

Sailing Ships, Science and Stonework: The Stuff One Dream Was Made Of

A History of the Sea Education Association and its Campus

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The Sea Education Association, Inc. (SEA) is a non-profit educational organization that offers multidisciplinary programs in ocean studies both ashore and at sea on its sailing research vessels Westward and Corwith Cramer. SEA is a relative newcomer to the community; it came to Woods Hole from Boston in 1975, and moved to its Quissett campus at 171 Woods Hole Road in 1985. The history of SEA's property predates the organization's occupancy by nearly 100 years.

The Stonework: A Century of Granite

During the last quarter of the nineteenth century, new railroad service to Falmouth brought an influx of people to the community. Easy access made local land desirable, and many families purchased property on which to build summer homes. In the fall of 1886, Samuel Palmer Davis, a local coffin maker, advertised his forty-acre farm on the Quissett ridge for sale, complete with house, out-buildings, farm stock and

implements. About a quarter mile from Quissett Harbor, with a spectacular view of Buzzards Bay and Vineyard Sound, there were two lots ideal for summer residences.¹

John S. Bleakie, a woolen manufacturer from Hyde Park, bought the farm and in 1889 built a 25-room, Victorian-style, shingled home which he named "Glenockie." The house had a magnificent granite and fieldstone foundation and first-story stone facing,



The John S. Bleakie estate, "Glenockie," 1890's. Built in 1889, the house was damaged by a fire around the turn of the century. Courtesy Falmouth Historical Society.

with a large barn behind it and a stable on the hilltop to the east. Bleakie was known in town for financing a local water system using Long Pond as the source to supply area homes. He incorporated the Falmouth Water Company in 1898 and donated to the town a handsome fountain and horse trough, which stood on the eastern edge of the Village Green.

Scant information exists about a fire that ravaged Bleakie's house around the turn of the century.² The damage was extensive; substantial remodeling dramatically changed the architectural lines of the roof and the second and third floors. The stonework remained intact.

In 1907, the estate was purchased by Charles R. Whittemore of the Whittemore Bros. Shoe Polish Corporation of Cambridge. The Whittemore family was prominent in summer and year-round activities in Quissett until after World War II. When the Whittemores first arrived, they converted the stable into a second house (today the Stephen Miller House) and purchased more land. Eventually, the Whittemore father and sons owned all three adjoining estates on the ridge overlooking Vineyard Sound and Buzzards Bay, and controlled hundreds of acres including Rac-

ing Beach. Their property extended as far as Beebe Woods to the north³ and Quissett Avenue to the south. The Whittemores kept 150 horses and a game park that included deer, peacocks and other animals, located on the western side of the mansion in the area enclosed by a long stone wall along Woods Hole and Ransom Roads. As time passed, the Whittemores sold off several parcels of their land.

Mrs. Charles Whittemore, the former Annie Ransom, made the house her principal residence after the death of her husband in 1923. She incensed many Falmouth residents in her fight against the town and the ice plant operation of Samuel T. Cahoon on the Miles Pond property which was formerly hers. From March, 1935 to September, 1939, Mrs. Whittemore's attorneys kept the issue in the courts while the town tried to legalize Cahoon's ice house. The town won its case, and Cahoon was permitted to operate the plant. In 1941, Mrs. Whittemore again opened her suit, charging that the town's effort to make the plant site a light industrial district was in violation of local zoning.⁴ Finally in 1943, the Barnstable Superior Court decided the ice house served public welfare and convenience. Mrs. Whittemore died in 1949.

The house was restored with dramatic changes in architectural style. The conservatory, at right, was added by the Charles Whittemore family. The property changed hands several more times during subsequent decades and the mansion was virtually destroyed by another fire in March, 1970. Courtesy SEA.



Annie Ransom Whittemore and the Cahoon ice house case were largely responsible for the town's adoption in 1936 of its representative town meeting, one of the first in the state, and for several decades, the only government of its kind on Cape Cod.

Talbot Howe bought the property in the '50s, with the intention of converting it to an inn for summer guests. When the town resisted this idea, he rented the house as a summer residence and bought a large parcel of land on the other side of Woods Hole Road. For several years, Howe kept antique cars and several antique sleds in the old carriage sheds behind the barn.⁵ These sheds, the barn and a tennis court fell to disuse; the tennis court became completely overgrown by trees. The house itself was maintained, and in 1961 and 1962, the Bureau of Commercial Fisheries rented and occupied the house during the construction of their new laboratory in Woods Hole.

Capt. Paul A. Johansen, the newly appointed assistant general manager of the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority, purchased the property in 1968. He sold a large parcel of land (about 11 acres) along with the four-story barn to Dr. Charles D. Johnson, a psychiatrist. Johansen and his wife kept about five acres and undertook extensive remodeling to make the old mansion a comfortable year round home for their family of ten children. Unfortunately, they did not update the old wiring, and on the evening of March 18, 1970, a major fire started in a third floor bedroom. Racing through the old wooden structure, the fire destroyed the entire third floor, much of the roof and several rooms on the second floor. After five hours the flames were out, but smoke and water added extensive damage to the rest of the house. The only room untouched by the fire was the new kitchen.⁶ The Johansen family managed to salvage some belongings, including most of their clothes and a television set, but they did not rebuild. After the fire, heavy vandalism became a concern to

the community, and the charred remainder of the house was finally razed in 1972. Left standing was the magnificent granite foundation and first story wall, a square stone cottage—the former music conservatory, added during the Whittemore era—and a small garage.

Within months of the fire, Capt. Johansen left his position at the Steamship Authority and became skipper of *The Bay State*, the training vessel operated by the Massachusetts Maritime Academy. He sold the property to Cornelius J. Hickey, Jr. who held it under the name of Quissett View Realty Trust.⁷ Hickey hoped to build a hotel on the site of the house destroyed by fire, but this project never got off the ground.

Richard H. Hawkins III, a banker from Brookline, bought the property from Hickey in 1975 and modernized the stone cottage to serve as a summer getaway for his young family. Hawkins was the Treasurer of SEA and brother-in-law of Corwith Cramer, SEA's founding director. In the summer of 1983, when Cramer became very ill with cancer—too ill to live on his boat moored in Quissett Harbor—Hawkins offered the cottage as a summer residence. Cory Cramer died there that July.

Hawkins sold the 4.7-acre property about a year later to SEA, which was looking for permanent headquarters in the Woods Hole area. By December of 1985, SEA had established its campus with the construction of a modest, two-level, shingled building that housed a classroom, laboratory and administrative offices. The fieldstone and granite foundation from the old house was left untouched, but the first floor stone facing was taken down. SEA used many of these large granite blocks as terraces and borders to landscape portions of its campus.

In November, 1987, SEA's new ship, *Corwith Cramer*, was launched. The addition of a second vessel meant the imminent doubling of SEA's student capacity. It had become evident that the Woods Hole community

The Sea Education Association's James L. Madden Center for Maritime Studies, completed in 1993, is built on the exact footing of the original Bleakie estate and incorporates its old fieldstone and granite terrace. Photo by Thomas Kleindinst.



could not absorb an increase of 25 students as boarders in private residences, and that SEA needed to provide its own housing for students. Construction of five cottage-like dormitories got underway in the spring of 1988, and the project was virtually finished by the start of the fall program. Each house was built to accommodate ten students, with several bunk rooms, a large common and kitchen area, and shared bathroom facilities.

SEA completed its campus in 1993 with the construction of the \$1 million James L. Madden Center for Maritime Studies. The building is named for Jim Madden, SEA's longest-serving Chairman, who died in 1984. It incorporates a student lecture hall, computer laboratory and library in addition to expanded office areas for SEA's staff and faculty. Providing the centerpiece for SEA's administrative complex, the new, three-story structure was built upon the site of the old Bleakie house, with the historic granite foundation as its base and its architectural lines reminiscent of the old mansion.

It is curious that SEA's campus grew from the site of Cory Cramer's death. Cramer was the driving force behind SEA from its inception to its incorporation in 1971, and throughout its first decade. The story of how

SEA developed, and how it came to build upon the foundation of the old Bleakie estate, is a rather fascinating tale. SEA's roots precede its arrival in Woods Hole, and its history rightly begins with an account of Cory Cramer, his dream, and how it became reality.

The Dreamer: Cory Cramer

Corwith "Cory" Cramer was a lifelong educator and yachtsman who, from a very young age, was captivated by the magic of the oceans. Educated by his mother during the Depression aboard the family yacht, Cramer spent his adolescent years sailing with his parents between the West Indies and Nova Scotia. Those times were filled with adventure and excitement and left a lasting impression on him. In a 1981 interview, Cramer recounted his experiences that led to the creation of SEA. After graduating from Yale University in 1949, he embarked on his first deep sea sailing. "I went down to Jamaica and joined an Englishman named Bobby Somerset on the 45-foot cutter *Iolaire*, and sailed with him to Europe," he explained. "Bobby was known throughout the world as one of the great seamen of all time."



SEA's founding director, Corwith "Cory" Cramer, on *Westward*, 1976. Courtesy SEA.

He began ocean racing and joined the crew of *Myth of Malham* which won the Fastnet Race in 1949, a sailing event which to Cramer rivaled the excitement of winning the Kentucky Derby in horse racing. Shortly afterwards, while visiting relatives in Ireland, Cramer happened upon a square-rigger in Cork harbor. He rowed out to see her and climbed aboard *Passat*, one of the last of the famous grain ships with 4,000 tons of grain in her hold. Having been fascinated by Alan Villiers' accounts of these magnificent vessels, Cramer charmed his way on board the tall ship and sailed to Liverpool on *Passat*'s final passage.

From the decks of *Passat*, Cramer returned to the States and took a job as a research assistant with the

Woods Hole Oceanographic Institution (WHOI), joining *Atlantis*, one of the last working U.S. sailing research vessels. The scientific team on board was conducting geological survey work on the mid-Atlantic Ridge. "They learned I could navigate," said Cramer, "so when one of the mates departed without much warning, I took his place." Thus ended his short stint in science.

Cramer briefly left sailing and came ashore in the summer of 1950, when he took up newspaper reporting in Baltimore until the Korean War broke out. Skirting an assignment to the Air Corps' electronics technician school, he obtained a commission in the Coast Guard, where he spent the next four years. He was first assigned to a search and rescue cutter as a junior officer, and subsequently became commanding officer. During this time he added considerable polish to his skills as a seaman.

After the Coast Guard, Cramer pondered how to combine a career with his love of the sea. Teaching was the answer, with three months' vacation every summer. Between 1954 and 1970, Cory worked at several private schools and rose through the educational ranks, from third grade teacher to history department chairman to headmaster at the Key School, a boys' preparatory school in Annapolis, earning a Master's degree in Maritime History at the University of Pennsylvania and serving as a Fellow at Yale. During the academic year, Cramer pursued the "life of the mind" and in the summers pursued ocean racing, navigating Carleton Mitchell's famous *Finisterre* to an unprecedented, and as yet unmatched, three victories in the Newport to Bermuda Race.

The First Sailing Ship, *Westward*

Gradually, the idea of a school ship began to germinate. Cramer had been immensely impressed by two men who had created school ships: Warwick Tompkins, who sailed a vessel called *Wanderbird* in the 1920s and '30s, taking people on board every summer

and sailing to Europe and back, and Irving Johnson, who served as mate with Tompkins, and subsequently undertook a similar venture. "Irving went farther—he went around the world with his boats. First a wooden schooner, then a steel one, both called *Yankee*, both very similar to *Westward*. He sailed around the world on these two ships seven times, taking young people, and I knew many of the people who had gone with him; it was a wonderful experience."

Cramer was by that time an experienced teacher, educational administrator and seaman. He had settled in Lake Forest, Illinois, serving as the Director of Admissions and Director of College Placement at Lake Forest Academy. But after nearly 20 years in traditional academia, he was becoming disillusioned with the staleness of the classroom environment and the increasing unrest among his students. It was the late '60s—momentum toward alternative lifestyles and alternative education heightened the interest in launching an alternative school. Increasing public awareness of the oceans made seagoing education an attractive option. Cramer felt that he had learned some of life's most valuable lessons on boats at sea—lessons of learning by doing, of discipline, responsibility and leadership, of challenge and growth. He was convinced that the best way to learn about the ocean, and about oneself, was to venture out to sea. Moreover, Cramer had developed an extensive network of friends and acquaintances in the yachting world. These men would eventually provide him a wealth of support and expertise.

On an evening in 1969, Cramer and his friend Edward "Sandy" MacArthur conceived the American Sailing Education Association, as SEA was first named. They incorporated in 1971 in Lake Forest, Illinois. Cramer and MacArthur formed a partnership, though MacArthur supplied most of the money to get things off the ground. Born into an insurance and real estate fortune, and a businessman in his own right, MacArthur was looking for a "noble" venture to

which he could make a significant contribution. The two men had sailed and raced together, and were neighbors in Lake Forest. Cramer called their original plan "a captain's paradise." As the official name implied, the organization's concept was to operate a deep-sea sail training ship that would serve an association of educational institutions that could not individually afford a deep-sea vessel. "We didn't want to teach people how to sail," said Cramer. "What we wanted to do was to take them to sea so they would learn to love the sea."

Luckily, Cramer was as pragmatic as he was visionary. For this new venture was rife with risks. It required an enormous financial investment. It meant giving up the security of a schoolmaster's position, including a salary and a home which he shared with his wife and children. Cramer knew from the beginning that he had to develop an entire organization, complete with a Board of Trustees, governing bylaws, and a non-profit status from the IRS. He also knew that the early financial support would come from his friends; he had to make sure that their gifts of faith would be rewarded by clear direction and tangible progress.

The first major challenge was to find a ship. Others who had gone before had ended unsuccessfully, or in tragedy. Cramer was convinced it was because they hadn't known ships, or had the wrong ships. Sandy MacArthur and his son travelled to Singapore and the Far East, to the Mediterranean, to the Caribbean, to the Baltic—all over the world—without finding a suitable vessel. In the meantime, Irving Johnson recommended Drayton Cochran's vessel *Westward*, which was then owned by the Oceanic Foundation in Hawaii. She was a replica of his *Yankee*, Johnson said, and the best to be found. *Westward* was a 125-foot, steel-hulled schooner, built in Germany in 1961; Cochran had commissioned her as a private yacht for around-the-world service. Her lines were modeled after those of the North Sea pilot schooners, seaworthy ves-

sels designed to heave to in often rough seas to await incoming cargo vessels. *Westward* was perfect for SEA, but she was not for sale. Within a few months, however, her owners began filing for bankruptcy, and accepted SEA's offer to buy her for \$90,000 in July of 1971.

Next came the problem of filling the vessel. Cramer became a publicist overnight, approaching dozens of organizations: the Boy Scouts, the Naval Sea Cadets, Mystic Seaport, and others who provided young people with coastal work but were unable to offer deep-sea experience. When this idea was met with enthusiasm but no money, Cramer tried other marketing approaches, such as a semester program for prep school seniors. Though the schools, this time, could not guarantee expenses, it seemed possible that interested students, with supportive parents, could come up with the necessary tuition.

"Everybody thought it was a wonderful idea, a great means for teaching people all kinds of things—history, science, math, physics, about themselves," said Cramer, "but nobody could guarantee us any money. We had bought the boat, and were looking to keep her going. I went down to Washington to talk with the Coast Guard about how this boat was going to be operated; I was well aware that there were regulations. They told me there was no way we could run *Westward* as a school ship because the rules aren't realistic. They said, 'Try oceanography.' I had been to sea on *Atlantis*, and knew what oceanography was, so I wrote up a description of our proposed at-sea curriculum. It was called 'ocean apprenticeship.' It consisted of all the usual ocean stuff plus what we now call nautical science. We were going to teach navigation, as a part of oceanography, and they accepted it. And so we were able to sail."

That summer, *Westward* was brought from Hawaii to Seattle. In the fall, Cramer and MacArthur sailed her without any students down the coast from Seattle to

San Francisco, to Santa Barbara, the coastal suburbs of Los Angeles, and on to San Diego. "Without students," reported Cramer, "the mission was to wave the flag and beat the drum. We got good articles, national articles. I was no publicity person; I had never done it in my life. But if you make enough noise, people pay attention to you. The Associated Press picked us up and put us on their weekly Sunday supplement. It was a unique and exciting idea to people, and we were the only ones doing it. Fortunately, we got enough attention to fill the boat, and so on New Year's Day, 1972, fifteen high school and college students arrived in San Diego to get on the ship."

The first group of apprentices came from nine states and ranged in age from 17 to 24; three were young women. *Westward* was staffed by a captain, two mates, an engineer who also stood deck watches, a full-time doctor, a cook and an oceanographer. The President of the Board, Dr. George Nichols, and the publisher of *SAIL* Magazine, Bernard Goldhirsch, also sailed during a portion of the trip. All 24 bunks were filled.

Their voyage was a fascinating one. *Westward* and her students sailed from San Diego, down the coast of Mexico, offshore, stopping at some of the remote islands off the Mexican coast, to the Galapagos and Cocos Islands and then through the Panama Canal, ending in San Juan, Puerto Rico. The last leg was a hard trek, 1,000 miles straight upwind into the Trades. The students disembarked after nine weeks, having had the adventure of a lifetime.

Problems in the Early Years

The second cruise on *Westward* was nearly canceled. Only six students had signed up by the scheduled day of departure. Fortunately, Cramer made the necessary contacts with friends who hurriedly assembled additional students, but this sort of scramble occurred frequently in the early trips. The program did not attract enough "apprentices" to make what was basically a sail training and character-building program viable.⁸ Aca-

ademic credit was the answer, but this took several years to secure.

The early education program, equivalent to an entire semester at sea, was unplanned and unstructured. Staffing was a problem; the crew were not teachers, and many had no idea how to teach nor what should constitute the shipboard educational goals. Cramer, who sailed periodically as captain, was often at odds with both the students and the crew. After "spinning back and forth between the ship and the office," it soon became apparent that he couldn't run the program *and* run the ship. The science conducted offshore was pure data collection, directed by the visiting researcher on board, with very little input or understanding by the rest of the ship's company, and often of questionable educational value.

"The staff were unaccustomed to being schoolmasters," explained Cramer. They were mainly sailors, and we had developed no real system—we were just learning by doing. The kids were quite disappointed. They had an extraordinary trip, but they had the feeling that they weren't being taught very much, or very well. And I don't blame them. On the other hand, they probably learned just as much. We just weren't organized, and they were used to highly organized educational experiences. Here they were getting [education] in a disorganized, but highly effective way."

On top of these difficulties, SEA also ran into problems with the Coast Guard. *Westward's* status as an oceanographic research vessel was tenuous at best. Her motley crew—bearded, bare-chested sailors and "hippie-looking" students—came under immediate scrutiny by many a regional Coast Guard commander when she put into domestic ports. Evidence that oceanographic research was being conducted was scarce; there was no sampling equipment on board save a few plankton nets. On several occasions, the Coast Guard came close to shutting down the whole operation.

And inevitably, there were financial problems. Within months of the formation of their partnership, Cramer and MacArthur disagreed on how SEA would be organized, so MacArthur withdrew his critical and sizeable investment. Cramer and his newly formed board scrambled to gather the necessary funds, and the chairman, Dr. Nichols, assumed the debt for the purchase of *Westward*. In addition, the ongoing struggle for students was a constant burden. Cramer and members of the board were fund raising constantly, not only for scholarship money, but also just to keep things going. The light at the end of the tunnel seemed very far away indeed.

Sea Semester is Established in Boston

Between *Westward's* West Coast publicity cruise and the launching of W-1, her first academic cruise, much had occurred from a business standpoint. Cramer had registered *Westward* with the Coast Guard as an oceanographic research vessel. He had lined up an oceanographer to sail on the first trip, a man working with the Smithsonian Institution named Eric Abranson. (Cramer commented, rather naively, "We paid the Smithsonian to pay Abranson. That gave us credibility.") Cramer had enlisted his brother-in-law, Dick Hawkins, as his right-hand man and eventually gave him the title of Associate Director. He had formed a board of trustees headed by Dr. George Nichols, a teaching physician with the Harvard Medical School and the grandson of J. P. Morgan. Cramer recruited his influential friends and acquaintances, many of whom were prominent sailors, to serve on the Board: Waldo Johnston, director of Mystic Seaport, Dr. Gifford Pinchot, a well-known doctor and cruising yachtsman, Peter Willauer, head of the Hurricane Island Outward Bound School, and Peter Stanford, director of the South Street Seaport in New York City. Encouraged and aided by the trustees and some new friends of SEA, especially Davis Taylor, publisher of *The Boston Globe*, the organization moved its head-

quarters from Lake Forest to downtown Boston, a "saltier" location, and set up shop in the *Globe's* Old Corner Bookstore at 3 School Street.

SEA's move proved fortuitous. In Boston, a college town and a sailing town, the prospects for financial and educational support were greater there than in Lake Forest. Early in 1973, SEA encountered Dr. George Fulton, a tenured professor and the Chairman of the Biology Department at Boston University. By no means a sailor, Fulton nonetheless grasped immediately the educational value of using a ship to learn about the ocean. He also realized that the seagoing experience offered by SEA could be heightened considerably by first preparing students ashore in the classroom. His idea was to create a shore component, including the theoretical elements of marine science and navigation, plus a course in the literature and history of the sea, that students could then apply in practice once they boarded *Westward* and cast off her dock lines. Cramer and the SEA board thought it was a marvelous plan, and Fulton proceeded to rally key faculty members from BU's College of Liberal Arts and Sciences, including the dean, Dr. Warren Ilchman, behind this novel program.

The resulting Sea Semester, as it was called, held its first session in the winter of 1974 using BU faculty and classrooms ashore. Three courses made up the six-week Shore Component: *Introduction to Marine Science*, *Introduction to Nautical Science*, and *Man and the Sea*; a six- to seven-week *Ocean Apprenticeship* on *Westward* followed. For the first time, students participating in SEA's programs were assured a full semester's credit from Boston University. This credit arrangement continues today. Fulton himself taught the first shore course in oceanography.

SEA had found its key to financial survival: parents were willing to pay the equivalent of a college semester's tuition when their sons and daughters returned not only with tales of adventure on the high

seas and signs of maturity, but also with a full semester's credit.⁹

However, by the end of 1974, finances nearly toppled SEA again. Cory Cramer and George Nichols, who headed the board, came to an irreconcilable difference in the philosophy behind Sea Semester. Nichols wanted the educational program to focus on research; Cramer insisted that SEA's program be a broad, multidisciplinary study of the oceans, with a research component. This dispute became heated to the point where neither Nichols nor Cramer would concede to a compromise. The board settled the issue by siding with Cramer's philosophy, and Nichols promptly resigned from the chairmanship and withdrew his funding of the note on *Westward*. Trustee Jack Merrill, another well-known yachtsman, saved the day and personally assumed the debt for the ship. Merrill soon was elected the new chairman and recently joked that he had "bought his way to the top."

This controversy and settlement were central to SEA's official name change in 1974 to the Sea Education Association. The board felt that the new name reflected "more properly the objectives and programs of an organization that educated people about the sea through classroom study, shipboard apprenticeship and research." The board decided to move SEA's headquarters again, this time to Woods Hole.

The Move to Woods Hole

Though *Westward* was seldom in port, Woods Hole was perhaps the port she most frequented. It was an easier and more practical New England stop than Boston; dock space was accessible and much less expensive. Several scientists from the Woods Hole Oceanographic Institution (WHOI) and the Marine Biological Laboratory (MBL), when they became familiar with the ship and her mission, donated cast-off or obsolete sampling equipment they no longer used. Richard "Dick" Edwards, with whom Cramer had sailed on *Atlantis*, was WHOI's Marine Superintendent. He

and his colleagues were eager to help *Westward's* crew with all kinds of ship and equipment repairs.

SEA's board recognized at once that Woods Hole was an ideal home for the organization and its Sea Semester program, and a perfect locus of support for *Westward*. The fledgling oceanographic program was struggling for recognition, for students to fill its six sessions a year, and for acknowledgement by the Coast Guard that *Westward* was indeed worthy of her status as a research vessel. Woods Hole's prominence as a world-renowned scientific community could do wonders for the reputation and growth of SEA's program. The community had an excellent marine science library, and other research- and sea-oriented attractions: the Oceanographic and the National Marine Fisheries Service (both with active research vessels), the MBL, a branch of the U.S. Geological Survey, the vessels of the Coast Guard, the local fishing fleet and the ferries to Martha's Vineyard and Nantucket, in addition to the extensive yachting activities in Buzzards Bay and Vineyard Sound. Different from urban Boston, already thick with academic institutions, Woods Hole was perfect for drawing students seeking an alternative education program and eager to learn about the sea.

SEA made the move in 1975. For about a year, SEA used classrooms at the MBL's Lillie building, and students resided in the MBL dormitories. That summer, with space at a premium in Woods Hole, SEA conducted the Shore Component of its summer Sea Semester at the Shoals Marine Laboratory on Appledore Island in the Isles of Shoals, off the coast of New Hampshire. Run jointly by Cornell University and the University of New Hampshire, the Shoals Lab offered intensive, undergraduate-level, summer courses in coastal biology in a remote island setting. Sharing SEA's philosophy that scientific learning can be enhanced by hands-on practice, this early collaboration was fitting.

Back in Woods Hole that fall, SEA soon settled into the basement of Fisher House, the parish hall of the Church of the Messiah on Church Street. The rented space accommodated a classroom, a small lab, and two office areas that at first housed ten staff and faculty. It was within easy walking distance to Woods Hole village and the MBL Library. Students could choose between living in the MBL dorms or renting a room for a modest weekly sum in one of several local residences. In every facet of living and studying ashore, the students were encouraged to work together to begin fostering the cooperative spirit so vital to the success of the Sea Component. The arrangement, in all regards, worked well.

By then the shipboard program had been formalized with the creation of handbooks for seagoing staff. This early documentation of "the SEA way" provided the much-needed structure to the students' educational experience on board *Westward*. "Through the Coast Guard," Cramer reported, "I had learned that ships could be run in a formal, departmentalized way, because the Coast Guard and the Navy run ships so that the crew can change and the ship keeps going. That was important to me, because the only way we can run *Westward* is to have her so that people can come and go but she goes on. When we first started with *Westward*, I was resented as a militarist because I insisted on this system. But I knew it was the only way it could work."

Early Science at SEA

In SEA's first three years, *Westward* sailed trans-Atlantic every year. The cruise tracks were largely determined by scientific research, and the research was provided by outsiders, not by SEA's own staff. These "outsiders" included some excellent and well-known researchers: Harold "Doc" Edgerton from MIT; Lavett Smith from the American Museum of Natural History; and Holger Jannasch from WHOI. Byron Morris from the Bermuda Biological Station, with research



Local artisans Tom Renshaw and Ted Fizzle in Tom's basement with *Westward* forecastle mockup, winter 1978. The structure was later disassembled and trucked to Miami for installation. Courtesy SEA.

interests in *Sargassum* weed, launched SEA on 23 years of data collection. John Apel from the National Oceanic and Atmospheric Administration (NOAA) involved *Westward's* crew and students in studies of internal waves. (Apel went on to head the Marine Science School at Johns Hopkins University.) Arthur Humes from the Boston University Marine Program (BUMP) became a valuable long-term advisor to SEA, and Val Worthington, a senior scientist at WHOI, played a prominent role on SEA's Scientific Advisory Board.

"In the beginning, the students helped in the research by throwing stuff overboard and pulling it back in, that's about all," said Cramer. "Our original motive for doing scientific research was to meet Coast Guard regulations, but very quickly we found that it was a wonderful way to coordinate with the nautical. By the end of the very first trip we were convinced that the two should go together, and we felt we should upgrade it."

But progress was slow. Publicly—outwardly—Cramer championed the scientific mission of *Westward*, and exhorted the educational value of learning to conduct

oceanographic research while handling the challenge of sailing and navigating the ship. Inwardly, however, and despite his personal experiences and ties, he seethed about the Coast Guard, continually frustrated by the regulations for research vessels. (His file on the Coast Guard was labeled "Public Enemy No. 1.") He had a dilemma on his hands: To run an oceanographic program or no program at all. His preference for the nautical and experiential over the scientific was clear, but he realized that science was the key to the perpetuation of Sea Semester, and ultimately the future of SEA. Nonetheless, he supported only the minimum scientific requirements necessary to satisfy the powers above. As a result, SEA's science limped along on limited resources and scrounged equipment, much of which was very old, some even obsolete. *Westward's* first hydrographic winch, constructed for *Atlantis*, was donated by WHOI, complete with 20,000 feet of wire. (This winch was in operation on *Westward* until early 1990.)

As executive director, Cramer wielded considerable control. An intelligent and committed educator, he was also a tight-fisted and controlling administrator.

Fortunately, he was a good judge of character. Many excellent scientists, mariners and teachers came to SEA and became committed to its unique style of education. During those early years, however, with low salaries, inadequate teaching tools and little moral support, staff and faculty turnover was rapid and burnout was high.

After moving to Woods Hole in 1975, SEA began attracting permanent faculty members who would teach on shore and then accompany the students to sea on *Westward*. With equal teaching time ashore and at sea, the Sea Semester program offered a more balanced and desirable employment situation than the earlier, entirely seagoing program. This arrangement lured a number of outstanding educators. The first three "deans," Edward Monahan, John "Stubby" Rankin, and Donald Drost, though brief in their tenure, all contributed to the new program. The curriculum was defined and developed with contributions from many early instructors: Henry Genthe, James Hain, Arthur Gaines on the scientific side, and Richard Farrell, Jonathan Lucas, Charles Rose, and John Metcalf on the nautical side, to name just a few.

The move to Woods Hole strengthened SEA and gave support to Sea Semester's academic focus on oceanography. In the fall of 1975, the ship's first scientific laboratory was added above decks. Her capacity was later increased to 35 by the addition of several bunks, with room for 24 students, ten professional crew and scientists, and a visiting scholar. After several years of sailing trans-Atlantic, *Westward* established an annual cruise track in the western North Atlantic, Sargasso and Caribbean Seas and Gulf of Mexico. She typically ventured as far north as Labrador in the summer months and as far south as Venezuela during the winter. Sailing through the same waters every year, *Westward's* scientists and students were able to develop a repetitive sampling program, which was useful in seeing changes in ocean characteristics over a period of time.

Slowly, Sea Semester's reputation grew, as did the list of colleges and universities that awarded credit to their students who participated. Through the efforts of the staff scientists, progress in SEA's science inched along. Among their successes were the compilation and periodic publication of scientific data collected on



A student explains her research to her shipmates. On board *Corwith Cramer*, 1989. Photo by Andrea Stander.

board *Westward*. Beginning in the 1970s and continuing sporadically through the early '90s, several works were published, primarily distributional studies conducted during numerous consecutive cruises. Examples of published research were investigations of spiny lobster larvae, pelagic *Sargassum* weed, various species of zooplankton, floating pollutants such as tar and plastic, and geologic studies of carbonate islands in the Bahamas.

The program's curriculum evolved to require that each student complete an independent research project in some aspect of oceanography. Students undertook background research ashore in Woods Hole, and then gathered data by collecting samples at sea. By the end of the Sea Component, each student would present his or her findings to the ship's company and write up the results in a formal research paper. This was the first time most of the students had pursued the scientific process from start to finish. Today, SEA's hands-on research opportunities are among the few available at the undergraduate level.

Credit, Credibility and Change

As early as the second full year of SEA's operation, additional ships were discussed, and the idea of expanding the organization and its programs was established as a long-term goal. By the completion of SEA's first decade in 1981, with enrollment full to capacity, the board of trustees was convinced that the demand for Sea Semester would continue to grow. The board decided to design and construct a second ship that would provide added capacity for more students and expanded programs. Along with a new ship, SEA would need to ensure an increase in numbers and depth among the staff and faculty. The shore facilities would have to expand to accommodate twice the number of students and a larger staff. As soon as the new ship became operational, *Westward* would need to be extensively refitted to ensure 20 more years

of service. Finally, the development of an endowment was deemed critical to provide additional scholarships and future financial support to SEA's operations.

In the fall of 1981, Cramer resigned from the directorship of SEA. The year before, he had successfully battled a bout with cancer. With an excellent prognosis, he took on some new challenges toward the achievement of significant long-range goals. Freed from the day-to-day responsibilities of running the organization, he focused the next several months on paving the groundwork for a major, several-million-dollar expansion campaign that would eventually raise the funds to build a new ship. Having been frustrated by the Coast Guard's restrictions on the educational program at sea, he began working with that body to create a new class of ship, called the Sailing School Vessel. While setting tougher standards for shipboard staffing and safety, new regulations would allow SEA (and other organizations) to be more flexible in designing seagoing curricula, including teaching Nautical Science at sea for academic credit. Due in large part to Cramer's efforts, the Sailing School Vessels Act survived the lengthy, difficult legislative process, and was signed into law in 1983.

By that time, Sea Semester was fairly well established and highly regarded, especially in the academic community of the eastern U.S. Its purpose was becoming more clearly articulated: To give liberal arts undergraduate students a theoretical and practical understanding of the sea in its broadest sense. The seagoing *Ocean Apprenticeship* had evolved into two separate laboratory courses: *Practical Oceanography I* and *II*, each worth four credits. The program was academically intensive, with a demanding workload ashore, and an intellectually and physically rigorous component at sea. Students who returned to campus after completing the program reported to their friends that, though it was not an easy elective, Sea Semester was an exciting, rewarding and even life-changing experience.

The students who came to SEA were exceptional. Cory Cramer described them as "an extraordinary lot of young people—highly self-motivated. They march to their own drums. They're not the followers, the sheep; they are the leaders." While in Woods Hole, the students benefitted from their total immersion in studies of the ocean; their classroom learning was supplemented and made richer by a variety of activities and outings: field trips to area beaches, marshes and rocky shores; excursions to Mystic Seaport and the New Bedford whaling museum; access to local talks on a variety of scientific and maritime topics; and musical gatherings to enjoy sea chanteys and community folk dancing. All of these shore-based activities helped students to appreciate the many facets of the marine and maritime worlds and to prepare them intellectually and emotionally for their own sea voyage.

SEA's faculty grew to include six full-time instructors in oceanography, nautical science and maritime studies, and *Westward* went to sea with three scientists who led the students in their research endeavors and in maintaining a 24-hour scientific watch. During this period the core of committed faculty members, including Dean James Millinger, Captains Carl Chase, Paul DeOrsay, Wallace Stark and John Wigglesworth, and Staff Scientists Mary Farmer, Susan Humphris, Allan Stoner and Jude Wilber, worked to refine the Sea Semester curriculum and to foster all the conditions necessary for providing students not only an excellent education about the oceans and a rigorous marine science research experience, but also a unique learning adventure at sea on board *Westward*.

In spite of the doubters who criticized SEA for conducting "1940's oceanography," there was growing

Teamwork is a necessary element of SEA's programs. Putting a reef in *Westward's* mainsail, 1991.
Photo by Robert Houser.





Executive Director
Rafe Parker and
the stonework,
1991. Photo by
Nannette Drake
Oldenbourg.

enthusiasm on all fronts for SEA's scientific program. The involvement of researchers from WHOI, MBL and other local institutions contributed to this excitement. Many well-known scientists lectured in SEA's small classroom; others went to sea on *Westward* as visiting investigators. Gradually, this increased scientific input had an impact on fiscal policy; faculty salaries improved and more adequate scientific equipment was purchased.

In early 1982, 65 non-affiliated colleges and universities accepted a full semester's credit for Sea Semester through Boston University. By the end of that year, the number grew to 90. This success was largely due to Dean Millinger's numerous campus visits and his growing network with college faculty and administrators. In addition to Boston University, SEA had become affiliated with Cornell and Colgate Universities, the University of Pennsylvania, The College of Charleston, American University in Washington, DC, and Eckerd College in Florida. Sea Semester students from these schools received credit directly from their home institution, instead of receiving transfer credit from Boston University. (Today, SEA has nine academic affiliates.)

When Cramer left the post of Executive Director, Millinger stepped into the role of Acting Executive

Director, and Susan Humphris took over as Acting Dean. After a year, Millinger returned to the dean's post and the helm of SEA was taken over by a new Executive Director, Rafe Parker. Parker, an Englishman, had a long background in experiential education programs through his work with Outward Bound both in the U.S. and abroad. When Parker joined the organization, Sea Semester was on solid ground, with a growing body of support, both academic and financial.

Cory Cramer's cancer returned and his health deteriorated rapidly. When he died in July, 1983, he knew that the stage was set for moving SEA into the future, and that all hands were working toward securing its permanence in the world of education. That September, SEA's Executive Committee unanimously voted to name the proposed new ship *Corwith Cramer*.

The Second Sailing Ship and the Second Decade: The Stonework Becomes SEA's

Rafe Parker brought to SEA a tremendous knack for fund raising; one only needs to look at SEA's new Woods Hole campus to see much of what he has accomplished. Indeed, the period following his arrival has been marked by substantial growth and expan-

sion. Many of the plans for a second ship had been laid while Cramer was still in charge, but Parker was the one who implemented and completed SEA's capital campaign, with the guidance and support of Trustee Ann Brewer. Conducted in two phases, the five-year campaign raised nearly \$5 million. The first phase of the campaign began in 1983, with a \$3.1 million goal to construct a permanent shore facility in Woods Hole and to build a second vessel.

Parker benefited from a strong and involved board of trustees. In addition to several of the founding trustees, the board included on the educational front such people as John Kingsbury, founder of the Shoals Marine Laboratory and Professor of Botany at Cornell University, Byron Saunders, also from Cornell, the retired Dean of Faculty, Clifford Low of St. Paul's School, and Robert Seamans, Dean of Engineering at MIT. On the business side, expertise was represented by James Madden formerly of Scott Paper, Paul Perkins of the Boston law firm Ropes & Gray, Francis Ballard of the Philadelphia law firm of Ballard, Spahr, Andrews & Ingersoll, Richard Hawkins of the First National Bank of Boston, Ann Brewer of the New England Aquarium, and Dr. George Clowes of the Harvard Medical School. A great many others completed the list.

Jim Madden had been elected Chairman of the Board in 1975. Madden was a lively, spirited fellow, with numerous important connections in both the yachting and the business worlds. An avid skier and figure skater who competed in the 1932 and '36 Olympic Games, Madden spent many years of his career as a director of Scott Paper Company in Philadelphia. He was also a devoted and accomplished sailor and navigator, racing and cruising for years aboard his yacht, *Gesture*. During his seven-year leadership, Madden worked very hard to promote SEA and to raise its stature among funding agencies, academic institutions, private enterprise and influential individuals. His

efforts on SEA's behalf paved the way for the burst of growth that followed. Parkinson's disease forced him to step down from the chairman's post in 1982, but he served as Chairman Emeritus until his death in 1984. Townsend "Townie" Hornor succeeded Madden, and led the Board when Parker came to SEA. Hornor lives in Osterville and is well-known in the Woods Hole community. He lent his energies in support of the capital campaign and SEA's new major initiatives.

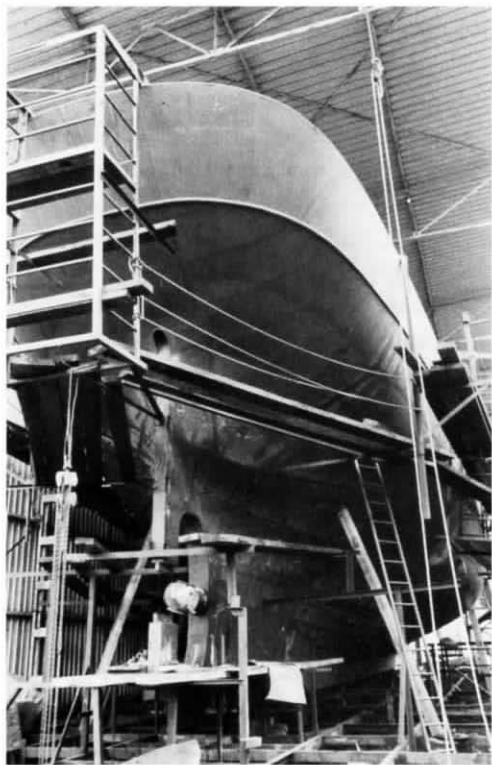
By 1983, SEA's quarters in Fisher House were bursting at the seams. Since the move to Woods Hole in 1975, the number of staff and faculty had grown from ten to 22. For about a year, SEA searched for space in the village where it could expand its operation. "We explored all kinds of alternatives with the Church of the Messiah, including the use of both floors of Fisher House and a long-term lease. None of these was satisfactory," said Director Parker. SEA also talked with the MBL about some of their land on which the organization might build, and with the town about using the Woods Hole School. These discussions proved unfruitful as well. SEA wanted to maintain proximity to the local institutions and the MBL Library. "We finally settled on the Woods Hole Road property, about two miles outside of the village," Parker explained. "This allowed us to create our own permanent campus, with enough land for future expansion."

In 1984, SEA purchased from Dick Hawkins his 4.7-acre parcel of land on Woods Hole Road, the last remaining parcel of the old Samuel Davis farm on the Quissett ridge. Board member Dr. Paul Fye, a former director of WHOI, was instrumental in helping to design the new campus. In December, 1985, SEA moved out of its rented space on Church Street to its brand new headquarters at 171 Woods Hole Road.

Six months later, SEA signed a contract with the Astilleros y Tallares y Celaya (ASTACE) shipyard in Bilbao, Spain, for the construction of the new vessel,

Corwith Cramer. It was an exciting time. Rod Stephens, of the renowned firm Sparkman & Stephens, and chairman of SEA's New Ship Committee, provided great insight and energy to the design process of *Cramer*; he had worked closely with the Coast Guard to refine the new regulations for Sailing School Vessels. *Cramer* was the first ship built under these regulations. Designed with lines similar to *Westward's*, she is safe, stable, and sails well. A 134-foot brigantine, she can accommodate a company of 36. She carries nearly 8,000 square feet of sail, and has an auxiliary diesel engine, a well-designed shipboard lab and even a small library and computer room.

Construction was completed in the fall of 1987, and *Cramer* was launched in Bilbao by the largest crane in



The Sailing School Vessel *Corwith Cramer* under construction in Spain, 1987. Courtesy SEA.

Spain on November 5. Sea trials in the Bay of Biscay followed. Her maiden voyage, from Spain to the Canary Islands, to Martinique and San Juan, to Grand Cayman and Miami, and finally to Bermuda and Woods Hole, attracted donors to the capital campaign as tuition-paying participants who helped the crew sail her home. On May 14, 1988, *Cramer* arrived in Woods Hole accompanied by *Westward* with the 99th Sea Semester class on board. This was an event—and a sight—that many close to SEA will never forget.

Support for the new ship and SEA's other capital initiatives was impressive. Funds were secured from many individuals and several major foundations, including the National Science Foundation, The Kresge Foundation and The Pew Charitable Trusts, among others. Endorsements from these funding agencies gave a real boost to SEA's reputation as a strong educational institution with an excellent program. Support from the academic community paralleled that of the funding agencies: in the fall of 1985, for the first time, Harvard University awarded credit for Sea Semester. SEA was coming of age.

The second phase of the capital campaign, which began in 1986 and ended in 1988, secured the funding for the refit of *Westward*. Completion of the campus with a library/lecture hall building and an endowment for the maintenance of the ships were deferred.

With funding from the National Science Foundation (NSF) in 1986, SEA was able to purchase modern, sophisticated oceanographic sampling scientific equipment for *Corwith Cramer*. This was a breakthrough for the organization and represented the first major government support for SEA's initiatives in science education. Suddenly, it became evident that *Westward* would be sorely inferior to *Cramer* in terms of her scientific capability. Susan Humphris, who had replaced Jim Millinger as dean in 1986, requested additional monies from NSF, this time to replace and



SEA Assistant Scientist Carl Baum with Nansen bottles on *Westward*. 1976 or so. Courtesy SEA.



In the late 1980s, Niskin bottles finally replaced Nansen bottles on SEA's ships. Here, a student on *Corwith Cramer* deploys a Niskin bottle to collect water samples at sea. Photo by Paul Joyce, 1989.

update the oceanographic equipment on *Westward*. This funding was approved as well, and the combined total of the two grants was \$401,000. Humphris had come to SEA in 1979 as one of SEA's staff scientists. "Before I came to SEA, I had only seen a Nansen bottle in a museum," she commented. (Nansen bottles were routinely used on *Westward* from the mid '70s to the mid '80s for the collection of water samples at various depths in the water column.) A highly regarded geochemist who juggled a simultaneous appointment as Adjunct Investigator at WHOI, Humphris' scientific experience strengthened SEA's credentials at NSF. "With major funding from NSF," she remarked, "we were able to bring SEA's science, once and for all, into the twentieth century."

SEA had reached the forefront of undergraduate oceanographic education. With an unmarred safety

record, its newly equipped sailing vessels were truly one-of-a-kind platforms that provided a matchless undergraduate educational experience. After struggling for so long, SEA's scientists finally had the technology they felt they needed to provide students with modern and effective ways of learning scientific principles and methods. Both ships have been equipped with up-to-date electronic and analytical sampling gear, ranging from the state-of-the-art Conductivity-Temperature-Depth (CTD) sensor, which helps analyze the temperature, salinity and density characteristics of water masses, to the Precision Depth Recorder (PDR), an acoustic instrument, used in profiling the topography and sub-bottom characteristics of the ocean floor. Using a modern hydrographic winch—several generations newer than the first WHOI-donated winch on *Westward*—students collect water samples, sediment cores and biological specimens from depths reaching

3,500 meters. In both shipboard labs, a spectrophotometer, fluorometer and salinometer facilitate seawater analysis. SEA also collects a wide range of biological organisms using a variety of sampling nets. Microscopes are available on both ships as are several computers used in the compilation and analysis of data.

The summer after *Cramer* first sailed into Woods Hole, *Westward* underwent her major mid-life refit at the National Sea Products Shipyard in Rockland, Maine, where she received an extensive overhaul both above and below decks, including a new engine and a new shipboard lab. In the fall of 1988, the two ships sailed together to the Caribbean on a parallel cruise track with SEA's 102nd Sea Semester class. Both vessels, registered as Sailing School Vessels, have been fully operational since.

SEA Surges Ahead

In recent years, SEA has launched several new non-semester programs, called SEA Seminars. During the mid to late '80s, the National Science Foundation encouraged and supported the development of SEA Experience, a summer marine science program for middle school and high school science and math teachers. Initially funding the program's two-year pilot project in 1988 and 1989, NSF renewed its support twice, most recently with a grant of more than \$1 million. Each summer from 1994 through 1998, SEA will run a doubled session of SEA Experience for 46 teachers from across the country including elementary school teachers for the first time. Modeled after SEA Semester, the teachers' program combines intensive study ashore with a rigorous research experience at sea aboard *Westward* and *Cramer*.

In 1992, SEA launched its Science at SEA seminars for high school students. These short, approximately three-week, summer programs were developed to attract young people to the oceans and to allow them to experience the excitement of a seagoing voyage. Combining study ashore and with research and sail-

ing on board one of the ships, SEA's aim is to spark in these students an interest in marine studies that they will pursue as they continue their education. Variations of the Science at SEA program are joint efforts with other organizations, including the Shoals Marine Laboratory—a renewed collaboration—and the Center for Talented Youth at Johns Hopkins University.

SEA has also developed custom-designed seminar programs with other organizations. Annual offerings include a shipboard, graduate-level seminar for first-year students in the MIT-WHOI Joint Doctoral Program, two seagoing seminars for the Williams College-Mystic Seaport Maritime Studies Program, and shore-based seminars for Elderhostel. These collaborative programs fit Cory Cramer's historic concept of an "association."

The Woods Hole Road campus has undergone construction twice since SEA's move there in 1985. Under the direction of Shore Facilities Committee Chairman Dr. George Clowes, who succeeded Paul Fye, SEA built its student cottages in 1988. Dr. Frank Bowles, a local trustee and Dr. Clowes' son-in-law, took over this committee after Clowes' death later that year. The campus was completed in the spring of 1993, with the construction of the James L. Madden Center for Maritime Studies, a handsome building that doubled SEA's administrative and teaching space. Designed by Gordon Tully, who is known locally for the expansion and renovation of the Woods Hole Library, the Madden Center is built on the exact footing of the original Bleakie mansion, incorporating the old fieldstone and granite terrace with the date 1889 forever built into its stonework. Reminiscent of the second, restored residence, the Madden Center has returned grace and elegance to this site on the Quissett ridge.

From 1989 to 1993, Dr. Robert C. Seamans, Jr., former Dean of Engineering at MIT, served as chairman of SEA's board. Seamans' impressive experience

included top positions at the Energy Research and Development Administration (ERDA), the National Aeronautics and Space Administration (NASA) and as Secretary of the Air Force. He played a powerful leadership role during his tenure and was instrumental in the success of SEA's Madden Center campaign. In June, 1993, on the day following the Madden Center dedication, Seamans retired as chairman and Dick Hawkins, involved with SEA since its earliest days, was elected to fill this top position.

With SEA's facilities completed, President Rafe Parker will lead SEA's board, staff and faculty in a major endowment campaign to be launched in conjunction with SEA's 25th anniversary. The goal of this campaign is to provide sufficient income to the organization's operating budget to stabilize tuition and to make SEA's programs more accessible to a wider range of students.

SEA has come a long way since its beginnings, reaching a high level of regard both in the local community and in broader academic circles. More than 150 colleges and universities regularly award a full semester's credit for SEA Semester, although the list changes yearly due to vagaries in campus policies, under pressure from the economy and the trends of the times.

In looking back over the years, many marvel at SEA, a dream transformed into reality by persistence, hard work, loyalty and spirit. This reality has, in turn, become embedded in the educational experiences of more than 3,000 students. As Cory Cramer said back in 1981, "What's really made SEA work are the extraordinary people we've had involved with us. The list is almost endless." Ultimately, the people who came to SEA brought with them, or developed along the way, the conviction that SEA's educational experience was not only exciting and different, but also powerful and worth fighting for.

Because of its non-traditional educational experience, SEA will have to continue struggling for credit, credi-

bility and financial support to stay at the forefront of ocean education. But if the trend of the last two decades continues, these battles will be interspersed with longer spells of peace and achievement. As Cory Cramer said many years ago, "If you have to, you can do almost anything. That is, of course, what *Westward* teaches." SEA may one day find that its historic Quissett hilltop has indeed become a safe harbor.

Lucy Coan Helfrich was born in New York City and grew up in Greenwich, Connecticut. She graduated from Brown University in 1985 with a degree in biology, and attended SEA Semester during the fall of 1984. She worked in New York for a Madison Avenue advertising agency before moving to Falmouth in 1987, when she joined the staff of SEA. Today, she continues her work in SEA's communications office.

Notes

1. Mary Lou Smith, ed. *The Book of Falmouth*. 1986. p. 349.
2. E.G. Perry. *A Trip Around Buzzards Bay Shores*. p. 371.
3. George L. Moses. *Ring Around the Punch Bowl*. p. 149.
4. *The Falmouth Enterprise*. December 28, 1984.
5. Ibid.
6. *The Falmouth Enterprise*. March 27, 1970.
7. *The Falmouth Enterprise*. November 11, 1972.
8. James F. Millinger. "Maritime Studies at Sea Semester." In *The American Neptune*. p. 206.
9. Ibid. p. 207.

Sources

- Dyer, Arnold. *Residential Falmouth: Homes New and Old*. Falmouth Historical Society, Inc., 1992.
- The Falmouth Enterprise*, archives.
- Interview transcript, Cory Cramer, 1981.
- Interviews: Richard H. Hawkins III, Dr. Susan E. Humphris, Capt. Paul A. Johansen, Mrs. Charles D. Johnson, Dr. James F. Millinger, Rafe Parker, Judy Schroth, John Wigglesworth.
- Millinger, James F. "Maritime Studies at Sea Semester." In *The American Neptune*, Vol. 47, No. 3, Summer 1987.
- Moses, George L. *Ring Around the Punch Bowl*. William S. Sullwold Publishing, Inc., 1976.
- Perry, E. G. *A Trip Around Buzzards Bay Shores*. Published by the Bourne Historical Commission, in association with William S. Sullwold Publishing, Inc., 1976.
- Sea Education Association files.

Smith, Mary Lou, editor. *The Book of Falmouth: A Tricentennial Celebration, 1686-1986*. Falmouth Historical Commission, 1986.