

Phycological Trailblazer

No. 33

De Alton Saunders

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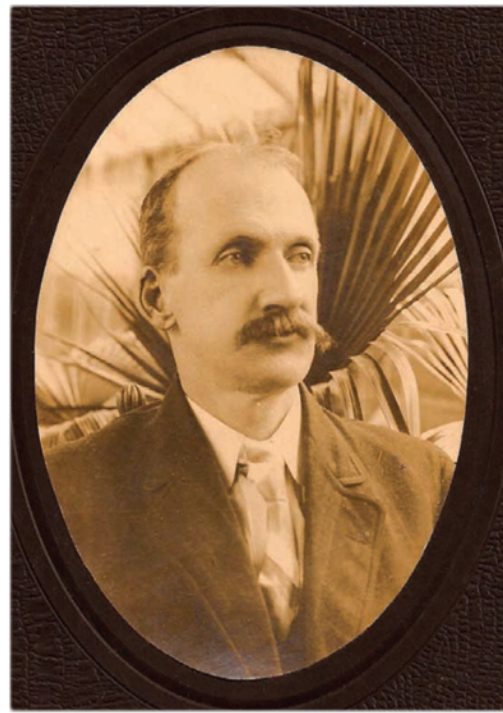
The inclusion of De Alton Brooks Saunders in this series of “Phycological Trailblazers” is owing to his pre-1900 studies of Pacific coast brown algae and his participation as the algal expert in the Harriman Alaska Expedition during the summer of 1899. Indeed his moniker during that 2-month cruise to Alaska, bestowed on him by none other than fellow shipmate John Muir, was “Seaweed Saunders”, a name that subsequent generations of his family affectionately refer to him. Although his interest in algae over the full period of his scientific profession was small, he made some useful contributions at a time that exploration was still in vogue. This also gives me an opportunity to include his portrait, which apparently has never been made available.

Saunders’ early professional career began at the South Dakota Agricultural and Mechanical College in Brookings, South Dakota, where he served as head of the Department, while also a professor of botany and entomology, in the period of 1896-1903. He headed an expedition to the Big Stone Lake region during 1896, where he collected 400 specimens of forage plants that were added to the herbarium. In 1898, he undertook a study of millet, which involved his classifying millets from more than three dozen seed sources. The most notable

contribution at this time was his involvement with the Agricultural Experiment Station, and he laid out and supervised the establishment and planting of 50 quarter-acre plots at the Highmore Substation (Cooperative Range Experimental Station). The goal of this research was to develop and evaluate new crop species for grazing and winter forage. He also produced a flora of the ferns and flowering plants of South Dakota (Saunders, 1899a).

Saunders spent parts of two years, 1895 and 1896, studying algae, especially brown algae, on the coast of California. Saunders (1895) described what he regarded to be a new species of *Costaria*, *C. reticulata*, from near Pacific Grove on the Monterey Peninsula. Smith (1942) later based his new genus *Dictyoneuropsis* on this species, which he placed in the Lessoniaceae. The gene-sequencing studies by Lane et al.

(2006) resulted in a major re-organization of the Laminariales and revealed that the generic distinction between *Dictyoneurum* and *Dictyoneuropsis* was not as great as previously believed. Silva (in Pedroche et al., 2008) transferred Saunders’ *Costaria reticulata* to *Dictyoneurum*. From the dates and the localities of some of the new taxa described by Saunders (1898), he made collections at San Pedro in southern California and Pacific Grove in central California. He spent July through September of 1896 on the Monterey coast. He described many new species, such as *Scytosiphon bullosus* [now *Colpomenia*



De Alton Saunders [Courtesy of Jennifer Miller].

bullosa (D.A. Saunders) Yamada] (fig. 1), *Colpomenia tuberculata*, *Ectocarpus corticulatus*, *E. acuminatus* [now *Feldmannia acuminata* (D.A. Saunders) Hollenb. & I.A. Abbott], *E. hemisphaericus* [now *F. hemisphaerica* (D.A.

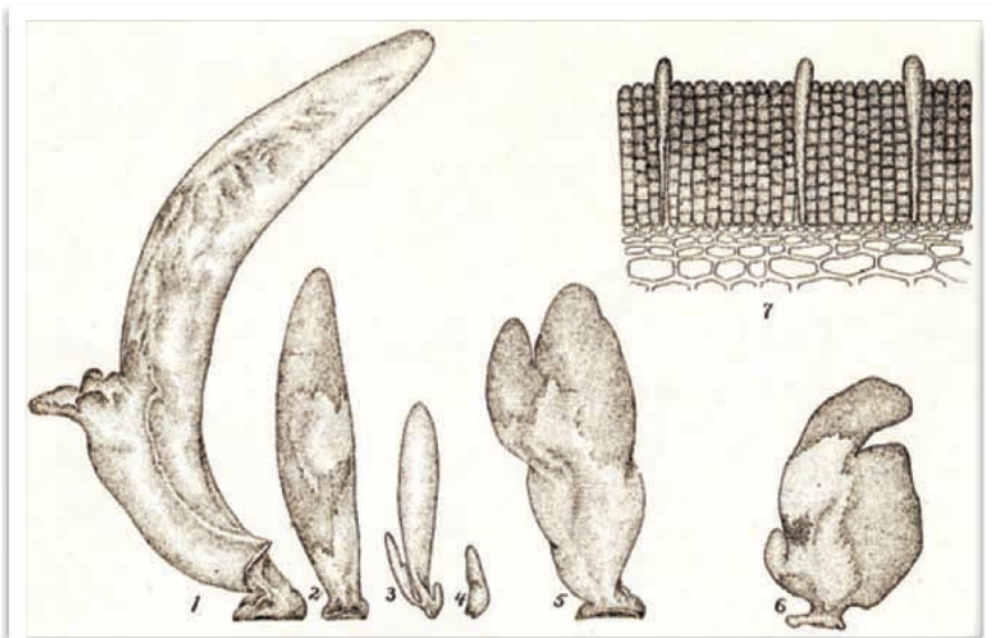


Fig. 1. *Scytosiphon bullosus* [now *Colpomenia bullosa* (D.A. Saunders) Yamada][from Saunders 1898].

Saunders) Hollenb.], *E. chitonicolus* [now *F. chitiniola* (D.A. Saunders) Levr.], *E. ellipticus* [now regarded as conspecific with *Spongonema tomentosum* (Huds.) Kütz.], *E. paradoxus* var. *pacificus* [now *Hincksia saundersii* (Setch. & N.L. Gardner) P.C. Silva], and *Sphacelaria dichotoma* [now regarded as conspecific with *S. divaricata* Mont.]. He also described a new genus of foliose brown algae, *Halorhipis*, based on *Punctaria winstonii* Anderson (1894). From this time period he described the new genus and species *Hapalospongidion gelatinosum* (Saunders, 1899b). Setchell & Gardner (1924) regarded the genus as congeneric with Reinke's (1888) *Microspongium* from Europe. But Hollenberg (1942) argued that the two genera were distinct, a view that has been accepted by subsequent workers. From the same 1899 paper, Saunders' record of "*Leptonema fasciculatum* Reinke" was later interpreted by Collins (1907) to be the new species *Pylaiella gardneri*. Saunders' (1901b) *Alaria curtipes*, described from central California, was treated by Setchell & Gardner (1925) as conspecific with *A. marginata* Postels & Rupr.

Although still in South Dakota, Saunders' work on west coast brown algae must have been sufficient basis for his being selected to join the Harriman Alaska Expedition during the summer

of 1899. Saunders' qualifications to be enlisted as one of the botanists (namely, the phycologist) might seem limited, given his Midwestern agricultural background. One circumstance is that William A. Setchell of the University of California, Berkeley, the person with stronger credentials at the time, was to participate on a separate expedition to Alaska, along with a large contingent of fellow Berkeley scientists. It is a coincidence that two such scientific expeditions to Alaska would be taking place simultaneously that summer (Setchell & Gardner, 1903; Wynne, 2009).

Mr. Edward Henry Harriman (Klein, 2000), President of the Union Pacific Railroad and worth \$60 million at that time, made the decision to sponsor and fully fund an Expedition to Alaska, and with advice from C. Hart Merriman he assembled an impressive total of 30 scientists to accompany him and several family members on a summer cruise from Seattle up into Alaskan waters and as far west as Russia. Essentially, this grand adventure was the result of Harriman's doctor telling him that he needed to take some time off and relax. In addition to Saunders as the phycologist, the scientific crew included: C. Hart Merriman (first chief of the U.S. Biological Survey and a founding

member of the National Geographic Society), John Muir (naturalist and founder of the Sierra Club), William Trelease (botanist and director of the Missouri Botanical Garden), Henry Gannett (chief geologist of the U.S. Geological Survey), George B. Grinnell (anthropologist and founder of the National Audubon Society), Robert Ridgway (curator of birds of the U.S. National Museum and president of the American Ornithologists' Union), Trevor Kincaid (entomologist from the University of Washington), William Ritter (zoologist at the University of California and president of the California Academy of Sciences), and Charles A. Keeler (ornithologist and director of the museum of the California Academy of Sciences). An article by Lindsey (1978) included a "staff picture" of members on the expedition and gives brief synopses of the scientists aboard. It was prefaced by "reminiscences" made by W. Averell Harriman, who at age 7 went along on the adventure and was the last surviving participant.

Edward Harriman went to great effort and expense to make the voyage as comfortable as possible for his scientific guests (and his own family). Most of the scientists had traveled in "high style" departing on May 23 from Grand Central Station in New York City on the "Utopia", Harriman's train with five luxuriously fitted "palace cars" (Goetzmann & Sloan, 1982). The train reached Portland, Oregon, where they met up with Muir and Keeler, who had arrived by train from California. The Harriman party spent the night in the Portland Hotel. The next morning the special train proceeded north to Seattle, where they were met by others, including Edward S. Curtis, the relatively young photographer from Seattle, whose future career would be forever molded by his experience on the expedition. Curtis would go on to become the pre-eminent photographer of Native Americans, the recorder of their rich cultures. In Seattle, the port of embarkation, the steamship *G. W. Elder* had been outfitted with not only the latest in scientific instruments but also with a piano, an organ, a library with 500 books, a lantern slide projector, a recording device called a graphophone, hunting equipment, canvas

tents, plus the necessary food, wine and champagne, and fresh water for the trip (Goetzmann & Sloan, 1982). The ship left Seattle at 6:00 PM, 31 May. A stop was made in Victoria on Vancouver Island, where there was time to visit the Museum. Then the ship moved northward along the coast of British Columbia. Once it moved out from the protected waterways, many suffered from seasickness. The *Elder* was notorious for being a bad "roller" in high seas. On the 4th of June, a stop was made at Merlakala, a village on Annette Island, south of Ketchikan, Alaska, where Father William Duncan had a missionary settlement of refugee native Americans. One of the scientists was so caught up with observations that he was almost left behind. So a sign-out system using pegs on a large painted board was then installed to avoid anyone being accidentally left behind. The next day, at Wrangell, Saunders rose at 3 AM to make the most of the low tide and made his way along the shoreline with the many large dugout canoes hauled ashore, to gather seaweeds (Goetzmann & Sloan, 1982). This was the first real opportunity to explore on "Alaskan soil", to take specimens and make photographs. Then on June 6, Skagway was reached, a boom town because of the discovery of gold. The White Pass railroad took miners from Skagway to the gold fields. Saunders and four others set out in a small steam launch to explore the area, while others rode the White Pass railroad to the summit of White Pass, a distance of 21 miles. The train went through Dead Horse Pass, which was regarded as the gateway to the gold rush. On June 8 in Juneau the *Elder* picked up the five scientists who had been in the field.

The next stop for the *Elder* was Glacier Bay, which was the longest stop made on the expedition, June 9 – 14. A dozen, including Harriman, hiked for 24 hours to "Howling Valley", with hopes to find a bear; that search was futile. Exploration by a separate party, including Muir, led to the discovery that the Grand Pacific Glacier was actually divided into three portions, and they decided to name the largest of these lobes the "Harriman Glacier". Saunders, Ritter, Kincaid, and some others used the time to carry

out dredging for marine life from the ship. June 15 – 18 was spent at Sitka, then the capital of Alaska territory. The Russian influence in the architecture and the customs was obvious. Harriman was able to capture Tlingit songs on his graphophone. A mission settlement at Yakutat and the Malaspina Glacier were visited on June 19. One of the natives, who was very knowledgeable of the coastline, was hired by Harriman to be a guide. "Indian Jim" stayed with the expedition for the duration. The ship's arrival at Yakutat Bay coincided with the locals' annual seal hunt. The smell of the discarded seal carcasses rotting in the sun was overwhelming, causing John Muir to walk away in disgust. But Edward Curtis observed the skinning procedures and photographed the activities (Goetzmann & Sloan, 1982). Saunders and a few others pitched tents on the shore. Four days were spent exploring the Malaspina Glacier (which had been earlier named by Dall) and Disenchantment Bay. A sea otter pelt was purchased by Harriman. It was then thought that the sea otter was possibly extinct. The *Elder* was referred to as a "floating university", and most evenings a lecture would be given by one of the scientists.

A salmon cannery at Orca at the easternmost portion of Prince William Sound was visited, and several gold miners preparing to return to the U.S. were encountered. The miserable condition of the Asian cannery workers was apparent as was the profligate usage of Alaska's natural resources (Goetzmann & Sloan, 1982). Prince William Sound was explored for several days in late June, and an unknown fjord was found, which was named "Harriman Fjord". Some of the scientists went ashore to camp and explore, while the *Elder* returned to Orca to prepare a broken propeller, the result of Harriman's overzealously pushing the Captain to take the *Elder* into narrow fjords. Harriman was somewhat obsessed with his desire to bag a trophy bear, and learning that bears were more easily encountered on Kodiak Island, he directed that the *Elder* next head to Kodiak. In early July with the help of several guides, Harriman shot his Kodiak bear, even though it was a medium-sized female with a cub

(the cub was also taken). A celebration was held in the town of Kodiak on the 4th of July. The *Elder* next steamed out into the Bering Sea and entered much rougher seas, with accompanying colder weather. On July 7, the *Elder* reached the Shumagin Islands, where five of the scientists, including Saunders, Ritter [namesake of *Codium ritteri* Setch. & N.L. Gardner], and Kincaid set up camp on Popof Island, where they would stay for 10 days to collect specimens, while the *Elder* steamed north into the Bering Sea. For their stay on Popof, they made use of an "old village" that had been built by the government as a station to restrict sealing (Goetzmann & Sloan, 1982). They also went by launch to nearby Unga Island. Thus, Saunders was not with the Expedition on its stop at St. Paul in the Pribilofs nor on the stop in eastern Siberia. It was Mrs. Harriman who had the desire to set foot in Siberia, and so the *Elder* came into Plover Bay, Siberia, and the party visited a small Eskimo settlement.

Back in Alaska, on July 12, the *Elder* stopped at Port Clarence, where the party had a chance to meet with gold miners, whalers and Eskimos. The next stop was St. Lawrence Island and on July 14, Hall Island was reached, where Fuertes was able to easily shoot and collect large numbers of sea birds. On July 15, St. Matthew Island was visited, and two blue foxes were captured. Then the *Elder* was homeward bound, picking up Saunders and his party on Popof Island as the ship steamed southward. There was a brief stop in Juneau, but another stop, an "ill-fated" one, was made that tarnished this expedition. Dellenbaugh had heard of an uninhabited Tlingit village at Foggy Bay, Cape Fox, and had a rough map of how to find it. So during July 26 – 27, the *Elder* anchored at this site, and the crew spent time not only gathering up abandoned artifacts and souvenirs but went so far as to remove many of the totems, taking them onto the *Elder*, with the idea of sending them to natural history museums. It was "reckless greed" (Goetzmann & Sloan, 1982). A century later, when the Harriman Alaska Expedition was re-enacted, repatriation of several of these Tlingit totems took place, in

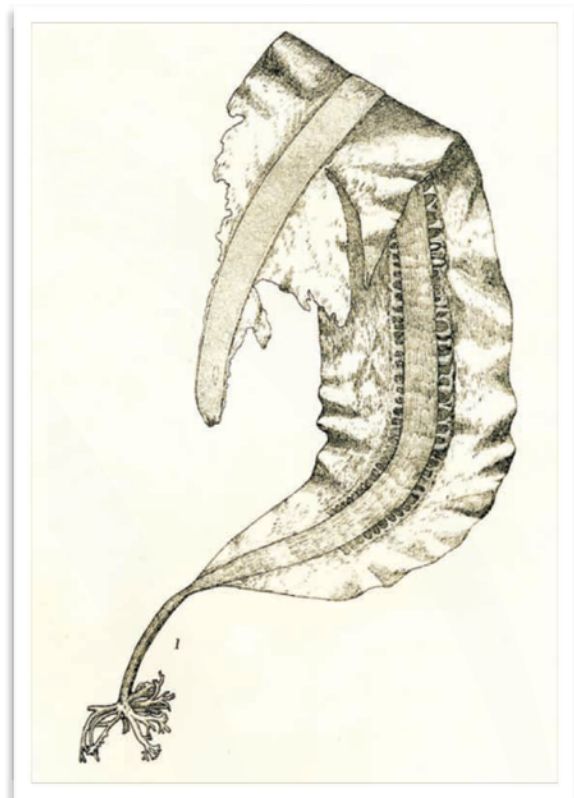


Fig. 2. *Pleurophycus gardneri* Setchell & D.A. Saunders ex Tilden. [from Saunders 1901a].

somber ceremonies returning them to the “Saanya Kwann” clan in Ketchikan (Litwin, 2005).

In the Introduction to his report on the Algae from the Harriman Alaska expedition, Saunders (1901a) acknowledged the generous help in working up his collections of many contemporaries, such as Frank Collins (the green algae), K. Hirn (Oedogoniaceae), M. Gomont (Oscillatoriaceae), A. M. Edwards (diatoms), F. R. Kjellman (“all” the Corallinaceae and help with *Alaria* and *Fucus*), W. A. Setchell (advice on the Laminariaceae and Cyanophyceae), and W. G. Farlow (who determined several species of red algae). He also thanked Dr. C. E. Bessey (Nebraska) and Prof. Conway MacMillan (Minnesota) for sharing their libraries and Miss Josephine Tilden for the loan of her entire Puget Sound collection. So Saunders was indeed the recipient of much assistance. According to Hultén (1940), the phanerogamic and the cryptogamic collections of the Expedition were assembled and now form the nucleus of the Alaskan material in the Nat’l Herbarium, Washington DC (US).

In the case of Saunders’ interacting with Tilden at the University of Minnesota, Paul Silva did some detective work in determining who validated the name of the Pacific coast kelp *Pleurophycus gardneri*. N. L. Gardner, then teaching high school in Washington, found a specimen on Whidbey Island and sent it to Setchell at Berkeley. Saunders, on the Harriman trip, found a specimen at Yakutat Bay, Alaska. Both Setchell and Saunders recognized this kelp with a markedly wide midrib to be a new genus, and they agreed to publish it together, calling it *Pleurophycus gardneri* (Fig. 2). According to Silva (2009), there was some “dithering” on where to publish their description. Then during Christmas break of 1899, Saunders took a trip to Minneapolis to consult with Tilden, who had also collected this same distinctive kelp but on San Juan Island. Through his “inadvertent assistance”, Saunders alerted Tilden to his and Setchell’s plans and also the name they were planning to use. Tilden’s release of her exsiccata “American Algae” using the name and also providing a description on the label validated the name and giving her credit for authorship, even though she had “Setchell and Saunders Mss.” The fourth Fascicle of her exsiccata appeared in Feb. 1900, predating the accounts by Setchell (1901) and by Saunders (1901a).

Some of the new taxa coming out of the Harriman Alaska Expedition were Saunders’ *Homeostroma lobatum* [now *Punctaria lobata* (D.A. Saunders) Setch. & N.L. Gardner], *Myelophycus intestinalis* [now *Melanosiphon intestinalis* (D.A. Saunders) M.J. Wynne], and several species of *Streblonema* (*S. irregulare*, *S. minutissimum*, and *S. pacificum*). His *Alaria fragilis* from Glacier Bay, Alaska, was recognized by Widdowson (1971) and Gabrielson et al. (2006), both under the junior synonym *A. tenuifolia* Setch., and by Tom De Cew’s on-line “Guide”. Yet Lane et al. (2007) included it within their broad circumscription of *A. marginata* Postels & Rupr. Saunders’ *Coilodesme linearis* is now treated as conspecific with *C. cystoseirae* (Rupr.) Setch. & N.L. Gardner. His *Ectocarpus cylindricus* is now treated as *Feldmannia paradoxa* (Mont.) Hamel var. *cylindrica* (D.A.

Saunders) H.-S. Kim & I.K. Lee (1994). Saunders is remembered by the brown algal generic name *Saundersella* of Kylin (1940), which was based on Saunders' *Mesogloia simplex* from Sitka, and the spin-off name *Heterosaundersella* Tokida (1942). It should be noted that the excellent illustrations accompanying Saunders' account were done by his wife "Eva" [Evangeline Merritt Saunders].

In 1903, Saunders and family [wife Eva and children Harry and Edna] moved from South Dakota to Texas, first living in Terrell, where Saunders continued his seed breeding work on the Porter Demonstration Farm. Terrell is where the farm extension service started, and he served as a County Farm Extension Agent. The Porter Farm remains a working farm today and is a National Historic Landmark. The 1910 U. S. Census shows Saunders and family to be living in Waco, Texas, where he continued as a Field Agent for the U.S. Government. By the 1920 Census, the family had moved to Greenville, Hunt County, where Saunders was one of the founders of the U.S. Government's Cotton Seed Breeding Station. A Cotton Museum remains in Greenville today. Saunders cross-pollinated the "Sea Island" strain of cotton with the "Upland cotton" strain resulting in the "Lone Star" cotton seed, which was the basis of his company, the "Saunders Lone Star Seed Company". He helped develop a breed of cotton plant with fibers that easily separated from the capsule, or "boll". The variety flourished in a hot, dry climate and became a standard in the industry and the forerunner of Egyptian cotton. He mentored students from Egypt and over his career had many interactions with Egyptian colleagues. Another of his students was Early C. Ewing, who later operated the largest cotton plantation in the world. Saunders eventually resigned and went on to establish his own fuel business (of coal and wood).

According to his great-granddaughter Jennifer Miller, most of the many souvenirs Saunders had from the Alaska expedition were later lost in a flood. But the "Souvenir Album" from the Expedition survived. Mrs. Miller also related how her mother has memories as a young girl of visiting her grandfather (De Alton)

and sampling the sugar cane that he was working on and how every Sunday one of De Alton's free-range chickens would end up in a pot for Sunday dinner ("chicken and dumplings"). She recalls him as a quiet, very private man, always experimenting in his gardens. Although two standard biographical references (Stafleu & Cowan, 1985; Brummitt & Powell, 1992) give Saunders' birth and death dates as "1870-1940", the family claims that he was born in Alfred, Allegany County, New York, 30 June, 1869. According to his official death certificate, he died in Greenville, Texas, 2 May 1949.

A century after the Harriman Alaska Expedition there was a re-enactment of the voyage (Litwin 2005). The *M/V Clipper Odyssey*, a 340-foot ocean-going vessel, re-traced the earlier expedition, with 19 scientists, writers, and artists. This is a very good read and provides a remarkable contrast in the Alaska that those on the *Elder* saw in 1899 and the contemporary scenes observed by those on the *Clipper Odyssey*. A PBS program [<http://www.pbs.org/harriman/index.html>] and an article in the *Smithsonian Magazine* (June, 2003) also provided interesting accounts of this re-enactment of the original Harriman Alaska Expedition.

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I am indebted to Jennifer Miller, the great-granddaughter of De Alton Saunders, for providing the portrait on page 1 and also a very helpful biographical account of his life. I happened to be watching “Antiques Roadshow” on PBS one evening, with a show originating from Hartford, Connecticut. Jennifer Miller brought to the show a family treasure to be evaluated, namely, her great-grandfather’s copy of the “Souvenir Album” from the Harriman Alaska Expedition. After the expedition, Harriman compiled a rich collection of his photographs taken during the expedition (primarily by Edward Curtis) and distributed

identical albums as souvenirs to each of the participants. Her appearance on that program allowed me to contact Mrs. Miller, and she generously shared with me some facts and anecdotes about her great-grandfather handed down through her family. Jennifer's grandfather was Harrison Merritt Saunders, Sr., who had 3 children [all of whom are living in Sept., 2010]: Harrison ("Bud") Merritt Saunders, Jr., and twins William ("Jack") Dee Saunders and Carolyn ("Jill") Lee [Saunders] Nash, Jill Nash being the mother of Jennifer Miller. Jean Ann Ables-Flatt, Volunteer Genealogist for the Riter C. Hulsey Public Library in Terrell, Texas, also provided me with useful facts.

Michael J. Wynne
University of Michigan, Ann Arbor