Biographic Memoir of Ernest Ingersoll: Naturalist, Shellfish Scientist, and Author

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Introduction

The name Ernest Ingersoll is wellknown to many shellfishery biologists as the author of two outstanding monographs on the shellfisheries of the United States and Canada in the 1880's. The first (Ingersoll, 1881a), entitled "A Report on the Oyster-Industry of the United States," was a 252-page description of historical and contemporary oyster fishing, marketing methods, and statistical data in the eastern provinces of Canada and the coastal states of the United States. The second (Ingersoll, 1887), entitled "The Oyster, Scallop, Clam, Mussel, and Abalone Industries," was a 120-page summary of the first monograph about oysters as well as a history and description of contemporary methods and statistical data of the other shell fisheries. Although Ingersoll was, by profession, a naturalist and author but only briefly a shellfish scientist, these monographs are regarded as benchmarks, providing the principal descriptions of shellfisheries in North America in the 1700's and 1800's.

Early Life

Ernest Ingersoll was born in Monroe, Mich., on 13 March 1852, the son of Timothy D. Ingersoll, a dental surgeon and writer on dental topics, and Eliza (Parkinson) Ingersoll. Like many naturalists of that era, his principal amusement as a boy was searching through the woods and fields around Monroe for rare and curious natural history specimens. In 1867, he entered Oberlin College, Ohio

where he studied science and was curator of the college museum; he was graduated in 1871. From the fall of 1872 to the spring of 1874, he was a student assistant in the Museum of Comparative Zoology at Harvard University, helping with collections of birds and mammals (Avery, 1926; The New York Times, 1946). The museum was founded and administered by Professor Louis Agassiz, the eminent teacher-naturalist. Ingersoll attended zoology classes at the Lawrence Scientific School (Harvard University) and spent the summer of 1873 as a student of Professor Agassiz at his seaside school on Penikese Island, near Woods Hole, Massachusetts (Ingersoll, 1933).

Western Expeditions

The death of Agassiz in 1873 led Ingersoll indirectly into journalism, when he wrote a sketch of Agassiz containing some highlights of his teachings and submitted it to The New York Tribune. The editor published it immediately in January 1874 (no day available) and sent Ingersoll a check for \$40 with a note asking him to write more articles of scientific interest (Ingersoll, 1933). He did so the following year, after accepting a position as a zoologist with the expedition of Dr. Ferdinand V. Hayden of the United States Geological and Geographical Survey of the Territories, then working in Colorado (Fig. 1).

The expedition's mission was to describe the topography, geology, and natural history of the West. Ingersoll was assigned to the Photographic Division, under the leadership of William Henry Jackson. Jackson's photographs during this and later expeditions were to make him famous, and he and Ingersoll became life-long friends (*The New York Times*, 1946). Ingersoll (1875) published a paper on his zoological survey entitled, "Report on the natural history of the United States Geological Survey of the Territories, 1874", summarizing his collections and identifications of freshwater invertebrates, mainly mollusks.

While on this expedition, Ingersoll and Jackson were the first trained scientists to see and describe the Mesa Verde ruins in southwest Colorado, cliff dwellings of an ancient Indian civilization (Fig. 2) (*The New York Times*, 1946). First news of their finding reached the East through Ingersoll's dispatches in columns of *The New York Tribune* in the summer of 1874. The finding created wide interest, especially among anthropologists. When the expedition reached its home base at Colorado Springs, Colo., Ingersoll found a telegram from the *Tribune* editor, offering him a job.

As a reporter to the *Tribune*, he covered mainly religious camp meetings in and around New York City (Ingersoll, 1933). From 1875 to 1877, he also was natural history editor of a magazine called *Forest and Stream and Rod and Gun* (forerunner to *Field and Stream*), and contributed articles to it as well as to other periodicals.

In 1877 Ingersoll made a second trip to the West, camping for 3 months in Wyoming, Idaho, and other relatively undeveloped regions. He contributed articles to *Forest and Stream and Rod and Gun*, *Harper's*, and *Scribner's* magazines and *The New York Herald* on his observations. In 1878-79 he was on the editorial staff of *Science News*. In 1879 the Century Company hired him to visit Colorado and write an article about frontier and mining life there (*The New York Times*, 1946).

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The Shellfishery Monographs

In 1879 Ingersoll also began his U.S. shellfishery surveys (Fig. 3). His monographs were part of a series, written as a joint enterprise between the U.S. Fish Commission and the Census Bureau. The intent of these agencies was to describe comprehensively the methods of the fisheries, the distribution of the fishing grounds, and the natural history of commercial marine animals. G. Brown Goode, Assistant Director of the National Museum, organized and directed the preparation of the monographs. Twentytwo agents, one of whom was Ingersoll, then only in his late 20's, conducted the field investigations (Baird, 1884). (Goode had already been engaged for a number of years in a systematic, historical, and statistical investigation of American fisheries.)

An office staff supported Goode's field agents. It handled correspondence, searched past records, and helped prepare the reports of the field agents for publication. The Census Bureau paid for the field work, while the Fish Commission paid for the preparation of the monographs (Baird, 1884).

Ingersoll may have been chosen to write the shellfishery monographs because he had demonstrated experience in observing various areas in the West. The techniques he had used in covering topography and animals (including mollusks), using interviews of settlers and Indians to learn about their histories and way of life, and writing about them, were the same as would be needed to survey the shellfisheries and prepare the two monographs. His experiences as a reporter and editor were useful also. Ingersoll worked 22 months on the project, from 1 October 1879 to 1 July 1881.

Ingersoll's monographs (1881a, 1887) have importance because they are the only good histories and documentation of shellfishing practices prior to 1900. They related that many people were employed in shellfishing, and shellfish were common in people's diets in coastal North America in the 1800's. The monographs were typical of Ingersoll's writings as they included all available pertinent information, interesting his-



Figure 1.—Five members of Ferdinand V. Hayden's exploring expedition in Colorado. Ernest Ingersoll, Zoologist, is standing at right, Ferdinand V. Hayden, Geologist-in-Charge, is seated in the center, and William Henry Jackson, Photographer, is seated at right. The illustration is autographed by Ingersoll and Jackson. Source of photograph: Library of Explorers Club, New York City.

torical perspectives, overviews, and vivid images with sometimes humorous details and statistics of subjects previously overlooked by other writers. Ingersoll based each of his publications on thorough field and library research. He wrote well, in a clear and lively style.

Extensive Travels

Ingersoll studied the shellfisheries from the Maritime Provinces of Canada to Texas by travelling along shorelines and visiting ports and marketing cities. He also reported on the oyster industry of California using information from another investigator. He described the local beds, boats and gear, and daily and annual landings, as well as pertinent regulatory legislation, and collected statistics, some of which he had to estimate. For vignettes and shellfishery histories, he interviewed local authorities and fishermen and collected documents. His on-site visits and interviews gave his reporting strong credibility. In the 1800's, pollution of shellfish beds was not a major concern since the only polluted areas were adjacent to cities, such as New York. People were interested in predators which limited shellfish

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Figure 3.—Portrait of Ernest Ingersoll at the age of 26 in 1878, the year before he began his shellfishery surveys. Source of photograph: Linnaean Society of New York, New York City.

Figure 2.— Mesa Verde dwellings in Colorado, photographed by William Henry Jackson, when he and Ernest Ingersoll discovered them in 1874. Ingersoll is sitting and recording his observations beside the dwellings. Source of photograph: Museum of New Mexico, Santa Fe.

abundances, and thus his monographs included discussions of control measures for drum-fish, *Pogonias cromis*; oyster drills, *Urosalpinx cinerea*; and starfish, *Asterias forbesi*.

Ingersoll (1881a) wrote that the earliest explorers of North America had observed Indians eating a variety of shellfish. On Atlantic shores, Indians ate oysters, blue mussels, horse mussels, razor clams, cockles, bay scallops, and hard clams, as well as freshwater unios and anodonts, and left large shell-heaps (middens). Along the Gulf coast, Indians left shell-heaps of many shellfishes, and along the Pacific Coast they left shellheaps mostly of mussels. He recorded that they also left shell-heaps of freshwater mussels and clams along the banks of a number of rivers, including the Mississippi, Ohio, Susquehanna, Delaware, Merrimac, and Concord. Ingersoll mentioned that shell-heaps were worldwide in distribution. For example, the shores of Denmark and Norway had ancient shell-heaps up to 300 m long, 60 m wide and 3 m deep. They were the midden heaps of ancient mollusk eaters and contained blackened stones, indicating fireplaces, and fragments of animal bones, rude utensils, and implements.

Chesapeake Bay Oysters

Chesapeake Bay was the largest producer of oysters for direct consumption and as a source of seed for more northern planters. In 1880 Chesapeake Bay produced some 17 million bushels of oysters and about 40,000 people were em-

ployed in that industry. In the early to mid 1800's, when the supply of native oysters in northern estuaries failed to meet the demand, planters from Massachusetts, Narragansett Bay, Rhode Island, Long Island Sound, Raritan Bay (New York and New Jersey), and Delaware Bay sailed schooners and sloops to Chesapeake Bay to purchase seed for replanting beds in their waters. The captains bought oysters from tongers in Maryland and Virginia. When the vessels arrived at their destinations, additional men reinforced their crews and using sixtine forks they shovelled the cargos of 2,500-5,000 bushels of oysters onto beds. The quantities were impressive. From 1850 to 1860, planters imported 100,000-150,000 bushels annually to Wellfleet, Mass. In 1880 planters imported about 450,000 bushels to Narragansett Bay, 450,000 bushels to Long Island Sound, 300,000 bushels to Raritan Bay, and 700,000-800,000 bushels to Delaware Bay. They harvested the

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Figure 4.-Figure from Ingersoll (1881a) entitled "Oyster barges at the foot of West Tenth Street, North River, New York City."

oysters and sold them to various oyster markets the succeeding fall.

Oyster Markets

One of the largest markets for oysters was New York City (Fig. 4), where they were enjoyed by rich and poor alike. The city was the principal market for oysters grown from Norwalk, Conn. to the midcoast of New Jersey. Ingersoll (1881a) wrote: "Oysters were pickled, stewed, baked, roasted, fried, and scalloped; oysters were made into soups, patties, and puddings; oysters with condiments and without condiments; oysters for breakfast, dinner, and supper; oysters without stint or limit, fresh as the pure air, and almost as abundant, are daily offered to the palates of the Manhattanese, and appreciated with all the gratitude which a bounty of nature ought to inspire."

The largest oyster market on the east coast, and probably in the world, was Baltimore. During the season from 1 September 1879 to 15 May 1880, fishermen brought 7 million bushels of oysters to Baltimore for local consumption or packing and subsequent shipment.

Soft and Hard Clams

Ingersoll wrote that soft clams occurred from the Maritime Provinces to Virginia. Fishermen gathered them with iron rakes. One of the largest producing states was Maine where 318,383 bushels were dug in 1879; cod and mackerel fishermen purchased 90 percent of them for bait. Those used as food were eaten by the fishermen (who were also farmers), local villagers, or by people who came down from the interior, as Indians had done, to enjoy a feast of clams and seaside recreation. Fishermen also sold some in local markets. In 1880 total landings of soft clams along the east coast of North America were about 1 million bushels.

Ingersoll stated that quahogs (hard clams) were abundant from Cape Cod to Florida, the largest supply coming from bays on the south shore of Long Island. In Great South Bay, Long Island, fishermen raked and tonged quahogs throughout the year, but mostly in summer when oysters were not in season. The number of diggers totalled 500 men and 200 boys. In good days, each dug about 3 bushels of quahogs which sold for a total of \$2. Buyers shipped most to New York City and sold the remainder to hotels on the island. In 1880 total landings of quahogs along the east coast were about the same as for soft clams, just over 1 million bushels as recorded by Ingersoll. The following two paragraphs from his 1887 monograph are examples of the human touches Ingersoll frequently included in his publications.

He wrote: "A 'clam-bake' expresses the sum of all human happiness to the Rhode Islander, and to gather all his relatives and friends on the sea-shore, bake the roystering clam in dried seaweed, and eat it with other good things, fills his cup of joy. As enthusiasm and emotion always seem odd, and perhaps ludicrous to those who are not under its influence, the New Englanders get much fun poked at them by outsiders. It is related, for example, that a Sundayschool teacher in Rhode Island told the pupils that there were poor children in Illinois who had never experienced the supreme delight of a clam-bake, and the last penny in the juvenile pocket was dropped in the plate in aid of the benighted sufferers."

Bay Scallops

Ingersoll stated that fishermen gathered bay scallops by towing small, triangular dredges from rowboats or sailboats. The scallops were opened at the shore, commonly by women. Some young wives opened scallops by hand "...with cradles behind them containing less than year-old babies...singing merrily some baby song to quiet the young ones, and by an indescribable motion of the left foot rocking the cradles with a gentle motion all-sufficient to keep the nurseling quiet. In another corner was a mother nursing her three-weeks-old babe at an interval in the work."

Mussels, though abundant, were not consumed to any extent, according to Ingersoll. Farmers used some for fertilizer.

Since the early 1900's, oyster production has declined sharply. The principal causes of the decline were the ready availability of beef and poultry (which sharply reduced the demand for oysters), pollution of beds rendering some oysters inedible, and diseases which caused large mortalities of oysters. On the other hand, people increasingly eat mussels now. Farms in eastern Canada and Maine grow most of them.

Later Writings

Following his shellfish survey work, Ingersoll spent his summers from 1882 to 1887 touring wilderness areas of the western United States and Canada and writing books and articles about his travels. He also worked as editor of Manhattan Magazine during 1883-84. Part of the time he worked for the Canadian Pacific Railway, writing guidebooks and other travel-related publications for it, thus acting as the first press agent for a railroad (Schwarz and Schlaikjer, 1947). In 1887 and 1888, while continuing this work, he lived in Montreal, but afterward moved to New York City (Avery, 1926).

Ingersoll wrote about 20 books during the late 1800's and early 1900's. Some

of them include: "Nests and Eggs of American Birds" (1880), "Friends Worth Knowing: Glimpses of American Natural History" (1881b), "Birds Nesting" (1882), "Knocking 'Round the Rockies" (1883), "The Crest of the Continent" (1885), "Down East Latch-Strings" (1887), "Wild Neighbors" (1897), "Gold Fields of the Klondike and the Wonders of Alaska" (1897), "The Book of the Ocean" (1898), "Nature's Calendar" (1900), "Wild Life of Orchard and Field" (1902), "The Wit of the Wild" (1906), "The Life of Animals The Mammals" (1907), and "Zoology; the Science of Life" (1922).

Ingersoll's articles about the outdoors, Indian life and Indian-Caucasian interactions, fur trading, bears, beavers, buffalo, and similar topics appeared in a variety of magazines, journals, and newspapers over the years. Besides the monographs on shellfisheries, his publications related to fisheries included: 'A short lecture on fishes'' (1877); "On the fish-mortality in the Gulf of Mexico" ([1881] 1882), the first published account of fish mortalities caused by red tides in Florida; "Wampum and its history" (1883); "Mollusks in general" (1884); "Natural history of economic mollusks of the United States" (1884); a chapter entitled, "Fishing and other marine industries" in "The Book of the Ocean" (1898); and a chapter entitled, 'Catching menhaden off Montauk' in "Wit of the Wild" (1906). Considered as one of the eminent naturalists of his period, Ingersoll was invited to serve as editor and submit contributions to the Standard Dictionary, New International Dictionary, Encyclopedia Americana (The New York Times, November 14, 1946), and The Standard Library of Natural History (Published by The University Society of New York in 1908).

One of the literary banes of the late 1800's and early 1900's was "Naturefaking" (guessing about or embellishing the natural history of wild animals and plants and publishing the results), but it was never a pitfall to Ingersoll. He wrote only about what he had observed or considered accurate in the literature. When President Theodore Roosevelt severely criticized "nature-fakers" in a published interview, he mentioned Ingersoll as a writer whose accuracy was exemplary. Afterward, Roosevelt invited him to the White House for a luncheon and the two became friends. In 1907 the President appointed him head of the Oyster Commission in Washington (Schwarz and Schlaikjer, 1947) (no record was found of his duties or length of service in this position). Among his other friends were the famous naturalists William Beebe and John Burroughs.

Environmental Protection Urged

Ingersoll was one of the early advocates of the protection of natural habitats and wildlife in the United States. In lectures delivered in the late 1800's to nature and women's clubs in the midwest under the auspices of the University of Chicago, he stated that all life in a given region is interconnected so that disturbance of any part disarranges the whole. He urged each person to protect natural habitats and also desist from the pleasure killing of wild animals. In a lecture presented in about 1888, Ingersoll (N.d., ca. 1888) said: "I believe that every person should regard himself as a trustee of nature for the benefit of his fellows and posterity; and that the wanton destruction of animal life is a sin against nature, against heaven and against humanity. I believe that the man or woman who commits that sin should be looked upon with such stern disfavor as that which society metes out to those who transgress the laws of the land." He stated that a well-filled notebook was worth more than boxes of dead specimens, photographs were worth more than stuffed animals in a museum, and education about enjoying the activity of life and beauty of animals should begin at childhood. He also stated that man could have prevented much of the destruction of natural areas and animal life, as he moved westward across the United States, through wise planning (Ingersoll, N.d., ca. 1888). Moreover, he was an excellent speaker. His lectures were highly instructive and interesting, holding the attention even of children who attended them (according to reports in the Galesburg, Illinois Register and Newark, Ohio Tribune on file at Mus. Nat. Hist., N.Y.).

From the early 1890's to about 1905, Ingersoll worked part-time for Rand,

McNally, and Co., researching, writing, and updating illustrated guidebooks. They described New York State, the Hudson River and Catskill Mountains, New York City, the New England states, Washington, D.C., and the southwestern states.

From 1900 to 1938 Ingersoll lived in New York City and wrote a weekly column for a Montreal newspaper, The Family Herald and Star Weekly (Fig. 5). The newspaper sought to increase its readership by including a column devoted to natural history and hired Ingersoll, a well-known authority and a proven, capable writer on such subjects, to write it. His column, titled "The Natural History Club," reached about a half million people a week throughout Canada and the Caribbean. It consisted of answers to readers' inquiries and presentations of new information about nature. From readers' letters, it became apparent that birds were the object of most interest and, at the time, a good identification guide, particularly for western birds, was lacking. Thus Ingersoll prepared a classification list of nearly all of the birds of Canada, giving a description of each species. This emphasis on birds ran for more than a year and was of great benefit to Canadian naturalists. Another notable service was a detailed review of eastern Canadian snakes (12 articles), illustrated and partly written by Ingersoll's only surviving child, a daughter, Helen, who also illustrated some of his books. Other articles featured insects, salamanders, and turtles and the farming of deer, foxes, frogs, marten, and mink. The readers of the newspaper regarded Ingersoll as a great oracle and sage about nature (The Family Herald and Weekly Star, October 14, 1925; The New York Tribune, March 11, 1932).

Ingersoll was a member of several prestigious organizations in New York City. He was one of two founders of the Linnaean Society of New York (naturalists, systematists, and zoologists) in 1878 and was its first secretary (Schwarz and Schlaikjer, 1947); he was elected a fellow of the Society on its 50th anniversity in 1928. He was a member of the National Association of Audubon Societies and the New York Zoological Society. He was also a member of the Authors Club



Figure 5.—Portrait of Ernest Ingersoll at about 65 years of age. Source of photograph: Library of Explorers Club, New York City.

(critics, dramatists, journalists, novelists, and poets; about 250 members), and was its secretary from 1920 to 1925; a member of the Barnard Club (authors, bankers, diplomats, lawyers, and painters; about 650 members), and the Salmagundi Club (architects, engravers, illustrators, painters, and sculptors) from 1916 to 1937. He was present at the founding of the Explorers Club in 1905 and was a member thereafter; he was its director and secretary for many years and editor of its quarterly magazine, *The Explorers Journal*, from 1926 to 1931. He was, in effect, a real Renaissance man.

Ingersoll retired from writing his newspaper column in 1938 when he was 86 years old, ending a career that lasted a full 65 years. He died in a nursing home in Brattleboro, Vt., on 13 November 1946 at the age of 94 (Schwarz and Schlaikjer, 1947).

Ernest Ingersoll spent his career following one of the tenets of his mostadmired mentor, Louis Agassiz. The latter taught his students that their mission in life should be to make science popular and interesting to the public, and if they did that it would be a blessing to the country (Ingersoll, 1933). The care which Ingersoll took with his writings, his many publications, and the subject matter he chose all demonstrate that he cared a great deal for his fellow man and the natural world. Ingersoll never mentioned his shellfishery surveys and monographs for the U.S. Fish Commission and the Census Bureau in his later writings. Perhaps he did not realize how valuable they would come to be to future generations of shellfishery biologists.

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