

Of late the western meadowlark has steadily extended its breeding range eastward into our region, after having become established at Rockford some years back. Harris's sparrow which formerly migrated north and south only west of the Mississippi River is of late years seen in increasing numbers east of it, in our area and as far east as Ohio.

Last fall, for the first time in many years, enormous flocks of the lesser snow goose, the equally rare blue goose, and small parties of the whistling swan were to be seen.

What is at the bottom of all these striking variations, fluctuations, or cycles?

River Forest.

Conservation Council Excursion

The State Natural History Survey extended an invitation to the Conservation Council of Illinois for a trip on the Illinois River near Havana. On the 23rd of last October twenty-five members of the Council drove about 200 miles down-state to that valley about which bird lovers have heard so much. To hunters all over the country it is known as the best valley in the state for water birds during the fall migration. Practically all the land adjoining the river is occupied by gun clubs or under lease to hunters. We were entertained from 11:00 A. M. until 4:30 P. M. aboard the *Anax*, the boat used in the work of the Survey, where we not only had a good hot dinner on a cold day, but had many kinds of questions answered by the different members of the Survey staff.

During the trip up and down the river, flocks of cormorants and many ducks were always to be seen. We visited the Chautauqua Lake Migratory Wildfowl Refuge, formerly an irrigation area which did not work, but which more recently has been acquired by the federal Bureau of Biological Survey. There were ducks, and more ducks gathering; still more came in as the sun moved toward the west! Could I count them? No! Shall I estimate—say, 50,000? At any rate, more ducks than I have seen before in a whole year at least. A large proportion of the ducks migrating over the state come along this valley, and they soon sense the area where hunting is not allowed—something for which every bird lover may be thankful! Then came something else for which to be thankful—the sky covered with tiny pink and old rose clouds, a sunset never to be forgotten, along with the clouds of ducks which in memory will long remain.

CATHERINE A. MITCHELL, Riverside.

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STEPHEN ALFRED FORBES

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By THOMAS G. SCOTT

"He is first cousin to the Indian, the prairie-wolf and the badger, but with a better knack than they at adapting himself to the new life of civilization. He is a perfect reflection of his most constant surroundings — with a bosom of prairie butter-cups, a back like the dead grass of autumn, and a song that harmonizes well with the whistling of prairie winds."

This is the meadowlark as visualized by Stephen Alfred Forbes in the introduction to one of his early scientific treatises (Forbes, S. A., *Ill. Hort. Soc. Trans.* for 1880, 14:234-5, 1881). A thoughtful reader may find it to be more than a picturesque description, for it also tells something of Forbes himself — of his literary gifts, his love of nature, his unusual grasp of ecological processes, and his courage to depart from accepted custom.

Stephen Alfred Forbes! This is a name for Illinoisans to remember. For, as Curator of the Museum of the State Natural History Society (1872-77), Director of the State Laboratory of Natural History (1877-1917), State Entomologist (1882-1917), Professor of Zoology and Entomology (1884-1909), Dean of the College of Science (1888-1905) at the University of Illinois, and Chief of the State Natural History Survey (1917-30), Forbes contributed mightily to the scientific world without losing sight of his responsibility to the general welfare of the people of Illinois. Anyone who studies the works of Forbes must conclude that this accomplished scientist was motivated in his impressive investigations of natural history by a genuine desire to contribute to the betterment of mankind.

Forbes' early life was truly rich in opportunity to develop an appreciation of natural history. He was born of pioneer parentage in a log cabin on a farm at Silver Creek, Stephenson County, in northern Illinois. When he was 10 years old his father died. Henry, a brother eleven years Stephen's senior, returned home to care for him, his mother, and his youngest sister. Stephen attended district school until the age of 14 years and then studied at home under Henry's supervision. Henry, who had abandoned plans to attend college when he assumed responsibility as head of the home, managed to send Stephen to Beloit Academy for a short time in 1860 to prepare him for a college education. This plan was interrupted by a shortage of funds.

When the Civil War came, Henry shared Stephen's desire to fight on the side of the North. As a consequence, Henry sold the farm, paid off the mortgage, and gave the remaining money to his mother, who went to live with her oldest daughter. The two brothers borrowed money to buy horses and joined Company B, 7th Illinois Cavalry, in September, 1861. Stephen was 17 years old and entered service as a private. Within a year he was orderly sergeant; at 19 he was a lieutenant, and at 20 he became captain.

Shortly after his eighteenth birthday he was captured while on dispatch duty near Corinth, Mississippi. He destroyed the dispatch. In a letter dated December 19, 1923, now in the Survey Library, he wrote: "At General Braggs' headquarters I was threatened with hanging if I did not produce my dispatch. . ." He was imprisoned for four months at Mobile, Macon, and Richmond, and then was paroled and released. It is significant that he bought a Bible and a Greek grammar while at Mobile.



Forbes in Uniform, 1861

whose flames we emerged with much of dross burned out of our characters, and with a fair chance still left to each of us to win his proper place in the life of the world."

Forbes attended Rush Medical College in Chicago after the war. He left there because he doubted that he was temperamentally suited to surgical aspects of the medical profession and because he was no longer able to finance his education. From 1867 to 1872, he raised strawberries near Carbondale, taught school at Makanda, Benton, and Mount Vernon, studied and practiced medicine under a preceptor, and studied briefly at Illinois State Normal University. Finally, in 1872, he began the career in biology which ended in Urbana. His son (Forbes, E. B., in *Memorial of the Funeral Services for Stephen Alfred Forbes*, Univ. Ill. Press, p. 7, 1930) believed that "His interest in natural science was determined by an academic tradition in the family, by an agricultural background, by four years' out-of-door experience in the army, by a naturally thoughtful habit, and by a continuing scientific interest after the cessation of his medical studies."

As a scientist, he showed himself to be accomplished in several fields of biology: ornithology, entomology, ichthyology, aquatic biology, and ecology. Few men have proved so eminently able in so many specialties.

His tremendous energy, extensive accomplishments, and great intellect are abundantly evident in his many publications. Forbes began to publish in 1870 and continued writing until his death. During this period he published over 400 titles. A complete bibliography has been presented by L. O.

Forbes was among the troopers who accompanied Colonel B. H. Grierson on his daring cavalry raid through the heart of the western Confederacy. The raid was designed to interrupt communications and aid in the capture of Vicksburg. There is an account of it, including photographs of Stephen and Henry, in D. A. Brown's *Grierson's Raid*, Univ. Ill. Press, 1954. He was under fire on 22 occasions. His army service terminated in November, 1865. Of his experience in the war, Forbes' son, Ernest (Forbes, E. B., in *Memorial of the Funeral Services for Stephen Alfred Forbes*, Univ. Ill. Press, p. 9, 1930), quotes him as having stated:

"Those of us who survived the Civil War in good health and strength, with morals unstained and minds still alert, have had no final cause to regret what seemed at the time the complete wreckage of our plans of life. To us war was not hell, but at the worst a kind of purgatory, from

Howard (*National Academy of Sciences Biographical Memoirs*, XV, First Memoir: 1-54, 1932).

He was a gifted writer, and his papers display a simplicity, conciseness, and clarity not often seen in scientific treatises. Harlow B. Mills has expressed the belief that Forbes will surely be "discovered" some day as an "essayist of the highest quality." D. A. Brown (*Grierson's Raid*, Univ. Ill. Press, p. 2, 1954) concluded that "Both Stephen Forbes and his older brother, Henry Forbes, were sensitive observers and recorders of events, persons, and everything that came into their ken, and many passages of their letters and journals, particularly Stephen's, are written with unusual eloquence and beauty."

The scientific accomplishments of Forbes were remarkable. He was a giant among the naturalists of his generation. Indeed, after reading one of his early papers dealing with animal populations, I was prompted to report that several of his observations were so far in advance of their time that they seemed "prophetic of views which are credited to relatively recent times" (Scott, T. G., *Ill. Nat. Hist. Surv. Bul.*, 27[2]:180, 1958).

A thorough measure of Forbes' scientific contributions would be an extensive undertaking, requiring the services of specialists from several disciplines. Perhaps here, nevertheless, it will be permissible for us to consider at least some of his research and his professional views on wildlife.



Forbes in Later Years

His research on the food of birds was among the earliest investigations of the Natural History Survey. As a matter of fact, it is my belief that: "These studies accompanied and probably assisted in the accomplishment of the reorganization which converted the Illinois Museum of Natural History into a State Laboratory of Natural History on July 1, 1877. The reorganization was accompanied by a new conception of purpose, relieving the members of the staff of the preparation of museum displays and allowing them to concentrate on research. Although I have been unable to uncover direct evidence of it, I feel certain that the change was manipulated by Forbes and members of the Illinois State Horticultural Society." (Scott, T. G., *Ill. Nat. Hist. Surv. Bul.*, 27[2]:179, 1958.)

Forbes' research on the food of birds became one of the outstanding early contributions to avian biology. In addition to reflecting Forbes' professional qualifications, it reveals his desire to contribute to knowledge relating to human economy and welfare. He did not study the food of birds simply because it interested him, but because he considered it economically desirable to know more about the significance of birds feeding on weed seeds and insect pests. This concept of purpose involved courage, because it required a departure from the kind of research considered worthy of a qualified scientist's attention at the time. For example, no less a contemporary than Robert Ridgway (*The Birds of North and Middle America*. U.S. Nat. Mus. Bul. 50. Part I:1, 1901) held the belief that:

"There are two essentially different kinds of ornithology: **systematic** or **scientific**, and **popular**. The former deals with the structure and classification of birds, their synonymies and technical descriptions. The latter treats of their habits, songs, nesting, and other facts pertaining to their life-histories. . . . Popular ornithology is the more entertaining, with its savor of the wildwood, green fields, the riverside and seashore, bird songs, and the many fascinating things connected with out-of-door Nature. But systematic ornithology, being a component part of biology — the science of life — is the more instructive and therefore more important."

W. L. McAtee (*Auk*, 34[3]:249, 1917) has expressed the belief that F. E. L. Beal and Forbes were "the founders of the scientific method of studying the economic value of birds." It is enlightening, too, to find that the book, *Birds in Their Relations to Man* (Weed, C. M., and N. Dearborn. Lippincott Co., 1903) is inscribed "To Stephen Alfred Forbes. . . whose classic studies of the economic relations of birds will long remain the model for later students."

Coues (Coues, E., *Nuttall Ornith. Club Bul.*, 8[2]:105) believed him to be "Our best authority upon the insect food of birds. . ." It should be noted that in 1884 the University of Indiana awarded Forbes the Ph.D. degree "by thesis and examination," his thesis being "The Regulative Action of Birds Upon Insect Oscillations."

It was natural for the orderly mind of Forbes to see that an appraisal of the economic importance of birds required more than a knowledge of food habits. It was also necessary to have some knowledge of the numbers and kinds of birds present in specific habitats during the different seasons. The resulting bird censuses are classics in American ornithology. These censuses are reported in six papers; however, most of the data may be seen in two papers (Forbes, S. A., and A. O. Gross, *Ill. Nat. Hist. Surv. Bul.*, 14[6]:187-218, 1922; 14[10]:397-453, 1923).

His understanding of the effect of predation on prey populations was surprisingly in advance of his time. In an early paper (Forbes, S. A., *Ill. Lab. Nat. Hist. Bul.* 1[3]:11, 1880) he observed that "The annihilation of all the established 'enemies' of a species would, as a rule, have no effect to increase its final average numbers."

His views on the dynamics of animal populations, too, are remarkably modern. He (Forbes, S. A., *Ill. Lab. Nat. Hist. Bul.* 1[3]:9, 1880) convincingly argues that "The fact of survival is therefore usually sufficient evidence of a fairly complete adjustment of the rate of reproduction to the drains upon the species." On page 11 of the same paper, he points out that the "real and final limits of a species are the *inorganic* features of its environment, — soil, climate, seasonal peculiarities, and the like." In another paper (Forbes, S. A., *Ill. Hort. Soc. Trans. for 1881*. 15:122, 1882) he reasons that excessive animal populations are "in one way or another, self-limiting."

Forbes' remarkably progressive views apparently failed to carry him much in advance of contemporary concepts with respect to wildlife management, for his thinking seems to have been limited largely to the encouragement of restrictive laws. He (Forbes, S. A., *Ill. Acad. Sci. Trans. for 1912*, 5:40, 1912) once observed that "Our resident game birds would all have been gone long ago if it had not been for the restraints of law put upon the activities of the hunter. . ." In this same paper (p. 46) he made a plea for the Illinois Academy of Science to support by resolution the "Anthony Bill" (Migratory Bird Act of 1913), then under consideration in the House of Representatives.

In view of our concern for the perilous status of the Prairie Chicken, it is of interest to consider some of Forbes' comments on this subject. In 1912, Forbes (Forbes, S. A., *Ill. Acad. Sci. Trans.* for 1912, 5:47-8, 1912) reported that "Prairie-Hens — thanks to our protective laws — are now to be seen in at least seventy-four counties, so abundantly in some that farmers are beginning to protest against their further increase because of the amount of grain which they devour." The reports on which this is based are in the Survey files. Re-examination of them brings out Forbes' conservativeness, for the reporting observers had believed that Prairie Chickens were present in 92 counties. Forbes obviously had reason to doubt some of the reports. In the same paper (p. 48) he showed awareness of the same environmental limitation which is endangering the Prairie Chicken today when he advised that:

"The very country in which it was formerly most numerous — that is, the open prairie — is now least favorable to it because of the agricultural operations, which disturb and destroy it during its breeding season."

Upon occasion, Forbes was known to express his sentiments in verse, but unfortunately, he apparently believed that this was too personal a matter for perpetuation. His family knew this and sometimes they were permitted to share his poetic expressions; however, seemingly fearful of displaying sentiment, Forbes characteristically destroyed his poems. It seems fitting to close this tribute with a few lines of verse which were found among his papers following death:

"He is not old who loves the young.
Whom the young love is young himself;
The full heart is the happy one,
The empty dish goes on the shelf.

"May the full heart, the curious mind
Be yours until your latest day;
Then shall your age be fresh as youth,
And late December bloom like May."

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THE 1961 I.A.S. CAMP-OUT

AS THE SEPTEMBER issue of the *Audubon Bulletin* goes to press, word has been received of the Annual Camp-Out at Starved Rock State Park on the week-end of September 9-10. Separate announcements giving all details will have been mailed to all members by the time this issue is printed; we hope that many of you will be able to attend. A full report of the Camp-Out will appear in the December issue of the *Bulletin*.

N.R.C.I. TO HOLD CONFERENCE ON PESTICIDES

THE NATURAL RESOURCES COUNCIL of Illinois will hold its 8th Annual Outdoor Conservation Conference at the Fairmount Hotel in Collinsville. Theme of the meeting is "INSECTICIDES, PESTICIDES, AND THE PUBLIC INTEREST." I.A.S. Directors Jane Tester and Elton Fawks are co-chairmen of the session. The Conference is scheduled for Oct. 20-22, 1961.