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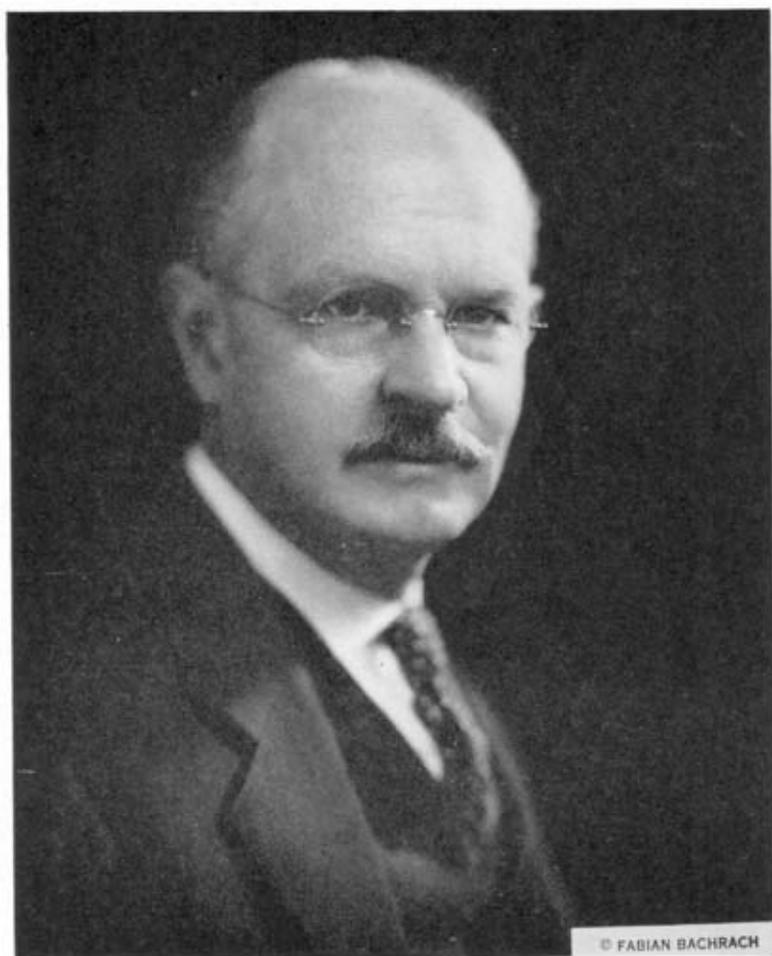
FRANK MICHLER CHAPMAN

1864–1945

BY

WILLIAM KING GREGORY

PRESENTED TO THE ACADEMY AT THE AUTUMN MEETING, 1947



Francis Chapman

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HEREDITY, ENVIRONMENT AND CULTURE

Frank Michler Chapman was born in what is now West Englewood, New Jersey, on June 12, 1864. The family home was an ample country residence, with wide lawns, fine old trees and high formal gate posts. This home was set in the midst of a large and prosperous farm, in a region abounding in woods and ponds, orchards and wide fields. The region was then a veritable paradise for birds; it was also an ideal environment for a child who grew up to be a most eloquent apostle of the birds and a faunal naturalist of immense achievement.

The home farm had been purchased from its Jersey Dutch owners in 1863. It was successfully run and developed under the general supervision of Frank's maternal grandfather, Chester Parkhurst. He was a retired physician whose ancestors came from Chelmsford, Essex, England.

Our best sources of biographic material are Chapman's delightful *Autobiography of a Bird Lover* (1933), his *Camps and Cruises of an Ornithologist* (1908) and his array of books, monographs and special reports upon the birds and bird faunas of North and South America.

Frank's mother, Mary Augusta (Parkhurst) Chapman was an ardent lover of flowers and a "born musician." "Always," he writes, "she had a garden and at times a small conservatory, and music was as much a part of our daily life as food." Her mother, Mary (Johnson) Parkhurst was also a "born musician." "It appears" (*Autobiography*) "that I have to thank . . . my mother and her mother for that love of music through which birds make their strongest appeal to me. Long before I had any desire to know their names I was deeply responsive to the songs of birds. Doubtless this pronounced trait, combined with a love of hunting which is the birthright of most boys, may

have helped to produce that intense interest in birds which is my most distinguishing characteristic.”

Frank's father, Lebbeus Chapman, Jr., was the senior member of a New York law firm and counsel for a large bank. He was a veteran of the Civil War, a very busy and much sought-for man, with many professional and civic duties. But until the time of his death in 1876, he was the close friend of his young son. His father, in turn, was a banker and was the author of *Chapman's Interest Tables*. The incredible industry and application of this man is shown by a neat manuscript copy of the entire Bible, comprising 1467 quarto pages.

Such in general were the parents, relatives and ancestors of which Chapman later wrote—English on both sides, so far as he could learn, for three centuries past, except for one lone Irishman. The latter, we may imagine, contributed something to Chapman's sensitivity and to his love for lyric music. Chapman's middle name, Michler, a friend informs me, is that of an old Pennsylvania family of German origin which migrated southward into Georgia. Nathaniel Michler who wrote the report on a survey for a Panama canal (1861) was a close friend of Chapman's father.

As a small boy Frank read the *Leatherstocking Tales* and similar stories. He loved to roam in the woods, listening to every bird call to which his inner ears were keenly attuned, and doubtless stealthily following and approaching the elusive birds. When cherries were ripe he used to perch quietly in a certain cherry tree and, as he says, “share the feast with the Cedar Wax Wings.” Or he would climb the rafters of the barn to the cupola and peer out for new arrivals.

But by what steps did this childhood play lead so directly to his career as an outstanding ornithologist, as a leader in science, in education, and even in social service? His deep love of music, his strong emotional response to the thrill of a bird-song and to the lure of a bird's flashing image were leading factors in his development; but so also were the strength and persistence of his hunting and collecting tendencies, together with his progressively constructive intelligence, which delighted in

planning and making or organizing something new, from a kite or a chicken coop to a boy's baseball club. From his birth onwards he was surrounded by a loving and appreciative family, parents, aunts, uncles and a beloved sister, who collectively protected him from the distracting man-made life in the city and consistently encouraged his interest in birds. Nor did they fail to encourage in him friendliness with modesty, good manners and a strong sense of fairness.

For ten years he attended school at Englewood (except for one term in Baltimore). At the Englewood Academy he was taught what were then considered to be the essentials of a sound education. When he graduated, at the age of sixteen, he did not choose to go to college and evinced a lack of enthusiasm for a system of education in which Nature, as a system, was practically ignored. At that youthful age, already thirsting for more and wider contacts with the world of birds, he perhaps did not realize that especially during the years at the Englewood Academy he was learning at least to write English well and clearly, or that he was acquiring the conventional background upon which he built so well his later career as author, lecturer and scientist. Nevertheless, it was no doubt fortunate that he did not go to college, for if he had done so he would have been more completely conditioned by the routine classical education of the period of 1880. His early drive toward bird study, bird hunting and exploration might have been crowded out by other interests. Moreover a college education might have interfered with his own highly productive results in self-education, in which his studies were motivated by his expanding needs.

As a young and isolated student of birds he had to learn almost everything by experience, gradually picking up the local names of birds, as well as the technical terms of ornithology. A kind uncle gave him Johnson's *Natural History*, in two large volumes with 1500 woodcuts and for ten years this was his only bird book. But its well studied text prepared him to appreciate the *Key to North American Birds* by Elliott Coues, which he acquired later.

BUSINESS VERSUS VOCATION (1880-1886)

In 1880, four years after the death of his father, he graduated from the Englewood Academy at the age of sixteen. "I had no call," he relates, "for any work or profession, my school life had awakened no special interests, but it was essential that I do something and, in default of other openings, I entered the American Exchange National Bank of New York, of which my father had been counsel. I remained in this bank for six years as a member of its city collection department. For the first time I now learned the meaning of the word work. In order to reach my desk at 9 a.m. I was obliged to leave home at 7:30 and the day's duties were not finished until our current accounts were proved. Usually this was about 5 o'clock, but it was often later and there were periods in 'coupon time' when night after night I did not leave the bank before midnight.

"The work was diversified, not without interest, and brought a growing measure of responsibility. It gave me a general knowledge of business methods, taught me to be prompt and made me far more orderly than I had been before—all good training for a naturalist and particularly for a museum man.

"Saturday half-holidays were then unknown and, aside from my annual vacation of ten days, Sundays and holidays were my only free days. There was, therefore, small opportunity for the development of my interest in birds. But on my journeys to and from New York I frequently met on the train Frederick J. Dixon of Hackensack, a man about ten years older than myself who knew more about birds than anyone with whom I had previously come in contact. He had a copy of the first (1872) edition of Coues' Key and a small collection of exceedingly well mounted birds. Furthermore he was a genuine lover of nature and a man of much personal charm. In him I found for the first time someone who fully understood my tastes and with whom I could talk birds. He could answer questions; he taught me how to make a bird skin."

A hardly less important link to his own future was supplied by his friend Clarence B. Riker, who could mount birds well

and who later made two journeys up the Amazon River to collect birds. Gradually the bonds that tied him to ornithology strengthened, even as his effective labors in the bank business brought him advancement there.

In the spring months of 1884, while still working full time at the bank he took part, as a volunteer, in a survey of bird migrations, initiated in Washington. The Atlantic Division of the Committee on Bird Migration of the American Ornithologists' Union was in charge of Dr. A. K. Fisher to whom Chapman ventured to offer his services. "This step," he writes (*op. cit.* p. 32), "determined my future. For the first time I was brought into direct communication with a professional ornithologist, and I doubt if one could have been found who would have shown more patience with my ignorance or devoted more time to my guidance. In a close friendship, which has now extended nearly fifty years, I have always called Dr. Fisher my 'ornithological godfather'."

But how was he to secure the necessary data on the migratory movements of birds and put in a full day's work at the bank? "Fortunately," he writes, "my environment permitted me to serve both birds and Mammon. At this time the station of West Englewood, on the West Shore Railroad, distant about half a mile from my home, was in the heart of as good collecting ground as there was in the New York City region. The woods surrounding it stretched for miles north and south, forming a highway for the diurnal journeys of migrating birds. The numerous roads and farm lanes of the Phelps' estate made them as easily penetrable as a park. A novice could not have found a better place in which to record the migration, supplementing his observations, when need arose, with specimens.

"From March 10th to May 23rd following, with the exception of Sundays and one day off, I went through the motions of a bank clerk, but for the whole period I lived, thought and dreamed the life of a bird student. Each morning I arose at daybreak. A cup of coffee, made the night before and heated over an alcohol lamp while I dressed, helped me to swallow two slices of bread. Then with my gun I was off for the

woods. My route was planned to bring me to the railroad station at 7:30 when the dress of the hunter was hurriedly changed for that of the bank clerk and I boarded the 7:39 train to begin what seemed like another existence.

“At night, on returning from the city, if time permitted, I again went to the woods for a brief outing before dinner. After dinner there were specimens to skin and notes to write, when, without urging, I went to bed as part of the preparation for the next day.

“My records, kept by the roll call and journal system, show that of the seventy-five days included in the period mentioned I went afield sixty-nine, for a total of 171 hours and 21 minutes’ observations, or an average of two hours and twenty-nine minutes daily. Besides Sundays I was absent from the bank only one day (May 15th), which I celebrated by collecting a specimen of Brewster’s Warbler, the climax of an experience which, in absorbing interest and stimulating excitement, has not been equaled in the succeeding nearly fifty years. . . .”

His report on 103 species from the restricted West Shore area was finished on time and forwarded to Dr. Fisher. “In due time came his official acknowledgment. The verdict of my initial venture in ornithology was in my hands. Had I succeeded or failed? I hesitated to learn, and it was not until I had reached the seclusion of the orchard that I ventured to open it. I recall the apple tree under which I stood when with inexpressible elation I read that my report was the best one that had been received from the Atlantic District.”

FREEDOM AT LAST (1886)

For two years longer he continued to serve the bank, no doubt faithfully and well, but on his Sundays, holidays and evenings he was building up his contacts with the worlds of birds and men. He joined actively in the campaign of the National Audubon Society against the devastating attack upon bird life of the millinery trade, which was engaged in wholesale slaughter of nesting egrets, thrushes, warblers and other birds. Especially after his promotion to be in charge of the

bank's city collecting department it became evident, he notes "that there would soon be a serious conflict between the bank clerk and the bird man." In the fall of 1886, with the full consent and cooperation of his mother and in no way disturbed by the "forebodings" of his "mystified colleagues," he resigned his position in the bank.

At last he was free to attend the Congress of the Ornithologists' Union in Washington, to lay plans for collecting in Florida, to fit up his workroom in his mother's winter home at Gainesville amid the pines and sand of North Central Florida. At Alachua Lake, near by, he was thrilled by the diversity of land and water birds. By May 1887 his collection included 581 Florida birds; and he had trapped many gophers on what is now the site of the University of Florida.

Returning to Englewood for the summer months he took his collection to the American Museum of Natural History for study and identification, sharing a room there by invitation of Mr. George B. Sennett, of Erie, Pennsylvania. Mr. Sennett had a considerable collection of Texas birds, upon which he was preparing a book. After Chapman had completed the assortment of his own collection, he devoted one half of each work day to assisting Mr. Sennett for the sum of one dollar a day. The other half of each day he gave to Dr. J. A. Allen, the curator of birds and mammals, who was then happily immersed in assorting the Lawrence Collection of 8,000 Central and South American birds.

"The days were now too short. Although master of my own time I traveled on the same trains to and from Englewood that I had used as a bank clerk. But with what a difference I approached my desk . . . No two days were alike, the character of the work might be the same but the birds were different. Actually dead specimens, they carried the message of living ones . . ." In other words he read these "feathered documents," as he afterward called them, with as clear a purpose as that of an epigrapher deciphering an inscription or of a palaeontologist studying a trilobite.

His first scientific paper, published in the *Auk* in January, 1888, recorded the results of his observations on the nocturnal migration of birds, as seen through a friend's 6-inch telescope against the glowing surface of the full moon's disk. The paper was presented at a meeting of the American Ornithologists' Union and was the first of about two hundred technical papers and notes, in addition to twenty books. About this time he was already taking photographs of living birds, using "a crude shutter made from pieces of a cigarbox and a rubber band," and thereafter many of his books and papers included his beautiful photographs of birds in their own environment.

MUSEUM CALL (1888)

He was about to start, with Charles B. Cory, in a stern-wheel flat-bottom houseboat, on a collecting expedition to Lake Okeechobee, Florida, when he received a climactic letter. "It was from Dr. J. A. Allen offering the position of his assistant in the American Museum. I read it at the lunch table and it was several moments before I could sufficiently compose myself to tell my companions [the Corys] of its contents." Without hesitating he resigned from the Okeechobee party and, taking the first available train north, reported for duty at the Museum March 1, 1888.

At the Museum he continued the cataloguing and identification of bird collections upon which he had previously worked as a volunteer. "Then began an association [with Dr. Allen], which so far as our professional relations were concerned, was like that of father and son, rather than that of a curator and his assistant." Chapman modestly says: "I came to Dr. Allen with only a beginner's knowledge of local birds and had everything to learn concerning the more technical side of ornithology. There was no one under whom I could have worked and studied more profitably. For nearly twenty years our desks were side by side." Dr. Allen in turn found in Chapman the ideal assistant and colleague.

Then followed more than half a century of crowded joyous years, with ever widening activities and higher horizons both

for the "apostle of the birds" and for those who came under his genial influence.

At the time when Dr. Allen called Chapman to be his assistant the American Museum department of birds and mammals had a large exhibition hall containing many thousands of birds, each one mounted on its own stand, arranged systematically in seemingly endless rows, on bluish white shelves. Experience gradually showed that this "dictionary type" of massing soon tired almost everyone except the bird expert. Before long Dr. Allen delegated to his willing assistant the problem of improving the educational value of the Museum's bird exhibits.

Chapman early began to install an exhibit of the birds of New York City and environs. Later he divided the great mass of birds in the central bird hall into two sections on opposite sides of the hall. On one side, the birds were arranged according to major geographic regions, on the opposite, according to their supposed relationship in orders, families, genera and species.

After a while he began to deliver popular lectures on birds, illustrated largely with lantern slides from his own photographs. These slides, he tells us, had been beautifully colored by his mother who continued to aid and encourage him in all his labors. In the winter seasons, starting from his mother's home in Gainesville, Florida, he made numerous field trips to collect small mammals and birds; thus he went to various localities in Florida, Texas, Cuba, Trinidad, B. W. I., Yucatan and Vera Cruz, Mexico, and later to many countries in South America. The story of his local expeditions in the United States and of his one visit to England is told in his *Camps and Cruises of an Ornithologist* (1908) and much later his many expeditions to Mexico, Central and South America are dealt with in his all too brief, authentic *Autobiography of a Bird Lover* (1933). Unfortunately, in the present short sketch of his amazingly diversified and yet unified career these earlier expeditions can only be referred to in passing.

THE AMERICAN ORNITHOLOGISTS' UNION AND THE
AUDUBON SOCIETY

Chapman took a very active part in both these organizations soon after they were founded; the former in 1883. In 1894 he was appointed associate editor of *The Auk*, organ of the A.O.U., in 1899 he established *Bird-Lore* for the Audubon Society, serving continuously as its editor for more than 34 years. He also served actively on the Board of Directors of the National Audubon Society, and was elected its Honorary President in 1945.

MRS. CHAPMAN "SIGNS ON" (1898)

At the beginning of the second decade of his Museum life Chapman was married (February, 1898) to Fannie Bates Embury. Their wedding journey was to Oak Lodge on the Indian River, Florida, conveniently near a certain island which yielded a series of a rare species of sparrow. At Mrs. Chapman's suggestion materials for a Brown Pelican group were also collected near by. To Chapman's "mixed astonishment and joy" his bride proved to be singularly adept in skinning both small birds and large; she was, in fact, an ideal assistant preparator and, like his mother, she devoted herself to furthering his career. A year later (1899) the Chapmans journeyed north to Bird Rocks in the Gulf of Saint Lawrence, where they collected materials and photographs for the group illustrating colonial bird life of the auks, gannets and other oceanic birds.

During his first ten years at the Museum (1888-1897) Chapman published thirty-four papers on birds and eleven on mammals. His *Handbook of Birds of Eastern North America* (1895) and his *Bird-Life: A Guide to the Study of Our Common Birds* (1897) also fall within this decade, as does his *Visitor's Guide to the Collection of Birds Found within Fifty Miles of New York City*. The *Handbook of Birds of Eastern North America* (1895, 1932) won high praise from Elliott Coues, William Brewster and other authorities and went through several editions. All his popular books and papers were welcomed

alike by scientists and amateurs and they opened doors to the world of birds for thousands of intelligent readers. Several of his papers dealt with bird migration and its origin, which was one of the main problems that led to his far-flung expeditions.

THE GALLERY OF NORTH AMERICAN BIRDS

Early in the "second period" (1898-1910) of his Museum service, by enlisting the generous support of John L. Cadwalader, he was able to make a marked advance in the art of bringing into the Museum the illusion of outdoors, at the same time showing the bird in relation to its haunts. This ambitious plan began to be realized in 1901 in the relatively large mounted group illustrating the seashore of Cobb's Island, Virginia, with its nesting skimmers and other birds. The adult Black Skimmers are conspicuous against the sand, but their protectively colored young, when spreading out flat at the danger call of their mother, are very hard to detect, even at close range. The painted background in this habitat group was a novelty and was criticized by some as too dramatic. But no one could say it was not true to Nature, and under Chapman's hands the painted background for large groups was steadily developed.

The success of the Cobb's Island group brought added support for Chapman's project for an entire gallery of habitat mounted groups of North American birds in their natural environment. For the completion of this project ten years of work and many field trips were necessary. The visitors to this gallery make, as it were, an extended tour of North America from the Palisades of the Hudson River to the Bird Rocks of the Saint Lawrence River, through the southern and western states to California and Mexico. The most imposing group is that showing the flamingos of the Bahamas in the nesting season. At the time these groups were constructed they were inevitably placed in this gallery, which has low ceilings. The potentially majestic scene of Mt. Orizaba, Mexico, was thus severely cramped. But it served to point the need for much greater dimensions for this and similar types of Museum exhibits.

After more than forty years all the groups of the North American bird gallery are still authentic and invaluable records both of the birds themselves and of the regions in which they lived. Most unfortunately the main entrance to the gallery in which these exhibits are installed is located in a part of the Museum which is now reached by few visitors, and of these fewer still pass through the dark gallery.

THE WARBLERS OF NORTH AMERICA (1907)

After accumulating data on the warblers for many years Chapman, with characteristic fairness, had printed on the title page "By Frank M. Chapman with the cooperation of other ornithologists."

All 55 of the North American species were accurately and briefly defined, including those whose nearest relatives are found in South America. The males and females of the North American species were illustrated by clear-cut portraits in color by Louis Agassiz Fuertes.

"The wide range of some species," Chapman writes (*ibid.*, page 11) "makes a geographical analysis of the group difficult, but by allotting a species to the region in which it occupies the largest area we have the following results:

South America	40	species
Galapagos	10	"
Central America and Mexico.....	30	"
West Indies	20	"
North America	55	"

Part of the introductory chapter which dealt with the migrations of warblers was written by W. W. Cooke. He notes that the Blackpolls, which are the greatest travelers among warblers, make annual migration trips of between 3500 and 7000 miles to their winter area in Brazil and Chile; also that thousands of warblers perish in storms by attempting to cross the Gulf of Mexico in a single flight. But why do these persistent little birds continue to follow this dangerous route instead of skirting the shores along a presumably safer way?

It was largely to secure answers to this and hundreds of more detailed questions that Chapman journeyed to so many parts of North and South America and sent his coworkers and assistants to many others.

CHAPMAN AND FUERTES

Among the numerous artists who went with Chapman into the field and painted backgrounds and bird portraits in the Museum none was ever so close to him as Louis Agassiz Fuertes of Ithaca, New York. For Fuertes, Chapman had an unbounded admiration. Chapman himself was no mean bird mimic, but he was amazed at Fuertes' wizardry in calling new birds; he rejoiced in sharing with the latter the adventures of the Andean mountain trails; he appreciated the tact and diplomacy shown by Fuertes in resounding Spanish phrases when dealing with pompous customs officials. Finally, Chapman was proud of his younger friend's remarkable deftness and productivity in turning out bird portraits of impeccable accuracy and with all the sprightly outlook of the bird in life. When many years later Fuertes was killed (1927) in an automobile crash, Chapman's sorrow was most grievous.

FAUNAL ZONES OF THE ANDES

In two of his earlier journeys in Mexico Chapman was deeply impressed by the bird life of Mt. Orizaba which was stratified in successive zones, each with its characteristic bird fauna. Humboldt had observed the same phenomenon in the Andes but Stolzmann in Peru was practically the only one who had made accurate observations in this field (Chapman 1933, p. 208). Humboldt indeed "in determining the relations between altitudinal and latitudinal climates had shown that as we proceed from the Equator toward the poles the mean temperature decreases one degree Fahrenheit with each degree of latitude. But as we ascend a mountain, the mean temperature decreases one degree with each 300 feet of altitude. That is approximately 300,000 feet of latitude equal 300 feet of altitude. Climatically therefore, we travel about one thousand times faster vertically

than we do horizontally." Now the Andes, Chapman reasoned, "did not attain their full elevation until the latter part of the Tertiary," but [from indirect evidence] it is probable that the bird-life of South America, "at least in its major aspects did not [then] differ materially from that which exists there today. Hence it follows that . . . we can not only give the Andes a geological birthday but can form a fairly definite conception of the character of the avifauna from which the hundreds of species of birds that have evolved on them were derived." "It is consequently obvious," Chapman continues, "that in a study of the origin of life in the Andes we can associate cause and effect far more frequently than in those continental areas the early pages of whose geological and biological history are lost in an incalculably remote past. One asks, therefore, what are the factors that determine with such clearness the boundaries of these Andean life zones? Whence came the hundreds of species that are confined to them?"

Such were the general principles and basic problem when in 1911 Chapman's explorations in the Andes began. During six years of exploration which were largely supported by friends, especially Malcolm MacKay, Graham Sumner, George B. Case and Daniel E. Pomeroy, the Andes were crossed and recrossed many times and in various countries, especially Colombia and Ecuador. Many thousands of birds were collected: (1) in the humid Tropical Zone, extending to elevations of from 3,500 to 5,000 feet, (2) in the Sub-Tropical Zone, up to 8,000 to 9,500 feet, (3) in the humid or arid Temperate Zone reaching up to 11,000 to 12,000 feet and (4) in the relatively barren Páramo or Puna Zone, which extends to the lower level of snow, or, usually about 15,000 feet. Both the flora and fauna of the Páramo Zone are remarkably distinct. Nearly all its birds are endemic.

The gradual recognition of these bird zones in Colombia and Ecuador came as the result of an enormous amount of field work and Museum study, as fully set forth in Chapman's monographs on the distribution of bird-life in Colombia (1917) and in Ecuador (1926). These zones, to Chapman's great satis-

faction (Autobiography, p. 211) agreed essentially with those of Wolf in the latter's work on the distribution of plants in Ecuador. After prolonged studies, Chapman concluded that generally speaking bird populations of the Sub-tropical and Humid Temperate zones had been derived respectively from their next lower zone. The Arid Temperate and Páramo birds, on the other hand, have been derived from birds of the *same* zones in adjacent or distant areas. If from far southward, below the Tropic of Capricorn, these zones will be at a lower elevation, perhaps reaching sea-level at the southernmost point; but they are not "lower zones," strictly speaking. "The apparent ancestor of a subtropical, equatorial Motmot, for example, was found in the tropical zone of eastern Mexico. Again, an Ovenbird (*Cinclodes*) of the Colombian Páramo has evidently originated in Patagonia."

In 1918 the National Academy of Sciences awarded Chapman the Daniel Giraud Elliot Medal in recognition of his first attempt to present the problems of zonal evolution. Three years later, presumably in further acknowledgment of his work on the Andes, he was elected to membership in the Academy. Other medals and honorary membership in learned societies came to him in due course.

THE RED CROSS

Chapman's ability to tell a great and true story in a modest, factual but thrilling way is seen in his brief account of two years spent by himself and Mrs. Chapman in the service of the Red Cross (Autobiography, pp. 274-300). He pays the highest tribute to the leadership and organizing ability of Henry P. Davison. Mr. Davison was appointed by President Wilson to be Wartime Director of the Red Cross. In a relatively short time he created out of near-chaos an enormous but effective organization of 22 million members; under his leadership over 200 million dollars were raised for the relief of suffering in the afflicted countries of Europe.

Chapman's job was Director of the Department of Publication, for which much of his training as editor and writer and

as director of large enterprises well qualified him. Mrs. Chapman had charge of women's work in the Potomac Division of the Red Cross.

On account of Chapman's wide knowledge of Latin American countries and their peoples, he was dispatched to the West Indies and South America as special commissioner. For this purpose he wrote many pamphlets, designed posters and prepared lectures. "While my Spanish heretofore had served well as a means of communication with guides, cooks and mule drivers," he writes (*ibid.*, p. 279), "I was not prepared to enter the diplomatic and oratorical field." He and Mrs. Chapman therefore added to their daily duties at the Washington headquarters a nightly course in Spanish. Equipped also with lantern slides and motion pictures, they journeyed to Cuba, Panama, Peru, Chile, Bolivia, Argentina, Uruguay, Brazil. Everywhere the responses to their Red Cross appeal by the people in these countries were highly satisfactory and productive.

Their next journey was to France. At Gièvres, near Tours, they met their son Frank M., Jr., who had enlisted in the marines and had been in the hospital in Gièvres.

Joining Mr. Davison in Paris, they found him organizing a league of Red Cross societies and even beginning to plan for an international organization for the maintenance of peace.

After the armistice they went to England, where they were impressed by the love of outdoor life and of native birds shown by a war-weary nation. Chapman and his friend Frederic C. Walcott then took the opportunity to renew their acquaintance with the common British birds.

MTS. RORAIMA, DUIDA

Chapman's paper on "The Upper Zonal Bird-life of Mts. Roraima and Duida" (1931) is essentially a comparative analysis of considerable collections of South American birds from two stations: Mt. Roraima at the junction of British Guiana, Brazil and Venezuela, and Mt. Duida in Venezuela, 400 miles south-southwest of Mt. Roraima. The collections

from Mt. Roraima were made by the Lee Garnett Day Expedition, under G. H. H. Tate, while those from Mt. Duida were made by the Tyler Expedition, also under G. H. H. Tate. About 161 species or subspecies representing 35 families were studied.

According to Tate's field observations and papers, both Roraima and Duida are table mountains, steep-sided and formed of sandstone, but the strata of Roraima are level bedded, while those of Duida are intensely folded. Roraima and its neighbors are considered remnants of a once continuous tableland which became dissected by erosion and is now represented by isolated fragments. Duida appears to be a newly up-faulted mass perhaps still rising. Roraima is almost devoid of soil and is the home of a relatively small and apparently diminishing plant and animal population. Duida has a deep covering of humus and bears a complex and highly modified fauna and flora. In spite of their separation and of the above noted differences, Chapman's analyses led him to the conclusions (1) that the avifauna of the upper zone of Roraima was essentially like that of Duida; (2) this distinctive upper zonal Roraima-Duidan avifauna contained the following chief components:

Of tropical origin.....	22	out of 85
With Andean relationships.....	39	“ “ “
With Southeastern Brazilian relationships	2	“ “ “
With Guatemalan relationships.....	2	“ “ “
Of unknown origin.....	20	“ “ “

Thus nearly one-half the birds peculiar to the Roraima-Duidan fauna have their nearest relatives in the Subtropical and Temperate Zones of the Andes (p. 42). "These birds find their nearest relatives at a distance of usually more than a thousand miles, nevertheless they outnumbered those members of the Roraima-Duidan fauna derived from nearby tropical ancestors by more than 50 per cent. This fact indicates the greater age of the Andean element and also that when it was

acquired the Roraima-Duidan and Andean forms, or their antecedents, were more nearly in contact than they are today” (p. 45).

Further analysis indicates (p. 47) that at no very remote period the present wide gap in distribution between the Roraima-Duidan and Andean forms was bridged by intermediate stations which have since disappeared. The existence of Roraima-Duidan forms with close relatives in the Andean Sub-tropical and, less frequently, Temperate Zones “may be explained by the disappearance of their common ancestors or connecting forms in the intervening area, due probably to the influence of climatic changes” (p. 58).

EASTERN BRAZIL

Extensive and much needed bird collections from eastern Brazil were made in a seven-year campaign by Emil Kaempfer, under the patronage of Mrs. E. M. B. Naumburg, Research Associate of the Museum’s Department of Birds.

MARINE BIRDS OF PERU

Dr. Leonard C. Sanford and his collectors, especially Rollo Beck, had already made great collections of the marine birds that swarm in vast numbers along the coast of Peru, and Dr. R. C. Murphy studied the complex ecologic factors which made these dense bird populations possible.

“It is well known,” writes Chapman, “that in this region, the combination of exhaustless supplies of fish, fish-eating birds (transformers, they might be called), islands on which birds may nest in safety, and a rainless climate has resulted in the production of vast quantities of guano. It is said that a billion dollars’ worth of this fertilizer has been removed from Peru’s coastal islands, and the annual deposit now constitutes one of her principal commercial assets. This subject, the biology of the Humboldt Current, and many other things of interest will be found fully treated in *The Bird Islands of Peru* by my colleague, Robert Cushman Murphy.”

THE WHITNEY PACIFIC EXPEDITION

From 1920-1928 Rollo Beck carried on his explorations in the islands of the Pacific under a generous fund which, through Dr. Leonard C. Sanford, was contributed by Harry Payne Whitney. Beck amassed enormous collections and was succeeded by Hannibal Hamlin, who in turn (1930) was relieved by William F. Coultas.

All the South American marine birds in the Museum's collections were the sources for Dr. Murphy's two splendid volumes *Oceanic Birds of South America*.

AFRICAN BIRDS

Meanwhile in Africa, Dr. James Chapin, De Witt Sage, J. Sterling Rockefeller and Charles B. G. Murphy made extensive collections, especially in the Belgian Congo. The vast bird fauna of the latter country was revised and described in two volumes by James Chapin, *Birds of the Belgian Congo*; a third and fourth volume are nearing completion.

THE LORD ROTHSCHILD COLLECTION AND THE WHITNEY WING

Under Chapman's leadership the Museum's Department of Birds received in 1932 the supreme gift of the Lord Rothschild Collection of 280,000 specimens. With it came provision for its administration and for fellowships for students from abroad—all this was in memory of Harry Payne Whitney from his widow and children. Before Mr. Whitney's death in 1930 he had joined with the city of New York in giving an entire new wing to the Museum. This was completely equipped to house the vast study collections and to provide ample facilities for research. Provision was also made for the superb hall of oceanic birds and for another large hall containing a general introductory exhibit on the biology of birds.

In this palatial Whitney bird building Chapman chose an unpretentious office, adjacent to the long galleries containing part of the study collections. At convenient locations near other galleries were the offices of his well-trusted colleagues: Robert Cushman Murphy who succeeded him as Chairman of

the Department of Birds; John T. Zimmer, a widely trained ornithologist from the Field Museum; James Chapin, to whom the forests of the Belgian Congo were as a second home; Ernst Mayr, a former member of the Whitney South Sea Expedition and a distinguished student of bird speciation; Mrs. Elsie M. B. Naumburg, author of *The Birds of Matto Grosso* and other publications on South American ornithology, who had long assisted Chapman, especially in identifying the birds of Ecuador, Peru and Brazil.

Always in close communication with Chapman was his life-long friend Dr. Leonard C. Sanford, of New Haven, a trustee of the Museum and patron of expeditions. It was largely through his good offices that Harry Payne Whitney and later, the Whitney family, made their princely contributions to the Museum as above noted.

BARRO COLORADO ISLAND

Whenever it was possible in his later years Chapman retired to Barro Colorado Island in the Panama Canal Zone. His abundant observations on the birds and mammals there are recorded in *My Tropical Air Castle* (1929) *Life in an Air Castle* (1938) and many later articles. This "island" resulted from the damming of the Chagres River. The latter flooded 165 square miles of lowland and made islands of hilltops. Mostly covered with forests it is the home of many birds, mammals and other animals and is under the protection of the U. S. Government. At first Chapman had only a small cabin on the island which, however, was ideally placed for a student of birds. Later Fuertes House was built and named for his deceased friend. From this high point of vantage Chapman could identify with his binoculars the water birds on Gatun Lake below him, or the soaring birds in the air above or the perching birds near by. Across the forest paths he set out photographic traps and when the bird or mammal touched the string the camera clicked. Thus he took beautiful portraits of ocelot, coatimundi, peccaries, tapir, et al. By tempting a savage male coatimundi

with bananas, he gradually succeeded in lessening its fear. Eventually "as an evidence of good faith on both sides," he held out the banana and the coati grabbed it, without attempting to use its dagger-like canine teeth on the donor. The life story of the male coati was eventually recorded and the role of the fighting male in coati survival was clearly shown.

Professional students of animal behavior rightly distrust the man-made interpretations which mar animal stories of casual observers. In his descriptions of the social life of the howler monkeys, Chapman used only common English words and metaphors, but an experimentalist who might wish to test the IQ of these nearly untamable savages, would do well to study Chapman's essentially objective records of their behavior both in the wild and in captivity. The strength of their dislike for strangers is suggested by the long stubborn and sullen resistance of a young female howler monkey against Chapman's persistent and finally successful attempts to gain her confidence.

While the reasons for the behavior of howler monkeys can to a certain extent be understood by us, the elaborate and fantastic courting antics of Gould's manakin, as recorded by Chapman, belong in the world of lizards and birds and are motivated and executed by a profoundly unmammalian nervous system. In brief, Chapman's books and articles on the fauna of Barro Colorado abound in material and problems which invite cooperative investigation on a large scale by geneticists, behaviorists and students of the evolution of the vertebrates.

CHAPMAN DIES, HIS WORK SURVIVES

As Chapman neared the age of fourscore years his strength failed and sorrow increased, for Mrs. Chapman died in September, 1944. But his son, Major Frank M. Chapman, Jr., returning safely from World War II, brought him much happiness, as did his son's wife Gladys Swarthout Chapman. As they both were distinguished musicians, they gave him the solace of uplifting music. Nor did he forget the thrill of countless bird-songs stored in his memory.

Thus on November 15, 1945, he died, content to leave to his devoted successors and colleagues the great cause for which he had so long labored. And all the amazing things he saw and recorded in the world of birds are ready for generations of readers still to come.

KEY TO ABBREVIATIONS USED IN BIBLIOGRAPHY

- Am. Mus. Jour. = American Museum of Natural History Journal
Am. Mus. Nov. = American Museum Novitates
Bull. Am. Mus. Nat. Hist. = Bulletin, American Museum of Natural History
Bull. U. S. Nat. Mus. = Bulletin, United States National Museum
Carnegie Inst. Wash. = Carnegie Institution of Washington
Century Mag. = Century Magazine
Educ. Rev. = Educational Review
Geogr. Jour. = Geographical Journal
Nat. Geogr. Mag. = National Geographic Magazine
Nat. Hist. = Natural History
Pop. Sci. Mo. = Popular Science Monthly
Proc. Biol. Soc. Wash. = Proceedings, Biological Society of Washington
Proc. Linnaean Soc. N. Y. = Proceedings, Linnaean Society of New York
Trans. N. Y. Acad. Sci. = Transactions, New York Academy of Sciences

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