 19.
- LEE, CHARLOTTE E. [Christmas bird census at Huntington].—Bird-Lore, iv, 1902, p. 27; v, 1903, p. 16; vi, 1904, p. 11.
- MARSHALL, WILLIAM B. A specimen of *Numenius arquatus* said to have been taken on Long Island.—Auk, ix, 1892, pp. 390–391.

While there is no question as to the identity of this specimen which is now in the State Museum at Albany, the A. O. U. committee has decided that the evidence that it was taken on Long Island or anywhere else in North America is by no means convincing.

MEARNS, EDGAR A. The capture of several rare birds near West Point, N. Y.—Bull. N. O. C., iii, 1878, pp. 45–46.

Refers to the capture of a Fish Crow on Long Island by Mr. Theodore Roosevelt.

MEARNS, E. A. Capture of the Glaucous Gull (*Larus glaucus*) on Long Island, N. Y.—Bull. N. O. C., v, 1880, p. 189–190.

MORAN, DANIEL E. The Tufted Titmouse on Staten Island, N. Y.—Bull. N. O. C., 1882, vii, p. 52.

MORAN, D. E. Capture of Baird's Sandpiper on Long Island.—Bull. N. O. C., vii, 1882, p. 60.

MURPHY, ROBERT C. Leach's Petrel (*Oceanodroma leucorhoa*) on the Long Island shore.—Auk, xxii, 1905, pp. 205–206.

NICHOLAS, GEORGE L. Bird notes from Long Island.—Forest and Stream, xiv, 1880, p. 44.

Large-billed Water Thrush Aug. 3, Loggerhead Shrike Aug. 4; in all about seventeen species observed at Shinnecock Bay.

NICHOLS, E. G., NICHOLS, S. N., and JOHNSON, H. R.

See Johnson, H. R.

OBERHOLSER, HARRY C. A review of the Larks of the genus *Otocoris*.—Proc. U. S. Nat. Mus., xxiv, 1902, pp. 801–884.

PEARSALL, R. F. Notes on the Purple Finch.—Bull. N. O. C., iv, 1879, p. 122.

Nesting at Bayside, June 15.

PORTER, H. E., and ROGERS, C. H.

See Rogers, C. H.

PROCTOR, THOMAS. Skylarks nesting on Long Island.—Auk, xii, 1895, p. 390.

PROCTOR, T. [Destruction of birds' eggs and young birds by the Gray Squirrel in Prospect Park].—Abstr. Proc. Linn. Soc., nos. 13–14, 1902, p. 3.

PURDIE, HENRY A. *Corvus ossifragus* on Long and Staten Islands, N. Y.—Bull. N. O. C., v, 1880, p. 240.

REED, J. H. The Terns of Great Gull Island, N. Y., during 1897.—Auk, xv, 1898, pp. 40–43.

- RICHARDSON, JENNESS. [Three nests of the Black Duck].— Abstr. Proc. Linn. Soc. (no. 2), 1890, p. 3.
One with young, in early May at Amagansett.
- RIDGWAY, ROBERT. On a Duck new to the North American Fauna.— Proc. U. S. Nat. Mus., iv, 1881, pp. 22-24.
A specimen of *Fuligula rufina*, found in Fulton Market is supposed to have been shot on Long Island.
- ROGERS, CHARLES H. AND PORTER H. E. [Christmas bird census at Rockaway Park Beach].— Bird-Lore, vi, 1904, p. 12; viii, 1906, p. 18.
- ROOSEVELT, THEODORE. Notes on some of the birds of Oyster Bay, Long Island. March, 1879, leaflet published by the author.
Seventeen species are noted.
- ROWLEY, G. D. The Pied Duck.— Ornithological Miscellany ii, 1877, pt. vi, pp. 205-223, pl. v, London.
Refers to some of the last specimens of the Labrador Duck from Long Island. Credits Long Island with thirteen extant specimens.
- SAGE, JOHN N. An historic letter.— Auk, xii, 1895, pp. 356-362.
From John Gardiner of Gardiners Island to Alex. Wilson, concerning the Fish Hawk on that island.
- SARGENT, HARRY B. Breeding of the Rough-winged Swallow at Shelter Island, New York.— Auk, x, 1893, p. 369.
- STEARNS, WINFRID A. AND COUES, E. New England Bird Life, Boston, 1883, pt. ii, p. 227.
A Curlew Sandpiper killed at Miller's Place in 1839.
- STORY, S. B. [Christmas Bird census at Setauket]. Bird-Lore, iv, 1902, p. 27.
- STRONG, SELAH B. AND WHITE, WALTER. [Christmas bird census at Setauket].— Bird-Lore, vi, 1905, p. 26; viii, 1906, p. 19.
- SQUIRES, KARL B. [Christmas bird census at Greenport].— Bird-Lore, vi, 1904, p. 11.
- TAYLOR, H. H. Baird's Sandpiper on Long Island Sound, N. Y.— Auk, xii, 1895, p. 179.
About a dozen seen in a flock of which two were secured, Sept. 29, 1894.

THOMPSON, BENJAMIN F. History of Long Island, New York, 1839.

Refers to the former presence of Wild Turkeys, Swans and Pelicans at Huntington.

TOWNSEND, A. L. [Spring arrivals of birds at Bay Ridge].—Forest and Stream, xviii, 1882, pp. 305, 346 and 427.

About thirty species referred to with dates of arrival. Crow Blackbird convicted as a destroyer of birds' eggs.

TOWNSEND, A. L. Painted Finch on Long Island.—Forest and Stream, xxii, 1884, June 26, p. 424.

VAUGHAN, C. W. Baird's Sandpiper at East Hampton, Long Island, N. Y.—Auk, xiii, 1896, p. 80.

WHITE, WALTER and STRONG, S. B.
See Strong, S. B.

WORTHINGTON, WILLIS W. Short-eared Owl nesting on Plum Island, New York.—Auk, x, 1893, p. 301.

The date is May 7, 1891.

WORTHINGTON, W. W. Cape May Warbler at Shelter Island, New York.—Auk, Vol. x, 1893, p. 303.

WORTHINGTON, W. W. Another Harlequin Duck record for Long Island.—Auk, xiii, 1896, p. 78.

WORTHINGTON, W. W. Rare Birds on eastern Long Island.—Auk, xvi, 1899, p. 85.

The Barn Owl, Duck Hawk and Florida Gallinule.

WORTHINGTON, W. W. Golden Eagle at Shelter Island, New York.—Auk, viii, 1891, p. 113.

WORTHINGTON, W. W. A rare record for eastern Long Island.—Auk, xvii, 1900, p. 63.

An immature female Sabine's Gull, *Xema sabinii* taken Oct. 7, 1899.

WORTHINGTON, W. W. A rare record for eastern New York.—Auk, xviii, 1901, p. 395.

Contopus borealis, taken at Shelter Island, Aug. 29, 1901.

WORTHINGTON, W. W. Connecticut Warbler and Philadelphia Vireo at Shelter Island, N. Y.—Auk, xix, 1902, p. 89.

WORTHINGTON, W. W. Henslow's Sparrow on Shelter Island, N. Y.—Auk, xix, 1902, p. 204.

WORTHINGTON, W. W. Rare birds for eastern Long Island, New York.—Auk, xix, 1902, p. 402.

A Summer Tanager, Apr. 9, 1902, and a Lark Sparrow, July 28, 1902.

WORTHINGTON, W. W. Bird Notes from Shelter Island, Long Island, N. Y.—Auk, xxi, 1904, p. 287.

Aythya affinis, *Wilsonia pusilla*, *Seiurus noveboracensis*, *Symphemia semipalmata*, *Geothlypis trichas*, *Pinicola enucleator*, *Hylocichla guttata pallasii*.

WORTHINGTON, W. W. Notes from Shelter Island.—Ornith. and Oöl., vii, 1882, p. 141.

Two Little Blue Herons, Aug. 16.

WORTHINGTON, W. W. Correspondence.—Ornith. and Oöl., ix, 1884, p. 24.

Notes at Shelter Island, the Carolina Dove on Jan. 20; the Fish Hawk, March 1; Red-bellied Nuthatch, May 17; Black Tern July 23; two Forster's Terns shot at Ram Island Shoals, Sept. 17; a Sooty Tern caught off Montauk Point, Sept. 18.

WORTHINGTON, W. W. Golden Eagle at Shelter Island.—Auk, viii, 1891, p. 113.

WORTHINGTON, W. W. Notes from Shelter Island.—The Ornith. and Oöl., vi, 1881, p. 46.

WORTHINGTON, W. W. Blue Yellow-backed Warbler nesting on Shelter Island.—Ornith. and Oöl., vi, 1881, p. 62.

WYMAN, W. B. The birds of Prospect Park [Brooklyn, N. Y.]. Forest and Stream, xxi, 1884 (no. 12) pp. 226–227.

“A nominal list of 81 species, including a number of improbable occurrences.” (*Auk*, 1884, p. 288.)

YOUNG, CURTIS C. *Tringa alpina* on Long Island, N. Y.—Auk, x, 1893, p. 78.

This appears to be the second record of the species for North America.

YOUNG, C. C. *Empidonax flaviventris* on Long Island.—Auk, xi, 1894, p. 78.

YOUNG, C. C. [Bonaparte's Gull at Rockaway Beach].—Abstr. Proc. Linn. Soc., no. 7, 1895, p. 13.

ZEREGA, LOUIS A. Notes on the northern range of the Fish Crow (*Corvus ossifragus*) with some account of its habits.—Bull. N. O. C., v, 1880, pp. 205–208.

Refers to records for Rockaway and Oyster Bay.

ZEREGA, L. A. Capture of the Snowy Heron (*Ardea candidissima*) on Long Island.—Bull. N. O. C., vi, 1881, p. 248.

ZEREGA, A. The Birds of Prospect Park.—Forest and Stream, xxi, (no. 16) 1884, p. 304.

A criticism of an article with this title in same journal pp. 226–227.

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1907-1911

NOS. 20-23

ABSTRACT

OF THE PROCEEDINGS OF THE

LINNÆAN SOCIETY

OF

NEW YORK

For the Years Ending

March 10, 1908

March 9, 1909

March 8, 1910

AND

March 14, 1911

CONTAINING

Bird's-nesting in the Magdalen Islands BY P. B. PHILIPP

The Bird Colonies of Pamlico Sound BY P. B. PHILIPP

A List of the Fishes Known to Have Occurred
within Fifty Miles of New York City
BY JOHN TREADWELL NICHOLS

Date of Issue, February 8, 1913.

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OF NEW YORK

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The Society meets on the second and fourth Tuesday evenings of each month, from October to May inclusive, at the American Museum of Natural History, 77th Street and Central Park West, New York City.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 10, 1908.

THIS is the twentieth in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date above indicated. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 26, 1907.—The President in the chair. Thirty-two members and visitors present.

The matter of sending a delegate to the Linnæan celebration in Upsala, Sweden, having been laid upon the table at the last meeting, was brought up again. It was found that it had been impossible to secure anyone who could represent the Society, and the Secretary was therefore instructed to forward the regrets of the Society to the University of Upsala.

Mr. C. G. Abbott spoke of a male European Chaffinch (*Fringilla cœlebs*) which has lately returned for the fifth consecutive season to a certain small area in Central Park, where it is invariably to be found except in the winter.

Dr. L. B. Bishop spoke of the marked and regular waves of bird migration as observed by him at New Haven, Conn., last fall. A notable movement of Red-breasted Nuthatches (*Sitta canadensis*) occurred in September; in October came Pine Siskins (*Spinus pinus*), followed by Red Crossbills and White-

winged Crossbills (*Loxia curvirostra minor* and *L. leucoptera*); and November was marked by unusual numbers of Goshawks (*Astur atricapillus*), while at the end of the month came Redpolls (*Acanthis linaria*), the first seen by Dr. Bishop at New Haven in twenty-five years.

Mr. Charles H. Rogers spoke of the increasing abundance of Starlings (*Sturnus vulgaris*) about Princeton, N. J.

The paper of the evening was entitled "The Birds of the Canadian Northwest," by Mr. Arthur C. Bent, and was read, in the author's absence, by the President. [Published in *The Auk*, vol. xxiv, 1907, pp. 407-430, and vol. xxv, 1908, pp. 25-35, under the title of "Summer Birds of Southwestern Saskatchewan."] Dr. Dwight and also Dr. L. B. Bishop, both of whom had accompanied Mr. Bent to Saskatchewan the previous summer, commented frequently upon his notes. A full list of the birds observed and collected was presented. The great variety of Ducks and other water birds nesting on the various lakes was the most noticeable feature. A series of photographs illustrating both the bird life and the scenery was exhibited.

Discussion followed the paper.

April 9, 1907.—The President in the chair. Thirty-nine members and visitors present.

A report was received from the auditing committee stating that the accounts of the Treasurer had been examined and found correct as submitted.

Mr. H. H. Hann reported finding occupied Crows' (*Corvus brachyrhynchos*) and Red-shouldered Hawks' (*Buteo lineatus*) nests on April 7, near Summit, N. J.

Dr. H. F. Merriam reported finding the nest of a Barred Owl (*Strix varia*), containing two eggs, on April 7, at Pine Brook, N. J. In the same nest eggs were found on April 8 of last year.

In view of the approaching celebration in honor of Linnæus, Mr. de Lagerberg read an abstract of the life of Linnæus.

Mr. C. G. Abbott presented a paper entitled "Some Sea-bird Colonies of the North Atlantic." Those treated were all on the American seaboard, and comprised the Herring Gulls (*Larus argentatus*) and Leach's Petrels (*Oceanodroma leucorhoa*) on Great Duck Island, Me., the Terns (*Sterna hirundo* and *S.*

dougalli) and Laughing Gulls (*Larus atricilla*) on Muskeget Island, Mass., the Terns (*Sterna hirundo*) on Ram Island, N. Y., the Sandpipers (*Actitis macularia*), Piping Plovers (*Ægialitis meloda*), Night Herons (*Nycticorax nycticorax naevius*), and other birds at Montauk Point, N. Y., the Fish Hawks (*Pandion haliaëtus carolinensis*) on Gardiner's Island, N. Y., and the Skimmers (*Rynchops nigra*), Terns (*Sterna hirundo*, *S. forsteri*, and *Gelochelidon nilotica*), and Laughing Gulls (*Larus atricilla*) on Cobb's Island, Va.

The speaker described his experiences in each of the colonies, and illustrated his remarks with lantern slides showing the adults, nests, and young of the various birds described, and also a few topographical views.

April 23, 1907.—The Secretary in the chair. Twenty-two members and visitors present.

Dr. H. F. Merriam was elected a resident member of the Society.

Mr. H. H. Hann reported finding on April 20 at Goshen, N. Y., a Red-shouldered Hawk's (*Buteo lineatus*) nest, from which the bird was not disturbed, and a Red-tailed Hawk's (*Buteo borealis*) nest containing two eggs. On April 21, at the same place, he found a Great Horned Owl's (*Bubo virginianus*) nest containing one young bird about a month old.

Mr. J. P. Callender said that he had found at Summit, N. J., on April 21, a Red-shouldered Hawk's nest with three eggs, in a tree quite apart from any woods. On the same day he found a Sparrow Hawk's (*Falco sparverius*) nest, containing five eggs, in a hole in the side of an ice-house. The same cavity he knew to have been occupied for three years.

Mr. C. G. Abbott spoke of finding a dead Woodcock (*Philohela minor*), apparently an incubating female, in Van Cortlandt Park on April 21. It had apparently been killed by striking a wire fence while in flight. In a swampy part of the woods in Van Cortlandt Park he also saw several Night Herons (*Nycticorax nycticorax naevius*) and what appeared to be the beginnings of their nests.

The paper of the evening was by Mr. J. P. Callender, and was entitled "A Trip to Bird Rock and the Magdalen Islands."

He described the experiences of himself and a companion during a three weeks' trip to those well-known bird resorts during June, 1904. He read a full list of the birds observed, and showed specimens of both birds and eggs collected on the trip.

May 14, 1907.—The President in the chair. Thirty-one members and visitors present.

Mr. Warren C. Tudbury spoke of discovering on May 12 a Rose-breasted Grosbeak (*Zamelodia ludoviciana*) which appeared to be in a dazed condition, and allowed itself to be touched.

Mr. H. H. Hann told of finding a Ruffed Grouse's (*Bonasa umbellus*) nest, containing 14 eggs, on May 12, at Summit, N. J. He also told of finding three more Red-shouldered Hawks' (*Buteo lineatus*) nests, making ten already discovered near his home this season.

The paper of the evening was by Mr. B. S. Bowdish, and was entitled "The Birds of Demarest, N. J." A large series of colored lantern slides was exhibited, showing incidents in the home life of many species of birds photographed by the speaker in the neighborhood of his home. Of especial interest were the photographs showing the large number of nesting Warblers to be found about Demarest.

May 28, 1907.—The Vice-President in the chair. Fourteen members and visitors present.

Messrs. P. B. Philipp, T. F. Wilcox, and R. H. Southard were elected resident members of the Society.

Mr. Dutcher opened a discussion on the European Starling (*Sturnus vulgaris*) in America, calling attention to its rapid spread, and asking the members present what steps, if any, should be taken toward its extermination. A number of those present related varied experiences with this bird.

The Wood Duck (*Aix sponsa*), on the other hand, was believed to require the strictest protection at this time to prevent its complete extermination. Mr. Dutcher told of replies which he had received from circular letters he had distributed over the United States, asking for figures as to the present numbers of this bird as compared with the abundance in previous years. Several members offered suggestions for protecting Wood Ducks and increasing their numbers.

Mr. Dutcher called attention to an article in a recent number of *The Condor*, describing the enormous colonies of Penguins (*Spheniscidæ*) and Cormorants (*Phalacrocorax*) on certain South Atlantic islands near Cape Colony. In 1902 no less than 500,000 eggs and 5,000 tons of guano were taken from one island.

Mr. R. H. Southard reported finding the nest and six young of the Brown Creeper (*Certhia familiaris americana*) near Newton, N. J., on May 19. What was apparently last year's nest of the birds was in the same stub about five feet lower down.

Mr. C. G. Abbott reported finding the nest and callow young of a Louisiana Water-Thrush (*Seiurus motacilla*) at Plainfield, N. J., on May 26, in company with Mr. W. DeW. Miller. Mr. Miller said he had found a nest of the same species in almost the identical site two years previously.

Mr. P. B. Philipp reported finding near Ipswich, Mass., on May 4, two Crows' (*Corvus brachyrhynchos*) nests, containing, respectively, seven and eight eggs.

Mr. J. de Lagerberg and Dr. Dwight gave an account of the recent Linnæan celebrations in New York.

October 8, 1907.—The Secretary in the chair. Seven members and one visitor present.

The program of the evening was of an informal character, and started with an exhibition of bird sketches by Dr. P. H. Bahr, of London, England, who had loaned his portfolios to the Secretary. The drawings, which were mostly in color, represented wild birds in many attitudes as they were sketched by Dr. Bahr in the field, and also included a number of studies made in the London Zoölogical Park.

Messrs. P. B. Philipp and T. F. Wilcox then told something of their ornithological experiences during the past summer in the Magdalen Islands. They deposited with the Secretary of the Society a complete list of the birds observed, nests found, eggs and birds taken, etc. They also exhibited an admirable series of photographs of birds and nests, including views on Bird Rock. Of especial interest were pictures of an American Bittern (*Botaurus lentiginosus*) which showed astonishing boldness and permitted itself to be photographed at close quarters.

Mr. J. A. Weber told of a collecting trip to Montauk Point, L. I., from August 15 to 17, when he obtained four Baird's Sandpipers (*Pisobia bairdi*) and three Sooty Shearwaters (*Puffinus griseus*). Pomarine and Parasitic Jaegers (*Stercorarius pomarinus* and *S. parasiticus*), and also Cory's Shearwaters (*Puffinus borealis*), were found to be common.

October 22, 1907.—The President in' the chair. Eighty-two members and visitors present.

Mr. W. L. Sherwood was elected a resident member of the Society.

Mr. Geo. E. Hix told of seeing forty-one species of birds during a walk near Leonia, N. J., on October 20.

Miss A. A. Crolius reported a pair of Dickcissels (*Spiza americana*) seen near Lake Mohonk, N. Y., throughout the month of July, 1907.

The paper of the evening was by Mr. Frank M. Chapman, and was entitled "Bird Studies in the Bahamas during April, 1907." The speaker described his recent experiences in cruising among these islands, and showed a series of lantern slides illustrating the scenery and bird life of the region, notably views taken in the great nesting colonies of Sooty Terns (*Sterna fuscata*), Noddy Terns (*Anous stolidus*), Boobies (*Sula leucogastra*), and Frigate-birds (*Fregata aquila*).

November 12, 1907.—The President in the chair. Sixteen members and visitors present, including Mr. Geo. E. Lodge of London, England.

Miss Lenda T. Hanks was elected a resident member of the Society.

The Secretary exhibited an artistic postcard and a badge, each showing a colored portrait of Linnæus, which were made in Sweden and were presented to the Society by Mr. de Lagerberg.

Mr. A. H. Helme reported that two Otters (*Lutra canadensis*) had been taken on Long Island during 1907, one at Eastport by Mr. Calverton, the station agent, and one at Coram by Mr. Thomas Smith.

As the Congress of the American Ornithologists' Union was to occur December 10-12, thereby conflicting with the first

regular meeting of the Society in December, and as the second regular meeting would naturally fall on the evening before Christmas, a motion prevailed that the December meetings of the Society fall on Tuesday, December 17, and on Monday, December 30.

Dr. Dwight presented the paper of the evening, which was entitled "Further Notes on the Variation and Distribution of the Genus *Junco*," and was somewhat in the nature of a continuation of a previous paper on the same subject. Much additional light was, however, thrown upon the subject, and with the aid of a map and an admirable series of skins, the members gained a much clearer understanding as to the widely varying forms of this interesting genus.

November 26, 1907.—The President in the chair. Twenty-nine members and visitors present.

Mr. J. D. Figgins, of the American Museum staff, presented the paper of the evening, which was entitled "The Santee Heronries of South Carolina, with Notes on Other Southern Bird Colonies." Mr. Figgins accompanied Mr. Chapman on his recent visit to the rookeries mentioned, for the purpose of collecting material for new groups in the American Museum. He exhibited an excellent series of lantern slides showing Herons and Egrets (*Herodias egretta*), their young and eggs.

The most encouraging feature of the paper was Mr. Figgins' statement that the Santee colony is admirably protected, and likely to exist for many years to come.

Discussion followed the paper.

December 17, 1907.—The President in the chair. Twenty-one members and visitors present.

Messrs. Ludlow Griscom and F. L. Van Tassell were elected resident members of the Society.

The Secretary read a letter from Dr. E. O. Hovey, Secretary of the New York Academy of Sciences, requesting the Linnæan Society to propose speakers for public lectures to be held under the auspices of the Academy. The matter was referred to the standing committee on lectures.

Dr. Dwight then gave an account of the Twenty-fifth Congress of the American Ornithologists' Union recently held in Philadelphia.

Mr. Geo. E. Lodge, of London, England, presented "A Few Remarks on the Red Grouse (*Lagopus scoticus*)." He told much of the plumage variation, manner of flight, habits, protection, shooting, and distribution of this bird, which is found only in the British Islands.

Dr. Jonathan Dwight, Jr., then presented a paper entitled "Notes on the Plumages of the Ptarmigan." Referring to the Red Grouse as the only *Lagopus* which does not become white in winter, he described the succession of moults which cause the marked plumage changes in other members of the genus. His remarks were illustrated with an admirable series of skins.

Mr. J. de Lagerberg told the Society of having compiled a large scrap album containing all the clippings he had been able to gather from various countries relative to Linnæus, published since the bicentennial celebrations of his birth, in May, 1907. He also spoke of many interesting incidents in the life of Linnæus, which were recorded in the scrap album. He then formally presented the book to the Society, together with a handsome framed portrait of Linnæus. A vote of thanks to Mr. de Lagerberg for his generous gift was unanimously passed by the Society.

December 30, 1907.—The President in the chair. Thirty-nine members and visitors present.

Mr. Arthur Goadby was elected a resident member of the Society.

Mr. Francis Harper recorded a Hermit Thrush (*Hylocichla guttata pallasi*) seen by Mr. C. G. Abbott and himself at Queens, L. I., on December 29. Attention was first attracted to the bird by a few faint phrases of its song.

The paper of the evening, by Mr. Clarence C. Abbott, was entitled "A Glimpse at the Bird Life of the Outer Hebrides, Scotland." It was illustrated with lantern slides. The speaker told of a month's ornithological visit to these remote islands in company with Dr. P. H. Bahr, of London. The region was found to be very rich in interesting bird life, and a series of excellent photographs was shown, illustrating the home life of the Grey Lag Goose (*Anser anser*), Red-throated and Black-throated Divers (*Gavia stellata* and *G. arctica*), Black-headed,

Greater and Lesser Black-backed, Herring, and Common Gulls (*Larus ridibundus*, *L. marinus*, *L. fuscus*, *L. argentatus*, and *L. canus*), Arctic and Little Terns (*Sterna paradisæca* and *S. minuta*), Dunlins (*Pelidna alpina*), Phalaropes, etc.

January 14, 1908.—The President in the chair. Thirty-two members and visitors present.

The paper of the evening, by Mr. Clinton G. Abbott, was entitled "British Bird Notes." The speaker illustrated the paper with about one hundred lantern slides.

January 28, 1908.—The President in the chair. Thirty-eight members and visitors present.

Mr. Chapman moved that the President appoint a committee of two to draft resolutions on behalf of the Linnæan Society, relative to the death of Mr. Morris K. Jesup. The President appointed Messrs. Chapman and Abbott to act as the committee.

The paper of the evening was entitled "Bird's-nesting in the Magdalens and on Seal Island," by Messrs. P. B. Philipp and T. F. Wilcox. [Published on pp. 57 ff. of this *Abstract*.] Mr. Philipp described their experiences of the previous summer in the Magdalen Islands proper, while Mr. Wilcox confined himself to Bird Rock and Seal Island—the latter being a much favored nesting resort for Herring Gulls, off the coast of Nova Scotia. The speakers had evidently been most fortunate, both in the number and variety of nests found, and in the photographs obtained during their brief trip. The latter were exhibited in the form of excellent lantern slides. One picture showed the nest and eggs of the Semipalmated Sandpiper (*Ereunetes pusillus*)—perhaps the first that have been photographed.

Discussion followed the paper.

February 11, 1908.—The regular Linnæan Society meeting took the form of attendance at a lecture by Mr. Clinton G. Abbott on "The Highlands and Islands of Scotland." The lecture was delivered under the auspices of the Board of Education of New York City in the large auditorium of the Museum.

After the lecture there was an informal meeting of the members of the Society, at which it was agreed to omit the reading of the minutes of the previous meeting, and the following resolu-

tions, drafted by the committee appointed at the last meeting, were adopted:

Resolved: That because of the favors which have been extended to it by the American Museum of Natural History, during the presidency of the late Morris K. Jesup, and because of the service rendered to science by Mr. Jesup, this Society desires to place on record its appreciation of the importance of Mr. Jesup's sympathetic and wisely directed efforts in the popularization of science as well as in fields of original investigation.

Resolved: That a copy of these resolutions be transmitted to Mr. Jesup's family, and to the Trustees of the American Museum of Natural History.

February 25, 1908.—The President in the chair. One hundred and one members and visitors present.

Mr. Francis Harper reported seeing a Catbird (*Dumetella carolinensis*) near Douglaston, L. I., on January 19.

Mr. F. L. Van Tassell spoke of the numbers of Robins (*Planesticus migratorius*) offered for sale as food in the South, as recently observed by him in New Orleans. He said it was small wonder that the birds now appeared to be less numerous in summer in some parts of New Jersey, and he deplored the state of affairs which permitted protection in one part of the bird's range and ruthless slaughter in another.

The first paper of the evening was by Mr. Roy C. Andrews, and was entitled "The North Atlantic Right Whale; with special reference to an individual that came ashore at Amagansett, L. I." A series of lantern slides from photographs taken on the beach at Amagansett showed very graphically the difficulties and dangers of preserving the skeleton of this rare whale (*Balæna glacialis*) for the American Museum.

Remarks followed by Dr. F. A. Lucas.

The second paper was entitled "The Distribution and Breeding Habits of the White Pelican (*Pelecanus erythrorhynchos*)," by Mr. Frank M. Chapman. The first slides shown designated the points on the map of North America where Mr. Chapman has visited breeding colonies of these birds, and they were followed by pictures showing many phases of their home life. In spite of the natural timidity of the White Pelican, Mr. Chapman had succeeded in photographing them at very close quarters, and even the interesting feeding operations were shown in detail.

Remarks followed by Dr. Dwight.

The third paper was "A Note on the Use of Lumière Color Plates in Nature Photography," and was delivered jointly by Messrs. F. M. Chapman and A. R. Dugmore. A number of examples of the new color photographs were thrown on the screen and explained by the speakers. The effects obtained were beautiful in the extreme, and evoked much applause from the audience. The colors of flowers and gaudy butterflies were rendered with marvelous accuracy by these plates, which far outclassed hand-colored slides.

March 10, 1908.—Annual Meeting. The President in the chair. Eighty-seven members and visitors present.

The paper of the evening was entitled "Hunting with the Camera," by Mr. A. R. Dugmore, and showed many subjects in nature to which the photographer may devote his energies. Birds, large wild game, flowers, and landscapes were shown in a large series of beautiful lantern slides.

The report of the Treasurer, showing a balance on hand of \$1291.67, was read, and referred to an auditing committee to be appointed by the President. The Chair named Mr. Dutcher and Mr. Bowdish for this committee.

The report of the Secretary was read, and ordered spread upon the minutes, as follows:

"The Secretary is pleased to report that during the past year the Society has held the full quota of sixteen meetings. It is the first time since 1899 that one or more meetings have not been omitted for various reasons.

There has been a total attendance of 514 persons (exclusive of one public lecture), or an average of over 34 persons at each meeting. The average of the previous year was slightly under 34, which was the highest in the history of the Society. It was hardly hoped that this attendance could be maintained, and it is therefore especially gratifying that the average this year is fractionally higher. The greatest number present at any one meeting was 101, which is the largest on record.

The Secretary believes that the good attendance is partly due to the fact that of the seventeen papers presented before the Society during the year, eleven were illustrated by lantern slides, and, in the case of three more, photographic prints were passed among the audience. These facts go to show the place which photography is taking in scientific nature study to-day.

Eleven new members have been elected to resident membership during the year, four have resigned, and one has been dropped for arrears in dues.

The membership roll now stands: Resident, 109; Corresponding, 31; Honorary, 2; a total of 142.

Abstract of Proceedings, Nos. 17-19, was issued on October 22, and circulated among the members and exchanges. It contained 136 pages of reading matter, including 'A List of the Birds of Long Island, New York,' by Wm. C. Braislin, M.D.

The usual exchange publications have been added to the Library, and also a handsome scrap album containing memorabilia of Linnæus, presented to the Society by Mr. J. de Lagerberg, of Passaic, N. J."

Mr. A. R. Dugmore and Mr. Roy C. Andrews were elected resident members of the Society.

The present officers were unanimously reelected for the ensuing year, as follows:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, William Dutcher.

TREASURER, Lewis B. Woodruff.

SECRETARY, Clinton G. Abbott.

The members of the present standing committees were then reappointed by the President, as follows:

Publications, Messrs. Allen, Chapman, and Abbott.

Finance, Messrs. Dutcher, Bumpus, and Woodruff.

Nominations, Messrs. Granger, Dutcher, and Abbott.

Papers and Lectures, Messrs. Granger, Chapman, and Abbott.

Dr. H. F. Merriam reported finding a pair of Great Horned Owls (*Bubo virginianus*) nesting near Goshen, N. Y., on March 1. He presumed these birds to be the same pair as that seen by him last year at the same place. The nest contained two fresh eggs.

Mr. Philipp reported two pairs of Great Horned Owls seen near Buzzard's Bay, Mass., on March 8. He located a nest which was evidently a fresh one, but no eggs were found.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 9, 1909.

THIS is the twenty-first in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date above indicated. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 24, 1908.—The President in the chair. Forty-one members and visitors present.

Mr. B. S. Bowdish reported for the auditing committee that the accounts of the Treasurer had been examined and found correct.

Dr. Dwight recorded a Great Horned Owl's (*Bubo virginianus*) nest, containing two eggs, which Mr. W. DeW. Miller had discovered on March 1, in a hole in a tree near South River, N. J. Mr. Miller also saw near New Brunswick, N. J., on the same date, a flock of Grackles (*Quiscalus*), which he estimated to contain between 5,000 and 15,000 individuals.

Mr. F. E. Johnson reported seeing a Hermit Thrush (*Hylotichia guttata pallasi*) on February 22 at Yonkers, N. Y.

The paper of the evening was by Mr. Frank Edgar Johnson, and was entitled "Further Notes on Prince Edward Island Bird Life." This was the second paper on the subject of Prince Edward Island that Mr. Johnson has given before the Society,

and it was based upon additional observations and experiences during the previous summer. It was illustrated with lantern slides, which represented something of the bird life of the region, and the rural beauty of Prince Edward Island as well.

April 14, 1908.—Mr. Walter Granger in the chair. Sixty-five members and visitors present.

The Secretary announced that a public lecture by Mr. Richard Kearton, the English ornithologist, to be given in the Museum under the auspices of the Linnæan Society, had been arranged for April 30. A motion therefore prevailed, changing the date of the next meeting of the Society from April 28 to April 30.

Mr. C. G. Abbott made the customary, though commonplace, record of the first Red-shouldered Hawk's (*Buteo lineatus*) nest—this year on April 12, near Plainfield, N. J.

Mr. J. P. Callender recorded a Red-tailed Hawk's (*Buteo borealis*) nest, with two eggs, near Goshen, N. Y., on March 29, and a Barred Owl's (*Strix varia*) nest, with two eggs, near Pine Brook, N. J., on April 5. The latter was the same nest as that reported to the Society on April 9, 1907.

Mr. Herbert Lang presented the paper of the evening, his title being "Wild Nature in British East Africa." He showed an excellent series of slides, depicting many phases of big game hunting in these parts—the animals themselves, the scenery, the natives, and the camp life,—while his descriptions gave a vivid picture of his varied experiences.

April 30, 1908.—A public lecture by Mr. Richard Kearton, the English ornithologist and bird-photographer, was given in the large auditorium of the Museum, under the auspices of the Linnæan Society, and took the place of the regular meeting scheduled for April 28. The lecture, which was well attended, was entitled "Wild Birds at Home," and was illustrated with lantern slides and moving pictures. These were the first moving pictures of birds ever exhibited in this country.

May 12, 1908.—The President in the chair. Fifteen members and visitors present.

Mr. James L. Clark was elected a resident member of the Society.

Mr. Ludlow Griscom reported a Prothonotary Warbler

(*Protonotaria citrea*) observed in Central Park on May 3. He also stated that Prof. C. C. Trowbridge, of Columbia University, had collected this spring a set of Duck Hawk's (*Falco peregrinus anatum*) eggs on the Palisades of the Hudson near Englewood, N. J.

Mr. A. H. Helme remarked on the irregular migration of the present season. He said he believed that cold waves during migration, following periods of warm weather, were one of the main causes of decrease in bird life. He reported the arrival of the Prairie Warbler (*Dendroica discolor*) at Miller Place, L. I., on April 28.

Mr. F. M. Chapman recorded some of his observations on a recent trip to Florida. He found very few migrants in the Cape Sable region, but at Gainesville they were common, having apparently passed over the coast region and landed in the interior. At Gainesville, on April 7, he collected a female Yellow-billed Cuckoo (*Coccyzus americanus*) that was about to lay, although it had undoubtedly arrived only a very few days before, thus furnishing additional evidence that the first migrants to arrive in a given region are the breeders.

Mr. Helme corroborated Mr. Chapman's observations on lack of migrants on the Florida Keys. He also reported that Robins (*Planesticus migratorius*) had wintered in very large numbers in Florida, and that, as usual, a great slaughter among them had been carried on. He stated that the Brown Pelican (*Pelecanus occidentalis*) is an abundant winter resident on the West Coast of Florida, but does not breed till May.

Mr. P. B. Philipp reported that this year he had found a few fresh eggs of the Brown Pelican on the West Coast as early as April 21.

Mr. Chapman then mentioned the curious difference in the nesting habits of these birds on the East Coast of Florida, which usually begin to breed in November, and last year began even in the first week of October. He said that on April 17 there were 300 nests of a second brood on Pelican Island.

Mr. Wm. Dutcher reported seeing three Herring Gulls (*Larus argentatus*) on the North River on May 10, an unusually late date for their presence in the harbor.

Mr. Arthur Goadby spoke of a measure which had recently passed the New York Legislature, providing for the exemption from taxation of forested lands in the Adirondack region. This law will naturally have the effect of increasing the forested area.

Mr. Dutcher spoke of the gains made by the New York Audubon Society during the past legislative season. One important law, which had just gone into effect, provided for a resident hunter's license. Another provided an indefinite close season for the Wood Duck (*Aix sponsa*), New York being the third state to take such action. He remarked further that the New York Game Bird Law had, in substance, just been introduced into the British Parliament by Lord Avebury. Mr. Dutcher also mentioned the recent seizure in Jersey City of 18,000 Lapwings (*Vanellus vanellus*), which had been illegally imported. In this connection he quoted Mr. Richard Kearton as saying that, largely on account of persistent eggging, there were in England at present perhaps only ten per cent. of the number of Lapwings to be found twenty years ago.

Dr. Jonathan Dwight, Jr., then presented the paper of the evening, entitled "Remarks on Some New Races of North American Birds." He discussed some of the changes recently accepted by the A. O. U. Committee on Classification and Nomenclature of North American Birds, illustrating his remarks with skins of a number of the new forms.

The paper was discussed by Messrs. Chapman and Dutcher.

May 26, 1908.—The President in the chair. Sixteen members and visitors present.

Mr. Herbert Lang was elected a resident member of the Society.

Mr. P. B. Philipp recorded finding the following nests at Summit, N. J., on May 24: Blue-winged Warbler (*Vermivora pinus*) (4 eggs), Hairy Woodpecker (*Dryobates villosus*) (young), Downy Woodpecker (*Dryobates pubescens*)—two nests (3 fresh eggs; 5 well-incubated eggs).

The paper of the evening was entitled "Notes Made on Birds in Florida, 1908," by Messrs. P. B. Philipp and T. F. Wilcox. The latter described their experiences in the interior near Mohawk, Lake County, from March 30 to April 6, and the

former told of their trip along the West Coast from April 9 to April 23. Some of the most interesting birds observed were the Louisiana Heron (*Hydranassa tricolor ruficollis*), Little Blue Heron (*Florida cærulea*), Roseate Spoonbill (*Ajaia ajaja*), American Egret (*Herodias egretta*), Reddish Egret (*Dichromanassa rufescens*), Brown Pelican (*Pelecanus occidentalis*), Florida Cormorant (*Phalacrocorax auritus floridanus*), Water-Turkey (*Anhinga anhinga*), Florida Jay (*Aphelocoma cyanea*), and Key West Vireo (*Vireo griseus maynardi*). No Snowy Herons (*Egretta candidissima*) were seen.

The paper was discussed by Messrs. Dutcher and Chapman.

Mr. Chapman then gave an account of his experiences in reaching the famous Cuthbert Rookery in the latter part of March. On the way from Miami to Flamingo he met with an interesting nesting case, where one young Great White Heron (*Ardea occidentalis*) and two young Ward's Herons (*Ardea herodias wardi*) were found in the same nest. He also heard a report that three Flamingos (*Phænicopterus ruber*) had recently been observed in that region by the natives.

From Flamingo he continued his journey to Snake Bight and thence to the Cuthbert Rookery. He found there approximately 2,000 Louisiana Herons, several hundred White Ibises (*Guara alba*), 50 Little Blue Herons, 14 or 15 Snowy Egrets, 32 Roseate Spoonbills, 300 or 400 American Egrets, one Pelican, a few Cormorants and Water-Turkeys, and numerous Fish Crows (*Corvus ossifragus*) and Florida Crows (*Corvus brachyrhynchos pascuus*). The Crows rifle a great many nests without interference on the part of the Herons. He found the Egrets exceedingly shy of a gun, abandoning the vicinity at the first shot and not returning for hours. In this habit seems to lie their only hope of escape from extermination.

October 13, 1908.—The President in the chair. Twenty-five members and visitors present.

Mr. C. G. Abbott remarked upon the presence of Black Terns (*Hydrochelidon nigra surinamensis*) in the harbor, the first having been observed by him on August 12. As usual, the majority were immature birds.

Mr. James Chapin said he observed the first Black Tern on

August 9. He thought the birds were commoner this year than last, being about as abundant as in 1906. In 1906 he saw the last bird on October 12. He also added that he had seen the last Common Tern (*Sterna hirundo*) in the harbor this year on October 11.

Mr. F. L. Van Tassell spoke of the large numbers of Black Ducks (*Anas rubripes*) observed by him on Great South Bay, L. I., in August of this year. Some of the flocks contained 700 or 800 individuals. He attributed the abundance of the birds partially to the abolition of spring shooting.

Mr. J. A. Weber reported collecting a Short-billed Marsh Wren (*Cistothorus stellaris*) at Freeport, L. I., on September 12. This is the second definite record of the species on Long Island.

Mr. Frank M. Chapman then presented the paper of the evening, which was entitled "Impressions of English Bird Life." He told of his first visit to England, made in 1906, and of trips to Cambridge, Surrey, Selborne, the New Forest, the Yorkshire coast, the Farne Islands, and southern Scotland. The paper was illustrated with lantern slides, which showed the scenery and the bird life of the regions visited.

October 27, 1908.—The President in the chair. Thirty-six members and visitors present.

Mr. James Chapin was elected a resident member of the Society.

Mr. J. A. Weber recorded the discovery of a nest of the Rose-breasted Grosbeak (*Zamelodia ludoviciana*) at Fort George, in this city, on June 6; it contained three eggs of the Grosbeak and one Cowbird's (*Molothrus ater*) egg. He also reported finding at the same place a nest of a Song Sparrow (*Melospiza melodia*) in a bush ten feet from the ground.

Prof. C. C. Trowbridge reported a like nest, seven or eight feet from the ground, which he had found on June 18; and Mr. B. S. Bowdish told of a nest built twelve feet up in vines under a bird-box, at Demarest, N. J.

Mr. Miller called attention to the fact that the early nests of Song Sparrows are almost invariably on the ground, while later ones, after the leaves are out so as to afford sufficient

cover, are commonly placed in bushes. Dr. L. B. Bishop spoke of a similar habit of the Brown Thrasher (*Toxostoma rufum*).

Dr. Bishop also reported the following interesting birds noted in the vicinity of New Haven, Conn., viz:

Florida Gallinule (*Gallinula galeata*), September 15, one on the Quinnipiac Marshes; September 28, one at Westville; and October 10, one at Goodspeed Landing.

Yellow Rail (*Coturnicops noveboracensis*), September 15, one on Quinnipiac Marshes.

Red Phalarope (*Phalaropus fulicarius*), September 25, one at West Haven.

Red-throated Loon (*Gavia stellata*), October 7, one at Branford.

American Coot (*Fulica americana*), October 8, Goodspeed Landing.

Baldpate (*Mareca americana*) and Ruddy Duck (*Erismatura jamaicensis*), October 14, Quinnipiac Marshes.

A general discussion of the Yellow Rail and its retiring habits followed, Mr. A. H. Helme recalling having flushed one at Port Jefferson, N. Y., many years ago, the only one he had ever seen. Dr. Dwight reported having received an adult Yellow Rail from Springfield, Mass., on October 10.

Mr. Helme reported the presence in August and September of large numbers of Red Crossbills (*Loxia curvirostra minor*) at Arkville, N. Y. They made their appearance on August 4, and by the 15th there were 300 to 500 about the depot. Later, by the 9th of September, they were still present, but in reduced numbers. The early ones appeared to be all adult, the later ones, young. The red males were moulting when they appeared.

Dr. Dwight called attention to the remarkable fact that the young moult directly from the streaked plumage to the complete red plumage.

Mr. Ludlow Griscom reported the following rare Warblers in Central Park this fall: Tennessee Warbler (*Vermivora peregrina*), August 20 and 21; Cape May Warbler (*Dendroica tigrina*), September 22 and 24, October 1 and 13; Connecticut Warbler (*Oporornis agilis*), September 22; Mourning Warbler (*O. philadelphia*), August 6.

The unusual abundance of the Cape May Warbler in the fall migration this year was commented upon by several members.

Dr. Bishop told of the work inaugurated this past season by the New Haven Ornithological Club in banding nestling birds, and suggested that the members of the Linnæan Society cooperate in this work next spring. Dr. Dwight supplemented Dr. Bishop's remarks, pointing out the field for valuable information relative to the course and extent of the travels of individual birds, which an extended adoption of tagging work would probably open to ornithological science.

Dr. Bishop then presented the first paper of the evening, which was entitled "The Magdalen Islands and Bird Rocks Revisited." He told of a visit made by him to the islands this summer, covering August and the first half of September, and compared the birds seen with those noted on his previous visit in 1887, commenting upon the entire absence of some species formerly common, while others were much more abundant than they were found twenty-one years ago.

Prof. Trowbridge, in the discussion following the reading of the paper, spoke of the progressive diminution in the numbers of the Caspian Tern (*Sterna caspia*) noted on his three visits to the Magdalen Islands in 1889, 1894, and 1899, respectively. Dr. Bishop said that none were seen by him this year.

Dr. Dwight presented the second paper of the evening, entitled "Some Notes on the Birds of the North Shore of the Gulf of St. Lawrence." He told of his summer visits to Tadousac, Quebec, for the past eighteen years, and called attention to the changes in the species seen during that period.

November 10, 1908.—The Secretary in the chair. Forty-eight members and visitors present.

Dr. Z. L. Leonard was elected a resident member of the Society.

Mr. Ludlow Griscom reported seeing at Watch Hill, R. I., on July 4, 1908, three Old Squaws (*Harelda hyemalis*) and two White-winged Scoters (*Oidemia deglandi*)—all evidently "left-overs" from the winter season—and also large numbers of Common Terns (*Sterna hirundo*) and a few Roseate Terns (*Sterna dougalli*), which must have been nesting not far away.

The paper of the evening was by Mr. Gilbert H. Trafton, of Passaic, N. J., and was entitled "Bird Studies with a Camera." Mr. Trafton's work has been confined largely to familiar birds, many photographs of which were exhibited by means of lantern slides. Especially worthy of mention were the winter feeding scenes, showing devices for attracting birds when snow covers the ground, and the very evident success attained by their use.

Discussion followed the paper.

November 24, 1908.—The President in the chair. Sixty-three members and visitors present.

Dr. Dwight gave an account of the recent A. O. U. Congress at Cambridge, Mass.

The paper of the evening consisted of an illustrated lecture by Mr. William L. Finley, of Portland, Oregon, entitled "A Summer with the Birds about Lake Malheur, Eastern Oregon." In company with Mr. H. T. Bohlmann, Mr. Finley traveled by automobile to this remote lake, where they camped out for weeks in an open boat or upon muskrat houses. In the meantime they secured some very remarkable photographs of such wary birds as Grebes, Ibises, Herons, Ducks, Gulls, and White Pelicans (*Pelecanus erythrorhynchos*). Intimate studies of these birds were shown upon the screen in great variety.

December 8, 1908.—The Secretary in the chair. Seventeen members and visitors present.

Messrs. Gilbert H. Trafton and Thos. D. Keim were elected resident members of the Society.

The first paper of the evening was by Mr. B. S. Bowdish, an official of the National Association of Audubon Societies, and was entitled "Ornithological Miscellany from Audubon Wardens." [Published in *The Auk*, vol. xxvi, 1909, pp. 116-128.] It consisted of excerpts from the wardens' reports, and gave a good idea of the extent of the protective work being done by the Audubon Societies.

The second paper was by Mr. P. B. Philipp, and was entitled "A Contrast of Three Types of Atlantic-nesting Gulls." The speaker described the cliff-nesting Kittiwake Gull (*Rissa tridactyla*), the rock- and upland-nesting Herring Gull (*Larus argentatus*), and the marsh-nesting Laughing Gull (*Larus atricilla*), as he had met with them on the North Atlantic sea-

board. A series of lantern slides, showing the birds, their nests, eggs, and young, illustrated the paper.

December 22, 1908.—The President in the chair. Sixty-one members and visitors present.

Messrs. Frederic Gallatin, Jr., and P. W. Geer were elected resident members of the Society.

Mr. Ludlow Griscom reported seeing 'a Great Horned Owl (*Bubo virginianus*) in Central Park on December 10. Mr. George E. Hix remarked that one was seen in Central Park in April, either 1900 or 1901, and was promptly shot.

The first paper of the evening was by Mr. C. G. Abbott, and was entitled "Random Remarks on Birding in England (1908)." The speaker had visited England during the previous summer, and he described those parts of his trip which were of a more or less ornithological character. He told especially of an expedition into the mountains of Camarthenshire, South Wales, in search of nests of the Kite (*Milvus milvus*) and Buzzard (*Buteo buteo*); of a visit to the remarkable collection of captive birds and animals belonging to the Duke of Bedford at Woburn Abbey; and of a sojourn at the home of Mr. H. F. Witherby, the English ornithologist, on the borders of the New Forest in Hampshire. The paper was illustrated with photographs.

The paper was commented upon by Dr. Dwight.

The second paper of the evening was by Dr. Frank Overton, and was entitled "A Trip to Gardiner's Island during the Summer of 1908." The speaker and a party of friends chartered a sail-boat and made a few days' visit in June to this charming island home of so many interesting birds. They evidently made the best of their limited time in the use of their cameras, the results being presented to the Society in the form of a long series of lantern slides. The birds showed the effect of their protection by wonderful tameness, and an especially fine series of Osprey (*Pandion haliaëtus carolinensis*) pictures was obtained at close quarters.

Dr. Overton closed his paper with a few pictures of birds taken elsewhere than on Gardiner's Island.

January 12, 1909.—The President in the chair. About eighty-five members and visitors present.

Mr. A. F. Gotthold was elected a resident member of the Society.

The lecturer of the evening was Mr. Alfred H. Dunham, of Nome, whose subject was "The Wonders of Alaska (with especial reference to its animal and plant life)." With the aid of lantern slides, the speaker first told of his journey to the Klondike in the spring of 1899, and then described the region of Nome. The slides included many scenes of natural beauty in Alaska, and views of the natives and their occupations; they also showed something of the bird, animal, and plant life of the country.

January 26, 1909.—The President in the chair. Twenty-four members and visitors present.

Mr. C. G. Abbott called attention to the unusual abundance of Redpolls (*Acanthis linaria*) this winter. Mr. Ludlow Griscom recorded the species in Central Park on January 26, and Mr. James Chapin at Great Kills, Staten Island, on December 20.

Mr. Griscom further recorded a Saw-whet Owl (*Cryptoglaux acadica*) seen in Central Park on January 4 and during the following four days.

Mr. Abbott recorded a Ruby-crowned Kinglet (*Regulus calendula*) observed at Livingston, Columbia Co., N. Y., on January 3.

Apropos of unusual birds in winter, Mr. Abbott commented upon Tree Swallows (*Iridoprocne bicolor*) which Mr. Roy Latham had told him he saw on Gardiner's Island, N. Y., on Christmas Day. The birds were said to be living upon bayberries. Mr. S. H. Chubb added that he had observed Tree Swallows eating cedar berries in New Jersey.

The first paper of the evening was by Mr. James Chapin, and was entitled "The Hawks and Owls of Richmond County." It was doubtless a revelation to many of the members to learn the numbers of nesting predaceous birds which systematic field work has revealed within the limits of New York City. Eleven pairs of Barred Owls (*Strix varia*), one pair of Barn Owls (*Aluco pratincola*), many pairs of Screech Owls (*Otus asio*), thirteen pairs of Red-shouldered Hawks (*Buteo lineatus*), several pairs of Sparrow Hawks (*Falco sparverius*), and one pair of Fish

Hawks (*Pandion haliaëtus carolinensis*), were observed by Mr. Chapin on Staten Island last season alone. In addition, he told many interesting anecdotes in connection with the birds, and exhibited an admirable series of photographs, mostly taken by Mr. H. H. Cleaves, his companion in the field.

The second paper of the evening was by Mr. W. DeW. Miller, and was entitled "Notes on the Feeding Habits of Birds of Prey, with Results of Some Examinations of Owl Pellets." Mr. Miller is practically a pioneer in making a study of the food of Owls by dissecting the regurgitated pellets, and the results of his work so far give ample evidence of its great economic possibilities. He showed by means of charts the contents of the pellets he had examined, as well as the variation in the food of several species of Owls. He also displayed skins of the various small mammals commonly devoured, and a mounted set of the birds themselves.

February 9, 1909.—The Secretary in the chair. Fifty-nine members and visitors present.

The first paper of the evening was entitled "Notes from a Trip around the Horn and to the West Coast of South America," by Mr. W. B. Symmes. The speaker called attention to the fact that part of the title should have read "through the Strait of Magellan" instead of "around the Horn." The lantern slides illustrating the paper included scenes from both the wild and the civilized portions of the regions traversed. Mr. Symmes described some remains of the Inca civilization which he had observed on several inland trips, and also told something of the animal life of the region—the llamas, the alpacas, the guanacos, and the bird inhabitants of the guano rocks.

The second paper was by Mr. J. P. Howe, and was entitled "Hunting Big Game in Cassiar, British Columbia." Mr. Howe told of his experiences in hunting Stone's Sheep (*Ovis stonei*), Moose (*Alce gigas*), Caribou (*Rangifer osborni*), Rocky Mountain Goats (*Oreamnus montanus columbianus*), and Grizzly Bears (*Ursus horribilis*) in this remote and wild region, and showed lantern slides of the game, both live and dead, and of the grand mountain scenery. The trip ended with the capture of a live Goat which was attempting to swim across a river, but which died in transportation to the Bronx Zoo.

February 23, 1909.—The President in the chair. Forty-three members and visitors present.

Mr. Ludlow Griscom reported seeing a Redpoll (*Acanthis linaria*) in Central Park on February 2, and Red-breasted Mergansers (*Mergus serrator*) on the large reservoir in Central Park on February 2, 3, and 4.

The speaker of the evening was Mr. W. A. Bryan of the Bishop Museum, Honolulu. His subject was "Fire Fountains—a Visit to Mt. Kilauea." This volcano is situated on the island of Hawaii. After saying something of the geological formation of the mountain, Mr. Bryan gave a realistic account of a visit to the spot, starting from Honolulu and ending in the fierce heat upon the very edge of the volcano pit. Moving pictures represented the visiting party descending from the Volcano House into the crater, and also showed the boiling action of the molten mass in the pit of the volcano. The fiery pit was photographed both by day and at night by its own light.

March 9, 1909.—Annual Meeting. The President in the chair. Fourteen members and visitors present.

Mr. Dwight Franklin was elected a resident member of the Society.

The Treasurer presented his annual report, which showed a balance on hand in the treasury of \$1625.32. The President appointed Dr. J. A. Allen and Mr. Roy C. Andrews as a committee to audit the report.

The Secretary then read his annual report, as follows:

"Your Secretary believes that in point of attendance and in the general interest of the meetings, the past year has been one of the most successful in the history of the Linnæan Society. Sixteen meetings have been held, none having been omitted, except that the second meeting in April took the form of a public lecture in the large auditorium by Mr. Richard Kearton, of England. At the other meetings there has been a total attendance of 685 persons, making an average attendance at each meeting of 46. This is by far the largest figure in the history of the Society. Seven years ago the average attendance was only 16, and the present attendance shows that the Linnæan Society is coming more and more to be known and recognized as a scientific society of prominence in New York City. At one meeting 87 persons were present.

In the sixteen meetings twenty papers have been presented, all illustrated with either lantern slides, photographs, specimens, or charts. The topics were largely ornithological.

During the year 13 new members have been elected, three have resigned, and one, Rev. Haslett McKim, has died. The membership roll now stands: Resident Members, 113; Corresponding Members, 31; Honorary Members, 2; total, 146.

The usual exchange publications have been added to the Library."

The present incumbents in the various offices were reelected for the ensuing year, as follows:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, William Dutcher.

TREASURER, Lewis B. Woodruff.

SECRETARY, Clinton G. Abbott.

The President then appointed the following standing committees for the year:

Publications, Messrs. Allen, Chapman, and Abbott.

Finance, Messrs. Woodruff, Bumpus, and Wilcox.

Nominations, Messrs. Dutcher, Philipp, and Abbott.

Papers and Lectures, Messrs. Chapman, Harper, and Abbott.

A lengthy discussion then ensued as to the better disposition and care of the Library of the Society. As a preliminary step in the adjustment of the matter, Dr. Dwight agreed to consult with the Director of the Museum in regard to finding more suitable quarters in the building for the Library.

Mr. John Treadwell Nichols gave the paper of the evening, which was entitled "The Salmon Fisheries of the Columbia River." Having been employed by the United States Bureau of Fisheries to investigate this subject, he was well qualified to speak upon it. He described the kinds of salmon that are found there, the many devices employed for catching them, and the work of artificial propagation being carried on by the government. The paper was illustrated with blackboard sketches, photographs, and colored drawings. Some salmon in the flesh, as well as living fry in glass jars, were also exhibited.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 8, 1910.

THIS is the twenty-second in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 23, 1909.—The Secretary in the chair. Forty-one members and visitors present.

Mr. R. C. Andrews reported that a pair of Sparrow Hawks (*Falco sparverius*) had been investigating a certain hole in the Museum building near Dr. Allen's window. It was hoped that the birds would decide to nest thus close to the ornithological department!

Mr. P. W. Geer read a letter from Col. J. A. Kuser, of Bernardsville, N. J., telling something of the captive birds in his large aviaries.

Mr. B. S. Bowdish spoke of the presence this winter at Demarest, N. J., of the Red-breasted Nuthatch (*Sitta canadensis*) and Ruby-crowned Kinglet (*Regulus calendula*)—both unusual winter residents there.

The paper of the evening was by Mr. L. W. Brownell, and was entitled "Some Experiences with Birds before the Camera."

Mr. Brownell exhibited a splendid series of lantern slides, covering many species, and demonstrating how very successful he has been in obtaining photographs of adult wild birds. He told of his experiences and methods, showing how he has overcome the timidity of numbers of birds with surprising ease. At the close of his remarks Mr. Brownell showed a number of admirable photographic studies of wild birds and animals made by his friend, Mr. W. E. Carlin.

Discussion followed Mr. Brownell's paper.

April 13, 1909.—Mr. Lewis B. Woodruff in the chair. Thirty-five members and visitors present.

Mr. Kenneth G. Agnew was elected a resident member of the Society.

Mr. J. A. Weber reported seeing three Evening Grosbeaks (*Hesperiphona vespertina*), an adult male, an adult female, and an immature bird, at Tomahawk, northern Wisconsin, in February, 1909. A female Red-winged Blackbird (*Agelaius phœniceus*) wintered there. He also said that the Northern Pileated Woodpecker (*Phlæotomus pileatus abieticola*) is still fairly common in the region, and gave further notes on various birds and mammals which he had observed there during a stay of several weeks.

The paper of the evening was "Bird's-nesting in Central and Western Florida," by Messrs. P. B. Philipp and T. F. Wilcox. This was an amplification of the talk given before the Society on May 26, 1908, with the addition of numerous colored lantern slides, showing the localities visited and the birds observed. Among the birds photographed were the Brown Pelican (*Pelecanus occidentalis*), Florida Cormorant (*Phalacrocorax auritus floridanus*), and Florida Screech Owl (*Otus asio floridanus*).

The paper was discussed by Mr. Arthur H. Helme.

April 27, 1909.—The President in the chair. Thirty-six members and visitors present.

Mr. J. de Lagerberg reported finding three dead Woodcock (*Philohela minor*) near his home in Passaic, N. J., on March 4 and 5, all the birds being apparently in good condition. In the forthcoming Alaska-Yukon Exhibition, he said, there was to be a Linnæus exhibit.

Mr. J. T. Nichols recorded a Turkey Vulture (*Cathartes aura septentrionalis*) observed at Cold Spring Harbor, L. I., on April 25.

The paper of the evening was entitled "Wild Birds in Captivity," by Mr. P. W. Geer. The speaker has had large experience with game and water birds in captivity, and showed lantern slides of many of the varieties he has possessed. The photographs were taken mostly at the farm of Mr. Homer Davenport at Morris Plains, N. J., where the collection now is. Mr. Geer supplemented his remarks with some admirable imitations of bird calls.

Discussion followed the paper.

May 11, 1909.—The President in the chair. Thirty-seven members and visitors present.

Mr. C. G. Abbott recorded a Saw-whet Owl (*Cryptoglaux acadica*) seen on Staten Island as late as April 28, and a Barn Owl's (*Aluco pratincola*) nest, also on Staten Island, containing eight eggs on May 2.

The paper of the evening was by Mr. C. G. Abbott, and was entitled "Some Wild Birds at Home." The speaker exhibited a series of colored lantern slides showing something of the home life of a number of our common birds.

May 25, 1909.—The President in the chair. Forty-six members and visitors present.

Mr. Ludlow Griscom reported that 113 species of birds had been seen by various observers in Central Park since Jan. 1. On May 19, 59 species had been counted. Some noteworthy records were: American Crossbill (*Loxia curvirostra minor*), for 3 days early in March; Duck Hawk (*Falco peregrinus anatum*), March 2 and May 2; Palm Warbler (*Dendroica palmarum palmarum*), April 21 and 22; Pigeon Hawk (*Falco columbarius*), April 30—second record; Red-bellied Woodpecker (*Centurus carolinus*), April 30 and May 1; Worm-eating Warbler (*Helmitheros vermivorus*), April 19; White-crowned Sparrow (*Zonotrichia leucophrys*), May 15; Cape May Warbler (*Dendroica tigrina*), May 18, 19, and 24; Yellow-bellied Flycatcher (*Empidonax flaviventris*), May 20 and 23; Mourning Warbler (*Oporornis philadelphia*), May 24; Kentucky Warbler (*Oporornis*

förmosus), May 25; Olive-sided Flycatcher (*Nuttallornis borealis*), May 25.

Mr. Francis Harper informed the Society that although reports had been current that the Black-crowned Night Heron (*Nycticorax nycticorax nævius*) colony at Roslyn, L. I., was fast becoming wiped out, he had visited the place recently and found it in a flourishing condition. He thought there were about 200 birds in the colony, a slight increase over the number in 1908, but fewer than in 1907, when the breeding birds were estimated at from 500 to 600.

Mr. C. G. Abbott reported seeing on Staten Island a Woodcock's (*Philohela minor*) nest, with four eggs, on which the bird was sitting on May 13, an unusually late date.

He also reported that five nests each of the Great Horned (*Bubo virginianus*) and Barred Owls (*Strix varia*) had been discovered this year by members of the Society within seventy-five miles of New York City.

The paper of the evening was by Mr. C. William Beebe, Curator of Birds at the Bronx Zoölogical Park, and was entitled "Notes on a Trip to British Guiana." Mr. Beebe had but recently returned from this trip, which he had made in the interests of the Zoo. He displayed a series of lantern slides, which included pictures of the jungles, the natives, and the animal life of the country. Of especial interest were photographs of the Sea-cow (*Trichechus manatus*), a nesting Parrot, and, above all, some Hoatzins (*Opisthocomus*). This remarkable species, in all probability, had never before been photographed in life.

October 12, 1909.—The President in the chair. Thirty-one members and visitors present.

Dr. Dwight called the attention of the members to the fact that the A. O. U. convention would this year be held in New York, and that the Linnæan Society would presumably be desirous of providing luncheon to the delegates during the three days of the convention, as in years past. A motion then prevailed that the President appoint a committee of two, besides himself, to attend to the matter.

The announced program of the evening was an exhibition of

original water-color drawings of birds by Mr. R. I. Brasher. Mr. Brasher is undertaking the task of painting every known bird of North America. So far he has completed about one half, or 500, of the subjects. Of these he exhibited a selection composed chiefly of water birds and Hummingbirds. They are mostly life-size, and are executed with great detail and accuracy. Mr. Brasher intends ultimately to publish the plates in illustration of a book on all the birds of North America.

Mr. J. T. Nichols, who had just returned from abroad, told something of the food fishes of Europe. He exhibited specimens in alcohol, and compared them with closely related American species.

Mr. Ludlow Griscom reported seeing three Lesser Scaup Ducks (*Marila affinis*) at Overpeck Creek, N. J., on June 8. They were not cripples, but perfectly able to fly. He also reported seeing an Alder Flycatcher (*Empidonax traillii alnorum*) at Coytesville, N. J., on June 26, and a Horned Grebe (*Colymbus auritus*) at Watch Hill, R. I., on September 26. He had observed from a transatlantic steamer an unusual number of sea birds, including a Tern 800 miles from land on June 28, and six Fulmars (*Fulmarus glacialis*) in mid-ocean on September 15.

Mr. C. G. Abbott outlined an ornithological trip made the past summer in company with Messrs. P. B. Philipp and B. S. Bowdish of the Linnæan Society. Sea-bird and Heron colonies on the coasts of North and South Carolina were visited, as well as the woods and lakes in the neighborhood of Havelock, N. C.

October 26, 1909.—The President in the chair. Thirty-two members and visitors present.

In accordance with the motion passed at the last meeting, the President appointed Messrs. Harper and Abbott as the committee to attend to the matter of providing luncheon for the delegates during the A. O. U. convention.

Mr. J. A. Weber reported collecting a Cerulean Warbler (*Dendroica cerulea*) at Palisades Park, N. J., on September 25.

Mr. Ludlow Griscom reported seeing a Stilt Sandpiper (*Micropalama himantopus*) near Watson's Woods in the Bronx on September 19.

Dr. L. B. Bishop noted the following records from the neighborhood of his home in New Haven, Conn.:

- 1 Marbled Godwit (*Limosa fedoa*), West Haven, August 26.
- 1 Western Willet (*Catoptrophorus semipalmatus inornatus*), West Haven, August 26.
- 1 Black Tern (*Hydrochelidon nigra surinamensis*), Hammonasset Point, September 6.
- 2 American Scoters (*Oidemia americana*), West Haven, October 4.
- 1 Golden Eagle (*Aquila chrysaetos*), within 10 miles of New Haven, October 9.
- 1 Fulmar (*Fulmarus glacialis*), near New Haven, October 10.
- 1 Baldpate (*Mareca americana*), North Haven, October 11.
- 2 Pintails (*Dafila acuta*), North Haven, October 23.
- 1 Golden Plover (*Charadrius dominicus*), West Haven, October 25.

He also recorded taking a Lawrence's Warbler (*Vermivora lawrencei*) last May, and finding a nest and eggs of a female *pinus* with a male Lawrence's Warbler on June 5.

The paper of the evening was by Mr. T. Gilbert Pearson, Secretary of the National Association of Audubon Societies, and was entitled "Notes on the Birds of Eastern North Carolina." Mr. Pearson told in a most interesting manner of the bird life in the region he described, and illustrated his remarks with a series of lantern slides. Of especial note were the Cormorant (*Phalacrocorax auritus floridanus*) colony of Great Lake and the Royal Terns (*Sterna maxima*) of Royal Shoal. The influence of the protection afforded by the Audubon Societies is well shown by the rapid increase in the nesting colonies during the last few years.

At the close of the meeting Mr. Dwight Franklin explained to the members the principal diagnostic features of our common frogs, living specimens of which he had brought to the meeting in jars.

November 9, 1909.—The President in the chair. Fifteen members and visitors present.

The paper of the evening was entitled "Notes on the Song Sparrows (*Melospiza melodia*)," by Dr. Dwight. He called attention to the variation in size and coloration of the races of this bird, which would cause a separation into distinct species,

could not intermediate forms and a direct relationship be traced between all. All the races recognized by the A. O. U., numbering 21, were described, and their habitats pointed out. Dr. Dwight then outlined a large map of North America, and placed a skin of each subspecies, with a single exception, upon the region which it inhabits.

Discussion followed the paper.

November 23, 1909.—The President in the chair. Twenty-one members and visitors present.

Dr. Dwight reported, for the committee in charge, that over two hundred dollars had been contributed to date toward the A. O. U. entertainment fund.

The first paper of the evening, entitled "The Sandpipers of Wolf's Pond," was presented by Mr. Howard H. Cleaves. It was illustrated with a series of excellent lantern slides, which included pictures of the Spotted (*Actitis macularia*), Solitary (*Helodromas solitarius*), Semipalmated (*Ereunetes pusillus*), and Least Sandpipers (*Pisobia minutilla*), and the Sanderling (*Calidris leucophæa*). All of the photographs were taken by Mr. Cleaves on Staten Island, and showed the birds in many striking and interesting poses.

Mr. Dwight Franklin then spoke on "Some Local Toads and Frogs." He illustrated his talk with live specimens as well as sketches, pointing out the differences and resemblances of most of the species found within fifty miles of New York City. Mr. Franklin also told something of the habits and life histories of the forms under discussion. The members present were given an opportunity after adjournment to inspect the specimens closely.

December 14, 1909.—The President in the chair. Forty members and visitors present.

The paper of the evening was entitled "The Isthmus of Tehuantepec, and Ascents of the Great Volcanoes Colima and Popocatepetl," by Dr. E. O. Hovey. He told of the physical characteristics, the inhabitants, and particularly the geological features, of the country visited. Many lantern slides, consisting largely of scenes on the lava-covered sides of the volcanoes, were exhibited.

December 28, 1909.—The President in the chair. Forty-one members and visitors present.

The report of the A. O. U. entertainment committee was read by Mr. Harper, showing a balance on hand of \$77.83. A letter from the Secretary of the A. O. U. was also read, thanking the Linnæan Society for hospitalities extended during the Congress. In view of the surplus in the hands of the entertainment committee, a motion prevailed to refund the subscriptions of non-resident corresponding members of the Society, amounting to \$33.00.

The matter of the proper disposition of the Society's Library was again brought up. The Secretary reported that he and the President had consulted with the Librarian of the Museum and found that it would be feasible to deposit the Library of the Linnæan Society in the Museum Library, where, without losing its identity, it would receive better care and be more readily accessible at all times. After some discussion a motion was finally carried that the Secretary notify all the members of the Society of the proposed change, and call upon each for an expression of opinion.

Dr. E. B. Southwick spoke of a male Rose-breasted Grosbeak (*Zamelodia ludoviciana*) that had been captured in Central Park on December 16 and was now confined in one of the glass conservatories.

The paper of the evening took the form of a most unique discourse, entitled "New Methods of Popularizing Lectures on Zoölogical Subjects," by Mr. Raymond L. Ditmars, Curator of Reptiles and Mammals in the N. Y. Zoölogical Park. Declaring that the public were tiring of lantern slides, Mr. Ditmars brought with him from the Zoo some of the smaller mammals and reptiles, which he displayed engaging in their natural movements upon a platform before the audience. Perhaps most interesting to those present were the jerboas, or jumping mice, which at the Park cannot be appreciated, as they sleep all day, but whose activity during the night time was amply and amusingly proved. Mr. Ditmars was aided by Mr. Snyder, his head keeper, the necessity for whose assistance was particularly evident in the handling of venomous serpents. Mr. Ditmars and Mr. Snyder

together illustrated the method of extracting the venom of a Cotton-mouth Moccasin (*Ancistrodon piscivorus*), the venom being used to produce an antitoxin for snake bite.

January 11, 1910.—The President in the chair. Twenty-nine members and visitors present.

Mr. J. A. Weber reported securing the skin of a Purple Sandpiper (*Arquatella maritima*) shot at Rockaway Beach, L. I., on November 2, 1909. He related how he had attempted to purchase the bird from a pot-hunter who had killed it, but the latter, declaring he needed it for food, refused to part with it. Mr. Weber thereupon accompanied the man to his home, skinned the bird, and leaving the morsel of flesh, was permitted to take the skin. At the man's home he saw two stuffed Barn Owls (*Aluco pratincola*), taken in Woodhaven Woods, L. I., and a Brünnich's Murre (*Uria lomvia*), taken on Long Island, December 13, 1908. Mr. Weber also reported collecting two Lapland Longspurs (*Calcarius lapponicus*) at Long Beach, L. I., on January 2.

Mr. Ludlow Griscom told of a Sharp-tailed Sparrow (*Passer-herbulus caudacutus*) which he had observed at Long Beach, L. I., on December 27. The bird allowed a close approach and was perhaps injured, thus accounting for its presence at that season. He also reported a Saw-whet Owl (*Cryptoglaux acadica*) which had spent a day in Washington Square, and could be seen in a neighboring tree from the windows of his home. He also said that a Baltimore Oriole (*Icterus galbula*) had been wintering in Central Park, and had been seen by several observers.

Mr. Robinson reported seeing a Loon (*Gavia*) at Chateaugay Lake, in the Adirondacks, on December 28, although the lake was completely frozen over and the temperature 16 degrees below zero. He said the bird was able to fly perfectly.

The paper of the evening was by Mr. B. S. Bowdish, and was entitled "A Week with the Herons and Shore Birds on the Coast of South Carolina." It was the first of a series of three papers describing the ornithological results of a trip made last summer by three Linnæan Society members, Messrs. Bowdish, Philipp, and Abbott. The party was successful in locating a small colony of Snowy Egrets (*Egretta candidissima*) in the midst of a large

heronry near Charleston, S. C. The nesting grounds of Willets (*Catoptrophorus semipalmatus*), Wilson's Plovers (*Ochthodromus wilsonius*), Oyster-catchers (*Hæmatopus palliatus*), Royal, Common, and Least Terns (*Sterna maxima*, *S. hirundo*, and *S. antillarum*), and Skimmers (*Rynchops nigra*) were visited, at points on the coast between Bull's Bay and Charleston. In most cases lantern slides were exhibited, showing the birds or their nests.

January 25, 1910.—The President in the chair. Thirty members and visitors present.

Mr. B. S. Bowdish extended to the members of the Linnæan Society an invitation received by the Audubon Societies from Pathé Bros., to witness at their offices in New York on the evening of February 7, an exhibition of motion pictures of birds recently received from Paris.

Mr. James P. Callender offered the following preambles and resolutions, which were unanimously adopted:

WHEREAS: The Linnæan Society of New York has for its object the study and protection of wild birds and animals; and

WHEREAS: The Linnæan Society of New York learns that a bill has been presented to the Legislature of the State, the purpose of which is to amend the present Forest, Fish, and Game Law relative to the definition of the term "plumage" and the protection of wild birds, the said bill being known as the Audubon Plumage Bill; and

WHEREAS: It is the opinion of the said Linnæan Society that the passage of the proposed amendments is essential for the proper conservation of the valuable bird life of this State, therefore be it

Resolved: That the members of the Linnæan Society in meeting assembled January 25, 1910, approve most heartily of the said amendments, and urge upon the members of the Legislature of the State to give them their favorable and early consideration, and be it

Further Resolved: That the Secretary of the Society be directed to send a certified copy of these resolutions to the Governor and each of the Senators and Assemblymen of the State of New York.

The paper of the evening was by Mr. C. G. Abbott, and was entitled "An Ornithologists' Camp in the Woods of North Carolina." The speaker described a week spent in company with Messrs. P. B. Philipp, B. S. Bowdish, and H. H. Brimley, near Havelock, N. C. A number of lantern slides were shown, illustrating the nature of the country and something of its

bird life—particularly that of the three lakes in the region, Lake Ellis, Great Lake, and Little Lake. On Great Lake there is a most interesting colony of tree-nesting Cormorants (*Phalacrocorax auritus floridanus*).

February 8, 1910.—The Secretary in the chair. Thirty-three members and visitors present.

Mr. H. H. Cleaves was elected a resident member of the Society.

The paper of the evening was by Mr. P. B. Philipp, and was entitled "The Sea-bird Colonies of Pamlico Sound." [Published on pp. 79 ff. of this *Abstract*.] This was the third and last paper of the series describing the previous summer vacation of three Linnæan Society members. The part of the trip described by Mr. Philipp covered Core and Pamlico Sounds from Beaufort, N. C., to Cape Hatteras. A number of populous and well-protected sea-bird colonies, situated on low sandy islands in the sound, were described. The camera had been used with good effect, as was evidenced by a large series of excellent lantern slides, showing Royal Terns (*Sterna maxima*), Cabot's Terns (*Sterna sandvicensis acuflavida*), Common Terns (*Sterna hirundo*), Least Terns (*Sterna antillarum*), Skimmers (*Rynchops nigra*), Laughing Gulls (*Larus atricilla*), and their eggs and young.

February 23, 1910.—The President in the chair. Thirteen members and visitors present.

There was some discussion of the present status of the Passenger Pigeon (*Ectopistes migratorius*), suggested by the rewards recently offered publicly for the discovery of an undisturbed nest of this species.

Dr. L. B. Bishop said that he saw a Mockingbird (*Mimus polyglottos*) in Central Park on October 30, 1909, and asked if these birds were often seen there. Mr. Abbott recalled having once observed one in the Park, but said that the possibility of such birds having escaped from captivity always rendered the records of uncertain value.

Dr. Bishop recorded the following additions to his collection since his last visit to the Linnæan Society:

Bald Eagle (*Haliaeetus leucocephalus*), taken at Willimantic, Conn., October 27, 1909.

Four Baldpates (*Mareca americana*), taken at New Haven, Conn., December 8, 1909.

Young male American Eider (*Somateria dresseri*), taken at New Haven, Conn., December 20, 1909.

Swamp Sparrow (*Melospiza georgiana*) and Red-winged Blackbird (*Agelaius phoeniceus*), taken at New Haven, Conn., January 1, 1910.

He also remarked on the flight of flocks of Blackbirds observed at Bronx Park, N. Y., on October 31, as exactly in the direction of the Quinipiac Marshes near New Haven. It was hardly thought likely, however, that these were the same birds that roosted there.

An interesting discussion followed on the speed of birds' flight in general.

Mr. C. G. Abbott recorded seeing about 50 Black-backed Gulls (*Larus marinus*) at Rockaway Beach on February 22.

Mr. H. H. Cleaves told of seeing the first Bluebirds (*Sialia sialis*) of the season on Staten Island on February 23.

Mr. Francis Harper recorded a Great Blue Heron (*Ardea herodias*) seen by Mr. H. C. Raven and himself at Smith's Point, L. I., on February 20.

Dr. Bishop then presented the paper of the evening: "Some Notes on the Winter Birds near Rockport, Texas." He spent from February 1 to 7 in that vicinity. During that time 62 species were observed, and 77 individuals, representing 34 species, were collected. Dr. Bishop divided the species observed into five groups, as follows: (1) birds of the water, (2) birds of the shores and flats, (3) birds of the marshes, (4) birds of the prairie, and (5) birds of the brush. Rockport is evidently situated advantageously from an ornithological point of view, since the ranges of numbers of eastern and western forms overlap at this point.

The meeting closed with an informal report by Dr. Bishop on the progress of the bird-tagging movement in this country. As an example of possible records, he told of a Bluebird (*Sialia sialis*) tagged in Maine and taken in the mountains of western North Carolina. He solicited the interest and support of the Linnæan Society in behalf of the work.

March 8, 1910.—Annual Meeting. The President in the chair. Seventy-eight members and visitors present.

The business part of the meeting was postponed until after the announced paper, which was by Mr. Alanson Skinner, and was entitled "By Canoe to Hudson Bay." Mr. Skinner has made two visits to this region in the interests of the Department of Anthropology of the American Museum of Natural History. He showed many lantern slides taken on both trips. He dwelt especially upon the Indians who inhabit the region traversed, and described their life and customs. [Mr. Skinner's studies in this region have been published as one of the Anthropological Papers of the American Museum of Natural History (vol. ix, part i, pp. 1-178, 1911) under the title of "Notes on the Eastern Cree and Northern Saulteaux."]

The Treasurer read his annual report, showing on hand a balance of \$2005.95. Dr. Allen and Mr. Granger were appointed by the Chair a committee to audit this report.

The Secretary then read his annual report, as follows:

"There have been held by the Society during the past year 16 meetings, which is the full possible number. The total attendance has been 494, which gives an average attendance per meeting of 31 persons. While this number is smaller than last year, it does not necessarily indicate a decreased interest on the part of the members, as the falling off apparently is chiefly in the numbers of visitors. The largest attendance at any one meeting was 46, the smallest, 13.

Seventeen papers have been presented before the Society during the year, covering a wide range of ornithological topics, and also ichthyology, mammalogy, herpetology, and the study of batrachians.

Three new members have been elected, and six have resigned during the year. This leaves on the membership roll: Resident Members, 110; Corresponding Members, 31; Honorary Members, 2; total, 143.

A number of exchange publications have been added to the Library. It is expected that a change in the disposition of the Library, by which it will be placed under the care of the Museum's Librarian, will be made in the near future."

The matter of the disposition of the Society's Library was then brought up for final settlement, as advised in the circular letter recently distributed among the members. After some discussion a motion finally prevailed that the Library of the Linnæan Society be turned over to the care of the Librarian of

the Museum on terms similar to those already acceded to by the New York Academy of Sciences.

Officers of the Society for the ensuing year were then elected, as follows:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, Clinton G. Abbott.

TREASURER, Lewis B. Woodruff.

SECRETARY, Francis Harper.

The appointment of the standing committees was postponed till the next meeting.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 14, 1911.

THIS is the twenty-third in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 22, 1910.—The President in the chair. Forty-two members and visitors present.

Mr. Walter Granger, in behalf of the auditing committee appointed at the annual meeting, announced that the Treasurer's report had been examined and found correct.

The President then appointed the following standing committees for the ensuing year, the matter having been postponed from the annual meeting:

Publications, Messrs. Harper, Allen, and Chapman.

Finance, Messrs. Woodruff, Bumpus, and Wilcox.

Nominations, Messrs. Dutcher, Abbott, and Keim.

Papers and Lectures, Messrs. Harper, Chapman, and Granger.

Dr. Dwight also announced that the Library of the Society had been formally turned over to the Librarian of the Museum, and that members of the Linnæan Society would have the privilege of withdrawing the books from the Museum Library.

Mr. Clinton G. Abbott contributed notes on his experiences in Crow-baiting at College Point, Long Island, on March 20. In company with Mr. Francis Harper, he had set up a stuffed Barred Owl (*Strix varia*) as a decoy in the meadows at College Point, and had secured some unusual photographs of both American and Fish Crows (*Corvus brachyrhynchos* and *C. ossifragus*), which came to "mob" the Owl.

Mr. J. T. Nichols then presented the paper of the evening, which was entitled "A Recent Cruise among the Florida Keys and the Everglades." The speaker had returned but a short time previously from a six weeks' collecting trip in this region in behalf of the American Museum of Natural History. He related some of his more interesting experiences on the trip, and gave notes on the fauna in general, but spoke with particular reference to the large number of fishes collected. The paper was illustrated with lantern slides of fishes and also of scenes photographed on the trip. In addition, a number of specimens of fishes were exhibited.

April 12, 1910.—The President in the chair. Seventy-two members and visitors present.

Mr. Francis Harper reported the Pine Warbler (*Dendroica vigorsii*) heard at Mastic, L. I., on April 3.

Dr. Dwight reported that in a recent conversation with members of the Delaware Valley Ornithological Club, the general opinion had been expressed that the bird migration so far this season had not kept pace with the warm weather and the early flowers.

The paper of the evening was by Dr. Frank Overton, and was entitled "Glimpses of Long Island Bird Life." For a number of years past Dr. Overton has been making a most interesting collection of photographs of Long Island birds, animals, people, flowers, scenery, and nature in general, and he illustrated his talk with a large series of lantern slides made from these photographs, together with a number of Lumière autochrome plates. He spoke in particular of the home life and nesting habits of several familiar birds found in the vicinity of Patchogue, L. I., and also of the waterfowl on Great South Bay. Of especial note were two photographs of thousands of Scaup Ducks (*Marila*

marila) on the wing, which comprised only a portion of an immense flock, such as is sometimes observed on the bay.

April 26, 1910.—The President in the chair. About thirty members and visitors present.

In partial confirmation of the report at the previous meeting, Dr. Dwight said that during the recent cool weather the vegetation had been checked, and the birds had not advanced.

Mr. J. A. Weber reported one Black-throated Green Warbler (*Dendroica virens*) and two Blue-headed Vireos (*Lanivireo solitarius*) observed at Palisades Park, N. J., on April 23.

Mr. C. G. Abbott recorded a number of first nests of the season, as follows: Red-shouldered Hawk (*Buteo lineatus*), April 3, on Staten Island; Barred Owl (*Strix varia*), April 10, at Newton, N. J.; Robin (*Planesticus migratorius*), April 24, at Westfield, N. J. All of the nests contained eggs. Mr. Abbott also reported that Messrs. P. B. Philipp and J. P. Callender had found three occupied nests of the Red-tailed Hawk (*Buteo borealis*) on April 10 in the vicinity of Brewster, N. Y.

Several members remarked on the occurrence together of the Barred Owl and the Red-shouldered Hawk in certain localities, and a like association of the Great Horned Owl and the Red-tailed Hawk in other localities. Staten Island seems to be a type of the former locality, and portions of Long Island, of the latter.

Mr. Francis Harper reported seeing a Barn Owl (*Aluco pratincola*) on both April 16 and April 23, roosting in an ever-green tree almost in the heart of the residence district of Flushing, L. I.

The first paper on the program, entitled "Nicaragua Mammals," by Dr. J. A. Allen, was omitted owing to the unavoidable absence of the author.

Dr. Dwight presented the second announced paper, entitled "The Distribution of the Jays of North America." He first pointed out the general distribution and characteristics of the four genera: *Cyanocitta* or Blue Jay, *Aphelocoma* or California Jay, *Xanthoura* or Green Jay, and *Perisoreus* or Canada Jay. He then proceeded to describe in some detail each species and

recognized subspecies, illustrating the plumage differences of the various forms with a complete series of skins, and showing the range of each bird by means of maps.

Discussion by several members and examination of the specimens followed the paper.

May 10, 1910.—The President in the chair. Thirty-one members and visitors present.

Mr. C. G. Abbott reported an unusually early breeding of the Cardinal (*Cardinalis cardinalis*) in Central Park, for on April 30 he had seen the parents feeding young birds already out of the nest.

As another instance of early nesting, Mr. Francis Harper reported a Blue Jay's (*Cyanocitta cristata*) nest, with five eggs, found on May 1 in the Half Hollow Hills, Suffolk County, L. I.

Mr. P. B. Philipp recorded a Red-shouldered Hawk's (*Buteo lineatus*) nest, with two incubated eggs, on April 2, at Newton, N. J.; a Sparrow Hawk's (*Falco sparverius*) nest, with five eggs ready to hatch, on April 10, at Summit, N. J.; and a Cooper's Hawk's (*Accipiter cooperi*) nest, with four eggs, on May 7, at Summit, N. J.

The first paper of the evening was by Mr. B. S. Bowdish, and was entitled "Photographic Odds and Ends." Mr. Bowdish exhibited several dozen lantern slides which had not been shown previously before the Society, and which included scenes of bird life in the Pocono Mountains, Pa., along the upper Hackensack River, N. J., and in the vicinity of the speaker's home at Demarest, N. J. Of especial interest were the pictures of the bird patrons of a winter lunch counter at Demarest, among which were the Purple Finch (*Carpodacus purpureus*), Junco (*Junco hyemalis*), White-breasted Nuthatch (*Sitta carolinensis*), and the inevitable House Sparrow (*Passer domesticus*).

Under the title of "Origin and History of Taxidermy," Mr. J. D. Figgins, chief of the preparation department of the Museum, gave a brief sketch of the development of the art from crude picture writings and rock carvings to the present plaster-model process, as employed at the American Museum of Natural History. He also exhibited a number of interesting slides illustrating various methods of taxidermy.

May 24, 1910.—The President in the chair. One hundred and sixteen members and visitors present.

At the suggestion of the President, the motion was made, seconded, and unanimously carried, that the Society present to Mr. Abbott several early volumes of *The Auk*, now in its library, as a token of its appreciation of his faithful and efficient service as Secretary.

Mr. Geo. E. Hix recorded three Hudsonian Curlews (*Numenius hudsonicus*) seen at Rockaway Beach, L. I., on May 11. Mr. Ludlow Griscom recorded a flock of 13 individuals of the same species observed at Long Beach, L. I., on both May 13 and May 21.

Mr. J. A. Weber spoke of a trip taken by himself and Mr. Francis Harper to the marshes and the beach near Freeport, L. I., on May 21 and 22. On the second day nine species of Shore Birds were collected or observed, as given below with their approximate numbers:

White-rumped Sandpiper (<i>Pisobia fuscicollis</i>),	6.
Least Sandpiper (<i>Pisobia minutilla</i>),	} 2,000.
Semipalmated Sandpiper (<i>Ereunetes pusillus</i>),	
Sanderling (<i>Calidris leucophæa</i>),	10.
Greater Yellow-legs (<i>Totanus melanoleucus</i>),	2.
Spotted Sandpiper (<i>Actitis macularia</i>),	15.
Black-bellied Plover (<i>Squatarola squatarola</i>),	175.
Ring-neck (<i>Ægialitis semipalmata</i>),	75.
Ruddy Turnstone (<i>Arenaria interpres morinella</i>),	10.

Dr. Dwight and several other members spoke of the present migration season, the unusual lateness of which had been remarked upon at several previous meetings, and had been noticeable up to the time of this meeting.

Mr. James L. Clark presented the paper of the evening, which was entitled "Snapshots from British East Africa." Mr. Clark set out for Africa in December, 1908, and had only recently returned from his trip. For some five months he was with Mr. A. R. Dugmore and assisted him in securing the photographs of big game which have now been published in Mr. Dugmore's book, "Camera Adventures in the African Wilds." Later he was associated for a time with Mr. Cherrie Kearton, of England,

and also with Mr. and Mrs. Carl Akeley, of Chicago. He covered much of the ground where ex-President Roosevelt has traveled, and met him on several occasions. Mr. Clark effectively supplemented his talk with a large number of excellent lantern slides, and gave a fascinating account of the expedition on safari; the hunting of rhinoceroses, lions, elephants, water buffaloes, hippopotami, and many other species of game; the scenery, which usually has the aspect of the temperate zone rather than of the tropical; his experiences with various tribes of natives, and their customs, manners, and dress; the exploration of the wonderful but little-known caves of Mount Elgon, which have probably been inhabited by native people for a very long period, etc. Of intense interest was the narrative of his experience in being treed and hunted by a band of several hundred elephants.

October 11, 1910.—The President in the chair. Thirty-five members and visitors present.

The President announced that as the next meeting of the Linnæan Society would fall upon the same date as the Annual Meeting of the National Association of Audubon Societies, a joint meeting of the two organizations would be held on October 25.

As a special feature of the evening, Mr. Reginald I. Brasher gave an exhibition of some very excellent water-color drawings of birds, which he had made recently. These formed a small part of a collection upon which Mr. Brasher has been working for a number of years, and which he designs eventually to include every known species and subspecies of North American bird. In speaking of the proposed publication of his work in some fourteen volumes, he called attention to the fact that no large and comprehensive work of this sort had been issued since the days of Audubon. This exhibition was practically a continuation of a similar one given by Mr. Brasher before the Society last year.

Mr. Howard H. Cleaves then presented a paper entitled "Wild Bird Photography as a Recreation," and illustrated it with a splendid collection of over 100 lantern slides. Practically all of the photographs were taken on Staten Island, and demonstrated what a rich avifauna may still be found within the

limits of the Greater City. Mr. Cleaves has attained notable success with many of his subjects, the Barred Owl (*Strix varia*), Barn Owl (*Aluco pratincola*), Red-shouldered Hawk (*Buteo lineatus*), Woodcock (*Philohela minor*), Kingfisher (*Ceryle alcyon*), and certain Sandpipers deserving special mention.

October 25, 1910.—A joint meeting of the Linnæan Society of New York and the National Association of Audubon Societies was held at the American Museum of Natural History.

The meeting was called to order shortly after 8 P. M., by Vice-President Palmer of the Audubon Societies. The audience numbered about 60 persons.

The address of the evening was given by Professor John B. Watson of the Johns Hopkins University, and was entitled "The Facilities for the Study of Animal Behavior Offered on the Dry Tortugas Bird Reservation." The speaker has for two seasons acted as a warden of the National Association of Audubon Societies on the Dry Tortugas, and has made a special study during these periods of the sense of orientation as shown in the Noddy (*Anous stolidus*) and Sooty Terns (*Sterna fuscata*). This little-known and very interesting subject has been studied more exhaustively by Dr. Watson than by any other scientist in America, and his researches have been published in part by the Carnegie Institution of Washington. He spoke particularly of his experiments with these birds, and illustrated his paper with a number of lantern slides.

November 9, 1910.—The President in the chair. Forty-seven members and visitors present.

Mr. J. A. Weber recorded a Palm Warbler (*Dendroica palmarum palmarum*) taken at Palisades Park, N. J., on October 1.

Mr. Geo. E. Hix reported seeing a Migrant Shrike (*Lanius ludovicianus migrans*) in Central Park on September 15. This is believed to be the first record for the Park.

Mr. J. T. Nichols presented the paper of the evening, entitled "In the Columbia Basin." Mr. Nichols has made two extended trips to this region, and has enjoyed excellent opportunities for studying its interesting fauna at first hand, especially while making investigations under the direction of the United States Bureau of Fisheries. He spoke in turn of eight different

localities distributed throughout the basin, and of various forms of animal life which are characteristic of each. These localities are as follows: (1) the Canadian Rockies from Banff to Glacier, B. C., near the headwaters of the Columbia; (2) Crab Creek, Wash., in an arid part of the country between the Snake and Columbia Rivers; (3) Ontario, Oregon, with a salmon hatchery and racks near the mouth of the Snake River; (4) The Dalles, Oregon; (5) the Hood River valley and mountains; (6) the Cascades of the Columbia; (7) the mouth of the Columbia; and (8) the beach near the river's mouth. The paper was illustrated with lantern slides, including photographs of the Rock Squirrel (*Callospermophilus*), Marmot (*Marmota flaviventris*), Little Chief Hare (*Ochotona princeps*), Lamprey Eels (*Entosphenus tridentatus*), Salmon (*Oncorhynchus tshawytscha*), and Western Semipalmated Sandpiper (*Ereunetes mauri*).

November 22, 1910.—The President in the chair. Thirty-three members and visitors present.

Mr. B. S. Bowdish reported seeing a Brown Thrasher (*Toxostoma rufum*) at Palisades Park, N. J., on November 8.

Mr. Geo. E. Hix recorded a male Chewink (*Pipilo erythrophthalmus*) seen in Central Park on November 20.

Mr. H. H. Cleaves reported a Tree Swallow (*Iridoprocne bicolor*) observed at Prince's Bay, Staten Island, on November 13. Mr. Ludlow Griscom recorded a flock of about 10 individuals of the same species seen at Long Beach, L. I., on the same date.

Mr. J. A. Weber reported Pine Siskins (*Spinus pinus*) present in large numbers at Rockaway Beach, L. I., on November 8. He had also observed hundreds of these birds recently at Palisades Park, N. J.

Mr. Francis Harper reported the taking of a tagged bird. On July 7, 1910, he had placed a band on a young Spotted Sandpiper (*Actitis macularia*) at Four Brothers Islands, Lake Champlain, N. Y., and had just received notice from Dr. Leon J. Cole, President of the American Bird Banding Association, that this bird had been shot from a flock of other Sandpipers on September 5 or 6 by Hayden Crocker at Squantum, Mass.

Dr. Robert T. Morris presented the paper of the evening,

which was entitled "A Preliminary Report on Bird Refuges," and embodied some of the results of the speaker's experiments and studies in bird protection and feeding on his estate near Stamford, Conn. He enumerated a formidable list of bird enemies found on the estate, including both the Red and the Gray Foxes (*Vulpes fulva* and *Urocyon cinereoargenteus*), the domestic cat, the Mink (*Lutreola vison*), the Weasel (*Putorius noveboracensis*), the Red and the Gray Squirrels (*Sciurus hudsonicus loquax* and *S. carolinensis*), the Chipmunk (*Tamias striatus*), mice, the Skunk (*Mephitis olida*), and man. For the protection of his bird tenants against these foes, Dr. Morris has devised a number of ingenious methods. He described at length the artificial shelters and feeding places which he has provided, including a tepee of cornstalks, in which the Bob-whites (*Colinus virginianus*) as well as other species find food, dry sand, and shelter for roosting. He also spoke of the various plants which furnish either food or protection for the birds. Dr. Morris illustrated his remarks with blackboard sketches.

The paper was discussed by Messrs. Weber, Fuertes, Bowdish, and Dwight.

At the invitation of the President, Mr. Louis Agassiz Fuertes, who was a guest at this meeting, gave a most interesting and comprehensive résumé of the papers presented at the A. O. U. Congress held in Washington the previous week.

Mr. Fuertes also contributed, by request, a comparative description of the songs of the Wood Thrush (*Hylocichla mustelina*), Veery (*H. fuscescens*), Alice's Thrush (*H. aliciae*), Olive-backed Thrush (*H. ustulata swainsoni*), and Hermit Thrush (*H. guttata pallasii*), together with whistled reproductions of the songs.

December 13, 1910.—The Vice-President in the chair. About fifty members and visitors present.

Mr. Ludlow Griscom spoke of a trip to Gardiner's Island on November 26, during which Mr. W. DeW. Miller, Mr. S. V. LaDow, and himself observed 39 species of birds, including 15 members of the Duck family (*Anatidæ*), and a flock of 11 Great Blue Herons (*Ardea herodias*).

Mr. B. S. Bowdish gave an early record for the Snowy Owl

(*Nyctea nyctea*), a specimen having been shot on November 19, near Orange, N. J. On December 11, at Demarest, N. J., he had picked up a dead Saw-whet Owl (*Cryptoglaux acadica*). He also reported the recent capture of a Barred Owl (*Strix varia*) on 127th Street, New York City, by a crowd of men and boys with sticks and stones. The Owl was then in his possession and apparently on the road to recovery.

The first paper of the evening was presented by Mr. Bowdish, and was entitled "Hawk Studies with a Camera: the Red-shouldered and Duck Hawks." He had finally succeeded during the past season in photographing both species at their nests, including adults as well as young birds. The Red-shoulder's (*Buteo lineatus*) nest was located in a tall oak in a swamp near Demarest, N. J., and Mr. Bowdish had secured his photographs by fixing a camera in a neighboring tree and operating it from a blind on the ground. In order to reach the Duck Hawk's (*Falco peregrinus anatum*) nest, which he had discovered on a narrow and difficultly accessible ledge some sixty feet from the top of the Palisades, he let himself down, with the aid of an assistant, by means of a rope. In this case the camera was placed on the same ledge a few feet from the nest, and operated from a place of concealment on the face of the Palisades. Mr. Bowdish gave many observations on the habits of both species, and illustrated his remarks with a large number of lantern slides. They included what are probably the first photographs ever taken of an adult Duck Hawk at its nest.

The paper was discussed by Mr. Abbott.

Dr. Frank Overton contributed the second paper, which was entitled "Bird Photography by the Lumière Direct Color Process," and was illustrated largely with autochrome lantern slides. Dr. Overton has done some pioneer work with birds in this new branch of photography, and his autochromes of the Robin (*Planesticus migratorius*), Blue Jay (*Cyanocitta cristata*), Song Sparrow (*Melospiza melodia*), and Catbird (*Dumetella carolinensis*) are, so far as known, unique. He exhibited additional autochromes of birds' nests and eggs, flowers, scenery, etc., and for the purpose of comparison introduced a number of

black-and-white slides. For the most part the autochromes rendered the color values with far greater fidelity and detail than hand-colored slides usually show. The speaker gave interesting notes on his methods and experiences in obtaining the photographs, and on the conditions under which they were taken.

December 27, 1910.—The Vice-President in the chair. Twenty-one members and visitors present.

Mr. Clinton G. Abbott reported four Seaside Sparrows (*Passerherbulus maritimus*) seen by Mr. H. H. Cleaves and himself on Staten Island near Raritan Bay on December 26.

Under the title of "The Seminoles and the Everglades," Mr. Alanson Skinner recounted his experiences on a journey across the Everglades between Fort Myers and Miami in August, 1910. The trip was undertaken in behalf of the Department of Anthropology of the American Museum of Natural History. His party traversed the saw-grass region of the Everglades in canoes, visiting on the way a number of Seminole camps along the edge of the Big Cypress Swamp. Mr. Skinner spoke particularly of the Seminoles' ways of living—their arts and implements of the household and of the chase, their games, dress, ornaments, ceremonial costumes, dwellings, boats, etc. He also mentioned many interesting forms of animal life which he had met with, including the Florida Wild Turkey (*Meleagris gallopavo osceola*), American (*Herodias egretta*) and Snowy Egrets (*Egretta candidissima*), Florida Barred Owl (*Strix varia alleni*), Panther (*Felis cougar*), Alligator (*Alligator mississippiensis*), Diamond-back Rattlesnake (*Crotalus adamanteus*), Cotton-mouth Moccasin (*Ancistrodon piscivorus*), Scorpion (*Scorpionida*), and Red Bug (*Trombidium*). His descriptions of the Seminoles and of various scenes and incidents on the journey were rendered more graphic by an admirable series of lantern slides.

Discussion followed the paper.

January 10, 1911.—The President in the chair. Thirty members and visitors present.

The first paper of the evening was presented by Mr. J. T. Nichols, and was entitled "The Fishes Found within Fifty Miles of New York City." [Published on pp. 90 ff. of this *Abstract*.]

Without reading the entire list of species included in the paper, the speaker took up a number of the most interesting forms, and gave notes on their habits and life histories, distribution, classification, and economic status. The paper was illustrated with lantern slides.

It was discussed by Messrs. J. M. Johnson and T. D. Keim.

Mr. Dwight Franklin gave a talk on "Collecting Fishes and Reptiles in Mississippi." He had spent two months in the spring of 1910 in the vicinity of Moon Lake, Miss., making collections for the American Museum of Natural History. He described at length the methods of taking certain food fishes—especially the Spoonbill (*Polyodon spathula*)—for commercial purposes, and also spoke of the various other fishes, as well as the reptiles, birds, and batrachians, which he had collected or observed in the region. Mr. Franklin illustrated his remarks with a large number of lantern slides made from photographs.

Both papers were also illustrated with preserved specimens, which those present had an opportunity to inspect after adjournment.

January 24, 1911.—The President in the chair. One hundred and seventeen members and visitors present.

Mr. Frank M. Chapman presented the paper of the evening, which was entitled "Bird Studies in Vera Cruz, Mexico," and embodied some of the results of an expedition which he had conducted to this region last spring. The expedition was made for the purpose of collecting data and material for a new habitat group in the Museum, representing the bird life of the tropical parts of Vera Cruz and the various life zones of Mt. Orizaba. Mr. Chapman illustrated his paper with a large number of lantern slides, including photographs of White Ibises (*Guara alba*), Man-o'-war-birds (*Fregata aquila*), and Roseate Spoonbills (*Ajaia ajaja*) nesting on the Tamiahua Lagoon, and also a drawing of a new species of Oriole, *Icterus fuertesi*. This has been named by Mr. Chapman in honor of the discoverer, Mr. Louis Agassiz Fuertes, who accompanied him. A description, together with a plate, of the new species appeared in *The Auk*, vol. xxviii, 1911, p. 1.

February 14, 1911.—The President in the chair. Nineteen members and visitors present.

Mr. Ludlow Griscom recorded a flock of 13 Evening Grosbeaks (*Hesperiphona vespertina*) observed by Mr. W. DeW. Miller on January 29, and a flock of 16 birds seen by both Mr. Miller and himself on February 12, near Plainfield, N. J.

Mr. B. S. Bowdish reported seeing a male Chewink (*Pipilo erythrophthalmus*) on February 12 at Demarest, N. J.

The first paper of the evening was presented by Mr. Howard H. Cleaves. It was entitled "Summer Bird Notes from the Green Mountains," and dealt with observation and photography on a trip to the vicinity of Newfane, Vt., during the previous summer. Of especial interest were notes on the nesting of the Hermit Thrush (*Hylocichla guttata pallasi*) and Tree Swallow (*Iridoprocne bicolor*), and also on various mammals of the region, including the Porcupine (*Erethizon dorsatum*), Deer (*Odocoileus americanus*), and Chipmunk (*Tamias striatus*). Photographs of all these forms were included in the lantern slides which illustrated the paper.

As a special contribution, Dr. Frank Overton exhibited an admirable series of lantern slides of a Ruby-throated Hummingbird (*Archilochus colubris*) and its two nestlings. He gave notes on some of the habits of the birds during the nesting time, and described the means by which he secured the photographs.

Under the title of "Some Studies of the American and Fish Crows," Mr. Francis Harper read a paper describing his experiences and observations in photographing these birds from a cat-tail blind with the aid of a stuffed Owl (*Strix varia*) decoy. Photographs of both species of Crows (*Corvus brachyrhynchos* and *C. ossifragus*), as well as of a Red-shouldered Hawk (*Buteo lineatus*), which also responded to the decoy, were shown by means of lantern slides.

February 28, 1911.—The President in the chair. Ten members and fifty-one visitors present.

Mr. H. C. Raven was elected a resident member of the Society.

The President made an announcement of the proposed changes in the by-laws of the Society, involving the abolition of the initiation fee, to be acted upon at the annual meeting.

Mr. H. H. Cleaves reported seeing on Staten Island, on

February 26, ten Bluebirds (*Sialia sialis*), and on February 27, a flock of Red-winged Blackbirds (*Agelaius phoeniceus*).

Mr. Geo. E. Hix reported that Redpolls (*Acanthis linaria*) had been abundant in the northern part of the city during the past winter.

Mr. Francis Harper recorded a Red-winged Blackbird seen on February 26 at College Point, L. I.

Mr. Roy C. Andrews remarked on the great numbers of birds of many species which he had seen exposed for sale in the market at Nagasaki, Japan. Throughout that country a wholesale destruction is going on, he said, which has resulted in a marked scarcity of bird life.

The first paper of the evening was presented by Mr. Andrews, and was entitled "Whale Hunting with a Camera." He told of modern methods of whaling on both sides of the Pacific, but particularly along the coast of Japan, where he had spent a number of months during the previous year. Many remarkable photographs of whales, in a great variety of attitudes, were exhibited by means of lantern slides. These photographs effectively supplemented Mr. Andrews's account of various whaling adventures, and his notes on the habits of the several species which he had met with, including the Humpback (*Megaptera versabilis*), Finback (*Balænoptera velifera*), Sei Whale (*Balænoptera arctica*), and Sperm Whale (*Physeter macrocephalus*).

The paper was discussed by Messrs. H. H. Cleaves and J. M. Johnson.

The second paper was presented by Mr. James L. Clark, and was entitled "Lion Hunting." It dealt with the experiences of the speaker and several fellow-hunters with this formidable beast of prey in British East Africa. Mr. Clark described at length some thrilling adventures in hunting lions both by day and by night, and in the open as well as from a blind. Of particular interest was his description of the taking of flash-light photographs by Mr. A. R. Dugmore and himself from a *boma*, or blind constructed of thorns. The paper was illustrated with lantern slides.

March 14, 1911.—Annual Meeting. The President in the chair. Nine members and seven visitors present.

The business incident to the annual meeting being postponed till after the announced paper of the evening, Mr. Grant took the chair, and Dr. Dwight presented "Notes on the Moulting and Plumages of Certain Warblers." In introducing the subject, the speaker called attention to the common neglect of moulting birds on the part of collectors, and especially to the lack of specimens showing the prenuptial moult. He traced the development of plumage, beginning with the natal down, and described the successive moults that take place, speaking with particular reference to the Magnolia (*Dendroica magnolia*), Myrtle (*D. coronata*), and Black-throated Blue Warblers (*D. caerulescens*), and Redstart (*Setophaga ruticilla*). The paper was illustrated with series of specimens representing each of these four species.

Mr. David Linnæus Bennett was elected a resident member of the Society.

Owing to the absence of the Treasurer, his annual report was not presented.

The Secretary then read his annual report, as follows:

"During the past year the Society has held the full quota of sixteen meetings, including a joint meeting with the National Association of Audubon Societies. The total attendance has been 824; the average attendance, 52. The largest attendance at any one meeting was 117 members and visitors, and the smallest, 19. The attendance of members, however, has been only about one-fifth of the total, and it is earnestly hoped that this proportion may be increased.

One new member has been elected during the year; six have resigned, one has been dropped for arrears in dues, and two, Mr. M. H. Beers and Hon. J. Hampden Robb, have been lost by death.

The membership list now stands: Resident, 101; Corresponding, 28; Honorary, 2; total, 131.

Twenty-one papers have been presented before the Society, including eleven on ornithology, and others on ichthyology, herpetology, mammalogy, ethnology, etc. Nineteen of the papers were illustrated with lantern slides, four with specimens, and still others with diagrams.

No publications have been issued by the Society during the past year, but a new *Abstract of Proceedings* is now in active course of preparation.

Owing to the fact that no *Abstract* has been published for several years, the number of exchange publications received has been only six for the past year.

The Library of the Society has been turned over to the care of the Librarian of the American Museum of Natural History."

Proceeding to the election of officers, the Society unanimously reelected the present incumbents in the various offices, as follows:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, Clinton G. Abbott.

TREASURER, Lewis B. Woodruff.

SECRETARY, Francis Harper.

The appointment of standing committees for the ensuing year was postponed till the next meeting.

Previous notice of certain proposed changes in the by-laws of the Society, involving the abolition of the initiation fee, having been duly sent to each member, it was moved and unanimously carried that the following changes be made:

Section I, Article I, to read as follows:

Resident Members shall be persons living in New York City and vicinity who are actively interested in natural history. Resident Members may become Life Members upon the payment to the Treasurer of fifty dollars (\$50.00), which shall be in lieu of annual dues.

Section I, Article IV, to read as follows:

Any Resident Member may withdraw from the Society by giving written notice of his intention and paying all arrearages due from him. Any Resident Member who shall neglect to pay his regular dues for one year, upon receiving due notification from the Treasurer, shall have his name erased from the roll of members.

Section III, Article I, to read as follows:

Every Resident Member shall be subject to annual dues of three dollars (\$3.00) payable at the first regular meeting in March; but no dues shall be required of any member during two months succeeding his election.





GROSSE ISLE, LOOKING SOUTH.

Bird's-nesting in the Magdalen Islands.

BY P. B. PHILIPP.

With photographs by the author.

In 1907 Mr. T. F. Wilcox and I decided to make a collecting trip to the Magdalen Islands, and to see for ourselves the bird wonders of that far-off place, so graphically described by Chapman and Job. Our chief object was collecting, but we took along as part of our equipment a Graflex camera, and a 5×7 plate camera equipped with a long-focus lens. Our work in the field was limited to a little over two weeks, into which, in such an interesting place, was crammed so much other work that photography was somewhat neglected.

The Magdalens—or “Madaleens,” as the natives call them—are a group of small islands which lie far out in the Gulf of St. Lawrence, about 150 miles north of Nova Scotia, and nearly midway between Newfoundland and northern New Brunswick. The largest of the islands comprises a stretch of hill, beach, and swamp, some 50 miles in length, with Amherst, the metropolis of the islands, at its southern end, and Grosse Isle, a fishing village of a few shanties, at its northern end. The extent between Amherst and Grosse Isle is designated on the maps as composed of several islands. As a matter of fact, these wider areas are joined by strips of sandy beach, over which it is possible, during the summer, at least, to walk dry-shod. Here and there are bold headlands, such as Grindstone Island and Wolf Island, all joined by stretches of beach and marsh. Toward the northern end of this long island is located the port of Grand Entry, a small village whose inhabitants are devoted exclusively to fishing, the great industry of the Magdalen Islands. Grand Entry is the last port of call for the steamer plying between the islands and the mainland. Six or eight miles across a bay of very stormy water lies Grosse Isle, the Mecca of the ornithologist visiting the main portion of the islands. North from Grosse Isle the island extends for eight or

ten miles, a desolate wilderness of alternate moss-covered upland and reed-grown swamp, quite uninhabited, and a splendid breeding ground for birds.

The islands have a bleak aspect, and climatic conditions render agricultural pursuits fruitless. The weather does not become warm until the last of June, and the ice comes early in September. The flora of the islands is meagre. Bayberry is abundant, as is also a sort of low, stunted spruce with which the hills are covered. In many places on the barren uplands are found several mosses, and in sheltered places during the brief warm summer several varieties of small flowers grow. Cattails are found in the swamps, and grasses and flags in the ponds.

The Magdalen Islands are interesting from an ornithologist's standpoint chiefly for four reasons:

First: On account of the Bird Rocks,—desolate crags rising sheer out of the sea 24 miles north of the other islands,—which are inhabited by one of the largest colonies of sea birds on the eastern coast of North America.

Second: The islands form almost the southern limit of the breeding range of several Shore Birds. This was one of the leading factors that drew us to the islands. We found six species of Shore Birds breeding there, all commonly save the Semipalmated Sandpiper.

Third: Lying as they do between Labrador on the north and Nova Scotia on the south, they afford a resting place for many of the more northern birds during their migrations.

Fourth: Owing to the greatly varying character of the country, a large number of birds of wide dissimilarity may be found breeding in a very narrow compass: on the rocky headlands of North and East Capes, Ravens and Guillemots; in the dense reedy swamps of East Point, American Bitterns, Carolina and Virginia Rails, Short-eared Owls, and Rusty Blackbirds; in and around the ponds on East Point, Red-breasted Mergansers, Black Ducks, Green-winged Teal, and Horned Grebes; and on the islands in the ponds, Common Terns. The swampy meadows on Grosse Isle support breeding Wilson's Snipe, Least Sandpipers, Mourning Warblers, and Savannah Sparrows,

and in the spruces and alders on the ridges may be found Golden-crowned Kinglets, Black-poll and Bay-breasted Warblers, a few Yellow Warblers, White-throated Sparrows, Fox Sparrows, Alder and Yellow-bellied Flycatchers, and Redstarts. Along the sandy beaches and the mud flats, at both East Point and Grosse Isle, may be seen the Semipalmated Plover or Ring-neck, the Semipalmated Sandpiper, the Piping Plover, and the Spotted Sandpiper. The whole region is alive with birds. A few, however, of those observed, such as the Herring Gull, the Great Black-backed Gull, and the Loon, do not breed here. On Bird Rock may be found seven species of sea birds breeding in vast numbers: Gannets, Common Murres (including the so-called Ringed Murres), Brünnich's Murres, Kittiwake Gulls, Puffins, Razor-billed Auks, and Leach's Petrels.

When we started for the Magdalen Islands, we were warned of the fearful obstacles confronting the voyager to those northern shores. When we made the trip, however, we were agreeably surprised to find that we could reach the Magdalen Islands almost, if not quite, as comfortably as one could go, for instance, from New York to Chicago.

We left Pictou, Nova Scotia, by the steamer *Amelia* on the morning of June 12, and after a very pleasant trip, with the sea as smooth as glass, we sighted Entry Island, the outermost of the Magdalen group, on the following morning. Steaming in through the narrow passage between it and Amherst, we drew up alongside the breakwater and began to discharge our cargo, consisting for the most part of innumerable barrels of flour, which is the chief staple of the island. Leaving Amherst in the afternoon, we sailed up along the island, arriving at Grindstone Island toward evening. As the wind had begun to freshen, Captain Burns decided to tie up at Grindstone Island overnight, rather than attempt to find the narrow channel into Grand Entry in the dark. He assured us, however, that we would be at Grand Entry at 9 o'clock in the morning. When we arose and went up on deck, we found the *Amelia* tying up at the dock at Grand Entry, and realized that we were finally at the place we had come so many miles to see. Hardly had the ship tied up before we were met by our friend, Frank

Prest, who was to act as guide, and who had sailed over that morning from Grosse Isle, where we were to make our headquarters.

Transferring our stuff to a little seventeen-foot open lobster-boat, we started on a cold beat of eight miles from Grand Entry to Grosse Isle, where we landed at two o'clock in the afternoon. During our sail across the harbor we had observed Gannets, Herring Gulls, Common Terns, Red-breasted Mergansers, and Black Ducks.

We were met at the landing by a tip cart proudly drawn by the only horse at Grosse Isle, and immediately set out for the house of Ez Rankin, our boarding master, who, like Prest, was a hardy young fisherman.

As soon as we had disposed of our traps, and had gotten out a collecting box or two, we started out for North Cape, a tremendous headland which rose directly behind our boarding house. We were informed by Prest that the Black Guillemots or Sea Pigeons—or "Wijens," as the fishermen call them—nested in the face of this cliff. We found that the cliff had numerous holes and crannies, in two of which we located nests of the Guillemot, one of them containing two eggs, and the other, one.

We then visited a large marsh adjoining Grosse Isle, looking for nests of Wilson's Snipe. It was toward evening, and the marsh was simply alive with feeding Snipe. It was here that we first had an opportunity to observe the very strange flight of this Snipe. The bird heralds its appearance by a peculiar whistling note, which is accredited to the very rapid movement of the wings, and which can be heard long before the Snipe is visible to the naked eye. The bird descends in wide circles, making this whistling note, until it spies a suitable place for feeding, when suddenly it drops headlong into the grass. Later on in our stay at East Point we had a still better opportunity to witness these flights, which usually occur in the morning and evening, as a number of the birds frequented a swamp directly behind our camp.

The Snipe were exceptionally numerous in this swamp at Grosse Isle. We flushed fifty birds in the course of an hour or so

while wandering across the swamp. These, however, were all feeding birds, and we were unable to find a nest. At the edge of the swamp, on a low spruce-grown ridge, we found a pair of Rusty Blackbirds, which apparently had a family of young near by.

As we walked back to the house, we passed through a low meadow of short grass, and here we found our first Least Sandpiper. The bird flushed from directly beneath our feet, and fluttered off through the grass as if it had a broken wing. On standing perfectly still, we soon discovered, two or three feet before us, the nest from which the bird had flushed. It contained four eggs. The finding of this nest and eggs made us very enthusiastic, for it is one which not many naturalists have seen. I walked all the way back to the house, got my camera, and, in spite of the lateness of the day, took several long time exposures of the nest.

On the following day, June 16, we spent the morning hunting over the headland across from Grosse Isle, which was covered with a heavy growth of spruce timber. We looked here for Redpolls, and saw one splendid male bird, but found no nests. We also flushed a Fox Sparrow, which appeared concerned over our presence. The cause of its concern proved to be a fine young bird almost able to fly, which we caught and photographed after half an hour's scramble through the brush.

At the bottom of this hill, in a low, grassy open place, or meadow, we found our second nest of the Least Sandpiper, the bird flushing from beneath our feet, as the first one had done, and revealing the nest of four eggs. This nest, like the first one, was simply a slight hollow formed in the side of a little tussock of grass and lined with a few straws. The bird was considerably excited and ran about close to us. An inspection of the eggs soon gave us the reason, for one of them was already "pipped" at the end. I went back a mile or so for my camera and set it up near the nest. The Sandpiper came back to the eggs almost immediately, although I was standing only four feet away. I secured one picture of her as she approached the eggs, and reversing the plate-holder, took a time exposure of her as she settled down to resume her nesting duties.

We journeyed on, climbing up through the spruces, where we saw numerous Fox Sparrows, Black-poll Warblers, and Redstarts. In a moss-grown spruce a tiny Kinglet was seen with a piece of moss as large as itself. The material was probably intended for a near-by nest.

As we were going through a little swamp on the hillside, surrounded by alders and overgrown with patches of grass and rosebushes, Mr. Wilcox flushed a Wilson's Snipe. After a search of half an hour or so, we found its four eggs resting directly on the dried grass, with no semblance of a nest. The eggs were green, heavily marked with brown, and were arranged with the points close together. Focusing the camera on the nest, I retired for half an hour, and then, sneaking carefully back through the alders, pulled the cord attached to the shutter. Although the bird seemed to jump from the nest, she did not, unfortunately, appear on the developed plate. As I subsequently learned in watching others of the family, Shore Birds come back to their nests in a very circumspect manner, and do a good deal of walking about before they settle down on their eggs. In this case I was a little too hasty in pulling the string.

On the way back to the house we also found our first nest of the Savannah Sparrow, a typical bird of the island, which is seen in almost every locality. During our stay we accidentally stumbled on half a dozen nests. The usual complement of eggs was five.

The next morning (June 17) dawned cold and clear. After our usual breakfast of cold porridge, without cream or sugar, and the inevitable pot of tea, we packed our traps in Quinn's one-horse shay, and started on an eight-mile walk to the trackless wastes of East Point. On our way down we passed the tremendous headland, East Cape, which rises precipitously to a height of two hundred feet above the surrounding beach and swamp, and is one of the landmarks of the islands. Here the Northern Raven breeds in security; it was now, however, long past the time for nesting, which takes place early in April.

We also stopped at a large reed-grown pond, known as Head-of-the-Bay Pond, where we saw several pairs of Horned Grebes



FIG. 1.—LEAST SANDPIPER ON NEST, GROSSE ISLE.



FIG. 2.—NEST AND EGGS OF SEMIPALMATED PLOVER, GULLY FLATS.

swimming around in the open water. An inspection of the rushes with the glasses revealed several dark objects, which Prest said were nests. We doffed our clothes and jumped into the icy water, but after wading around for fifteen minutes, we came to the conclusion that the Grebes had, as yet, laid no eggs. On our way to the point we saw great flocks of Black Ducks and Mergansers everywhere, and also one Green-winged Teal.

We arrived there about noon, and immediately proceeded to pitch our camp among some stunted spruce trees in a sheltered hollow. This hollow was at the foot of a great sand dune, locally known as "Big Hill." While Wilcox busied himself in fitting up the camp, I started out with Prest to explore a large marsh covered with dead cat-tails and flags. This marsh was a mile long and half a mile wide, and was flanked on both sides with low ridges of spruce trees. Here was the typical haunt of the American Bittern; and after painfully traversing most of the marsh, I was rewarded by seeing one of these great birds rise from the flags a couple of hundred yards ahead. Loaded down as I was with collecting bag, tripod, and camera, I made haste slowly through the mucky underfooting to the point where the bird had risen. After a short search I found the nest, which was composed of a mass of broken-down rushes, and contained five olive-brown eggs. On resuming our search through the marsh, we were rewarded by finding four other nests of the Bittern, which, in suitable localities, is one of the most abundant birds of the Magdalens. One of the nests had young, but all the others contained eggs. Along the edges of the sloughs numerous Wilson's Snipe were observed, but no nests were found.

In the higher and drier parts of the swamps many Mourning Warblers were found. These beautiful birds appeared to be just mating, as they were generally seen in parties of three.

On the following day, the 18th, which was cold and somewhat breezy, we started for the ponds and marshes to the eastward of our camp. Numerous Common Terns were seen and several breeding places found, but very few eggs. About a dozen single eggs were collected, however, for our breakfast the next

day, as we had found on previous trips that fresh Terns' eggs made a most delicious addition to our bill of fare.

While pushing through a mass of dead cat-tails in a small marsh near our camp, Mr. Wilcox was greeted with a prolonged hissing. On investigating the cause, he had the good fortune to find an American Bittern on her nest within twenty feet of him. Since the bird showed no inclination whatever to leave, I hastened to the high land after the camera and, returning, took an instantaneous exposure at a distance of some twenty-five feet. I then moved the camera very cautiously and gradually forward until the lens was not more than six feet from the nest. The bird still remained perfectly quiet, and I was enabled to take a splendid time exposure. We then attempted to drive her from the nest, in order to see what she was sitting upon. Much to our surprise, she fluffed up her feathers in a defiant attitude, and hissed at us most savagely. Mr. Wilcox thrust at the Bittern first with a cat-tail stalk and then with a cigar box, but she refused absolutely to leave the nest; she backed off and made rapid lunges at the box, in one instance driving her bill almost through the cover. I had now set up the camera within three feet, and was fortunate in getting a photograph just as she was drawing back and preparing to strike.

Meanwhile, Prest had been scurrying around another part of the swamp and had found the nest of a Carolina Rail, containing eight well-marked and heavily incubated eggs. From here we continued our exploration down the point, and presently came to a wide, flat meadow lying between a marsh on the one side and the sand dunes on the other. Here we hoped to find Semipalmated Sandpipers, and started to drag the meadow with a rope. While we were thus engaged, Prest had wandered off to the edge of the marsh and, standing on a high hillock, began firing his gun. We saw him motion violently for us, and hastened over to join him. He pointed out a little island in one of the ponds, covered with gooseberry bushes and high grass, and told us that the report of the gun had "jumped one of them Owls." We immediately surmised that it was a Short-eared Owl, one of the last things we had expected to find on our trip. Wading out to the islet through icy water

Plate III.



AMERICAN BITTERN ON NEST, EAST POINT MARSHES.

that came to our armpits, and peering over the edge—the islet was scarcely larger than a dining-room table—we saw lying on a mat of grass two white eggs, which were, without doubt, those of the Short-eared Owl. Not knowing at that time how many eggs this Owl is supposed to lay, we were careful not to go near the nest, and left it until we had more definite information on the subject.

In the meadow adjoining this marsh we discovered two nests of the Savannah Sparrow, each with five beautifully marked eggs. Here, also, in an old shack, we found two pairs of Barn Swallows nesting. It was now near the end of the day, and we reluctantly started back to camp. On the way Wilcox flushed a pair of Wilson's Snipe, which apparently had young in an adjacent alder thicket, as broken egg shells were found in a little grassy spot at its edge.

While looking for the nest of a Green-winged Teal, which we had flushed early in the morning, we had the exceptional good luck to find the nest of a Virginia Rail, the only individual of the species which we saw during our stay on the islands. The nest was interesting because of its peculiar situation: it was placed on the end of the limb of a spruce tree which extended out over a slough and was surrounded by a bunch of dead cat-tails. So quietly did Prest approach the nest that the bird did not fly; and apparently relying on its protective coloration, it sat there while we looked at it from a distance of a couple of feet. The nest contained nine eggs.

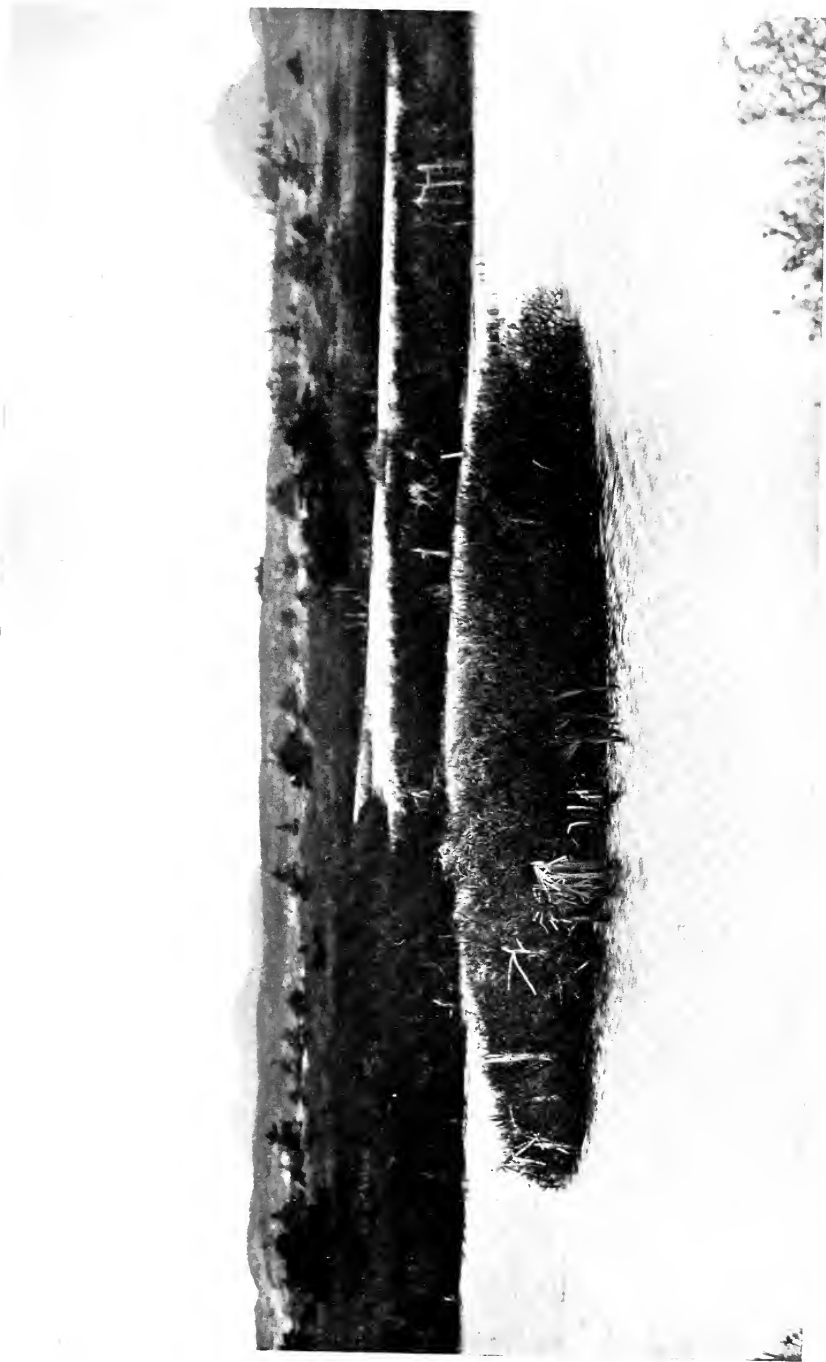
We were not successful in finding the nest of the Green-winged Teal, though we saw the bird again at this place on several other occasions. The identification was fairly reliable, since in each instance, when the bird was flushed, she immediately joined a male Green-winged Teal in a neighboring pond.

We then returned to camp and were greeted by Quinn with his one-horse shay, for he had instructions to return for us whenever the weather conditions appeared favorable for a trip to the Bird Rock. We therefore piled both the cameras and our collecting outfit into the cart and started back for Grosse Isle, leaving our camp to the mercy of the elements.

The next morning the wind was east, blowing hard and cold. Weather conditions absolutely prohibited a trip to the Rock, and so we decided to spend the day on the Gully Flats, where previous observers had reported a colony of Ring-necks, or Semipalmated Plovers. This region consists of sandy or muddy flats, interspersed with low dunes, and lies some ten miles south of Grosse Isle. The east wind was a favoring one, and we were soon sailing across the bay. On our way we stopped at a small island known as Red Island, from the precipitous sides of which flew large numbers of Sea Pigeons, or Guillemots. Though we searched carefully, we were unable to find any nesting holes occupied, and we presumed that we were a little early. When we arrived at the Gully Flats, we were met by the usual swarms of Common Terns, which came out to greet us with their shrill cries. Owing, however, to persistent depredations by the French fishermen, very few Terns' nests with eggs were found.

Scarcely had we landed when we saw half a dozen pairs of little Ring-necks running around the low flats, accompanied by two or three small Sandpipers. We immediately began to look for the nests of the little fellows, but for four or five hours our search was in vain. The birds were very wild, and would not remain on the nests as long as we were in sight. Our first nest was found purely by accident. While we were eating lunch, a bird was seen to disappear behind a little hillock. When I rose, the bird immediately appeared, and I walked over to the place, but a careful search revealed no nest. After I resumed my seat, the bird was again seen to disappear. Again, as soon as I stood up, the bird appeared, and, on going to the place and carefully studying every inch of the ground, I finally saw the nest. On my previous trip I had passed within a foot of it. The four eggs lay with their points close together, and were a perfect match for the brown mud on which they rested among bits of dry seaweed. An attempt to photograph the bird was unavailing. I wasted a valuable hour waiting for the bird to return to her nest, but when she left the second time, it was apparently for good, and we did not see her again.

While I was photographing the nest, and attempting to get a



EAST POINT MARSHES.

(The island in the foreground was the site of a Short-eared Owl's nest.)

picture of the mother bird, Prest and Wilcox had been searching about down the beach, and were rewarded by finding a nest of the Piping Plover. The four eggs were effectively concealed by their resemblance in color to the bare sand on which they were laid. A photograph was taken of this set, and, meanwhile, Wilcox discovered another nest of the Ring-neck with four eggs, by watching the bird from a sand dune a couple of hundred yards away. This Ring-neck, like the other, was exceedingly shy, and when she left the nest, declined to return.

On our way back to the boat we observed a pair of Terns hovering over a sand dune, on the top of which was a nest containing two finely marked eggs. One of the birds was secured, and proved to be an Arctic Tern, the only individual of this species which we were absolutely sure we saw during our stay. The tremendous colony mentioned by Audubon and subsequent observers seems to have entirely disappeared.

As it was by this time dark, we headed for the bay, and the wind having entirely died out, we settled down to a long row back to Grosse Isle.

The following day, the 20th, we hoped to start for Bird Rock. We awoke, however, to find a hard easterly storm of wind and rain, which made us give up any notion of going to sea. We decided to spend the day searching for Mergansers' nests at Grand L'Etang, a sandy area, dotted with ponds and spruce-covered hillocks, to the southward of Grosse Isle. Up to this time we had not succeeded in finding a nest of the Spotted Sandpiper, which is by far the commonest Shore Bird of Grosse Isle. On this trip, however, we discovered no less than six nests on the brush-covered hillocks around the shallow ponds. One of these nests was beautifully situated at the foot of a little spruce tree, the four eggs being laid with their points together, as is customary in Shore-bird households, on a bed of dried bayberry leaves. The birds had just completed laying, for all the eggs taken were fresh.

It was on this trip to Grand L'Etang that we saw our only Bay-breasted Warbler in the Magdalens.

The weather the next day (the 21st) proved unfavorable for the trip to Bird Rock, and so we returned to East Point in

hopes of finding a nest of the Black Duck. On the way we found our second and last nest of the Piping Plover, with the usual complement of four eggs. Though other observers had reported the Piping Plover as common, we saw but six individuals of this species during our whole stay. Prest informed us, however, that they had been much commoner in previous years.

When we reached East Point, we decided to leave the previously discovered Short-eared Owl's nest alone, but we collected the set of Virginia Rail's eggs, which we found, on blowing, to be advanced in incubation.

In the afternoon the wind suddenly died out, and after a short time a gentle breeze sprang up from the south. "To-morrow it is Bird Rock," said Prest. So we again packed up and trudged back to Grosse Isle.

BIRD ROCK.

A collecting trip to the Magdalen Islands would be far from complete without a visit to Bird Rock. For while one might visit the islands themselves and be favored with the best of fortune, as we were, he would find that his work was only half done if he failed to see that wonderful rock, the home of one of the largest colonies of sea birds on the Atlantic Coast.

The rock itself lies about twenty-four miles north of Grosse Isle, but in order to reach it and land successfully, one must encounter the most favorable conditions of wind and weather, for otherwise the violence of the sea is such that in an open, frail lobster-boat a landing would be not only highly dangerous but practically impossible. One may imagine, then, the eagerness with which we scanned the sky each night and noted the direction of the wind each morning, and our disappointment as day after day passed without a sign that conditions would favor us.

At length, however, the morning of June 22 dawned bright and clear with a light breeze from the south; and about ten o'clock we embarked for the rock in Prest's lobster-boat, the "Loretta," which was just seventeen feet in length, and open at that. We had not been sailing more than half an hour when we discovered that the boat was taking in water about as fast as we could

bail it out, and not relishing the prospect of continuous bailing, we were about to put back, when fortunately another craft, homeward bound with a cargo of lobsters, bore down upon us. The crew readily consented to an exchange of boats, and we made the transfer quickly.

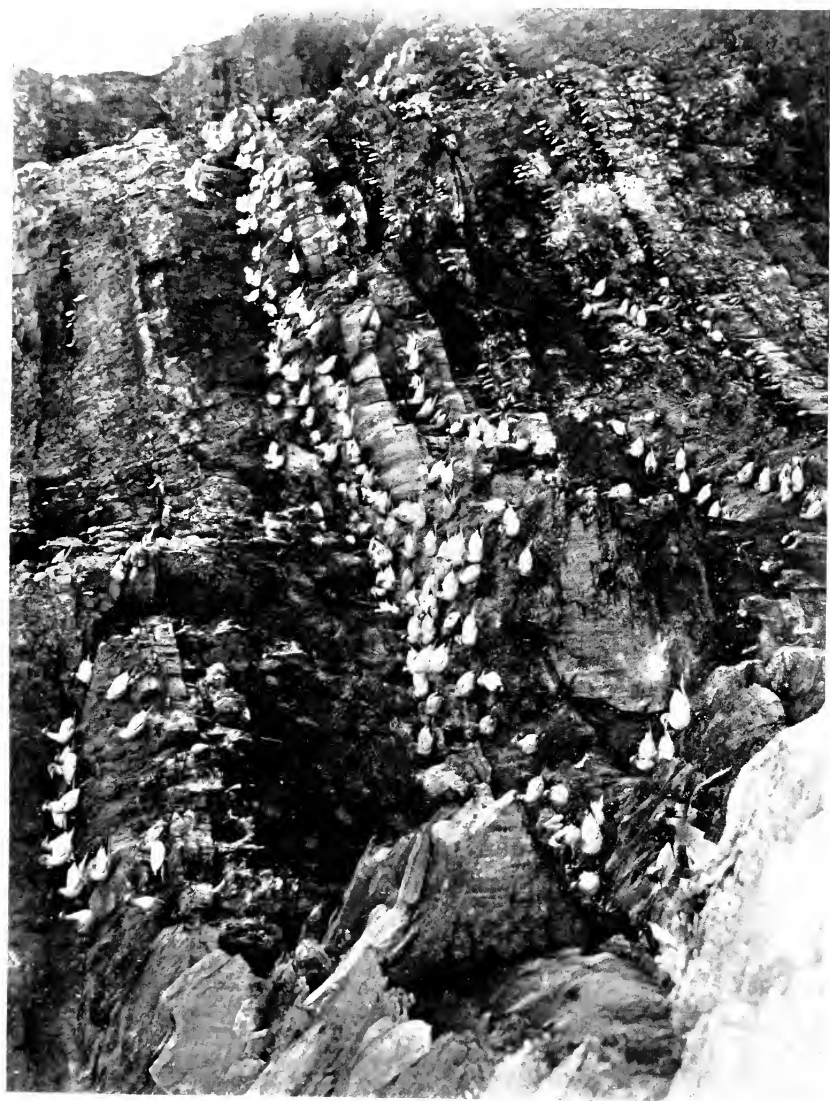
We resumed our journey then, and all went well for a couple of hours, until the wind, which had been gradually growing lighter, died away altogether, and there we lay rocking on the swell, while the sail flapped and banged from side to side. There was nothing for it but to get out the long, heavy sweeps, and for five weary hours we rowed that unwieldy craft, Wilcox and I taking half-hour spells in the bow, and Prest manning the stern oar. At the beginning of our long pull we could just discern the rock as a little blue cloud on the horizon, and it seemed as though our progress were so slow that we would never reach it; but finally about five o'clock in the afternoon we began to see Gannets, Kittiwakes, and an occasional Murre or Puffin, and approached near enough to fully appreciate that wonderful bird home.

The rock is a great crag, rising sheer out of the ocean to a height, it is said, of one hundred and forty feet. Its flat top is about three and a half acres in extent. The sides are all precipitous, and on the south absolutely unclimbable. At its base it seems to be of a basaltic composition, while from half way up to the top it is composed of sandstone. Running around the sides of the rock are ledges and shelves on which the birds nest; most of them are horizontal or nearly so, rising one above the other at intervals of every few yards. Near the top the action of frost and storm has worn away the soft stone into the most fantastic shapes, forming innumerable cracks, crannies, and crevices. The rock is continually surrounded with a cloud of wheeling and circling birds, and so closely are the ledges packed with birds that from a distance they look as white as if covered with snow. Half a mile or so from the main rock is a smaller one, called North Bird Rock. This, like the big rock, rises straight from the water. It is only forty feet high, but its flat top is covered with nesting Gannets, which give it the appearance, from the big rock, of a snow field.

There used to be a tiny strip of beach where the boats landed, but recently the British Government has built a stout pier there, and in place of the crane and crate which aided visitors to the top of the rock, one now finds a flight of steps; and for his baggage a little car is hauled up and down on rails laid in a great cut blasted out of the solid cliff-side. So, in the calm of a perfect June evening, we laid our craft across the end of the wharf,—a feat which, according to Prest, had never before been accomplished, and of which he was mightily proud,—and disembarked, eager to see for ourselves the wonders of which we had heard and read so much. With two young French Canadians, assistant light keepers, we soon reached several of the more easily accessible ledges, and secured a complete representation of the eggs of all the species of birds which nest on the rock, before the welcome sound of a dinner bell summoned us. The head light keeper, Winnie Bourque, was away when we landed, but his wife and niece and the two young men made us very welcome. After a dinner to which we did full justice, we began to prepare and blow the eggs which we had taken, and to load the plate-holders for the morning's work. Our task was not completed until well after midnight, when we turned in, as tired a pair of ornithologists as one can well imagine.

We were out bright and early the next morning, and with collecting bag and camera were soon scrambling and crawling over the ledges on the northwest face of the cliff, where the Gannets were most numerous. There they sat row upon row, their white plumage and black-tipped wings making a striking contrast to the gray rock walls about them. They were so tame that we could almost touch them. Their nests were placed thickly along the ledges or on jutting spurs of rock. They were merely masses of seaweed and kelp, but in some a few feathers were added. In the hollow of each lay a single egg.

The Kittiwakes, too, frequented this part of the rock, but owing to their habit of fastening their nests on small projections on a perpendicular cliff, it was extremely difficult either to photograph them or to collect their eggs. We succeeded, however, in locating a small group which we were able to photograph at fairly close range.



The Murres, Razor-billed Auks, and Puffins were rather sociably inclined, and nested together all over the rock, but seemed to prefer the eastern face, for there we found them most numerous.

The Puffins burrow deeply in the soft sandstone, and the eggs were secured with considerable difficulty, though the birds seemed to be more numerous than we had expected. A single egg is the full complement, and they are stained a deep red from the sandstone in which they are laid, though their real color is white.

The Razor-bills selected deep crevices and hollows in the rock in which to lay their eggs, and would often allow themselves to be surprised on their nests. They can be captured without difficulty, though I should advise anyone making the attempt to proceed with due caution. The name Razor-bill is not a jest, for one which we captured secured a good grip on Wilcox's finger, and could not be induced to relinquish his hold until after he had nipped off a portion of the flesh.

The Murres nested in long rows along the ledges, and fluttered away only on our near approach. Two species breed on the rock, viz., Brännich's and Common Murres (including the so-called Ringed Murre). The Ringed Murre has a white circle about its eye, and a white line running straight back from the ring to the ear. The Brännich's Murre is more abundant than the Common, and the Ringed are scarce, only about twenty individuals of the latter type being seen. They nest together indiscriminately, a Brännich's nesting between a Common on the one side and a Ringed on the other. Both sexes appear to incubate, and spend much time near the egg.

The Leach's Petrel also breeds somewhat commonly on the rock, burrowing in the soft earth under the out-croppings of sandstone on the flat, table-like top of the cliff. Under one huge slab of stone, which was raised with great difficulty, we found a Puffin and two Leach's Petrels living sociably together. They were fully ten yards from the edge of the cliff, and the Puffin was a quite unexpected find in such a location.

When the morning had been spent in photographing and in climbing to all the accessible places we could find, Prest brought

the unwelcome news that the wind was working around and blowing fresh, and that if we did not want to be marooned on the rock for a week or so, we had better pack up and prepare for the long sail back. We were just preparing to start when a fishing schooner was seen headed for the rock. It then occurred to us to engage the schooner to carry us back, taking our small boat in tow.

When the party landed, the skipper readily came to terms and agreed to start back for Grosse Isle at four o'clock. With a couple of extra hours at our disposal, therefore, we scrambled about the rock until our time was up, only to find that meanwhile the captain and all the rest of the men had decided to have a birthday party. Now a Magdalen Island birthday party is never complete without a certain kind of liquid refreshment, which is partaken of very freely. The result of the party is not difficult to guess. Instead of 4 P. M., it was just 7 o'clock when we got our anchor aboard, and after we had narrowly missed being swept down on North Bird Rock, we succeeded in coaxing the skipper and mate into the cabin. Prest then took the wheel, and about 2:30 A. M. we dropped our anchor off Grosse Isle. In another half hour we were snugly tucked away at Ez Rankin's, and slept for nearly twelve hours without a break.

On the 24th of June we again started for East Point. Our camp, which we had left for about three days, we found undisturbed, and while Wilcox started to renovate it and prepare lunch, Prest and I went to the Egg Nubbles. These nubbles are a collection of small hillocks, surrounded by ponds and wet marshes and covered with thick clumps of grass and low bushes. It was on these nubbles that Mr. Job found his nest of the Bluebill or Scaup Duck, and we decided to look them over as a last chance of finding a Black Duck's nest. We had scarcely reached the third nubble, when a fine, large Black Duck flew up almost in my face, disclosing her nest of eight eggs embedded in a mass of black down. This was probably a second laying, as the date was exceptionally late for fresh eggs of this species. On the following day we found no less than three broods aggregating about thirty young birds, which had been out of the egg at least

Plate VI.



FIG. 1.—NEST AND EGGS OF BLACK DUCK, EAST POINT.



Fig. 2.—NEST AND EGGS OF SHORT-EARED OWL, EAST POINT MARSHES.

two weeks. This nest was photographed and the eggs, needless to say, were collected and very carefully packed away for future reference.

On the following day, which was very cold, a visit was planned to the Short-eared Owl's nest. Packing up the camera, therefore, and making sure that the plate-holders were in the case, we started on the four-mile tramp. The nest was still there, and in the eight days since we had found it, the bird had laid one more egg. We decided to take the set, although we found in the books that four to seven was the usual number of eggs. All these eggs were incubated, however, and very likely they formed a full set.

The nest was then photographed, and never again do I desire to take a photograph under the same conditions. The little island on which the nest was located was scarcely large enough for me to stand on, to say nothing of setting up the camera. After spending an hour trying to find a suitable place on which to set the tripod, I gave it up as a bad job, and holding the camera in my hand and trusting I had it focused on the nest, I took a snapshot. The resulting picture was not what it might have been under more favorable circumstances.

On our way to the Owl's nest, we visited one of the largest colonies of Common Terns which we found in the islands. These nests had not been disturbed, and most of them contained full sets of eggs.

So far, in spite of careful searching, we had been unable to locate a nest of the Shelduck or Red-breasted Merganser. But when the next day broke cold and rainy, we had hopes that we would at last find one of these elusive Shelducks on her eggs. Donning our oil skins, therefore, we set out; and when rounding a little point of land jutting out into a pond, I saw a flash of white which I thought was a Merganser. The bird appeared, as I saw it, to be running on the water as though getting a start to rise. We decided that here at last was the long-looked-for nest. While Prest and Wilcox made a careful search, I visited a different part of the pond in hopes of again seeing the bird. On my return, at the end of an hour, they reported no luck, and I decided to have a final look. Going about ten feet further

than Wilcox had been, I saw on a dead spruce stump a telltale piece of white down. On looking around the stump, I found the nest, which contained nine fresh eggs.

We decided to spend the following day close to headquarters so that we should be sure to catch the steamer, which was due on that day or the next, and would not call again for a week. So Wilcox and I, aided by Charlie, Prest's brother, and his two fine hounds, spent the day hunting over the large marsh close by Grosse Isle, and we were rewarded by finding no less than seven nests of the Least Sandpiper, all containing eggs in various stages of incubation. This exceptional number of nesting Least Sandpipers was perhaps due to the extreme cold weather, which caused many of the birds to stop south of their regular breeding grounds.

We were advised by cable that the steamer would not arrive at the islands for two more days. We therefore decided to put in our last day on Grand L'Etang Beach, as we had heard rumors that a number of Snowy Owls had been seen there. Although we did not find the Snowy Owls, we made what was to us a much rarer discovery. While walking along the shore of a small pond, Prest flushed a Sandpiper, which flew a short distance to the edge of the pond and sat quite still. Approaching carefully, we turned the glasses on the bird, which appeared to be very similar to the Least Sandpiper, but slightly larger. Prest found the nest in a high part of one of the nubbles; it contained four very dark eggs, which were somewhat similar to those of the Least Sandpiper. Carefully watching our chance, we secured the bird, which proved, to our great surprise and delight, a Semipalmated Sandpiper. This species, as far as we had been able to learn, had never been taken breeding south of northern Labrador. The identification is certain, as the bird in the hand cannot be mistaken for any of the other small Sandpipers.

That evening we were advised by cable that the good ship "Amelia" had arrived at Amherst, and was due at Grand Entry the following morning. We therefore spent most of the night in packing up, and at 4 o'clock embarked in Prest's little lobster-boat. At 9 o'clock we met the steamer, and bade

farewell to the Magdalen Islands, leaving them with many pleasant memories and with the satisfaction of having made a most successful trip. We had seen at the islands 55 species of birds, and of these we had found 36 breeding or preparing to breed.

All in all, I do not know of a pleasanter or more profitable place in which to spend a bird-hunting vacation. The Magdalens are readily accessible, offer a wide variety of most interesting birds, and are free from snakes and troublesome bugs. I would, however, advise anyone who plans such a trip, to take plenty of heavy, warm clothing and plenty of food. The weather is frequently stormy and nearly always cold, and there is scarcely anything in the way of provisions to be obtained there.

The following is a list of the birds we noted at the Magdalen Islands, including Bird Rock. The breeding records are based on nests which were found occupied, or on young birds which were observed. Many of the other species are reported to nest there, but we did not happen to find any evidence of their breeding.

1. *Colymbus auritus*. HORNED GREBE.—Common. Breeds.
2. *Gavia immer*. LOON.—Eight seen at Grosse Isle.
3. *Fratercula arctica arctica*. PUFFIN.—Common on Bird Rock. Breeds.
4. *Cepphus grylle*. BLACK GUILLEMOT.—Common. Breeds.
5. *Uria troille troille*. MURRE.—Abundant on Bird Rock. Breeds. On Bird Rock we also found the so-called Bridled or Ringed Murre to be fairly common.
6. *Uria lomvia lomvia*. BRÜNNICH'S MURRE.—Abundant on Bird Rock. Breeds.
7. *Alca torda*. RAZOR-BILLED AUK.—Abundant on Bird Rock. Breeds.
8. *Rissa tridactyla tridactyla*. KITTIWAKE.—Common on Bird Rock. Breeds.
9. *Larus marinus*. GREAT BLACK-BACKED GULL.—Common about Grosse Isle.

10. *Larus argentatus*. HERRING GULL.—Common about Grosse Isle.
11. *Sterna hirundo*. COMMON TERN.—Common at East Point and the Gully Flats. Breeds.
12. *Sterna paradisæa*. ARCTIC TERN.—Rare. One female collected on the Gully Flats, and three birds, apparently of this species, seen in the same locality. Breeds.
13. *Oceanodroma leucorhoa*. LEACH'S PETREL.—Common on Bird Rock. Breeds.
14. *Sula bassana*. GANNET.—Abundant on Bird Rock. Breeds.
15. *Mergus serrator*. RED-BREASTED MERGANSER.—Abundant at East Point. Breeds.
16. *Anas rubripes*. BLACK DUCK.—Abundant at East Point. Breeds.
17. *Nettion carolinense*. GREEN-WINGED TEAL.—Rare. Found only in East Point Marshes. Breeds.
18. *Marila marila*. SCAUP DUCK.—Rare. Two noted at East Point.
19. *Botaurus lentiginosus*. BITTERN.—Common at East Point. Breeds.
20. *Rallus virginianus*. VIRGINIA RAIL.—Rare. Female and a set of 9 eggs taken at East Point.
21. *Porzana carolina*. 'SORA.—Probably common. Six observed and two nests found at East Point.
22. *Gallinago delicata*. WILSON'S SNIBE.—Abundant. Breeds.
23. *Pisobia minutilla*. LEAST SANDPIPER.—Common. Breeds.
24. *Ereunetes pusillus*. SEMPALMATED SANDPIPER.—Rare. A female and a nest with 4 eggs collected at Grand L'Etang. One male taken in same locality.
25. *Totanus flavipes*. YELLOW-LEGS.—Rare. One noted at East Point.

26. *Actitis macularia*. SPOTTED SANDPIPER.—Abundant. Breeds.
27. *Ægialitis semipalmata*. SEMIPALMATED PLOVER.—Common. Breeds.
28. *Ægialitis meloda*. PIPING PLOVER.—Not common. Six birds seen and two nests found at Grosse Isle.
29. *Circus hudsonius*. MARSH HAWK.—Rare. Breeds. One nest and eggs found at East Point.
30. *Falco columbarius columbarius*. PIGEON HAWK.—Rare. One noted at Grosse Isle.
31. *Pandion haliaëtus carolinensis*. OSPREY.—Rare. One noted at Grand Entry.
32. *Asio flammeus*. SHORT-EARED OWL.—Rare. Breeds. Two noted at East Point.
33. *Ceryle alcyon*. BELTED KINGFISHER.—Two seen.
34. *Colaptes auratus luteus*. NORTHERN FLICKER.—One seen at Grosse Isle.
35. *Tyrannus tyrannus*. KINGBIRD.—Two seen at Grosse Isle.
36. *Empidonax flaviventris*. YELLOW-BELLIED FLYCATCHER.—Fairly common. Noted mostly about Grosse Isle and East Point.
37. *Corvus corax principalis*. NORTHERN RAVEN.—Not common. Breeds at East Cape. One bird seen.
38. *Corvus brachyrhynchos brachyrhynchos*. CROW.—Common about Grosse Isle. Seen with young of the year.
39. *Euphagus carolinus*. RUSTY BLACKBIRD.—Abundant. Breeds.
40. *Acanthis linaria linaria*. REDPOLL.—Rare. One male seen at Grosse Isle.
41. *Passerculus sandwichensis savanna*. SAVANNAH SPARROW.—Abundant. Breeds.
42. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Not common. Three records at Grosse Isle.

43. *Junco hyemalis hyemalis*. SLATE-COLORED JUNCO.—One seen at Grosse Isle.
44. *Passerella iliaca iliaca*. FOX SPARROW.—Common. Breeds.
45. *Hirundo erythrogaster*. BARN SWALLOW.—Two pairs breeding in a shanty at East Point.
46. *Iridoprocne bicolor*. TREE SWALLOW.—Six noted at Grosse Isle.
47. *Riparia riparia*. BANK SWALLOW.—Common. Breeds.
48. *Dendroica æstiva æstiva*. YELLOW WARBLER.—Four noted about Grosse Isle.
49. *Dendroica castanea*. BAY-BREASTED WARBLER.—Rare. One male noted at Grand L'Etang.
50. *Dendroica striata*. BLACK-POLL WARBLER.—Abundant. Breeds.
51. *Oporornis philadelphia*. MOURNING WARBLER.—Common at East Point.
52. *Setophaga ruticilla*. REDSTART.—Common at Grosse Isle.
53. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—Not common. Breeds. A pair found nest-building at Grosse Isle.
54. *Hylocichla guttata pallasii*. HERMIT THRUSH.—One seen at Grosse Isle.
55. *Planesticus migratorius migratorius*. ROBIN.—Common. Breeds.

The Bird Colonies of Pamlico Sound.

BY P. B. PHILIPP.

With photographs by the author and others.

Several years ago, while cruising through one of the narrow inlets among the sea islands off the coast of Virginia, I saw flying across the sky two great white birds with crimson bills. "Royal Terns," my guide told me; and he went on to give an account of the vast numbers of this species which had formerly nested on the shelly beach along which we were sailing. Even in his memory, he said, it had been possible in the egg season to gather their eggs by the bushel-basketful at many points on the Virginia coast, all of which have long since been forsaken.

The mere sight of these birds was sufficient to kindle in me a desire to see them in their summer home, and I made up my mind to do so when the opportunity should present itself. However, sea-bird colonies are often hard to locate definitely, as the birds are apt to shift about when disturbed by man or storm. It was not until 1909 that I secured definite information of a breeding place of Royal Terns that was sufficiently near New York to admit of a visit. From Mr. T. Gilbert Pearson, Secretary of the National Association of Audubon Societies, I learned that a large colony of these birds had nested for many years on Royal Shoal, a small sandy island almost in the center of Pamlico Sound, North Carolina; and with the Royal Terns there were reported breeding several other interesting species of sea birds.

A trip to the place was decided upon, and a party was made up, consisting of B. S. Bowdish and C. G. Abbott, of New York, both members of the Linnæan Society, H. H. Brimley, Curator of the North Carolina State Museum at Raleigh, and the writer.

Early on the morning of June 24, 1909, we left Beaufort, North Carolina, in the Audubon patrol boat "Dutcher," which, together with the services of Warden Jennett, had been gen-

erously placed at our disposal. After a very pleasant and interesting trip through Buck Sound and Core Sound, we passed Harbor Island Light, which marks the entrance to Pamlico Sound, and headed north against a fresh breeze and a sea that tossed us about in lively fashion. Late in the afternoon we saw ahead of us a low, dark object, which Jennett announced to be Royal Shoal. Soon we were met by parties of Common Terns, which flew about us and acted as an escort while we passed under the lee of the shoal and into the narrow lagoon which forms a safe harbor and landing place.

As we were approaching the shoal, we were alarmed to see a "sharpy" beating a hasty retreat out of the lagoon. "Eggers," said the warden; and we were very much afraid that our visit was too late, and that the colony had suffered one of the now infrequent but destructive visitations from the fishermen, who greatly prize the eggs as food. As soon as the anchor was down, Bowdish, Abbott, and I scrambled out of the boat and were soon ashore exploring the island. We had arrived apparently just in time to prevent the fishermen from raiding the colony, as we found no nests disturbed.

Royal Shoal is a very narrow sand spit, shaped somewhat like a fishhook, and at its highest part is scarcely three feet above sea level. At the upper or shank end of the shoal there are stunted bushes and high, thick beach grass, but the rest of the island is merely sandy and shell-strewn, with occasional patches of driftweed. The shallow lagoon within the hook of the shoal is only three or four feet deep, and swarms with small mullet and other fish; it makes an ideal feeding ground for the birds, and is a safe anchorage against almost any wind.

Breeding on the island were Common Terns, Black Skimmers, Laughing Gulls, and Least Terns. The Laughing Gulls were nesting among the bushes and the grass on the higher part; the Skimmers, for the most part, kept to themselves in a little colony among the shells at the very tip of the island; the Common Tern colony was located at the lower or hook end; and the Least Tern colony was scattered along a ridge of shells on the inner side of the island at about the central part. We estimated that there were breeding 250 Common Terns, 200 Least Terns, 200 Skim-

Plate VII.



FIG. 1.—LAUGHING GULL, ROYAL SHOAL.



FIG. 2.—BLACK SKIMMER, ROYAL SHOAL.

mers, and 100 Laughing Gulls. Owing to a severe storm in 1908, which occurred at the height of the breeding season of the Royal Tern, the colony of that species was badly broken up, and no Royal Terns had come back until the day preceding our arrival. On the afternoon of our arrival a few were seen about the shoal, and the following day about 36 were counted in one flock. They had not, however, started to nest, and we were very much disappointed, of course, not to find breeding the one bird that we had come so far to see.

Our plans allowed us but the afternoon of the 24th and the following day on the shoal. On first going ashore, therefore, we made a survey in order to map out a program by which we could observe and photograph the birds to best advantage in the limited time at our disposal. Fortunately, the colonies were so distributed as to allow each of us to take a different station and work on a different species without interfering with the other members of the party; and the next morning Abbott took the Common Terns, Bowditch the Least Terns, and I the Laughing Gulls and Skimmers. The nesting of all these species was well advanced. The Laughing Gulls had young running around in the grass, or eggs almost ready to hatch. Most of the Skimmers' nests had the usual three or four eggs, one nest of five being noted. The Least Terns had, for the most part, hatched, and the young were found hiding among the shells and the drift. Most of the Common Terns had the usual sets of three eggs, though several young were found.

The Laughing Gulls nested on Royal Shoal in a very peculiar manner. I had previously seen their nests on the New Jersey and Virginia coasts as large structures built among the growing grass or placed on drift patches in the open marsh, and visible for a considerable distance. But here they were very carefully concealed in the grass and under the bushes on dry ground. Leading from the open places were little pathways along which the birds walked when approaching or leaving their nests. The eggs were hidden from above, and the nests themselves were mere collections of bits of drift and dried grass, placed flat on the ground.

I placed my umbrella blind near a clump of bushes in which I

had discovered a Laughing Gull's nest. On the other side of the blind, and in good photographic distance, was a Skimmer's nest with four eggs, as well as two nests of the Common Tern—all very close together. I went into the blind at sunrise and remained there till late afternoon, having a splendid opportunity to observe the birds at close range. They all very quickly became accustomed to the blind, in spite of the fact that it swayed in the strong wind that was blowing at the time. While in the blind I had the good fortune to obtain photographs of a Laughing Gull hovering against the wind, almost directly overhead. Several times, too, the Gull whose nest was nearest favored me by coming out in the open and standing perfectly still, not more than twenty feet away, where I had a fine chance to photograph her.

But it was in the Black Skimmer that I was most interested. Its nest was not more than fifteen feet from the blind, and I was agreeably surprised, on looking into the hood of my Graflex, to suddenly see a Skimmer, which seemed to cover the whole ground glass, settle down on its eggs. The bird did not mind the blind in the slightest, or the click of the shutter, and I obtained several photographs of her in various poses, particularly one in which she was yawning. This attitude is very characteristic. The Skimmers are exceedingly restless; the one which I observed would alight some distance from her nest, waddle up in a most ludicrous manner, settle on the eggs for a minute, open her beak wide, then stand up, turn about, preen herself, and fly away. This was repeated at short intervals during the day. It seems impossible for these birds to remain still for any appreciable length of time. Continuous incubation, however, is unnecessary, as on a clear day the heat of the sun, reflected by the sand, is sufficient to give the eggs plenty of warmth, without very much care from the mother. It would seem that the birds visited their eggs more to shade them than to incubate them. Of the birds whose nests I watched closely, but one of the pair incubated, although at times, when one bird was on the eggs, its mate would come very close. In such instances the bird on the nest would sometimes leave, and both would fly off together, taking a little spin out over the water, after which one of them would return to the eggs.



Photograph by Clinton G. Abbott.

FIG. 1.—COMMON TERNS, ROYAL SHOAL.



FIG. 2.—YOUNG ROYAL TERN, MILLER LUMP.

While I was working on the Skimmers and the Laughing Gulls, Bowdish had been busily engaged in capturing and photographing young Least Terns. Like the young of most of the beach birds, the chicks can run as soon as hatched. Here the usual number of eggs in the Least Terns' nests was two, and most of the young birds were found in pairs. Bowdish succeeded in obtaining some admirable photographs of the young ones, some of which illustrated the surprising variation in color not infrequently found in youngsters presumably hatched in the same nest. They are very cunning little fellows, and their coloration is such that by simply lying flat and remaining perfectly still, they most effectively conceal themselves on the bare sand.

Although most of the Least Terns had young birds, we found a few nests with eggs. There is really no nest, the eggs being deposited in shallow hollows scratched in the clear sandy spaces between the shells. These hollows are sometimes lined, apparently for effect, with tiny shells and chips of shells. The eggs themselves are of a drab ground color, spotted and mottled with various shades of brown and umber, and faintly splashed with lilac here and there; they admirably match the sand on which they are laid.

Our photographic work and our observations, including the making of an estimate of the nests and birds on the shoal, took up the greater part of the 25th of June. We could not stay longer, and late that afternoon we reluctantly packed up and made a very rough passage across Pamlico Sound to the quaint old town of Ocracoke, where Abbott was obliged to leave us and start on his return journey to New York. We spent the night of the 25th and part of the following day in and around this old fishing village. It is situated on the narrow strip of sand known to mariners as the Hatteras Banks, one of the most dangerous places on the Atlantic coast. The town itself is a place of some historic interest, having been made famous by the pirate chief Blackbeard, who used to come in through Ocracoke Inlet, careen his craft, and lay in his supplies. It is reported that he buried much treasure somewhere around the town, and the natives still have the idea that if they hunt

long enough, they will find some of it. We were shown several places where digging had gone on, but so far without result.

The chief object of our trip—finding the Royal Tern at home—was no more accomplished now than when we left New York. When we were disappointed on Royal Shoal, we were afraid that we should have to return without seeing a breeding colony of these birds. We decided, however, that if there were any Royal Terns in Pamlico Sound, we would find them. We were told by the warden that on some small islands—or “lumps,” as the natives call them—close to the Hatteras Banks, and some thirty miles north of Ocracoke, there was reported to be a small colony of the Terns. As the “Dutcher” was at our disposal, we decided to take a chance and prolong our trip a sufficient length of time to visit these lumps. As it turned out, our decision was a wise one. On the 26th of June we started north along the banks, and about noon we came to a group of very small and low muddy islands, known locally as the Miller Lumps. On the west side of the Hatteras Banks is a mile or more of deep water, and then there is a considerable expanse of hard, peaty mud flats, over which there is scarcely six inches of water. These mud flats extend for miles, and every half mile or so the mud is raised a foot or two above the surface of the water, forming a “lump” or hummock, seldom more than half a hundred yards in length. As we drew up in the deep water off the Miller Lump, the warden said, “The Terns are there.” We were about a mile from the lump, which looked like a mere black speck capped with white, but with our glasses we could see that this white was a mass of living birds. As we looked, three or four, and then half a dozen, would leap into the air and settle slowly back. Royal Terns! Not the vast colony which we had hoped to see on Royal Shoal, but enough to amply satisfy enthusiasts like us.

Warden Jennett ran the “Dutcher” in over the mud flats until she was almost aground. We disembarked into the small boat, which we pulled in for a hundred yards or so, and then it was a case of wading the quarter of a mile to the lump. The warden told us that if we went slowly, we could probably approach the lump and even get upon it without disturbing the



FIG. 1.—ROYAL TERNS IN FLIGHT OVER MILLER LUMP.



FIG. 2.—COLONY OF ROYAL TERNS ON MILLER LUMP.

birds. At some distance, therefore, we unlimbered our reflecting cameras, and made ready to take what pictures we could at long range before the birds should leave. Bowdish and I, being the camera men, were allowed the right of way, and cautiously approaching, we crawled upon the lump some sixty yards from the most gorgeous array of sea birds I have ever seen. We took several long-distance photographs of the birds as they stood watching us. The lump upon which the colony was nesting was not over a hundred yards by thirty, and, in the highest part, was not over a foot and a half above the surrounding mud flats. The area occupied by the nests was not over twenty feet in diameter. And the birds! We estimated that there were about 500 pairs of these splendid birds breeding in that small compass. So close together were they that a bird returning to the colony would have to hover for some seconds to find a place to alight.

We sat for probably twenty minutes within a hundred feet of the birds, which showed not the slightest apprehension; and gradually we edged nearer and nearer, until finally we got a little too close and the entire bunch arose as one bird. Fortunately I was ready, and succeeded in catching them just as they left their nests. We remained perfectly still, however, and shortly, in twos and threes, they began to drop back, and soon all had settled again.

A large number of pictures were taken, but I was not satisfied, as I wanted to make some closer observations, as well as to get some more intimate camera studies. The umbrella blind was out of the question, as there was no protection whatever against the strong wind which, of course, was blowing particularly hard at that moment; but I thought it might be possible, if I had the necessary tools, to build a blind of seaweed as close to the nests as I wished to get. We did not have any lumber or the other requisites with us, and so we decided, having found our birds, that we should leave them and come back later fully prepared.

We then decided to make a full investigation of the colony, and approached the nesting place. The birds left, most of them hovering above our heads at a low height, and some of them flying out and settling in the shallow water surrounding the

shoal. While we were watching the birds, we were delighted to note that among the flock were three pairs of a smaller Tern with a yellow-tipped, black bill—the Cabot's Tern, that rare straggler from the tropics. They had been reported as nesting at Royal Shoal in the previous year in small numbers, but in such a small colony as this we had not hoped to find them. As we drew nearer to the nests, there jumped up and ran ahead of us little shadowy, gray forms, which were the young Terns in various stages of growth, from those just hatched to those a week or so old. The little Royals, almost as soon as their natal down is dry, are strong on their legs, and at the age of a day or two become expert swimmers. As we walked through the nesting area, the little fellows preceded us, and having been driven to the end of the dry land, they took to the water without the slightest hesitation, swimming out in groups of a dozen or more, to wait patiently until we should depart.

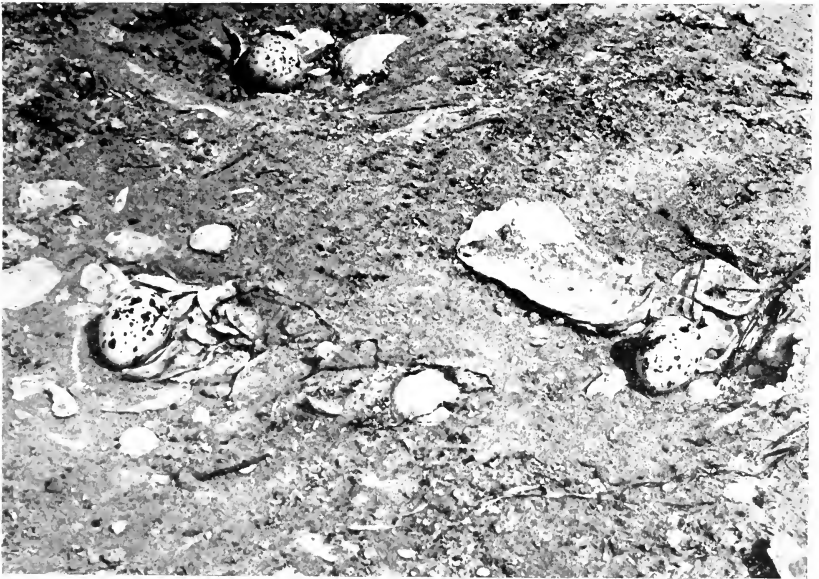
The nesting area was a sight long to be remembered. Everywhere were eggs—large, handsome eggs, the size of a turkey's—with whitish ground color, profusely marked with various splotches and dots of black and brown and violet. They were laid in little hollows scratched out of the peaty surface of the lump. So thick were the eggs that one had to be exceedingly careful where he walked to find foot space among them. Most of the nests held but one egg, though in several were found two, the markings of which were the same, and which were laid obviously by one bird. Best of all, however, we located three nests of the Cabot's Tern among the others. Each contained a single egg, very like the eggs of the Royal Tern, though smaller. Bowdish took a large number of nest and egg pictures of both the Royal Tern and Cabot's Tern; they give an excellent idea of the nesting.

It was with reluctance that we left, but the following day being Sunday, it was against the principles of the warden to do anything remotely resembling work; so we again boarded the "Dutcher" and sailed across the mile of deep water to Buxton, where the warden lived.

We were met at the landing by Captain Davis, the most eminent citizen of these parts, who entertained us most hos-



FIG. 1.—NESTS AND EGGS IN THE ROYAL TERN COLONY, MILLER LUMP.



Photograph by B. S. Bowditch.

FIG. 2.—TWO NESTS AND EGGS (IN THE FOREGROUND) OF CABOT'S TERN, MILLER LUMP.

pitably that night and the following day. Bowdish and I were rather weary after our labors, and after loading our plateholders, retired for the first good night's sleep we had had since leaving Beaufort; for, though a staunch craft, and an ideal one for the warden to cruise about the sound in, the "Dutcher" was hardly fitted for accommodating an ornithological expedition with all its necessary equipment.

Sunday, the 27th of June, we spent with Captain Davis in looking around the town of Buxton, and in a visit to the ocean side of the Banks, which here are about three miles wide. They are well timbered with pine, though much of it has been lumbered out. From the beach, almost under the shadow of Hatteras Light, we could see the Diamond Shoals Lightship.

The following morning dawned bright and clear, with less wind than usual, and we were early astir and ready for a return to Miller Lump to continue our photographic work on the Terns. Through the kindness of Captain Davis, I obtained a hammer and nails and some thin pine boards, with which to build a blind. After a hasty breakfast, we boarded the "Dutcher" and soon were back at the lump, where we found the birds still in undisturbed possession. On this occasion we wasted no time in approaching carefully, but proceeded at once to build the blind of scantling about twenty feet from the nests. We covered it with layers of wet seaweed, and I hid within. Bowdish, Brimley, and the warden retired to the boat. The birds followed them and seemed to think the coast was clear; for in a few moments they returned and settled on their eggs, almost under my very nose. Then I certainly had an hour of enjoyment, though within the blind it was very, very hot. In a colony of this size, with the birds nesting so close together, there is endless commotion and stir, giving splendid opportunity for photographic work. The birds were constantly leaving and returning to their eggs. Like other sea birds, the Royal Tern does not incubate by sitting closely, but seems to go to its nest chiefly for the purpose of turning the eggs or shading them from the sun. The birds are handsome creatures, with their crimson bills, gray wings, snow-white breasts, and bold topknots. They keep up a continual screeching sort of conversation among themselves.

Squabbles are frequent, especially when a bird gets too near a nest not its own, whereat there is a great flapping of wings and striking of bills, until the intruder leaves. The birds perform their wing maneuvers with exceptional grace and ease. They always face the wind when arising or alighting.

The young birds, when just hatched, are covered with a sort of drab-colored down, marked with brownish or blackish spots, which blends excellently with the sand. When a person approaches, the newly hatched birds lie perfectly flat and motionless, and are almost indistinguishable from their surroundings; the older ones scamper off with as much speed as they can.

One should not linger too long in such a colony, if he would enjoy in the highest degree the really marvelous sight. The wonderful first impression becomes indistinct after a time, and is difficult to describe. To appreciate such a place, one must see it with his own eyes.

After completing our photographic studies on the lump, we left for Ocracoke, our trip being practically over. On the way we stopped at a little isle known as the Legged Lump, the property of the North Carolina Audubon Society, where some 200 Black Skimmers, a few Common Terns, and about a dozen Least Terns were breeding. On the neighboring Davis Lump were about a hundred Black Skimmers, twenty-five pairs of Common Terns, and sixty pairs of Royal Terns.

In spite of our misfortune in finding the tremendous colony on Royal Shoal broken up, we were well satisfied with our trip, and cannot have too much praise for the admirable work which Warden Jennett has done. Shooting has almost entirely ceased in the Pamlico Sound colonies, and eggng has, to a large extent, been suppressed. The islands in the sound should continue to afford a safe refuge for the sea birds that resort there to breed, and the colonies should increase in the years to come.

The following is a list of the birds noted on the islands which we visited in Pamlico Sound:

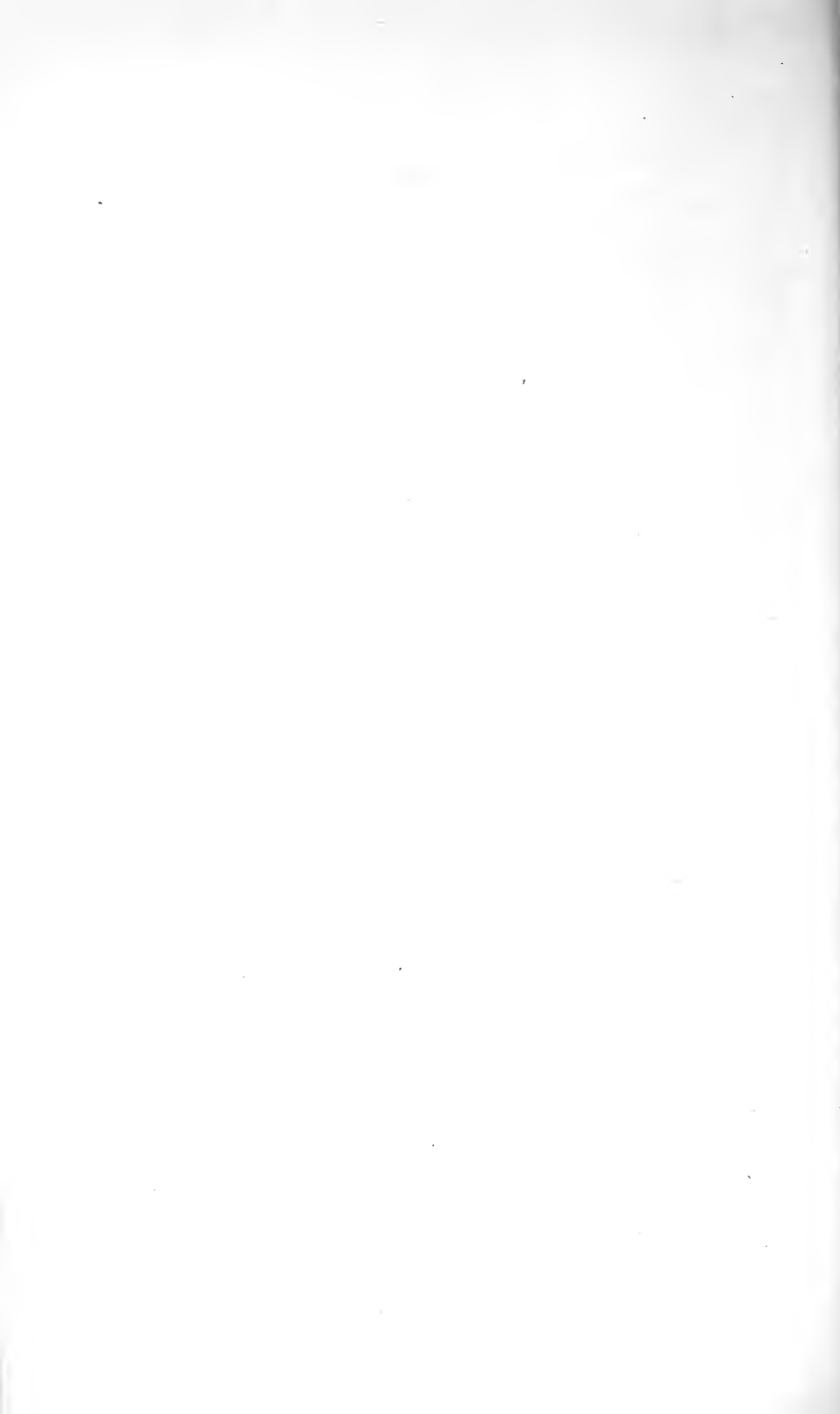
1. *Larus atricilla*. LAUGHING GULL.—A colony of one hundred birds nesting on Royal Shoal.
2. *Gelochelidon nilotica*. GULL-BILLED TERN.—Rare. One pair seen on Miller Lump, and one bird on Royal Shoal. Breeds.



FIG. 1.—ROYAL TERNS, MILLER LUMP.



FIG. 2.—ROYAL TERNS, MILLER LUMP.



3. *Sterna maxima*. ROYAL TERN.—Colonies found on Miller Lump (1,000 birds); on Davis Lump (120 birds); and on Royal Shoal (50 birds).
4. *Sterna sandvicensis acuflavida*. CABOT'S TERN.—Rare. Six noted on Miller Lump. Breeds.
5. *Sterna hirundo*. COMMON TERN.—Common on all the islands and lumps in the sound. Breeds.
6. *Sterna antillarum*. LEAST TERN.—A colony of 200 birds on Royal Shoal, and a colony of 12 or 15 birds on Legged Lump.
7. *Hydrochelidon nigra surinamensis*. BLACK TERN.—Rare and accidental. One at Royal Shoal and one at Miller Lump. Probably does not breed.
8. *Rynchops nigra*. BLACK SKIMMER.—Abundant about the islands and lumps of the sound. Breeds.
9. *Pelecanus occidentalis*. BROWN PELICAN.—Casual in Pamlico Sound. Four seen on Legged Lump.
10. *Pisobia minutilla*. LEAST SANDPIPER.
11. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.
Several flocks of small Sandpipers, including probably both these species, seen on Legged Lump.
12. *Hæmatopus palliatus*. OYSTER-CATCHER.—Two seen on Royal Shoal. Said by the warden to breed there.

A List of the Fishes Known to Have Occurred within Fifty Miles of New York City.

BY JOHN TREADWELL NICHOLS.

With drawings by Charles R. Knight, Gregory S. Allen, and Francis West.

The compilation of this list has been incidental to work on the local ichthyofauna at the American Museum of Natural History. It is based on specimens in the collections of this museum, and on the following three publications: Bean, "Fishes of Long Island," N. Y. Forest, Fish, and Game Com. Rept., 1900; Smith, "Fishes of the Fresh and Brackish Waters in the Vicinity of New York City," Abstr. Proc. Linn. Soc. N. Y., No. 9, 1896-1897; Fowler, "Fishes of New Jersey," N. J. State Mus. Rept., 1905.

The nomenclature followed throughout is that of Jordan and Evermann's "Fishes of North and Middle America," Bull. 47, U. S. National Museum. We believe that in following a well-known general work of this nature we run less risk of confusion, and serve best the aims of the present paper. A final paragraph brings certain of the names more up to date.

The list is intended to be in no way complete or final, but to serve as a basis for further work.

The writer has been aided in its preparation by Dr. T. H. Bean of the New York Forest, Fish, and Game Commission, Prof. Bashford Dean of Columbia University, Mr. W. I. De Nyse of the New York Aquarium, Dr. Louis Hussakof of the American Museum of Natural History, Dr. R. C. Osburn of the Aquarium, Mr. Eugene Smith of the Linnæan Society, and Dr. C. H. Townsend of the Aquarium.

1. **Petromyzon marinus** Linn. SEA LAMPREY.

Not uncommon. March to June.

2. **Lampetra wilderi** Gage. BROOK LAMPREY.

Common. Spring. (Dean & Sumner, *Trans. N. Y. Ac. Sci.*, xvi, 1897, 321.)

3. *Mustelus canis* (Mitch.). SMOOTH DOGFISH.
Common. June to October.
4. *Carcharhinus obscurus* (Le Sueur). DUSKY SHARK.*
Common. Midsummer to September.
5. *Sphyrna zygaena* (Linn.). HAMMERHEAD SHARK.
Uncommon. July to September.
6. *Alopias vulpes* (Gmelin). THRESHER SHARK.
Occasional. April to June.
7. *Carcharias littoralis* (Mitch.). SAND SHARK.
Common. June to October.
8. *Isurus dekayi* (Gill). MACKEREL SHARK.
Accidental. October.
9. *Cetorhinus maximus* (Gunner). BASKING SHARK.
Accidental.
10. *Squalus acanthias* Linn. SPINED DOGFISH.
Not uncommon. October to April.
11. *Squatina squatina* (Linn.). MONKFISH.
Uncommon. Summer.
12. *Raja erinacea* Mitch. COMMON SKATE.
Common. Resident.
13. *Raja ocellata* Mitch. BIG SKATE.
Tolerably common. September and October.
14. *Raja eglanteria* Bosc. CLEAR-NOSED SKATE.
Not uncommon. September.
15. *Raja laevis* (Mitch.). BARN-DOOR SKATE.
Abundant. October to June.

*Since this list was first prepared, two additional species of sharks have been recorded, as follows:

Prionace glauca (Linn.). Great Blue Shark. One record. A large specimen taken near City Island, N. Y., in late October, 1911, was presented to the American Museum of Natural History by Mr. Alfred Frank, of New York.

Carcharhinus limbates (Mül. & Hen.). Edged Shark. One record. Mr. Edwin Thorne, of Babylon, L. I., has the jaws of a large specimen which he took in Great South Bay in midsummer several years ago.

16. *Tetronarce occidentalis* (Storer). TORPEDO.
Accidental. Summer.
17. *Dasyatis centrura* (Mitch.). COMMON STING RAY.
Uncommon, formerly common. July and later in the year.
18. *Pteroplatea maclura* (Le Sueur). BUTTERFLY RAY.
Uncommon.
19. *Rhinoptera bonasus* (Mitch.). COW-NOSED RAY.
Uncommon. Summer and autumn.
20. *Acipenser sturio* Linn. COMMON STURGEON.
Common. February to fall.
21. *Acipenser brevirostrum* Le Sueur. SHORT-NOSED STUR-
GEON.
Rare. May.
22. *Lepisosteus osseus* Linn. LONG-NOSED GAR.
Occasional.
23. *Felichthys marinus* (Mitch.). GAFF-TOPSAIL CATFISH.
Sometimes common. August.
24. *Hexanematichthys felis* (Linn.). SEA CATFISH.
Rare.
25. *Ictalurus punctatus* (Raf.). SPOTTED CATFISH.
Locally common. Resident. Introduced.
26. *Ameiurus lacustris* (Walb.). LAKE CATFISH.
Locally introduced.
27. *Ameiurus catus* (Linn.). WHITE CATFISH.
Tolerably common. Resident.
28. *Ameiurus nebulosus* (Le Sueur). HORNED POUT.
Tolerably common resident.
29. *Schilbeodes gyrinus* (Mitch.). STONE CATFISH.
Not uncommon resident.
30. *Schilbeodes insignis* (Richardson). MUD CATFISH.
Recorded.
31. *Catostomus commersonii* (Lac.). WHITE SUCKER.
Common resident.

32. *Erimyzon sucetta oblongus* (Mitch.). CHUB SUCKER.
Tolerably common. Resident.
33. *Moxostoma macrolepidotum* (Le Sueur). RED HORSE
Recorded.
34. *Carassius auratus* (Linn.). GOLDFISH.
Common. Resident. Introduced.
35. *Cyprinus carpio* Linn. CARP.
Common. Resident. Introduced.
36. *Idus idus* Linn. GOLDEN IDE.
Introduced. Resident.
37. *Tinca tinca* Linn. TENCH.
Introduced. Resident.
38. *Hybognathus nuchalis* Ag. SILVERY MINNOW.
Tolerably common. Resident.
39. *Pimephales notatus* (Raf.). BLUNT-NOSED MINNOW.
Recorded.
40. *Semotilus corporalis* (Mitch.). FALLFISH.
Not common. Resident.
41. *Semotilus atromaculatus* (Mitch.). HORNED DACE.
Common. Resident.
42. *Leuciscus vandoisulus* Val. ROSY DACE.
Recorded.
43. *Leuciscus margarita* Cope. GOLD-THREAD SHINER.
Recorded.
44. *Scardineus erythrophthalmus* (Linn.). RUDD.
Abundant. Resident. Introduced.
45. *Abramis crysoleucas* (Mitch.). GOLDEN SHINER.
Common. Resident.
46. *Notropis bifrenatus* (Cope). BRIDLED MINNOW.
Locally common. Resident.
47. *Notropis procne* (Cope). DELAWARE MINNOW.
Common. Resident.
48. *Notropis hudsonius amarus* (Girard). SPAWN-EATER.
Rare. Resident.

49. *Notropis analostanus* (Girard). SILVERFIN.
Locally common. Resident.
50. *Notropis cornutus* (Mitch.). SHINER.
Common. Resident.
51. *Notropis chalybæus* (Cope). ABBOTT'S MINNOW.
Recorded.
52. *Notropis amœnus* (Abbott). RARITAN MINNOW.
Recorded.
53. *Rhinichthys cataractæ* (Val.). LONG-NOSED DACE.
Rare. Local resident.
54. *Rhinichthys atronasus* (Mitch.). BLACK-NOSED DACE.
Common. Resident.
55. *Hybopsis kentuckiensis* (Raf.). HORNYHEAD.
Occasional.
56. *Exoglossum maxillingua* (Le Sueur). CUT-LIP MINNOW.
Rare. (Eugene Smith.)
57. *Anguilla chrysypa* Raf. COMMON EEL.
Abundant. Resident.
58. *Leptocephalus conger* (Linn.). CONGER EEL.
Uncommon. Summer.
59. *Tarpon atlanticus* (C. & V.). TARPON.
Accidental. Summer and fall (October).
60. *Elops saurus* Linn. BIG-EYED HERRING.
Accidental. October.
61. *Albula vulpes* (Linn.). LADYFISH.
Accidental. October. (Bean, Fishes of New York, *Bull.*
N. Y. State Mus., 1903.)
62. *Dorosoma cepedianum* (Le Sueur). GIZZARD SHAD.
Uncommon. Resident.
63. *Etrumeus sadina* (Mitch.). ROUND HERRING.
Uncommon. July to October.
64. *Clupea harengus* Linn. HERRING.
Irregular. All seasons.

65. *Pomolobus mediocris* (Mitch.). HICKORY SHAD.
Common. August through November.
66. *Pomolobus pseudoharengus* (Wilson). ALEWIFE.
Abundant. February to November.
67. *Pomolobus æstivalis* (Mitch.). GLUT HERRING.
Not uncommon. August.
68. *Alosa sapidissima* (Wilson). SHAD.
Common. (March) May to October (December).
69. *Opisthonema oglinum* (Le Sueur). THREAD HERRING.
Sometimes abundant. July and August.
70. *Brevoortia tyrannus* (Latrobe). MENHADEN.
Abundant. May to November.
71. *Stolephorus per fasciatus* (Poey). FLAT ANCHOVY.
Recorded. September.
72. *Stolephorus brownii* (Gmelin). STRIPED ANCHOVY.
Uncommon. Summer.
73. *Stolephorus argyrophanus* (C. & V.). SILVERY ANCHOVY.
Recorded. June to August 20, when a specimen was taken
at Long Beach, L. I., by T. D. Keim and C. Van Loan.
74. *Stolephorus mitchilli* C. & V. COMMON ANCHOVY.
Common. May to October.
75. *Salmo salar* Linn. ATLANTIC SALMON.
Occasional.
Salmo salar sebago (Girard). LANDLOCKED SALMON.
Introduced.
76. *Salmo fario* Linn. BROWN TROUT.
Introduced. Resident.
77. *Salmo irideus* Gibbons. RAINBOW TROUT.
Introduced.
78. *Salvelinus fontinalis* (Mitch.). BROOK TROUT.
Formerly common.
79. *Salvelinus alpinus* (Linn.). SAIBLING.
Introduced. Rare. (Eugene Smith).

80. *Osmerus mordax* (Mitch.). SMELT.
Common. Resident.
81. *Synodus foetens* (Linn.). LIZARD FISH.
Sometimes common. October.
82. *Umbra pygmæa* (DeKay). STRIPED MUD MINNOW.
Common. Resident.
83. *Lucius americanus* (Gmelin). BANDED PICKEREL.
Tolerably common. Resident.
84. *Lucius reticulatus* (Le Sueur). CHAINED PICKEREL.
Tolerably common. Resident.
85. *Fundulus majalis* (Walb.). BASS KILLY.
Abundant. Resident.
86. *Fundulus heteroclitus macrolepidotus* (Walb.). MUM-
MICHOG.
Abundant. Resident.
87. *Fundulus diaphanus* (Le Sueur). FRESH-WATER KILLY.
Common. Resident.
88. *Fundulus luciae* (Baird). LUCY'S KILLY.
Occasional. July. (Fowler, *Science*, Oct. 15, 1909.)
89. *Lucania parva* (Baird & Girard). RAIN-WATER FISH.
Common.
90. *Cyprinodon variegatus* Lac. SHEEPSHEAD MINNOW.
Abundant. Resident.
91. *Tylosurus marinus* (Walb.). BILLFISH.
Common. June to December.
92. *Hyporhamphus roberti* (C. & V.). HALFBEAK.
Uncommon. August and September.
93. *Exocoetus volitans* Linn. FLYING FISH.
Accidental.
94. *Cypsilurus heterurus* (Raf.). BEARDED FLYING FISH.
Recorded.
95. *Cypsilurus furcatus* (Mitch.). DOUBLE-BEARDED FLYING
FISH.
Recorded.

96. *Pygosteus pungitius* (Linn.). TEN-SPINED STICKLEBACK.
Common. Resident.
97. *Gasterosteus bispinosus* Walb. TWO-SPINED STICKLE-
BACK.
Common. Resident.
98. *Apeltes quadracus* (Mitch.). FOUR-SPINED STICKLEBACK.
Abundant. Resident.
99. *Fistularia tabacaria* (Linn.). TRUMPET FISH.
Uncommon. September and October.
100. *Siphostoma fuscum* (Storer). PIPEFISH.
Abundant. June to November.
101. *Hippocampus hudsonius* Dekay. SEA-HORSE.
Sometimes common. May to November.
102. *Aphredoderus sayanus* (Gilliams). PIRATE PERCH.
Tolerably common. Resident.
103. *Kirtlandia laciniata* (Swain). ROUGH SILVERSIDE.
Occasional.
104. *Menidia gracilis* (Günth.). FRESH-WATER SILVERSIDE.
Common. Resident.
105. *Menidia notata* (Mitch.). COMMON SILVERSIDE.
Abundant. Resident.
106. *Mugil cephalus* Linn. STRIPED MULLET.
Resident. Abundant in late summer and fall. Hibernates.
107. *Mugil curema* C. & V. WHITE MULLET.
Common. August to October.
108. *Sphyræna borealis* Dekay. NORTHERN BARRACUDA.
Rare. June to November.
109. *Polydactylus octonemus* (Girard). THREADFIN.
Accidental. September.
110. *Ammodytes americanus* Dekay. SAND EEL.
Common. Resident.
111. *Mullus auratus* Jordan & Gilbert. GOATFISH.
Occasionally common. September and October.

112. **Scomber scombrus** Linn. MACKEREL.
Sometimes common. May to July.
113. **Scomber colias** Gmelin. CHUB MACKEREL.
Sometimes common. Summer.
114. **Gymnosarda pelamis** (Linn.). OCEANIC BONITO.
September. (*Bull. N. Y. Zool. Soc.*, Nov., 1911.)
115. **Gymnosarda alleterata**. LITTLE TUNNY.
September. (*Bull. N. Y. Zool. Soc.*, Nov., 1911.)
116. **Thunnus thynnus** (Linn.). TUNNY.
Sometimes common. Summer. (Townsend, *Forest & Stream*, Oct. 22, 1910.)
117. **Germo alalunga** (Gmelin). ALBACORE.
Sometimes tolerably common. Summer. (W. I. De Nyse.)
118. **Sarda sarda** (Bloch). BONITO.
Common. June to October.
119. **Scomberomorus maculatus** (Mitch.). SPANISH MACKEREL.
Common. August and September.
120. **Trichiurus lepturus** Linn. SCABBARD FISH.
Rare. July and August.
121. **Istiophorus nigricans** (Lac.). SAILFISH.
Accidental. August. (Osburn, *Bull. N. Y. Zool. Soc.*, Nov., 1910.)
122. **Xiphias gladius** Linn. SWORDFISH.
June. (Bean, *Fishes of New York*, *Bull. N. Y. State Mus.*, 1903.)
123. **Oligoplites saurus** (Bl. & Sch.). LEATHERJACKET.
Occasional. Summer (October).
124. **Seriola zonata** (Mitch.). BANDED RUDDER FISH.
Tolerably common. August to October.
125. **Seriola lalandi** C. & V. AMBER FISH.
Accidental. July and August.
126. **Elagatis bipinnulatus** (G. & G.). RUNNER.
Accidental. August.

127. *Decapturus punctatus* (Ag.). SCAD.
Sometimes common. July.
128. *Trachurus trachurus* (Linn.). GASCON.
Accidental. October.
129. *Trachurops crumenophthalmus* (Bloch). GOGGLE-EYED
SCAD.
Not uncommon in summer. September.
130. *Caranx hippos* (Linn.). JACKFISH.
Tolerably common. July to October.
131. *Caranx crysos* (Mitch.). HARDTAIL.
Tolerably common. July to October.
132. *Alectis ciliaris* (Bloch). THREADFISH.
Occasional in August.
133. *Vomer setipinnis* (Mitch.). MOONFISH.
Uncommon. June to October.
134. *Selene vomer* (Linn.). LOOKDOWN.
Uncommon. August to October.
135. *Chloroscombrus chrysurus* (Linn.). BUMPER.
Accidental. Summer.
136. *Trachinotus falcatus* (Linn.). ROUND POMPANO.
Tolerably common. August to October.
137. *Trachinotus carolinus* (Linn.). COMMON POMPANO.
Tolerably common. August to October.
138. *Pomatomus saltatrix* (Linn.). BLUEFISH.
Abundant. May to October.
139. *Rachycentron canadum* (Linn.). CRAB-EATER.
Occasional. June. Aug. 27 (Osburn, *Bull. N. Y. Zool. Soc.*,
Nov., 1911).
140. *Coryphæna hippurus* Linn. COMMON DOLPHIN.
Accidental. August and September.
141. *Palinurichthys perciformis* (Mitch.). RUDDER FISH.
Uncommon. August to October.
142. *Rhombus paru* Linn. HARVEST FISH.
Sometimes common. Summer.

143. *Rhombus triacanthus* (Peck). BUTTERFISH.
Abundant. May, September, and October.
144. *Pomoxis annularis* Raf. CRAPPIE.
Introduced.
145. *Pomoxis sparoides* Lac. CALICO BASS.
Introduced.
146. *Acantharchus pomotus* (Bd.). MUD SUNFISH.
Uncommon. Resident.
147. *Ambloplites rupestris* Raf. ROCK BASS.
Introduced. Resident.
148. *Enneacanthus obesus* (Bd.). SPOTTED-FIN SUNFISH.
Uncommon. Resident.
149. *Enneacanthus gloriosus* (Holbrook). HOLBROOK'S SUN-
FISH.
Resident.
150. *Mesogonistius chætodon* (Bd.). BLACK-BANDED SUN-
FISH.
Uncommon. Resident.
151. *Lepomis auritus* (Linn.). LONG-EARED SUNFISH.
Common. Resident.
152. *Lepomis pallidus* (Mitch.). BLUEGILL.
Recorded.
153. *Eupomotis gibbosus* (Linn.). SUNFISH.
Abundant. Resident.
154. *Micropterus dolomieu* Lac. SMALL-MOUTHED BASS.
Uncommon. Resident.
155. *Micropterus salmoides* (Lac.). LARGE-MOUTHED BASS.
Tolerably common. Resident.
156. *Stizostedion vitreum* (Mitch.). PIKE PERCH.
Introduced. Resident.
157. *Perca flavescens* (Mitch.). YELLOW PERCH.
Common. Resident.
158. *Boleosoma nigrum olmstedii* (Storer). JOHNNY DARTER.
Common. Resident.

159. *Boleichthys fusiformis* (Girard). FUSIFORM DARTER.
Recorded.
160. *Roccus chrysops* Raf. WHITE BASS.
Introduced. Resident.
161. *Roccus lineatus* (Bloch). STRIPED BASS.
Common. Resident.
162. *Morone americana* (Gmelin). WHITE PERCH.
Common. Resident.
163. *Polyprion americanus* (Bl. & Sch.). WRECKFISH.
Accidental. August. (Osburn, *Bull. N. Y. Zool. Soc.*, Nov., 1910.)
164. *Centropristes striatus* (Linn.). SEA BASS.
Common. April to December.
165. *Pseudopriacanthus altus* (Gill). DEEP BIG-EYE.
Accidental. One taken at Oak Island Beach, Long Island (Charles B. Davenport), and another at Long Beach, L. I., Aug. 20, 1911, by T. D. Keim and C. Van Loan.
166. *Neomænis aya* (Bloch). RED SNAPPER.
Accidental. October.
167. *Orthopristis chrysopterus* (Linn.). PIGFISH.
Occasionally common. August to October.
168. *Stenotomus chrysops* (Linn.). SCUP.
Abundant. April to November.
169. *Lagodon rhomboides* (Linn.). SAILOR'S-CHOICE.
Occasional. Summer and autumn (October).
170. *Archosargus probatocephalus* (Walb.). SHEEPSHEAD.
Rare. June to October.
171. *Eucinostomus gula* (C. & V.). MOJARRA.
Accidental. August.
172. *Kyphosus sectatrix* (Linn.). BERMUDA CHUB.
Rare. September and October.
173. *Cynoscion regalis* (Bl. & Sch.). WEAKFISH.
Common. May to November (December).

174. *Larimus fasciatus* Holbrook. BANDED CROAKER.
Accidental. July and August.
175. *Bairdiella chrysur*a (Lac.). SILVER PERCH.
Sometimes common. July to November.
176. *Sciaenops ocellatus* (Linn.). CHANNEL BASS.
Rare. May to October.
177. *Leiostomus xanthurus* Lac. SPOT.
Common. June to December.
178. *Micropogon undulatus* (Linn.). CROAKER.
Rare. September.
179. *Menticirrhus saxatilis* (Bl. & Sch.). KINGFISH.
Not uncommon. May to October.
180. *Pogonias cromis* (Linn.). DRUM.
Tolerably common. May to December.
181. *Tautogolabrus adspersus* (Walb.). CUNNER.
Abundant. Resident.
182. *Tautoga onitis* (Linn.). TAUTOG.
Common. Resident. Hibernates.
183. *Chaetodipterus faber* (Brous). SPADEFISH.
Occasional. Summer.
184. *Chaetodon ocellatus* Bloch. BUTTERFLY FISH.
Accidental. October.
185. *Pomacanthus arcuatus* (Linn.). BLACK ANGEL FISH.
Accidental.
186. *Teuthis hepatus* Linn. DOCTOR FISH.
Accidental. October.
187. *Balistes carolinensis* Gmelin. TRIGGER FISH.
Occasional. Summer (September).
188. *Monacanthus hispidus* (Linn.). FILEFISH.
Tolerably common. August to November.
189. *Alutera schœpfi* (Walb.). ORANGE FILEFISH.
Tolerably common. May to November.
190. *Alutera scripta* (Osbeck). UNICORN FISH.
Rare or accidental. (Eugene Smith.)

191. *Lactophrys trigonus* (Linn.). TRUNKFISH.
Occasional. August and October.
192. *Lagocephalus lævigatus* (Linn.). SMOOTH PUFFER.
Rare. September to October.
193. *Spheroides maculatus* (Bl. & Sch.). PUFFER.
Common. May to November.
194. *Chilomycterus schoepfii* (Walb.). SPINY BOXFISH.
Uncommon. September and October.
195. *Mola mola* (Linn.). HEADFISH.
Accidental. (Bean, Fishes of N. Y., *Bull. N. Y. State Mus.*, 1903.)
196. *Sebastes marinus* (Linn.). ROSEFISH.
Accidental. August.
197. *Uranidea gracilis* (Heckel). BLOB.
Locally abundant. Resident.
198. *Myoxocephalus æneus* (Mitch.). BRASSY SCULPIN.
Uncommon. Resident.
199. *Myoxocephalus grœnlandicus* (C. & V.). DADDY SCULPIN.
Accidental.
200. *Myoxocephalus octodecimspinosus* (Mitch.). HACKLE-HEAD.
Common. August (G. E. Hix), September to May.
201. *Hemitripterus americanus* (Gmelin). SEA RAVEN.
Tolerably common. April and May, August (G. E. Hix), September to December.
202. *Aspidophoroides monopterygius* (Bloch). SEA POACHER.
Accidental. Summer.
203. *Cyclopterus lumpus* Linn. LUMPFISH.
Uncommon. April and May.
204. *Prionotus carolinus* (Linn.). CAROLINA SEA ROBIN.
Common. May to October.
205. *Prionotus strigatus* (C. & V.). STRIPED SEA ROBIN.
Common. May to October.

206. *Cephalacanthus volitans* (Linn.). FLYING GURNARD.
Occasional. August to October.
207. *Gobiosoma bosci* (Lac.). NAKED GOBY.
Tolerably common. Autumn.
208. *Echeneis naucrates* Linn. SHARK SUCKER.
Not uncommon. July and August.
209. *Remora remora* (Linn.). REMORA.
Accidental.
210. *Astroscopus guttatus* (Abbott). SPOTTED STARGAZER.
Accidental. Fall.
211. *Opsanus tau* (Linn.). TOADFISH.
Common. Resident.
212. *Chasmodes bosquianus* (Lac.). STRIPED BLENNY.
Occasional.
213. *Pholis gunnellus* (Linn.). ROCK EEL.
Uncommon. Autumn and winter (January).
214. *Cryptacanthodes maculatus* Storer. GHOSTFISH.
Occasional.
215. *Anarhichas lupus* Linn. WOLF FISH.
Rare.
216. *Zoarces anguillaris* (Peck). MUTTONFISH.
Tolerably common. Fall and winter. (Mr. G. E. Hix reports having seen it taken in August.)
217. *Rissola marginata* (DeKay). SLIPPERY DICK.
Occasional. October.
218. *Merluccius bilinearis* (Mitch.). SILVER HAKE.
Sometimes common. Spring and fall (October and November).
219. *Pollachius virens* (Linn.). POLLACK.
Occasional. Winter.
220. *Microgadus tomcod* (Walb.). TOMCOD.
Resident. Abundant in fall and early winter.
221. *Gadus morrhua* Linn. COD.
Sometimes abundant. October to April.

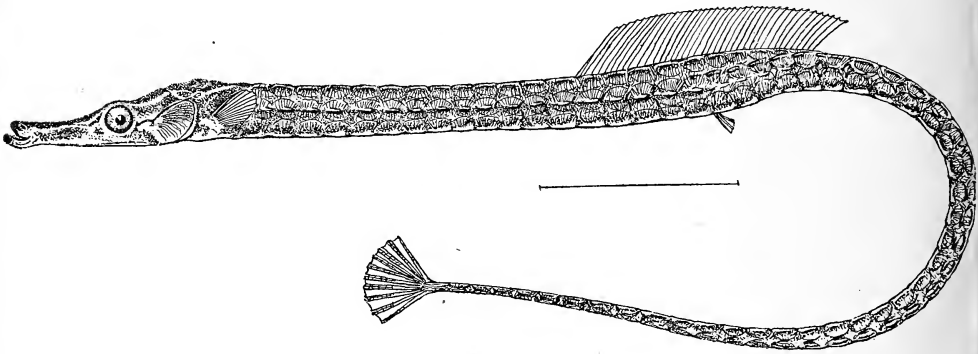
222. *Melanogrammus æglifinus* Linn. HADDOCK.
Uncommon. Winter.
223. *Lota maculosa* (Le Sueur). LING.
Accidental.
224. *Urophycis regius* (Walb.). SPOTTED CODLING.
Uncommon. September to December.
225. *Urophycis tenuis* (Mitch.). HAKE.
Uncommon. April to May. September to December.
226. *Urophycis chuss* (Walb.). SQUIRREL HAKE.
Occasional. October.
227. *Hippoglossus hippoglossus* (Linn.). HALIBUT.
Occasional. Winter.
228. *Paralichthys dentatus* (Linn.). FLUKE.
Common. May to October.
229. *Paralichthys lethostigmus* Jordan & Gilbert. SOUTHERN
FLOUNDER.
Recorded. (Bean, Fishes of New York, *Bull. N. Y. State
Mus.*, 1903.)
230. *Pseudopleuronectes americanus* (Walb.). FLATFISH.
Abundant. Resident.
231. *Lophopsetta maculata* (Mitch.). WINDOWPANE.
Abundant. August and September.
232. *Platophrys ocellatus* Swainson. SAND FLOUNDER.
Accidental. September.
233. *Etropus microstomus* (Gill). SMALL-MOUTHED FLOUN-
DER.
Tolerably common. September and October.
234. *Achirus fasciatus* Lac. AMERICAN SOLE.
Common. April to December.
235. *Lophius piscatorius* Linn. ANGLER.
Common. October to May. August (G. E. Hix).
236. *Pterophryne histrio* (Linn.). MOUSE FISH.
Accidental. August. (Bean, Art. XXIV, *Bull. Am. Mus.
Nat. Hist.*, vol. ix, 1897, p. 329.)

237. *Ogcocephalus vespertilio* (Linn.). BATFISH.
Accidental. Midsummer.

CHANGES IN NOMENCLATURE.

For the sake of uniformity the nomenclature of Bulletin 47 of the United States National Museum has been followed throughout the foregoing list. A number of older names, however, have been reestablished by later writers, and such changes in nomenclature are given below. The number preceding each name indicates the position of the synonym in the annotated list.

24. *Galeichthys felis* (Linn.).
38. *Hybognathus nuchalis regius* (Girard).
93. *Exonautes speculiger* (C. & V.).
105. *Menidia menidia notata* (Mitch.).
143. *Poronotus triacanthus* (Peck).
205. *Prionotus evolans strigatus* (C. & V.).



Drawing by Gregory S. Allen.

SIPHOSTOMA FUSCUM. PIPEFISH.

Note.—The inch mark beneath this and the following figures is reduced or enlarged in the same proportion as is each drawing from a grown specimen of the species.

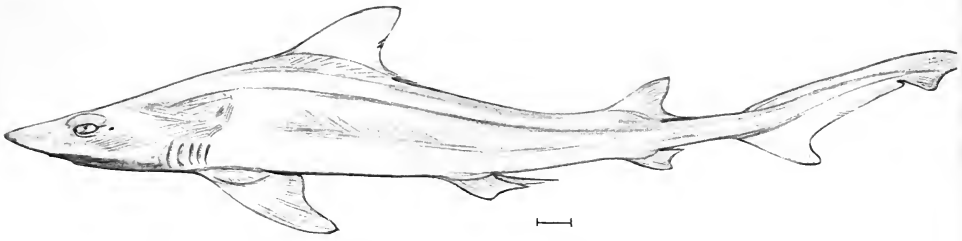


FIG. 1.—*MUSTELUS CANIS*. SMOOTH DOGFISH.

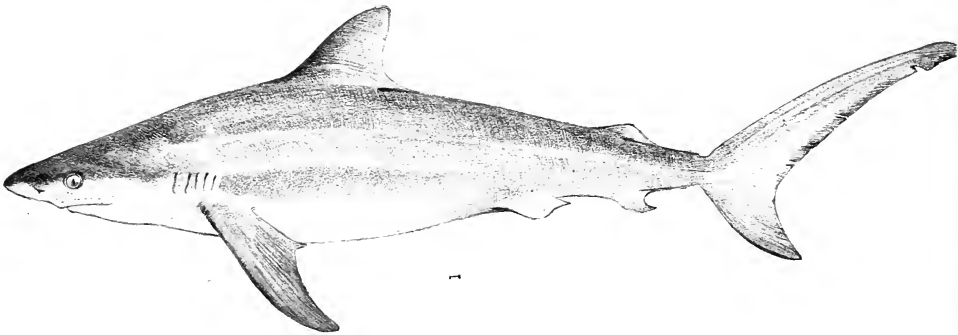
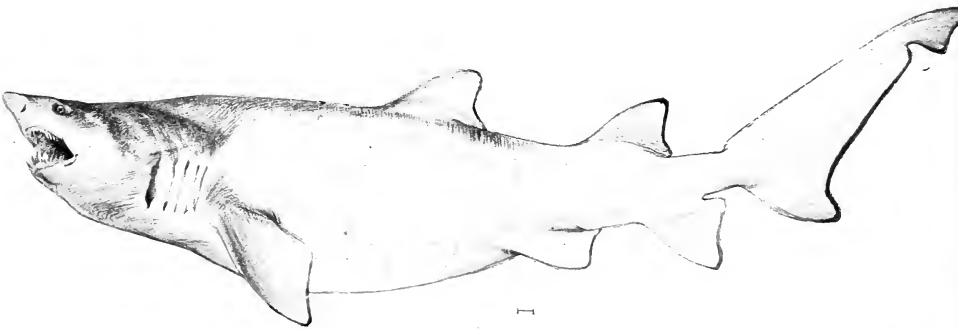


FIG. 2.—*CARCHARHINUS OBSCURUS*. DUSKY SHARK.



Drawings by Charles R. Knight.

FIG. 3.—*CARCHARIAS LITTORALIS*. SAND SHARK.

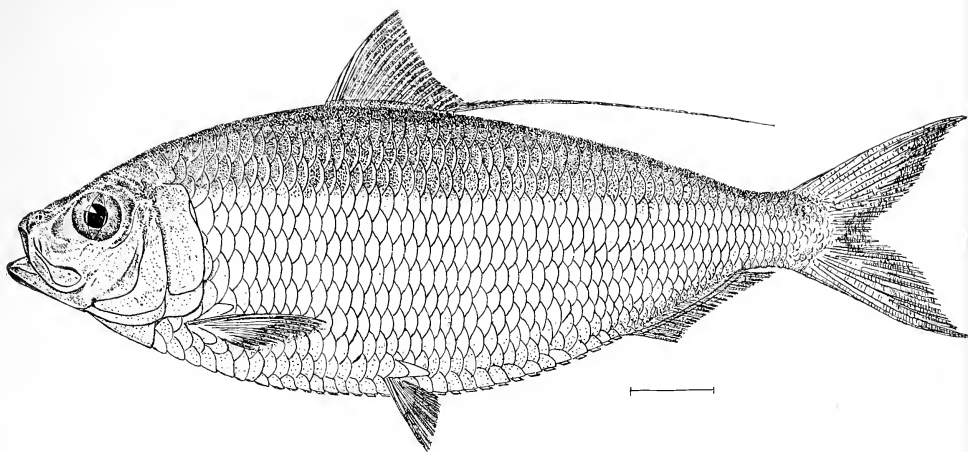


FIG. 1.—*OPISTHONEMA OGLINUM*. THREAD HERRING.

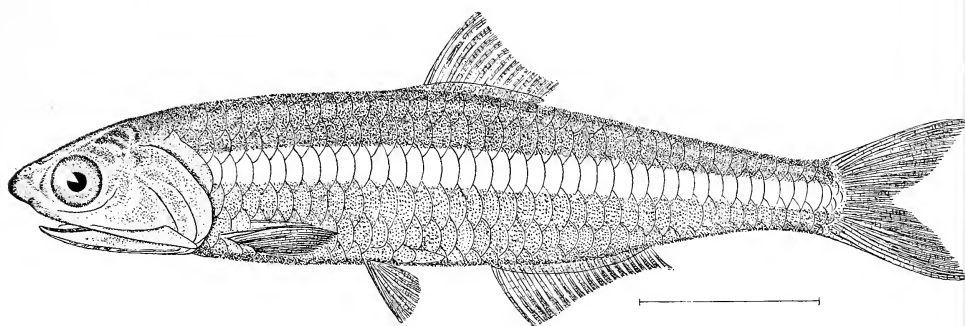


FIG. 2.—*STOLEPHORUS BROWNII*. STRIPED ANCHOVY.

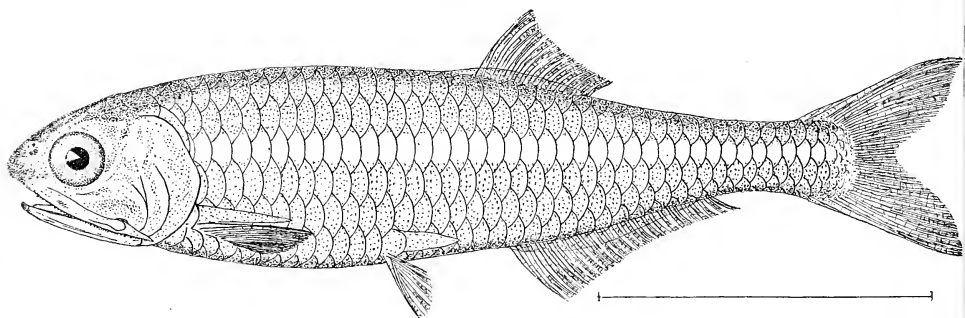


FIG. 3.—*STOLEPHORUS MITCHILLI*. COMMON ANCHOVY.

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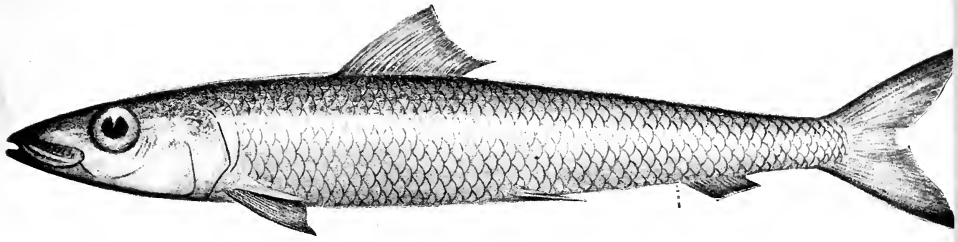


FIG. 1.—ETRUMEUS SADINA. ROUND HERRING.

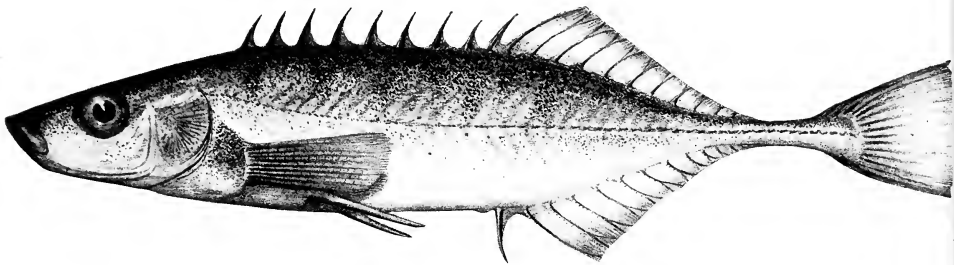
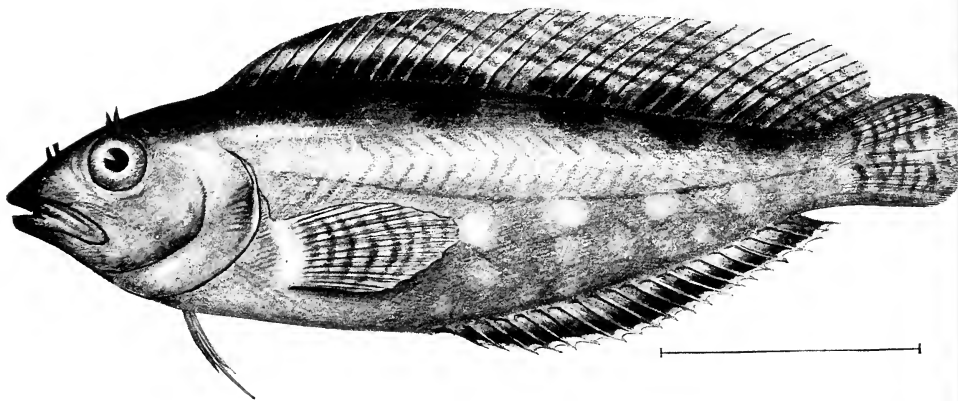


FIG. 2.—PYGOSTEUS PUNGITIUS. TEN-SPINED STICKLEBACK.



Drawings by Francis West

FIG. 3.—CHASMODES BOSQUIANUS. STRIPED BLENNY.



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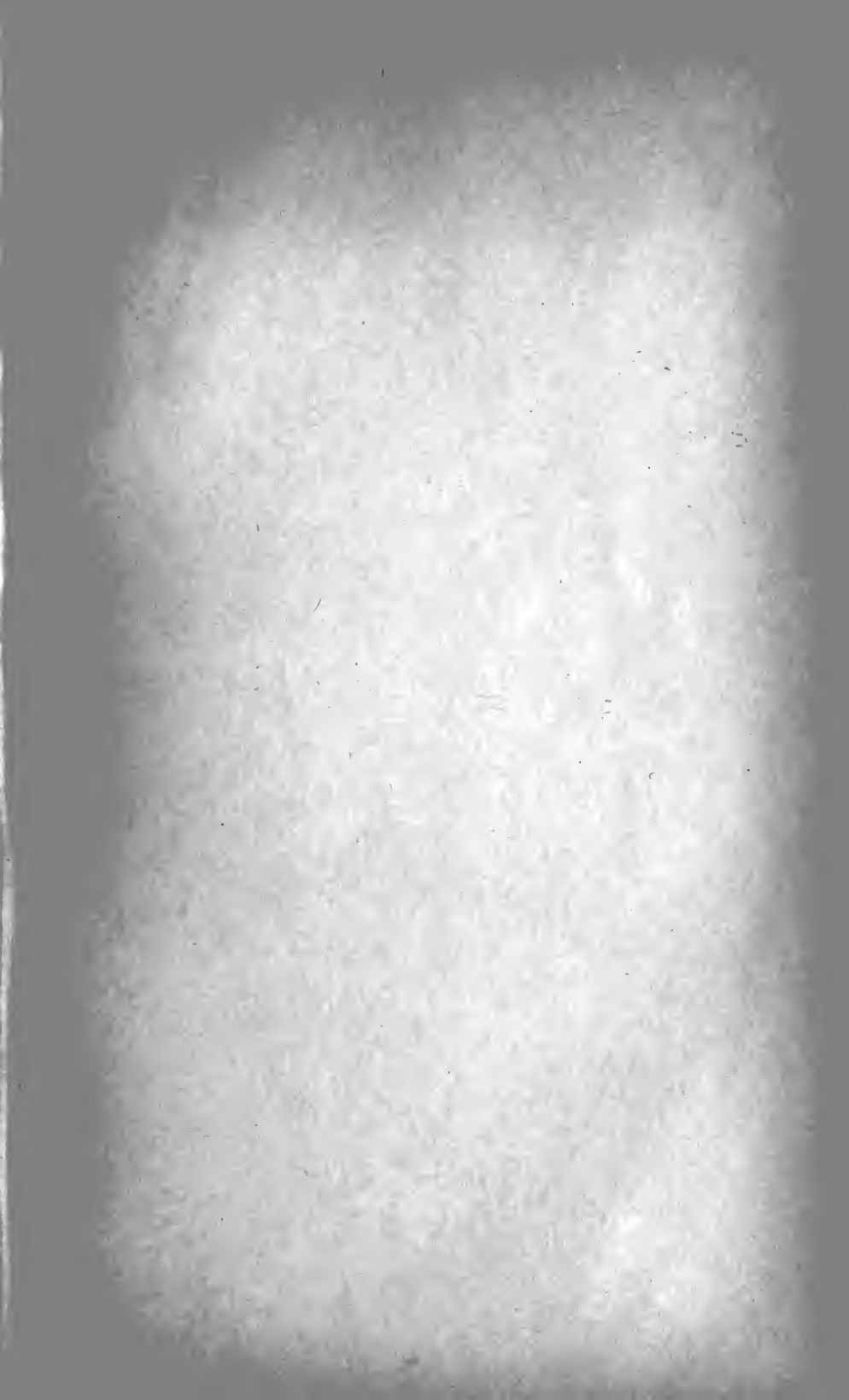
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OF

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1911-1913

NOS. 24-25

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For the Years Ending

March 12, 1912

AND

March 11, 1913

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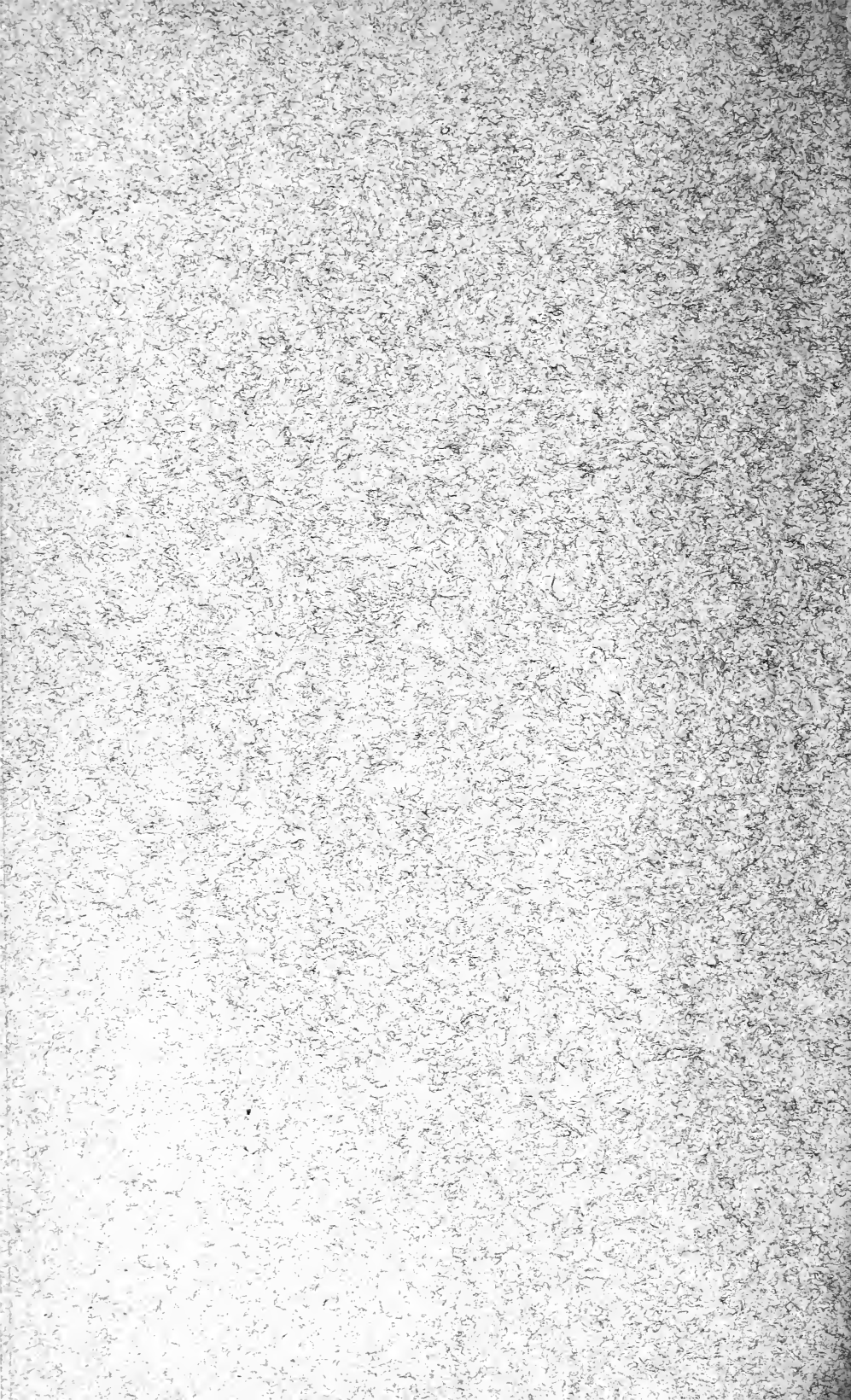
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The Society meets on the second and fourth Tuesday evenings of each month, from October to May inclusive, at the American Museum of Natural History, 77th Street and Central Park West, New York City.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 12, 1912.

THIS is the twenty-fourth in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date above indicated. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 28, 1911.—The President in the chair. Twelve members and nineteen visitors present.

The President announced that owing to illness the Treasurer was still unable to present his annual report.

The following standing committees were appointed by the chair for the ensuing year:

Publications, Messrs. Harper, Abbott, and Chapman.

Finance, Messrs. Woodruff, Allen, and Granger.

Nominations, Messrs. Cleaves, Grant, and Weber.

Papers and Lectures, Messrs. Harper, Abbott, and Chapman.

Mr. W. W. Grant offered the following preamble and resolutions, which were unanimously adopted:

WHEREAS: The Linnæan Society of New York has for its object the study and protection of wild birds and animals; and

WHEREAS: The Linnæan Society of New York learns that a bill has been introduced in the Assembly of the New York Legislature by A. J. Levy, which will not only repeal in effect the splendid Shea-White Plumage Law enacted last year, but by substitution of the words "native birds"

in Section 98 of Chapter 256 of the Laws of 1910 will, it appears, open the way for the sale of the plumage of many birds heretofore protected; and

WHEREAS: It is the sense of the said Linnæan Society that the passage of the proposed measure would be detrimental to the proper conservation of the valuable bird life of this state, therefore be it

Resolved: That the members of the Linnæan Society in meeting assembled March 28, 1911, do most emphatically protest against Assembly Bill 359, and do most earnestly request the members of the Legislature of the state to use their influence against the passage of said bill, and be it further

Resolved: That the Secretary of the Society be directed to send a copy of these resolutions to the Governor and to each of the Senators and Assemblymen of the State of New York.

Mr. Grant also proposed that the time of commencing the meetings of the Society be changed from 8:15 P.M. to 8 P.M. After some discussion, the matter was laid upon the table for action at the next meeting.

The paper of the evening was entitled "Summer Bird Life of Four Brothers Islands, Lake Champlain," by Messrs. C. G. Abbott, B. S. Bowdish, and Francis Harper. These islands were visited during the nesting season of 1910 (in June by Mr. Bowdish, and in July by Messrs. Abbott and Harper) for the purpose of observation and photography. Their summer bird population consists of Herring Gulls (*Larus argentatus*), American Mergansers (*Mergus americanus*), Black Ducks (*Anas rubripes*), Spotted Sandpipers (*Actitis macularia*), Kingbirds (*Tyrannus tyrannus*), American Crows (*Corvus b. brachyrhynchos*), Song Sparrows (*Melospiza m. melodia*), Tree Swallows (*Iridoprocne bicolor*), Bank Swallows (*Riparia riparia*) and Yellow Warblers (*Dendroica æ. æstiva*).

All, with the exception of the Crows, were found breeding, and nesting portraits of most of them were secured, particular attention being paid to the Gulls, Sandpipers, and a Merganser. An effective warden service is maintained, and the islands as a breeding place are in a flourishing condition. The paper was illustrated with nearly 100 lantern slides. Mr. Abbott was unable to be present, but his slides were shown.

April 11, 1911.—The President in the chair. Nine members and twenty-seven visitors present.

The Secretary reported the receipt of a number of letters

from members of the New York Legislature, concerning the set of resolutions adopted at the last meeting and forwarded to them. Several of the writers had expressed themselves as opposed to the Levy Bill. Mr. T. Gilbert Pearson remarked that sentiment was growing in opposition to the bill, but that the campaign was not yet won.

There was considerable discussion concerning the proposed change in the hour of commencing the meetings, but no decision was reached.

Mr. Francis Harper reported that the flock of Evening Grosbeaks (*Hesperiphona v. vespertina*) near Plainfield, N. J., which had been reported at a previous meeting, was last noted on March 5 by Mr. W. DeW. Miller and himself.

He also recorded two Northern Phalaropes (*Lobipes lobatus*) which had been observed and photographed by Dr. Frank Overton and himself on April 2 at Long Cove, Great South Bay, L. I.

He also presented some notes on the status of the Black Duck (*Anas rubripes*) in the vicinity of Great South Bay, which tended to show that the brown-legged variety is the breeding bird, and the red-legged variety a winter visitant. These notes were based upon information furnished by Capt. John Smith, an observing bayman of Patchogue, L. I. Dr. Dwight remarked, on the contrary, that he had secured a red-legged specimen from Long Island during the breeding season.

The paper of the evening was presented by Messrs. H. H. Cleaves and C. G. Abbott, and was entitled "The Bird Colonies of Gardiner's Island in 1910." It dealt mainly with the Fish Hawks (*Pandion haliaëtus carolinensis*) and Common Terns (*Sterna hirundo*) of this well-known bird paradise. Extended notes on the feeding and nesting habits of the two species were given, and were supplemented by a large and splendid series of lantern slide photographs. Among the other species represented by the slides, the Piping Plover (*Ægialitis meloda*) is worthy of note.

April 25, 1911.—The President in the chair. Fourteen members and seventeen visitors present.

The Secretary mentioned the receipt of several additional letters from members of the New York Legislature concerning the resolutions adopted by the Society at its meeting on March 28. A majority of the letters expressed opposition to the Levy Bill.

The matter of changing the hour at which the meetings commence was again taken from the table. The motion was made and seconded that the meetings commence thereafter at 8 P.M., instead of at 8:15 P.M., and after some discussion was unanimously carried.

Mr. Abbott spoke of a letter received by Mr. Grant from Dr. Leon J. Cole, President of the American Bird Banding Association, stating that the work of the Association was not being pushed as it should be, and that any suggestions or help in carrying on the work would be welcomed. Mr. Abbott therefore moved that the chair appoint a committee of three, which should offer its services to the American Bird Banding Association for undertaking the work. Messrs. Grant, Abbott, and Cleaves were appointed upon this committee, and the Secretary was instructed to notify Dr. Cole of the Society's action.

Mr. Geo. E. Hix remarked upon the recent and unusual occurrence of Herring Gulls (*Larus argentatus*) on the lake in Central Park. Mr. Nichols suggested that the large numbers of dead and dying fish in the lake at this time might account for the presence of the Gulls.

The first paper of the evening was by Mr. J. M. Johnson, and was entitled "A Report on the Birds of Duck Island, Maine." This paper was the result of a visit to the locality in August, 1910, near the close of the breeding season. It was estimated that 8,000 Herring Gulls (*Larus argentatus*) had bred on Great Duck Island, and an even larger number on Little Duck Island. The number of both old and young birds, therefore, was probably at that time something over 30,000, although there had been a considerable mortality among the latter, owing perhaps to a failure of the fisheries on the Maine coast last season. The nesting Leach's Petrels (*Oceanodroma leucorhoa*) and Black Guillemots (*Cepphus grylle*) were believed to number about 400 each.

The depredations of the birds' greatest enemies, the domestic cat and man, had been checked by the efficient warden service maintained by the National Association of Audubon Societies.

Dr. Frank Overton then exhibited a number of slides of a Northern Phalarope (*Lobipes lobatus*) which he had photographed at Long Cove, L. I., on April 2. He also showed an autochrome of a Pickering's Hyla (*Hyla pickeringi*) and a unique flashlight photograph of the same individual in the act of peeping.

The second paper of the evening, entitled "The Ghost Whale of the St. Lawrence," was presented by Mr. Roy C. Andrews. He spoke at some length of the range, method of capture, commercial uses, chief characteristics, and feeding habits of this interesting cetacean, which is known commonly as the White Whale (*Delphinapterus leucas*). The paper was illustrated with excellent lantern slides, including what is probably the first photograph taken of a live and free White Whale.

May 9, 1911.—The President in the chair. Fifteen members and sixteen visitors present.

Mr. Charles H. Rogers, of New York City, was elected a resident member of the Society.

Mr. Grant reported in behalf of the bird-banding committee that the matter of turning over the work of the American Bird Banding Association to the Linnæan Society was then in the hands of the executive committee of the Association, and would probably be acted upon favorably.

On motion of Mr. Abbott, and after considerable discussion, the Society unanimously voted an appropriation of two hundred dollars (\$200) to the National Association of Audubon Societies for its special Egret Fund. This fund is being collected in an effort to save the American and Snowy Egrets (*Herodias egretta* and *Egretta c. candidissima*) from final extinction in the United States, and is to be used for education, for warden service, and for legislation.

An appropriation of ten dollars was also voted for the protection of a Duck Hawk's (*Falco peregrinus anatum*) nest on the Palisades of the Hudson.

Mr. Ludlow Griscom recorded the following observations in Central Park: Blue-gray Gnatcatcher (*Poliophtila c. cærulea*) on April 17; Wilson's Warbler (*Wilsonia p. pusilla*) on May 2; Blackpoll Warbler (*Dendroica striata*) and Olive-backed Thrush (*Hylocichla ustulata swainsoni*) on May 3.

Dr. Dwight said that Mr. John H. Sage had reported an unusually early migration at Portland, Conn.

Mr. C. H. Rogers recorded a Palm Warbler (*Dendroica p. palmarum*) seen near Englewood, N. J., on May 6.

Mr. J. T. Nichols spoke of a skate (*Raja*) which he had seen offered for sale in a fish market on Columbus Avenue. He was told that considerable numbers of the skates were sold to the French and the Japanese in the city. Mr. Rogers remarked that the "wings" of the skates caught on the fishing banks near the city were eaten by the fishermen.

Professor Bashford Dean presented the first paper of the evening, which was entitled "Field Notes on Hagfishes and Lampreys," and was illustrated with specimens, wax models, and lantern slides. Many points concerning these imperfectly known forms were very interestingly and ably discussed, the notes touching upon their evolution, distribution, habits, and life histories in general. The speaker also described his collecting experiences off the coasts of California and Japan. The lantern slides of some of the species were the first ones ever exhibited.

The paper was discussed by Mr. Andrews.

Mr. F. C. Walcott presented the second paper of the evening, which was entitled "Hunting with the Camera in Wyoming and New Brunswick." It dealt with various vacation trips to the Jackson's Hole country in Wyoming, the Maine Coast, the Bay of Fundy, and the Tobique River in New Brunswick, and was illustrated with a large number of splendid lantern slides. Especially noteworthy were a superb flashlight photograph of a "Silvertip" Grizzly Bear (*Ursus h. horribilis*) at close range, and a picture of one of the speaker's friends actually riding upon the back of a wild Moose (*Alces americanus*) in a New Brunswick lake. Many photographs of the Herring Gulls (*Larus argentatus*) and Leach's Petrels (*Oceano-*

droma leucorhoa) of Great Duck Island, Maine, were also shown and described.

May 23, 1911.—The President in the chair. Fifteen members and twenty-five visitors present.

Mr. T. Gilbert Pearson was elected a resident member of the Society.

Mr. W. W. Grant reported for the bird-banding committee that although the management of the American Bird Banding Association had not yet been formally turned over to the Linnæan Society, the committee was pushing forward with the work and had ordered some new dies made.

Mr. H. H. Cleaves gave an account of his successful experiment in inducing a Fish Hawk (*Pandion haliaëtus carolinensis*) to seize an artificial golden carp (*Carassius auratus*) in Wolf's Pond, Staten Island. He showed, among several other slides, a unique photograph of the bird rising from the water with the booty in its talons.

Mr. Witmer Stone, of the Delaware Valley Ornithological Club, was the guest of the evening, and gave an address on "The Fauna and Flora of the New Jersey Pine Barrens and their Relationships." He outlined the boundaries of this very interesting portion of the coastal plain, and discussed the distribution of its animal and plant life, as compared with that of the adjoining regions. Two very different faunas (Carolinian and Alleghenian) overlap in these pine barrens, for certain Carolinian forms, as Mr. Stone explained, here reach the normal northern limit of their range, while certain boreal forms are also found breeding, especially in the bogs. The speaker gave extended notes on many species of mammals, birds, insects, and plants which occur in the region, and a large number of them were represented in the lantern slides which illustrated the paper. The mosquitoes, he said, discouraged to a considerable extent occupation and development of the land, and thereby rendered good service in helping to preserve the pine barrens in their natural state.

At the close of his paper Mr. Stone, by special request, made some informal remarks concerning the Delaware Valley Ornithological Club and its activities. He described some of the

features which have made it so successful an organization, and which the members of the Linnæan Society might find suggestive in their own work.

October 10, 1911.—The President in the chair. Seventeen members and about twelve visitors present.

The Secretary read a letter from Miss G. E. Taft, of New York City, protesting against the tagging of birds as small as Warblers (*Mniotiltidæ*), as suggested in a leaflet of directions prepared by the Society's bird-banding committee for the American Bird Banding Association. The letter was referred to the committee for attention.

Mr. Wm. T. Davis was elected a resident member of the Society.

It was voted to suspend the next regular meeting of the Society, which would have fallen upon October 24, and to hold in its place a joint meeting with the National Association of Audubon Societies on October 31.

Mr. H. H. Cleaves reported that on September 24 he had seen a Bald Eagle (*Haliaeetus l. leucocephalus*) pursuing a Fish Hawk (*Pandion haliaëtus carolinensis*) at Great Kills, Staten Island. The latter was forced to drop the fish it was carrying, but the Eagle, swooping, failed to catch the booty before it fell to the ground.

Mr. C. H. Rogers reported picking up the remains of a Dovekie (*Alle alle*) at Long Beach, Long Island, on May 30. The bird had evidently been dead for a long time. Mr. Pearson remarked that he had seen two Dovekies off the coast of Maine in the middle of July.

Messrs. J. M. Johnson and B. S. Bowdish reported on the nest of Duck Hawks (*Falco peregrinus anatum*) on the Palisades of the Hudson, for the protection of which the Society had voted an appropriation of ten dollars at its meeting of May 9. It appeared that the old birds had been disturbed and kept from the nest for such a length of time that the young had died from exposure. Five dollars of the appropriation had been used, and the balance returned to the Treasurer of the Society.

Mr. G. E. Hix recorded a Northern Phalarope (*Lobipes*

lobatus) which he had seen on August 20 at Watson's Woods in the Bronx.

Mr. J. T. Nichols read a paper entitled "Notes on the Biological Significance of Color in Animals." He touched upon many interesting phases of concealing and advertising coloration, recognition marks, and adaptation of color to surroundings, drawing examples from his own field experiences and illustrating some of the points with lantern slides.

Dr. Frank Overton and Mr. Francis Harper gave an exhibition of autochromes taken during the past season. They included color photographs of the Flicker (*Colaptes auratus luteus*), Yellow Warbler (*Dendroica æ. æstiva*), Catbird (*Dumetella carolinensis*), Brown Thrasher (*Toxostoma rufum*), Song Sparrow (*Melospiza m. melodia*), Osprey (*Pandion haliaëtus carolinensis*), Wilson's Tern (*Sterna hirundo*), Laughing Gull (*Larus atricilla*), and Black Skimmer (*Rynchops nigra*). Black and white slides as well as autochrome slides of most of the subjects were shown.

October 31, 1911.—Joint meeting with the National Association of Audubon Societies. The President in the chair. Twenty-one members and about sixty visitors present.

Messrs. Robert C. Murphy and Benjamin Adams were elected resident members of the Society.

It was voted to suspend the next regular meeting, scheduled for November 14, because it would coincide with the A. O. U. meeting in Philadelphia.

Mr. Ludlow Griscom recorded six Ruddy Ducks (*Eris-matura jamaicensis*) which he had observed in the Central Park Reservoir on October 30.

Mr. W. W. Grant, in behalf of the bird-banding committee, made a brief report on the progress of the work.

The first paper of the evening, entitled "Bird Reservations of the Northwest," was presented by Mr. William L. Finley, of Portland, Oregon. He spoke in turn of three different types of bird reservations: those on the new reservoirs that have been constructed for irrigating purposes, those on the rocky islands off the coast, including Three Arch Rocks Reservations in particular; and those on the lakes of southern

Oregon and northern California, such as Lake Malheur and Klamath Lake. These reservations have been set aside by the Federal Government, and are effectively protected by Audubon wardens. The paper was illustrated with slides made from some of Messrs. Finley and Bohlmann's remarkable photographs, which showed Gulls, Murres, Puffins, Cormorants, Pelicans, Ibises, Herons, Grebes, Ducks, and other kinds of waterfowl in natural and striking attitudes. The great value and possibilities of these reservations in conserving and increasing our bird life were graphically set forth by Mr. Finley's paper.

Professor C. F. Hodge, of Clark University, was to have given the second paper of the evening, entitled "Problems of Conserving American Game Birds," but was unable to be present.

Dr. Dwight then called upon Dr. T. S. Palmer, Vice-President of the National Association of Audubon Societies, for an address on "Objects and Methods of Bird Protection." Dr. Palmer gave an exceedingly interesting account of the numerous and diverse activities of the Audubon Societies in legislation, education, and protection. He spoke of the recent progress in all branches of the work, as well as of some of the aims and hopes for the future, and his words were warmly applauded.

Remarks followed by Messrs. Goadby, Pearson, and J. M. Johnson.

November 28, 1911.—The Vice-President in the chair. Twelve members and sixteen visitors present.

On motion of Mr. Grant, and after some discussion, an appropriation of fifty dollars was voted for the American Bird Banding Association, represented by the Society's bird-banding committee.

Mr. Grant also moved that the President appoint two additional members upon the bird-banding committee, consisting at present of three members, since the by-laws of the American Bird Banding Association called for an executive committee of five. The motion was carried.

Dr. Frank Overton spoke of seeing from a train a flock of

about 5,000 Scaup Ducks (*Marila marila* or *M. affinis*) on the Hudson River above Kingston on November 22.

Mr. J. T. Nichols remarked that Scaup Ducks had been more than usually abundant on Moriches Bay, L. I., this fall.

He also stated that the Charles River at Cambridge, Mass., had recently been dammed, and that the Whistlers (*Clangula clangula americana*) no longer frequented the river above the dam, since the water has become fresh. He had recently seen there, however, a flock of 15 Scaup Ducks.

Mr. C. H. Rogers recorded 1 or 2 Piping Plovers (*Ægialitis meloda*) which he and others had observed at Long Beach, L. I., on November 7.

Mr. J. A. Weber reported that a farmer at Bound Brook, N. J., had stated that the Ruffed Grouse (*Bonasa u. umbellus*) were more common there this fall than usual, but that the Quail (*Colinus v. virginianus*) were not present in their former numbers. Since the Quail imported from the south were said to disappear in the fall, Mr. Weber raised the question as to whether or not the birds had become migratory. Mr. J. M. Johnson suggested that they might have been exterminated by the Alabama Quail disease, but Mr. Weber replied that the Quail reappeared in the spring. Mr. Nichols pointed out the opportunity here offered to the bird-banders.

The paper of the evening, entitled "Bird Notes from Pisgah Forest, North Carolina," was presented by Mr. Harry C. Oberholser, of Washington, D.C., a corresponding member of the Society. Three life zones, the Carolinian, Alleghenian, and Canadian, are represented in the region under discussion, which supports an unusually rich fauna and flora. Mr. Oberholser contributed very interesting notes not only on the birds, but also on the mammals, reptiles, fishes, insects and other invertebrates, and on the plant life. He spoke in particular of the distribution of the species through the three life zones. The paper was illustrated with lantern slides.

Discussion followed by Messrs. Rogers, Weber, J. M. Johnson, Grant, and Nichols.

December 12, 1911.—The President in the chair. Thirteen members and nine visitors present.

The Chair appointed Messrs. J. T. Nichols and J. A. Weber as additional members of the bird-banding committee, in accordance with the motion carried at the last meeting.

Mr. J. M. Johnson recorded a Brown Thrasher (*Toxostoma rufum*) which he had seen on December 10 in the Bronx Zoölogical Park—not in a cage.

Mr. Ludlow Griscom spoke of a trip which Mr. W. DeW. Miller, Mr. S. V. LaDow, and he had taken to Gardiner's Island on December 1, 2, and 3. During that time they recorded at the Island 64 species of birds, including 17 species of waterfowl (*Anatidæ*). Of especial note was the record of two adult male European Widgeons (*Mareca penelope*), observed on the north inlet of the island.

Mr. H. H. Cleaves reported some observations which he had made on a flock of seven White-winged Scoters (*Oidemia deglandi*) and on a female Old-squaw (*Harelda hyemalis*) off Prince's Bay, Staten Island, on December 10. They were diving for food in water that was probably seven or eight feet deep. He timed the periods during which one of the Scoters and the Old-squaw remained under water. The former was observed to make two dives, lasting 26 seconds and 32 seconds, respectively. On seven successive dives the latter remained beneath the surface for the following lengths of time: 32, 32, 33, 33, 31, 36, and 33 seconds; the periods between the dives lasted for 13, 10, 12, 12, 11, and 11 seconds, respectively. The Scoters swallowed their food, which consisted apparently of shellfish, after reaching the surface; the Old-squaw, on the other hand, was not observed in the act of eating, and seemed to swallow its food (if it secured any) beneath the surface.

Mr. Wm. T. Davis exhibited a Corn Snake (*Coluber guttatus*) collected at Chatsworth, Burlington County, N. J., in July, 1911. He stated that this was apparently the first specimen recorded from that state, and that Prof. Cope, in his "Crocodilians, Lizards, and Snakes of North America," particularly mentions the fact that it had not been found in New Jersey, though common to the southward.

The paper of the evening, entitled "A Week with the Birds

of the Virginia Coast Islands," was presented by Mr. Howard H. Cleaves, who gave an admirable account of a trip, lasting from June 25 to July 2, 1911, to the sea-bird colonies of Cobb's, Wreck, and Isaac's Islands. His success in photography, the main object of the trip, was illustrated in the large number of lantern slides, showing Laughing Gulls (*Larus atricilla*) in their marsh homes, and Common Terns (*Sterna hirundo*) and Black Skimmers (*Rynchops nigra*) on the sandy beaches where they breed. Many interesting notes on the numbers and habits of these birds were given. The slides also included pictures of eggging parties, which had collected large numbers of Skimmers' and Terns' eggs for eating purposes. (A report of this trip by Mr. Cleaves appeared in *Bird-Lore* for November-December, 1911.)

Discussion followed by Messrs. J. M. Johnson, Harper, Grant, Griscom, Abbott, Weber, and the Chair.

December 26, 1911.—The President in the chair. Thirteen members and thirty-five visitors present.

The death on December 16 of Mr. Isaac J. Greenwood, a member of the Society, was announced.

The Secretary read an interesting letter which he had recently received from Mr. James Chapin, a fellow-member absent on the Congo Expedition of the American Museum of Natural History.

Mr. W. W. Grant reported seeing two Fox Sparrows (*Passerella i. iliaca*) and a Robin (*Planesticus m. migratorius*) near Englewood, N. J., on December 24.

Mr. J. A. Weber spoke of having received recently a specimen of the Gannet (*Sula bassana*) from Lynnhaven, Va.

Mr. Alanson Skinner presented a paper on "The Menomini Indians of Wisconsin." He has spent several summers among this tribe, which has always been on friendly terms with the whites. Some of the tribe have become entirely civilized and live in modern dwellings, while others, chiefly old people, cling to their primitive mode of living in remote parts of the reservation. In Mr. Skinner's opinion, their tribal traditions will not outlive the present generation of old people, and he has therefore made a special study of these traditions. He

gave an account of several of them, and devoted particular attention to the poetic Myth of the Medicine Lodge, reading a literal translation of a portion of it.

Remarks followed by Mr. Grant.

Mr. A. R. Dugmore gave the second paper of the evening, entitled "Photographing Caribou and Other Creatures." He spoke first of his efforts for the past six years to photograph migrating Caribou (*Rangifer terræ-novæ*) in Newfoundland, and of his final and complete success in the fall of 1911. The attitudes of these animals, their manner of migrating, and some of their queer habits were not only described by Mr. Dugmore, but were also shown graphically in a remarkable series of lantern slides.

Among the other creatures later referred to, were various species of Shore Birds and waterfowl in the United States, and lions, zebras, giraffes, rhinoceroses, hippopotami, a hyena, and hartebeestes in British East Africa, all of which were represented by means of slides made from Mr. Dugmore's wonderful photographs. The pictures of the lions and of several of the other animals were flashlights taken at night.

January 9, 1912.—The President in the chair. Twenty-two members and about thirty visitors present.

Mr. C. H. Rogers reported having seen a Chipping Sparrow (*Spizella p. passerina*) and several Fox Sparrows (*Passerella i. iliaca*) on December 24 near Fort Lee, N. J. On January 1 he had seen at Manhattan Beach, L. I., several Lapland Longspurs (*Calcarius l. lapponicus*), which remained in that vicinity for several weeks. Another interesting record was that of a female Cardinal (*Cardinalis c. cardinalis*), observed near Sheepshead Bay on January 1, 1912.

Mr. C. G. Abbott recorded a Seaside Sparrow (*Passer-herbulus m. maritimus*) which had been seen by Mr. H. H. Cleaves and himself on Staten Island on December 25, 1911.

Mr. Frank M. Chapman gave the paper of the evening, entitled "A Natural History Reconnaissance of Colombia." He had conducted an expedition of the American Museum of Natural History to this country early in 1911, entering it at Buenaventura on the Pacific coast, and leaving it several

months later, after a journey of 1,500 miles, at Santa Marta, on the Caribbean Sea. With headquarters established at Cali, in the province of Cauca, the party made collecting trips into both the Coast Range and the Central Range of the Andes, as well as among the valleys. An extensive series of bird skins, including several new species, was secured. Mr. Chapman illustrated his paper with a large number of lantern slides, which gave those present an admirable idea of Colombian vegetation and topography. Owing to the unfavorable conditions, which rendered bird photography very difficult, if not impossible in some cases, Mr. L. A. Fuertes, who was a member of the expedition, had painted some of the birds into Mr. Chapman's photographs of the vegetation, and the resulting composite pictures were included among the colored slides. Mr. Fuertes was present at the meeting, and spoke for a few minutes on the birds whose portraits were thus exhibited.

January 23, 1912.—The President in the chair. Fourteen members and about forty visitors present.

Mr. R. L. Lemmon and Dr. R. Constantian were elected resident members of the Society.

Mr. H. H. Cleaves spoke of an interesting day which he and Mr. Ludlow Griscom had spent in the field on Staten Island on January 21. Among other birds, they had observed 2 Great Blue Herons (*Ardea h. herodias*), 2 Barn Owls, (*Aluco pratincola*), 4 Short-eared Owls (*Asio flammeus*) and a Flicker (*Colaptes auratus luteus*).

Mr. J. A. Weber recorded a Grackle (*Quiscalus quiscula* subsp.) which he had seen at Palisades Park, N. J., on January 22.

The paper of the evening, by Mr. C. William Beebe, was entitled "A Search for Pheasants in India and Borneo." Mr. Beebe had returned a few months previously from one of the most extensive ornithological expeditions ever organized; it covered parts of Ceylon, India, Burma, Sumatra, Java, Borneo, China, and Japan, and entailed a globe-circling journey of over 50,000 miles. On the trip he had succeeded in collecting representatives of each of the 22 known genera

of Pheasants, Jungle Fowl, and Peafowl (*Phasianidæ*). During the evening, however, owing to the extent of the subject and the limitations of time, he was able to describe his field experiences in Ceylon and the Himalayas only. The paper was illustrated with many beautifully colored lantern slides, which showed the haunts of various Pheasants, as well as the previously undiscovered nests and eggs of several species. The slides also included photographs of many Pheasants in captivity and a Peacock (*Pavo cristatus*) in a wild state.

February 13, 1912.—The Secretary in the chair. Nine members and twenty-six visitors present.

Mr. Edward F. du Vivier was elected a resident member of the Society.

Mr. H. H. Cleaves recorded 26 species of birds which Mr. Ludlow Griscom and he had observed on a trip to Long Beach, L. I., on January 28. Of especial interest were two Clapper Rails (*Rallus c. crepitans*); these were in such weakened condition that one was easily despatched with a stick, and the other captured alive and kept for several days before it died. The skins of the two birds were exhibited.

Mr. Griscom spoke of a trip on February 12 to the same locality, on which he saw 29 species of birds; these included an adult Glaucous Gull (*Larus hyperboreus*), 75 Canada Geese (*Branta c. canadensis*), 9 Brant (*B. bernicla glaucogastra*), and seven other species of waterfowl.

On January 27 he had seen 2 Canvasbacks (*Marila valisineria*) on the Hudson River from the Palisades above Fort Lee, N. J.

Mr. Robert C. Murphy recorded a Sora Rail (*Porzana carolina*) which had been taken at Wading River, L. I., on January 2, and an American Bittern (*Botaurus lentiginosus*) observed at Port Jefferson Harbor on January 26. The Sora, unlike the Clapper Rails mentioned by Mr. Cleaves, was in excellent condition when taken.

Mr. Francis Harper spoke of the winter feeding of Meadowlarks (*Sturnella m. magna*), Juncos (*Junco h. hyemalis*), and Blue Jays (*Cyanocitta c. cristata*) by Dr. Frank Overton and

himself at East Patchogue, L. I., during the past few days. He exhibited several lantern slides made from Dr. Overton's photographs of the Meadowlarks.

The first paper of the evening was presented by Mr. J. M. Johnson. It was entitled "Bird Notes from Northwestern Wyoming," and dealt chiefly with the birds which he had observed on a trip to Yellowstone Park and vicinity during the past summer. Mr. Johnson's careful observations and apt descriptions enabled him to convey an excellent idea of the habits and characteristics of many western species with which most of the members present were unfamiliar. He spoke also of experiences with some of the mammals of the Park.

Mr. Albert E. Butler presented the second paper, entitled "Travels in the Mountains of Colorado." In company with Mr. H. C. Raven, a member of the Society, he had recently made a number of collecting trips into these mountains in behalf of the Denver Museum. With the aid of lantern slides, he described his journeys amid the wonderful scenery of Estes Park and neighboring portions of the Rockies. He also contributed notes on many of the interesting birds and mammals of the region, such as the Blue-winged Teal (*Querquedula discors*), Redhead (*Marila americana*), Coot (*Fulica americana*), Avocet (*Recurvirostra americana*), Ptarmigan (*Lagopus l. leucurus*), Magpie (*Pica pica hudsonia*), Pack Rat (*Neotoma cinerea*), Beaver (*Castor canadensis frondator*), Snowshoe Rabbit (*Lepus b. bairdi*), Puma (*Felis oregonensis hippolestes*), Rocky Mountain Sheep (*Ovis cervina*) and several species of Squirrels. The slides included photographs of mounted groups in the Museum, which had been prepared by Messrs. Butler and Raven from the material they collected.

Febraury 27, 1912.—The President in the chair. Eleven members and nineteen visitors present.

The Secretary read a formal invitation which the Academy of Natural Sciences of Philadelphia extended to the Linnæan Society, to be represented at the celebration of the centenary anniversary of the Academy in Philadelphia on March 19, 20, and 21, 1912. The matter was laid upon the table for action at the next meeting.

The Secretary also read a clipping from a recent issue of *The Springfield Republican*, in which it was stated that the name of the Springfield Bird Club had been changed to the Allen Bird Club, in honor of Dr. J. A. Allen.

Mr. Henry Thurston was elected a resident member of the Society.

Mr. Cleaves, in behalf of the bird-banding committee, recorded the taking of a Bluebird (*Sialia s. sialis*) which had been tagged as a nestling by Mr. E. H. Baynes at Meriden, N. H., on June 3, 1911, and was shot from a flock at Berlin, Md., on January 20, 1912.

Mr. Ludlow Griscom reported seeing a Field Sparrow (*Spizella p. pusilla*) and a Mockingbird (*Mimus p. polyglottos*) in Bronx Park on February 17.

Mr. J. M. Johnson spoke of seeing recently a number of Black-crowned Night Herons (*Nycticorax nycticorax naevius*) at Lake Agassiz in Bronx Park. A few birds that had been reared in captivity formed a nucleus which attracted other members of the species, and there were now said to be as many as 30 in the flock. It was thus hoped that a breeding colony of wild Night Herons might be established in the Park.

Mr. Ernest Harold Baynes reported that a Mockingbird (*Mimus p. polyglottos*) was spending the winter at Groton, Mass.

As the subject of bird-banding was one of especial interest to the Society, Mr. Baynes also spoke for a few minutes on his experiences and methods in tagging birds, and showed several lantern slides bearing on the subject.

As founder of the American Bison Society, Mr. Baynes was particularly qualified to present the paper of the evening, which was entitled "The American Bison." He spoke in turn of the earliest records of the Buffalo, its general habits, its relation to the Plains Indians, the great slaughter by white hunters and settlers, the efforts to prevent its complete extermination, the formation of the American Bison Society and the results it has achieved, and the present status of the herds of Buffaloes in the United States and Canada. Great progress has been made in preserving and propagating these herds,

and there is every prospect that their numbers will gradually increase. Mr. Baynes also described his arduous but very successful efforts in breaking young captive Buffaloes to the yoke and to harness. His paper was illustrated with a large number of lantern slides.

March 12, 1912.—Annual Meeting. The President in the chair. Ten members and thirteen visitors present.

In response to the invitation of the Academy of Natural Sciences of Philadelphia, which had been read at the previous meeting, Dr. Dwight was appointed to represent the Linnæan Society at the celebration of the centenary anniversary of the Academy in Philadelphia on March 19, 20, and 21.

Before the rest of the business incident to the annual meeting was taken up, the Chair called upon Dr. Frank Overton for the paper of the evening.

Dr. Overton first exhibited a splendid series of lantern slides of Meadowlarks (*Sturnella m. magna*) as well as of Blue Jays (*Cyanocitta c. cristata*), Juncos (*Junco h. hyemalis*), Starlings (*Sturnus vulgaris*), and House Sparrows (*Passer d. domesticus*). All of these birds had been photographed near Patchogue, L. I., during the cold weather of the past few weeks, as they came to cleared spaces in the snow, where food had been put out for them.

The paper which had been announced on the program and was entitled "Frogs and Toads of Long Island," was then presented. This very interesting paper dealt mainly with Dr. Overton's studies of the Leopard and Green Frogs (*Rana pipiens* and *R. clamitans*), the Common Toad (*Bufo fowleri*), Pickering's Hyla (*Hyla pickeringi*) and the common Tree Frog (*H. versicolor*) in Suffolk County during the previous spring and summer. The speaker described at considerable length his observations on the distribution, notes, reproduction, and general habits of these species. The paper was admirably illustrated with lantern slides, which included a number of autochromes and many flashlights taken at night in the marshes. The speaker's vocal imitations of the batrachians' notes were supplemented in a unique manner by phonographic records of the croaking of the Toad, which were reproduced on a phonograph before the audience.

The paper was discussed by Mr. Murphy.

The remainder of the business of the annual meeting was then taken up.

Mr. Ludlow Griscom recorded a Glaucous Gull (*Larus hyperboreus*) which he had seen at Long Beach, L. I., on March 3, and a Prairie Horned Lark (*Otocoris alpestris praticola*) in a flock of Shore Larks (*O. a. alpestris*) at Long Beach on March 10.

The annual report of the Treasurer was read, in his absence, by the Secretary. It showed a balance of \$2,315.23 on hand.

The Secretary then read his annual report, as follows:

"During the past year the Society has held fifteen meetings, including a joint meeting with the National Association of Audubon Societies. One of the regular meetings was omitted because of conflict with the Annual Congress of the American Ornithologists' Union. The total attendance has been 564 (members, 206; visitors, 358); the average attendance, 38. The largest attendance at any one meeting was 81 members and visitors, and the smallest, 16. While the average attendance of members and visitors together has been less than during the previous year, it is gratifying to note that there has been a decided increase in the attendance of members, the average being nearly 14.

Ten new members have been elected; four have resigned; and one, Mr. Isaac J. Greenwood, has been lost by death.

The membership list now stands: Resident, 106; Corresponding, 27; Honorary, 2; total, 135.

Twenty-one papers have been presented before the Society, including fourteen on ornithology, and others on mammalogy, ichthyology, ethnology, etc. Sixteen of the papers were illustrated with lantern slides, and three with specimens.

No publication has been issued by the Society during the past year. A new *Abstract of Proceedings*, however, is being prepared for the press.

Exchange publications to the number of 67 parts and 2 volumes have been added to the Library.

The Society then elected the following officers for the ensuing year:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, Clinton G. Abbott.

TREASURER, Lewis B. Woodruff.

SECRETARY, Ludlow Griscom.

The appointment of the standing committees was postponed till the next meeting.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 11, 1913.

THIS is the twenty-fifth in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date above indicated. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 26, 1912.—The President in the chair. Fourteen members and nineteen visitors present.

Dr. C. W. B. Wheeler of New York City was elected a resident member of the Society.

The chair appointed standing committees for the ensuing year as follows:

Publication, Messrs. Harper, Cleaves, Griscom, and Nichols.

Finance, Messrs. Woodruff, Granger, and Nichols.

Nominations, Messrs. Harper, Franklin, and Nichols.

Papers and Lectures, Messrs. Abbott, Cleaves, Grant, and Griscom.

Bird-banding, Messrs. Grant, Abbott, Cleaves, Nichols, and Weber.

Messrs. Granger and Nichols were also appointed as a committee to audit the Treasurer's annual report.

Mr. Harper read a communication from Mr. T. Gilbert Pearson, reporting on the Egret Fund of the National Associa-

tion of Audubon Societies to which the Society had contributed last year.

Under observations, Mr. George E. Hix reported a Towhee (*Pipilo e. erythrophthalmus*) in Central Park on March 22. Mr. Nichols reported the unusual numbers of Purple Grackles (*Quiscalus q. quiscula*) this spring, and the comparative scarcity of Robins (*Planesticus m. migratorius*), Bluebirds (*Sialia s. sialis*), and Redwings (*Agelaius p. phæniceus*) at Englewood, N. J. Other members (the Chair, Mr. Harper, and Mr. Cleaves) confirmed this observation; and remarks followed on the unusual lateness of the spring. Mr. Cleaves reported for Staten Island as follows: Red-winged Blackbird, February 22; five Bluebirds, February 25; eight Robins, March 10; seven Purple Grackles, March 17. Mr. Weber reported the arrival of the tardy Robins that morning, as he had seen a large flock near Leonia, N. J. Mr. Griscom reported a Savannah Sparrow (*Passerculus sandwichensis savanna*), March 16, near Leonia, N. J.

The first paper of the evening was given by Mr. Norman Taylor of the Brooklyn Museum, and was entitled "The Effects of Temperature on Our Local Flora." Some interesting correspondences were pointed out between the distribution of plants and the duration of time between the last killing frost in the spring and the first killing frost in the fall. A few colored lantern slides of northern flora were exhibited.

Mr. Robert Cushman Murphy read the second paper of the evening, entitled "A Historical Review of Bird Migration." The speaker gave an excellent presentation of the phenomena of migration, and the various theories for them which have been advanced.

Discussion followed by Messrs. Nichols, Grant, Cleaves, Griscom, and the Chair.

April 9, 1912.—The President in the chair. Thirty-seven members and visitors present.

Mr. G. Kingsley Noble was elected a resident member of the Society.

Mr. Nichols reported for the auditing committee that the Treasurer's report had been examined and found correct. His report was accepted by the Society.

Mr. Harper reported for Mr. T. Gilbert Pearson that the National Association of Audubon Societies was in need of contributions to its Egret Fund, and moved that the Linnæan Society appropriate \$50 for that purpose. The motion was seconded and unanimously carried.

Mr. Cleaves reported the following birds: Tree Swallow (*Iridoprocne bicolor*), March 31; Kingfisher (*Ceryle alcyon*), Phœbe (*Sayornis phæbe*), Fish Hawk (*Pandion haliaëtus carolinensis*), and Chipping Sparrow (*Spizella p. passerina*), April 7—all observed at Prince's Bay, Staten Island.

Mr. Nichols reported the following Amphibia: American Toad (*Bufo americanus*), one heard and captured at Hackensack, N. J., April 6; Swamp Tree Frog (*Chorophilus nigrilus* subsp.), heard at Hackensack, N. J., April 6; Wood Frog (*Rana sylvatica*), heard at Oradel, N. J., April 6; Pickering's Hyla (*Hyla pickeringi*), very noisy at various points in northern New Jersey, April 6, as for a week or two previous.

Mr. Franklin reported that Dr. Frank Overton had captured several Spadefoot Toads (*Scaphiopus holbrookii*) at Patchogue, L. I.

Mr. Murphy reported the Carolina Wren (*Thryothorus l. ludovicianus*) from Fort Lee, N. J., April 7, and Mr. Nichols remarked that this species was abundant along the Palisades opposite Englewood in December, 1911, and before the cold weather.

The first paper of the evening was by Dr. C. H. Townsend, Director of the N. Y. Aquarium, and was entitled "The Rediscovery of the North American Elephant Seal" (*Macrorhinus angustirostris*). A short discussion followed.

The second paper, by Mr. Clinton G. Abbott, was entitled "An Exhibition of Lantern Slides and Photographs of Birds in Action."

April 23, 1912.—The Vice-President in the chair. Thirteen members and twenty visitors present.

Mr. Noble reported a Veery (*Hylocichla f. fuscescens*) at Yonkers, N. Y., on April 12.

Mr. Franklin recorded the capture of the Marbled Salamander (*Ambystoma opacum*) on Long Island, April 14. He

also mentioned finding a Leopard Frog (*Rana pipiens*) with three feet bitten off. Mr. Harper read a letter from Dr. Overton giving details of the capture and the habits of the Spadefoot Toad (*Scaphiopus holbrookii*) at Patchogue, L. I.

Mr. Nichols reported a Sparrow Hawk (*Falco s. sparverius*) flying around the Museum that afternoon. Messrs. Murphy and Franklin said they had seen this species around the Brooklyn Museum.

Mr. Weber reported having received a Gannet (*Sula bassana*) captured in Virginia on April 9. He had also received another captured alive with a fish weighing a pound in its stomach. Mr. Weber also gave a few brief remarks on the peculiar anatomy of the Gannet.

Mr. Grant, on behalf of the bird-banding committee, reported that the delay in the arrival of the bands from England was due very possibly to the loss of the *Titanic*, but that a new lot was being sent as rapidly as possible.

Mr. Griscom reported a Migrant Shrike (*Lanius ludovicianus migrans*) near Leonia, N. J., on April 20, and a Yellow Warbler (*Dendroica æ. æstiva*) in Central Park on April 19, the earliest record of its arrival.

Mr. Abbott reported that on April 21 he had found two nests of the Carolina Wren (*Thryothorus l. ludovicianus*) near Englewood, N. J., within a quarter of a mile of each other—one in an outhouse, and the other in a hollow tree. No eggs had been laid as yet.

The paper of the evening was by Mr. W. W. Grant, and was entitled "An Ascent of the Volcán Irazú, and Life in Central America." The paper dealt with a flying visit to Jamaica, the Panama Canal Zone, and more extended travels in Costa Rica. Colored lantern slides were shown, chiefly of the scenery and places of interest visited.

May 14, 1912.—The President in the chair. Six members and twenty-seven visitors present.

A letter was read from Mr. George Welch of Port Townsend, Wash., reporting the nesting of the Western Mockingbird (*Mimus polyglottos leucopterus*) there, this being the first state record.

The Chair announced that an old member, Dr. C. B. McQuesten, had died, leaving a bequest of \$50 to the Society in his will.

Mr. J. M. Johnson reported the Tufted Titmouse (*Bæolophus bicolor*) and the Cardinal (*Cardinalis c. cardinalis*) in northern New Jersey on May 5. He also reported the Bay-breasted Warbler (*Dendroica castanea*) in Prospect Park on May 14; Wilson's Warbler (*Wilsonia p. pusilla*) was also common that day.

Mr. Murphy read a list of 148 species which had been seen in Prospect Park, Brooklyn, by various observers during the last decade. The Chair observed that he had seen a Brown Thrasher (*Toxostoma rufum*) and a Veery (*Hylocichla f. fuscescens*) in City Hall Park that morning.

Mr. Abbott recorded that Mr. Cleaves had found a nest of the Killdeer (*Oxyechus vociferus*) on Staten Island.

Mr. Griscom reported that Mr. Grant, Mr. Nichols, Mr. Lensen, and himself had spent a 15-hour day around Englewood, N. J., on May 12. Although the weather conditions were unfavorable, they succeeded in identifying 90 species of birds. A Lesser Scaup Duck (*Marila affinis*) on Overpeck Creek and a pair of Rough-winged Swallows (*Stelgidopteryx serripennis*) were the birds most worthy of note.

Mr. Charles H. Rogers reported that Mr. W. DeW. Miller and he had been all day in the field on the same date around Plainfield, N. J., and had observed 79 species of birds, of which the Prairie Warbler (*Dendroica discolor*) was noteworthy, this being a very rare species in that locality. Mr. Griscom then remarked that the total number of species seen by various observers around New York on May 12 amounted to 107.

Mr. Abbott, on behalf of the bird-banding committee, reported that the bands had not been lost on the *Titanic*, but had arrived, and were admitted duty-free after some trouble with the customs.

Mr. Charles H. Rogers then presented the paper of the evening, entitled "Five Weeks at Juan Viñas, Costa Rica." The speaker told in a very interesting way of the bird life in the

different types of country in this region, and his paper was illustrated with lantern slides of the scenery and the commoner birds. Specimens of the characteristic species were also exhibited.

May 28, 1912.—The President in the chair. Nine members and visitors present.

As there was no paper for the evening, the meeting first turned to an informal discussion of plans for the ensuing season. It was

Resolved: That in the future, once a month, a formal paper shall be dispensed with, its place being taken by reports on the migrations and discussion among the members of the problems of local interest. It is hoped that by this means the members may come into closer association with one another, and that work of real importance may thus be accomplished.

Reports on the spring migration were next given by the members and visitors. The consensus of opinion was that the migration was an exceptional one in that the early spring arrivals were much later than usual, while the species arriving in late April and May were several days ahead of their customary schedule. The following species, noteworthy because of their rarity, were reported at the meeting:

Knot (*Tringa canutus*), one observed by Mr. J. M. Johnson and Mr. Ludlow Griscom at Oak Island Beach, L. I., May 26.

Hudsonian Curlew (*Numenius hudsonicus*), two seen by Mr. George E. Hix at Long Beach, L. I., May 22.

Olive-sided Flycatcher (*Nuttallornis borealis*), one observed by Messrs. Grant, Nichols, and Griscom at Englewood, N. J., May 12.

Alder Flycatcher (*Empidonax trailli alnorum*), one at the same place and date.

Yellow-bellied Flycatcher (*E. flaviventris*), one observed by Mr. J. M. Johnson at Matawan, N. J., May 11.

White-crowned Sparrow (*Zonotrichia l. leucophrys*), reported by Mr. Johnson from Matawan, N. J., May 11; from Saddle River, N. J., May 19; and from Central Park, May 10.

Lincoln's Sparrow (*Melospiza l. lincolni*), seen by various observers in Central Park, May 11-15.

Tennessee Warbler (*Vermivora peregrina*), two seen by Miss Anna A. Crolius, Central Park, May 12.

Cape May Warbler (*Dendroica tigrina*), two reported from Central Park by Dr. William H. Wiegmann on May 20.

Of special interest was the occurrence of the Brown Pelican (*Pelecanus occidentalis*) on Long Island and the Connecticut Warbler (*Oporornis agilis*) in Central Park. Messrs. Johnson and Griscom observed a Brown Pelican on May 26 at Oak Island Beach for over an hour under favorable circumstances. This is the second record for Long Island. The Connecticut Warbler was first seen in Central Park on May 15, being observed at a distance of 15 feet by Messrs. W. DeW. Miller, C. H. Rogers, S. V. LaDow, L. Griscom, and Dr. W. H. Wiegmann. It remained in the Park six days. This species is very rare in spring east of the Alleghenies.

The meeting next discussed the local status of certain species of birds. The curious distribution of the Prairie Warbler (*Dendroica discolor*) was commented upon by several. This species breeds commonly in the pine barrens of New Jersey and on Long Island. It is a rare migrant in all the intervening section, having been recorded only four times near Plainfield, and once on Staten Island, while it is very seldom seen on the Palisades. Oddly enough, however, it is a common migrant in Central Park, occurring from April 25 to June 1.

Several members reported the Cape May Warbler as having increased in numbers in the vicinity of New York City. It has been observed annually in Central Park during the last five years in both spring and fall, while it has been reported from localities near the city as well. It was thought possible, however, that part of the supposed increase might be due to the larger number of observers on the watch for it.

October 8, 1912.—The President in the chair. Nine members present.

The Secretary read a letter from the Academy of Natural Sciences of Philadelphia, thanking the Linnæan Society for its congratulations and expressions of good will on the occasion of the former society's centenary anniversary.

As no formal paper was on the program, the members discussed their summer work and the various questions of interest

that had arisen from their observations. Mr. Woodruff reported a Carolina Wren (*Thryothorus l. ludovicianus*) around his house at Bronxville, N. Y., last summer. This was the first time he had observed this species there. Its local status was next discussed by several members. Just at present, and in the last five years, the Carolina Wren has been undoubtedly increasing around New York as well as spreading further north. It was suggested that the number of Carolina Wrens around New York seems to fluctuate greatly, at one period of years the species being very common, while in succeeding years it becomes quite rare and local.

Mr. Davis reported the second capture of the Corn Snake (*Coluber guttatus*) in New Jersey. He had found a fine specimen, over 40 inches long, last summer near Lakehurst. He also recorded the capture of a Star-nosed Mole (*Condylura cristata*) near South Lakewood. This record is of importance in that it furnishes additional evidence that the region around South Lakewood should not be included in the true "pine barren" area of New Jersey, as has been done in the faunal maps so far.

Mr. Rogers reported the unusual scarcity of roadside birds, such as the several Sparrows, Myrtle Warblers (*Dendroica coronata*), and Bluebirds (*Sialia s. sialis*), in the White Mountain region of New Hampshire in September. It was probably due to the cold spring and summer.

Dr. Dwight reported Black Flies (*Simulium molestum*) unusually abundant in the north woods, although the summer was cold and rainy. Previously, when this fly had been present in greater numbers than usual, it was always an exceptionally warm summer, but this season, the coldest he had known in 22 years, the flies were the most abundant.

Mr. Griscom reported that the past summer in western Europe had been one of the coldest and rainiest for centuries. The effect on the bird life as observed by him in Switzerland was very interesting. The fall migration was at least ten days earlier than in previous seasons, while, on the other hand, many of the summer residents remained much later than usual. It was suggested that this might have been due to the

difficulty in raising a brood and the delay caused by the inclement weather. Moreover, Mr. Griscom reported seeing the Alpine Swift (*Apus m. melba*) and the Alpine Chough (*Pyrrhocorax graculus*), a member of the family Corvidæ, two birds which he had previously never observed below 8,000 ft., at very much lower altitudes. He had also seen a Hooded Crow (*Corvus c. cornix*), a summer resident of northern and eastern Europe, in western Switzerland in August. This species had been recorded only some half dozen times from Switzerland in summer, and its presence might have been due to the cold weather.

Mr. Cleaves spoke of a Sora Rail (*Porzana carolina*) which had been found swimming in an inlet on Staten Island, with a broken wing. The nearest suitable locality for a rail was half a mile away on the Jersey mainland, so that it must have swum that distance across the bay.

Mr. Nichols recorded a flight of Stilt Sandpipers (*Micro-palama himantopus*) at Mastic, L. I., on August 12. There were at least 200. He also spoke of having seen Willets (*Catoptrophorus s. semipalmatus*) more often than usual, and according to tradition they flew in from the west, against the trend of flight of the other Shore Birds. Mr. Nichols also brought up the status of the Semipalmated Sandpiper (*Ereunetes pusillus*) on our coasts. Last spring especially, he had been surprised to find that it outnumbered the Least Sandpiper (*Pisobia minutilla*) three to one in the marshes, and he had even found it in a wet meadow near Englewood, N. J. The field marks of this species were next discussed by members. There are several really excellent points by which it can be distinguished from the Least Sandpiper, notably the grayer and lighter color of the back, the purer white stripe over the eye, the bill, which is proportionately much wider at the base, and by the black legs. Lastly, the call notes are different. Mr. Nichols also said that last summer he had collected Semipalmated Sandpipers with noticeably longer bills, and had at first supposed they were Western Sandpipers (*E. mauri*), but when sexed, they were found to be females. Dr. Dwight remarked that the bills of both species varied greatly, the

female Semipalmated and the male Western Sandpipers having bills nearly equal in length, but that there was a noticeable difference in the bills of the same sex. It was thought that the reported abundance of the Western Sandpiper on Long Island in fall might be due in part carelessness in sexing.

October 22, 1912.—The Vice-President in the chair. Thirty-five members and visitors present.

Mr. A. H. Pratt was elected to resident membership.

Mr. Weber recorded the capture of a Mourning Warbler (*Oporornis philadelphia*) near Leonia, N. J., on August 28. He also reported the Worm-eating Warbler (*Helmitheros vermivorus*) very common this fall from August 4 to 13. On the 8th of August six were seen. He also said that in recent years he had found the Connecticut Warbler (*Oporornis agilis*) regularly every fall, his dates ranging from September 9 to October 5. Several members then discussed the habits of this species. Mr. Weber had found it chiefly in bayberries, Mr. Woodruff in huckleberry thickets, and Mr. Helme in cedars and dense brush. All agreed that the bird flushed at the last minute, and would then settle on some perch, remaining motionless for a long time, thus often escaping detection.

Mr. Helme recorded the capture of the Arkansas Kingbird (*Tyrannus verticalis*) at Miller Place, Long Island, September 6. This is the first record of this species for Long Island.

Several members spoke of the decrease of the Carolina Wren (*Thryothorus ludovicianus*) this fall around the city. In recent years it has been quite common, but this fall only a few individuals have been noted. Mr. Helme had seen only one near Miller Place, L. I.

The paper of the evening, by Mr. John Treadwell Nichols, was entitled "A Naturalist in Cuban Waters." Mr. Nichols gave an account of a recent fish-collecting trip to Cuba, in the course of which he discovered two species new to science. He also gave a brief synopsis of the bird life observed, and his paper was illustrated with colored lantern slides of the birds, fishes, and scenery.

November 12, 1912.—The Treasurer in the chair. Six members and three visitors present.

The following persons were elected to resident membership: Dr. Frank Overton, of Patchogue, L. I.; Mr. R. W. Deckert, of New York, and Mr. Nicholas F. Lenssen, of Englewood, N. J.

As there was no business and no paper for the evening, an informal discussion took place. Mr. Wm. T. Davis showed a live specimen of a Tree-toad (*Hyla evittata*) captured near Washington, D. C., and pointed out the difference between *Hyla evittata* and *H. cinerea*. He also told of collecting in Florida.

Mr. Franklin showed some live Red Salamanders (*Spelerpes ruber*) and a large Tree-frog from tropical America.

Dr. Wm. H. Wiegmann recorded several fish from Long Island, among others the File-fish (*Monacanthus hispidus*) and Bur-fish (*Chilomycterus schæpfi*), and showed some preserved specimens of them.

November 26, 1912.—The President in the chair. Fifteen members and twelve visitors present.

Mr. George W. Hubbell and Mr. Daniel F. Kellogg were elected to resident membership.

After much discussion the following resolutions were proposed by Mr. Grant and unanimously adopted:

Resolved: That the Linnæan Society have an annual dinner, and be it further

Resolved: That the first annual dinner take place in December, the date to be determined by a committee, and be it further

Resolved: That Mr. Frank M. Chapman be a guest of honor at the first annual dinner and receive a medal in recognition of his work in popularizing the study of ornithology, and be it further

Resolved: That the dinner committee be appointed to arrange matters and to procure a medal.

Mr. Thurston reported a Saw-whet Owl (*Cryptoglaux a. acadica*) from Belmont Park, L. I., on October 24. He also spoke of an unusual flight of White-crowned Sparrows (*Zonotrichia l. leucophrys*) in early October at Floral Park, L. I.

Mr. Griscom reported the Seaside (*Passerherbulus m. maritimus*) and Sharp-tailed Sparrows (*P. caudacutus*) at Long Beach on November 5, and stated that during the last three years he had found them lingering much later than the text-books had led him to suspect. He also recorded an Acadian

Sharp-tailed Sparrow (*P. nelsoni subvirgatus*) consorting with the other two species on November 5, and mentioned some of the differences in plumage by which it might be distinguished in the field at close range from the Sharp-tailed Sparrow.

Mr. Weber reported big flights of Grackles (*Quiscalus*) during recent mornings at Palisades Park, N. J. They were observed about half an hour after sunrise, invariably flying in a northerly direction.

Mr. Cleaves recorded 26 species of birds observed by him on or from the grounds of the Staten Island Museum. The Loon (*Gavia immer*) and the Common Tern (*Sterna hirundo*) were noteworthy records, while on the 25th a flock of Canada Geese (*Branta c. canadensis*) had passed overhead, flying south.

Mr. Nichols spoke of a trip which he had made on a fishing steamer last week to the edge of the Continental Shelf looking for Tile Fish (*Lopholatilus chamaeleonticeps*). Several interesting deep-sea fish were found: a Red Sea Robin (*Peristedeon miniatum*); a rare Shark (*Catulus retifer*), and a species of *Zenopsis* (*Zenopsis ocellatus*). He remarked upon the change of the fish fauna with increasing depth. Two species of Flounders, *Paralichthys oblongus* and *Limanda ferruginea*, which had not previously been recorded within 50 miles of New York City, were found in numbers.

The first paper of the evening was by Mr. Howard H. Cleaves, and was entitled "Hunting in Nova Scotia, with Special Reference to the Bird Life." The speaker gave a most interesting account of a trip to southern Nova Scotia and a visit to Seal Island, where Black Guillemots (*Cephus grylle*), Herring Gulls (*Larus argentatus*), and Eider Ducks (*Somateria dresseri*) were studied. The scenery, the inhabitants, and the characteristic bird life were all described, and the paper was illustrated with a splendid series of colored lantern slides, those of a breeding colony of the Great Black-backed Gull (*Larus marinus*) being especially noteworthy.

The second paper of the evening, entitled "Notes on the Birds of Northern Ontario," by Mr. Clinton G. Abbott, was postponed owing to the lateness of the hour.

December 10, 1912.—The President in the chair. Twenty-one members and eight visitors present.

Mr. Rogers reported for Mr. Miller a Pine Warbler (*Dendroica vigorsii*) at Plainfield, N. J., on December 8.

Mr. Griscom recorded a Gannet (*Sula bassana*) at Long Beach, L. I., on December 8.

Mr. Grant reported a Fish Hawk (*Pandion haliaëtus carolinensis*) on the Hudson near Englewood, N. J., on December 1.

Mr. Weber reported the Ipswich Sparrow (*Passerculus princeps*) at Long Beach on September 28, the earliest fall date for Long Island. Mr. Griscom mentioned that he had seen one on October 13, his earliest date.

Mr. Helme reported an Arkansas Kingbird (*Tyrannus verticalis*) on October 30 at Miller Place, L. I., possibly one of those he saw last September. Dr. Dwight remarked that one had been taken in the vicinity of Boston this fall. Mr. Helme also reported a Purple Grackle (*Quiscalus q. quiscula*) observed recently at Miller Place. Discussion of the Grackles and their status in this neighborhood ensued. Mr. Rogers reported two Grackles near Plainfield on December 1.

The first paper of the evening, by Dr. F. A. Lucas, was entitled "The Structure of Birds in Relation to their Habits." The speaker pointed out most entertainingly how the structure of birds was modified by their habits and vice-versa. Dr. Lucas also spoke of the probable ancestry of some of the existing types of birds as illustrated by extinct species, notably *Hesperornis*. Discussion followed.

The second paper of the evening, "Collecting Experiences in the Middle West," was presented by Mr. Dwight Franklin, who told of his search for the Bowfin (*Amia calva*) and the Shovel-nosed Sturgeon (*Scaphirhynchus platyrhynchus*) in Wisconsin last summer. The breeding habits of these interesting fishes were illustrated with photographs, some of which were autochromes. Among other things a fine series of autochrome photographs of the Least Bittern (*Ixobrychus exilis*) were shown, a species which was breeding in the same lake as the Bowfin. Specimens of some of the animals and fishes collected were exhibited.

December 26, 1912.—The President in the chair. Eighteen members and twelve visitors present.

Mr. J. M. Johnson was elected to resident membership in the Society.

The first annual dinner of the Society was held at the Hotel Endicott on December 17. Fifty-eight members and visitors were present. Mr. Frank M. Chapman was the guest of honor of the Society, and was presented with the Linnæan Medal for his distinguished success in popularizing the subject of ornithology. Among the guests who attended were Professor H. F. Osborn, Dr. F. A. Lucas, Dr. A. K. Fisher, Dr. Spencer Trotter, and Messrs. John Burroughs, John H. Sage, Ernest Thompson Seton, and George Bird Grinnell.

Mr. Grant reported that around Englewood on December 22 he had observed a total of 22 species of birds, including 75 Red-winged Blackbirds (*Agelaius p. phæniceus*), 8 Rusty Blackbirds (*Euphagus carolinus*) and 2 Fox Sparrows (*Passerella i. iliaca*). Mr. Nichols commented upon the unusual abundance of Redwings at this late date. Fully 50 per cent of the birds seen were young males. He had seen 30 this morning.

Mr. Griscom reported an interesting day with Messrs. Harper and LaDow at Long Beach on December 22. Twenty-six species of birds were seen, including a Gannet (*Sula bassana*), 14 Ipswich Sparrows (*Passerculus princeps*), 2 Sharp-tailed Sparrows (*Passerherbulus caudacutus*), 4 Seaside Sparrows (*P. m. maritimus*), a Fox Sparrow (*Passerella i. iliaca*), and a Robin (*Planesticus m. migratorius*). At Bronx Park with Mr. LaDow on December 14, he had seen 11 Black-crowned Night Herons (*Nycticorax nycticorax nævius*) and a flock of Grackles (*Quiscalus quiscula* subsp.). On December 15 with Mr. J. M. Johnson around Plainfield, N. J., he had seen 2 Rusty Blackbirds (*Euphagus carolinus*) and a Field Sparrow (*Spizella p. pusilla*).

Mr. Noble reported that Dr. Vietor had seen a pair of Wood Ducks (*Aix sponsa*) in Prospect Park on Christmas Day.

Mr. Rogers reported twenty-four species seen at Crosswicks, N. J., in less than three and a half hours on Christmas Day, including a fine male Yellow-bellied Sapsucker (*Sphyrapicus v. varius*) and a flock of 5 White-breasted Nuthatches (*Sitta c. carolinensis*). Numbers of birds were singing. A

Winter Wren (*Nannus h. hiemalis*) flew into his dining room during the afternoon.

Mr. Abbott reported a Barred Owl (*Strix v. varia*) at dusk at Broadway and 138th St. a couple of weeks ago.

The first paper of the evening, by Mr. Francis Harper, was entitled "A Fortnight in the Okefinokee." Mr. Harper had visited the swamp last spring, and told most graphically of the wonderful bird and animal life there. Bears (*Ursus floridanus*) are still common, and such birds as the Limpkin (*Aramus vociferus*), Sandhill Crane (*Grus mexicana*), Ivory-billed Woodpecker (*Campephilus principalis*), Pileated Woodpecker (*Phlæotomus p. pileatus*), and Swainson's Warbler (*Helinaia swainsoni*) are found there. Mr. Harper's paper was illustrated with many lantern slides, including a few autochromes.

Mr. Nichols presented the second paper of the evening, entitled "Notes on the Shore Birds." The Shore-bird life of Long Island was well described by the speaker, who supplemented his remarks on the habits, notes, and field marks of the various species with an excellent series of lantern slides, showing the birds feeding and flying.

January 14, 1913.—The President in the chair. Seventeen members and four visitors present.

Dr. A. A. Allen was elected a resident member of the Society.

After much discussion Mr. Abbott moved that a letter be sent to the Senators from New York State, expressing the Society's approval of the McLean Bill for the protection of migratory birds. The motion was carried.

At the request of the Chair, Mr. Woodruff reported on the financing of the annual dinner. A motion prevailed discharging the committee with thanks.

Practically the remainder of the evening was spent hearing a report from the Committee on Publications regarding the *Abstract* now in the press, and plans for the next *Abstract* were laid. It was resolved to issue a new *Abstract* as soon as possible, for the two years ending next March.

Mr. Grant moved that the Society issue migration blanks

to the members for the purpose of recording the arrival of the spring and fall migrants and publishing a report of the same in the *Abstract of Proceedings* of the Society. After much discussion this motion was carried, and Dr. Dwight and Mr. Rogers were appointed to prepare a suitable model for the blanks.

Mr. Cleaves spoke of his studies of migrating birds observed flying across the face of the moon at night during spring and fall. A very good idea of the vastness of these annual flights of the birds could be gained, he said, by watching the numbers moving in such a limited area in a few minutes.

Dr. Dwight reported a Dovekie (*Alle alle*) which had been found dead on a beach on the eastern end of Long Island on Christmas Day.

January 28, 1913.—The President in the chair. Fourteen members and twenty-seven visitors present.

Mr. Grant reported the European Goldfinch (*Carduelis carduelis*) at Englewood, N. J., on January 19 and 26. Discussion of the status of this introduced species around New York City followed. It has entirely disappeared from Central Park, where it was originally liberated, but appears regularly every winter around Englewood. It has not been observed during the summer for several years.

Mr. Rogers reported that Mr. Miller and he, along the Rahway River, between Rahway and Cranford, on January 26, had seen a Kingfisher (*Ceryle alcyon*), a flock of Grackles (*Quiscalus quiscula* subsp.), and a flock of 11 Field Sparrows (*Spizella p. pusilla*). Song Sparrows (*Melospiza m. melodia*) were singing, several flowers were in bloom, and insects and 31 Painted Turtles (*Chrysemys picta*) were observed. On January 19 on Staten Island he had observed Herring Gulls (*Larus argentatus*) dropping clams from a height onto the hard sand so as to break the shells and get at the food within.

The first speaker of the evening was Mr. Roy W. Miner, of the American Museum of Natural History, who presented a paper entitled "Sea Creatures of Our Shores." Mr. Miner spoke most entertainingly of the beautiful and curious animals of our coasts, especially with regard to their biological rela-

tionships. His paper was illustrated with beautifully colored lantern slides.

Mr. Robert S. Lemmon presented the second paper of the evening, entitled "Notes on the Fauna of Ecuador." With Mr. S. N. Rhoads, Mr. Lemmon had collected for several months in Ecuador, and he described graphically the various life zones and the characteristic bird and animal life of each. The tropical lowlands, the arid region of the high plateaus, and lastly the summits of the Andes themselves, were each found to have an almost totally distinct bird life. Photographs illustrating the scenery were exhibited.

February 11, 1913.—The President in the chair. Fourteen members and seventeen visitors present.

Upon motion by Mr. Griscom, the Society unanimously

Resolved: To send a circular letter to the Legislature of New York, expressing its disapproval of Senator O'Keefe's bill to revive spring shooting of wild fowl upon Long Island, now pending before that body.

Mr. Weber recorded a Flicker (*Colaptes auratus luteus*) at Long Beach, L. I., on January 1. Few other birds were noted.

Mr. Rogers reported that Mr. W. DeW. Miller and he had spent an interesting day at Scotch Plains, N. J., and vicinity on February 9. A Phoebe (*Sayornis phæbe*) and a Woodcock (*Philohela minor*) were observed.

Mr. Nichols spoke of a recent sea trip to Cuba and back. Very few winter birds were observed at sea on the way down. Herring Gulls (*Larus argentatus*) were not noticed south of Cape Hatteras. On the return voyage a Dovekie (*Alle alle*) was noted off the Jersey coast. Gannets (*Sula bassana*) were observed on both trips all the way up to New York Harbor in numbers, over 90 per cent being adults.

Mr. Cleaves told of his capturing an adult Great Black-backed Gull (*Larus marinus*) alive at Long Beach on February 2. The bird lived for about two weeks in captivity.

Dr. Louis B. Bishop recorded the following notes from Connecticut:

Gadwall (*Chaulelasmus streperus*), 2 juvenile males, Quinnipiac Marshes, North Haven, October 26, 1912.

Canvasback (*Marila valisineria*), a pair, December 27, 1912, West Haven.

Bald Eagle (*Haliaeetus l. leucocephalus*), one young bird at Lyme, November 28, 1912.

American Merganser (*Mergus americanus*), one captured with a fish over 8 inches long in its stomach.

Mr. A. C. Bent presented the paper of the evening, entitled "Among the Eskimos of Labrador." The speaker described a trip last summer in a small power boat along the coast of Labrador almost to the northernmost cape. The scenery, the difficulties of navigation owing to bad weather and ice, the fisher-folk, and the Eskimos were graphically described by Mr. Bent. In the northern part of Labrador the Eskimos still keep their primitive dress and speak little or no English. The Moravian missionaries alone bring them into contact with civilization, and largely through the efforts of these devoted men, the speaker had found them a pleasant, cheerful, and comparatively moral people. Many lantern slides illustrating the scenery, the Eskimos and their *igloos*, clothing, and *kayaks* were shown upon the screen.

February 25, 1913.—The President in the chair. Nineteen members and twelve visitors present.

The Secretary reported that he had received a good many replies to his circular letter to the Legislature, protesting against Senator O'Keefe's bill. Most of the answers were noncommittal, but a few Assemblymen had promised to vote against the bill.

Mr. Rogers reported for the committee on migration blanks. His report was discussed, and it was finally moved that the same committee be empowered to draw up a blank as best fitted the needs of the case. The motion was carried.

Mr. Griscom reported two interesting field trips around Englewood, N. J. On February 12, he had observed 35 species of birds, including American Merganser (*Mergus americanus*), 100; Mallard (*Anas platyrhynchos*), 1; Black Duck (*Anas rubripes*), 50; Bald Eagle (*Haliaeetus l. leucocephalus*), 3; Duck Hawk (*Falco peregrinus anatum*), 2; Kingfisher (*Ceryle alcyon*), 1; and Myrtle Warbler (*Dendroica*

coronata), 3. On February 23 Mr. LaDow and he had observed 27 species, including a flock of about 75 Red-winged Blackbirds (*Agelaius p. phæniceus*), which were undoubtedly spring migrants.

Mr. Nichols reported 2 Red-winged Blackbirds and also 6 European Goldfinches (*Carduelis carduelis*) on February 16 at Leonia, N. J.

Mr. Rogers reported that on February 23 Mr. W. DeW. Miller and he had visited Ash Swamp, southeast of Plainfield, N. J. A Saw-whet Owl (*Cryptoglaux a. acadica*), a Rusty Blackbird (*Euphagus carolinus*), about 200 Grackles (*Quiscalus q. quiscula*), and 10 Fox Sparrows (*Passerella i. iliaca*) were noteworthy. On February 16 they had visited the valleys of the Dead and Passaic Rivers, and had observed 21 Red-headed Woodpeckers (*Melanerpes erythrocephalus*).

Dr. Dwight reported a Grackle in Bronx Park on February 23.

Mr. Cleaves reported 12 Great Black-backed Gulls (*Larus marinus*) and 3 Flickers (*Colaptes auratus luteus*) at Great Kills, Staten Island, on February 23. Mr. Griscom remarked that since the cold weather early in February the Great Black-backed Gull had greatly increased in numbers around New York City.

Mr. Herbert K. Job presented the paper of the evening, which was entitled "Wild-fowl Studies in Manitoba." The speaker described a visit made last summer to a remote lake in Manitoba, where 12 species of wild fowl were breeding. His object was to secure as many young ducks as possible and bring them back to Connecticut, where they are now being reared; and it is hoped that the wild-fowl life of the state will be greatly increased by inducing the hand-reared birds to breed in suitable reservations. The habits of the various species, the finding of their nests, and the rearing of the young Ducks were all entertainingly described by Mr. Job, who illustrated his talk with many colored lantern slides.

Discussion followed the paper.

March 11, 1913.—Annual Meeting. The President in the chair. Fourteen members present.

The Secretary reported that he had received a few more letters from members of the Legislature in reply to his circular letter.

The Treasurer was then called upon for his annual report. It showed a balance on hand of \$2,489.73.

The Secretary next read his annual report, as follows:

"During the past year the Society has held the full quota of sixteen meetings. There has been a total attendance of 430 persons during the year, giving an average of about 27 persons per meeting. This is a smaller average than usual, but it should be borne in mind that during most of the year the first meeting of every month was a closed meeting with no paper, thus reducing the number of visitors to a comparatively small figure. It is very gratifying, however, to be able to report that there has been a great increase in the attendance of members. For the first time in the history of the Society for many years the total attendance of members has exceeded that of the visitors. The largest attendance at any one meeting was 41, and the smallest, 9. The largest attendance of members was 21, on December 10, equalling the best record of the Society.

Ten new members have been elected during the past year, two have resigned, and two, Edward S. Renwick and Eugene Smith, have been lost by death.

The membership list now stands: Resident, 110; Corresponding, 27; Honorary, 2; a total of 139.

Fifteen papers have been presented before the Society, namely: 6 on ornithology, 1 on mammalogy, 1 on herpetology, and 7 on general subjects. Twelve of the papers were illustrated with lantern slides, and several with specimens, photographs, and diagrams.

On February 8, the long-delayed *Abstract of Proceedings*, Nos. 20-23, was issued under one cover and distributed among the members and exchanges. The *Abstract* contained "Bird's-nesting in the Magdalen Islands" and "The Bird Colonies of Pamlico Sound," by P. B. Philipp, and "A List of the Fishes Known to Have Occurred within Fifty Miles of New York City," by John Treadwell Nichols.

Of special note was the first Annual Dinner of the Society, held at the Hotel Endicott on December 17. Fifty-eight members and guests attended. Mr. Frank M. Chapman was the guest of honor, and was presented with the Linnæan Medal for his distinguished success in the science of ornithology.

Owing to the continued non-appearance of any publication, the exchanges during the year consisted of only 40 parts. An entirely new and more complete list of exchanges is being drawn up by the Librarian, however, and it is hoped that in the future the Society, by publishing an *Abstract of Proceedings* annually, will find its Library increasing rapidly in value.

Mr. W. W. Grant next reported for the bird-banding committee. His report showed a balance on hand of \$119.84, but outstanding liabilities would give a deficit of five or ten dollars. The new bands were to arrive in the course of two or three weeks.

Mr. Grant then moved that the Society appropriate \$35 for the work of the bird-banding committee. The motion was unanimously carried.

The Society then elected the following officers for the ensuing year:

PRESIDENT, Jonathan Dwight, Jr.

VICE-PRESIDENT, Clinton G. Abbott.

TREASURER, Lewis B. Woodruff.

SECRETARY, Ludlow Griscom.

The Chair appointed standing committees for the ensuing year, as follows:

Publications, Messrs. Griscom, Nichols, and Rogers.

Papers and Lectures, Messrs. Grant, Abbott, and Griscom.

Nominations, Messrs. Abbott, Franklin, and Griscom.

Bird-banding, Messrs. Grant, Abbott, Cleaves, Nichols, and Weber.

Messrs. Granger and Nichols were appointed as a committee to audit the Treasurer's report.

Mr. Rogers reported for the committee on migration blanks that the blank was ready for the printer, and he passed around a sample. A lengthy discussion ensued, and it was finally resolved to print the blank as it stood.

Mr. Weber spoke of a colony of over 500 English Sparrows (*Passer d. domesticus*) that had been roosting in three elms near the 130th Street subway station all winter. It was a mystery to him why they choose such an exposed and noisy place. Some discussion of the roosting places of birds ensued. Mr. Cleaves spoke of finding Robins roosting on the ground.

Mr. Griscom reported 5 Night Herons (*Nycticorax nycticorax naevius*), 3 Grackles (*Quiscalus q. quiscula*), and 6 Fox Sparrows (*Passerella i. iliaca*) in Bronx Park on March 8.

Mr. Grant reported 10 Bluebirds (*Sialia s. sialis*) at Englewood, N. J., on March 9.

Mr. Cleaves recorded 3 male Red-winged Blackbirds (*Agelaius p. phæniceus*) on Staten Island on March 1, and 4 Bluebirds on March 7. He also spoke of a Holboell's Grebe (*Colymbus holbælli*) shot at Prince's Bay, Staten Island, a short time ago. He suspected that this species was not so rare there as supposed.

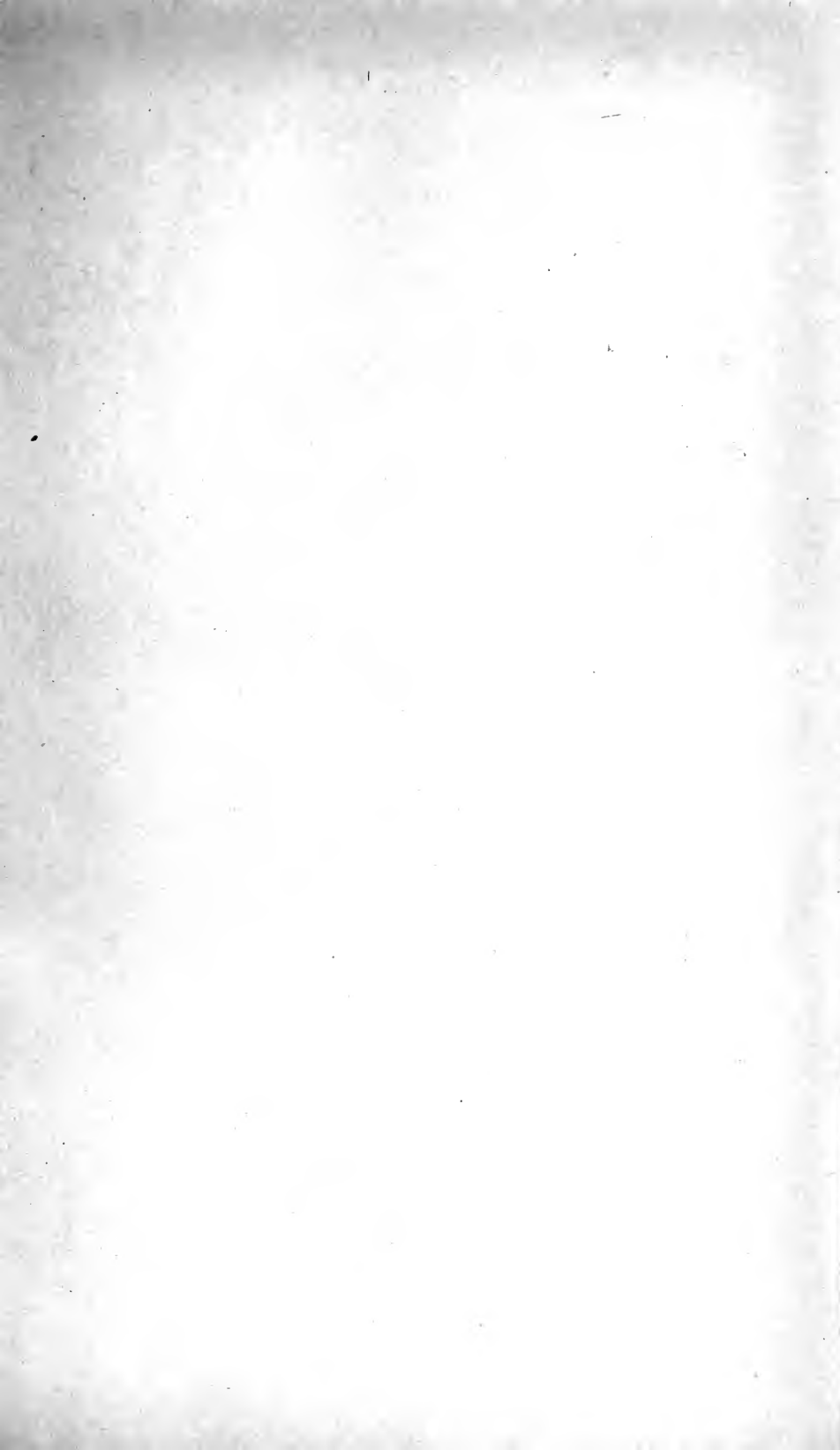


PLATE I.



FIG. 1.—RENWICK MARSH AND THE HEAD OF CAYUGA LAKE FROM WEST HILL DURING THE MARCH FLOODS.



FIG. 2.—THE SAME DURING THE MIDDLE OF MAY.

THE RED-WINGED BLACKBIRD: A STUDY IN THE ECOLOGY OF A CAT- TAIL MARSH.

BY ARTHUR A. ALLEN,
Zoölogical Laboratory, Cornell University.*

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* The author wishes to express his appreciation to Professor H. D. Reed for his helpful suggestions and criticisms of both the work and the manuscript; to Dr. A. H. Wright for similar help and encouragement; to Professor J. G. Needham for assistance in the determination of insects and for the privileges of the Biological Field Station; to Mr. J. T. Lloyd for his constant coöperation in the preparation of maps and gathering of field data; to Professor G. C. Embury for similar assistance; to Professor K. M. Wiegand for his criticism of that part of the manuscript pertaining to the plant associations; and to Mr. Francis Harper for his critical reading of the entire manuscript.

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INTRODUCTION.

Of the many problems in the scientific study of birds, none is more suggestive than that of local distribution. One walks through the open fields in the month of June, and finds there a concourse of birds that he knows will be found nowhere else. There are the Savannah, Vesper, and Grasshopper Sparrows, Bobolinks, and Meadowlarks, birds which are said to be typical of such an environment. Passing on to the overgrown borders of a wooded area, he finds Song Sparrows, Yellow Warblers, Redstarts, Red-eyed Vireos, and Catbirds—a different assemblage. Thus, in passing from one distinct type of environment to another, he passes from one distinct group of birds to another. The botanists have long recognized the importance of similar associations or societies of plants, and have done much toward determining their controlling factors. Environments have been intensively studied, and their meteorological and physiographic conditions determined. The various factors imposed by organic and chemical agencies have been investigated, and the resulting adaptations of species and individuals have been correlated. The whole has placed the botanist on terms of intimacy with the natural life processes of the objects which he studies—a state not yet attained by the zoologist. For the student of animal ecology there remains an almost virgin field. Especially is this true in the study of birds. Here much preliminary work has been done in the way of collecting data concerning distribution, migration, and variation. Outlines of the life histories of most of the birds have been formulated. In a few instances environments have been described with appended lists of bird inhabitants. This is valuable and necessary, but far from final. What has been done toward the correlation of these various factors? From almost any volume on birds one can very easily tabulate all of the known differences in structure between the Vesper, Song, and Swamp Sparrows. He can find described at some length the habitat or environment in which each is found. But where can he find set forth the factors which determine that one bird shall inhabit the open

fields, another the undergrowth, and a third the marshes? What is the exact nature of the environment in which each lives, and wherein are these environments dissimilar? What are the adaptations of each species to its peculiar habitat, and how has each become dependent upon it? Questions such as these demand an intimate knowledge, not only of every phase of the life history of each bird, but also of every condition that might be imposed by its surroundings. The nearer completeness can be approached in this knowledge, the more nearly perfect will be the understanding of the relations existing and the reasons for these relations. Investigations in this subject must of necessity become intensive rather than extensive. The known facts are yet too meager to admit of broad generalities or the comprehension of such diverse relations as exist in even a normally circumscribed habitat. For this reason, one environment has been selected for study, and efforts have been concentrated upon a single species.

The cat-tail marsh, which is here considered, is as peculiar and distinctive as any environment available for study. Great expanses of sedge, rush, and cat-tail conceal an assemblage of birds which are as interesting as they are little known—birds that are little known because of the difficulties in their study, that are seldom seen because of their secretive habits, yet withal, birds that are as unique in their adaptations, as varied in their structure and habits, as any other similar group. There are the Rails, the Coot, and the Gallinule constituting an ecological unit in themselves, the Marsh Wren, Swamp Sparrow, and Red-winged Blackbird another, the Least and American Bitterns, and the Pied-billed Grebe still others. All are strictly marsh birds which seem to find their optimum environment in the cat-tail marsh. With some of these birds, adaptation to a marsh life is very evident, but with others, it is quite obscure. The long legs of the Virginia Rail for wading, the long toes for grasping the floating debris and distributing the weight, the long bill for probing, the color, the compressed shape—like that of a flea—for slipping through the dense vegetation, are decided specializations for a life in this peculiar environment. The Swamp Sparrow and the Redwing, on the other hand, show no striking modifications,

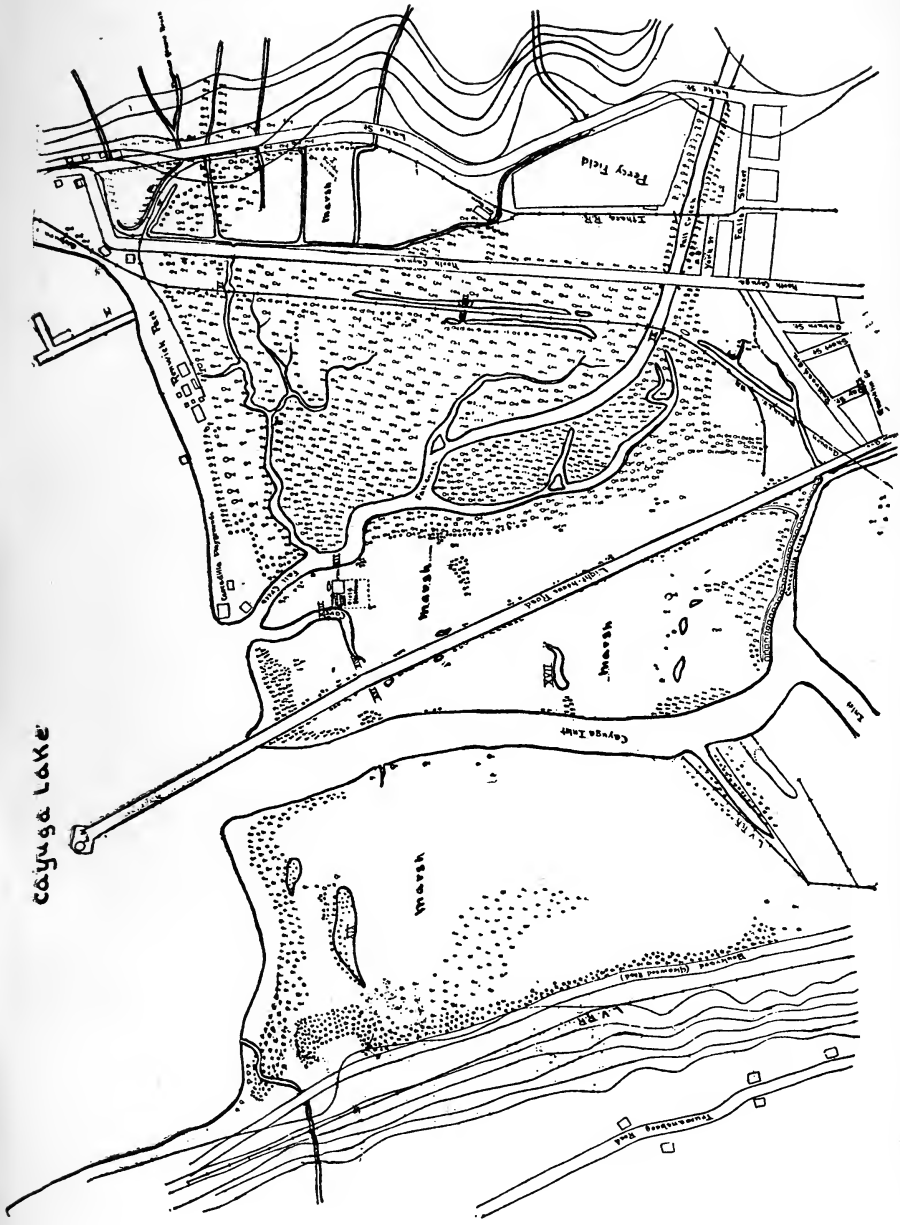
and their adaptations to this habitat are, at best, obscure. By an intensive study of these birds and the factors of the environment in which they live, it is hoped to gain some definite knowledge of the processes which are ever present, moulding their actions, shaping structure to habit and habit to structure—processes which have exterminated whole races of birds in the past and which even to-day are creating new ones.

PART I. THE ENVIRONMENT.

In beginning investigations of this kind, the first requisite is an intimate knowledge of the environment to be considered—a knowledge which cannot be gained by a few months of casual observation, but which requires years of intensive study. The discussion which follows is but a brief outline of the facts that ought to be known.

Geographically, the tract under consideration, known as Renwick Marsh,* is situated in the central part of New York State at the head of Cayuga Lake. Its latitude is $42^{\circ} 27'$ north, its longitude, $76^{\circ} 29'$ west. The marsh proper covers approximately 450 acres and is almost at lake level, its altitude being 383 feet. Concerning the ancient history of Cayuga Lake or the "Finger Lakes" in general, little need be said here. They represent preglacial river valleys, widened and deepened by the action of the ice, and left in most places with rather precipitous shores. As a result, the marsh is sheltered on the east and on the west by hills which rise about 400 feet in the first half mile, and reach an altitude of 1,400 or 1,500 feet within five miles. Physiographically, the marsh represents a delta formed by the streams that flow into the lake at its southern end—Cayuga Inlet, Fall Creek, and Cascadilla Creek. The marsh probably originated from the stagnation of the waters behind a bar that was formed across the head of the lake by the action of northerly winds and the lateral tributaries,

* Since the completion of this study, dredging operations for the Barge Canal, resulting in the deepening and widening of the Inlet, and the consequent filling on each side, have almost completely destroyed the marsh and replaced it with extensive, dry, sandy flats of little ornithological interest.



MAP OF RENWICK MARSH AND THE HEAD OF CAYUGA LAKE.

Williams and Pleasant Grove Brooks (Plate II). At present this bar rises a few feet above the lake on one side and the marsh on the other, and is covered with a growth of willows (*Salix nigra*) and alders (*Alnus incana*). The marsh continues southward up the Inlet Valley for a distance of two miles, as a series of more or less interrupted flood plains. Omitting from consideration the southerly two-thirds of this stretch, which has been greatly modified by human agencies, we shall confine our observations to that area north of the junction of Cascadilla Creek and the Inlet, about seven-tenths of a mile from the lake. From this point the Inlet continues almost due north through what is here recognized as the marsh proper. In former years each of these streams undoubtedly pursued a much more meandering course, as is evidenced by various long, narrow ponds and lagoons still in existence. The straightening and dredging of the Inlet for navigation have doubtless modified the marsh to a great extent. The change is most evident at present in that part west of the Inlet. Into this portion flow several small tributaries from the hill on the west. Before the banks of the Inlet were thrown up at the time of dredging, these tributaries probably had well-worn channels by which they made their way to the Inlet. The banks formed by the dredge then dammed the channels, and forced the water to spread over the marsh before finding an outlet. Consequently a grove of elm and ash, which had established itself over a large portion of the western border, became too greatly inundated and was gradually drowned. All that remain of these woods to-day are a few dead trees still standing, and numerous fallen trunks. It has been largely replaced by a growth of cat-tail, a reversion of the process which is taking place elsewhere in the marsh, where the trees are crowding upon the cat-tails.

Fall Creek, entering from the east, north of Cascadilla Creek, flows in a northwesterly direction to the lake. Its delta has been built up considerably higher than the rest of the marsh, and is now covered with a growth of large elms, maples, and sycamores. Discussion of the various meanders of this stream and of the radical changes in its course, which

have taken place even in recent years, will be omitted. All of the lagoons and coves which transect the woods (Plate II) are former channels of this stream. By the building of a road (North Cayuga Street) and the consequent damming of lateral tributaries from the hill toward the east, processes like those described for the western part of the marsh have been at work, resulting similarly in dead trees and patches of open marsh.

The marsh, according to Miller's criterion (1899), evidently belongs to the Transition Zone, with a stronger admixture of the southern than of the northern elements. Of the 22 birds listed by him as finding the northern limit of their breeding range in the Transition Zone, 15 have been found breeding in or about the marsh:

<i>Colinus virginianus</i>		Bob-white
<i>Bonasa umbellus umbellus</i>		Ruffed Grouse
<i>Zenaidura macroura carolinensis</i>		Mourning Dove
<i>Coccyzus americanus</i>		Yellow-billed Cuckoo
<i>Empidonax minimus</i>		Least Flycatcher
<i>Icterus galbula</i>		Baltimore Oriole
<i>Pipilo erythrophthalmus</i>	} on the } adjacent } dry hills	Towhee
<i>Ammodramus savanna-</i>		
<i>rum australis</i>		
<i>Passerina cyanea</i>		Grasshopper Sparrow
<i>Stelgidopteryx serripennis</i>		Indigo Bunting
<i>Dendroica aestiva</i>		Rough-winged Swallow
<i>Telmatodytes palustris</i>		Yellow Warbler
		Long-billed Marsh Wren
<i>Dumetella carolinensis</i>		Catbird
<i>Hylocichla mustelina</i>		Wood Thrush
<i>Sialia sialis</i>		Bluebird

Of the 12 northern birds finding the southern limit of their breeding range in the Transition Zone, but four have been found nesting in the marsh:

<i>Podilymbus podiceps</i>	Pied-billed Grebe
<i>Empidonax trailii alnorum</i>	Alder Flycatcher
<i>Penthestes atricapillus</i>	Chickadee
<i>Hylocichla fuscescens</i>	Veery

Of the plants listed, too many are from the uplands to admit of a significant comparison.

Of the mammals given, five of the eight of Transitional occurrence are found here:

<i>Sylvilagus floridanus mearnsi</i> Allen	Cottontail
<i>Sciuropterus volans volans</i> (Linn.)	Southern Flying Squirrel
<i>Sciurus hudsonicus loquax</i> Bangs	Southeastern Red Squirrel
<i>Peromyscus leucopus noveboracensis</i> (Fischer)	Deer Mouse
<i>Eptesicus fuscus fuscus</i> (Beauvois)	Brown Bat

Two of the three having northern tendencies have been found:

<i>Tamias striatus lysteri</i> (Richardson)	Northeastern Chipmunk
<i>Mustela cicognanii cicognanii</i> (Bonaparte)	Small Brown Weasel

The Austral Zone is represented by only one mammal, *Pipistrellus subflavus*, and by one bird, *Icteria virens*, which is found in the near vicinity. Of the Canadian mammals and birds, none are known to breed within this area.

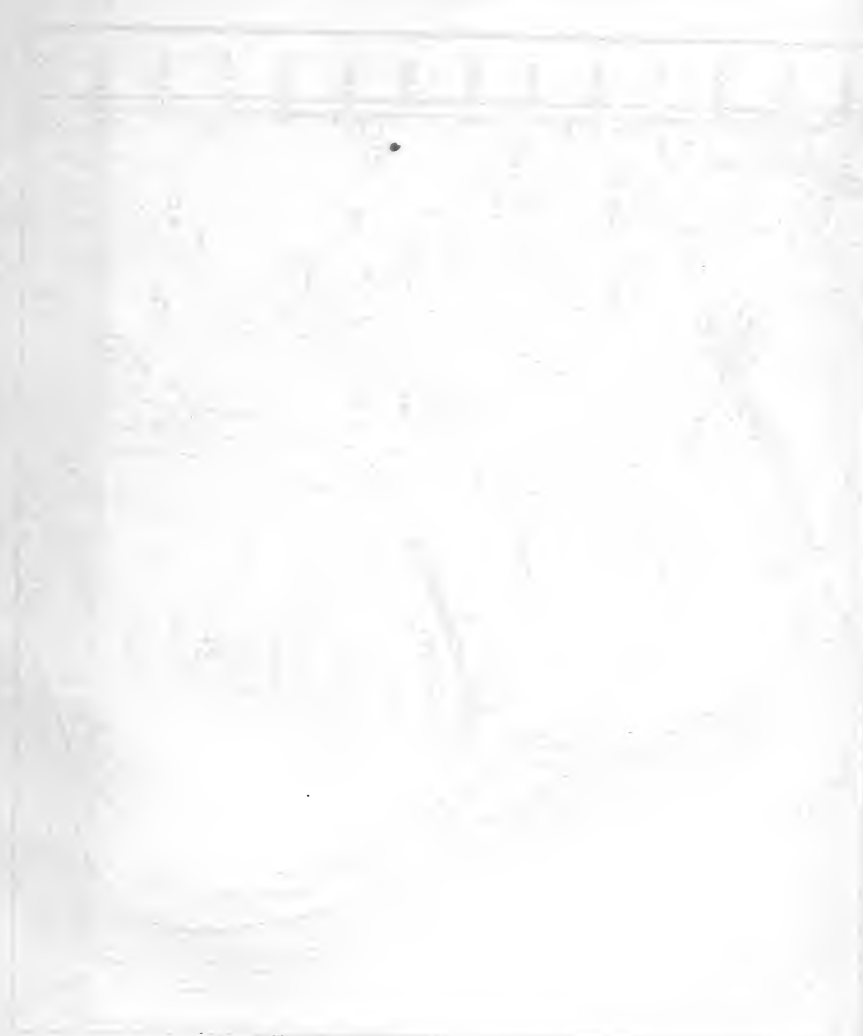
In this connection it was deemed advisable to determine the exact temperature conditions of the marsh. Accordingly, a proper shelter was provided, and a recording thermograph and hygograph were installed. The "kiosk" was constructed in such a way as to admit of the free passage of air and at the same time to afford protection from the wind and the direct rays of the sun. Each week, when the clocks of the instruments were wound, the records were checked by means of a maximum-minimum thermometer and a whirling hygrometer. By applying Merriam's (1909) laws of temperature control, the sum of the mean daily temperatures above 43° F., from June, 1909, to June, 1910, was found to be 13,350. The normal mean temperature of the six hottest consecutive weeks was 69.5° F. The corresponding temperatures for the Transition Zone, as given by Merriam, are 10,000 and 71.6° F.,

respectively. In order to compare the temperature of the marsh with that of the uplands, curves of the temperatures recorded at the U. S. Weather Bureau Station at Ithaca were plotted on the same sheet with those for the marsh. (The Weather Bureau is located on the roof of one of the agricultural buildings of Cornell University, 546 feet above the marsh.) Aside from occasional fluctuations which were extremely erratic with regard to season, it was found that the two curves followed one another very closely. There was not the great difference between the spring temperatures of the hill and of the valley, which was supposed to account for the early appearance of amphibians in the marsh; nor was the coolness of the autumn, presumed by Dudley (1886) to account for the late flowering of the fall asters along the lake shore, recorded to any extent in the marsh. The sequence of differences was as follows:

	Mean Temperature.		Difference.
	Marsh.	Weather Bureau.	
January	23.75	25.3	-1.55
February	21.5	23.2	-1.7
March	41.0	42.0	-1.0
April	49.06	49.8	-0.74
May	53.1	54.2	-1.1
June	64.8	64.6	+0.2
July	67.8	68.7	-0.1
August	66.0	67.3	-1.3
September	60.26	60.2	+ .06
October	46.2	46.7	- .5
November	44.15	44.0	+ .75
December	25.8	26.1	-0.3
Average for year	47.0	47.69	-0.69

Inasmuch as the differences were so slight, inquiry into their cause and nature will not be here considered in detail. It will be sufficient to know that, in general, the average temperature of the marsh is *not* higher than that of the upland.

In order to become familiar with all of the physical features of the marsh before beginning the ecological study, and because of the lack of a good map, it was deemed advisable to chart the region lying between the two sheltering hills and



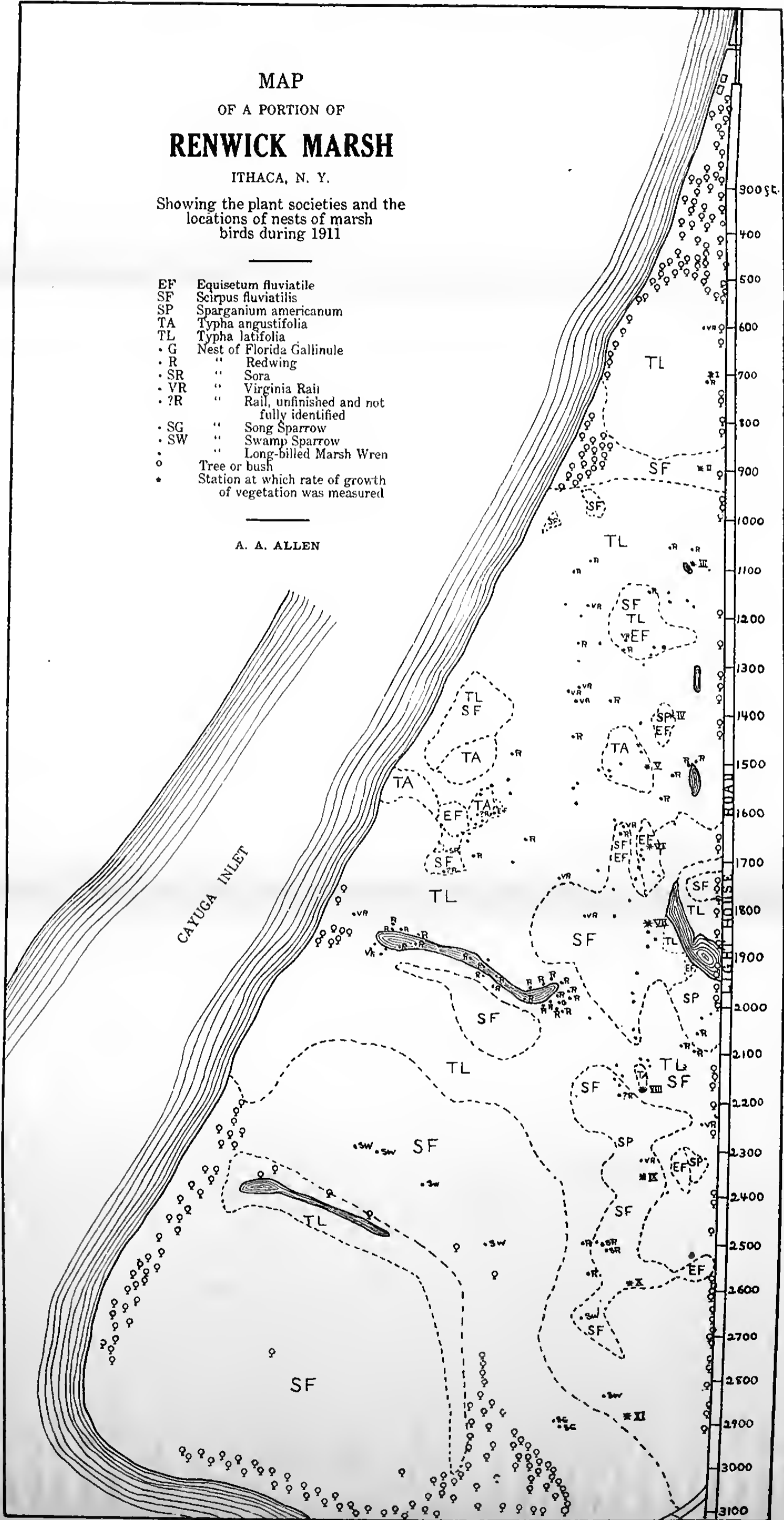
MAP
OF A PORTION OF
RENWICK MARSH

ITHACA, N. Y.

Showing the plant societies and the
locations of nests of marsh
birds during 1911

- EF Equisetum fluviatile
- SF Scirpus fluviatilis
- SP Sparganium americanum
- TA Typha angustifolia
- TL Typha latifolia
- G Nest of Florida Gallinule
- R " Redwing
- SR " Sora
- VR " Virginia Rail
- ?R " Rail, unfinished and not fully identified
- SG " Song Sparrow
- SW " Swamp Sparrow
- " Long-billed Marsh Wren
- Tree or bush
- Station at which rate of growth of vegetation was measured

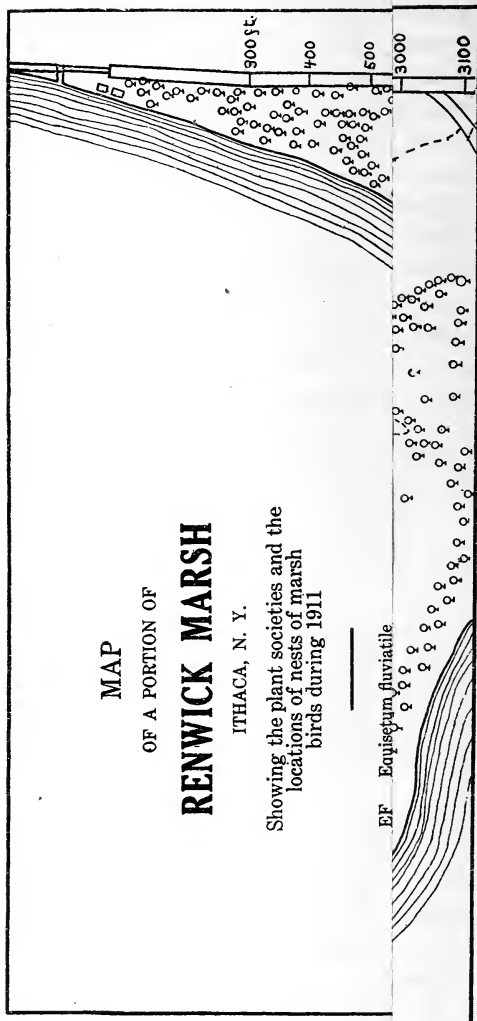
A. A. ALLEN



MAP OF A PORTION OF RENWICK MARSH SHOWING PLANT SOCIETIES AND DISTRIBUTION OF BIRDS' NESTS.



PLATE III.



MAP OF A PORTION OF RENWICK MARSH SHOWING PLANT SOCIETIES AND DISTRIBUTION OF BIRDS' NESTS.

extending from Cascadilla Creek to the lake. This tract is a mile wide and about four-fifths of a mile long, and covers, as stated above, about 450 acres. Accordingly, in the winter of 1908, such a map was roughly prepared (Plate II). Upon it were located the woods, the watercourses, and the natural landmarks that might be useful. For an intensive study, it was decided to have a more detailed map of a portion of the marsh, and in the spring of 1910 a tract was selected which seemed representative, and was at the same time available from the Biological Field Station.* This tract (Plate III), which is delineated by the Inlet, Cascadilla Creek, and a road extending through the marsh to the lighthouse, is roughly triangular in outline. It is 3,750 feet in length and 1,250 feet in greatest width, and covers about 62 acres. With chain and planetable it was accurately outlined, and the trees, bushes, and other landmarks were indicated. The ponds and plant societies were added by means of the planetable and a series of flags, which was erected every hundred feet along the lighthouse road.

In this area each nest, as soon as discovered, was tagged and marked upon the chart. Records were kept of the depth of the water at the nest, the height of the nest above the water, its structure, and the nature of the vegetation in which it was built. Entries were made as to its progress at each observation. In this way, in 1910, 163 different nests were located and visited from time to time. Of these, 74 were built by Marsh Wrens, 51 by Red-winged Blackbirds, 10 by Virginia Rails, 2 by Sora Rails, 10 others by Rails, but not finished and therefore not fully identified, 8 by Swamp Sparrows, 3 by Song Sparrows, and 1 by a Florida Gallinule. Many of these nests, especially those of the Redwing and the Marsh Wren, were never completed, and of those completed, many were destroyed before the eggs hatched, and still others before the young could leave the nest. A general summary showed that of the 51 Redwings' nests carefully observed, 12 were deserted before completion, in 14 the eggs were destroyed, by natural

* The Biological Field Station of Cornell University, located in the marsh near the mouth of Fall Creek; Professor J. G. Needham, Director.

agencies or otherwise, before hatching, and in 3 the young were destroyed before leaving the nest. Seven of the remainder were watched to maturity.

In addition, more or less complete notes were kept on many nests in other parts of the marsh. Besides the observations made in charting these nests, almost daily observations for two seasons were recorded on the migrating birds, especially as they came into the marsh in the evening and left in the morning. Days were spent in studying their actions through binocular field glasses, and for hours at a time individual nests were watched and photographed from a blind at arm's length.

A discussion of the environment from the standpoint of the plant societies will be considered first. Other phases, including seasonal changes, will be taken up in connection with corresponding stages in the life history of the bird. Although the zonal arrangement of these societies is best observed about the large ponds in the marshes at the north end of Cayuga Lake, it may be traced quite easily along the Cove and in places along the head of the lake.

I. THE OPEN-WATER ASSOCIATION.

This association, which extends throughout the open and deeper waters of the marsh, is characterized by a number of species of algæ and potamogetons which cover the bottom even in the deepest parts. In the shallower portions such plants as *Elodea*, *Myriophyllum*, and *Utricularia* predominate. The more important plants included in this environment are the following:

<i>Castalia odorata</i> (Ait.) Woodville & Wood	Sweet-scented Water-lily
<i>Ceratophyllum demersum</i> L.	Hornwort
<i>Elodea canadensis</i> Michx.	Water-weed
<i>Heteranthera dubia</i> (Jacq.) MacM.	Mud Plantain
<i>Lemna minor</i> L.	Duckweed
<i>Lemna trisulca</i> L.	Duckweed
<i>Marsilea quadrifolia</i> L.	European Marsilea
<i>Myriophyllum spicatum</i> L.	Water Milfoil

<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt	Slender Naiad
<i>Nymphaea advena</i> (Ait.)	Spatter-dock
<i>Potamogeton amplifolius</i> Tuckerm.	Large-leaved Pondweed
<i>Potamogeton crispus</i> L.	Curled-leaved Pondweed
<i>Potamogeton natans</i> L.	Common Floating Pondweed
<i>Potamogeton pectinatus</i> L.	Fennel-leaved Pondweed
<i>Potamogeton perfoliatus</i> L.	Clasping-leaved Pondweed
<i>Potamogeton Robbinsii</i> Oakes.	Robbins' Pondweed
<i>Utricularia vulgaris americana</i> Gray	Greater Bladderwort
<i>Ranunculus aquatilis capillaceus</i> DC.	White Water-crowfoot
<i>Vallisneria spiralis</i> L.	Eel-grass

In the ecology of bird life, the plants of this zone gain importance by supplying forage for certain of the Ducks (the Wood Duck is the only one that breeds here), the Coot, the Florida Gallinule, and the Pied-billed Grebe. This forage consists of the stems, leaves, and rootlets of the plants, the fruiting parts not yet having been found in the food of any of the birds. Indirectly they supply food by harboring the larvæ of many insects which, when adults, are eaten in considerable quantities. The presence of fishes, which are the food of the Kingfisher and (to some extent) of the Grebe, is likewise determined by the vegetation and the invertebrate life which it shelters.

There are no mammals which can be considered strictly typical of this habitat. Although the Muskrat forages along the bottom for molluscs, it is more typical of the next association.

The bats which seek their food over the surface of the creeks and the Cove, belong more properly to the woods. Their food, however, is largely the midges and other Diptera, the larvæ of which develop in the open-water association. The following have been taken in the marsh:

<i>Lasiurus borealis</i> (Müller)	Red Bat
<i>Lasionycteris noctivagans</i> (Le Conte)	Silvery Bat
<i>Pipistrellus subflavus subflavus</i> (F. Cuvier)	Georgia Bat
<i>Eptesicus fuscus fuscus</i> (Beauvois)	Brown Bat
<i>Myotis lucifugus</i> (Le Conte)	Little Brown Bat

The fishes, although probably having little direct influence in the lives of any of the birds save the Kingfisher, Grebe, and Herons, may well be listed. Many species enter the marsh to spawn, and at certain seasons the pools fairly teem with their young. If Fall Creek and the Inlet were to be considered as part of the marsh, this list would include practically the entire fish fauna of the Cayuga basin.* It will be restricted, therefore, to those forms which have been found spawning in the marsh, or which occur in sufficient numbers to indicate that they probably spawn here.

Amiatus calva (Linn.). Bowfin. It is reported that this fish has been seen to capture and swallow the young of marsh birds. It spawns during May. The young, accompanied by the male, have been taken early in June.

Ameiurus nebulosus (Le Sueur). Common Bullhead. It spawns abundantly in shallow water along the shores of the Cove and along the head of the lake, beginning about the first of June. It enters the marsh early in April, becoming very abundant during the first part of May.

Schilbeodes gyrinus (Mitchill). Tadpole Cat. Not at all uncommon; it probably spawns along the shores, where numerous young are taken in September.

Catostomus commersonii (Lacépède). Common Sucker. One of the most common fishes in the creeks; it spawns more or less in the marsh, where large schools of young appear about the middle of May.

Pimephales notatus (Rafinesque). Blunt-nosed Minnow. Quite abundant in the Cove at times, especially about the

* For a complete list see "The Vertebrates of the Cayuga Lake Basin, N. Y.," by Hugh D. Reed and Albert H. Wright, *Proceedings Am. Philos. Soc.*, Vol. XLVIII, No. 193, 1909.

middle of April. It spawns along the head of the lake through June and July.

Semotilus atromaculatus (Mitchill). Horned Dace. Not uncommon, but not a characteristic fish.

Abramis crysoleucas (Mitchill). Golden Shiner. One of the most abundant fishes of the Cove. It begins to run early in April, but does not begin to spawn until the latter part of May. It provides the chief forage for the larger predaceous fishes and for the Kingfisher. It occurs in large schools.

Hypognathus nuchalis Agassiz. Silvery Minnow. Discovered in the Cayuga basin for the first time in 1910, and then in considerable numbers. Schools containing ripe males and females were taken during the latter part of April and the first of May.

Notropis cayuga Meek. Cayuga Minnow.

Notropis heterodon (Cope). Varying-toothed Minnow. Both this and the preceding species are fairly common in the Cove.

Notropis hudsonius (DeWitt Clinton). Spot-tailed Minnow. This species enters the marsh during the latter part of April and the first of May.

Notropis whipplii (Girard). Silverfin.

Notropis cornutus (Mitchill). Redfin. This and the preceding species frequently occur, but they are not characteristic marsh forms.

Cyprinus carpio (Linn.). Carp. Extremely common at certain seasons. It comes up into the Cove early in May, but does not spawn until after the first of June. At this time the water plants are found covered with its eggs. As many as 2,800 eggs were counted by Mr. J. T. Lloyd on one square yard of the aquatic vegetation.

Anguilla chryssypa (Rafinesque). Common Eel. It is not uncommon in the creeks, and probably occurs in the marsh, although it has never been taken there.

Pomolobus pseudoharengus (Wilson). Alewife. Frequently taken in the Cove during May and June, when it comes from the deeper parts of the lake to the shallower water. It spawns at night during the latter part of June and July.

Esox reticulatus (Le Sueur). Eastern Pickerel. This species

migrates into the marsh with the Pike, but in much smaller numbers.

Esox lucius (Linn.). Northern Pike. The "run" begins with the disappearance of the ice in the spring. While the Inlet is still full of floating ice, the Pike are found along the shore in shallow water trying to make their way into the marsh. Here, during March and April, they spawn in large numbers. The young, which are extremely voracious, are found in the ponds throughout the marsh. The ecology of this form has been worked out in detail by Prof. G. C. Embody.*

Fundulus diaphanus (Le Sueur). Grayback. Not uncommon in the shallow water and open ponds.

Eucalia inconstans (Kirtland). Brook Stickleback. Formerly the Stickleback was very common in some cut-off pools along the railroad tracks, but during the summer of 1909 these pools dried up. It occurs occasionally in the Cove.

Percopsis guttatus (Agassiz). Trout Perch. During May and June it sometimes becomes quite common in the Cove. At other seasons it is of rather rare occurrence.

Labidesthes sicculus (Cope). Brook Silversides. Of not infrequent occurrence. Its habits and movements have not been observed.

Eupomotis gibbosus (Linn.). Common Sunfish. About the middle of May this fish comes into the shallow water of the marsh, and by the first of June there are numerous nests to be seen. The young are very abundant at all seasons.

Micropterus salmoides (Lacépède). Large-mouthed Black Bass. The young are frequently taken in the Cove, and with them occasionally the young of the small-mouthed species. The latter is more abundant elsewhere in the basin, where the bottom is rocky.

Perca flavescens (Mitchill). Yellow Perch. Small specimens are very frequently taken in the Cove during the spring. No regularity as to their occurrence has yet been noticed.

Boleosoma nigrum olmstedii (Storer). Tessellated Darter. Fairly common in the spring, and one of the few fishes that

* Embody, G. C., "The Ecology of the Pike, *Esox lucius*." Ms.

PLATE IV.



FIG. 1.—HEAD OF CAYUGA LAKE, SHOWING THE SHORE-LINE ASSOCIATION EXPOSED DURING THE DROUGHT OF LATE SUMMER.



FIG. 2.—WEST MARSH, SHOWING AN EXTENSIVE, UNINTERRUPTED AREA OF THE CAT-TAIL ASSOCIATION.

are found in the Cove in the late fall. Specimens from the Cove average larger than those from the creeks.

Of the Amphibia typical of this zone, there is a preponderance of the larval stages. *Necturus maculosus* is common in the creeks, and occasionally is taken in the Cove. *Diemictylus viridescens*, the only other aquatic adult, is found in marginal pools. One other species of the Urodela, *Ambystoma punctatum*, and eight species of Anura migrate to the swamp in the spring to deposit their eggs. Their larvæ, which throng the pools, properly belong to this zone. They are:

<i>Bufo americanus</i> (Le Conte)	American Toad
<i>Hyla versicolor</i> (Le Conte)	Common Tree Toad
<i>Hyla pickeringii</i> (Holbrook)	Peeper
<i>Rana pipiens</i> (Schreber)	Leopard Frog
<i>Rana palustris</i> (Le Conte)	Pickereel Frog
<i>Rana clamata</i> Daudin	Green Frog
<i>Rana catesbiana</i> Shaw	Bull Frog
<i>Rana sylvatica</i> Le Conte	Wood Frog

As a general rule, egg-laying and the appearance of tadpoles occur from a few days to a week earlier in the swamp than on the uplands.

Of the reptiles, the three that occur in the marsh belong more properly to the habitat next considered.

II. THE SHORE-LINE ASSOCIATION.

(Plate IV, fig. 1.)

This is a very complex association, and might well be divided into several lesser societies. Crowding out into the open water is a zone of bulrushes (*Scirpus validus*), very scattering at its outer edge but becoming much denser in the shallower water. Shoreward from this zone is a strip of burreed (*Sparganium*), water horsetail (*Equisetum*), arrowhead (*Sagittaria*) and water plantain (*Alisma*). Shoreward from this is an area of pickereel weed (*Pontederia*), arrow arum (*Peltandra*), water dock (*Rumex*), loosestrife (*Lysimachia*), and the like. The shore-line association forms a transition from the open water to the true marsh vegetation. In places the zonal arrangement is quite complete, in others, very fragmentary.

In the ecology of the birds this association occupies a much more immediate position than the first. In its outer portion, among the bulrushes, the Pied-billed Grebe finds the optimum for its existence. Here, upon a floating pile of debris, it deposits its eggs, and here it raises its young. In the inner stretches, where the vegetation is more dense, several birds are found nesting. Out into the burreed and *Equisetum* the Redwings and Rails extend their domain, while on the inner edge of the society the Marsh Wrens begin to nest and the Redwings and Rails occur more abundantly. The Coot and the Gallinule occasionally straggle thus far from the shelter of the cat-tails for their nesting sites. None save the Grebe, however, find here conditions best suited to their mode of life. Aside from giving shelter for nesting sites, it provides one of the best foraging grounds for most of the marsh birds, not in itself, but indirectly through the insect life which it supports. None of the plants of this zone—nor, in fact, any of the strictly marsh plants—supply forage for the birds, so far as observed. The seeds, which would be the natural food of many birds, are so protected by extremely thick seed-coats, as in the burreed and sedges, or by thick coatings of mucilaginous jelly, as in the arrow arum, that they are not available. The seeds that are utilized are those of plants which do not belong strictly to the marsh but to its border. However, in the pools and shallow water of this zone, on the leaves and in the tissues of the plants, are bred the numerous insects which furnish the primary food supply of most of the marsh birds during at least part of the year. Beetles of the genus *Donacia*, for instance, appear about mid-June in enormous numbers on the leaves of the burreed, and furnish almost the entire food supply of the Redwings at that season.

The characteristic mammal of this habitat is the Muskrat (*Fiber zibethicus*). Here it builds its houses, which are such characteristic sights along the rush-lined shores.

The fishes listed under the first association penetrate into this habitat but do not belong strictly to it, and therefore will be omitted here.

Of the Amphibia, the adults of certain species remain in the

marsh throughout the year, and properly belong to this association. The Bull Frog (*Rana catesbiana*), of rare occurrence, is never found away from the water, nor is the more common Green Frog (*Rana clamata*). The Leopard Frog (*Rana pipiens*) and the Pickerel Frog (*Rana palustris*) leave the water, but are found throughout the rest of the marsh during the summer. The Peeper (*Hyla pickeringii*) and the Tree Toad (*Hyla versicolor*) leave the water for the bushes and trees during the summer and fall. The Toad and the Wood Frog, being terrestrial, likewise leave the water, and after the breeding season are found only in the drier situations. Adults as well as larvæ furnish food for certain of the birds and fishes. The Green Heron, the Night Heron, and the two Bitterns derive a large portion of their sustenance therefrom.

The reptiles which occur in the marsh belong properly to this association. There are but three: the Snapping Turtle (*Chelydra serpentina*), the Painted Turtle (*Chrysemys marginata*), and the Water Snake (*Natrix sipedon*). All come out of hibernation at about the same time, between the middle and the last of March.

III. THE CAT-TAIL ASSOCIATION.

(Plate IV, fig. 2.)

Not only is this association larger in extent than any of the others, but in it a single plant predominates to a greater degree than in either of the associations thus far considered. There are two species of cat-tail, *Typha latifolia* and *Typha angustifolia*, but the former is far more abundant. The two occur in very distinct patches, and seldom mingle. Within the association comparatively few other plants are found, but about the edges there is a mingling with the other societies, as would naturally be expected. In order to determine the rate of growth of *Typha latifolia*, stations were established at three points in the area surveyed where conditions seemed somewhat varied. Measurements were taken about once a week during most of the growing season (from April 20 to June 21), and again in the fall after growth had ceased. Curves of growth were drawn (Figure 1), and from them it is

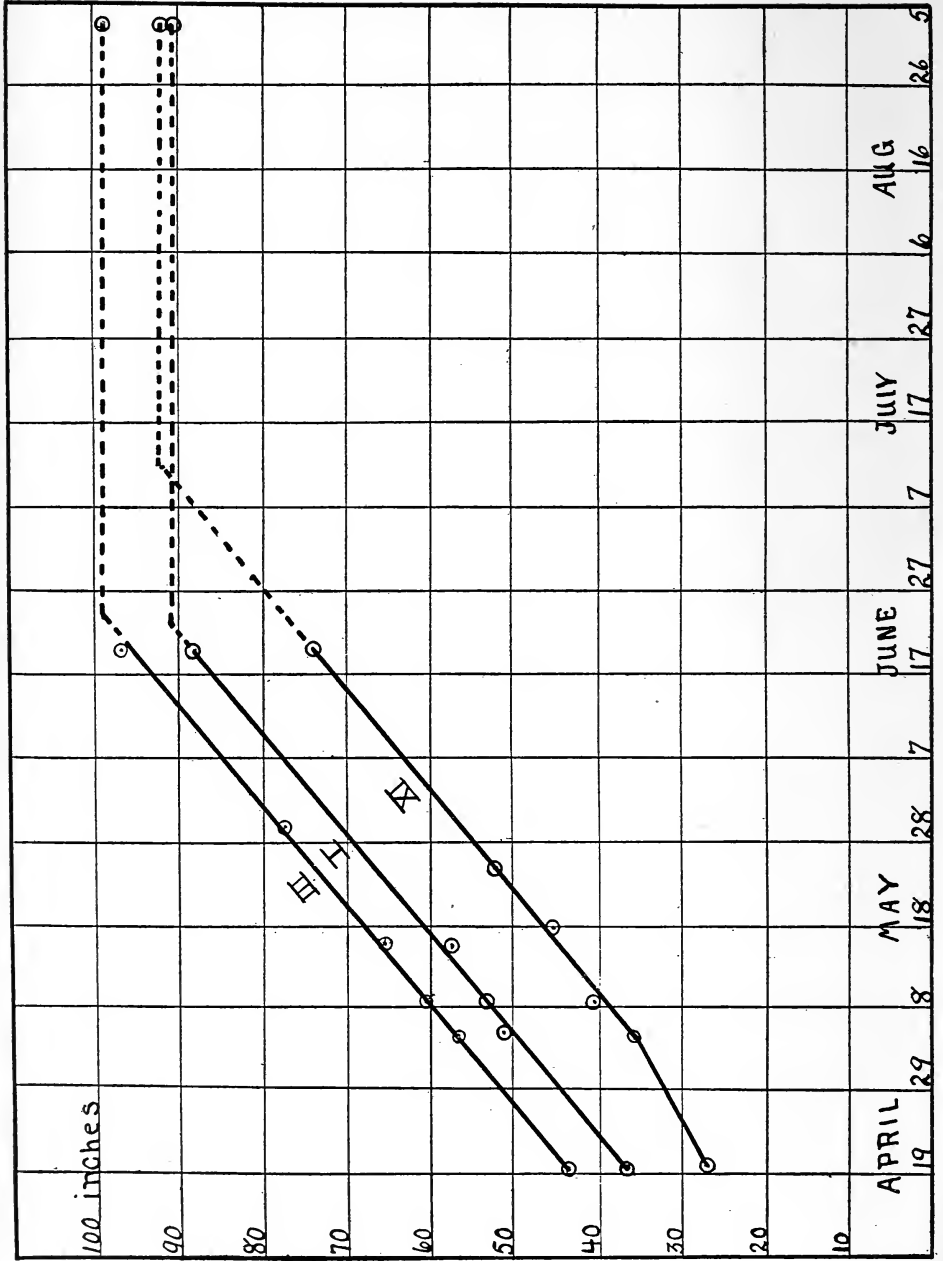


Fig. 1.

readily discerned that the rate of growth was practically the same at each station—about one inch per day. Growth ceased in the latter part of June or early July, when a height of between 90 and 100 inches was reached. Certain differences which the curves present, and which may be due to variations in the depth of water, exposure, or other causes, would be a study in themselves, and will not be considered here.

This association furnishes the optimum conditions for several birds. About its edges, especially around the ponds, a majority of the Redwings hang their nests. The Coot, the Florida Gallinule, and the Least Bittern are more restricted to this habitat than are any of the other birds. The Virginia Rail and Sora, although showing no very marked preference for this habitat over the following, will be considered here. The Marsh Wren nests here in greater abundance than in the shore-line association, and occasionally the American Bittern also is found.

Of the mammals, there are none restricted to this habitat. The Weasels (*Mustela noveboracensis* and *M. cicognanii*) and the Mink (*M. vison vison*) find here their best foraging ground, although they prefer the presence of a few fallen trees or stumps. Here one may find piles of fish skulls, amphibian bones, and the wings and feathers of marsh birds, which tell of the part played by these animals in the ecology of the marsh. Because of the absence of open water, the conditions here are not quite suited to the needs of the Muskrat. Frequently, however, by the clearing away of the roots of the cat-tails for the construction of its houses, small ponds are formed and the conditions of associations I and II are thus created. The Meadow Mouse is abundant here, and its nests are built just above the water line. Its habits in this environment are so different from its habits on the dry uplands, that its adaptations would be a study in themselves.

So far as forage is concerned, the cat-tails offer none except the insects they shelter. Of these, the most important are the weevils, the adults of which furnish a large part of the food supply of the Redwing at all seasons of the year.

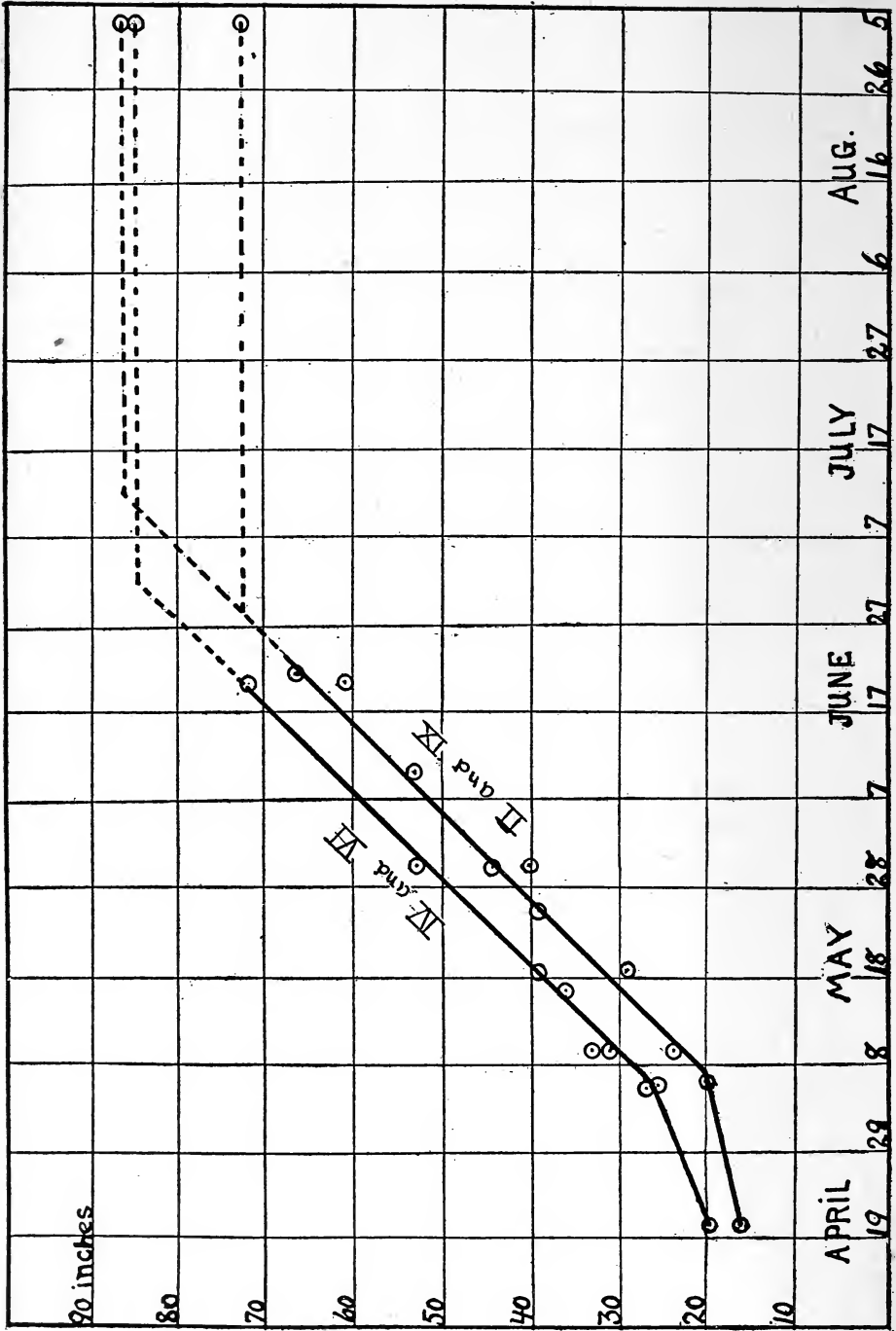


Fig. 2.

IV. THE SEDGE ASSOCIATION.

(Plate VI, fig. 1.)

Here, as the name implies, the predominant forms of vegetation are the sedges. Several species occur, of which the most abundant is *Scirpus fluviatilis*. This association is nearly as pure as that of the cat-tails, and occupies areas nearly as extensive. In some places within the zone, such as the edges of ponds, the sedges are not firmly established, and numerous aquatic or semi-aquatic plants flourish. Many of those which make up the shore-line association are thus found scattered through the sedges. The rate of growth of *Scirpus fluviatilis*, determined as for the cat-tail at four stations, between May 6 and June 21, 1910, averaged slightly over an inch per day (Fig. 2). Previous to May 6, the growth was slow. It ceased, as in the case of the cat-tail, in the latter part of June or early July, when between 80 and 90 inches in height.

The birds most typical of this habitat are the American Bittern and the Swamp Sparrow, the latter being almost wholly restricted to it at the nesting season. The Marsh Wren, likewise, reaches its greatest abundance here. Of the other birds, the Redwing, the Rails, and occasionally the Coot and the Florida Gallinule, extend their nesting range from the previous zone into the sedges. The Song Sparrow and the Maryland Yellow-throat, in like manner, extend their range from the grass zone on the other side, and are found nesting with the Swamp Sparrow.

Among the mammals, the Jumping Mouse (*Zapus hudsonius*) probably reaches its maximum numbers in this zone. The Meadow Mouse continues to be very abundant, and the Star-nosed Mole (*Condylura cristata*) occasionally occurs.

The question of forage here repeats itself. The seeds of the sedges are occasionally found in the stomachs of the Redwing and the Rails, but, because of their exceedingly thick seed-coats, are probably used rather as grinding stones. The society is rich in insect life, however, and furnishes much of that type of food. The Marsh Hawk (*Circus hudsonius*), which might be included among the birds of this association, preys upon the Meadow Mice before the sedges become too high.

V. THE GRASS ASSOCIATION.

(Plate V, fig. 1.)

For want of a better term this has been called the grass association. It constitutes the transition from the marsh proper to the marsh border. It is characterized not only by a great variety of grasses, but by many of the Compositæ and such plants as the turtlehead, the vervains, and others that are typical of wet meadows. The following grasses are among those found here:

Bromus ciliatus L.
Calamagrostis canadensis (Michx.)
Elymus striatus Willd.
Glyceria nervata (Willd.) Trin.
Glyceria pallida (Torr.) Trin.
Glyceria acutiflora Torr.
Leersia oryzoides (L.) SW.
Phalaris arundinacea L.

The other more common species of plants are as follows:

<i>Ambrosia artemisiæfolia</i> L.	Roman Wormwood
<i>Ambrosia trifida</i> L.	Giant Ragweed
<i>Asclepias incarnata</i> L.	Swamp Milkweed
<i>Aster paniculatus</i> Lam.	Panicled Aster
<i>Aster novæ-angliæ</i> L.	New England Aster
<i>Bidens connata</i> Muhl.	Swamp Beggar-ticks
<i>Bidens cernua</i> L.	Stick-tight
<i>Chelone glabra</i> L.	Turtlehead
<i>Eupatorium perfoliatum</i> L.	Boneset
<i>Eupatorium purpureum</i> L.	Joe-Pye Weed
<i>Galium</i> L. (several species)	Bedstraw
<i>Impatiens pallida</i> Nutt.	Pale Touch-me-not
<i>Impatiens biflora</i> Walt.	Spotted Touch-me-not
<i>Lobelia cardinalis</i> L.	Cardinal-flower
<i>Lobelia syphilitica</i> L.	Great Lobelia
<i>Mimulus ringens</i> L.	Monkey Flower
<i>Myosotis scorpioides</i> (True F.)	Forget-me-not
<i>Phytolaca decandra</i> L.	Scoke
<i>Polygonum Hydropiper</i> L.	Water Pepper

PLATE V.



FIG. 1.—THE GRASS ASSOCIATION WITH THE ALDER-WILLOW IN THE BACKGROUND.



FIG. 2.—THE ALDER-WILLOW ASSOCIATION FRINGING A POND FILLED WITH SPATTER-DOCK.

<i>Polygonum lapathifolium</i> L.	Slender Pink Persicaria
<i>Polygonum Persicaria</i> L.	Lady's Thumb
<i>Polygonum Convolvulus</i> L.	Black Bindweed
<i>Polygonum sagittatum</i> L.	Arrow-leaved Tearthumb
<i>Solanum Dulcamara</i> L.	Bittersweet
<i>Urtica gracilis</i> Ait.	Nettle
<i>Verbena hastata</i> L.	Blue Vervain
<i>Verbena urticæfolia</i> L.	White Vervain

The birds characteristic of this habitat are few in number. The Maryland Yellowthroat and the Song Sparrow are the most typical; the Mourning Warbler, the Indigo Bunting, and a few others of varied habits sometimes nest here; and infrequently the Swamp Sparrow builds thus far away from the sedges.

Among the mammals, the Star-nosed Mole is the most typical species, but the Jumping Mouse and the Meadow Mouse occur abundantly. The Short-tailed Shrew (*Blarina brevicauda*) is found occasionally, but it belongs more particularly to the alder-willow and maple-elm associations. The Deer Mouse (*Peromyscus leucopus*) is found where there are stumps or fallen trees.

This association is quite rich as a feeding ground, especially in the fall and early spring, as long as there are seeds to be found, for the seeds of the varied assortment of plants occurring here are much more available for food than are those in the other societies.

VI. THE ALDER-WILLOW ASSOCIATION.

(Plate V, fig. 2.)

This might well be considered as two societies, for the alders generally precede the willows in securing a foothold in the marsh. Ornithologically, however, it constitutes a unit. It includes, in addition to the alders and willows, a number of other plant forms, such as the skunk cabbage and the water arum. Toward the swamp, in the more aquatic situations, are the buttonbushes; on the other side, the red osier, wild rose, and meadowsweet. Many of the plants of the preceding

zone also occur where the shade is not too dense. A few of the more important plants of the alder-willow association are here listed:

<i>Alnus incana</i> (L.) Moench.	Speckled Alder
<i>Alnus rugosa</i> (DuRoi.) Spreng.	Smooth Alder
<i>Arisaema Dracontium</i> (L.) Schott.	Green Dragon
<i>Calla palustris</i> L.	Water Arum
<i>Cephalanthus occidentalis</i> L.	Buttonbush
<i>Cornus stolonifera</i> Michx.	Red-osier Dogwood
<i>Radicula Nasturtium-aquaticum</i> (L.) Britton & Rendle	True Water Cress
<i>Rosa carolina</i> L.	Wild Rose
<i>Ribes floridum</i> L'Hér.	Wild Black Currant
<i>Salix nigra</i> Marsh.	Black Willow
<i>Salix discolor</i> Muhl.	Glaucous Willow
<i>Spiraea salicifolia</i> L.	Meadowsweet
<i>Symplocarpus fœtidus</i> (L.) Nutt.	Skunk Cabbage
<i>Viburnum dentatum</i> L.	Arrowwood

For the birds, this habitat constitutes a transition between the marsh and the uplands. The majority of them, such as the Catbird, Rose-breasted Grosbeak, and Yellow Warbler, are upland birds which are crowding into this part of the swamp. The only birds truly typical of this habitat are the Alder Flycatcher and the Green Heron. In the region under consideration, the Redwing only occasionally leaves the cattails and sedges for the alders. A list of the birds that have been found nesting in this habitat follows:

<i>Butorides virescens</i>	Green Heron
<i>Zenaidura macroura carolinensis</i>	Mourning Dove
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo
<i>Dryobates pubescens medianus</i>	Downy Woodpecker
<i>Archilochus colubris</i>	Ruby-throated Hummingbird
<i>Tyrannus tyrannus</i>]	Kingbird



PLATE VI.



FIG. 1.—THE SEDGE ASSOCIATION WITH THE MAPLE-ELM IN THE BACKGROUND.



FIG. 2.—THE MAPLE-ELM ASSOCIATION AND FALL CREEK.

<i>Myiochanes virens</i>	Wood Pewee
<i>Empidonax trailli alnorum</i>	Alder Flycatcher
<i>Empidonax minimus</i>	Least Flycatcher
<i>Corvus brachyrhynchos</i>	Crow
<i>Molothrus ater</i>	Cowbird
<i>Icterus galbula</i>	Baltimore Oriole
<i>Quiscalus quiscula aeneus</i>	Bronzed Grackle
<i>Astragalinus tristis</i>	Goldfinch
<i>Spizella passerina</i>	Chipping Sparrow
<i>Melospiza melodia</i>	Song Sparrow
<i>Zamelodia ludoviciana</i>	Rose-breasted Grosbeak
<i>Iridoprocne bicolor</i>	Tree Swallow
<i>Bombycilla cedrorum</i>	Cedar Waxwing
<i>Vireosylva olivacea</i>	Red-eyed Vireo
<i>Vireosylva gilva</i>	Warbling Vireo
<i>Lanivireo flavifrons</i>	Yellow-throated Vireo
<i>Dendroica aestiva</i>	Yellow Warbler
<i>Setophaga ruticilla</i>	Redstart
<i>Dumetella carolinensis</i>	Catbird
<i>Penthestes atricapillus</i>	Chickadee
<i>Hylocichla fuscescens</i>	Veery
<i>Planesticus migratorius</i>	Robin
<i>Sialia sialis</i>	Bluebird

This habitat furnishes little forage for the true marsh birds, but a few that pass the winter find shelter in it. The Red-wings take refuge here upon their first arrival in the spring, and during both spring and fall it throngs with other migrants.

VII. THE MAPLE-ELM ASSOCIATION.

(Plate VI, fig. 2.)

The maple-elm association forms the climax society in the swamp. The silver maple and the black ash, which are the first to gain a foothold, are followed by the sycamore, the butternut, and finally the elm. The latter tree at present makes up the greater part of the wooded area on the eastern side of the marsh (Plate I). This association includes several minor societies, which will not be considered here, and furnishes

a habitat for a large number of birds. Those which have been found breeding here are given in the following list, which is arranged in ecological groups:

1. BIRDS THAT NEST IN THE TREE TOPS.

<i>Ardea herodias</i>	Great Blue Heron*
<i>Nycticorax nycticorax naevius</i>	Black - crowned Night Heron*
<i>Buteo lineatus</i>	Red-shouldered Hawk
<i>Corvus brachyrhynchos</i>	Crow
<i>Icterus galbula</i>	Baltimore Oriole
<i>Vireosylva gilva</i>	Warbling Vireo

2. BIRDS THAT NEST IN THE TRUNKS OF TREES.

<i>Aix sponsa</i>	Wood Duck
<i>Falco sparverius</i>	Sparrow Hawk
<i>Otus asio</i>	Screech Owl
<i>Dryobates villosus</i>	Hairy Woodpecker
<i>Dryobates pubescens medianus</i>	Downy Woodpecker
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker
<i>Colaptes auratus luteus</i>	Northern Flicker
<i>Myiarchus crinitus</i>	Crested Flycatcher
<i>Iridoprocne bicolor</i>	Tree Swallow
<i>Troglodytes aëdon</i>	House Wren
<i>Sitta carolinensis</i>	White-breasted Nuthatch
<i>Penthestes atricapillus</i>	Chickadee
<i>Sialia sialis</i>	Bluebird

3. BIRDS THAT NEST ON THE LOWER BRANCHES.

<i>Zenaidura macroura carolinensis</i>	Mourning Dove
<i>Archilochus colubris</i>	Ruby-throated Hummingbird
<i>Tyrannus tyrannus</i>	Kingbird
<i>Myiochanes virens</i>	Wood Pewee
<i>Empidonax minimus</i>	Least Flycatcher
<i>Molothrus ater</i>	Cowbird
<i>Quiscalus quiscula æneus</i>	Bronzed Grackle
<i>Astragalinus tristis</i>	Goldfinch
<i>Spizella passerina</i>	Chipping Sparrow

*Nests in the marshes at the north end of Cayuga Lake, but not at Ithaca.

<i>Piranga erythromelas</i>	Scarlet Tanager
<i>Bombcilla cedrorum</i>	Cedar Waxwing
<i>Vireosylva olivacea</i>	Red-eyed Vireo
<i>Lanivireo flavifrons</i>	Yellow-throated Vireo
<i>Hyllocichla mustelina</i>	Wood Thrush
<i>Planesticus migratorius</i>	Robin

4. BIRDS THAT NEST IN THE UNDERGROWTH.

<i>Coccyzus americanus</i>	Yellow-billed Cuckoo
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo
<i>Zamelodia ludoviciana</i>	Rose-breasted Grosbeak
<i>Passerina cyanea</i>	Indigo Bunting
<i>Dendroica aestiva</i>	Yellow Warbler
<i>Oporornis philadelphia</i>	Mourning Warbler
<i>Setophaga ruticilla</i>	Redstart
<i>Dumetella carolinensis</i>	Catbird

5. BIRDS THAT NEST ON THE GROUND.

<i>Melospiza melodia</i>	Song Sparrow
<i>Geothlypis trichas</i>	Maryland Yellowthroat
<i>Hyllocichla fuscescens</i>	Veery

The mammals which have been found typical in this habitat are:

<i>Sciurus hudsonicus loquax</i> Bangs	Southeastern Red Squirrel
<i>Sciuropterus volans</i> Bangs	Southern Flying Squirrel
<i>Peromyscus leocopus noveboracensis</i> (Fischer)	Deer Mouse
<i>Sylvilagus floridanus mearnsi</i> (Allen)	Eastern Prairie Cottontail
<i>Mephitis putida</i> Boitard	Southeastern Skunk
<i>Procyon lotor</i> (L.)	Raccoon
<i>Blarina brevicauda</i> (Say)	Short-tailed Shrew

The bats, mentioned under Association I, spend the days for the most part suspended in the trees of this association. The Weasels, the Mink, the Star-nosed Mole, the Meadow Mouse, and the Jumping Mouse extend more or less into this habitat.

As a foraging ground and shelter, the maple-elm association

is of comparatively little importance to the strictly marsh birds, except in the case of the Redwing. In the spring and fall migrations, during the period of fall flocking, and even during the breeding season, many Redwings are found feeding in the trees and clearer portions of the woods.

The vegetation is that typical of lowland woods. A list of the more abundant forms follows:

TREES.

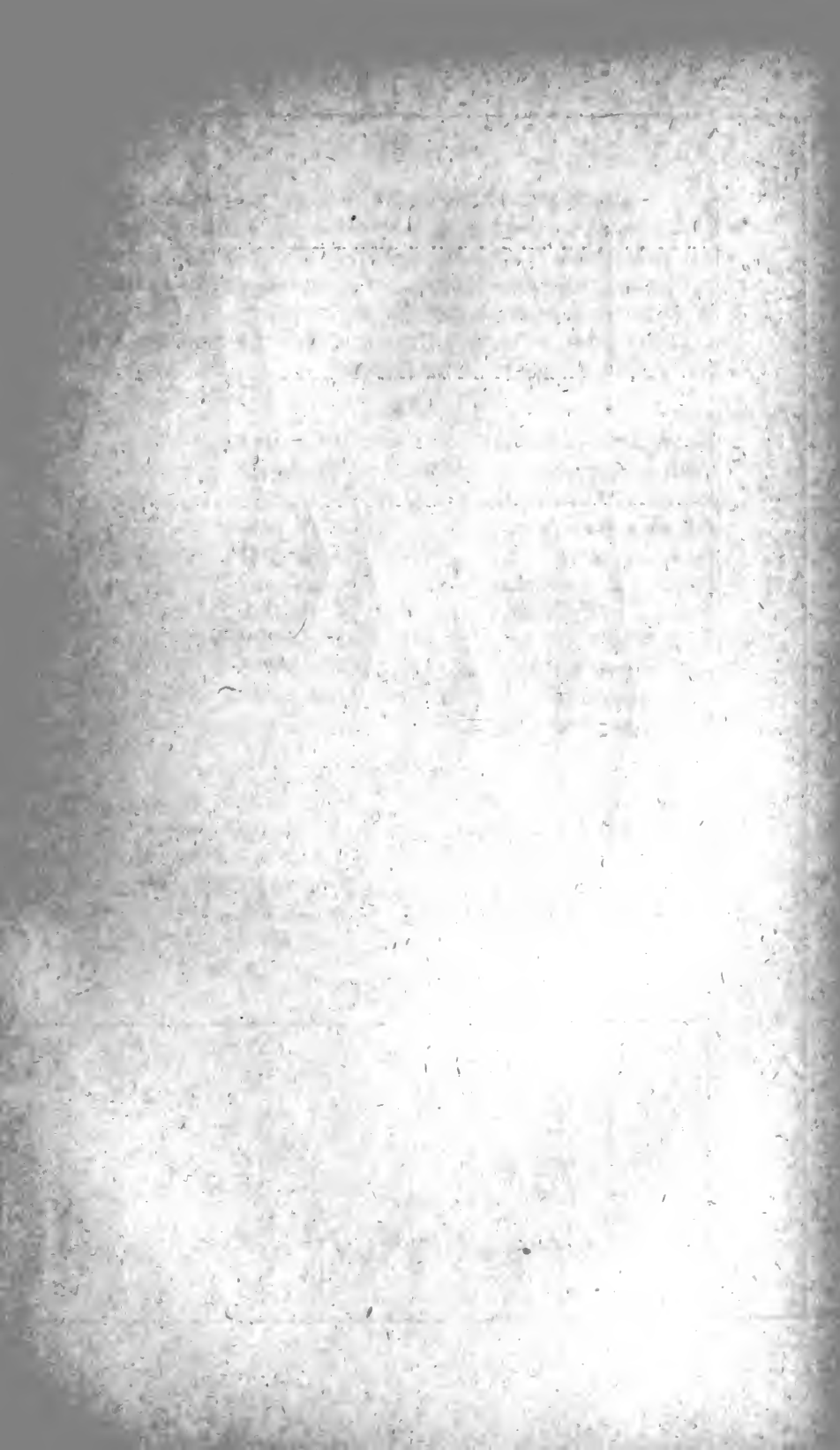
<i>Acer saccharinum</i> L.	Silver Maple
<i>Celtis occidentalis</i> L.	Sugarberry
<i>Fraxinus americana</i> L.	White Ash
<i>Fraxinus nigra</i> Marsh	Black Ash
<i>Juglans cinerea</i> L.	Butternut
<i>Plantanus occidentalis</i> L.	Sycamore
<i>Quercus bicolor</i> Willd.	White Oak
<i>Salix fragilis</i> L.	Crack Willow
<i>Salix nigra</i> Marsh	Black Willow
<i>Tilia americana</i> L.	Basswood
<i>Ulmus americana</i> L.	American Elm

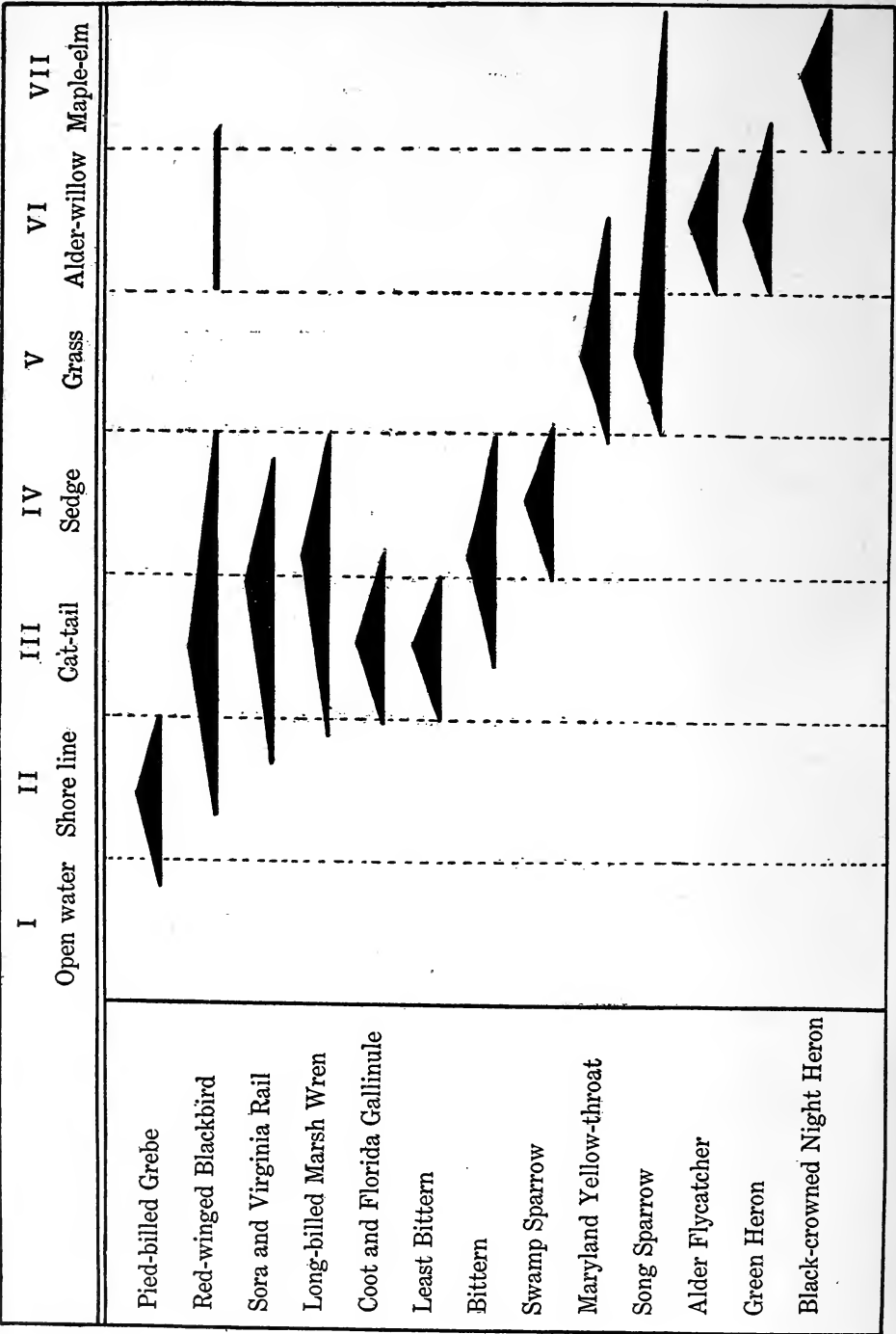
BUSHES AND VINES.

<i>Benzoin æstivale</i> (L.) Nees.	Spice Bush
<i>Cornus stolonifera</i> Michx.	Red-osier Dogwood
<i>Ribes floridum</i> L'Hér.	Wild Black Currant
<i>Sambucus canadensis</i> L.	Common Elderberry
<i>Rhus Toxicodendron</i> L.	Poison Ivy
<i>Vitis vulpina</i> L.	Frost Grape

HERBACEOUS PLANTS.

<i>Allium tricoccum</i> Ait.	Wild Leek
<i>Ambrosia trifida</i> L.	Giant Ragweed
<i>Angelica atropurpurea</i> L.	Angelica
<i>Cardamine bulbosa</i> (Schreb.)	
BSP.	Spring Cress
<i>Dentaria diphylla</i> Michx.	Two-leaved Toothwort
<i>Dentaria laciniata</i> Muhl.	Cut-leaved Toothwort
<i>Galium</i> L.	Bedstraw
<i>Nepeta hederacea</i> (L.) Trevisan	Ground Ivy





<i>Heracleum lanatum</i> Michx.	Cow Parsnip
<i>Impatiens biflora</i> Walt.	Spotted Touch-me-not
<i>Impatiens pallida</i> Nutt.	Pale Touch-me-not
<i>Polygonum virginianum</i> L.	Virginia Knotweed
<i>Symplocarpus foetidus</i> (L.) Nutt.	Skunk Cabbage
<i>Urtica gracilis</i> L.	Stinging Nettle
<i>Laportea canadensis</i> (L.) Gaud.	Wood Nettle
<i>Viola papilionacea</i> Pursh	Purple Violet

A general summary of the distribution of the most typical marsh birds, showing where each finds its optimum conditions for nesting, is shown in Plate VII. The extent of range is indicated by the length, and the optimum conditions by the greatest width, of the black lines.

SUCCESSION.

Even the most casual observer who has had opportunity to revisit a marsh after a short absence, is struck with the changes that have taken place. One cannot help noticing that conditions are far from static. Aside from such radical changes as occur when a stream alters its course, or when a barrier breaks and produces a flood, there are certain forces always acting, which place each association under a sort of tension. These forces are the struggle for existence and, especially, the struggle for the perpetuation of kind. Each zone tends by its growth to increase the area which it occupies, and therefore crowds upon some other society. The bulrush, extending further and further from shore, gains a foothold where before it was impossible for it to live. The tangle of its roots and the denseness of its growth, which naturally follow nearer the shore, furnish the shelter which is necessary for the life of the other plants of the shore line. These in turn crowd into the bulrushes, and even by so doing render conditions more favorable for themselves and less so for the former occupants. The innermost of the bulrushes die, and that zone has been crowded forward. While this has been in progress, a similar struggle has been going on between the vanguard of the cat-tails and the rear guard of the shore-line association, resulting in the crowding of the latter further from the shore.

The cat-tail association has, by its own growth, built up a firmness of soil that gives the sedges the conditions necessary for their occupancy. Thus the story goes on. The climax society is that of the elms, the society which, if left undisturbed, would eventually conquer the entire marsh. The zones of plant life are very evident, and the method of succession comparatively simple. In the case of the animals, other factors enter, and conceal the order of progression, which nevertheless exists as with the plants. An area occupied by Grebes to-day may be occupied by Rails to-morrow. As the sedges encroach upon the cat-tails, so the Swamp Sparrows crowd upon the Rails. A detailed understanding of the succession requires years of close observation, and the results to be derived from such observation are, of course, not yet forthcoming. It was with this in view that the map of the area under consideration was made. By following it from year to year, it is hoped that a more definite knowledge of the succession will be gained.

PART II. THE LIFE HISTORY AND ECOLOGY OF THE RED-WINGED BLACKBIRD.

The order of this discussion will be that of the various phases of the life history of the bird. Beginning with the spring migration, we shall consider in turn mating, nesting, flocking, fall migration, and other general phases not included in the above, such as enemies, plumage, and food. Each division will be prefaced with a summary of the principal literature upon the phase under consideration, and will include a discussion of the changes occurring in the environment during that period.

SPRING MIGRATION.

Summary of the Literature.—In view of the general interest that is taken in this phase of a bird's life history, remarkably little definite information concerning the Redwing's migration has been published. According to Wilson (1831), the species is migratory north of Maryland. It is "found during winter in immense flocks, sometimes associated with Purple Grakles,

. . . along the whole lower parts of Virginia, both Carolinas, Georgia and Louisiana, particularly near the sea coast. . . . About the twentieth of March, or earlier if the season be open, they begin to enter Pennsylvania in numerous tho small parties. The migrating flocks are usually observed from day-break to eight or nine in the morning, passing to the north, chattering to each other as they fly along. . . . They continue in small parties to frequent the low borders of creeks, swamps and ponds, till about the middle of April, when they separate in pairs to breed." Nuttall (1840) observes: "From the beginning of March to April, according to the nature of the season, they begin to visit the northern states in scattered parties, flying chiefly in the morning." Samuels, in 1867, states: "It arrives [in New England] in small flocks, the males preceding the females a week or ten days. On its arrival, it frequents the meadows and swamps, where, from early dawn to twilight, its song . . . is heard."

Warren (1890) observes that they arrive in Pennsylvania about March 20, the males a few days in advance of the females. Loomis (1892) tells us that in Chester County, S. C., "Unless the season is backward, by the first week [in February] . . . Red-winged Blackbirds are found with increasing regularity," and by "the middle of the month . . . the hosts of Robins and Blackbirds . . . arrive, and females become more numerous." Stone, in 1894, placed the date of spring arrival in Pennsylvania much earlier than either Wilson or Nuttall, stating, "abundant summer resident, arriving in the vicinity of Philadelphia on the first spring-like day, sometimes as early as February 6."

Merrill (1898) states that at Fort Sherman, Idaho, it is "One of the first migrants to appear, as I have seen it on February 22. After remaining two or three weeks these early birds seem to pass on to the north and none are seen until about the first of May, when others, apparently the birds nesting here, arrive."

Libby (1899, Wisconsin), in his studies of the nocturnal flight of migrating birds, says: "More Swamp Blackbirds were identified than any other." Hoffman (1904, New Eng-

land) puts the time of arrival of the females as three weeks later than that of the males. Baird, Brewer, and Ridgway (1874) tell us that "Early in March these large assemblies break up. A part separate in pairs and remain among the Southern swamps. The greater portion, in smaller flocks, the male bird leading the way, commence their movements northward. . . . They are among the earliest [in New England] to arrive in spring, coming, in company with the Rusty Grackle, as early as the 10th of March. Those which remain to breed usually come a month later." Townsend (1905, Massachusetts) gives us a hint as to their habits during the migration by stating: "The greatest number are to be found in the late afternoon, as during the day, they are foraging in the upland fields."

Brewster (1906) gives the earliest record for Cambridge as February 26, 1866, with March 16 as the normal date. He then gives us more definite information as to their movements than any one prior to this time. "For several weeks after their first appearance in early spring Redwings are usually found in flocks composed wholly of males. At this season they are seldom seen about their breeding grounds excepting in the early morning and late afternoon. At most other hours of the day they frequent open and often elevated farming country, where they feed chiefly in grain stubbles and weed-grown fields. . . . After the female Redwings arrive (I seldom see them before the first week of May) the males spend most of the time with them in the swamps and marshes, but even at the height of the breeding season it is by no means unusual to find birds of both sexes feeding, in flocks, in dry, upland fields." This is by far the most detailed and accurate account that has been found. As far as it goes, it agrees with the observations made at Ithaca except, perhaps, for the time of the appearance of the females. Very different is the account of its habits given by Max M. Peet (1908) in Michigan. He observes in part: "It is worthy of note that during this period [spring] the red-wings are seldom met with outside of the marsh and so must procure the bulk of their food in it."

To summarize what has been written concerning its spring

migration, it may be stated that, beginning its northward movement from the Southern States in February, it reaches Pennsylvania during the first of March, although birds have been recorded as early as February 6. It reaches Massachusetts normally about the tenth of the month. The males precede the females by from several (Wilson) to as many as fifty (Brewster) days. The first birds to arrive are not the breeding birds, but are followed by the latter after an interval of from two or three weeks to a month. They migrate chiefly during the early morning, but have been recorded as traveling at night. They forage principally over the uplands, and roost in the marshes.

Spring Migration at Ithaca.—Although the Redwings have been observed chiefly from points of vantage in the marsh, frequent notes as to their movements elsewhere have been made. Several trips each week (and often daily trips) were made to the marsh, and the movements of the birds were watched from their first appearance in the afternoon until after dusk. Again in the morning, from dawn until their flight to the uplands, they were studied through two successive seasons. The collection of numerous specimens made it possible to satisfy any doubts relative to age or sex. Conclusions based upon observations of their movements have been reinforced by studies of the food taken from stomachs.

The normal migration can be divided into seven periods according to sex, age, and nature of the birds (whether resident or migrant), as follows:

1. Arrival of "vagrants."
2. Arrival of migrant adult males.
3. Arrival of resident adult males.
4. Arrival of migrant females and immature males.
5. Arrival of resident adult females.
6. Arrival of resident immature males.
7. Arrival of resident immature females.

Arrival of "Vagrants."—Here, as recorded in Pennsylvania by Stone, the first warm days of spring bring the first Red-winged Blackbirds, although the marshes may still be frozen solid, and the ground covered with snow. These I have

termed "vagrants," because they are supposed not to represent the beginning of the true migration, but to be individuals which have wintered not very far to the south. These birds are not recorded every year, but when they do appear, they are noted in February. In 1906 they were first recorded on February 24, in 1909 on February 22, and in 1911 on February 25. In 1907, 1908, and 1910, they were not recorded. They precede the true migrants by an average of 13 days. The "vagrants" are for the most part adult males, but immature males or females may be found among them. They are never in large flocks, and often occur singly. The reproductive organs are very small, especially in the case of immature birds (Plate XXI, A), in which they have scarcely begun to enlarge. They differ from the next migrants to arrive, in that they frequently linger about the marsh in the daytime and seem in no hurry about their migration. They sometimes remain until the true migrants arrive, although usually there is a well-defined interval between their departure and the arrival of the next group. Their food at this time is almost entirely animal, consisting of weevils, lepidopterous larvæ and pupæ, and ground beetles, which they secure for the most part in the alder-willow zone. They do not frequent the open marsh.

Arrival of Migrant Adult Males.—The first true migrants arriving in the spring are adult males. They appear in flocks, some of which contain a hundred or more birds, and ordinarily are first noted in the marsh, although occasionally seen in tree tops or stubble fields on the uplands. The average date of arrival from 1906 to 1911 was March 9—nearly two weeks after the arrival of the "vagrants." By this time the ice has usually disappeared from the streams, and the marsh is flooded (Plate I, fig. 1). The fires of the fall and winter have left merely the half-burned, sharply pointed stubble projecting above the water, so that in the open marsh shelter is very scant. Birds and organisms of all kinds are exceedingly scarce. A few early Pike have begun to splash, but there are few other signs of spring.

At this season of the year, about 4.30 in the afternoon, let us take a stand at the upper end of the marsh and gaze

PLATE VIII.

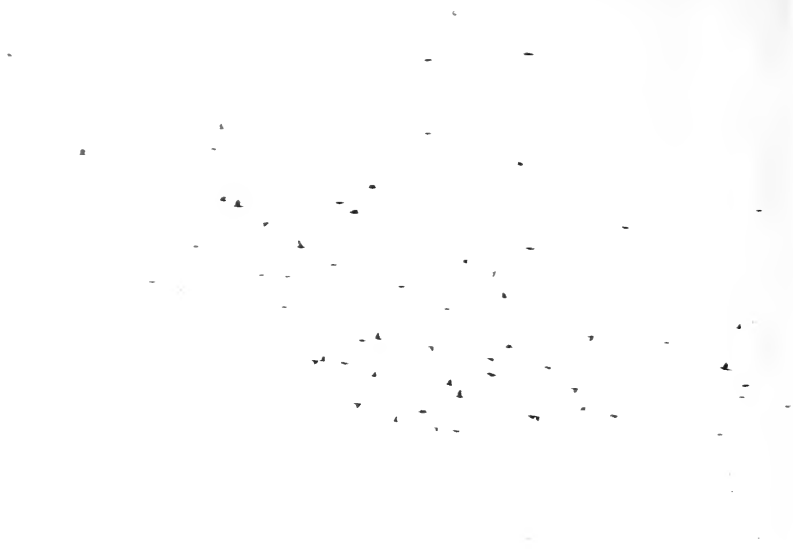


FIG. 1.—MIGRATING REDWINGS, ILLUSTRATING THE IRREGULAR FORM OF THE FLOCK.



FIG. 2.—A PAIR OF REDWINGS HOVERING ABOVE THE NEST.

southward up the Inlet Valley. Presently we discern what appears like a puff of smoke in the distance, drifting in at a considerable height. After a minute or two the smoke is resolved into an aggregation of black specks, and then, as it drops lower and lower, it takes on that irregular form so characteristic of the flocks of Red-winged Blackbirds (Plate VIII, fig. 1). With one last swoop and flutter of wings, they alight on the more prominent of the few scraggly trees at the southern end of the marsh. The migration has begun. For a few moments they shake out their feathers and give vent to their feelings in song. It is but a short time, however, before they start again for the north. As they pass over the marsh, individuals drop from the ranks and float down to projecting branches or cat-tails, but the main body continues on its way to the lake, where it rises and swings to the west; then gaining the brow of the hill, it turns once more on a northward course. Meanwhile, other flocks appear and repeat the same maneuvers. These are followed by others, until the marsh is well populated with birds that have dropped from the migrating flocks. The marsh resounds with their songs. These might be thought of as resident birds selecting this marsh as their abode for the year, but such is not the case. Many of them make their way by short flights to the north end of the marsh, where considerable flocks gather in the willows along the lake shore. Then, as a migrating flock passes over, they fly up and join it, and are again on their way toward their more northern homes. Occasionally a flock, upon reaching the lake, swings to the east and continues along that side of the lake, but the majority hold to the west. The first flocks to arrive in the evening come from the south and drop in from a considerable height, but as it grows later, they are seen flying lower and lower until the last barely skim the hills. These flocks do not come from the south, but from the southeast and east. They are more compact, and are intent upon but one thing—the finding of a place to roost. The place selected is a spot where the flags are not quite so completely burned and a little more shelter is afforded. Toward this spot, as if with some previous knowledge of its location, all of these later flocks direct their

flight, and disappear into the cat-tails. The birds scattered over the marsh assemble in the same place, and all spend the night together.

Every available perch, not so high as to be conspicuous, is filled with birds down to the water's surface, but were it not for the unspeakable din that arises from the hundreds of throats, one would scarcely be aware of their presence, so inconspicuous are they against the dark water. If one disturbs them now, there is a rush of wings, but they do not fly far. Raillike they drop back into the marsh a short distance away, and soon resume their indescribable discord. As night falls, their notes become more subdued. A little crowding now and then brings forth a few scolding notes, or the sudden crackling of a flag under its unaccustomed weight startles a cry from some frightened bird, but otherwise all is quiet. And so it remains until the next morning. Unlike most of the marsh birds, they are seldom heard during the night.

The next morning the evening's performance is reversed, and the procedure during each day of the migration is practically the same. A month later, when other birds have arrived, the comparative times of awakening and periods of activity of the various marsh birds are better observed. At this time the Song Sparrows are singing by four o'clock, and the Swamp Sparrows a few minutes later. The stars are still bright when a Short-eared Owl is heard giving its peculiar call and is dimly seen as it circles near. The Sparrows continue to sing. It is 4.25 A.M., and the first Bittern awakes and sounds its liquid notes across the marsh. The Gulls are heard on the lake, and ten minutes later the Wilson's Snipe begin to bleat and perform their aerial evolutions. The Gulls start up the valley for their daily skirmishing in the fields. It is fully three-quarters of an hour since the first Song Sparrow was heard, the morning star has sunk below the horizon, the first signs of dawn have long since appeared, and now the first Redwing is heard. As though awaiting the signal, a hundred birds give answer, and day is announced. The stars die out and color appears in the east; the greens and yellows change to rose, and the rose to red. A Great Blue

Heron leaves his roost in the woods and starts for his fishing grounds. A pair of Teal swing through the field of vision, dark against the sky. A few restless Grackles start from the marsh, heading for the hill, and soon the morning flight of Redwings has begun. Scattering over the marsh, they do not leave in the compact flocks that are so characteristic of the evening flight. Single birds, more uneasy than the rest, loose groups of seven or eight, or at times slightly larger flocks, start for the hills to the east and to the west. By eight o'clock most of the birds have left, and two hours later one would scarce know there had been a Redwing in the marsh.

Following these scattered birds as they leave, one finds some of them continuing to the east, often for considerable distances and high in the air, as though retracing their flight of the preceding evening before swinging to the north. Others continue up the west shore of the lake, as did the majority of the early flocks on the evening flight, but most of them do not fly far before alighting to feed. During the day, by alternate periods of feeding and short flights, they continue in a general northerly or northwesterly direction until late afternoon. Then ensues a more prolonged flight which is the real migration of the day. This continues until almost dusk, when a straight line is made for the nearest marsh. As they pass over fields where other Redwings are feeding, the latter answer their calls and fly up to join them. This may be repeated many times before the arrival at the marsh, single birds collecting into small groups, and the groups into large flocks. During the fall migration the birds frequently retrace their flight to a greater or less extent, in order to reach the proper shelter, and are seen coming into the marsh at nightfall from the south. In the spring, however, they have not been observed (at Ithaca) to change the direction of flight except to a northwesterly or westerly direction; at this season they come into the marsh, as has been stated previously, from the east and southeast as well as from the south. In case a marsh is reached some time before nightfall, they may linger, but the majority continue on their way north until nearly dusk.

This period of the migration, which I have termed the

arrival of *migrant adult males*, continues for about two weeks before the *resident* birds begin to arrive. Each evening there is a well-defined flight into the marsh; each night the birds all roost together; and each morning they all leave for the north. The marsh to them at this period is a shelter for the night only, and the entire day is spent on the uplands. Frequently there is a lull of a few days when there are no birds migrating, and at this time none will be found in the marsh even at nightfall. The marsh is still flooded, and the vegetation has not yet started (Plate I, fig. 1).

Arrival of Resident Adult Males.—The arrival of resident males is first made clear by the actions of the birds themselves. To one unfamiliar with their habits the *exact* time of arrival is not apparent. Up to this time the birds, for the most part, have kept in more or less well-defined flocks. They have been difficult of approach, the slightest annoyance starting them off. The birds scattered over the marsh have not confined themselves to one area, and the slightest disturbance has frightened them to some other part, or has caused them to leave the marsh altogether. About the end of March, however, certain birds arrive, in whose actions a difference is noticed. They do not fly away at one's approach, or, if frightened, soon return to the same spot. These birds do not associate with the migrating flocks, and they roost alone. If one is enabled to identify an individual bird among them by such characteristics as abnormal feet or the loss of its tail or a primary feather, as has frequently been done in this study, one finds that it never changes its station in the marsh after its arrival. Appearing about the last of March, these resident males establish themselves at what are believed to be their former nesting sites. To these spots they betake themselves each afternoon, and from them they depart each morning to the uplands where they feed during the day. Whatever time is spent in the marsh, is spent at this station and nowhere else. Many times between four and six o'clock in the afternoon, "marked" birds have been observed to enter the marsh along with small groups of companions, which they soon left, proceeding directly to their chosen sites. The next morning,

between eight and ten, they have been observed leaving the marsh for the day. The resident birds generally delay their departure in the morning until practically all of the migrating birds have left. In like manner they return in the afternoon before the migrating individuals arrive. As the season advances, the time spent on the uplands becomes shorter, until by the middle of April, when the first of the resident females appear, these resident males are spending the entire day in the marsh. From their first arrival, they assume all rights to the domain in which they have established themselves. Frequently these domains adjoin one another closely, but the birds seldom trespass on one another's rights. When they do so, they seem to recognize the owner's prerogative, so that serious quarrels never ensue.

A consideration of their food at this season (see page 120) shows that it partakes of both a marsh and an upland character. Of the marsh food (Plate XVIII, fig. 2) there is no great variety, for insects are still scarce and in the open marsh there are no available seeds whatsoever.

At the time of the arrival of these resident birds, the level of the water in the marsh has fallen considerably, and the Inlet no longer overflows its banks. The vegetation has started its growth, but is not yet visible above the surface of the water. The Pike are at the height of their spawning season, and the Spotted Salamander, Wood Frog, and Leopard Frog are depositing their eggs.

Arrival of migrant females and immature males.—The resident males have been at their stations but a few days before the first females and immature males appear among the migrating flocks, for the last days of March and first of April usually usher them in. The first females recorded are generally single birds traveling in company with the adult and immature males. At this time the males pay no attention to them. Many Cowbirds, Bronzed Grackles, and Rusty Blackbirds are now mingled in the flocks of Redwings, as each species has been, more or less, since its first appearance. Within a few days, as their numbers increase, small flocks made up entirely of females are observed. It is about this time—the end of the

first week in April—that the males begin to show a slight interest in the presence of the females. The former now spend more of their time in the marsh, and resent intrusion into their domains. By this time their reproductive organs show considerable increase in size (Plate XXI, *E*). Among the migrating birds at this time there is an increasing preponderance of immature males and of females. The latter shun the presence of the males, and whenever they do approach one of the residents, they are immediately driven off. A flock of fifteen females has been observed to be dispersed by a single male and actually prevented from alighting in the marsh undisturbed. This flock, after circling about the marsh and attempting to alight several times, was finally forced to leave.

Arrival of resident adult females.—During the early part of the third week in April, another group of females arrives. The flocks break up and the single birds scatter over the marsh, as did the resident males upon their first arrival. Usually they select a place near some male or group of males. They are much more retiring than the latter, however, and keep mostly near the water's surface, where they are inconspicuous. Whenever they appear on the tops of the cat-tails, or more especially, when they attempt to fly, they are immediately pursued by one or more of the males. Occasionally a male drives a female in great circles over the marsh and even to a considerable height. Eventually, however, he relinquishes the pursuit and returns to his post. The earlier migrant females, when pursued in this way, immediately leave the marsh. But now, as the male ceases pursuit, the female checks her flight and is soon again at her station near the male. Such maneuvers announce the arrival of the resident females. The resident males now remain the entire day in the marsh. The females at first leave the marsh during the middle of the day, but return to the same spot each night. Occasionally a female is found to have selected a spot near a male, and for some reason remains unmolested or even scarcely noticed by him. Ordinarily she is persistently persecuted, and can not appear above the cat-tails without being pursued. She always returns, nevertheless, to the same area. After a varying

period of such actions, the attitude of the male suddenly changes. Instead of pursuing the female, he is more subdued and takes to following her about. He never allows her to escape from his sight, and as she hunts about near the water's surface, he vaunts himself on the nearest cat-tail. They now may be considered mated. At about this time (the last of April), although there are comparatively few birds in the marsh, the migration ceases for a time. The flocks which come in each night and leave each morning are scattering, and are composed entirely of resident birds. Before all of the birds have become mated, the females naturally predominate in the flights to and from the uplands, for the still unmated, resident males spend the entire day in the marsh. After mating occurs, and before and during the building of the nest and oviposition, the sexes leave together for the hills in the late morning, and return in the late afternoon. A study of the food at this season of the year, without reference to sex or time of day or place of collection, would therefore give most varied results. The vegetation in the marsh is beginning to show considerable green above the water. The cat-tails are about thirty inches in height, the burreed is well started, the water horsetail and the sweet flag are eight or ten inches in length, though not yet showing above the water's surface, and the sedges have sent up sprouts about two inches in length. Stretches of open water mark burned-over areas that will soon be covered with a new and luxuriant growth of sedges. Insects at this period appear in greater numbers and supply abundant food for the Redwings. Numerous tabanid and other dipterous larvæ are floating at the surface of the water, and furnish the almost exclusive food of some individuals. Other individuals continue their diet of lepidopterous larvæ and weevils, adding only the spiders, whose wind-blown webs sometimes fairly cover the cat-tails (Plate XVIII, fig. 3). But the migration has not yet ceased.

Arrival of resident immature males.—About the first week in May, after most of the adult resident birds have begun to nest, the immature residents begin to appear in numbers. The days are much longer now, and the sun does not sink below

the hills until nearly seven o'clock. As a result, the migrating flocks do not appear in the marsh until much later in the evening. Between four and six P.M. the adult residents can be seen dropping in, usually singly or in pairs. Shortly after six, the first flock of migrants appears, frequently coming from the east, but more often from the south. Other flocks follow at intervals until nearly dusk. The flocks are small and rather irregular, the total number of individuals not exceeding seventy-five or a hundred birds. From the second week in May until the last of the month, these flocks continue.

Arrival of resident immature females.—The immature females begin to appear with the immature males about the middle of the month. They increase in numbers until the first of June, when they far outnumber the males, and by the second week, when the last migrating birds are recorded, they compose the entire flocks. These flocks are nervous and erratic in their actions. They frequently appear during the middle of the day, flying over the marsh as though on a definite migration. The next moment, however, they swing back, scatter, settle down for a few moments, and just as suddenly are away again to another part of the marsh. It is doubtless through some of these birds, at a time when unattached males are difficult to find, that many of the cases of polygamy arise.

Summary of Spring Migration.—To summarize the spring migration, the groups of migrants and the periods of migration are arranged below in tabular form. Inasmuch as definite dates have not been secured for a sufficient number of years to furnish averages, the periods of 1911 only (with two exceptions, as noted) are employed.

I. "Vagrants".....	Feb. 25-March 4.
II. Migrant adult males.....	March 13-April 21.
III. Resident adult males.....	March 25-April 10.
IV. Migrant females and immature males	March 29-April 24.
V. Resident adult females.....	April 10-May 1.
VI. Resident immature males.....	May 6-June 1 (1910).
VII. Resident immature females.....	May 10-June 11 (1910).

The first date of the period of migration, as given above, is that of the first appearance; the last date in some cases is of necessity only approximate, because of the difficulty in distinguishing migrant from resident birds.

MATING AND SONG.

Summary of the Literature.—Concerning this phase of the life history but little has been written. Nuttall gives us the best account: "They continue to feed in small parties in swamps and by slow streams and ponds until the middle or close of April, when they begin to separate in pairs. Sometimes, however, they appear to be partly polygamous, like their cousins the Cow Troopials; as amidst a number of females engaged in incubation but few of the other sex appear associated with them; and as among the Bobolinks, sometimes two or three of the males may be seen in chase of an individual of the other sex, but without making any contest or show of jealous feud with each other, as a concubinage rather than any regular mating seems to prevail among the species." Baird, Brewer, and Ridgway (1874) tell us that "Late in April, they have all re-established themselves in their chosen haunts, have mated, and are preparing to make their nests. In Pennsylvania this is done in May, in New England early in June, and farther north a fortnight later." The observations of Peet (1908) in Michigan differ in some respects from those of the two preceding authors and from those made at Ithaca: "Upon arriving in the spring, the courting *begins at once*,* although nest building must be delayed for several weeks, as *no nests are built until the cat-tails are nearly grown*.* He then adds: "The females spend much of their time walking about among the dead, broken-down herbage, probably seeking food, but the males strut about on the limbs of the near-by trees, their feathers ruffled up and body swelled out. . . . During the time elapsing between their arrival from the south and nesting, the Redwings may usually be found scattered over the entire swamp, but with the coming of the breeding season, they collect in the clumps of cat-tails, where in a short time the nests will be built."

The song of the Redwing may well be discussed in connection with mating. Nuttall again gives us the most extended account: "They commence a general concert that may be

* The italics are the present writer's.

heard for more than two miles. This music seems to be something betwixt chattering and warbling,—jingling liquid notes like those of the Bobolink, with their peculiar *kong-quër-rēē* and *bob ä le, o-bob ä lēē*; then complaining chirps, jars, and sounds like saw-filing, or the motion of a sign-board on its rusty hinge; the whole constituting a novel and sometimes grand chorus of discord and harmony, in which the performers seem in good earnest, and bristle up their feathers as if inclined at least to make up in quantity what their show of music may lack in quality. . . . Selecting their accustomed resort, they make the low meadows resound again with their notes, particularly in the morning and evening before retiring to or leaving the roost; previous to settling themselves for the night, and before parting in the day, they seem all to join in a general chorus of liquid warbling tones, which would be very agreeable but for the interruption of the plaints and jarring sounds with which it is blended. . . . Assembled again in their native marshes, the male perched upon the summit of some bush surrounded by water, in company with his mates, now sings out, at short intervals, his guttural *kong-quër-ree*, sharply calls *t'tshéah*, or when disturbed, plaintively utters *t'tshāy*; to which his companions, not insensible to these odd attentions, now and then return a gratulatory cackle or reiterated chirp, like that of the native Meadow Lark. . . . If the nest is approached . . ., the female cries *'queäh*, *'pueäh*, and at length, when the mischief they dreaded is accomplished, the louder notes give way to others which are more still, slow, and mournful; one of which resembles *t'ai'*, *t'ai'*, or *téa* and *t'tshedäh*."

Bicknell (1882), in his studies of the singing of birds, states that their song always accompanies migratory movement, even as early as February 22. The chief song months are March, April, and May. After the middle of May, they lose their readiness of voice, but never cease singing before July, final songs being heard July 17, 28, and August 3. In the fall, singing is transiently renewed between October 14 and 17.

Baird, Brewer, and Ridgway (1874), in discussing the song, say: "The notes of this bird are very various and indescribable.

The most common one sounds like *con-cur-ee*. But there is also almost endless mingling of guttural, creaking, or clear utterances that defy description."

Townsend (1905), in listening to the voices of a New England marsh, found that on the 22d of May the Redwings ceased singing at 7.30 p.m. They did not sing during the night nor begin in the morning until between 3 and 3.15, after the Catbird, Song Sparrow, and Tree Swallow had begun to sing. Full dawn appeared at 3.45. At a later day (June 24) the Redwings were found to continue singing for about three-quarters of an hour after sundown.

To attempt to put in words what such men as Baird, Brewer, and Ridgway have considered indescribable, may appear somewhat rash. Nevertheless it would be advantageous to describe or classify, if possible, the various notes given, for they are not so infinite in number as might be supposed (at least not so at Ithaca). The greatest difficulty lies in the selection of words, letters, or symbols that will convey a sound similar to that uttered by the bird. The *con-cur-ee*, *kong-quer-ree*, or *gur-gel-lee* note, as it has been variously called, is sufficiently described to need no further remarks here. It represents the true song. It may be modified by the addition of various of the call notes to be next considered, but it is always recognizable. It is always accompanied by spreading of the wings and tail feathers and by erection of practically all the body feathers, especially those of the shoulder patches. It is given by the males alone, from first arrival until the middle of July, and again, to some extent, in the fall. In addition to this song, there is another, restricted to the males, which is heard occasionally on cold days of spring, especially by the first "vagrants" to arrive. These birds seldom give the *kong quer-ee* note, but indulge in a low monotone chuckle, which is difficult of description. A large flock engaged in this monotone can be heard for a considerable distance.

The call notes can be put into two groups, the *check* notes and the whistles. Of the former there are two which are easily recognized. The first is the flight note, which may be represented by the word *chuck*. This is the note which first

attracts our attention to a flock flying over. The second is a scolding note, which is, in general, similar but much shorter in its accent. It may be represented by the word *check*. The latter note is given whenever one intrudes upon the bird's haunts.

The whistles, likewise, are of two sorts, dependent upon the inflection. The first, with a falling inflection, is rather plaintive, and not so scolding as the second. It is probably what Nuttall represented by '*tshāy*'. The second does not have the falling inflection, and begins more abruptly than it ends. It is probably the note which Nuttall describes as '*tshéah*'. This is the alarm note; it is given when the nest is approached, and arouses all of the other birds within hearing. Various combinations of these call notes, with slight modifications, are frequently given, but they can almost always be resolved into these factors. For example, a sort of scolding song, which is given in the air, with quivering wings, can easily be resolved into: *check, check, check, t'shéah*. A modification of this, which is given by both birds at the breeding season, but especially by the female, substitutes the *chuck* note for the *check*, and a *chee* note for the whistle, and may be represented thus: *chuck, chuck, chuck, chee-e, chee-e, chee-e*.

Although song begins with the arrival of the first true migrants, mating can not take place for several weeks. The first migrating females do not arouse the males, and travel unmolested. After about a week, however, the males begin to notice them, and song and display are augmented. Upon the arrival of the first resident females, the reproductive organs of the males become considerably enlarged (Plate XXI, *F*), and song and display reach their height. In addition to the ordinary display and erection of feathers, a method of soaring is now indulged in. In comparison with that of the Lark, it is rather crude, but undoubtedly it is akin to it. Mounting by a rather irregular spiral, the male bird attains a considerable height, where he hovers, oftentimes for long periods, while his wings barely flutter. Song is not generally indulged in. Eventually, with half-closed wings, the bird drops down in a zigzag course to the marsh. A dozen or more birds may fre-

quently be seen in the air at once, as they perform these evolutions. At this time, also, hovering at a much lower height is frequently indulged in. With a few quick strokes of his wings, the male vaults from his post into the air, and with quivering wings and flaming shoulders, gives vent to his pent-up passion in the "scolding song" described above. After mating has taken place and family cares have begun, song gradually diminishes, although it is still frequently heard from some individuals until late in July.

As before stated, the arrival of the first resident females arouses the males to a sort of frenzy, and whenever one appears in sight, it is pursued and driven from the neighborhood. A migrating female immediately leaves the vicinity, but a resident bird returns to the same spot. With a few birds mating occurs at once, so that the first nests are started by the beginning of the third week of April. Normally, however, the male continues to drive away the female for a week or more after her first appearance. But she clings to the spot, and eventually his attitude changes. Instead of pursuing her, he follows her around while she feeds about the debris upon the water. Actual mating may not occur, however, for a week or two after the female has made her choice of a future mate. Meanwhile she spends the middle of the day on the uplands, while the male remains in the marsh. After mating and before nest-building, she spends the entire day in the marsh and only occasionally leaves, accompanied by her mate. After the nest is commenced and through the egg-laying period, both birds ordinarily spend the middle of the day on the uplands; particularly is this true of those nesting during the earlier part of the season.

Nuttall states that "a concubinage rather than any regular mating seems to prevail among the species," and there is very good ground for the belief, although there seems to be a great deal of individual variation in this respect. Certain pairs have been observed throughout the season, and found to be mated as steadfastly as are most birds, while in others the tie seems to bind only so long as the male is watchful and able to exert his lordship in driving away other males. A female

has been observed to receive one male with spreading wings and quivering feathers, and the next moment, when this bird had been driven off, to welcome the victor with the same freedom and display. To what extent this prevails, it is, of course, difficult to say. Cases of polygamy, such as Nuttall suggests, probably occur even more frequently than polyandry. Coues (1883) reports on two such cases observed by Beal in the prairie sloughs of Iowa, and many other cases doubtless have been noted. In a large marsh, where a great many birds are nesting, it is difficult to decide with precision in such cases, since the slightest disturbance brings males from all parts. One definite case, however, was observed during 1910, where a male mated with two females. The nest of the first female and her relations with the male were perfectly normal. The nest of the second female was built about five days later than that of the first, and at a distance of about 25 feet. Three eggs were laid, but one of them disappeared and another proved infertile. This nest was rather poorly constructed, and it slipped down on one side. The relations of the second female with the male were not extremely close, the only interest usually shown by him being that of driving other males from the neighborhood of the nest. She had, however, no other mate. The two nests were watched for many hours at a time from a blind.

After the choice of mates, an interval of a week or more may intervene before the building of the nest, although it is frequently less, and in many cases the nest is started immediately. By the end of the first week in May, most of the adult birds are mated and have started to build. When mating occurs, the ovaries of the females are far from mature. The organs of the male, on the other hand, have reached nearly a maximum of development. (Plate XXI, *R* and *H*.)

NESTING.

To quote from every author who has written on the nesting of the Redwing would be an endless task, and would result in much unnecessary repetition. Nuttall has written the most complete account, and is quoted almost in full below. Only

such parts as add materially to this account will be selected from other authors.

“About the end of April or early in May, in the middle and northern parts of the Union, the Red-winged Blackbirds commence constructing their nests. The situation made choice of is generally in some marsh, swamp, or wet meadow, abounding with alder (*Alnus*) or button-bushes (*Cephalanthus*); in these, commonly at the height of five to seven feet from the ground, or sometimes in a detached bush or tussock of rank grass in the meadow, the nest is formed. Outwardly it is composed of a considerable quantity of the long, dry leaves of sedge-grass (*Carex*), or other kinds, collected in wet situations, and occasionally the slender leaves of the flag (*Iris*) carried round all the adjoining twigs of the bush by way of support or suspension, and sometimes blended with strips of the lint of the swamp *Asclepias*, or silkweed (*Asclepias incarnata*). The whole of this exterior structure is also twisted in and out, and carried in loops from one side of the nest to the other, pretty much in the manner of the Orioles, but made of less flexible and handsome materials. The large interstices that remain, as well as the bottom, are then filled in with rotten wood, marsh-grass roots, fibrous peat, or mud, so as to form, when dry, a stout and substantial, though concealed shell, the whole very well lined with fine, dry stalks of grass or with slender rushes (*Scirpi*). When the nest is in a tussock, it is also tied to the adjoining stalks of herbage; but when on the ground this precaution of fixity is laid aside. . . . They raise two broods commonly in the season. . . . When the young are taken or destroyed, the pair continue restless and dejected for several days; but from force of their gregarious habit they again commence building, usually soon after, in the same meadow or swamp with their neighbors.”

Wilson's account, while quite full, contains no information not conveyed by Nuttall. Samuels (1887), Stearns (1881), Goss (1883), and Capen (1886) each give a more or less extended account of the nesting habits, but add nothing to Nuttall's description. Capen does not record the first set of eggs until the last of May. Merrill (1888) found half-grown

young at Fort Klamath, Oregon, on May 27, which would mean that the set of eggs was completed about May 12. Chapman (1888) records a nest containing four eggs at Gainesville, Florida, on May 6. Dugmore (1902) states that "The nest varies greatly in its construction and situation; usually of weeds and coarse grasses, lined with *hair**. . . . Most nests are about three inches deep inside, but some that are built like the orchard oriole's are much deeper." Baird, Brewer, and Ridgway (1874) state that "Mr. Maynard found these nests placed in trees twenty feet from the ground. One nest was built on a slender sapling at the distance of fourteen feet from the ground. The nest was pensive, like that of the Baltimore Oriole. It was woven of bleached eel-grass." Further on appears the statement: "So tenacious are they of a selected locality, that I have known the same pair to build three nests within as many weeks in the same bush, after having been robbed twice. . . . In New England these birds have but *one** brood in a season. Farther south they are said to have three or more." Stockard (1905) gives the limiting dates for nests as May 12 and June 27 in Mississippi, with the height of the breeding time at about June 1. He also records "eleven nests of the Redwing . . . found in a peach orchard which was located one mile from the Mississippi River, but the ground was dry and not at all marshy." Brewster (1905) also records a nest in a vertical fork of a small apple tree. Judd (1907) does not record the Redwings as nesting "until the latter part of May or early in June" in Albany county, N. Y. Peet (1908, Michigan) records the earliest nests with completed sets of eggs on May 9. He states that "Two or three broods are usually raised," and that "Sometimes as many as a dozen nests are found within a space ten feet [!] square." He writes that they "continue nesting through June," but it is quite obvious that the time between May 9 and July 1 is too short for three broods. Cleaves (1910) records a group of Redwings nesting in a daisy field after the destruction of their former breeding ground in a near-by marsh.

* The italics are the present writer's.

To summarize, in so far as the conflicting statements will admit, it has been stated that the Redwings begin building about the second week in May in the Middle and Northern States, and one or two weeks earlier farther south. They rear one, two, or three broods a season, depending upon the locality. The nest shows a great deal of variation in structure, materials used, and location, but a normal nest is composed of three parts: an outer basket woven into the supporting bushes or rushes, a filling of mud or decayed wood, and a lining of finer materials. The Redwing shows great adaptability with regard to nest construction, and a tenacity for a selected nesting site despite great changes in the environment or disasters which may befall its nest.

At Ithaca nest-building commences about the middle of April, but it is not until the first part of the second week in May that all of the adult males are mated and have nests started. At this time, it will be recalled, the immature resident males are just beginning to arrive, so that before they are mated and nesting, it is the last of May. Thus the height of the nesting season is reached about the first of June. The adult birds commence building again, often before the first young have left the nest. The second nest is located in the immediate vicinity of the first, frequently within a distance of ten feet. This is true also when the first nest has been robbed or destroyed. One pair, which was experimented upon, built four nests within a radius of twenty-five feet between April 15 and May 18. The first nest was deserted before completion, probably because it was discovered, and the second was immediately started about fifteen feet to the east. This was completed in six days, and a complement of three eggs was then deposited. This nest was removed on April 26. Another was soon finished about fifteen feet to the south, the complement of eggs again numbering three. This was removed on May 6. The fourth nest, which was built about ten feet to the south of the third, likewise contained three eggs when the full set had been deposited. This nest was removed on May 18. A fifth nest was doubtless constructed, for two weeks later both birds were seen still clinging to the spot. On

account of the presence of other nests in the vicinity, however, it was not identified with certainty. A comparison of the three completed nests shows them quite similar in construction and in materials used. The first two are more regular in shape, however, since the third was built entirely in the growing vegetation and had to be adapted to it.

A comparison of the eggs shows a relatively normal amount of variation as to color and markings, the last set having a slightly darker ground color and heavier spots. The size shows a gradual increase from the first to the last eggs laid, as the following table of measurements shows:

Date taken.	Length.	Width.
Apr. 26, 1911.....	23.0 mm.	17.0 mm.
Apr. 26, 1911.....	23.2	17.0
Apr. 26, 1911.....	24.2	18.0
May 6, 1911.....	24.2	18.0
May 6, 1911.....	25.4	18.0
May 6, 1911.....	27.0	19.0
May 18, 1911.....	27.2	18.2
May 18, 1911.....	27.2	18.4
May 18, 1911.....	28.0	19.0

The first nests built are located in the dead stubs of the cat-tails that have been burned over during the previous fall. At first they are not sheltered by vegetation of any kind, for the new growth is barely above the water (Plate IX, fig. 1). Occasionally nests are located in the tangles where the flags have not been burned. As the season advances and the vegetation grows, green stalks are included in the support. At first these are not sufficiently strong to serve alone as a support, and consequently the nests are always attached on one side to a dead stub (Plate IX, fig. 2). This is true of most of the nests constructed in early May, and it generally results in disaster. So firmly are the nests fastened by the strands of milkweed fiber, that the side attached to the green blades is carried upward by their growth, while the other, attached to the dead stubs, remains fixed. As a result, the one side is lifted at the rate of almost an inch a day until the nest is inverted (Plate XVII, fig. 1). The birds continue to incubate until the last egg is rolled out. Later, as the growing cat-



FIG. 1.—NEST BUILT DURING LATE APRIL, BETWEEN THE DEAD CAT-TAIL STUBS.



FIG. 2.—NEST BUILT DURING EARLY MAY, BETWEEN DEAD STUBS AND GROWING VEGETATION.



FIG. 2.—NEST IN ARROW ARUM IN EARLY JUNE.



FIG. 1.—NEST BUILT IN THE CAT-TAILS DURING LATE MAY,
SHOWING THE ALTITUDE ABOVE THE WATER

tails become stronger and denser, suitable nesting sites can be found without the employment of the stub supports, and many of the nests are suspended freely in the growing vegetation. These nests are seldom capsized, though frequently the growth of the vegetation squeezes the nest together, crowding the young until they are forced to leave prematurely (Plate XVII, fig. 2). By the end of the third week in May, most of the vegetation in the marsh is sufficiently strong to support a nest, and as a result, nests built at this season are located rather indiscriminately in cat-tail, sedge, burreed, water horsetail, dock, or arrow arum (Plate X, fig. 2). By the first of June the cat-tails and sedges are matured, and have become very dense and harsh. The Redwings now desert them for the softer vegetation, such as the dock and smartweed, which by this time fill most of the small ponds. A few pairs, however, continue to nest in the cat-tails about the edges of ponds, where it is unnecessary for them to penetrate at each visit the harsh, dense tops of the vegetation above the nest. With the change in nesting site during the season, there is a corresponding change in the altitude of the nest above the water. Beginning in the middle of April, the nests are located at an average of eight or ten inches above the water, but by the middle of June the average has risen to twenty-five inches (Plate X, fig. 1). This is doubtless due to the elevation, with the growth of the vegetation, of the available nesting sites. There is likewise a corresponding change in nesting material and workmanship. The first nests, constructed by adult birds with plenty of time and material, are very neat, compact structures, like that described by Nuttall. Later nests, however, built by immature birds when the supply of milkweed fiber has been greatly depleted and time is more limited, are much less complete, not infrequently with one of the three main parts eliminated. The nest shown in Plates XIV-XVI is such a one, composed almost entirely of narrow strips of cat-tail and sedge, without the feltlike filling and much of the grass lining. In general, the materials are those which are most convenient at the season and spot in which the nest is being constructed, and they are utilized in so far as they can

be adapted to the type of nest to which the Redwings strictly adhere. Thus, the outer basket may be composed entirely of fibers of milkweed, or of grasses, or of strips of sedge. The sedge, however, to be as flexible as the fiber and as adaptable to the necessary weaving, must be wet. Hence, when such material is used, it is always taken from the water and used in a moist condition. The "felting" of the nest may be dead wood, decaying fragments of *Typha*, or mud. The exact kind of material is not as important as its general nature.

The time required for building a complete nest is usually six days. Of this time, three days are spent on the outer basket and "felting," and three days on the lining. Many of the later, more poorly built nests require much less time for construction, some of them being completed in as few as three days. The materials, as might be judged from their nature, are frequently gathered from very different parts of the marsh; the outer and lining layers generally come from the margins, and the "felting" from the open marsh in the immediate vicinity of the nest.

The attachment for the chosen nesting site, which is shown from the first arrival of the male bird, and which causes a pair to nest time and again about the same spot when the nests are destroyed, is equaled only by their sensitiveness to the discovery of the nest before its completion. If a nest is discovered before the deposition of the first egg, it is usually deserted. Practically every nest constructed before the second week in May, and discovered before its completion, has been deserted. Generally the birds build a second nest a short distance away, employing more or less the materials from the first nest. Very frequently the cause for desertion has been no more than a person's walking past the nest at a short distance, and the bending of a flag to mark the spot. Later in the season, especially in the case of the immature birds, this sensitiveness is not so marked.

The construction of the nest, in all cases observed at Ithaca, has been entirely by the female. The male has never been seen with nesting material in his bill. He is very attentive, however, during the process. This usually takes place

PLATE XI.



REDWINGS NEAR THE NESTING SITE ILLUSTRATING THEIR METHOD OF PERCHING
ON THE VERTICAL CAT-TAILS.

only during the early morning and late afternoon, both birds leaving the marsh during the heat of the day. When long excursions are made to the edges of the marsh, the male accompanies the female. When she forages near the nest, he takes a position upon some prominent point, from which he can keep her under his eye and drive away any intruding males. Such watchfulness may have resulted from the female's tendency toward polyandry, which has been mentioned above.

Egg-laying usually follows immediately upon the completion of the nest, though intervals of two and three days before the deposition of the first egg have been recorded. The usual complement is three or four, the one number being as common as the other. Not infrequently five eggs, and rarely six, are found in a nest. Sets of seven, as recorded by Dawson (1903), have not been discovered here. The eggs are always unmistakable, though there is considerable variation in color, markings, size, and shape. Baird, Brewer, and Ridgway's (1874) concise account of the eggs may be quoted here: "The eggs vary greatly in size: the largest measures 1.08 inches by .82 of an inch; the smallest .90 by .65. They average about an inch in length and .77 of an inch in breadth. They are oval in shape, have a light bluish ground, and are marbled, lined, and blotched with markings of light and dark purple and black. These markings are almost wholly about the larger end, and are very varying." One nest was discovered containing four eggs, which were slightly paler in ground color than the average, and had no spots or markings of any kind. From these to eggs in which the ground color is almost concealed with cloudings of brown, and with heavy spots and blotches, all intergradations have been found.

During the days when the eggs are being deposited, frequently both birds continue their excursions to the uplands. With the laying of the third egg, incubation begins, and thenceforth both birds remain in the marsh. Incubation, so far as observed, is performed entirely by the female. In one instance the first egg hatched in ten days, and frequently one or more of the eggs requires twelve, but the usual period is eleven days.

THE YOUNG.

Concerning the development and care of the young, but little has been written. Herrick (1901) gives the most complete account. He writes as follows: "On the fifth day of July a nest of three young Blackbirds, . . . aged five days, was found. . . . On . . . July 11th, . . . at about half-past eleven o'clock one of the fledglings left the nest and was fed by the old birds in the surrounding bushes of the marsh. . . . Three days later the swamp was visited at just after sundown, when the young birds suddenly arose from the nest and flew off with ease and precision." Evidently the first bird was in the nest eleven days, and the others fourteen, provided they were five days old when first found. A summary of the observations made on the development of the young at Ithaca, for various nests in 1910, is as follows:

At *hatching* the young are blind and helpless. The skin is scarlet, with but a scant covering of buffy or grayish down along the principal feather tracts (Plate XII, fig. 1). They are at first exceedingly helpless, scarcely able to raise their heads for food, but they gain strength rapidly after the first feeding. During the *first* day there is considerable increase in size. On the *second* day feather sheaths of the primaries and secondaries show distinctly. By the *third* day these feather sheaths appear distinctly along all of the tracts. On the *fourth* and *fifth* days there is a great increase in the size of the body and in the length of the quills (Plate XII, fig. 2). On the *sixth* the feather sheaths of the wing break open. On the *seventh* the wing feathers have grown considerably, and those of the other tracts begin to break. On the *eighth* all of the sheaths have broken, and the wing feathers have attained considerable length. On the *ninth* the feathers have grown still further, but do not yet cover all of the bare spaces (Plate XIII, fig. 1). The young can fly short distances, however, and can not be kept in the nest if once frightened or removed. If the nest has become polluted, as frequently occurs when it has become greatly compressed by the growing vegetation, they may leave of their own accord on this day. On the *tenth* the stronger of the young leave and climb to near-by



FIG. 1.—JUST HATCHED.



DEVELOPMENT OF THE YOUNG OF THE REDWING.

FIG. 2.—FIVE DAYS OLD.

PLATE XIII.



FIG. 1.—NINE DAYS OLD.



FIG. 2.—TEN DAYS OLD.

DEVELOPMENT OF THE YOUNG OF THE REDWING.

supports (Plate XIII, fig. 2). If the nest is approached, all leave, but otherwise the weaker remain until the *eleventh* day (Plate XIV, fig. 1), when all scatter to the vegetation in the immediate vicinity. They then remain in this neighborhood for at least ten days, even after the parents have ceased caring for them and have started a second brood.

Herrick also gives us the following information concerning the care of the young: "In the space of four hours on the first day. . . fifty-four visits were made and the young were fed forty times. The female brooded her young over an hour, fed them twenty-nine times, and cleaned the nest thirteen times. The male made eleven visits, attending to sanitary matters but twice. . . . On the following day, . . . in the course of nearly three and one-half hours, fifty-five visits were made, and the young were fed collectively or singly forty-three times. . . . The male bird served food eleven times and attended to sanitary matters once. In the course of forty-two minutes the first young bird to leave the nest was fed eight times, seven times by the mother and once by the father."

Observations on the care of the young in this study are yet incomplete. Just as all of the work of incubation is performed by the female, so the care of the nest and young rests largely with this sex. Although the male always shows great concern when the nest is approached, he has seldom been seen to assist in the actual care of the young. (There is evidently considerable individual variation in this respect.) Previous to the hatching of the eggs, the male is more bold in the presence of danger, but after hatching the instinct becomes much more pronounced in the female.

The food of the young consists entirely of animal matter, so far as observed here, although Judd (1900) found one per cent of weed seeds in the food of nestlings examined by him. It does not vary materially with the age of the young, but more especially with the insects predominant in the marsh and therefore most easily secured at the time. The principal insects eaten are May flies, caddis flies, and lepidopterous larvæ. Generally three or four insects are brought each time, and one delivered to each young. This is not always the case,

however, for sometimes the entire mass is given to one bird. There seems to be no order in this distribution, the young bird with the longest neck and widest mouth always getting fed first. The food is delivered well down into the throat of the young (Plate XV, fig. 1), and if not immediately swallowed is removed and given to another. The number of visits or periods of feeding varies with different individuals, and in general increases with the age of the young. Two different nests were observed with young of about the same age (four days). One female made visits about once a minute, but took long rests every ten minutes or so; the other was more regular, but her visits averaged only once in five minutes. After almost every feeding, the nests were scrupulously cleaned, and the excrement, enclosed in its membrane, was carried some distance from the nest before it was dropped. Some individuals drop the excreta always in the same spot.

FALL MIGRATION.

With the gathering together of the Redwings in the fall and their visitations in vast flocks upon the grain fields, they are so conspicuous and are of such economic importance that they have received a great deal of attention, both by ornithologists and by the public at large. Wilson (1831) writes that toward the middle of August the young birds begin to fly in flocks chiefly by themselves. He tells of their feeding on green corn in September and of the method employed to destroy them on their roosts by setting fire to the marsh. He states that about the first of November they begin to move off toward the south, though near the seacoast, in New Jersey and Delaware, they continue long after that period. Nuttall's account is very similar to that of Wilson, but goes a little more into detail: "In the latter part of July and August the young birds, now resembling the female, begin to fly in flocks and release themselves partly from dependence on their parents, whose cares up to this time are faithful and unremitting; a few males only seem inclined to stay and direct their motions. About the beginning of September these flocks, by their formidable numbers, do great damage to the unripe corn, which is now a



FIG. 2.—FEMALE REDWING APPROACHING THE NEST.

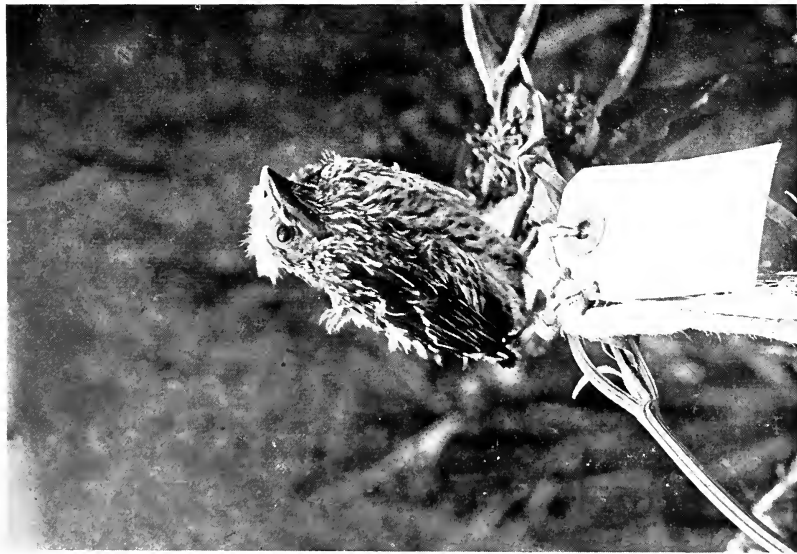


FIG. 1.—YOUNG REDWING, ELEVEN DAYS OLD.



FIG. 2.—[INSPECTION AFTER FEEDING.



FIG. 1.—FEMALE REDWING DELIVERING THE FOOD.



FIG. 1.—SEARCHING THE NEST FOR EXCREMENT.



FIG. 2.—CARRYING AWAY THE EXCREMENT.
CLEANING THE NEST.

favorite repast; towards the close of September . . . they begin to roost in the reeds, whither they repair in large flocks every evening from all the neighboring quarters of the country; upon these they perch or cling, so as to obtain a support above the surrounding waters of the marsh. . . . Early in November they generally leave the Northern and colder States, with the exception of straggling parties, who still continue to glean subsistence, in the shelter of the sea-coast." Samuels (1867) states that "Two broods are usually reared in the season: as soon as the last brood leaves the nest, the whole family joins with its neighbors into a flock of sometimes a hundred or hundred and fifty or more," and "about the last of October, they depart on their southern migration." In 1885 Bicknell noted the disappearance of the Redwings during a period of the fall, stating that the adult males disappear about the end of July, while the females and young remain abundant and congregate in mowed meadows. In September, the females and young likewise disappear, in some years almost altogether. He offers no explanation for this disappearance. Lloyd (1887) states that in Tom Green and Concho Counties, Texas, the Redwings winter, the males keeping in separate flocks with the young males, only a few of the latter being found with the females. Lawrence (1889) records that on New York Island "the first birds flying south were the Red-winged Blackbirds (*Agelaius phœniceus*); from the middle of July, for some weeks, there would be a flight of this species every afternoon, coming in flocks of from twenty-five to fifty or more individuals." The disappearance of the Redwings during a period of the fall is again noted by Coombs (1892) in Louisiana. "About the middle of August this species, as also the Great-tailed Grackle, becomes temporarily scarce, presumably leaving for the better feeding grounds of the rice districts further northward. Returning later, much swelled in numbers, they continue abundant until about April first, when the departure of migrants thins the ranks appreciably." Loomis (1892) likewise notices this disappearance during the fall: "The gathering of clans of Red-winged Blackbirds and their subsequent disappearance form one of the

closing features of the month (July). . . . The opening fortnight (November) witnesses the full tide of Blackbirds, the Red-winged returning after a long void but imperfectly broken since the breeding season." Between 1892 and 1905 various references to the fall migration are made, but nothing new is added. In 1905 Townsend gives an account of the fall migration as it occurs in Essex County, Mass. "As early as July 1 the females and young gather in small scattered flocks, together with a few adult males. By the middle of July the flocks are moderate in size, while by the end of the month they have gone up into the hundreds, composed of females and young, while only a few red-shouldered males are to be seen. . . . The flocks of young then diminish in size and by the end of August are generally gone. Then ensues a period when Red-winged Blackbirds are rarely seen, but in the latter part of September and in October large flocks of the more northern birds appear."

To summarize, then, it has been stated that after the second brood has left the nest, which may be as early as July 1, the females and young gather in flocks and visit the uplands. The males assemble in similar places, but remain in distinct flocks. Here they feed largely in grain and stubble fields. During the first of August all of the Redwings disappear, and are not seen again until the middle or latter part of September. The males are the first to disappear. This phenomenon has been noticed from Massachusetts to Louisiana, and has been variously interpreted. In the north it has been explained as their departure for the south, and in the south as a departure for better feeding grounds. During the last of September they appear again in numbers larger than ever before, the sexes in distinct flocks. At this time they come to the marshes to roost each night, and feed on the uplands during the day. During the winter they may be found in the states south of Maryland in large flocks. The sexes remain apart, but generally a few immature males accompany the females.

Considerable time has been devoted to the study of the postnuptial movements of the Redwings at Ithaca, until it is

believed that an understanding has been gained of the "mysterious disappearance" and the phenomena of the migration. It has been previously stated that the young remain in the vicinity of the nesting site frequently for ten days after the cessation of care by the parents. They then make their way to the borders of the marsh, where they are joined by other young until considerable flocks are formed. With them a very few adults of either sex are usually associated. They spend the day gleaning food about the alder-willow and grass zones, but generally spend the night in the open marsh. Their food is still largely animal, consisting primarily of weevils and lepidopterous larvæ. By the first of July, small flocks begin leaving the marsh in the morning to seek their food on the uplands. They join the numerous Grackles and Cowbirds which are now through breeding, and together they visit grain and stubble fields, where they frequently do considerable damage by reason of their large numbers. Their diet now changes from the insectivorous marsh type to an almost strictly herbivorous diet of grain and weed seeds. By the first of August the breeding season is entirely over, and they are joined by the females and the young of the second brood, while the males congregate in flocks by themselves. For several weeks now, no Redwings are found in the marsh during the day, but may be seen coming in at sundown and leaving at dawn in considerable flocks. But the molting season has commenced. The inner primaries and many of the body feathers have already been replaced. The "mysterious disappearance" now begins to take place. The adult males, which begin molting about two weeks earlier than the females or young, are the first to go, and shortly they are followed by the females and young. To the ordinary observer they have completely disappeared. No longer are they seen leaving the marsh in the morning or returning at evening. Along the ponds, streams, and lake shore there are none to be seen. They are apparently gone from the neighborhood. If at this time, however, one penetrates into the heart of the marsh, where the flags wave four and five feet over his head, he may hear a rush of wings ahead of him as a flock of birds

breaks from cover and drops again into the flags a short distance beyond. He may hear this again and again, and yet never see a bird, so impenetrable is the thicket of flags. A few vigorous "squeaks," however, such as frequently draw birds from cover, and the secret is disclosed. A flock of tailless, short-winged birds hovers above his head for a moment, and then is off again into the tangle. If specimens are collected, the disappearance of the Redwings becomes no longer mysterious. Aside from the loss of the tail, which is obvious, one finds that the outer primary feathers are but just breaking their sheaths. With such handicaps, it is no wonder that the long flights to the uplands are not attempted, and that they seek protection in the effectual shelter of the marsh. The fall disappearance, then, corresponds to that period of the postnuptial molt when the tail feathers and outer primaries are being replaced. Their diet undergoes another change at this time, weevils and lepidopterous larvæ again taking the ascendancy, for there is but little vegetable food available in the open marsh at this time.

About the middle of September the adult males again come into evidence, and are seen once more on the uplands by day. They commenced the molt about two weeks earlier than the females and young, and having now completed it, they appear again about two weeks sooner. During the molting period the males and females occurred in mixed flocks, but from now on, with scarce an exception, they are segregated. Shortly the females and immature birds come more into evidence about the borders of the marsh, and by the first of October are as regular in their movements as the males, spending their days on the uplands and coming to the marsh each night to roost.

Well-defined migration begins about the middle of October. At that time all loitering ceases, and the evening and morning flights in and out of the marsh are very regular, scarcely a bird lingering during the day. Beginning about three-fourths of an hour before, and continuing about half an hour after the sun has disappeared behind the hills, they can be seen in flocks of from ten to a thousand continually dropping into the marsh.

A single roosting place seems to be selected toward which all the birds direct their way. In the extensive Montezuma Marshes, at the foot of Cayuga Lake, this roost is frequently at the northerly end, so that birds coming in from the south often fly over miles of marsh before reaching the place. With them are often associated Cowbirds, Grackles, and Rusty Blackbirds. The form of the flock is rather irregular, but always with the long axis at right angles to the direction of flight (Plate VIII, fig. 1), thus differing from the characteristic form of the flocks of Grackles which sometimes extend for over a mile in length, although only a few rods wide. The maximum flight occurs at sundown. The morning flight is not so regular as that in the evening, and it extends over a shorter period. Beginning a few minutes before sunrise, flocks are continually in sight for about thirty minutes. Their formation is open and they vary in numbers, from a few to over ten thousand birds, the largest flocks extending to the east and to the west as far as the eye can see, but generally not more than a hundred birds deep. During the evening flight the sexes are generally in separate flocks, except for some of the last birds to arrive, among which there is a considerable mixture. The method of segregation of these birds in the morning flight is interesting. A single male or a small group of males, finding themselves in a flock of females, drop out of the ranks and await the appearance of a flock of their own sex, or until their own numbers are sufficiently augmented to form a flock of some size, when they are again up and away. Half an hour after the morning flight has commenced, scarcely a Redwing is to be found in the marsh. The fall migration continues until about the middle of November. The last birds seen are generally scattered flocks of females.

ENEMIES.

Reference has already been made to some of the enemies or forces which tend toward the destruction of the Redwings. The presence of Minks and Weasels in the marsh has been mentioned. In the same category with them might be placed the Marsh, Sharp-shinned, Cooper's, and Pigeon Hawks,

which frequently strike terror into the ranks of Redwings. It is the Long-billed Marsh Wren, however, that is accountable for the greatest devastation. Chapman (1900) comments upon this bird's destructiveness to the eggs of the Least Bittern. In the spring of 1911, I observed it destroying the eggs of a Red-winged Blackbird. While I was standing near a nest containing two eggs, I noticed a peculiarly acting Marsh Wren about thirty feet away. The vivacious notes so characteristic of this species were not uttered. It made its way through the vegetation directly toward the nest until within about ten feet of me, when it began to circle. After I had retired to a distance of about fifteen feet, the Wren went without hesitation straight to the nest, hopped upon the rim, and, bending forward, delivered several sharp blows with its beak upon one of the eggs. It then began to drink the contents much as a bird drinks water. After a few sips, it grasped the eggshell in its beak and flew off into the marsh, where it continued its feast. Upon finishing the contents, it fluttered up to a near-by cat-tail, where, for the first time during the whole period, it burst into song. How general this egg-eating habit of the Marsh Wren may be, is unknown. It seems very strange, however, in view of the friendly terms upon which it seems to live with the Redwing, for nests of both birds are not infrequently found in close proximity. That cases are not isolated is shown by the fact that of 51 nests of the Redwing observed in a limited area, the eggs of 14 were destroyed in this or in a similar way, and it is not at all uncommon to find one or more of the eggs of a nest with neat, circular holes in one side, such as would be made by the small, sharp beak of a Wren.

The way in which nests are destroyed by the growth of vegetation has already been commented upon (Plate XVII, figs. 1 and 2).

A list of the parasites found upon the Redwing has been prepared for me by Mr. A. R. Thompson, and is presented herewith:

Mallophaga:

Docophorus agelaii Osborn



FIG. 1.—NEST OVERTURNED BY THE GROWTH OF THE VEGETATION.



FIG. 2.—NEST COMPRESSED BY THE GROWTH OF THE VEGETATION.

Nirmus illustris Kellogg

Nirmus ornatissimus Giebel

Acarina:

Cnemidoptes fossor Ehlers

Proctophyllodes indefensus Thompson, sp. nov.

Pterodectes sp.

Syringophilus elongatus Ewing

The effect of *Cnemidoptes* upon the feet of the Redwing is shown in Plate XX, fig. 1. Such abnormal feet are by no means uncommon, and can be identified in the field even at a considerable distance.

MOLT AND PLUMAGE.

The most complete and authoritative account of the molt-
ing and plumages of the Redwing is that by Dwight (1899).
He writes:

"1. *Natal Down*. Pale mouse-gray.

"2. *Juvenal Plumage* acquired by a complete postnatal
moult.

"Above . . . dull brownish black (no red at this stage),
the feathers edged with buff. . . . Below pinkish buff,
ochraceous on the chin, thickly streaked (except on the chin)
with brownish black. . . .

"3. *First Winter Plumage* acquired by a complete post-
juvenal moult beginning towards the end of August. Re-
sembles previous dress, the general effect being that of a
brown streaked bird, the black being heavily veiled by brown
feather tips, and mottled orange 'shoulders' are acquired.

"4. *First Nuptial Plumage* acquired by wear which is con-
siderable, birds becoming a dull brownish black by loss of the
feather edgings and by fading. The mottled 'shoulder
patches' are characteristic of young birds, the amount of
orange varying greatly. The wings and tail show marked
wear.

"5. *Adult Winter Plumage* acquired by a complete post-
nuptial moult beginning in mid-August, young and old becom-
ing practically indistinguishable.

"6. *Adult Nuptial Plumage* acquired by wear which produces

less marked effects than in the young birds. The exposed edges of the buff median coverts fade to a dull white. The more resistant nature of the adult feathers is strikingly shown by this species, the worn and faded remiges and rectrices of young birds contrasting sharply with those of adults.

Female.—In natal down and juvenal plumage females differ little from males, the juvenal dress perhaps averaging browner above with less buff below and the chin narrowly streaked. The first winter plumage is acquired by a complete postjuvenal moult as in the male, from which the female now differs widely being brown and broadly streaked. The first winter plumage is hardly distinguishable from the adult winter and passes into the first nuptial by wear which produces a black and white streaked bird, brown above. A pinkish or salmon tinge is often found in females in any of these plumages especially about the chin and head and an orange or crimson tinge may show on the ‘shoulders’ of the older birds.”

These excellent descriptions, together with such innate variation as is likely to occur, account for practically every plumage. Certain birds, however, seem to show greater difference than would be allowed for by ordinary variation. The difference is most noticeable in the spring. These specimens resemble the adult males in having the bright scarlet shoulder patches, which, however, are occasionally flecked with black, and in the greater gloss to the feathers. They resemble the immature males in the first nuptial plumage in the persistence of the buffy and rusty edgings to the feathers and in the decidedly worn brownish remiges and rectrices. This plumage is thus intermediate between the immature and adult plumages as described by Dwight. The regularity of its occurrence leads me to believe that it frequently requires more than two years for the fully adult plumage to be acquired, and that these represent birds of the second year.

FOOD AND FOOD SUPPLY.

The food of the Red-winged Blackbird has received so much attention on account of its economic importance that it is impossible to quote all that has been written on the subject.

From the time of the early settlers, when it was obligatory to kill a certain number annually or pay a fine (Allen, 1876), to the time when Beal (1900) completed his examination of over a thousand stomachs, its food and feeding habits have been dwelt upon at length. The more important discussions of the food of the Redwing will be found in the following references:

- | | |
|--------------------------------------|-----------------------|
| Wilson, A., 1831. | Warren, B. H., 1890. |
| Audubon, J. J., 1831. | Shriner, C. A., 1896. |
| Baird, Brewer, and Ridgway,
1874. | Wayne, A. J., 1899. |
| Allen, J. A., 1876. | Beal, F. E. L., 1900. |
| Goss, N. S., 1883. | Forbush, E. H., 1907. |
| | Peet, M. M., 1908. |

For the most part these observations have been made, and the results summarized, from an economic standpoint. An ecological summary would impose an extremely difficult and unsatisfactory task, if one were to attempt to include everything that has been written. From such a standpoint, food studies are valuable only when correlated with the various phases in the life history of the bird. Intensive studies are therefore more suggestive than extensive ones, because each change in food is thus brought into close relation with the synchronous phase of the life history. It is for this reason that during the three seasons of work over one hundred birds have been collected and the food content of their stomachs tabulated.

A summary of Beal's studies shows that "The food of the year was found to consist of 73.4 per cent of vegetable matter and 26.6 per cent of animal. The animal food begins with 1.4 per cent in January and gradually increases to 88.2 per cent in June, after which it regularly decreases to a fraction of 1 per cent in November. With the exception of a few snails and crustaceans, it consists entirely of insects and their allies (spiders and myriapods), so that, roughly speaking, insects constitute one fourth of the year's food. They consist principally of beetles, grasshoppers, and caterpillars, with a few wasps, ants, flies, bugs, and dragon-flies. . . . The vegetable food of the redwings consists mainly of seeds of grasses and

weeds, the different kinds of grain being merely larger or more important grasses."

That this change in food takes place is in itself very interesting, but the explanation for it would be much more so. Beal goes on to suggest an explanation which is very plausible, and which would undoubtedly have received additional support, had his studies been more intensive or had they included more than the food. He states: "The diagram on p. 38 shows in a striking manner the increase of the animal food in early summer—that is, in June. It is probable that the exhaustive labors of reproduction call for a more exclusively animal diet in May and June than does the strain of moulting in July and August. There seems to be no other theory by which to explain the decrease in the latter month, especially in view of the fact that these are the months when grasshoppers abound."

In the present work, an effort has been made to study the changes in the Redwing's food in the light of synchronous changes in the environment and correlated changes in the available food supply. Likewise, an attempt has been made to determine changes which take place within the birds themselves, especially in connection with the alimentary canal and the reproductive organs. Inasmuch as there is such a difference in the available food supply of the marsh and of the uplands, it is of prime importance always to bear in mind the locality in which the birds have been feeding. In general, most of the food of the migrating birds is secured on the uplands, and that of the resident birds, in the marsh. But those migrants which are the first to arrive in the evening and the last to leave in the morning, feed to a greater or less extent in the marsh. As these are most easily collected, a considerable number of the migrating birds will be shown in the table as finding their food in the marsh, and allowances must be made therefor. The normal difference between the food of migrating and resident birds is so great that allowances should be made also in applying Beal's curves to the life history of individuals, for his data probably include both migrating and resident birds on the same date. The following table includes the result of the studies made in Renwick Marsh. The nature of

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
Feb. 27, '11...	"Vagrant" immature male	Marsh	0	.....	100	Lepidopterous larvæ, 5 Lepidopterous pupæ, 1 Rhyncophora
Mar. 7, '10...	Migrant adult male	Marsh	0	.....	100	Myriapoda Coleoptera (misc.) Rhyncophora Orthoptera Myriapoda Hemiptera Carabidæ, adults Carabidæ, larvæ Hymenoptera, 1 Hemiptera, 1 Myriapoda, 2 Carabidæ, adults, 3 Carabidæ, larvæ, 2 Orthoptera
Mar. 7, '10...	Migrant adult male	Marsh + up-lands	0	.....	100	Rhyncophora
Mar. 8, '10...	Migrant adult male	Uplands	0	.....	100	Rhyncophora
Mar. 8, '10...	Migrant adult male	Marsh	5	Not identified	95	Rhyncophora
Mar. 8, '10...	Migrant adult male	Marsh	95	Not identified	5	Rhyncophora
Mar. 8, '10...	Migrant adult male	Marsh	40	Not identified	60	Rhyncophora
Mar. 13, '11...	Migrant adult male	Marsh	0	.....	100	Rhyncophora, 28 Carabidæ, adults, 3 Rhyncophora
Mar. 15, '11...	Migrant adult male	Marsh	5	<i>Scirpus</i> seeds, 2	95	Rhyncophora Arachnida, 4 Carabidæ, adults, 3 Dipterous larvæ, 1 Carabidæ, 1 Dipterous pupæ, 26 Rhyncophora, 3 Formicidæ, 2
Mar. 18, '11...	Migrant adult male	Uplands	98	Not identified	2	
Mar. 22, '11...	Resident adult male	Marsh	0	.....	100	
Mar. 18, '11...	Migrant adult male	Uplands	98	Not identified	2	

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
Mar. 27, '11...	Resident adult male	Marsh	0	.....	100	Lepidopterous larvæ, 10% Rhyncophora, 90%
Mar. 29, '11...	Resident adult male	Marsh	0	Foxtail grass, 97%	100	Rhyncophora
Mar. 30, '09...	Resident adult male	Uplands	98	Ragweed, 2% Grain, 1%	2	Lepidopterous larvæ, 7 Arachnida, 1
Mar. 30, '09...	2 migrant adult males	Uplands	90	Ragweed, 3% Foxtail grass, 97% (1,500 seeds)	10	Lepidopterous larvæ, 12 Arachnida, 5
Mar. 31, '09...	Migrant adult male	Uplands	50	Not identified	50	Lepidopterous larvæ Lepidopterous pupæ
Mar. 31, '09...	Migrant adult male	Uplands	85	Not identified	15	Carabidæ, adults
Mar. 31, '09...	Migrant adult male	Uplands	50	Not identified	50	Carabidæ, adults
Apr. 1, '11...	Migrant imm. male	Uplands	99	Foxtail grass	1	Lepidopterous larvæ
Apr. 1, '11...	Migrant female	Uplands	99	Foxtail grass (816 seeds)	1	Lepidopterous larvæ
Apr. 6, '11...	Migrant imm. male	Uplands	90	Unidentified seeds, 6	10	Lepidopterous larvæ, 3
Apr. 8, '11...	Resident adult male	Marsh	0	Foxtail grass	100	Rhyncophora Lepidopterous larvæ, 2
Apr. 10, '11...	Migrant adult female	Uplands	100	Foxtail grass	0	Rhyncophora
Apr. 11, '11...	Resident adult male	Marsh	0	.....	100	Lepidopterous larvæ Rhyncophora Lepidopterous larvæ
Apr. 12, '10...	Migrant adult male	Marsh border	50	Scirpus (18 seeds) Cut-grass (30 seeds)	50	Coleoptera (misc.)
Apr. 12, '10...	Migrant adult female	Marsh border	95	Scirpus (9 seeds) Cut-grass (75 seeds)	5	Rhyncophora
Apr. 13, '10...	Migrant male	Uplands	50	Grain (rye)	50	Coleoptera (misc.)
Apr. 15, '11...	Resident adult female	Marsh	0	.....	100	Dipterous pupæ, 25% Carabidæ, 35% Rhyncophora, 40%

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
Apr. 15, '11...	Resident adult male	Marsh	0	.....	100	Rhyncophora
Apr. 18, '11...	Migrant adult male	Uplands	20	Ragweed	20	Rhyncophora Lepidopterous larvæ Arachnida
Apr. 20, '11...	Migrant male	Marsh border	80	<i>Polygonum persicaria</i>	20	Lepidopterous larvæ Carabidæ, larvæ Tabanidæ, larvæ
Apr. 20, '11...	Migrant female	Marsh	0	.....	100	Rhyncophora
Apr. 21, '11...	Resident male	Marsh	0	.....	100	Dipterous larvæ Arachnida
Apr. 21, '09...	Migrant female	Uplands	80	Foxtail grass	20	Coleoptera Lepidopterous larvæ, 2 Planorbis, 1 Dolichopodidæ, 2
Apr. 21, '09...	Migrant male	Uplands + marsh	10	Foxtail grass	90	Coleoptera Coleoptera Arachnida
Apr. 21, '09...	Resident male	Marsh	0	.....	100	Dipterous larvæ Lepidopterous larvæ, 3 Rhyncophora, 1
Apr. 26, '10...	Resident male	Marsh	0	.....	100	Lepidopterous larvæ, 18 Rhyncophora, 18 Capsidæ, 2
Apr. 26, '10...	Migrant male	Marsh	0	.....	100	Lepidoptera Rhyncophora Coleoptera (misc.) Tabanidæ, larvæ, 18
Apr. 26, '10...	Resident male	Marsh	2	Not identified	98	Rhyncophora, 3 Rhyncophora
Apr. 26, '11...	Resident male	Marsh	0	.....	100	Tabanidæ, larvæ

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
May 5, '09		Marsh	0		100	Lepidopterous larvæ Coleoptera <i>Chaetodes</i> , larvæ Muscidae, larvæ, 57 Stratiomyiadae, larvæ, 1 Rhyncophora Coleoptera (misc.)
May 5, '09		Marsh	0		100	Lepidopterous larvæ Arachnida Coleoptera <i>Chaetodes</i> , larvæ Rhyncophora Arachnida
May 5, '09		Marsh	0		100	Coleoptera Stratiomyiadae, larvæ Lepidopterous larvæ, 8 Rhyncophora, 1 Arachnida, 1 Snail shell
May 5, '09		Marsh	0		100	Lepidopterous larvæ, 9 Rhyncophora, 1 Rhyncophora, 1 Lepidopterous larvæ, 3 Rhyncophora (fragments) Lepidopterous larvæ, 7 Rhyncophora (fragments)
May 6, '11	Resident adult female	Marsh	0	Oats	10	Coleoptera
May 6, '11	Resident adult male	Marsh	0		100	Dipterous larvæ, 24 Arachnida, 6 Rhyncophora, 6
May 10, '11	Resident adult female	Marsh	0		100	
May 10, '11	Resident adult male	Marsh	0		100	
May 10, '11	Migrant imm. male	Uplands	90		10	
May 26, '09	Resident male	Marsh	0		100	

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
May 26, '09...	Resident male	Marsh	0	.....	100	<i>Chaetodes</i> , 98% Rhyncophora, 2%
May 26, '09...	Resident male	Marsh	1	.....	99	<i>Chaetodes</i> <i>Donacia</i>
May 26, '09...	Resident male	Marsh	0	.....	100	Dipterous larvæ <i>Chaetodes</i> , 1
June 16, '09...	Resident male	Marsh	0	.....	100	Dipterous larvæ Rhyncophora, sev. <i>Donacia</i> , 95%
June 16, '09...	Resident male	Marsh	0	.....	100	Dipterous larvæ, 5%
June 16, '09...	Resident male	Marsh	0	.....	100	<i>Donacia</i>
July 10, '12...	Resident immature	Marsh	75	Grass seed	25	<i>Donacia</i>
July 10, '12...	Resident immature	Marsh	0	.....	100	Rhyncophora Dipterous larvæ
July 10, '12...	Resident adult	Marsh	0	.....	100	Lepidopterous larvæ Rhyncophora
July 10, '12...	Resident adult	Marsh	0	.....	100	Neuroptera Rhyncophora
July 10, '12...	Resident adult	Marsh	0	.....	100	Rhyncophora larvæ Lepidopterous larvæ
July 10, '12...	Resident adult	Marsh	50	?	50	Lepidopterous larvæ Rhyncophora
Aug. 21, '12...	Resident adult	Uplands	100	Grain	0	.....
Aug. 21, '12...	Resident adult	Uplands	95	Grain	5	Jassidæ
Aug. 21, '12...	Resident adult	Uplands	95	Grain	5	Rhyncophora
Aug. 23, '12...	Resident adult	Marsh	50	<i>Polygonum</i>	50	Rhyncophora
Sep. 13, '12...	Resident adult	Marsh	95	<i>Polygonum</i>	5	Rhyncophora
Sep. 13, '12...	Resident adult	Marsh	5	<i>Polygonum</i>	95	Rhyncophora
Sep. 13, '12...	Resident adult	Marsh	0	.....	100	Rhyncophora

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
Sep. 13, '12 . . .	Resident adult	Marsh	95	<i>Polygonum</i>	5	Rhyncophora
Sep. 13, '12 . . .	Resident adult	Marsh	95	<i>Polygonum</i>	5	Rhyncophora
Oct. 6, '09 . . .	Resident male	Marsh	2	.....	98	Carabidæ
Oct. 6, '09 . . .	Resident male	Uplands	95	Foxtail grass	5	Carabidæ
Oct. 6, '09 . . .	Resident male	Marsh	1	.....	99	Carabidæ
Oct. 14 & 21, '09	15 migrants	Marsh + uplands	80	Foxtail grass, 98% Ragweed + bind- weed, 1% wheat + corn, 1%	20	<i>Donacia</i> , 50% Rhyncophora, 20% Jassidæ, 8 Aphidæ, 8 <i>Hyalella</i> , 2 Muscidæ, 2 Noctuidæ, pupæ, 2 Arachnida, 2 <i>Gammarus</i> , 1 Psocidæ, 1 Dipterous larvæ, 1 Tenthredinidæ, 1 Phalangidæ, 1 Dermestidæ, 1 Lepidopterous larvæ Jassidæ, 2
Oct. 26, '09 . . .	Migrant	Uplands	99	Ragweed seed	1	
Oct. 26, '09 . . .	Migrant	Uplands	99	Wheat, 50% Ragweed + foxtail grass, 50%	1	
Oct. 26, '09 . . .	Migrant	Uplands	95	Wheat, 45% Ragweed + foxtail grass, 55%	5	Jassidæ Lepidopterous larvæ Cerambycidæ <i>Cnemidolus duodecimo-</i> <i>punctatus</i> , 1
Oct. 26, '09 . . .	Migrant	Uplands + marsh	99	<i>Polygonum virgini-</i> <i>anum</i>	1	

Date.	Nature of Bird.	Food Secured Where.	Vegetable Food.		Animal Food.	
			Per Cent.	Forms Occurring.	Per Cent.	Forms Occurring.
Oct. 26, '09 . . .	Migrant	Uplands	98	Corn, 75% Ragweed + foxtail grass, 25%	2	Jassidæ, 1 Rhyncophora, 1 Arachnida, 1
Nov. 8, '09 . . .	Migrant	Uplands	98	Ragweed + foxtail grass, 99% Wheat, 1%	2	Lepidopterous larvæ, 2
Nov. 8, '09 . . .	Migrant	Uplands	100	.....	0	.....
Nov. 8, '09 . . .	Migrant	Uplands	100	Ragweed, 45% Foxtail grass, 45% Wheat, 8% <i>Geum strictum</i> , 2%	0	.....
Nov. 8, '09 . . .	Migrant	Uplands	100	Ragweed, 45% Foxtail grass, 45% Oats, 10%	0	.....

the food, whether animal or vegetable, is given in bulk percentages and is followed by a list of the seeds or insects identified. Reference has already been made in a general way to the food at the different seasons, but it will now be taken up in greater detail.

Food during the Spring Migration.—Although this period is, in reality, not complete until nearly the middle of June, when the last immature females arrive, it will be considered in the present connection as extending only up to the time of mating, which is about the 20th of April. As before stated, the food at this season is secured largely upon the uplands, and is very different from that secured in the marsh. The data given in the table include more than a fair average of birds which have been feeding in the marsh, and therefore the two types of food will be taken up separately. Under the title of "food secured in the marsh" will be included that of the resident birds up to the time of mating, as well as that of the migrants.

Food Secured on the Uplands.—By far the greater part of this food is vegetable, ranging between 90 and 100 per cent in nearly half of the stomachs examined. Some birds, however, find sufficient insect life on the hills to bring down the average for the 18 stomachs examined to 66 per cent of vegetable food. Of this, the seeds of foxtail grass (*Setaria glauca*) and of ragweed (*Ambrosia artemisiæfolia*) constitute the largest part, with a trace of grain (corn and rye) next. In the crop and stomach of one female were 816 seeds of foxtail grass, and in two others, 1,500 of the same seeds. In the 34 per cent of insect food, lepidopterous larvæ predominate, with Caribidæ (ground beetles) and their larvæ next, and centipedes, grasshoppers, and miscellaneous Coleoptera following (Plate XVIII, fig. 1).

Food Secured in the Marsh.—As before stated, the marsh at this time of the year is flooded and vegetable food is scarce. The seeds of strictly marsh plants are not available for various reasons, and all that are secured must be picked from the marsh border. Here are found sufficient seeds of cut-grass (*Leerzia*) and the like to bring up the total to 19 per cent. Thirteen out of the 20 birds examined, however, had secured



FIG. 1.—Secured on uplands
Mar. 7-Apr. 21.



ANIMAL CONTENT OF TYPICAL STOMACHS.
FIG. 2.—Secured in marsh
Mar. 7-Apr. 21.



FIG. 3.—Secured in marsh
Apr. 21-May 7.

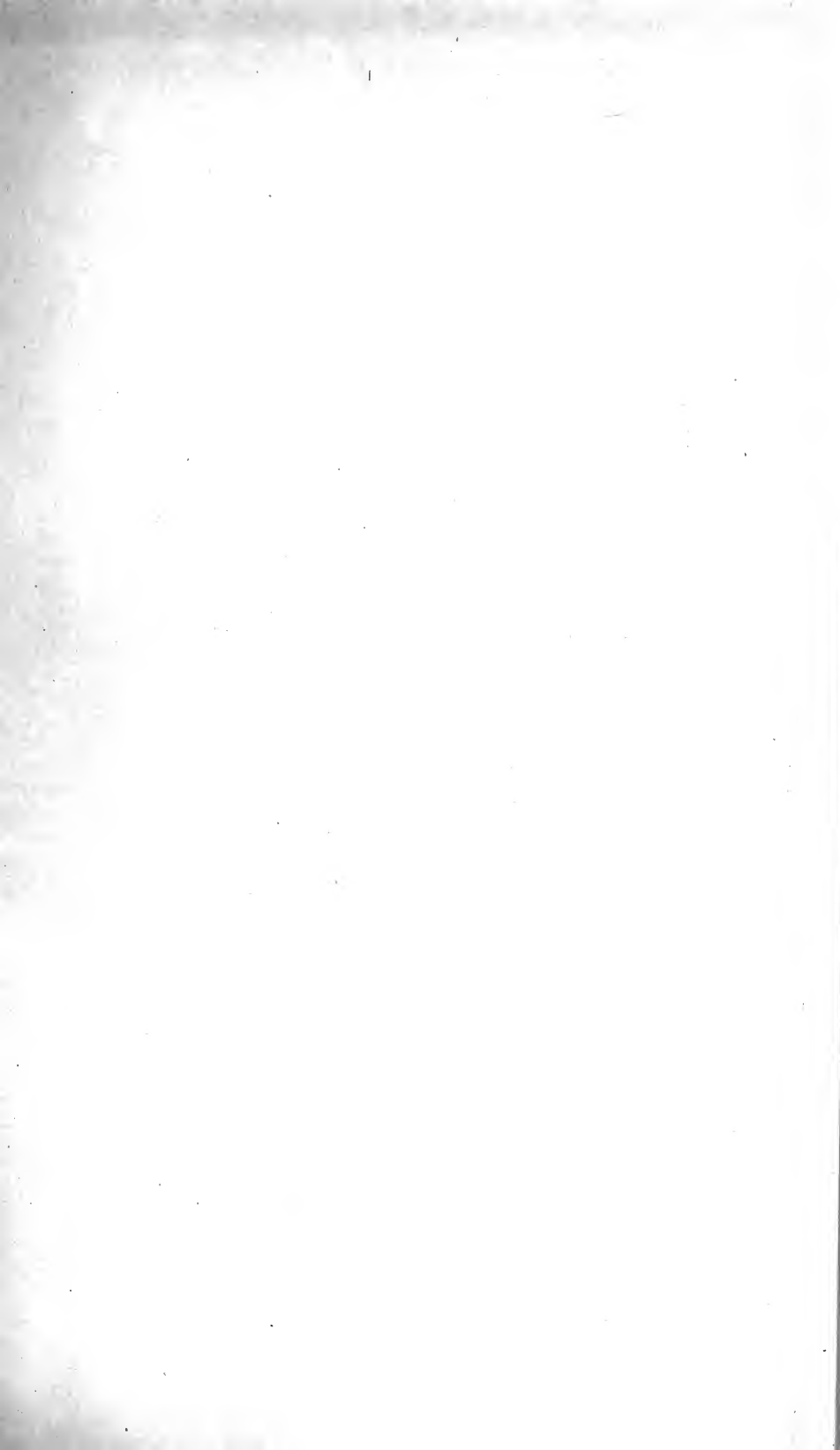


PLATE XIX.



FIG. 1.—May 7-26.



ANIMAL CONTENT OF TYPICAL STOMACHS.
FIG 2.—May 26-June 16.



FIG 3.—June 16-July 1.

no vegetable food whatsoever. Of the animal food, weevils of several species form by far the greatest percentage, seven birds having fed upon them to the exclusion of everything else. Next in order of abundance are lepidopterous larvæ, ground beetles, spiders, and centipedes, with dipterous larvæ beginning to appear (Plate XVIII, fig. 2). These are the forms that are found in greatest numbers in the marsh at this season. With the disappearance of the ice in the spring, the first insects to appear from hibernation are the weevils, which occur in large numbers, but are inconspicuous because of their secretive habits. Lepidopterous larvæ, though numerous, are even more difficult to find. In the drier portions, and often on floating logs and debris, are numerous ground beetles and centipedes. Other forms are exceedingly scarce. Toward the latter part of April numerous dipterous (tabanid) larvæ appear floating on the surface, and at once form a part of the Redwing's food.

Food during the Mating Period.—This period extends from the third week in April through the first week in May (April 21–May 7). At this time food is secured by the resident birds entirely in the marsh, and is practically 100 per cent animal. The vegetation in the marsh has obtained a good start, and furnishes forage for large numbers of lepidopterous larvæ, which now take the ascendancy in the food. Dipterous larvæ follow a close second, with weevils, spiders, and ground beetles more numerous than before, but now in the background (Plate XVIII, fig. 3).

Food during the Breeding Season.—This shows a series of changes which are closely correlated with the appearance and disappearance of the predominant insects in the marsh. At first the lepidopterous larvæ continue to predominate, but frequently are superseded by dipterous larvæ, which are found at the surface of the water before transformation. *Chauliodes* larvæ, crawling out of the water to pupate, appear and disappear in the food very abruptly. Rhyncophora and other Coleoptera continue (Plate XIX, fig. 1). Toward the last of May another decided change takes place, when the fish flies (*Chauliodes*) transform and furnish abundant and easy forage;

at this time they occur even more abundantly in the Redwing's food than do the dipterous larvæ, which are still very numerous. Weevils and lepidopterous larvæ continue to occur, and beetles of the genus *Donacia* begin to appear (Plate XIX, fig. 2). Between the last of May and middle of June other changes probably take place, such as by the transformation of caddis flies and May flies, which are known to form an important item in their food. About the middle of June, however, there suddenly appear in the marsh great hosts of *Donacia*, which in a few days overrun everything, and arise in swarms ahead of one who walks through the sedges and burreeds. They are so abundant and so readily captured by the Redwings that they constitute nearly 100 per cent of its food at this season. Among the few other insects taken, dipterous larvæ predominate (Plate XIX, fig. 3).

Food during the Molting Season.—The diet of *Donacia* continues until the birds begin to flock and fly to the uplands in July. At this time the percentage of animal food decreases to nil. With the retirement to the marsh in late August for the latter part of the molting season, however, the percentage of animal food again increases, as there are but few seeds available in the open marsh at this season. In it weevils and lepidopterous larvæ predominate, while several species of *Polyganum* supply the greater part of the vegetable food. This augmentation of the animal diet is but temporary, for as soon as the Redwings begin flying to the uplands again in late September, the percentage of animal food steadily decreases.

Food during the Fall Flocking.—In October, during what we may call the period of fall flocking, animal food constitutes but 18 per cent. At this season of the year food is secured mostly from the uplands, but in the evening and morning some is secured from the marsh. A study of the insects eaten shows a great variety, but *Donacia* and Rhyncophora predominate. The vegetable food is very similar to that of the spring, being largely the seed of the one grass, *Setaria glauca*, with an admixture of the seeds of other grasses, ragweed, and bindweed.



PLATE XX.



FIG. 1.—ABNORMAL FEET OF REDWING CAUSED BY THE MITE, *Cnemidocoptes fossor*.

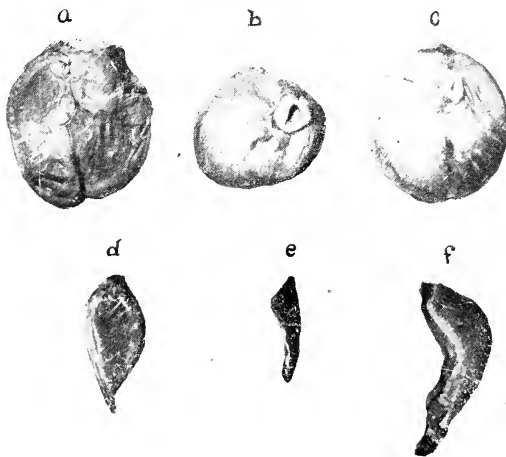


FIG. 2.—GIZZARDS OF REDWINGS, SHOWING THE CORRELATION BETWEEN FOOD AND MUSCULATURE.

Food during the Fall Migration.—By the last week in October the migration is well under way, and the Redwings spend very little time in the marsh. The food is taken entirely from the uplands, and is practically 100 per cent vegetable; it is composed chiefly of the seeds of foxtail grass and ragweed, with a little grain (corn, wheat, and oats) interspersed. This diet continues throughout the migrating period, which ends about the middle of November.

Such are the changes occurring—changes which pass through all stages from a strictly herbivorous to a totally insectivorous diet, and which must demand an exceptional adaptability as well as a most generalized structure. In conclusion, it may be stated that the Redwings feed upon whatever is most available; that during the migrating periods of spring and fall they obtain their food upon the uplands, where the seeds of foxtail grass and ragweed are most abundant; that during the breeding season they obtain their food in the marsh, where only animal food is available; that here their food is limited only by their powers of capture, and varies with the species predominating in the marsh.

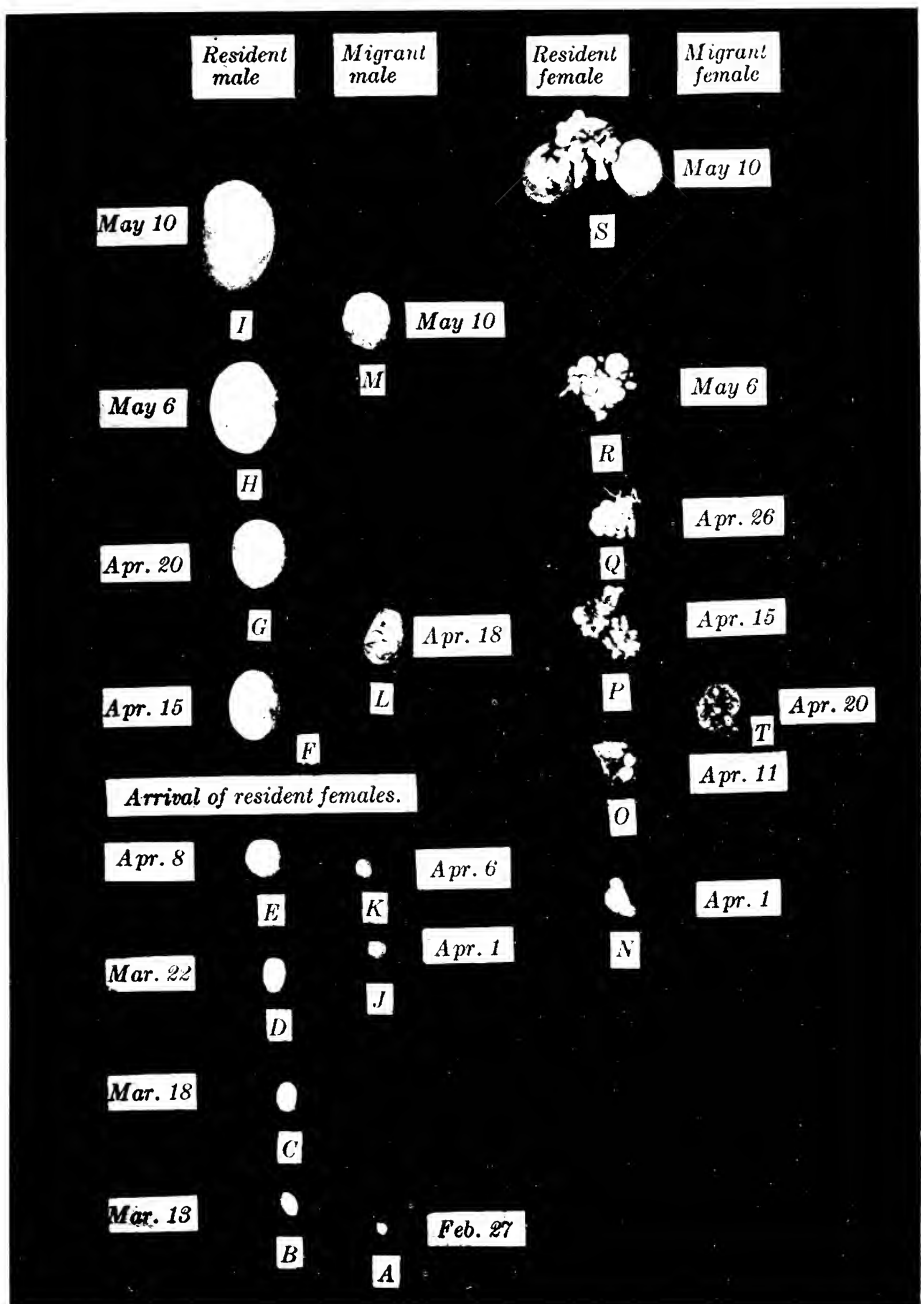
CORRELATION BETWEEN CHANGES IN FOOD AND CHANGES IN STRUCTURE OF STOMACH.

Along with the change in diet from seeds to insects and from insects to seeds, there is a corresponding change in the nature of the gizzard. The comparatively soft-bodied insects do not require the muscular strength that is necessary to grind the hard seeds, so that with the decrease in the amount of vegetable food eaten, there is a corresponding degeneration in the musculature of the ventriculus. This is well shown in Plate XX, fig. 2, where the stomachs of a migrating bird and a resident bird, taken on the same day, are opposed (*B* and *C*). The migrant had not yet begun its insectivorous diet, whereas the resident had been feeding upon insects for at least a month. A similar difference is shown between the stomachs of the two resident birds taken, one at the time of first establishment in the marsh, and the other after a month's residence (*A* and *B*).

CORRELATION OF THE CHANGES OCCURRING IN THE
REPRODUCTIVE ORGANS.

The development of the reproductive organs shows a somewhat similar condition. The testes of the males will be first considered. The first "vagrants" to arrive in the spring show but slight enlargement (Plate XXI, *A*). In the first migrants to arrive the increase is more evident (*B*). Enlargement takes place at a fairly uniform rate (*C* and *D*) until the arrival of the adult females, when the rapidity of growth is greatly increased (*F*). The males are now spending their entire time in the marsh and feeding upon an exclusively insectivorous diet. This rapid increase does not occur in the birds which are migrating, but only in the resident birds. (The migrant birds, however, are immature, and therefore may not be strictly comparable.) After this sudden enlargement, growth continues at a uniform rate until the mating period (*G*, *H*, *I*), when the maximum is reached. The rate of growth of the testes of the immature migrant birds is much less than that of the residents, as is well shown in the plate (*J*, *K*, *L*, *M*), those of the adult resident bird on May 10 being fully twice the size of those of the immature migrant of the same date. That the sudden enlargement occurring after the arrival of the resident females and during the subsequent days spent in the marsh, and that the difference in degree of development between the resident and migrating birds, is largely due to the nature of the food, can not, of course, be stated, although there is some ground for so believing. It is probable that the presence of the females serves to stimulate the growth, but it may well be that the animal food is necessary to support it.

When the migrant females first arrive, their ovaries are in a relatively less mature condition than were the organs of the males upon their arrival a month earlier, the ova being of microscopic size (Plate XXI, *N*). Enlargement is fairly rapid, however, so that by the time the first resident females appear the largest ova are about $1\frac{1}{2}$ millimeters in diameter (*O*). Mating occurs while the ova are still immature (*P*), and the nest is commenced just as the deposition of yellow yolk is



STAGES IN THE DEVELOPMENT OF THE TESTES AND OVARIES OF REDWINGS, SHOWING THE RATE OF GROWTH.

begun about the most mature ovum (*R*). By the time the nest is finished, the first ovum is ordinarily complete with its yolk; in the next twenty-four hours it passes down the oviduct, where it receives the albumen and shell, and is emitted on the day following the completion of the nest. This process is repeated each day, a second egg falling into the oviduct about the time the first is deposited, until the complement is complete. The development of the ova in the migrating females is much slower than that in the resident birds, as is shown in the plate (*T*). The ova in this ovary were smaller on April 20 than were those of the resident bird on April 11. This helps to substantiate the belief first intimated by Beal (1900), that there is a direct correlation between the food and the development of the reproductive organs.

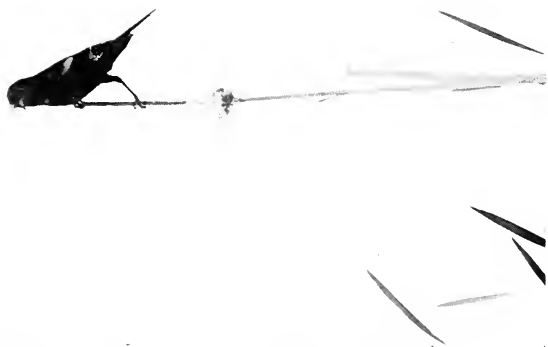
CONCLUSION.

In the introduction to this study, mention was made of the necessity for a complete knowledge of both the environment and the life history of the organism before there could be a perfect understanding of the relations existing between the two. The data here presented are little more than an introduction to the facts that might be determined. So far as they are known, they point toward an independent relation between the Redwing and the marsh. In general, an organism is dependent upon its environment for food and shelter, for itself and offspring. The Redwing's independence of the food supply of the marsh has been discussed. During the greater part of the year it obtains its food outside of the marsh, and that which it does secure here, is taken, without selection, from the preponderant forms as they occur in succession. Its dependence upon the marsh, or, in other words, the reason for its being a marsh bird, lies in the shelter which it or its offspring receive. Generalized in structure as it is, and therefore adaptable, the Redwing was able to take to the marshes when crowded from its natural environment, and finding there little competition, easily established itself. In its previous habits it was perhaps similar to the Bobolink of to-day, and nested on open uplands. It may have come to the marshes naturally,

through first seeking protection there during the migration, as do both the Bobolink and the Redwing at the present day. That this may have happened in comparatively recent times, is suggested by a number of considerations. In the first place, the Redwing shows no specialization to a marsh environment in either structure, food, or coloration. Secondly, it spends hardly more time in the marsh than is necessary to rear its young. Thirdly, it easily reverts to a dry-land nesting site when driven from the marshes by any catastrophe. Fourthly, it is still unable to cope with an emergency that must have always arisen in connection with its marsh nesting site, namely, the overturning of its nest by the growth of the vegetation. Fifthly, unlike the true marsh birds, it relies for safety primarily upon flight and not upon the shelter of the marsh itself.

The Redwing is a member of a large and widely distributed family of birds, which are very diverse in habits, occupy almost every type of environment, and yet retain great similarity of structure. The modifications occurring among the members of the family are for the most part slight. The birds in this group seem eminently generalized, adaptable to almost every environment and to almost every food. The Redwing is as generalized as any member. Its bill, for example, is heavy at the base and suitable for crushing seeds, and yet it is almost as finely pointed and sharply edged as a Warbler's; it is shorter and heavier, relatively, than the Grackle's, Oriole's, or Meadowlark's, but not so extreme in this respect as is the Bobolink's. The Redwing is to-day the dominant species of bird found in the marsh, and it has gained this ascendancy, not by permanent modification or specialization, but by a generalization of structure and an adaptability which permit it to utilize the richest resources of diverse environments. It is thus freed from the dependence which restricts the more specialized types of birds. Add to this the inconstancy of the conditions in the marsh, which tends to limit the abundance of the less adaptable species, and the dominance of the Redwing is easily understood. The Redwing is dominant because it is superior to its environment.

PLATE XXII.



THE RED-WINGED BLACKBIRD—NOT SPECIALIZED, BUT EMINENTLY ADAPTED TO ITS ENVIRONMENT.

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AN INTERESTING ORNITHOLOGICAL WINTER AROUND NEW YORK CITY.

BY LUDLOW GRISCOM.

The winter of 1912-1913 will long be remembered by bird-students of New York City and vicinity. The almost entire absence of frosty weather during the latter part of the fall caused many species to linger in larger numbers than usual, while others, which habitually winter farther to the south, were tempted to remain beyond their usual time of departure, and in some cases spent the whole season with us. If the fall was a mild one, the winter was no less so. Freezing temperature prevailed only some half dozen times, and there was only one "cold spell" that lasted more than a day or two. Snow fell only a few times, never in any great quantity, and disappeared almost at once. These remarks, of course, must be qualified as regards the outlying country, where naturally enough the temperature averaged a few degrees lower. To give some idea of the effects of this extraordinary weather, flowers of three or four kinds were found in bloom; insects, especially spiders, flies, and midges, were seen; turtles basked in the warm sunlight; and the writer was astonished to hear tree-toads piping on January 12. On the same date, he found a Garter Snake recently killed, and later in the month saw some small bats flying in New York City.

It is no wonder then, that the winter was favorable to land birds, or rather those species whose food cannot be obtained readily in a frozen marsh or on ground deeply covered with snow. With such birds as the Grebes, Gulls, and waterfowl the case is very different. The more inclement the weather, the greater the numbers of waterfowl which throng to our beaches, bays, and river. A good illustration is furnished by the contrast of the last two winters at Long Beach, L. I. The winter of 1911-12 was an unusually severe one. Eleven species of waterfowl were noted during the winter, and on

February 12, 1912, with the thermometer at 10°, and ice floating in the ocean, ten species of waterfowl were observed. At no time last winter were more than four species noted on any one day, while only six species were recorded during the entire season. The same holds true of the Hudson River. When the weather is cold and the river is full of ice, Ducks of various kinds are common, as well as Bald Eagles, especially when the tide is down-stream. This would seem to indicate that these birds come from the lakes in the northern part of the state or the upper reaches of the Hudson River, when their usual winter quarters are frozen over. This theory is confirmed by last winter's observations, again in comparison with the preceding year, when the river was more or less full of ice the whole time. Ducks of several kinds and Bald Eagles were unusually common. The early half of this past winter, the river was practically "duckless"—to coin an adjective. Early in February occurred the only cold spell worthy of the name. On February 12 the river was full of ice, and severe cold was reported from the northern part of the state. Ducks were very common even below Yonkers, and three Bald Eagles were noted.

Apart from the waterfowl, the status of a few other species is worthy of comment in that they were absent altogether or in fewer numbers than usual. In the first class belong pre-eminently the Alcidæ, the Glaucous Gull, and the boreal finches, such as the Pine Grosbeak, Crossbills, Redpoll, Pine Siskin, Snowflake, and Lapland Longspur. Of these, the Alcidæ and the Glaucous Gull undoubtedly are present in very cold weather only. The Snowflake is usually a regular winter visitor, and as a rule is present in small numbers even in mild weather. Its absence, therefore, was a great surprise, and probably there is some other reason which will account for it more satisfactorily than the high temperatures prevailing all winter. With the other Finches mentioned, lack of their usual food supply is probably more important than the severity of the winter in influencing them to pay us a visit.

In the second class mentioned—those species which occurred in fewer numbers than usual—two good illustrations are the

Great Black-backed Gull and the Horned Lark. The Great Black-backed Gull is a common winter resident along our coasts, becoming abundant in severe weather, and at such times entering the harbor and penetrating up the river as far as Yonkers, where of course it is a rare bird. This Gull was decidedly scarce until after the cold spell in early February, during which it appeared in its normal numbers. The Horned Lark was unusually scarce the entire winter, it being exceptional to see more than half a dozen individuals during a day's walk on one of the beaches. Largely as a result of this, the Prairie Horned Lark was not recorded, this subspecies associating with its relative, and not occurring unless the latter is unusually common.

A few words should be said at this point as to what constitutes a "winter record." Roughly speaking, the winter season is from December 1 to March 1. Birds, however, with a fine contempt for the chronology of man, by no means fit in to this convenient division. If the autumn be a mild one, many species, such as the Blackbirds, Grackles, and Hermit Thrush, regularly linger with us well into the middle of December. The migration of waterfowl is rarely concluded until the first of January. Canada Geese, for instance, are reported almost yearly from Long Island around Christmas, but the number of records for the end of January is comparatively small. Another fact should be noted. Make a thorough search of your locality some day during the end of December. The birds seen will consist of a greater or less number of the common winter residents of your locality plus a few other species represented for the most part by isolated individuals. Repeat the same trip in the end of January, and you will in all likelihood notice the following difference. The number of the commoner species will have greatly decreased, and the isolated individuals of the less common species will have disappeared altogether. This is by no means an arbitrary rule, and there are plenty of exceptions, but every field ornithologist knows the experience of taking a friend to some choice spot without success and exclaiming, "Well, there were plenty of birds here earlier in the winter." The reasons for this

change are obvious. Cold may have driven some away or killed them; the food supply may have partially failed, or been covered up with snow. From the foregoing it is easy to conclude that the best and most satisfactory "winter record" is that made in mid-winter. A Robin seen the first of February is more noteworthy than one seen the end of December. On the other hand, from what has been said, a Pine Warbler seen on December 8 is a better winter record than a Red-winged Blackbird recorded two weeks later, because the Warbler leaves us during the middle of October, and mild weather only affects its stay with us a week or so. Bearing the facts discussed above in mind, the winter of 1912-13 is remarkable in that the usual decrease in numbers as the season advanced did not take place to so great a degree as usual. The best day's list for the entire winter was 35 species, observed by the writer at Englewood, N. J., on February 12, one better than the list from the same locality on December 29. Moreover, a day's list of 35 species is, so far as the writer knows, the biggest ever made in winter around New York City.

A few words regarding the territory covered by this article. It includes, roughly speaking, the immediate vicinity of the city and such points at a greater distance as are regular all-day trips of members of the Linnæan Society. Long Beach, L. I., is unquestionably the best locality for water birds; Plainfield and Englewood, N. J., the best places inland. Plainfield, being the more remote locality with a great variety of favorable country in the vicinity, contributes the greatest number of unusual or local species. Englewood, with a comparatively small amount of good country, contributes the biggest lists for one day's work, chiefly because all favorable spots can be visited in one day, a thing entirely impossible at Plainfield.

The notes contained in this article are mainly the result of the combined observations of the more active members of the Linnæan Society. Messrs. John Treadwell Nichols and Charles H. Rogers have been especially helpful in furnishing full records of their work in the field during the winter. Many of these notes have already been published in *Bird-Lore's* last Christmas Census. Records published there, not made by

members of this Society, have been included for the sake of completeness. The writer wishes to express his obligations to Mr. W. deW. Miller, of the American Museum of Natural History, for kindly permitting the incorporation of his notes on the winter birds of Plainfield, N. J. Most of the unusual records made this season were made by Mr. Miller, who spent every available day in the field and reports 56 species from his territory, a region not boasting a single marsh or a body of open water.

Below follows the annotated list of the ninety-seven species of birds observed last winter around New York City, a truly extraordinary number. All observers are given full credit for their notes of any kind. The writer wishes it understood that he is in no way responsible for any records except his own. As a matter of interest he has, at the close of the article, arranged the species given in the list into groups to show their comparative abundance.

1. *Colymbus holboelli*. HOLBOELL'S GREBE.—An uncommon winter resident and common winter visitant in cold weather. Very few were noted during the winter.
2. *Colymbus auritus*. HORNED GREBE.—Usually a common winter resident along the beaches, but very few observed last winter.
3. *Gavia immer*. LOON.
4. *Gavia stellata*. RED-THROATED LOON.—Both Loons are winter residents with us, the Red-throated slightly preponderating in numbers. Both species very scarce last winter.
5. *Rissa tridactyla tridactyla*. KITTIWAKE.—A pelagic species, rarely noted from the beaches. The best way of observing it is from the fishing steamers. Less common than usual.
6. *Larus marinus*. GREAT BLACK-BACKED GULL.—Arrived very late, and was a decidedly rare bird during the first part of the winter. With the advent of cold weather, however, it appeared in its usual numbers. Although commonest along the beaches, this Gull

regularly follows the Herring Gulls into the harbor. Mr. Charles H. Rogers reports it from the Liberty Street Ferry on three occasions during the end of January, and the writer saw one on February 12 on the River near 130th St.

7. **Larus argentatus.** HERRING GULL.—Abundant everywhere near the city where there is open water. Common up the River as far as Yonkers, where its numbers rapidly decrease. Mr. Miller reports having seen it on three occasions in the vicinity of Plainfield, flying overhead.
8. **Larus delawarensis.** RING-BILLED GULL.—There is no longer any doubt that this species winters occasionally off Long Island, although most of the reports by observers are unquestionably immature Herring Gulls. The writer knows of no field marks by which this species can be satisfactorily identified. Comparison of size under favorable circumstances is the only means of being certain without a gun. There are two satisfactory records for last winter made by those who have been acquainted with this bird for many years: Manhattan Beach, L. I., 3, December 21 (Wiegmann, Hix, and Griscom); Long Beach, 2, January 5 (Johnson and Griscom).
9. **Larus philadelphia.** BONAPARTE'S GULL.—Commoner during December than usual, but none observed during midwinter.
10. **Sula bassana.** GANNET.—The Gannet was one of those species which spent the winter with us owing to the mildness of the weather. The records are as follows: Long Beach, December 22, one adult (Harper, LaDow, and Griscom); January 5, one adult (Johnson and Griscom); Fishing Banks off Seabright, N. J., December 28, 30 adults (Wiegmann, Miller, and Rogers). Mr. John Treadwell Nichols, during a voyage to Cuba and back in late January and early February, observed Gannets in numbers as far north as Sandy Hook. Ninety per cent were adults.

11. **Mergus americanus.** AMERICAN MERGANSER.— This handsome Duck is common on the Hudson River during cold weather. Very few seen last winter. The first arrival noted on December 29, 1912.
12. **Mergus serrator.** RED-BREASTED MERGANSER.—Less common than usual.
13. **Anas platyrhynchos.** MALLARD.—Now very rare with us in winter. A female was observed by the writer with Black Ducks on the Hudson, February 12.
14. **Anas rubripes.** BLACK DUCK.—Usually our commonest and most generally distributed Duck in winter. Less common than usual in all its haunts.
15. **Aix sponsa.** WOOD DUCK.—Fortunately this beautiful species is slightly on the increase around New York City. In winter, however, its occurrence is very exceptional. Dr. E. W. Viator and other members of the Brooklyn Bird Club record an individual seen on the lake of Prospect Park, Brooklyn, on Christmas Day, 1912.
16. **Marila marila.** SCAUP DUCK.—Less common than usual. After the cold weather in early February a large "bed" was seen off Long Beach.
17. **Clangula clangula americana.** GOLDEN-EYE.—This is essentially a cold weather Duck. It follows, therefore, that very few were noted last winter.
18. **Harelda hÿemalis.** OLD-SQUAW.—Noticeably scarce last winter. The migration was very late, so that the large number—over 250—seen on December 22 at Long Beach were perhaps bound further south, as they had all disappeared on January 5.
19. **Oidemia americana.** SCOTER.
20. **Oidemia deglandi.** WHITE-WINGED SCOTER.—Very few Scoters seen during the winter. The Surf Scoter, the rarest of the three, was not noted at all.
21. **Ardea herodias herodias.** GREAT BLUE HERON.—One noted, Clason Point, N. Y. C., December 28 (Hix). Very rare with us in winter.
22. **Nycticorax nycticorax nÿvius.** BLACK-CROWNED NIGHT

- HERON.—This Heron has now become a permanent resident in Bronx Park, N. Y. C., and Prospect Park, Brooklyn. A flock of these birds perched in a tree over the lake in Bronx Park one December afternoon was the most abject picture of misery the writer has ever seen in the bird world. Every bird by his or her attitude had utterly abandoned hope.
23. *Philohela minor*. WOODCOCK.—Messrs. Miller and Rogers flushed an individual of this species by a spring in the Washington Valley, north of Plainfield, on February 9. The surrounding woods were snow-covered. Mr. Miller writes that this is the first winter record for the vicinity of Plainfield. The Woodcock is of rare occurrence near New York City in winter.
24. *Numenius hudsonicus*. HUDSONIAN CURLEW.—Miss Charlotte Bogardus records a Hudsonian Curlew which was found in an exhausted condition in the back yard of an apartment house at Rockaway Beach, Long Island, on December 24. (See *Auk*, Vol. XXX, No. 2, p. 270.)
25. *Colinus virginianus virginianus*. BOB-WHITE.—Now a rare bird around New York. With the exception of a small flock in Van Cortlandt Park, found only in the outlying districts and then in small numbers. A permanent resident where found.
26. *Bonasa umbellus umbellus*. RUFFED GROUSE.—Now confined to the wild country near Plainfield, N. J., Greenwich, Conn., and Yonkers, N. Y. It is nowhere common, and persistent persecution has made it very wild.
27. *Phasianus colchicus*. ENGLISH PHEASANT.—Mr. Miller reports a Pheasant, undoubtedly of this species, on two occasions near Plainfield.
28. *Circus hudsonius*. MARSH HAWK.—Usually rare in winter with us, disappearing after December. Last winter reported throughout the entire season from several localities. Its occurrence near Plainfield, N. J., is especially noteworthy.

29. *Accipiter velox*. SHARP-SHINNED HAWK.
30. *Accipiter cooperi*. COOPER'S HAWK.—These Hawks are never common with us during the winter, their presence depending not so much upon the weather as the food supply. A few individuals of both species were noted in the outlying districts of our territory.
31. *Buteo borealis borealis*. RED-TAILED HAWK.—In larger numbers than usual.
32. *Buteo lineatus lineatus*. RED-SHOULDERED HAWK.—Hawks were commoner than usual last winter. Englewood, N. J., was a particularly good place for them, and rivaled Gardiner's Island. On February 12, 1913, the writer observed seven species of Hawks in the course of a day's walk, a record it would be difficult to excell.
33. *Archibuteo lagopus sancti-johannis*. ROUGH-LEGGED HAWK.—A rare winter resident. Last winter occurred in unusual numbers at Long Beach, and was also recorded from the marshes near Englewood (Hix) and the river at Rahway, N. J. (Rogers).
34. *Haliaeetus leucocephalus leucocephalus*. BALD EAGLE.—Owing to the mildness of the winter, the Bald Eagle was decidedly uncommon on the Hudson. Elsewhere, of course, it is at all times a very rare bird.
35. *Falco peregrinus anatum*. DUCK HAWK.—A regular summer resident on the Palisades, but rare in winter. A pair was noted by the writer on February 12 near their summer eyrie.
36. *Falco columbarius columbarius*. PIGEON HAWK.—An adult noted in the marshes back of Long Beach on January 19 (Lenssen and Hubbell).
37. *Falco sparverius sparverius*. SPARROW HAWK.—For some reason this little Hawk was less common than usual.
38. *Pandion haliaëtus carolinensis*. OSPREY.—One on the Hudson River, December 1 (W. W. Grant). The occurrence of this species at so late a date is purely

- accidental, and could occur only as a result of very mild weather.
39. **Aluco pratincola.** BARN OWL.—A resident on Staten Island.
 40. **Asio wilsonianus.** LONG-EARED OWL.—A rare resident in the vicinity of Plainfield, wintering in thick cedar groves. Mr. Miller found it on two or three occasions during the past winter.
 41. **Asio flammeus.** SHORT-EARED OWL.—The only winter records are from Staten Island: December 29 (Cleaves) and January 19 (Rogers).
 42. **Strix varia varia.** BARRED OWL.—A permanent resident on Staten Island, at Englewood, and in the vicinity of Plainfield.
 43. **Cryptoglaux acadica acadica.** SAW-WHET OWL.—One caught alive in Ash Swamp near Plainfield, February 23 (Miller and Rogers).
 44. **Otus asio asio.** SCREECH OWL.—A permanent resident near Plainfield, on Staten Island, and doubtless in other localities near the city. Noted last winter only from Plainfield (Miller).
 45. **Bubo virginianus virginianus.** GREAT HORNED OWL.—This Owl is a rare resident in the wilder districts near Plainfield. Mr. Miller noted it only once. A straggler was reported near Flushing, L. I., on December 29 by Howarth S. Boyle. (See *Bird-Lore*, Christmas Census for 1912.)
 46. **Ceryle alcyon.** BELTED KINGFISHER.—Recorded from several localities during all the winter months. The following records have come to the writer's notice: Englewood, N. J., December 29 and February 12 (Grant, Nichols, and Griscom); Cranford, N. J., Jan. 5 (Rogers); Picton, N. J., January 5 (Rogers) and January 26 (Miller and Rogers).
 47. **Dryobates villosus villosus.** HAIRY WOODPECKER.—By no means an uncommon resident in the more wooded sections of our territory.
 48. **Dryobates pubescens medianus.** DOWNY WOOD-

PECKER.—An abundant permanent resident, occurring last winter in greater numbers than usual.

49. **Sphyrapicus varius varius.** YELLOW-BELLIED SAP-SUCKER.—There was a marked occurrence of the Sapsucker last winter north of its usual winter boundaries in the Atlantic States. The following records come within our territory: Crosswicks, N. J., December 25 (Rogers); Millington, N. J., January 1 (LaDow and Griscom).
50. **Melanerpes erythrocephalus.** RED-HEADED WOOD-PECKER.—With us a rare and local species, breeding in numbers only in the valleys of the Dead and Passaic Rivers. It wintered there last season in extraordinary numbers. It was first noticed by the writer and Mr. S. V. LaDow on January 1. Messrs. Miller and Rogers made a careful search of the region on February 16 and counted no less than 21 individuals during a day's walk. A belated migrant was noted near Flatbush on December 26 by Messrs. Lewis F. Bowdish and Edward Fleischer. (See *Bird-Lore*, Christmas Census for 1912.) Another was noted near South Elizabeth, N. J., on January 1 (Rogers).
51. **Colaptes auratus luteus.** NORTHERN FLICKER.—Commoner than usual.
52. **Sayornis phoebe.** PHOEBE.—Mr. Miller found an individual of this species on January 1 by a waterfall in the Scotch Plains Notch near Plainfield. It was in the same place on January 5, February 9 and 12, but could not be found on February 22. This is the first winter record for Plainfield, and so far as the writer knows, for the vicinity of New York City. The Phoebe is seldom seen after the first week in November.
53. **Otocoris alpestris alpestris.** HORNED LARK.—Much less common than usual along the seacoast. Of rare occurrence inland, most of the records referable probably to the Prairie Horned Lark. The writer

and Mr. LaDow flushed a flock of these birds in a field near Millington, N. J., on January 1. Two of the birds were unquestionably *O. a. alpestris*, while the others were not satisfactorily identified. This is the first record for the Plainfield region. Mr. Rogers reports a flock of Horned Larks from Crosswicks, N. J., on December 25, the subspecies not determined.

54. *Cyanocitta cristata cristata*. BLUE JAY.
55. *Corvus brachyrhynchos brachyrhynchos*. CROW.—
Both these birds were present in their usual numbers.
56. *Corvus ossifragus*. FISH CROW.—A rare winter resident with us. One noted December 25 near Plainfield (Miller); three along the Rahway River near Rahway, January 1 (Rogers).
57. *Sturnus vulgaris*. STARLING.—Abundant resident, with a marked predilection for the haunts of man. Oddly enough, very rare in lower New York City. During eleven years residence in the lower part of the city, I have seen it only twice below 57th St. Mr. Chas. H. Rogers records two seen at Battery Park, January 19. This curious freak of distribution calls for an explanation, but I have none to offer.
58. *Molothrus ater ater*. COWBIRD.—Mr. H. H. Cleaves records a flock of five on Staten Island, December 29. The Cowbird is rarely noted after November 15, and then only stray individuals as a rule.
59. *Agelaius phoeniceus phoeniceus*. RED-WINGED BLACKBIRD.—The mild winter caused this species to remain with us in favorable places, notably the marshes near Englewood, N. J. On December 22 Mr. W. W. Grant counted 75 individuals, and on January 19 Mr. John Treadwell Nichols estimated 100 birds. On February 16 two were seen (Nichols). Other records follow: Plainfield, one in Ash Swamp on December 25, the second winter record for Plainfield (Miller); Staten Island, December 29, a flock of seven (Cleaves).
60. *Sturnella magna magna*. MEADOWLARK.—Commoner

than usual, especially in the interior, where as a rule it is rare. Reported last winter from several inland localities, notably Englewood, Cresskill, Millington, Elizabeth, and Plainfield, all in New Jersey; West Farms, N. Y. C.; Flushing, L. I.

61. **Euphagus carolinus.** RUSTY BLACKBIRD.—Like the Redwing, this species spent the winter with us, though no large flocks were recorded. A flock of ten was noted near Englewood on December 29. In the Plainfield region the following records have come to my notice: Ash Swamp, a pair, December 22 and 25; a male, February 23 (Miller); Scotch Plains, December 15, a pair (Johnson and Griscom). Besides these records, Blackbirds were noted during the winter at Millington and Scotch Plains, N. J., and at Van Cortlandt Park, N. Y. C., but in no case could the species be accurately determined.

62. **Quiscalus quiscula æneus.** BRONZED GRACKLE.—Grackles spent the winter with us in unprecedented numbers. Instead of individuals there were flocks. At Englewood on January 1 about 50 Grackles were noted, and on January 19 two were seen (Nichols); Miller and Rogers record a flock of 25 along the Rahway River on January 26; also a flock of 200 plus two individuals in Ash Swamp, south of Plainfield, on February 23, but most if not all of these were probably migrants.

It is a question which has yet to be determined whether Grackles which winter with us are Bronzed or Purple. In the writer's opinion it is far more likely that they are Bronzed. It has recently been discovered that the Bronzed Grackle is by no means so rare a migrant with us as was formerly supposed. It is therefore by no means improbable, inasmuch as the Bronzed Grackle has the more northerly breeding range, that it should linger farther north in winter. This question can only be settled by a little judicious collecting, and the writer raises the point in the hope that some enterprising person will give some time to the solution of the problem.

63. *Carpodacus purpureus purpureus*. PURPLE FINCH.—
In smaller numbers than usual except at Plainfield,
where it is locally common in winter.
64. *Passer domesticus domesticus*. HOUSE SPARROW.—
This pest is abundant everywhere. At Long Beach,
L. I., it is migratory in severe cold weather.
65. *Astragalinus tristis tristis*. GOLDFINCH.—Abundant
around Plainfield, but less common than usual else-
where.
66. *Carduelis carduelis*. EUROPEAN GOLDFINCH.—This in-
troduced species occurs in small flocks every winter
around Englewood. It has not been noticed in
summer for several years.
67. *Passerculus princeps*. IPSWICH SPARROW.—Much
commoner than usual. No less than 14 observed at
Long Beach in one day. Two seen January 19 on
Staten Island, where it is rare (Rogers).
68. *Passerculus sandwichensis savanna*. SAVANNAH SPAR-
ROW.—A few individuals wintered at Manhattan
Beach. It is usually present at Long Beach in
winter, but was absent this year.
69. *Passerherbulus caudacutus*. SHARP-TAILED SPARROW.
—Two individuals noted in a sheltered bed of marsh
grass at Long Beach on December 22 by Messrs.
Harper, LaDow, and Griscom. Not found on Janu-
ary 5.
70. *Passerherbulus maritimus maritimus*. SEASIDE SPAR-
ROW.—Six of these Sparrows lingered in the same
bed of marsh grass as the Sharptails. On January 5
they were in full song and very tame. On February 9
they could not be found. So far as I know, this is the
first winter record for Long Island.
71. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—
Wintered in larger numbers than usual. One noted
by the writer at Long Beach on December 22, the
second winter record for that locality.
72. *Spizella monticola monticola*. TREE SPARROW.—Even
more abundant than usual.

73. *Spizella pusilla pusilla*. FIELD SPARROW.—A rare winter resident around Plainfield, and rarer still in the immediate vicinity of the city. More numerous than usual at Plainfield (Miller), and reported from several other localities.
74. *Junco hyemalis hyemalis*. SLATE-COLORED JUNCO.—Present in about its usual numbers.
75. *Melospiza melodia melodia*. SONG SPARROW.—Occurred last winter in much greater numbers than usual, and was one of the commonest birds.
76. *Melospiza georgiana*. SWAMP SPARROW.—More numerous and more generally distributed than usual. Reported from Prospect Park, Brooklyn, on Christmas Day (Viotor).
77. *Passerella iliaca iliaca*. FOX SPARROW.—Reported in unusual numbers from many localities.
78. *Cardinalis cardinalis cardinalis*. CARDINAL.—Resident in Central Park, N. Y. C., Staten Island, the Palisades near Englewood, and the vicinity of Plainfield.
79. *Bombycilla cedrorum*. CEDAR WAXWING.—An irregular winter resident in the hills north of Plainfield (Miller).
80. *Lanius borealis*. NORTHERN SHRIKE.—A shrike was noted on January 1 near Plainfield (Miller). It was probably *borealis*.
81. *Dendroica coronata*. MYRTLE WARBLER.—Much commoner and more generally distributed than usual. By far the largest number ever noted at Plainfield in winter (Miller).
82. *Dendroica vigorsi vigorsi*. PINE WARBLER.—A male was noted December 8, 1912, by Mr. Miller near Plainfield. This is the first winter record for Plainfield and also for the vicinity of New York City, so far as the writer has been able to find.
83. *Anthus rubescens*. PIPIT.—A flock of 25 recorded by Lewis F. Bowdish and Edward Fleischer on December 26, 1912, in the marshes near Manhattan Beach. (See *Bird-Lore*, Christmas Census for 1912). Stray

- individuals of this species are frequently noted in winter, but the occurrence of so large a flock is exceptional.
84. *Dumetella carolinensis*. CATBIRD.—One noted on Staten Island, December 29 (Cleaves). Very rare in winter.
 85. *Toxostoma rufum*. BROWN THRASHER.—One noted in Prospect Park, Brooklyn, December 25 (Vieter). Of rare occurrence in winter.
 86. *Thryothorus ludovicianus ludovicianus*. CAROLINA WREN.—A locally common resident on the Palisades near Englewood, where last winter its numbers were normal. Noted two or three times in the hills north of Plainfield, where it is rare (Miller).
 87. *Nannus hiemalis hiemalis*. WINTER WREN.—As a rule, a local and uncommon winter resident. Slightly more numerous than usual.
 88. *Certhia familiaris americana*. BROWN CREEPER.—Present in its usual numbers.
 89. *Sitta carolinensis carolinensis*. WHITE-BREASTED NUTHATCH.—Commoner than usual.
 90. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Rare in winter. Noted on one occasion in the Plainfield region (Miller).
 91. *Bæolophus bicolor*. TUFTED TITMOUSE.—Now a regular resident as far north as Englewood, N. J. Commoner than usual last winter.
 92. *Penthestes atricapillus atricapillus*. CHICKADEE.—Much more abundant than usual; 45 noted in a single day (Miller).
 93. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—Less common than usual.
 94. *Regulus calendula calendula*. RUBY-CROWNED KINGLET.—Of very rare occurrence here in winter. A single individual was noted on February 1 and 12 near a brook in the Scotch Plains Notch north of Plainfield (Miller). This is the second winter record for Plainfield.

95. *Hylocichla guttata pallasi*. HERMIT THRUSH.—Noted in four different spots around Plainfield (Miller), and also observed on Staten Island, December 22 (Cleaves).
96. *Planesticus migratorius migratorius*. ROBIN.—More generally distributed than usual, although absent from the vicinity of Englewood.
97. *Sialia sialis sialis*. BLUEBIRD.—Much commoner last winter than usual. As a rule found only in the Plainfield region. Noted from Staten Island (Cleaves), Englewood (Griscom), Millington (Griscom), and Greenwich, Conn. (Hubbell).

The following species, regular winter residents, occurred in their usual numbers:

Herring Gull	Great Horned Owl
Night Heron	Hairy Woodpecker
Bob-white	Blue Jay
Ruffed Grouse	Crow
Pheasant	Starling
Sharp-shinned Hawk	House Sparrow
Cooper's Hawk	European Goldfinch
Barn Owl	Junco
Long-eared Owl	Cardinal
Barred Owl	Cedar Waxwing
Screech Owl	Brown Creeper

The following species, regular winter residents, occurred in greater numbers than usual:

Bonaparte's Gull	Song Sparrow
Marsh Hawk	Swamp Sparrow
Red-tailed Hawk	Fox Sparrow
Red-shouldered Hawk	Myrtle Warbler
Rough-legged Hawk	Carolina Wren
Downy Woodpecker	Winter Wren
Flicker	White-breasted Nuthatch
Meadowlark	Tufted Titmouse
Ipswich Sparrow	Chickadee

White-throated Sparrow	Hermit Thrush
Tree Sparrow	Robin
Field Sparrow	Bluebird

The following species, regular winter residents, occurred in smaller numbers than usual:

Holboell's Grebe	Golden-eye
Horned Grebe	Old-squaw
Loon	Amer. Scoter
Red-throated Loon	White-winged Scoter
Kittiwake	Bald Eagle
Great Black-backed Gull	Sparrow Hawk
Amer. Merganser	Horned Lark
Red-breasted Merganser	Purple Finch
Black Duck	Goldfinch
Scaup Duck	Savannah Sparrow
	Golden-crowned Kinglet

The following species, rare or irregular in winter, were either recorded or occurred in unusual numbers:

Ring-billed Gull	Red-winged Blackbird
Gannet	Rusty Blackbird
Duck Hawk	Bronzed Grackle
Short-eared Owl	Sharp-tailed Sparrow
Saw-whet Owl	Northern Shrike
Kingfisher	Pipit
Fish Crow	Red-breasted Nuthatch

The following species are either casual in winter or else so rare as to make their occurrence worthy of special note:

Mallard	Red-headed Woodpecker
Wood Duck	Phoebe
Great Blue Heron	Cowbird
Woodcock	Seaside Sparrow
Hudsonian Curlew	Pine Warbler
Pigeon Hawk	Catbird
Fish Hawk	Brown Thrasher
Yellow-bellied Sapsucker	Ruby-crowned Kinglet

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MARCH, 1913.

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PUBLICATIONS

OF

The Linnaean Society of New York.

TRANSACTIONS.

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AN INTERESTING ORNITHOLOGICAL WINTER AROUND NEW YORK CITY. By LUDLOW GRISCOM.

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1913-1915

NOS. 26-27

ABSTRACT

OF THE PROCEEDINGS OF THE

LINNÆAN SOCIETY

OF

NEW YORK

For the Years Ending

March 10, 1914

AND

March 9, 1915

Date of Issue, November 23, 1915

Officers of the Linnæan Society

OF NEW YORK

1913-1914

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1914-1915

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<i>Treasurer</i> - - - - -	LEWIS B. WOODRUFF.

The Society meets on the second and fourth Tuesday evenings of each month, from October to May inclusive, at the American Museum of Natural History, 77th Street and Central Park West, New York City.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 10, 1914.

THIS is the twenty-sixth in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 25, 1913.—In the absence of all other officers the Secretary took the chair, and Mr. Grant was appointed Secretary *pro tem*. Ten members and fifteen visitors present.

Mr. Nichols reported for the Auditing Committee that the Treasurer's report had been examined and found correct.

Mr. Rogers reported for the Committee on Migration Blanks that the blanks were in the hands of the printer, and were promised for some time in the ensuing week. The cost would be about eleven dollars.

Mr. Nichols recorded a Killdeer (*Oxyechus vociferus*) at Overpeck Creek, N. J., on March 23. Mr. Grant said that he had observed one the previous day in the same locality.

Mr. Nichols also recorded a Red-tailed Hawk (*Buteo b. borealis*) on Overpeck Creek March 23—a late date. Mr. Bowdish remarked that he had seen three or four there a few days ago.

Mr. Griscom recorded the following spring migrants: At Millington, N. J., March 16 with Mr. Lenssen—Mallard (*Anas platyrhynchos*), 4; Pintail (*Dafila acuta*), 15; Woodcock (*Philohela minor*), 1; Killdeer (*Oxyechus vociferus*), 6; Mourning Dove (*Zenaidura macroura carolinensis*), 4; Rusty Blackbird (*Euphagus carolinus*), 50. At Englewood, N. J.—March 15: Phoebe (*Sayornis phæbe*), 1; March 23: Pintail, 18; Lesser Scaup (*Marila affinis*), 8; Ruddy Duck (*Erismatura jamaicensis*), 18.

The paper of the evening was presented by Mr. P. B. Philipp and was entitled "Two Florida Rookeries." The first part of the paper described a visit made with Messrs. Bowdish and Wilcox to Bird Island Reservation in Orange Lake. The last great rookery is located here. White Ibises (*Guara alba*) are very abundant, the American (*Herodias egretta*) and Snowy (*Egretta c. candidissima*) Egrets are common, and there are a few pairs of Reddish Egrets (*Dichromanassa rufescens*) and Glossy Ibises (*Plegadis autumnalis*). One of the party collected a set of Ivory-billed Woodpecker (*Campephilus principalis*) eggs in the vicinity. Under the efficient care of Warden Baynard, protection is being given, and there is a good chance that the rookery will last for a long time to come.

The second part of Mr. Philipp's paper dealt with the Brown Pelicans (*Pelecanus occidentalis*) of Pelican Island in the Indian River. A year before his visit the Pelicans, for some unknown reason, moved to another island nearby, and he found them breeding there in large numbers.

The paper was illustrated with over a hundred beautifully colored lantern-slides of the Egrets, Ibises and Pelicans, showing intimate studies of these birds in their domestic life.

Discussion followed. Mr. Bowdish mentioned that the Pelicans had now returned to their original island.

April 8, 1913.—The President in the chair. Ten members and two visitors present.

As there was no paper scheduled for the evening, the members discussed the migration, comparing this spring with the previous one. All were of the opinion that it was an unusually early one.

Mr. J. M. Johnson recorded five Herring Gulls (*Larus argentatus*) on the Connecticut River just north of Massachusetts. He had never seen them in this locality before. A Phæbe (*Sayornis phæbe*) was noted on March 19, a very early date for that latitude. The Ruffed Grouse (*Bonasa umbellus*) was also seen, for the first time in many years.

At West Englewood, N. J., on April 6, Mr. Johnson had noted a Red-shouldered Hawk (*Buteo l. lineatus*) with the tips of the primaries of one wing shot off and a big hole in the other wing.

Mr. Nichols mentioned that at a recent meeting of the Nuttall Ornithological Club in Boston which he attended a Tree Swallow (*Iridoprocne bicolor*) was reported near New Bedford on March 4.

Mr. Weber recorded a Brown Thrasher (*Toxostoma rufum*) at Fort Lee, N. J., on April 8.

Mr. Rogers reported a Pine Warbler (*Dendroica vigorsii*) at Mt. Bethel, N. J., where it is not common; also two Ospreys (*Pandion haliaëtus carolinensis*) at Runyon Pond, near South Amboy, N. J., on March 30.

Mr. Thurston recorded a flock of Vesper Sparrows (*Poæcetes g. gramineus*) at Garden City, L. I., on March 30.

Mr. Noble mentioned finding a Bittern (*Botaurus lentiginosus*) at Yonkers on April 5, and a nest of the Red-shouldered Hawk (*Buteo l. lineatus*) with three eggs.

Mr. Cleaves recorded the following notes from Staten Island: March 16—Woodcock (*Philohela minor*), 3; March 30—Holbøll's Grebe (*Colymbus holbølli*), 2; Kittiwake (*Rissa t. tridactyla*), 8; Bonaparte's Gull (*Larus philadelphia*), 1; Goldeneye (*Clangula clangula americana*), 75; Osprey (*Pandion haliaëtus carolinensis*), 3; Saw-whet Owl (*Cryptoglaux a. acadica*), 1; April 6—Holbøll's Grebe, 2; Pied-billed Grebe (*Podilymbus podiceps*), 1; Turkey Vulture (*Cathartes aura septentrionalis*), 2; and a Red-shouldered Hawk nest with two eggs.

Mr. Nichols reported the following birds from Englewood, N. J.: March 30—a pair of Duck Hawks (*Falco peregrinus anatum*) on the Palisades; April 4—Tree Swallow (*Iridoprocne bicolor*), 10; April 6—Grackles (*Quiscalus quiscula* subsp.)

in very large numbers; Yellow Palm Warbler (*Dendroica palmarum hypochrysea*), 4; April 7—Chipping Sparrow (*Spizella p. passerina*), 3. Mr. Johnson mentioned seeing a Chipping Sparrow at West Englewood on April 6.

Mr. Griscom reported a Savannah Sparrow (*Passerculus sandwichensis savanna*) at Overpeck Creek, N. J., on March 29. In Central Park the Pine Warbler (*Dendroica vigorsii*) arrived March 30, the Sapsucker (*Sphyrapicus v. varius*) April 1, the Yellow Palm Warbler, Ruby-crowned Kinglet (*Regulus c. calendula*) and Hermit Thrush (*Hylocichla guttata pallasi*) April 3, and the Field (*Spizella p. pusilla*) and Chipping Sparrows April 4.

At the close of the meeting the migration blanks were distributed.

April 22, 1913.—The President in the chair. Eleven members and forty-one visitors present.

Mr. Griscom moved that a letter be written to Congress, expressing the Society's approval of the Feather Clause in the Tariff Bill. The motion was carried.

Mr. Nichols reported the following observations: At Englewood, N. J.—April 13, Robins (*Planesticus m. migratorius*) building; April 14, a Towhee (*Pipilo e. erythrophthalmus*) and a Worm-eating Warbler (*Helmitherus vermivorus*); April 20, a flight of hawks, three Broad-winged (*Buteo platypterus*) and several Sharp-shinned (*Accipiter velox*); in Central Park, N. Y.—April 15, Myrtle Warbler (*Dendroica coronata*); Rockaway Beach, L. I.—April 19, Barn Swallows (*Hirundo erythrogasira*) flying in from the sea.

Mr. Griscom recorded a good day around Englewood on April 1 with Mr. N. F. Lenssen. Fifty-one species of birds were seen, including two Pintail (*Dafila acuta*) and a Green Heron (*Butorides v. virescens*).

Mr. Noble reported a White-crowned Sparrow (*Zonotrichia l. leucophrys*) at Yonkers on April 17, and a Carolina Wren (*Thryothorus l. ludovicianus*) breeding on the 18th. The latter's nest with young was found.

The paper of the evening was presented by Mr. Alanson Skinner and was entitled "The North American Indian." The

speaker divided the Indians of this continent into six general groups, according to their customs, modes of life and religious and social development. Each group was taken up in turn and described in detail. Numerous lantern-slides illustrating their dress, houses and characteristic hunting and agricultural implements were thrown upon the screen.

May 13, 1913.—The President in the chair. Ten members and six visitors present.

The Secretary reported the receipt of several letters from members of the United States Senate acknowledging his circular letter in regard to the Feather Clause in the Tariff Bill. All the Senators heard from expressed themselves as being heartily in favor of the measure.

Mr. Cleaves reported that orders for bird bands were far ahead of those last year. He had banded four young Killdeer (*Oxyechus vociferus*) a few days ago.

Mr. Johnson reported a Red-headed Woodpecker (*Melanerpes erythrocephalus*) at Sound Beach, Conn., on May 10. Mr. Noble recorded another at Yonkers, N. Y., on May 6. Mr. Hix mentioned that it was common in the Passaic Valley below Mt. Bethel, N. J.

Mr. Rogers mentioned that the Herring Gull (*Larus argentatus*) was still on the Hudson River. He also reported two Rose-breasted Grosbeaks (*Zamelodia ludoviciana*) at Cranford, N. J., on May 3.

Mr. Griscom recorded the following rare birds from Central Park, N. Y.: April 27—Blue-gray Gnatcatcher (*Poliophtila c. caerulea*), 1; May 3—Palm Warbler (*Dendroica p. palmarum*), 1; May 4—Loon (*Gavia immer*), 5—the second Park record; May 4 and 13—Bay-breasted Warbler (*Dendroica castanea*); May 11 and 13—White-crowned Sparrow (*Zonotrichia l. leucophrys*); May 13—Cape May Warbler (*Dendroica tigrina*), 2.

Mr. Hix reported a Lincoln's Sparrow (*Melospiza l. lincolni*) in Central Park on May 13. He had spent the week-end of May 11 at Mt. Bethel, N. J. Hardly any migrants were observed. The Henslow's Sparrow was, as usual, common. A Lesser Yellowlegs (*Totanus flavipes*) and a Rusty Blackbird (*Euphagus carolinus*) were observed May 10.

Mr. Noble reported as follows for the vicinity of Yonkers, N. Y.: April 26, Blue-winged Warbler (*Vermivora pinus*); May 3, Magnolia Warbler (*Dendroica magnolia*); May 8, Chat (*Icteria v. virens*); May 9, White-crowned Sparrow (*Zonotrichia l. leucophrys*).

Mr. Cleaves reported a Chat on Staten Island on May 10, and on the same day 200 Bonaparte's Gulls (*Larus philadelphia*), Seaside (*Passerherbulus m. maritimus*) and Sharp-tailed (*P. caudacutus*) Sparrows and a Green Heron (*Butorides v. virescens*) nest with four eggs. He had first noted the Bobolink (*Dolichonyx oryzivorus*) on May 3.

Mr. Weber reported a Least Flycatcher (*Empidonax minimus*) at Fort Lee, N. J., April 25.

May 27, 1913.—The President in the chair. Six members and seven visitors present.

Mr. Johnson reported the White-crowned Sparrow (*Zonotrichia l. leucophrys*) near North Mt. Vale, N. Y., twelve males singing on May 17.

Mr. Rogers recorded an individual of the same species singing near Scotch Plains, N. J., May 18. On that day Mr. W. DeW. Miller and he had found around Plainfield 92 species of birds. Thrushes (*Hylocichla*) were noticeably scarce. He had found a Vesper Sparrow (*Poæetes g. gramineus*) nest in the strip of grass along a road, eight inches from a footpath. He also saw a female Cape May Warbler (*Dendroica tigrina*). He spoke of a Herring Gull (*Larus argentatus*) on the Hudson River May 20.

Mr. Nichols reported five Cape May Warblers near his house in Englewood, N. J., May 18.

Mr. Johnson reported the Golden-winged Warbler (*Vermivora chrysoptera*) as very common around Pearl River, N. Y., May 18.

Mr. Griscom told of an interesting day in the field with Mr. N. F. Lenssen and Mr. S. V. LaDow around Englewood on May 18. 91 species were observed. Birds of all kinds were exceedingly abundant, especially Tanagers (*Piranga erythromelas*), Warblers (*Mniotiltidæ*) and Thrushes (*Turdidæ*). The following noteworthy species were recorded: Lesser Scaup (*Marila affinis*), 1; Red-tailed Hawk (*Buteo b. borealis*), 1;

Lincoln's Sparrow (*Melospiza l. lincolni*), 1; Orange-crowned Warbler (*Vermivora c. celata*), 1; Tennessee Warbler (*V. peregrina*), 1; Cape May Warbler, 2 adult males; Bay-breasted Warbler (*Dendroica castanea*), 15; Prairie Warbler (*D. discolor*), 9.

Mr. Griscom also gave the following summary of the migration in Central Park since the last meeting:

- May 14—Cape May Warbler, 4 adult males.
 Bay-breasted Warbler, 2.
 15—Golden-winged Warbler, 1.
 Cape May Warbler, 1.
 Bay-breasted Warbler, 1.
 16—62 species seen.
 Whip-poor-will (*Antrostomus v. vociferus*), 1.
 White-crowned Sparrow (*Zonotrichia l. leucophrys*), 1.
 Worm-eating Warbler (*Helmitherus vermivorus*), 1.
 Tennessee Warbler, 1 male, 1 female.
 Cape May Warbler, 3 adult males.
 Bay-breasted Warbler, 3.
 17—Screech Owl (*Otus a. asio*), 1.
 Solitary Vireo (*Lanivireo s. solitarius*), 1.
 23—Olive-sided Flycatcher (*Nuttallornis borealis*), 1.
 26—Bay-breasted Warbler, 4.
 Mourning Warbler (*Oporornis philadelphia*), 1.

The week-end of May 25 was spent with Messrs. Johnson, Nichols and Lenssen at Jones Beach, L. I. Shore-birds were very abundant, all the common species being observed and also two Knots (*Tringa canutus*) and sixty-two Red-backed Sandpipers (*Pelidna alpina sakhalina*). Other birds of interest noted were Red-breasted Merganser (*Mergus serrator*), Black Duck (*Anas rubripes*), all three Scoters (*Oidemia americana*, *O. deglandi* and *O. perspicillata*), Great Blue Heron (*Ardea h. herodias*), Virginia Rail (*Rallus virginianus*) and Duck Hawk (*Falco peregrinus anatum*).

The paper of the evening was by Mr. J. M. Johnson and was entitled "The Mammals of Yellowstone Park and Vicinity." Owing to the absence of hunting, the reservation is stocked with

an abundant mammalian fauna, and the opportunities for observation and photography are unusual. Mr. Johnson availed himself of every chance, and as a result exhibited before the Society a remarkable series of lantern-slides, especially of bears and of the shy spermophiles and other rodents.

October 14, 1913.—The President in the chair. Eight members and one visitor present. In the absence of the Secretary, the Chair appointed Mr. Rogers Secretary *pro tem*.

A card from Mr. Abbott was read reporting his observation of a female Arctic Three-toed Woodpecker (*Picoides arcticus*) near Colby Pond, Saranac Lake, N. Y., September 24. A letter also was read from him, in which, owing to his expected absence from town for some months to come, he tendered his resignation as Vice-President and as a member of the Committee on Bird-Banding. It was voted to lay the matter on the table to await action at the Annual Meeting.

As the Annual Meeting of the National Association of Audubon Societies was scheduled to fall on October 28, the date of the next meeting of the Linnæan Society, it was voted that the President should arrange that the evening session of the Association should be held jointly with our meeting, and that he should procure a speaker therefor.

Mr. Cleaves was asked for an informal report of the season's work of the Committee on Bird-Banding. He said that some 7,000 bands had been issued to 150 persons and that about half of these had been placed on birds of 149 species. Large lots of bands had been supplied to Mr. Ekblau of the Crocker Land Expedition and to Mr. Anderson of the Canadian Arctic Expedition for use on such birds as were likely to reach civilization in the winter. The treasury contained about \$67.00, bands were running short, and probably \$100.00 would be needed for bands for next season. Support had been erratic. Mr. Cleaves gave several of the most interesting return records, notably that of a Robin (*Planesticus m. migratorius*) banded as a nestling at Mastic, L. I., and found a year later a quarter of a mile from the same spot. It had apparently met its death from getting its beak so tangled in a bit of string that it was unable to open it or free itself.

There was no paper for the evening, so the remaining time was taken up by a general discussion of summer and recent field experiences.

Mr. Johnson read a list, with brief comments, of birds he had observed in the mountains of North Carolina near Asheville, with headquarters at 4,250 feet. Crows (*Corvus b. brachyrhynchus*) he had found very scarce, not more than five all told. House Sparrows (*Passer d. domesticus*) were in evidence even at the most remote mountain hamlets. Carolina Juncos (*Junco hyemalis carolinensis*), a form noticeably handsomer than ours (*J. h. hyemalis*), were exceedingly abundant even on the summit of Mt. Mitchel. Cairns's Warblers (*Dendroica caerulescens cairnsi*)—which he could not distinguish in the field from our Black-throated Blue Warbler (*D. c. caerulescens*)—were in great abundance.

Mr. Johnson also reported Turkey Vultures (*Cathartes aura septentrionalis*) in southern Orange County, N. Y., on October 12 and 13, two each day.

Wood Ducks (*Aix sponsa*) were reported by several members as apparently increasing in northern New Jersey and southeastern New York, owing to the several years' continuous closed season. Mr. Weber told of one man who killed 85 in two days in northern Wisconsin recently, just before such a closed season went into effect.

Mr. Murphy told of banding birds in the South Atlantic, including several Noddies (*Anous stolidus*) which he simply picked out of the air as they flew over. He and Mr. Nichols reported seeing a Pigeon Hawk (*Falco c. columbarius*) recently catching dragonflies in its bill, and Mr. Cleaves said he had once seen a Sparrow Hawk (*F. s. sparverius*) catch one thus, then transfer it to its foot and, still flying, eat it.

Mr. Nichols had seen a Sooty Shearwater (*Puffinus griseus*) at Mastic, L. I., October 13, when he had found Herring Gulls (*Larus argentatus*), in unusually great abundance, feeding on Sand Lances (*Ammodytes americanus*). Fully 75 per cent of the Gulls were immature. There were present also large numbers of Surf (*Oidemia perspicillata*) and White-winged (*O. deglandi*) Scoters and a few Gannets (*Sula bassana*).

Mr. Grant spoke of a visit with several British ornithologists last spring to Saltee Island, Ireland, where probably 500,000 Puffins (*Fratercula a. arctica*) were breeding. He and others present spoke of the great regularity of their migrations and of other habits.

Mr. Weber recorded his recent collecting of a Bittern (*Botaurus lentiginosus*) which contained the remains of four or five Meadow Mice (*Microtus pennsylvanicus*).

October 28, 1913.—The President in the chair. Eight members and thirty-two visitors present.

The name of Mr. Charles J. Fetterer was proposed by the Secretary for Resident Membership.

Upon motion of Mr. Franklin, duly seconded, the Chair appointed a committee to investigate the various types of projectoscopes on the market, to see whether one of them might be feasible for use by the Society. The Chair appointed Messrs. Johnson, Franklin and Thurston to serve upon the committee.

Mr. Johnson described the clever manner in which some Chickadees (*Penthestes a. atricapillus*), observed by him in Prospect Park, Brooklyn, on October 19, extracted the meat from the seed-wings of ash trees (*Fraxinus*). He also reported a flock of sixty Pine Siskins (*Spinus pinus*) feeding on Black Birch (*Betula lenta*) seeds.

Mr. Griscom recorded an Arkansas Kingbird (*Tyrannus verticalis*) from Watch Hill, R. I., on September 24, which was observed at close range for half an hour. This is an addition to the State list. He also mentioned the unusual abundance of Pine Siskins, and reported a Junco (*Junco h. hyemalis*) on September 10 and a flock of eight Baldpates (*Mareca americana*) on September 14—both of them the earliest fall dates for the State.

Mr. Weber recorded a Junco at Long Beach, L. I., August 28, the earliest fall date for Long Island. He also mentioned that Pine Siskins were common near Leonia, N. J.

Mr. Charles H. Rogers presented the paper of the evening which was entitled "Impressions of British Bird Life." The speaker compared the bird life of Great Britain with that

around New York City, taking up the numbers of species and individuals, the families, and the seasonal occurrence of birds, dividing them into permanent residents, summer residents, winter residents, migrants and accidental visitants. Perhaps the greatest point of difference in the last respect was the fact that Britain has no fewer than 125 permanent residents. Mr. Rogers concluded his paper with an account of his visit to Bass Rock, probably the most famous sea-bird colony in the world, and threw many excellent photographs of nesting Gannets (*Sula bassana*) and other birds upon the screen. He also exhibited specimens of some characteristic British birds.

November 11, 1913.—Regular meeting omitted owing to conflict with the meeting of the American Ornithologists' Union.

November 25, 1913.—The President in the chair. Twelve members and forty-five visitors present.

The Secretary read a letter from the Secretary of the American Ornithologists' Union conveying the thanks of the Union to the Linnæan Society for their hospitalities during the recent session of the Union in New York City.

Mr. Charles J. Fetterer was elected to Resident Membership.

The name of Mr. John Dryden Kuser was proposed by Mr. Nichols for Resident Membership.

The Committee on Projectoscopes reported on the progress they had made. They hoped shortly to have a machine on exhibition for the Society.

Dr. Dwight, as Chairman of the A. O. U. Entertainment Committee, reported that the luncheons had cost \$288.00. All but \$70.00 had been raised by subscription. It was moved to pay this balance from the Treasury.

Mr. Griscom recorded the Hudsonian Chickadee (*Penthestes hudsonicus*) at Watch Hill, R. I., as follows: one October 30, four October 31, three November 5. The subspecies was presumably the Acadian (*P. h. littoralis*). He also mentioned that fourteen had been seen around Boston this autumn.

Mr. Bowdish reported a Saw-whet Owl (*Cryptoglaux a. acadica*) in his yard at Demarest, N. J., November 23. Although very tame, it eluded capture.

The first paper of the evening, entitled "Bird Snap-Shots,"

was presented by Mr. B. S. Bowdish. The speaker threw upon the screen colored lantern-slides of various bird subjects, including birds feeding at a lunch counter by his window in Demarest, pictures of Roseate Terns (*Sterna dougalli*) and Black Guillemots (*Cepphus grylle*) on Noddy Island, Nova Scotia, and a pair of Bald Eagles (*Haliaeetus l. leucocephalus*) by their nest in Ontario.

Mr. Ludlow Griscom presented the second paper of the evening, entitled "The Water Fowl of Gardiner's Island, with Remarks upon the Identification of Ducks in the Field." The speaker gave an account of the wonderful water-fowl life of this unique island, as witnessed by him and others during four visits made in the late fall and early spring. The field marks by which the various species could be distinguished were next discussed, and his remarks were illustrated by specimens most courteously loaned him from Dr. Dwight's collection.

December 9, 1913.—The President in the chair. Six members and a visitor present.

The meeting opened informally with the exhibition of a projectoscope procured by the Committee. Various articles and pictures were thrown upon the screen. It was decided that only the best machine would suit the Society, and then only if the focal length could be increased and the focus of objects could be made equally clear for their entire surface.

A letter was read from Mr. Clinton G. Abbott reporting Redpolls (*Acanthis l. linaria*) and Pine Siskins (*Spinus pinus*) as the most abundant birds around Saranac Lake, in the Adirondacks. He had also recently seen a Pileated Woodpecker (*Phlæotomus p. pileatus*) and some White-winged Crossbills (*Loxia leucoptera*).

Another letter, from Dr. A. A. Allen, was read, reporting Canvasbacks (*Marila valisineria*), Pine Grosbeaks (*Pinicola enucleator leucura*) and Northern Shrikes (*Lanius borealis*) from Ithaca, N. Y.

A letter from Mr. W. W. Grant was read in which he resigned as Chairman of the Bird-Banding Committee. The question was laid upon the table until the Annual Meeting.

Mr. John Dryden Kuser was elected to Resident Membership.

Mr. Cleaves read some notes on a flock of Killdeer (*Oxyechus vociferus*) seen at Princes Bay, Staten Island, which had remained in that vicinity for some time. Twenty-one were noted on November 2 and two on the 30th. A Pipit (*Anthus rubescens*) was also seen on November 30. He mentioned that Mr. Ernest Harold Baynes had observed a Hudsonian Chickadee (*Penthestes hudsonicus*) recently at Meriden, N. H.

Mr. Rogers reported a Saw-whet Owl (*Cryptoglaux a. acadica*) in a back yard in West 76th Street on November 15. He had also seen a Brown Thrasher (*Toxostoma rufum*) in Van Cortlandt Park November 30.

Mr. Kuser reported an interesting day at Long Beach, L. I., with Dr. Wm. H. Wiegmann on November 30. Noteworthy species were a Goldeneye (*Clangula clangula americana*), some Canada Geese (*Branta c. canadensis*) and a Brant (*B. bernicla glaucogastra*). He also recorded a flock of Horned Larks (*Otocoris alpestris*) at Bernardsville, N. J., on November 6.

Mr. Griscom reported a Sapsucker (*Sphyrapicus v. varius*) at Englewood, N. J., on November 23.

December 23, 1913.—The President in the chair. Twelve members and four visitors present.

It was resolved to hold the Annual Dinner on the date of the Annual Meeting. The question as to whether a medal should be given this year was laid upon the table.

Mr. Rogers reported that the Brown Thrasher (*Toxostoma rufum*) he had seen in Van Cortlandt Park on November 30 was at the same spot on December 21.

Mr. Cleaves recorded a Kingfisher (*Ceryle a. alcyon*) at Princes Bay, Staten Island, December 21.

Mr. Noble reported a Black Skimmer (*Rhynchops nigra*) at Point o'-Beach, L. I., on September 5. It stayed around for three days and was finally collected. He also reported an American Egret (*Herodias egretta*) and a Turkey Vulture (*Cathartes aura septentrionalis*) on Martha's Vineyard about July 25.

Mr. Weber spoke of the large number of immature Herring Gulls (*Larus argentatus*) present this season.

Mr. Aretas A. Saunders recorded three Night Herons (*Nyc-*

ticorax nycticorax naevius) in Pelham Bay Park on the 21st. A Kingfisher (*Ceryle a. alcyon*), three Bluebirds (*Sialia s. sialis*) and some Meadowlarks (*Sturnella m. magna*) were also seen. He had seen a flock of thirty Night Herons in the same locality December 15.

Mr. Cleaves spoke of seeing large flocks of Dowitchers (*Macrorhamphus g. griseus*) on the South Carolina coast late in June.

The paper of the evening, entitled "Albatrosses of the South Seas," was presented by Mr. Robert Cushman Murphy. Mr. Murphy is almost the only ornithologist who has had the opportunity of studying certain pelagic species on their breeding grounds. On South Georgia he found several species nesting, and he gave a most interesting account of their life-histories at this season. The breeding habits of the Wandering Albatross (*Diomedea exulans*) were unknown prior to his observations. The paper was fully illustrated by splendid lantern-slides, many of them wing-shots made possible by the great tameness of his subjects.

January 13, 1914.—Regular meeting omitted owing to lack of a quorum.

January 27, 1914.—The President in the chair. Thirteen members and twenty-five visitors present.

Mr. Hubbell proposed the name of Mr. Neil Morrow Ladd of Greenwich, Conn., for Resident Membership, and the Secretary proposed Dr. Witmer Stone of the Philadelphia Academy of Sciences for Honorary Membership and Mr. Stanley Vaughan LaDow of 610 West 116th Street for Resident Membership.

After much discussion it was voted to present a medal at the Annual Dinner to Dr. Daniel Giraud Elliot.

Mr. Cleaves recorded a Snowy Owl (*Nyctea nyctea*) which had been shot on Staten Island January 10.

Mr. Hubbell reported a Towhee (*Pipilo e. erythrophthalmus*) at Greenwich, Conn., January 11, and a flock of eleven Bluebirds (*Sialia s. sialis*) on the 18th.

Mr. Thurston recorded the Ring-billed Gull (*Larus delawarensis*) at Fire Island Beach, L. I., December 31 and January 1. One was collected, the first specimen ever taken in winter on Long Island.

Mr. Griscom recorded a Short-billed Marsh Wren (*Cistothorus stellaris*) collected at Jones Beach, L. I., December 28, the fourth record for Long Island and the first winter record for New York State.

Mr. Alanson Skinner presented the paper of the evening, entitled "The Cree and Ojibway Indians of Saskatchewan." The speaker spent last summer with these tribes, studying their customs and ancestral traditions. Apparently about a century ago they had migrated from the wooded regions of eastern Canada and the northern United States. As a result they had kept many of the customs of the woods Indians while adopting most of those of the plains Indians. Mr. Skinner described his experiences most entertainingly and illustrated his remarks with many colored lantern-slides.

February 10, 1914.—Regular meeting omitted owing to lack of a quorum.

February 24, 1914.—The President in the chair. Seven members and four visitors present.

By request, the paper of the evening, entitled "Observations on the Life History of the Sea Elephant," was presented by Mr. Robert Cushman Murphy before the business was taken up. The speaker recounted vividly his experiences with this huge and lumbering animal on South Georgia Island, and illustrated his remarks with a splendid series of lantern-slides. Discussion followed.

The business end of the meeting was then taken up.

Dr. Witmer Stone was elected an Honorary Member and Messrs. N. M. Ladd and S. V. LaDow were elected to Resident Membership.

It was resolved to change the date of the Annual Dinner from March 10 to the 28th so as not to have it coincident with the Annual Meeting.

Under observations, Mr. Cleaves recorded from Staten Island a Redpoll (*Acanthis l. linaria*) February 12, and a Red-headed Woodpecker (*Melanerpes erythrocephalus*) February 15.

Mr. Weber reported that he had received recently from Montauk, L. I., a Dovekie (*Alle alle*) found dead February 9 and a Black Duck (*Anas rubripes*) and a Holboell's Grebe (*Co-*

lymbus holbælli) found dead February 23. He also spoke of a trip to Long Beach, L. I., on the 23d. A Sanderling (*Calidris leucophæa*) was the most interesting bird observed. Horned Larks (*Otocoris a. alpestris*) were very abundant. He had picked up a Pied-billed Grebe (*Podilymbus podiceps*) and a Brant (*Branta bernicla glaucogastra*) dead.

Mr. Griscom remarked that previous to Mr. Weber's observations the Horned Lark had been very scarce all winter on the beach.

March 10, 1914.—Annual Meeting. The President in the chair. Seven members and four visitors present.

In the absence of the Treasurer, his report was read by the Secretary. It showed a balance on hand of \$2,224.87. Messrs. Granger and Nichols were appointed as a committee to audit the Treasurer's report.

The report of the Secretary was next read, as appended herewith:

"During the past year the Society has held thirteen meetings. One was omitted owing to conflict with the session of the American Ornithologists' Union in New York City, and at two other meetings there was no quorum owing to the severe weather prevailing on both evenings. As a result the total attendance was only 310 persons, the lowest record in many years, giving an average attendance of twenty-four persons per meeting, compared with twenty-seven last year. The attendance of members averaged ten, the largest being fourteen. This item also shows a big decrease, due in part to the fact that six of our most active members have left New York City during the past year.

"One Honorary Member and four new Resident Members have been elected during the past year; seven have resigned and two have been dropped for arrears in dues. The Membership list now stands: Resident, 102; Corresponding, 27; Honorary, 3; total, 132.

"Nine papers have been presented before the Society, namely, five on ornithology, two on mammalogy, and two on anthropology. Eight of the papers were illustrated with lantern-slides and one with photographs and specimens.

"No publication has been issued by the Society during the past year owing to unforeseen difficulties, but a new *Abstract of Proceedings*, the largest the Society has ever published, will be issued in about a month.

"The usual number of exchange publications have been added to the Library."

The Society then proceeded to elect the following officers for the ensuing year:

PRESIDENT, Jonathan Dwight, Jr.
 VICE-PRESIDENT, Julius M. Johnson.
 TREASURER, Lewis B. Woodruff.
 SECRETARY, Ludlow Griscom.

The Chair appointed standing committees for the year as follows:

Publication, Messrs. Griscom, J. M. Johnson and Rogers.
Papers and Lectures, Messrs. Griscom, Granger and Rogers.
Nominations, Messrs. Weber, Hubbell and F. W. Hyde. .
Finance, Messrs. Woodruff, Granger and Nichols.
Bird-Banding, Messrs. Cleaves, Nichols and Rogers.

Mr. Rogers recorded thirty-five Redpolls (*Acanthis l. linaria*) from Van Cortlandt Park on March 8. He had also seen a Red-winged Blackbird (*Agelaius p. phœniceus*) and three Bluebirds (*Sialia s. sialis*).

Mr. Griscom recorded an interesting day around Englewood, N. J., on March 8 with Messrs. Johnson, LaDow and Nichols. A Holboëll's Grebe (*Colymbus holboëlli*) was seen on the River, a flock of Crossbills (*Loxia curvirostra minor*) were heard and four Redpolls were noted. Horned Larks (*Otocoris alpestris* subsp.) were also seen. The party failed to find any Carolina Wrens (*Thryothorus l. ludovicianus*) on the Palisades, and it is feared that the cold weather may have exterminated them.

Several members spoke of the effects of so severe a winter upon the birds. The Redpolls and Crossbills, of course, arrived as a result of it. According to the papers many Bob-whites (*Colinus v. virginianus*) had perished on Long Island.

Several members spoke of a suppositious Goshawk (*Astur a. atricapillus*) that had been seen that day around the Museum. Discussion ensued as to the means of identifying this species in the field. It was conceded by all that a satisfactory identification was difficult.

This led to a discussion of the experiences various members had had with enthusiasts who had made absurd mistakes, and several amusing anecdotes were related.

ABSTRACT
OF THE PROCEEDINGS OF THE
LINNÆAN SOCIETY
OF
NEW YORK,
FOR THE YEAR ENDING MARCH 9, 1915.

THIS is the twenty-seventh in the series of *Abstracts* published by the Linnæan Society of New York, and, like the preceding issues, is prepared mainly as a brief review of the work of the Society during the year closing with the date indicated above. Papers presented before the Society and published elsewhere are mentioned with proper reference to the place of publication.

March 24, 1914.—Second Annual Dinner, held at the Hotel Endicott. The President presiding. Twenty-seven members and twenty-five guests present.

During the dinner a flashlight photograph was taken of the gathering. At the close the Chair spoke of the purpose of assembling that evening,—to honor Dr. Daniel Giraud Elliot for his unique attainments in mammalogy and ornithology. He next introduced various speakers, among them Prof. H. F. Osborn, Dr. F. A. Lucas, Dr. Witmer Stone, Dr. T. S. Palmer, Dr. W. T. Hornaday, Mr. Ernest Ingersoll, Mr. Ernest Thompson Seton, Dr. A. K. Fisher and Dr. F. M. Chapman. At the close of the speeches the Chair presented Dr. Elliot with the Linnæan medal of honor.

Dr. Elliot spoke as follows:

“Mr. President, Ladies and Gentlemen:

“This is certainly an age for acquiring information and having knowledge bestowed upon you, and within the last fifteen or twenty minutes I

have learned one important fact and, being of a generous disposition, I propose to have you share this knowledge with me. The fact is this, that, if a man wishes to become intimately acquainted with himself and to learn that he has qualifications which he never before suspected, he must attend the Annual Dinner of the Linnæan Society of New York. We are told that we are fearfully and wonderfully made, but from the exposé of myself made by a number of distinguished speakers, the fearfulness and wonder of my make-up would most certainly stagger the very ancient prophet who expressed himself so intimately acquainted with the internal arrangements of a Primate.

"I am perfectly familiar with the pernicious custom of my fellow-countrymen that, when two or three Americans are assembled together one, certainly, and the whole of them, probably, will be expected to make a speech; so that when I accepted my subpoena to appear here this evening and receive sentence I felt that it was likely, though no intimation had been given to me, I should be obliged to say something in defence of my life and character; but I have been extremely busy in the last three weeks thoroughly engaged in that which has occupied a large proportion of my fellow-citizens, and with the assistance of some millions of handkerchiefs I have blown away nearly everything connected with my outer self, and even the few ideas that had a lodgement in my head; so that I come before you on this perilous occasion in a rather defenceless state with hardly a notion as to what I am going to say to you, but if you will bear with me I will talk to you in a familiar way upon such thoughts as may come to me at the moment. And the one thought that occurs with particularly great force as I look around upon this assembly and see so many ornithologists and naturalists gathered here, is that I am instinctively carried back into the long ago when New York and I were young. There is no one here who remembers the time of which I am about to speak, for I am the sole survivor of those days.

"I do not suppose that my boyhood was different from that of any other lad who had been inoculated with the virus that was to strengthen and increase in power more and more with the passing years, until it should dominate and control his entire life. I began to make a collection of birds—why I began I have no idea, probably could not help it—and when it verged toward completion I did not know what to do with it, for there was no one of my age anywhere to be found who sympathized with me in my pursuit, or with whom I could rejoice upon the acquisition of some rare specimen; I was practically alone. My cousin Jacob Giraud, the author of the 'Birds of Long Island,' had just entered upon the close of his career, and wrote no more; Audubon, with decayed mental faculties had entered upon the last year of his life; DeKay had died in Albany, and in all the cities and within the boundaries of our great state there was but one working ornithologist, George Newbold Lawrence, a man greatly older than myself, whose sons were my friends and companions, but who had not inherited their father's scientific taste, and their interest in birds

was simply that of shooting and eating them; a gastronomic fancy shared in by all the rest of the population. I would go occasionally to Lawrence's house and look at his collection, which to my youthful eyes seemed greater and more extensive than any I have since seen in all the museums of the world; but Lawrence was not an instructor, and cared mostly for finding and describing some new form, the a-b-c of systematic work, and I could learn but little how to work properly from him. It was a case of non-compatibility rather than an unwillingness to render aid. The only representative of science in the city was the moribund Lyceum of Natural History, living upon its past reputation, and indebted to the courtesy of the College of Physicians and Surgeons for its meeting place; a room having been placed at the disposal of the members in their building corner of Fourth Avenue and Fourteenth Street, then at the northern boundary of the city. The meetings were presided over by Major Delafield, with a dignity and suavity worthy of a much larger audience. In Massachusetts there were no ornithologists. Neither Allen nor Brewster had appeared, and their predecessor, Brewer, had hardly been heard from. Philadelphia was much better off. It had its Academy, collections and library, donated mainly by Dr. Wilson, and for its Curator of Ornithology, John Cassin, one of the most erudite and competent ornithologists this country has ever produced, and the only one of his time familiar with exotic forms. Leidy was at the height of his career, engaged upon the works which have brought him such a celebrated name. I worked a good deal in the old building corner of Broad and Sansom Streets, my companion often having been Cope, then starting upon his career, and we used to labor at the same table, he with his alcoholic snakes and lizards, and I with my birds; and as I was shy of having my material brought in contact with his, he usually occupied the greater part of the table.

"With Cassin I was brought into rather intimate communication, because when I began to publish my monographs the plates were colored at the establishment of Bowen and Company who served Audubon for so many years, and of which firm Cassin was then the head, and we were in constant correspondence as well as personal communication for a number of years. In Washington, Baird had only lately come to the Smithsonian Institution, and with that great patience for which he was noted and the methods of diplomacy which carried him so far in after years, he was feeling his way in his position as Assistant Secretary, not having much of the sympathy of his chief, Henry, who did not hesitate to declare that he would have sent all the specimens of mammals and birds out of the Institution if he had had his way. There was no other naturalist then in Washington. Gill had just begun his study of fishes, but Ridgway or Coues had not yet peeped.

"In all the length and breadth of the land there was not a periodical devoted to the ways of birds, and it was hard sledging for a budding ornithologist. The vast majority of the books which are your daily companions, and which you consult for hours, keeping them always within

reach of your hand, had not even been conceived much less printed. With the exception of Lawrence, there was no private collection of birds of any moment in the country. The Mississippi was the western boundary of civilization, and the last outpost of the Government was at Fort Union on the Missouri. Beyond that post across plains and mountains was the land of the wild Indian, and the hardly less wild animals. It was the glimmering of the dawn of that glorious day that was to produce that famous company of the greatest naturalists the world has ever seen, most of whom have already crossed the river.

“And this brings me to the consideration of the position I occupy this evening as the recipient of the Society’s medal. It is a peculiar honor that you have conferred upon me; peculiar in the fact that it does not come to me from strangers, but from my friends, those who are my most keen and competent judges. It is easy for me to say I thank you, but the simple words fail to express the depths of feeling that causes them to issue from my lips, and if I do not attempt to add anything to them it will be because I know you will understand.

“Now before I sit down I want to say a word to the young men whom I am glad to see here present, and who are just entering the scientific field which I am about to leave. Experience, from the heights which it has gained through many a desperate struggle and dire conflict, looks back over the past where its heart and memory lie. It rarely scans the future because, from its position to the river, the road is very short; and beyond lies the unknown. You have hope, enthusiasm, and courage, great attributes of youth, and I would not speak a word of discouragement but rather bid you onward and God speed, but perhaps a word of caution and advice from one who has travelled and knows well the way, may not be amiss. How beautiful the road appears before you; broad and smooth, and brightened by the sunlight of early morning, but it will not always be so; there will be rough places where you will stumble and mayhap fall; there will be heights which will demand all your youthful strength and resolution before you shall be able to cross the summit; there will be waste places where you will lose your way and wander and be faint of heart and weary, and the sunlight will not always shine upon that road for it has been beautifully told us that ‘Into each life some rain must fall, some days must be dark and dreary.’ But hold fast to your colors; I will give you a motto to emblazon on its folds; ‘Time, Faith, Energy.’ Time, The period of opportunity, for every son of earth, whether he possesses the ten talents, or the three, or even only the one, at some time in his career opportunity comes knocking at the door, the acceptance or rejection of which makes or mars a life. Faith: Confidence in yourself and in your work; resolution to seize it, determination to carry it forward to its legitimate end. Energy: Firmness of will, so that whatever your hand finds to do you may do it with your might. Under this motto of Time, Faith, Energy, always pointing upward and onward, you may go far. Cling to your principles of right thinking and clean living, so that you may be

courteous to your adversaries, and charitable to those that fail; but above all have the courage of your convictions; watch each sign and mark before you even as a hunter tracks his quarry, leaving nothing behind overlooked, or without having been subjected to keen research; go slowly to your decisions; but having once reached your conclusion, stand by your guns and defend your position to the utmost limit of your strength, for I tell you that science has no use for a wobbly disciple. And then when you come to stand where I do now, and look back on the road over which you have come, winding and twisting, far, far away into the dim distance, even to the horizon of your youth, you shall mark that there was the place of dire conflict; further onward was where you were sorely wounded and almost overcome; still further yet lies that wilderness in which the path was lost and you wandered aimlessly until almost driven to despair; but even as you gaze, the mists of trial, trouble and despair will rise and float away, and the glorious beams of the sun of victory shall shoot forth illuminating all the land, and you conquerors! shall rejoice in your achievements splendidly accomplished, and in your honors nobly won."

[Dr. Elliot's address was separately published in May, 1914.]

April 14, 1914.—The President in the chair. Thirteen members and about forty visitors present.

Mr. Granger reported for the Auditing Committee that the Treasurer's report had been examined and found correct.

Mr. Cleaves reported a small deficit for the American Bird-Banding Association and asked for \$15.00, which was unanimously granted from the Treasury.

Mr. J. M. Johnson reported for the Projectoscope Committee that the Convertible Balopticon was the only machine suited to the Society's needs. It would cost \$282.00. The Chair remarked that this matter would better not be taken up until next autumn, as the spring season was so nearly over.

Mr. Johnson recorded a Glaucous Gull (*Larus hyperboreus*) on the Basin (near the Potomac River) in Washington, D. C., which remained in the vicinity for several days, being first seen on April 5th and last on the 9th. The bird had been satisfactorily identified by Messrs. Rogers, Nichols and Preble, as well as himself.

Dr. F. M. Chapman spoke of a Ruby-crowned Kinglet (*Regulus c. calendula*), which he had heard singing that morning at Englewood.

Mr. Rogers reported finding on March 21 in Van Cortlandt

Park eight Bob-white dead. They were in a group not twenty inches across and had evidently been imprisoned by a crust that had formed over them as they roosted in the snow. At Runyon, N. J., on April 5, Mr. Rogers and Mr. W. DeW. Miller had seen Black Ducks (*Anas rubripes*), Pintail (*Dafila acuta*), Green-winged Teal (*Nettion carolinense*), two Ospreys (*Pandion haliaëtus carolinensis*) and a male Chipping Sparrow (*Spizella p. passerina*). According to residents, the Ospreys bred there last year. The Chippy noted had a light bill, an unusual feature at this season.

Mr. Griscom spoke of the Jerome Reservoir in the northern section of the City as the Jamaica Pond of New York City. Ten species of ducks had been seen there during March, including Hooded Mergansers (*Lophodytes cucullatus*), Blue-winged Teal (*Querquedula discors*), Redheads (*Marila americana*) and Canvasbacks (*M. valisineria*). By request, Mr. Kieran, the original discoverer of the ducks on the Reservoir, spoke a few words on this subject. Scaups of one or both species (*M. marila* and *M. affinis*) and Goldeneyes (*Clangula clangula americana*) arrived late last autumn, and American Mergansers (*Mergus americanus*) in December. Canvasbacks first appeared in January. That morning a few Scaups and Goldeneyes were still present.

Dr. Frank M. Chapman presented the paper of the evening, entitled "The American Museum Expedition to the Bogotá Region of Colombia." Together with Messrs. Louis Agassiz Fuertes, George K. Cherrie, Geoffry O'Connell, Paul Howes and Thomas Ring, he had sailed six hundred miles up the Magdalena River and then ridden over the Eastern Andes to their eastern base at an altitude of 1,600 feet. The wonderful richness of the avifauna was described, and also how the results of the expedition assisted toward solving the problem—whence the region acquired its bird-life. The paper was illustrated with numerous colored lantern-slides.

April 28, 1914.—The President in the chair. Eleven members and four visitors present.

It was voted that Dr. Elliot's address at the Annual Dinner should be issued separately at once.

Mr. Rogers spoke on the interesting changes in form of the Common Eel (*Anguilla chrysypa*) from infancy to maturity, and illustrated his remarks with blackboard sketches.

Mr. Woodruff spoke of the curiously shaped Tree-Hoppers (Membracidæ), an interesting family of the Hemiptera, giving a brief account of their habits and general appearance. Blackboard sketches and numerous specimens from his collection served to illustrate his remarks.

Mr. Cleaves spoke of the amusing effects of aëroplanes upon herons and Marsh Hawks (*Circus hudsonius*), as observed by him last summer on Staten Island. He also spoke briefly of the nesting habits of Willets (*Catoptrophorus s. semipalmatus*), Wilson's Plover (*Ochthodromus wilsonius*), Oystercatchers (*Hæmatopus palliatus*), herons and terns on the South Carolina coast. He exhibited some fine photographs of these birds.

Mr. Griscom spoke of the unusual and erratic migrations this spring. The severe winter had apparently affected them considerably, the early spring species arriving very late, and many of the winter residents remaining later than before. On the other hand, many species had arrived earlier than ever, all the more remarkable when the vegetation was three weeks behind. He read some letters from Mr. Aretas A. Saunders of New Haven, Conn., reporting the same state of affairs there. Oddly enough several species had been noted as arriving there from four days to a week earlier than around New York City.

General discussion of the migrations followed.

Mr. Nichols spoke on the diagnostic characteristics in the flight of our various hawks, and also mentioned their methods in catching prey. Discussion followed.

May 12, 1914.—The President in the chair. Six members and eleven visitors present.

The Secretary proposed the following gentlemen for Resident Membership: Mr. E. A. Quarles, Mr. B. S. Taubenhau, Mr. George E. Hix and Mr. John F. Kieran. The name of Mr. Benjamin H. Adams was proposed by the Treasurer for Resident Membership.

Mr. Woodruff spoke of having received a letter from Mr. Clinton G. Abbott. His health was improving steadily at Asheville, N. C.

Mr. Rogers reported a Palm Warbler (*Dendroica p. palmarum*) in Central Park May 7.

Mr. Weber reported a Nashville Warbler (*Vermivora r. rubricapilla*) May 1 at Coytesville, N. J.

Mr. Nichols recorded a Lawrence's Warbler (*V. lawrencei*) at Englewood, May 10, singing exactly like a Blue-winged Warbler (*V. pinus*).

Mr. Griscom reported that Mr. S. V. LaDow had seen a Golden-winged Warbler (*V. chrysoptera*) at Leonia, N. J., May 8. He himself had seen a Brewster's Warbler (*V. leucobronchialis*) and a Worm-eating Warbler (*Helmitherus vermivorus*) May 9 and a Kentucky Warbler (*Oporornis formosus*) May 10—all at Englewood. He also reported for Central Park as follows: May 6—Worm-eating Warbler, 2; Tennessee Warbler (*Vermivora peregrina*), 1; Cape May Warbler (*Dendroica tigrina*), 1; May 12—Lincoln's Sparrow (*Melospiza l. lincolni*), 1.

Mr. George E. Hix recorded a Screech Owl (*Otus a. asio*), both Cuckoos (*Coccyzus a. americanus* and *C. erythrophthalmus*) and the Bay-breasted Warbler (*Dendroica castanea*) in Central Park May 11.

The paper of the evening, entitled "Turtles," was presented by Mr. John Treadwell Nichols. The speaker gave a most interesting and entertaining account of all the species of turtles known in the vicinity of the City and illustrated his remarks by living and alcoholic specimens of most of the species.

General discussion, led by Mr. Taubenhau, followed, and all phases of the life-history of these interesting creatures were dealt with. At the close of the meeting Mr. Hix exhibited a specimen of DeKay's Snake (*Storeria dekayi*) which he had collected in Central Park.

May 26, 1914.—The President in the chair. Fifteen members and about forty visitors present.

The Secretary read extracts from a letter by Mr. C. G. Abbott, reporting improving health at Asheville, N. C. He mentioned among other things a remarkable migration of Cape May Warblers (*Dendroica tigrina*) April 20.

Mr. Benjamin H. Adams, Mr. E. A. Quarles, Mr. George E.

Hix, Mr. John F. Kieran and Mr. B. S. Taubenhaus were elected to Resident Membership.

Mr. Rogers told of an effort of Mr. W. DeW. Miller, Dr. Wm. H. Wiegmann and himself to see as many species of birds as possible May 17 around Plainfield. Birds were found in extraordinary numbers, and as a result 104 species were noted, the most interesting being a Great Blue Heron (*Ardea h. herodias*), a Cooper's Hawk (*Accipiter cooperi*) on its nest and four eggs, a Yellow-bellied Flycatcher (*Empidonax flaviventris*), a White-crowned Sparrow (*Zonotrichia l. leucophrys*), four Blue-headed Vireos (*Vireo s. solitarius*), a Tennessee Warbler (*Vermivora peregrina*), three Cape May Warblers (*Dendroica tigrina*), eight Wilson's Warblers (*Wilsonia p. pusilla*) and a Red-bellied Nuthatch (*Sitta canadensis*).

Mr. Griscom spoke of a similar effort on the same day around Englewood, in which Mr. J. M. Johnson, Mr. Lenssen, Mr. Nichols and Mr. LaDow had taken part with him. Mr. Nichols had worked separately in the morning, joining the rest of the party at 3 P. M. Birds were by no means abundant, but nevertheless 99 species were recorded. Of these the most noteworthy were a Wilson's Snipe (*Gallinago delicata*), an Olive-sided Flycatcher (*Nuttallornis borealis*), two Acadian Flycatchers (*Empidonax virescens*), six Pine Siskins (*Spinus pinus*), four Worm-eating Warblers (*Helmitherus vermivorus*), a Lawrence's Warbler (*Vermivora lawrencei*), five Tennessee Warblers (*V. peregrina*)—a truly remarkable number—a Kentucky Warbler (*Oporornis formosus*) and a Red-bellied Nuthatch (*Sitta canadensis*). In this connection Mr. Griscom mentioned that around New Haven, Conn., also on May 17, Mr. Aretas A. Saunders and Mr. Clifford H. Pangburn had observed 100 species, and they reported birds as being very abundant. He next remarked that Miss Anne A. Crolius had observed a Mourning Warbler (*Oporornis philadelphia*) in Central Park May 18.

Mr. Griscom next told of a trip which Mr. Johnson, Mr. LaDow and he had made to Jones Beach, across Great South Bay from Amityville, L. I., May 24. Shore birds were very abundant, no fewer than thirteen kinds having been seen, a

list of which follows: Dowitcher (*Macrorhamphus g. griseus*), 28; Knot (*Tringa canutus*), 4; Least Sandpiper (*Pisobia minutilla*), 500; Red-backed Sandpiper (*Pelidna alpina sakhalina*), 4; Semipalmated Sandpiper (*Ereunetes pusillus*), 1,500; Sanderling (*Calidris leucophæa*), 75; Spotted Sandpiper (*Actitis macularius*), 25; Black-bellied Plover (*Squatarola squatarola*), 400; Semipalmated Plover (*Ægialitis semipalmata*), 150; Piping Plover (*Æ. meloda*), 10; Turnstone (*Arenaria interpres morinella*), 55. Other species of note were Red-breasted Mergansers (*Mergus serrator*), Black Ducks (*Anas rubripes*), all three Scoters (*Oidemia americana*, *O. deglandi* and *O. perspicillata*), a Duck Hawk (*Falco peregrinus anatum*) and a Myrtle Warbler (*Dendroica coronata*). The most interesting bird, however, was a Black Rail (*Creciscus jamaicensis*), which was flushed at Mr. Griscom's feet, and after fluttering forward a little, doubled back, passing him at a distance of about ten feet, and continuing some twenty-five feet further, when it dropped into the grass and was lost. He was able to make out the red iris with his naked eye.

Mr. Nichols recorded a Tennessee Warbler at Mastic, L. I., May 23 and a Gannet (*Sula bassana*) on the 25th.

Mr. Cleaves recorded fifteen Semipalmated Plover at Princes Bay, Staten Island, May 15.

Mr. Weber recorded finding a nest of the Green Heron (*Butorides virescens*) in some bushes on the marshes near Long Beach May 23,—an unusual situation.

Mr. Granger reported a Great Blue Heron (*Ardea h. herodias*) seen by him on the Ramapo River May 17. Birds, he said, were very abundant.

Mr. C. William Beebe was scheduled to speak on "Bird Notes of a Visit to India and Ceylon." As, however, this subject had been presented before the Society a year or two previously, at his own request he spoke on "Pheasant Hunting in the Malay Peninsula and China." Mr. Beebe described his experiences in hunting all the known pheasants of these regions, and spoke most entertainingly of the difficulties encountered. In the Malay States leeches were found to be an almost intolerable pest, and in China his party was held up for some time by a riot. Many finely colored lantern-slides illustrated his remarks.

At the close of the paper Mr. Beebe exhibited some plates of pheasants drawn by European artists for his forthcoming "Monograph of the Phasianidæ."

October 13, 1914.—The President in the chair. Nine members and six visitors present. In the absence of the Secretary, who will be at Cornell University throughout the academic year, the President appointed Mr. Rogers Secretary *pro tem* to serve till the next election.

The following names were proposed for Resident Membership and referred to the Committee for action: by Mr. Nichols (by proxy), Mr. George Whiting Hollister, of 521 Madison Avenue, Manhattan, and Mr. William Helmuth, of Yale University; and by Dr. Dwight, Mr. David Spencer Ball, of Spuyten Duyvil.

A letter from the Pennsylvania State Museum, at Harrisburg, was read, requesting the gift of a set of the Linnæan Society's publications and that their name be placed on our mailing list. It was voted to grant this request.

In accordance with the program, there was no paper, and the members told of their experiences during the summer.

Mr. Cleaves recorded from Princes Bay, S. I., an immature Little Blue Heron (*Florida cærulea*) July 19, an adult Bald Eagle (*Haliaeetus l. leucocephalus*) August 22 and an immature Red-headed Woodpecker (*Melanerpes erythrocephalus*) September 26.

Mr. Rogers told of an exploratory trip made by Dr. Wm. H. Wiegmann, Mr. W. DeW. Miller, Mr. LaDow and himself to Sandy Hook, N. J., July 18. It proved a very interesting place ornithologically and botanically as well as for the interest of the fortifications, proving grounds, etc. In the interior was an extensive and dense growth of Red Cedar (*Juniperus virginianus*) and American Holly (*Ilex opaca*) enclosing four small ponds past which ran a disused wood road. The most abundant bird was the Fish Crow (*Corvus ossifragus*), with Catbird (*Dumetella carolinensis*) and Towhee (*Pipilo e. erythrophthalmus*) next and Song Sparrow (*Melospiza m. melodia*) and Maryland Yellowthroat (*Geothlypis t. trichas*) not far behind. Such Carolinian forms as Carolina Wrens (*Thryothorus l. ludovicianus*) and Cardinals (*Cardinalis c. cardinalis*) were

also present. About thirty herons were seen,—six Greens (*Butorides v. virescens*), a Great Blue (*Ardea h. herodias*), a flock of eleven Little Blues (*Florida caerulea*, five adult, six immature), the rest Nights (*Nycticorax nycticorax naevius*). A Double-crested Cormorant (*Phalacrocorax a. auritus*) was observed flying northward off the beach.

Mr. Rogers reported that on a New Jersey canoe trip June 13 and 14 from New Brunswick via Bound Brook, Trenton and Bordentown to Crosswicks, Mr. Miller and he had found the country swarming with bird life. They noted 71 breeding species (besides two crippled ducks). The most noteworthy find was an Alder Flycatcher (*Empidonax trailli alnorum*) singing in a typical breeding place below Blackwell's Mills, further south than any previously known breeding station in New Jersey. They met with a flock of fully sixty Turkey Vultures (*Cathartes aura septentrionalis*) on the Delaware above Bordentown.

Mr. Hix and Mr. Rogers reported the apparent entire absence of rails from the Newton, N. J., marsh in July, where several years ago both Soras (*Porzana carolina*) and Virginias (*Rallus virginianus*) were common, and conditions appear not to have changed. Mr. Weber said there had been few rails in the Overpeck meadows during this autumn's migration.

Mr. Weber recorded the mating of Mallards (*Anas platyrhynchos*) and Black Ducks (*A. rubripes*) and of Canada and domestic Gray Lag Geese (*Branta c. canadensis* and *Anser anser*) and the successful rearing of hybrids by a breeder at Montauk, L. I., this summer.

Cape May Warblers (*Dendroica tigrina*) were reported common or in unusual numbers this autumn in the Connecticut Lake and White Mountain regions of New Hampshire (Rogers), at Watch Hill, R. I., and Ithaca, N. Y. (Griscom *in litt.*), about Plainfield, N. J. (W. DeW. Miller), and Wytheville, W. Va. (L. L. Jewel *in litt.*); also Tennessee Warblers (*Vermivora peregrina*) about New York City (Rogers) and Plainfield (Miller).

Other interesting autumn records follow: Hudsonian Curlew (*Numenius hudsonicus*), 7, at Long Beach July 25 (Weber); Knots (*Tringa canutus*), East Hampton, L. I., around Labor

Day, a Duck Hawk (*Falco peregrinus anatum*) flying even below the house-tops along West 91st Street, Manhattan, and a Swift (*Chaetura pelagica*) at Marksboro, N. J., October 11 (Hix); a Lincoln's Sparrow (*Melospiza l. lincolni*) on the Rahway River below Cranford, October 4 (LaDow and Rogers) and another in Bronx Park September 26 (Hix); three Philadelphia Vireos (*Vireosylva philadelphica*) at East Hampton, L. I., September 28 (Hollister); and a Blue-gray Gnatcatcher (*Polioptila c. caerulea*) at East Hampton September 6 (Hix).

October 27, 1914.—The Vice-President in the chair. Ten members and thirteen visitors present.

A letter from the Pennsylvania State Museum, at Harrisburg, was read, thanking the Society for a gift of its publications.

Mr. David Spencer Ball, Mr. Wm. Helmuth and Mr. Geo. Whiting Hollister, whose names had been proposed at the previous meeting, were elected to Resident Membership. The following additional names were proposed: by Mr. J. M. Johnson, Mr. Edward Fleischer, of 1591 Union Street, Brooklyn; and by the Secretary *pro tem.* Mr. E. Sydney Marks, of 655 Kearney Avenue, Arlington, N. J.

Mr. Woodruff told of the unusual abundance of Wilsons' Petrels (*Oceanites oceanicus*) in the Upper Bay during July and August. On one trip on the Municipal Ferry he had noted well above two thousand between Staten Island and South Ferry, counting those seen from only one side of the boat.

Mr. Nichols reported a Scarlet Tanager (*Piranga erythromelas*) October 12 and a Black-poll Warbler (*Dendroica striata*) on the 20th, both at Englewood, and possibly the latest records for the locality. Mr. Rogers said that Mr. J. M. Johnson, Mr. W. DeW. Miller and he had seen six Black-polls on the 25th between Cranford and Rahway, N. J.

The paper of the evening was presented by Mr. Murphy and was on his "Experiences with the Smaller Subantarctic Birds." It was his third paper before the Society on material gathered during his visit to South Georgia in 1912-'13. This evening he told in detail of the nesting, feeding and many other habits of several of the petrels and of the species—each—of penguin, cormorant, skua, gull, tern, teal, goose,

sheathbill and pipit breeding on the Island. Numerous colored lantern-slides and skins of the different birds illustrated the talk. Mr. Murphy also gave a summary of the climatic and other conditions on South Georgia; and discussed several questions raised by members of the audience.

November 10, 1914.—The President in the chair. Twelve members and five visitors present.

A letter from the Geological Survey of the Department of Mines of Canada was read, requesting the gift of a set of the Society's publications, and asking the price if they were to be had only through purchase. It was voted that a Committee composed of the President, the Librarian and the Secretary, all *ex-officio*, be empowered to act on this and on all future requests of a like nature.

Mr. Edward Fleischer and Mr. E. Sidney Marks, whose names had been proposed at the previous meeting, were elected to Resident Membership.

Mr. Rogers transmitted an offer from Mr. Cleaves to show the Society his two thousand feet of motion pictures if the use of the Museum's auditorium and apparatus could be secured. The matter was referred to the Committee on Papers and Lectures.

The question of what use should be made of our Bird Observation Blanks was again raised and it was voted that the Publication Committee consider the matter and submit a plan.

It was further voted that the Committee on Projectoscopes resume the investigations it had dropped for the summer.

Mr. Kieran reported a male Chaffinch (*Fringilla c. caelebs*) November 2 at the foot of Spuyten Duyvil hill. Mr. Weber remarked that that locality had been a favorite one with bird catchers, who used birds such as the Chaffinch for decoys, and that Mr. Kieran's bird may have been an escaped decoy.

Several members spoke of Hermit Thrushes (*Hylocichla guttata pallasi*) as having been more than usually common lately. They had been seen in St. Paul's Churchyard (Kieran), in front of the Museum (Nichols) and at other city points as well as in their more ordinary haunts.

Mr. LaDow reported for Mr. Griscom that the latter had

collected a Golden Plover (*Charadrius d. dominicus*) at Ithaca, N. Y., the third record for the locality.

Mr. Davis stated that at evening on July 26, 1914, two Hermit Thrushes were on the southerly side of Deep Pond, near Wading River, L. I. The birds sang for about an hour. This locality is about eight miles to the northeast of Yaphank, where they are known to breed. This extends the summer range of the bird on Long Island from that reported in "The Auk," October, 1909.

Mr. Davis showed two primary feathers of the Bald Eagle (*Haliaeetus l. leucocephalus*), one found on the shore of Long Pond, near Wading River, June 25, 1913, and the other collected at the same place July 27, 1914. According to those living near Long Pond, Bald Eagles have frequented the locality for several years past during the warmer months, and probably have a nest somewhere in the interior of the Island. Mr. Thurston had compared the primaries shown with those of the Bald Eagle, which have slanting ridges extending across the shaft on each side; these do not occur in the same feathers in the Osprey (*Pandion haliaetus carolinensis*).

Other interesting local records follow: three Brown Creepers (*Certhia familiaris americana*) on a hotel at Long Beach, L. I., November 3, apparently searching for spiders on the stucco wall (J. M. Johnson); a Rough-legged Hawk (*Archibuteo lagopus sancti-johannis*), light phase, flying westward over the Museum October 31 (Nichols); at Englewood, N. J.—a Pheasant (*Phasianus torquatus*; a cock with a conspicuous white collar), two Night Herons (*Nycticorax nycticorax naevius*; the latest record for the region), a Long-billed Marsh Wren (*Telmatodytes p. palustris*) in full song and a Ruby-crowned Kinglet (*Regulus c. calendula*), all November 8 (Ball and Rogers); on the same day near Richmond Village, S. I., a Long-billed Marsh Wren in subdued song (Davis); a Yellow Palm Warbler (*Dendroica palmarum hypochrysea*) at Palisades Park, N. J., November 3 (Weber).

The following brief papers were presented by Mr. Weber and by Mr. J. M. Johnson. Lack of time caused the postponement of those prepared by Dr. Dwight and by Mr. Taubenhaus.

Mr. Weber spoke on the structure and action of the outer tail-feathers in *Gallinago*. By means of a simple apparatus he whirled an outer tail-feather of a Common Snipe (*G. gallinago*) swiftly through the air, and when this was done with the feather held at the correct angle, the characteristic "bleating" or "winnowing" of the bird was heard, caused by the action of the air on the vane, which the speaker showed to be peculiarly stiffened. Among other experiments were ones that showed the same structure in our Wilson's Snipe (*G. delicata*) and its absence in such a nearly related genus as the Dowitchers (*Macrorhamphus*).

Mr. J. M. Johnson spoke on the birds seen by him on a horse-back trip through Yellowstone Park last summer. He showed specimens of many species, especially of those unfamiliar to Easterners, and spoke of their distinguishing marks and habits.

November 24, 1914.—The President in the chair. Ten members and eighteen visitors present.

The Committee on Papers and Lectures reported that for Mr. Cleaves's proposed exhibition of motion pictures the Museum's auditorium could be secured on Wednesday evening, December 9 (but not on our regular meeting day, Tuesday the 8th), for the cost, not much exceeding fifteen dollars, of the operator and attendants. It was voted that the auditorium be so secured, and that the meeting scheduled for the previous day be omitted.

Mr. J. M. Johnson reported that a Coot (*Fulica americana*) had been seen on the Lake in Prospect Park, Brooklyn, on November 15, and that he had seen it on the 22d. It was so tame that it allowed an approach up to ten feet.

Mr. Rogers recorded finding a Catbird (*Dumetella carolinensis*) in Van Cortlandt Park November 22, in the same spot where the Brown Thrasher (*Toxostoma rufum*) had been last winter. He had seen also a covey of Bob-white (*Colinus v. virginianus*), the first he had heard of in the Park since he had found eight dead on March 21. Dr. Wiegmann said he had counted nineteen in this new covey.

The paper of the evening was on "Collecting in Costa Rica for the New York Zoo," by Mr. Lee S. Crandall. Mr. Crandall

told of a six weeks' visit in Costa Rica, chiefly at Guapiles, in the spring of this year, during which he and an assistant had collected alive over three hundred mammals, birds, reptiles, batrachians and fishes. The most interesting discovery he made was a little sac on the breast of the abundant Central American Brown Jay (*Psilorhinus mexicanus cyanogenys*); when the birds were excited they rapidly inflated and deflated these sacs with a popping noise. The sac was plainly to be seen on a skin the speaker exhibited. He showed also the skins of the Montezuma and Wagler's Oropendolas (*Gymnostinops montezuma* and *Zarhynchus wagleri*) and a caged Mexican Rice Grackle (*Cassidix oryzivorus mexicanus*), which is parasitic, cowbird-wise, on the Oropendolas; and living specimens of the great Marine Toad (*Bufo aqua*), a poisonous snake (*Lachesis*) and two species of Pæciliid fishes (*Pæciliopsis pitieri* and *Alfaro cultratum*), one of them (*Pæciliopsis*) with young born that morning; also water-color sketches of frogs, one species (*Dendrobates t. typographus*) bright red.

December 9, 1914.—The special public lecture by Mr. Howard H. Cleaves on "Bird Studies along the Atlantic Coast" was given in the auditorium of the American Museum of Natural History before an audience of 102. In the absence of the President, Vice-President Johnson introduced the speaker.

Mr. Cleaves told of his studies, chiefly of water-birds, made at various points from Nova Scotia to South Carolina, and showed a large series of motion pictures and colored lantern-slides of Wilson's Petrels (*Oceanites oceanicus*), Great Black-backed and Laughing Gulls (*Larus marinus* and *L. atricilla*), Royal, Common and Least Terns (*Sterna maxima*, *S. hirundo* and *S. antillarum*), Semipalmated Sandpipers (*Ereunetes pusillus*), Piping Plover (*Ægialitis meloda*), Ospreys (*Pandion haliaëtus carolinensis*) and other species.

December 22, 1914.—The Vice-President in the chair. Twelve members and five visitors present.

Mr. Cleaves proposed Mr. Clifford H. Pangburn, of Lawrence Park, Bronxville, New York, for Resident Membership.

From the National Association of Audubon Societies a letter was read calling attention to our contribution of fifty dollars

in June of last year and expressing hope for another this year. It was voted to donate fifty dollars to the Association.

Members who had recently visited the New Jersey part of the Palisades Interstate Park spoke with much feeling of the extensive clearing of underbrush and the smaller tree growth and general formalizing now being carried on. It was voted that a letter be written to the Park Commission, protesting in the strongest terms against the continuation of such work and urging the preservation of the Park in as wild and natural a condition as possible.

The question was raised as to whether or not the Society should present a medal this year, and if so, to whom, and the members were requested to think the matter over in preparation for a discussion at the next meeting.

Mr. Rogers stated that Mr. W. DeW. Miller and he had noticed a striking scarcity of Chickadees (*Penthestes a. atricapillus*) and Tree Sparrows (*Spizella m. monticola*) around New York this winter, and asked whether anyone present had found either species in its usual abundance. No one had, and several reported the contrary, but Mr. Cleaves said that Mr. Decker in a twenty-mile walk on Staten Island December 20 had counted forty-four Chickadees and a hundred Tree Sparrows.

The following are the more interesting local records reported: a Grackle (*Quiscalus quiscula* subsp.) at Englewood December 13 (Nichols); a Ruby-crowned Kinglet (*Regulus c. calendula*) at Englewood November 28 (J. M. Johnson and LaDow) and another in Pelham Bay Park the next day (LaDow and Rogers); a Palm Warbler (*Dendroica p. palmarum*) at Hicksville, L. I., December 13 (R. C. Murphy and Rogers); a Great Blue Heron (*Ardea h. herodias*) at Long Beach, L. I., out at sea, at sunset, flying west, rather high, December 20 (J. M. Johnson, W. H. Wiegmann and Rogers).

Mr. Griscom had been since September at Ithaca, N. Y., and now gave a brief sketch of the autumn bird-life of that vicinity as observed by him. Among the most interesting features were the abundance of the Tennessee Warbler (*Vermivora peregrina*), which was second only to the Red-winged

Blackbird (*Agelaius p. phæniceus*), and the presence of several Bohemian Waxwings (*Bombycilla garrula*).

Mr. Francis Harper was present and told at length of a trip he made last summer as one of a Canadian Government expedition to the country between Great Slave and Athabasca Lakes.

January 12, 1915.—The President in the chair. Nine members and a visitor present.

The Secretary *pro tem.* reported that he had written to the Interstate Park Commission a letter as requested at the previous meeting, and read the reply he had received from Mr. Geo. W. Perkins, President of the New York Palisades Park Commission. Mr. Perkins assured us that there was no ground for our fears, and that the intention was not to formalize the Park but to keep it as nearly as possible in its natural condition, but that a certain amount of forestry work was necessary in order to do this. Mr. J. M. Johnson and Mr. Marks both insisted, however, that the clearing out they had seen in the Park was so excessive as to spoil completely the naturalness of a large area.

Mr. Clifford H. Pangburn, whose name had been proposed at the previous meeting, was elected to Resident Membership.

It was voted that the President appoint a Committee to make tentative arrangements for the Annual Dinner.

The more interesting of the local records reported follow: a Kingfisher (*Ceryle alcyon*) ten miles west of Bridgeport, Conn., January 3 (J. M. Johnson), another in the Castle Hill section of the Bronx December 26 (Hix) and a third and also a Vesper Sparrow (*Poæcetes g. gramineus*) at Cranford and a flock of eleven Horned Larks (*Otocoris a. alpestris*) at Aldene, N. J., December 27 (Ball and Rogers); four Sanderling (*Calidris leucophæa*) November 14 and one or two January 2 and a Red-backed Sandpiper (*Pelidna alpina sakhalina*) December 25 at Long Beach, L. I. (Fleischer); on January 10, an adult Black-backed Gull (*Larus marinus*) at the 130th Street Ferry, a flock of 110 male and female Red-winged Blackbirds (*Agelaius p. phæniceus*) at Leonia and a Carolina Wren (*Thryothorus l. ludovicianus*) at West Englewood, N. J. (J. M. Johnson and Rogers); three more Carolina Wrens at Sandy Hook December

26 (Wm. H. Wiegmann and Rogers) and another and also forty Song Sparrows (*Melospiza m. melodia*) and seven Fox Sparrows (*Passerella i. iliaca*) in one patch of cedars and thickets at Sheepshead Bay, L. I., January 9, and about thirty Myrtle Warblers (*Dendroica coronata*) and twenty-five Bluebirds (*Sialia s. sialis*) at Englewood January 10 (Nichols).

Mr. Rogers, who had again edited the Christmas Census returns for *Bird-Lore*, described the main features of this winter's bird-life in the United States as revealed by the Census, to appear in *Bird-Lore* for February.

Dr. Dwight spoke on the Scoters (*Oidemia*), and described at length their molts and plumages, and the development in the color and shape of the bill, using in illustration a selected series of skins of the three American species and the plates of his article in *The Auk* (Vol. XXXI., No. 3, pp. 293-308, pl. XXIV.-XXX.). The speaker described also the extralimital species. Considerable discussion followed and many questions were answered by the speaker.

January 26, 1915.—The President in the chair. Fourteen members and eleven visitors present.

The President announced his appointment of Mr. Woodruff and Mr. Nichols as the Committee on the Annual Dinner.

A letter was read from Mr. T. Gilbert Pearson, Secretary of the National Association of Audubon Societies, extending the thanks and appreciation of the Association for the Linnæan Society's recent donation of fifty dollars, which is to be applied to the Egret Protection Fund for 1915.

Mr. J. M. Johnson reported that Mr. W. DeW. Miller and he had on January 17 found a Harbor Seal (*Phoca vitulina*) hauled up on Long Beach, L. I.; it allowed a close approach before taking refuge in the sea.

Several members told of recent visits to the ducks on Jerome Reservoir. Most of the species seen last year have been present irregularly. An adult Black-backed Gull (*Larus marinus*) was seen there January 17 by Mr. LaDow and Mr. Rogers and another on the 24th by Mr. J. M. Johnson. Mr. Pangburn spoke of having seen six or eight Black-backs from the 130th Street Ferry January 1; they were floating on ice-cakes. He also

recorded an immature Red-headed Woodpecker (*Melanerpes erythrocephalus*) at Riverdale January 20.

Mr. Quarles reported that a freshly killed female Cowbird (*Molothrus a. ater*) which had previously lost a foot had been picked up at Forest Hills, L. I., December 10. He and Mr. Rogers had seen the specimen.

Mr. Quarles told also of some Ruffed Grouse (*Bonasa umbellus*) which had been raised in captivity and said that in one case last summer the cock and the hen had relieved each other in the duty of incubation.

The speaker of the evening was Mr. Roy W. Miner, of the American Museum of Natural History, and his subject was "The Fauna of our Tide-Pools." After explaining a series of lantern-slides showing the nature of tide-pools at points from Nahant, Mass., to the Bay of Fundy, Mr. Miner described the various forms of life inhabiting them—barnacles, starfish, anemones, worms, and other invertebrates, illustrating his talk with numerous colored slides.

February 9, 1915.—The Secretary *pro tem.* in the chair. Eleven members and a visitor present. In the absence of all other officers, the Chair appointed Mr. Francis Harper Secretary *pro tem.*

Mr. Nichols, for the Dinner Committee, reported that the Committee advised not having a dinner this year. After considerable discussion it was decided to have on the evening of the Annual Meeting an informal dinner without a guest of honor or invited speakers, the business program to follow the dinner.

Mr. Cleaves reported on the financial condition and the coming season's needs of the Bird-Banding Association and asked for an appropriation of one hundred dollars, which would be needed even after the receipt of all dues and contributions. This sum was voted unanimously.

Mr. Nichols told of a migration of Red-headed Woodpeckers (*Melanerpes erythrocephalus*) about Englewood last autumn during which he had noticed one bird in particular hiding acorns in a stub at Grantwood. On February 6 he had seen a Red-head eating acorns from that stub. If it was indeed the same bird, its head had changed from brown to red in the

meantime. The acorns proved to be from the Pin Oak (*Quercus palustris*).

Mr. Crosby recorded the unusual occurrence of eight or ten Red-headed Woodpeckers wintering at Rhinebeck, N. Y. In October he had watched one industriously hiding acorns in a vertical section of piping, inserting them through a hole near the top and listening to their fall of several feet inside.

Mr. Hix said that on January 16 in Van Cortlandt Park he had seen eight Rusty Blackbirds (*Euphagus carolinus*) and a flock of twenty Field Sparrows (*Spizella p. pusilla*).

Mr. Cleaves reported for his friend Mr. H. K. Decker that the latter had seen a Towhee (*Pipilo e. erythrophthalmus*) at West New Brighton, S. I., January 10, and on February 1, after a sleet-storm, had found on the ground a Red-shouldered Hawk (*Buteo l. lineatus*) with its wing-quills and other plumage so incased in ice that the bird was helpless. Mr. Decker took the bird home, thawed it, fed it on meat for two days and released it with a band on its leg.

Mr. Fleischer remarked that he was familiar with the wood-chopping of the Pileated Woodpecker (*Phlæotomus pileatus*) in the north woods and that he had recently found similar excavations near Verona Lake, N. J., more extensive than he had known any of our smaller woodpeckers to make. The possible occurrence of this fine species in New Jersey was discussed; no definite records were known.

Mr. Quarles gave a brief sketch of the origin, aims and activities of the American Game Protective Association—of which he is Second Vice-President—speaking particularly of its work in aid of the Federal bill for the protection of migratory birds.

Lack of time caused the postponement of a brief paper prepared by Mr. Nichols.

February 23, 1915.—The President in the chair. Eleven members and about forty visitors present. In the absence of the Secretary *pro tem.*, the Chair appointed Mr. LaDow to that office for the evening.

Mr. Nichols proposed for Resident Membership Mr. L. L. Mowbray, of the New York Aquarium, and his name was submitted to the Committee on Membership.

Mr. J. M. Johnson recorded four female Hooded Mergansers (*Lophodytes cucullatus*) and five Scaup (*Marila marila* or *M. affinis*) at Jerome Reservoir February 20. He reported that birds—both species and individuals—had been remarkably scarce at Long Beach February 21.

Mr. Chubb recorded twenty-five American Mergansers (*Mergus americanus*) and ten American Goldeneyes (*Clangula clangula americana*) on Jerome Reservoir during the preceding week. He told of a pair of Sparrow Hawks (*Falco s. sparverius*) which had raised a brood last spring in the wall of a house near the 238th Street Subway Station. The space under the ceiling had been utilized by the birds and here five eggs were laid, the last on April 5. By May 20 the young were hatched, and they left the nest between the 13th and 18th of June. They were fed largely on Garter Snakes (*Thamnophis sirtalis*).

Mr. F. E. Johnson recorded an immature Red-headed Woodpecker (*Melanerpes erythrocephalus*) in the north of Yonkers December 26.

Mr. Quarles reported that the Supreme Court of Arkansas had declared unconstitutional the law permitting the sending of game out of Mississippi County, in the extreme northeastern corner of the State. This is regarded as a significant victory for bird protection, as great quantities of game have been shipped to Chicago from this quarter.

Mr. Quarles gave the first paper of the evening, entitled "The American Game Protective Association's Game Farm," in which he told of the breeding and rearing of various ducks, grouse and other game birds for propagation purposes, illustrating his account with lantern-slides of the farm and its stock.

Mr. J. M. Johnson then told of his experiences in "Photographing the Mammals of Northwestern Wyoming," largely in the Yellowstone National Park, and showed many lantern-slides from photographs, taken often at very close quarters, of mammals large and small.

March 9, 1915.—Annual Meeting. The Vice-President in the chair. Twenty members and a visitor present. This meeting followed immediately the Third Annual Dinner, held

at the Hotel Colonial and attended by twenty members and five guests.

Mr. Charles J. Fetterer's resignation from Resident Membership was read. Mr. A. A. Saunders and Mr. L. L. Mowbray were elected to Resident Membership.

In the absence of the Treasurer, his report was read by the Secretary *pro tem.* It showed a balance on hand of \$1888.02, a decrease since the previous Annual Meeting of nearly \$340.00 due chiefly to the costly nature of the *Abstract* published last spring. The Chair appointed Mr. Granger and Mr. Nichols a committee to audit this report.

The Secretary *pro tem.* then read his report, as follows:

"During the past year the Linnæan Society has met its full quota of sixteen times with a total attendance of 503 persons. This is the largest since long papers of public interest were presented at every meeting. These meetings include the Second Annual Dinner at which twenty-seven members and twenty-five guests were present, and a Special Public Lecture with an attendance of 102 members and visitors. At the remaining fourteen meetings the attendance averaged twenty-five, including ten members, these figures being slightly in excess of last year's. At three of them the number exceeded fifty; the smallest was ten.

"At the Annual Dinner already mentioned, the Linnæan Medal was presented to Dr. Daniel Giraud Elliot for his unique attainments in mammalogy and ornithology.

"Eleven Resident Members have been elected during the past year; two have resigned and four have been dropped automatically for arrears in dues. No changes having occurred in the other classes, the Membership list now stands: Resident, 107; Corresponding, 27; Honorary, 3; total, 137.

"Including the Special Lecture, eight long papers have been presented before the Society, four on ornithology and one each on birds and other vertebrates, mammals, turtles, and marine invertebrates. In addition there have been twelve brief papers by members, ten of them on birds or bird protection, one on ichthyology and one on entomology. The papers were illustrated with lantern-slides, living and museum specimens, drawings, etc., and also, in the case of the Special Lecture, with motion pictures, a new departure for the Society.

"Under date of April 15, 1914, the Society published under one cover its *Abstract* Numbers 24 and 25, 156 pages, containing the minutes for the two years ending March 11, 1913, and 'The Red-winged Blackbird: A Study in the Ecology of a Cat-tail Marsh,' by Dr. Arthur A. Allen, and 'An Interesting Ornithological Winter around New York City,' by Mr. Ludlow Griscom. Dr. Allen's article contained much original matter and was illustrated with twenty-two plates from original photographs; it attracted wide attention.

"Dr. Elliot's speech at the Annual Dinner was printed separately and distributed.

"The preparation of an *Abstract* to contain simply the minutes of the past two years is well under way and should be out this spring, thus bringing the series up to date.

"But few exchanges have been added to the library and preparations for exchanging with a number of field naturalist clubs in the British Isles and on the Continent were cut short by the present war."

CHARLES H. ROGERS,
Secretary *pro tem.*

Mr. J. M. Johnson reported for the Committee on Projectoscopes that after consideration, and consultation with other members, it was deemed inadvisable for the Society to purchase a projectoscope at the present time.

The following officers were elected to serve for the ensuing year:

PRESIDENT, Jonathan Dwight, Jr.
VICE-PRESIDENT, Julius M. Johnson.
TREASURER, Lewis B. Woodruff.
SECRETARY, Charles H. Rogers.

The Palisades Interstate Park question was again raised and discussion ensued, all who had been in the Park agreeing that its natural beauty was being very seriously marred by the efforts of the Interstate Park Commission to "improve" it. Mr. Murphy stated that our member Mr. Quarles, Second Vice-President of the American Game Protective Association, and Dr. George F. Kunz, President of the New York Academy of Sciences, had requested copies of our recent correspondence with the Commission; and the Secretary was authorized to supply them. The members, especially those who had themselves seen the devastation in the Park, were urged to write personal letters of protest to the Commission, and to get interested friends to do likewise.

Mr. Nichols gave an account of the status of the Red-headed Woodpecker (*Melanerpes erythrocephalus*) in the Englewood region. Ordinarily it is a rare transient in May and September. Late last autumn he found two at Grantwood and saw one there regularly for two or three weeks. He watched it storing Pin

Oak (*Quercus palustris*) acorns in a tall dead stub. In November he twice saw one in Englewood at each of two different places, the last time on Thanksgiving Day. All of these were brown-headed young. No more were seen till February 6 when he found one at Grantwood eating the acorns stored in the autumn. On March 6 and 7 he saw one at each of the autumn stations in Englewood, but he believed that they did not winter there or he would have seen them on his very frequent visits. These spring birds had acquired nearly complete red heads. There are a few previous records for February and March, so that the species would seem to have double migration periods, May and September, and February-March and November. Mr. Lemmon found a nest in which a brood was raised in 1897 or '8.

This winter's widespread scarcity of Black-capped Chickadees (*Penthestes a. atricapillus*) was discussed. In some localities, however, they were in their usual abundance, *e. g.*, Newton, N. J. (Bowdish), and Suffern, N. J., and Mastic, L. I. (Nichols).

Mr. Nichols reported a Mockingbird (*Mimus polyglottus*) at Englewood February 14 and again March 2; he had not been able to find it between those dates. On the second occasion it was feeding on *Rosa multiflora* hips. Mr. Ladd said that one had appeared at Greenwich, Conn., in January of each of the three years preceding the present.

Mr. Nichols and Mr. Murphy recorded from Mastic, L. I., February 22 an adult Bald Eagle (*Haliaeetus l. leucocephalus*), and a flock of Red-winged Blackbirds (*Agelaius p. phoeniceus*) in song; also a Black Duck (*Anas rubripes*) which Mr. Murphy had stepped on after Mr. Nichols and his dog had walked over or directly by it without seeing it. The Duck flew away waving one foot.

Mr. J. M. Johnson sought an explanation for the following experiences with Herring Gulls (*Larus argentatus*). A year ago he found a freshly dead adult on the inland side of the dunes at Long Beach, L. I., which showed no sign of any wound when carefully examined. This winter in the same situation he found another perfectly alive but so weak and helpless that it made no motion to strike when handled. While old age may

have been the cause in a species so free from enemies, neither bird showed signs of it in feet, plumage or elsewhere.

Mr. Fleischer strengthened the general belief that the Skylark (*Alauda arvensis*) colony at Rugby, L. I., was no more, by stating that he had failed to find any there since three years ago.

Mr. Saunders told of a party of at least four Night Herons (*Nycticorax nycticorax naevius*) that had spent the past winter at West Haven, Conn. (the second winter record for the State), roosting nightly in Norway Spruces in the back yard of Mr. Herbert K. Job.

Mr. Nichols stated that he had taken pains the past two winters to observe the relative numbers of Herring Gulls of different ages and had come to the conclusion that only about one-third of the first year birds lived to visit us again, but that the average life was over fourteen years after attaining adult plumage.

Mr. Lemmon recorded a flock of seven Killdeer (*Oxyechus vociferus*) at Englewood February 7, much the earliest spring record for the region. Mr. Nichols told of once watching a Killdeer pull some grass from the water and pick therefrom a small fish and swallow it.

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OF NEW YORK.

MARCH, 1915.

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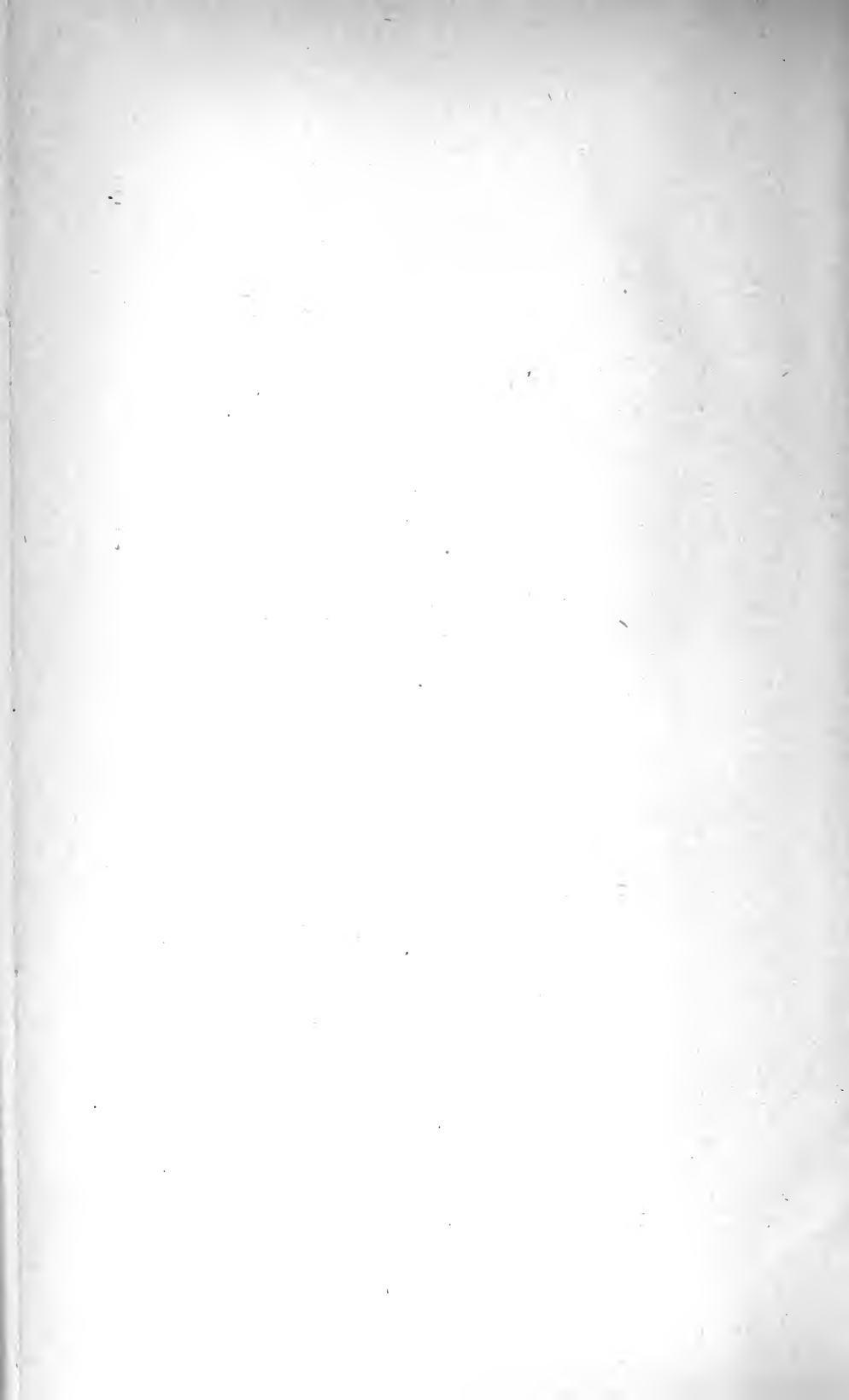
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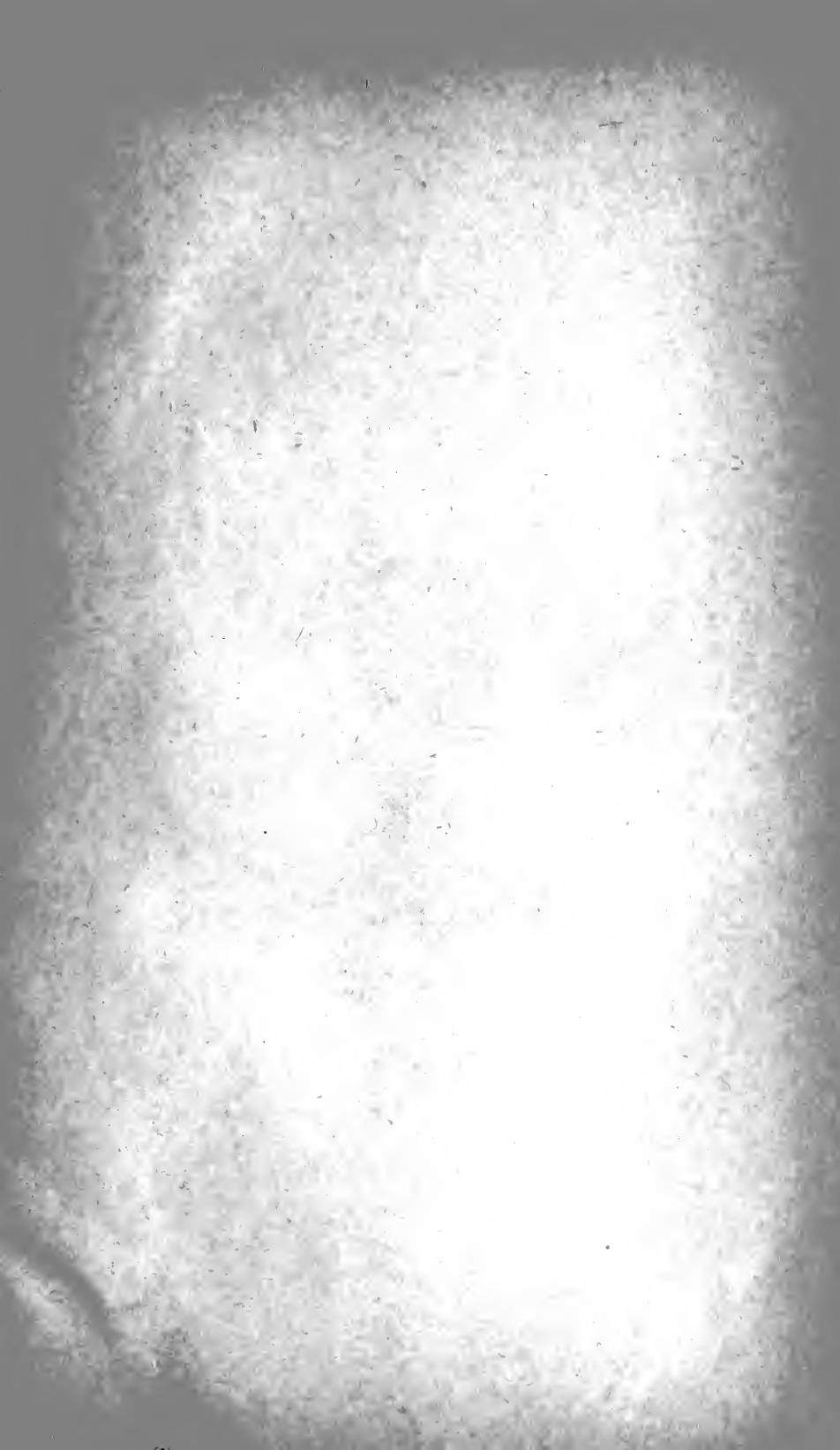
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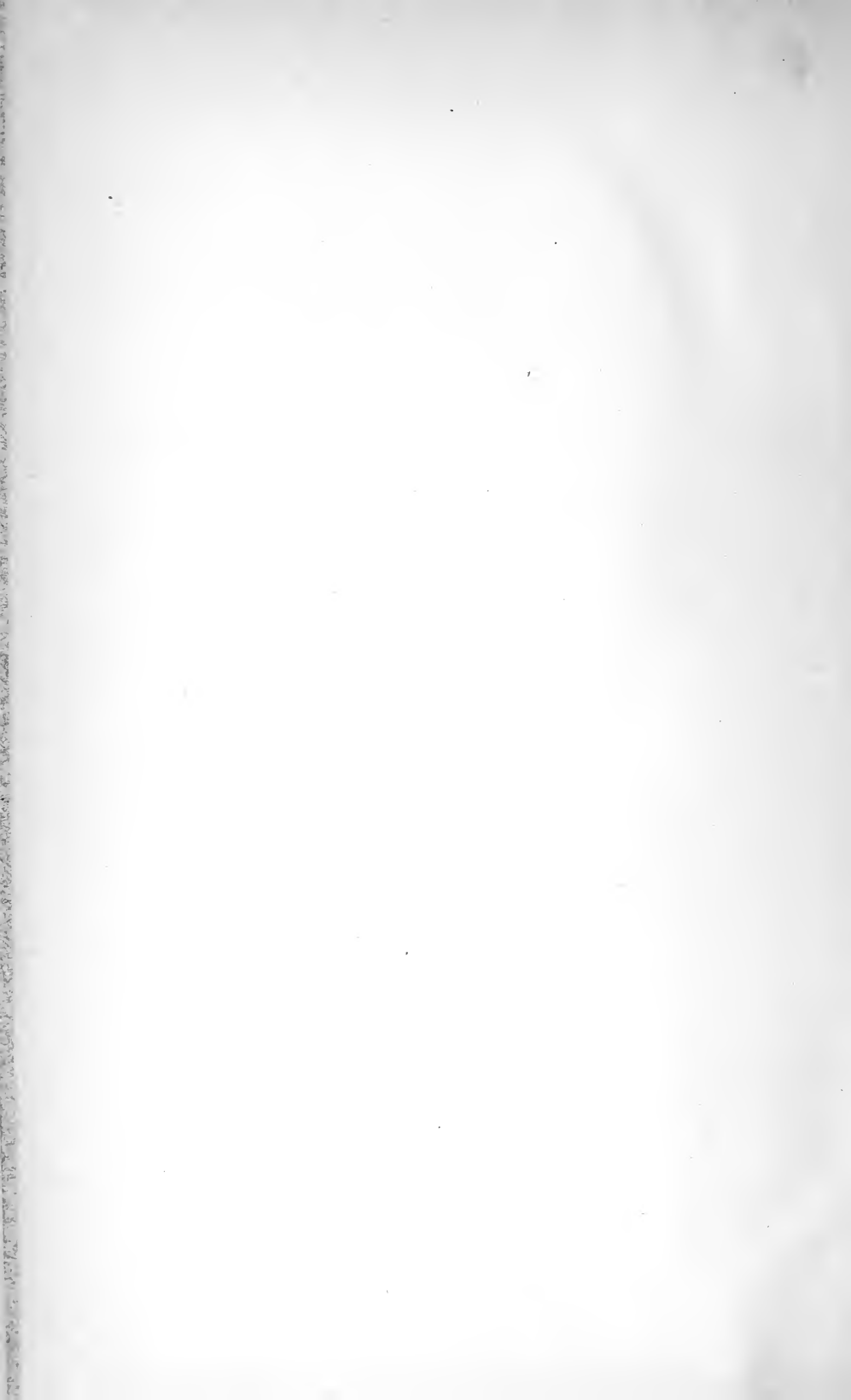
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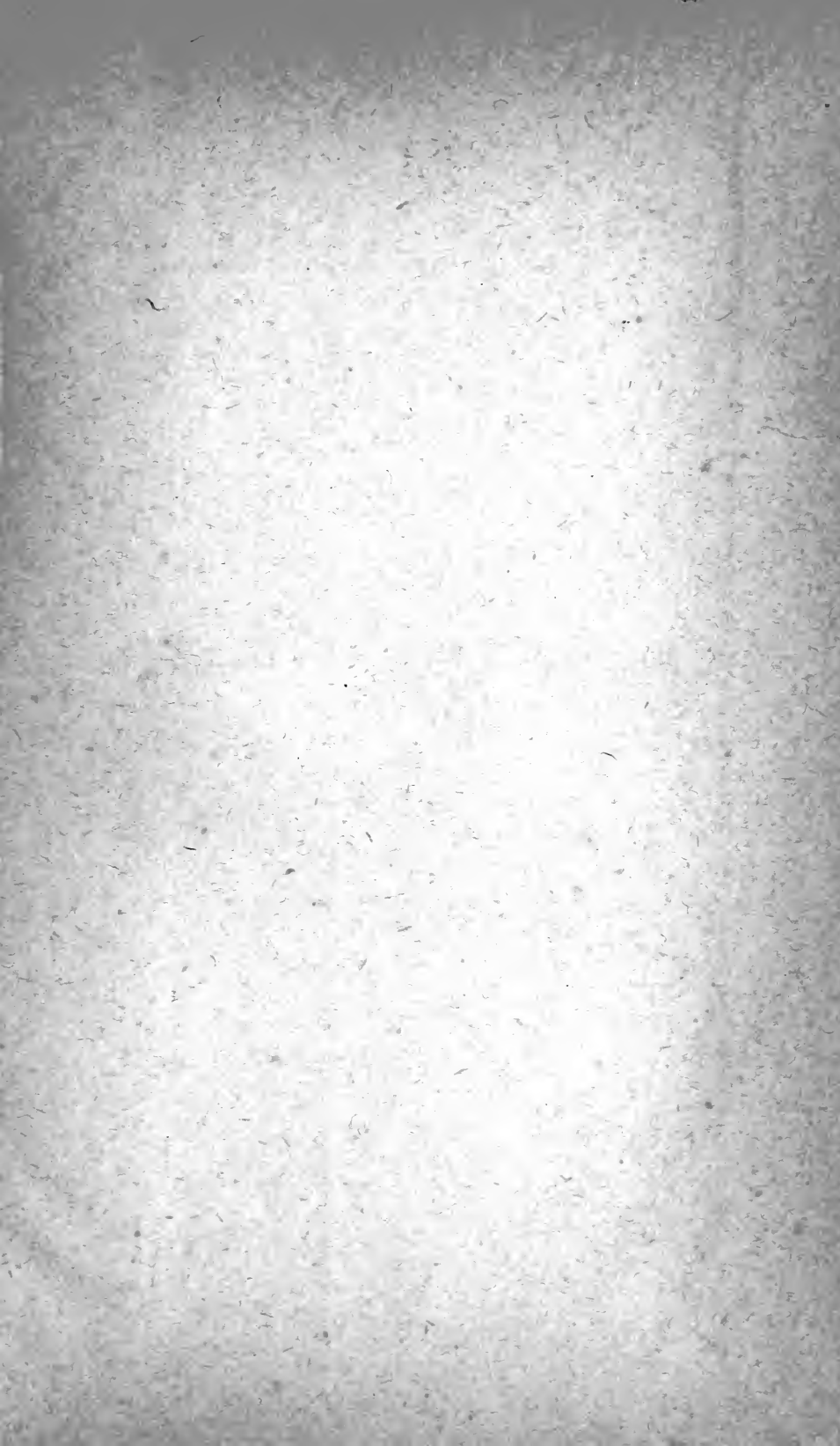
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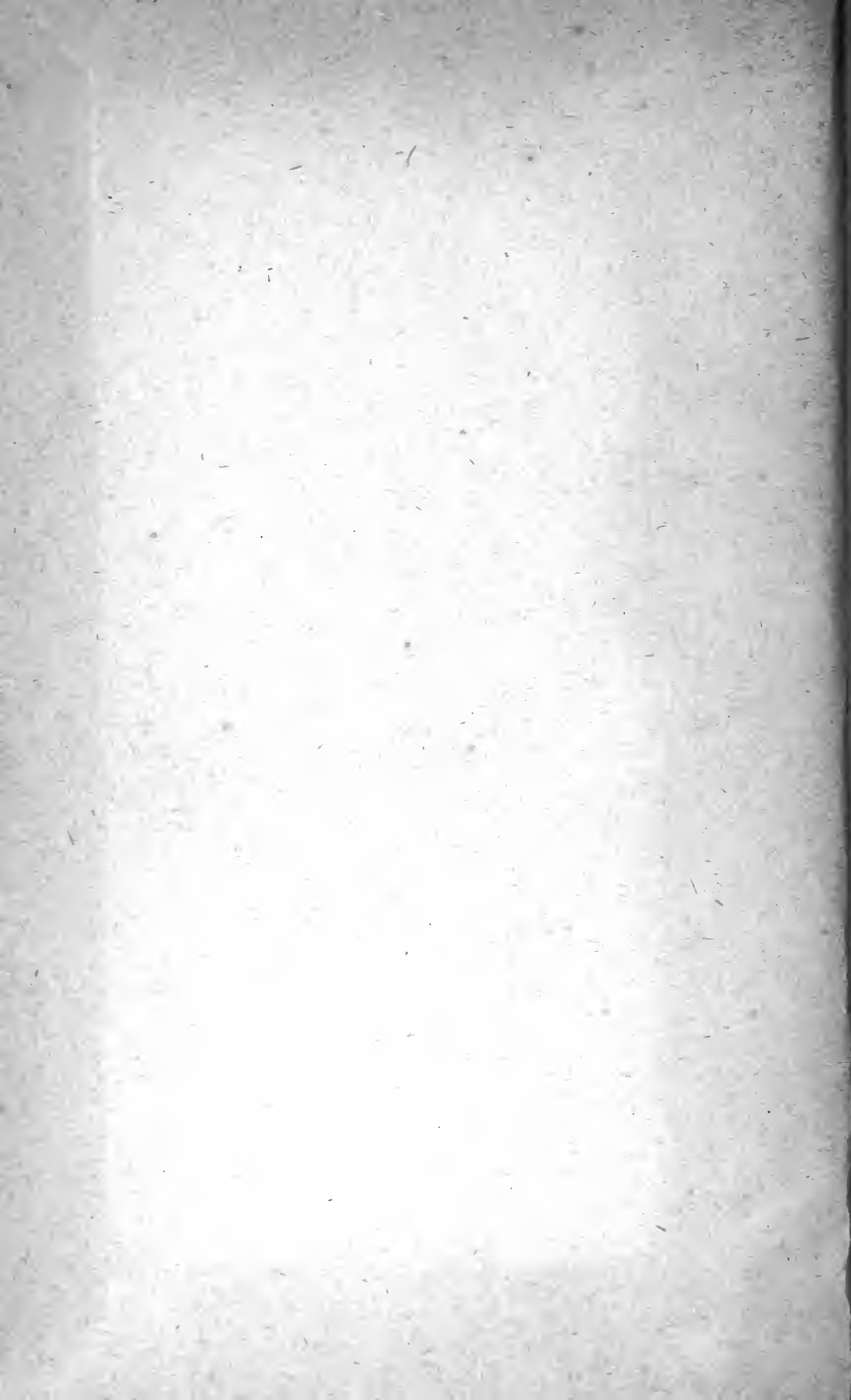
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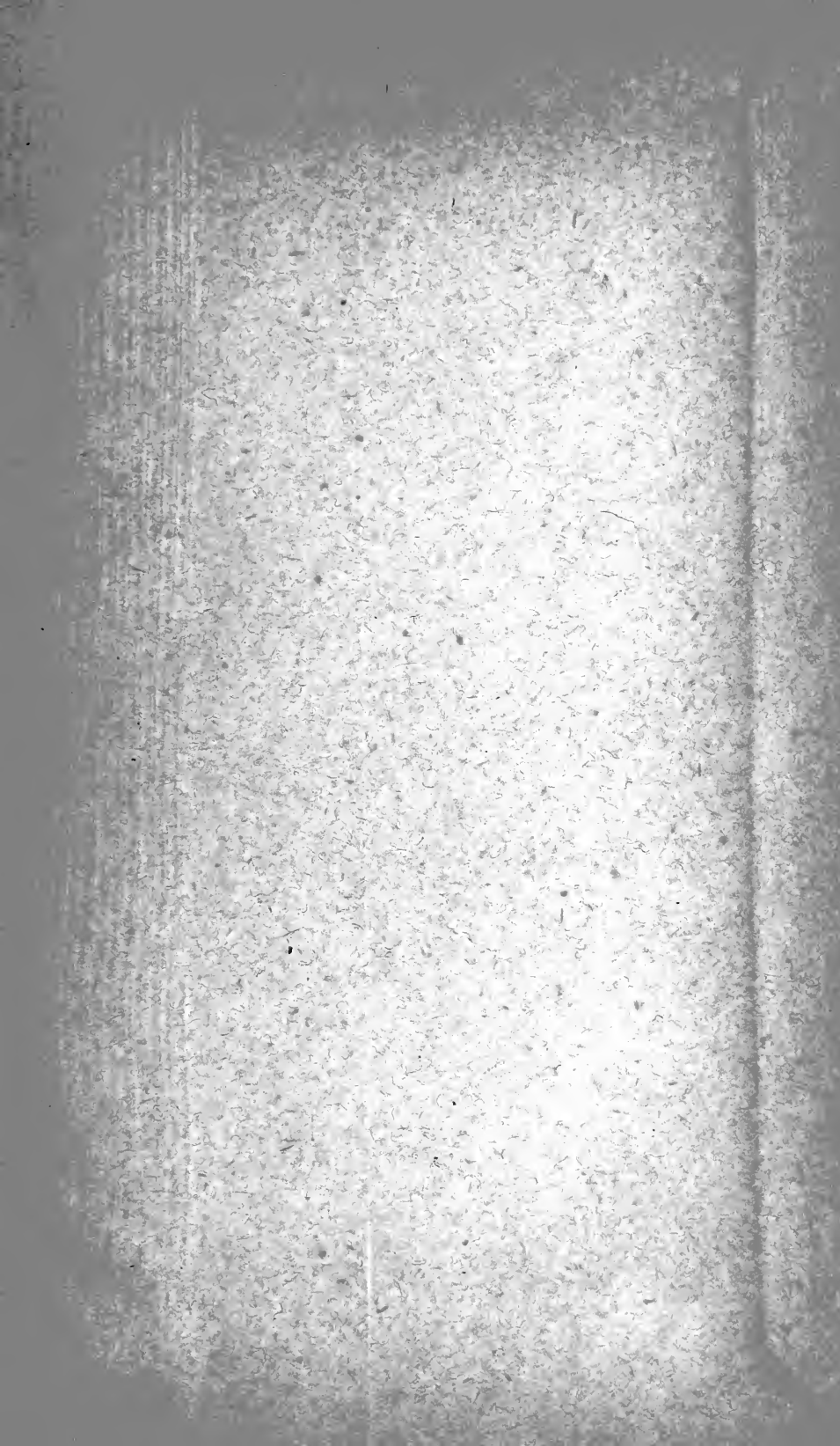
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