

IN MEMORIAM: PAUL LESTER ERRINGTON

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PAUL LESTER ERRINGTON was born June 14, 1902, on a farm near Bruce, Brookings County, South Dakota. Following graduation from the Brookings High School and the South Dakota State Agricultural College, he came to the University of Wisconsin for graduate work in 1929. His graduate study was made possible by an industrial fellowship from the Sporting Arms and Ammunition Manufacturers' Institute, and the U.S. Biological Survey, arranged by Aldo Leopold. In the preface to a chapter, "Canadian North" (*in* John K. Terres, *Discovery: great moments in the lives of outstanding naturalists*, 1961), the statement is made that Errington was one of Leopold's first students in wildlife management. This is incorrect. Errington received his doctorate in 1932, and Leopold did not join the University faculty until the fall of 1933. They were long associated, however, on a quail project.

Errington was an exceptionally skilled field man; few possessed his ability in reading sign. This was due to his long apprenticeship to trapping. He trapped for 13 winters in the period 1915-1928. Most of his activity centered on the family farm in the Oakwood-Tetonkaha lake and marsh chain west of Bruce and on the Big Sioux River west of Brookings. One winter was spent trapping along the Cheyenne River in Haakon County, South Dakota, and another in the Big Bog, in Beltrami and Koochiching counties, Minnesota. The proceeds from the furs virtually put him through South Dakota State College. He never considered his most ambitious trapping expeditions to have been especially successful financially. The lure of the profession was so great, however, that when urged by his mother to attend college, he consented with reluctance, since he realized that the life of freedom which he had enjoyed would be greatly curtailed.

Trapping in the north can be a gruelling experience. About 1700 Cadillac wrote: "If people could realize the labor which is involved in finding beaver skins they would not think so lightly of this commodity." Then he gave in detail the hardships that the trapper had to undergo. Aside from the inclemencies of the weather, there may be hazards to life. Once when Paul was going to his trapping cabin on the Tamarack River in the Big Bog, his canoe was swamped by high waves in the passageway between Red Lake and Upper Red Lake, and he narrowly escaped drowning. At the age of nineteen he took the train to Longlac, Ontario, intending to descend the Kenogami to James Bay and find a locality for trapping. He was advised to follow two Indians who were going down the river to the town of Grant, 40 miles distant. The two

canoes became separated, and though previously warned, he almost entered a stretch of impassable rapids. This experience showed that he was not prepared for living in the Canadian North, and he returned home. One morning after crossing the treacherous ice of the Tamarack River to follow his trap-line, he chanced to look back and found that the roof of his cabin was on fire. The flames were extinguished with difficulty. The tar produced by burning green aspen had run down the stove pipe and ignited. This difficulty was solved by reversing the joints so that the tar ran down the interior of the pipe. Had he returned to find the cabin and contents destroyed, his situation would have been serious.

I thought originally that he was immune to cold. One stormy winter day he inveigled me into accompanying him to the country to learn what a covey of Bobwhite quail would be doing under the circumstances. In time the depth of the snow required putting on chains with bare hands. I congealed just as a spectator. Subsequently I was to learn that he had a normal susceptibility to cold. In the Big Bog the temperatures ranged from 20° to 40°F below zero. In his "cosy" cabin he slept under 14 woolen blankets with alternate layers of newspapers. While visiting his traps, he prevented his face from freezing by applying to it the flesh side of fresh pieces of the skin of the snowshoe hare. It was easier, however, to endure the quiet cold of the Big Bog than the 15° to 20°F below zero of the Brookings area with its strong winds. In the Algonquin Provincial Park, Ontario, he admired the frost-covered wolves, raised from pups, since they wanted to romp at -39°F.

Game supplied much of his food in the Big Bog. Venison he never learned to like and of Ruffed Grouse he soon wearied. Of snowshoe hare he never tired, and snares were in constant operation. At one time in South Dakota, he cooked a skunk, which to him tasted like chicken, but after eating one piece, his prejudice was so great that the remainder was discarded.

More than a normal share of physical ills fell to his lot. At the age of seven he had polio and for a year could not walk without crutches. His right leg remained permanently crippled. This misfortune intensified his innate love of nature by causing him to spend as much time as permissible in the outdoors in order to restore his physical condition as much as possible. Subsequently he had rheumatic fever and an appendectomy. In 1960 he revisited the home farm and Lake Tetonkaha. While in a reverie of sadness over the changes produced by man, he stepped into a concealed badger hole and broke an ankle. He ignored the handicaps of the body and drove himself in his field work to the physical limit.

Only a brief acquaintance with Paul was necessary to reveal his singleness of purpose and intense interest in his investigations. Even in his

last years it was sometimes difficult to steer the conversation from what he was doing. During his graduate period he was frequently at our table. My small boys pestered him to be given a ride in his open car or taken on his field trips. All this he looked upon as interference or a waste of time. One summer I received a package containing a wolf trap. A day or so later I received a card stating: "I am sending you an instrument with which to catch those brats."

Probably due to his environment, he had a predominating interest in marshes and their wildlife. Aside from the marshes of his home county he had broad experience with others. In 1921 he saw the huge plain bogs and swamps southwest of James Bay. Upper Red Lake, Thief Lake, Thief River, and the Big Bog in northern Minnesota, first seen in 1920, were revisited in 1948. On two occasions he inspected the wetlands near Washington, D.C., and in 1929, under the guidance of Herbert Stoddard, he visited marshes in southern Georgia and northern Florida. A trip in 1934 was made to inspect the waterfowl breeding areas in the north central states and the prairie provinces of Canada. Among the places visited were Medicine Lake in northeastern Montana, Mud Lake in Minnesota, and the Qu'Appelle River marshes of Saskatchewan. In the summer of 1948, as a guest of the Hudson's Bay Company and the Province of Manitoba, he had an opportunity to give particular attention to the Netley and Delta marshes of Lake Manitoba. The same summer he visited the Lower Souris Marshes, North Dakota; Red Rock, Flathead, and Seeley lakes, Montana; and wetlands in Yellowstone Park and northeastern Wyoming. The following summer he investigated muskrat populations in southwestern Wyoming, northern Utah, southern Idaho, and southern Oregon, and the Sand Hills of Nebraska. He was as much acclimated to marshes as the muskrat itself.

From September, 1958, to August, 1959, he was a Guggenheim Fellow and visiting professor in Scandinavia. Approximately the first six months were spent at Lund University in Sweden where he lectured and advised graduate students. Two months were spent at the Erken Limnological Laboratory near Uppsala, and an equal amount of time at the Boda Research Station near Enånger. He also visited Norway, Denmark, and Finland. The sojourn abroad gave him an opportunity to see a wide variety of ecological areas.

Realizing the value of the ecological research done in Scandinavia and published in Scandinavian languages, he had, years before going to Northern Europe, taught himself Norwegian, Danish, and Swedish. This background made his stay in Europe all the more profitable.

Following his attainment of the Ph.D. at the University of Wisconsin in 1932, he became Research Assistant Professor in Zoology at Iowa

State University, Associate Professor in 1938, and Professor in 1948. He did no formal teaching until the latter years of his life (as a result, few graduate students benefited from his great fund of knowledge), but he thoroughly enjoyed teaching. After arrival at Ames, Iowa, he initiated an intensive study of the factors governing muskrat populations and the mink as a predator on the muskrat. The painstaking observations on these two mammals will probably never be excelled.

A bibliography of the publications by him, or as coauthor, includes over 200 titles. In addition there are two long unpublished manuscripts. Even in high school he was interested in composition, though at times the subjects would not come under polite literature. The tales were "hairy-chested," his prizefights being especially sanguinary. A teacher commented that it was not necessary to knock out the reader. In his scientific writing he was very meticulous. He rewrote papers several times and advised young writers to take particular pains in the preparation of their manuscripts. Some of his papers cover the same subject in different language—often editors, having different classes of readers, requested the articles. There was a brief early period during which he wrote complex sentences, the intended meaning of which was difficult to discern. His popular works, written in simple, straightforward style, are a pleasure to read. Always the conservationist, he presented his views without pointing a moral or making a thrust at an indifferent public. His "Muskrats and Marsh Management" (1961) is a model for popular scientific writing. He could turn a phrase superbly—as in describing a young Marsh Hawk attacking a cock pheasant which "wasn't in the mood to tolerate such nonsense"; "green herons, made up chiefly of necks"; and, "heavy-ended fledgling blackbirds."

His main researches were in population dynamics, cycles, predation, food habits of predaceous birds and mammals, and muskrat diseases. Nearly a quarter of a century was spent on muskrat populations and predation upon them by mink. The magnitude of the muskrat study may be judged from his examination of nearly 5,000 young females to determine their breeding condition. He also obtained data on about 2,700 litters of young. Approximately 32,000 hours were spent on Iowa marshes and streams. He discovered the very lethal hemorrhagic disease of muskrats that bears his name. The exact etiological agent remains to be established. Strangely, he found that infection did not occur uniformly throughout a marsh. There were relatively small foci of infection that retained virulence year after year.

An interesting by-product of his work was the discovery, with T. G. Scott, of the skull of a new species of Pleistocene otter (*Lutra iowa*) in the bed of Big Wall Lake, Wright County, Iowa, in 1940. It was de-

scribed and named by E. A. Goldman (*Field Mus. Nat. Hist., Zool. Series 27: 229, 1941*).

Cyclic phenomena he found intriguing and baffling. The human mind is so constituted that it adheres tenaciously to a plausible answer to a natural phenomenon, and for years most biologists believed in a fixed time cycle of game fluctuations. In his first research efforts, the study of Bobwhite populations, he attempted to show that cycles of some regularity existed, though his data scarcely warranted the conclusion. In the wisdom acquired in later years, particularly from his muskrat studies, he became very cautious. Population fluctuations due to drought and disease were unpredictable. He did not like the term "cyclic" but could not think of a better one. He thought that biologists were attaching too much importance to numerical fluctuations. Drought exercised so strong an influence on muskrat populations as to mask cyclic phenomena in populations *per se*. He was able, however, to find cycles in litter size, resistance to disease, and precocious breeding, which were in harmony with grouse and snowshoe hare cycles.

Predation engrossed his attention and he came to several important conclusions in this area. The maximum winter carrying capacity of an area for the Bobwhite was governed by the quality and distribution of food and cover and intolerance to overcrowding. The surplus population, the number beyond the carrying capacity of the occupied territory, will disappear without regard to the number and kinds of predators present. Surplus populations were doomed to disappear in one way or another so that predation should be viewed as a "by-product of population" rather than as a dominating influence on numbers. Decimation of high populations of small rodents comes from starvation or disease. Though predation may continue year in and year out on a given species, there comes a time when its small number renders hunting a waste of time and predators find other species more vulnerable.

As to muskrats and mink, he found that the latter preyed upon the excessive number of young muskrats, the old, physically disabled by disease or battle, and individuals rendered insecure by nature of the habitat. At best their life expectancy was poor. His mature judgment (1956) was: "In the frittering away of doomed surpluses, or of parts of populations doomed because of emergencies, it seems to make so little difference in the end what the specific agencies of mortality may be that I rarely feel sure of the logical propriety of ascribing true depressive influence to any one agency" (no. 176 of bibliography).

He was given all the honors that the Wildlife Society can bestow. In 1941 he received, jointly with Frances and F. N. Hamerstrom, Jr., the Publication Award for the bulletin, "The Great Horned Owl and its

prey in north-central United States"; and again in 1947 for his paper, "Predation and vertebrate populations." Finally in 1962 he was awarded the Leopold Medal. Foreign recognition came in words of high praise. F. S. Bodenheimer (*Animal ecology to-day*. The Hague, 1958: 105) wrote: "Paul Errington is today the outstanding authority on all problems connected with predation, especially in mammals."

He became a Member of the A.O.U. in 1932, an Elective Member in 1936, and a Fellow in 1952.

Death came in his sleep on November 5, 1962. He is survived by his wife Carolyn Storm and two sons. Of his wife, I heard him remark: "She is my best literary critic."

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