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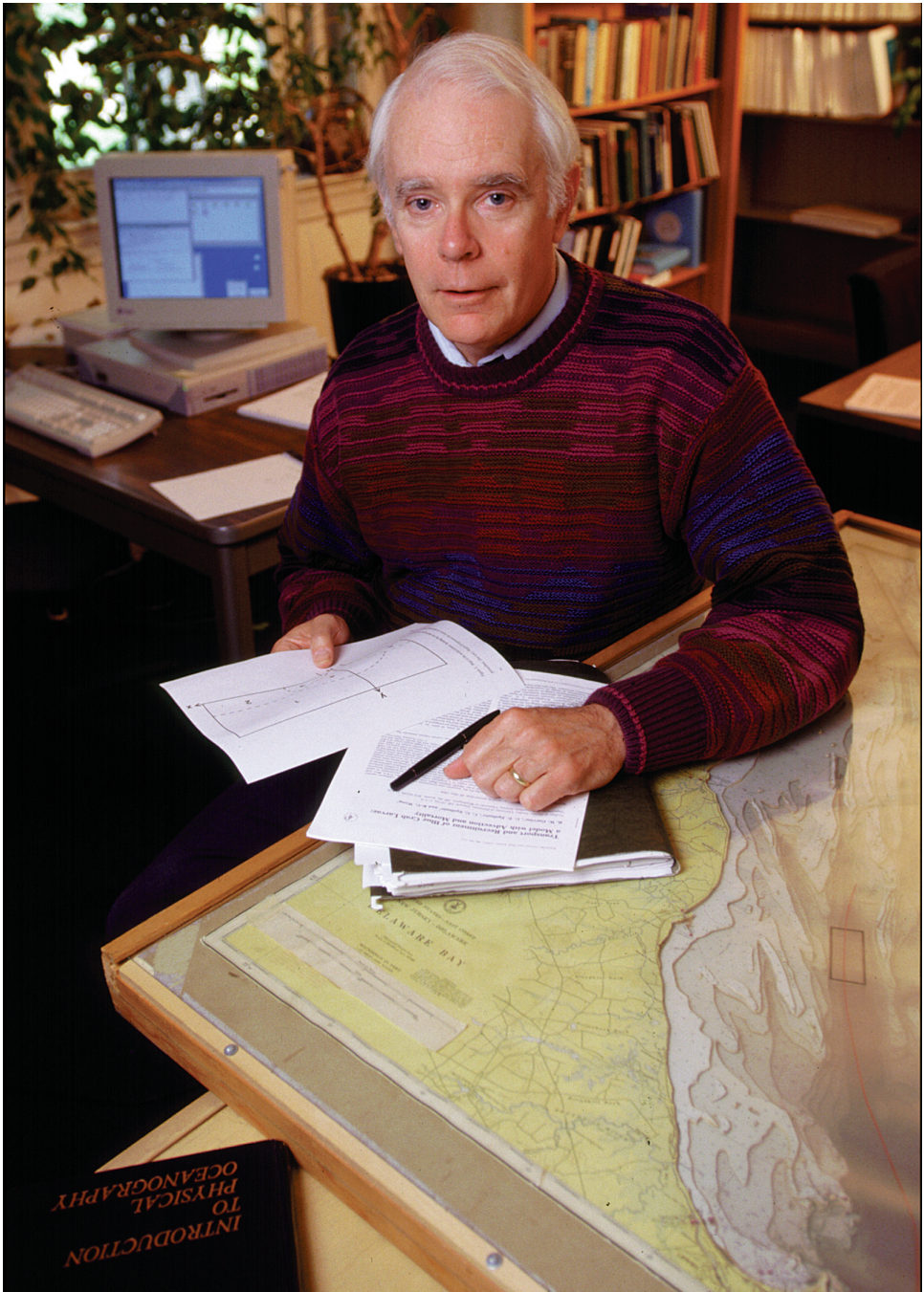
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Richard W. Garvine
1940–2007



Rich Garvine assists Tim Pfeiffer as he works on a current meter in the science lab on the R/V *Cape Henlopen*.
(caption by Glen Gawarkiewicz)



Off to Lime Rock . . . then perhaps, the Grand Prix.
(caption by Bill Fitzgerald)

Richard W. Garvine (1940–2007)

Richard Garvine passed away on December 10, 2007 of pancreatic cancer, and the ocean science community lost a respected, humane leader whose impact will endure on several levels.

Rich was born in 1940 in Pottstown, Pennsylvania. His undergraduate degree in aerospace engineering at M.I.T. was followed by a Ph.D. at Princeton University in 1965, also in aerospace engineering. He was hired by the General Electric Space Sciences Laboratory as a theoretical aerodynamicist, but in 1969, perhaps prodded by a downturn in the aerospace field, he made the rather dramatic shift to a position as an Assistant Professor of Oceanography at the University of Connecticut. At this time, oceanography was booming, with growing budgets and overwhelming optimism about its future. For example, Vice President Humphrey had just visited an oceanographic institution, the Stratton Commission had recently completed its historical work calling for a greater investment in ocean activities, and the National Science Foundation was responding by the creation of the International Decade for Ocean Exploration (IDOE). It was a splendid time to enter the field, and Rich was one of many talented scientists entering with a doctorate in a specialty other than oceanography.

Rich made the best of the opportunities. Some of his earlier oceanographic papers show distinct evidence of his past work in gas dynamics: the analogy between shock waves and oceanic fronts is clear. Indeed, oceanic fronts became one of the central foci of Rich's career. At this time, prior to the advent of convenient satellite imagery or of towed, undulating *in situ* vehicles, there was a good deal of question about how often fronts actually occur in the ocean, what their structures might be, and whether they were in any sense important. Perhaps it was these many observational uncertainties that drove Rich toward observational oceanography. Initially, he was concerned with work on river outflow fronts, primarily from the Connecticut River. Success required organizational talent, new tools, and new ways to think about making oceanic measurements sufficiently rapidly. His other early research involved wind-driven coastal upwelling, where he started with theoretical approaches but again was drawn to observations as well. Indeed, his near-surface current measurements off the coast of Oregon during the 1970's are still highly regarded.

Even though Rich was rising through the ranks at the University of Connecticut, he was drawn to the University of Delaware in 1977, where he eventually became the Maxwell P. and Mildred H. Harrington Professor of Marine Studies, and where he remained for the rest

of his life. The university's location on the Delaware estuary was ideal for his continued explorations of estuarine outflows, and, over the years, he mounted major field programs that clarified estuarine dynamics while discovering the previously undocumented Delaware Coastal Current. His focus on estuarine observation led naturally to profitable interactions with his biological colleagues, particularly Charles Epifanio, and he soon demonstrated a gift for carrying out meaningful research that crossed disciplinary boundaries. Of particular importance was his work on larval transport of blue crabs and on evaluating coastal wind power generation. At the University of Delaware, he also became active in studying the shelfbreak front south of New England. He was among the first to recognize and document the extremely complex frontal meandering that characterizes the region.

A distinguishing feature of Rich's research was his ability to do creative, groundbreaking work in both theory and observations. For him, the interplay of observations with sound theory and modeling was critical. His dynamically oriented work included a systematic classification of oceanic fronts that helped to clarify the scale-dependence of frontal processes. Perhaps most visible, though, was his continued work on estuarine outflows and how they interact with waters of the continental shelf. His thoughtful numerical modeling studies have remained a standard. It is Rich who coined the term "estuarine-shelf interaction," and his work assures that the expression will forever be associated with him.

In the fall of 2007, Rich received the Buck Ketchum Award from the Woods Hole Oceanographic Institution, an award meant to recognize lifetime scientific accomplishment along with an ability to relate science to societal applications. The award ceremony, given at the University of Delaware under the sponsorship of the University, was an appropriate valediction.

A straightforward summary of Rich's research career does not adequately summarize his enduring influence. Although he shunned formal community leadership roles, he is nonetheless regarded as one of the founders and leaders of the study of coastal physical oceanography. His leadership derived to a large extent from his individual interactions, both formal and informal, with other scientists. His passion and character left a profound impact on all who knew him.

Rich had a natural gift for mentoring. As an advisor, he was wise, gracious, full of professional advice, and he always offered the student respect and compassion even as he administered constructive (and often extensive) criticism. He served as a model for the student through his devotion to hard work, the clarity of his thought, and his unfailing kindness and encouragement. He frequently guided a student along research tasks with such a light touch that only years later did the student realize how closely and expertly his or her path had been determined, and that most of the ideas had in fact originated with Rich.

Part of the respect that he engendered was due to his unsurpassed modesty. He did not care about personal recognition to any discernable degree. This made collaboration with Rich a great pleasure. He took genuine pride in the accomplishments of his students, of

which there were many, and offered them great opportunities and responsibilities. He assigned graduate students to be Chief Scientists on cruises quite frequently, and allowed them to make their own decisions and mistakes within a carefully constructed framework of a cruise plan.

Rich lectured with remarkable clarity. He taught a number of different classes including Coastal and Estuarine Dynamics and Geophysical Fluid Dynamics. He was effective because he appealed to easily understood physical analogies, such as the spring and mass systems frequently used in mechanical engineering classes. He also was able to present examples from personal experience, which resulted in a remarkably large number of canoeing analogies! His University of Delaware classes were extremely popular, and it is not uncommon to find former graduate students who can still recall, twenty years after the class, how inspiring these lectures were. He received the 1988 University Excellence in Teaching Award for his graduate courses, a significant anomaly, since it had previously been given exclusively to professors teaching large undergraduate courses.

He played a strong role in the careers of many scientists outside his own department. He had the ability to form strong friendships with young coastal oceanographers all over the world, and to influence their work through his intellect, encouragement, quiet advice and example. Many of the younger scientists who revere Rich do so because of some important conversations rather than because of any particular publication or presentation.

Rich had an astonishing number of interests outside of science. The first of these was his well known enthusiasm for the Philadelphia Eagles football team. Second, he was a farmer and grew corn and also kept cows (but never to our knowledge wore a cowboy hat). He delighted in naming the cow-of-origin while serving hamburgers at the annual August picnics for his graduate students and was scornful of corn on the cob served at Dover Malls in the middle of January. Third, he had a well-known passion for fast cars and airplanes. He raced sports cars while he was a graduate student and during his time at General Electric. He was not averse to opening the throttle while driving between the Newark and Lewes Campuses of the University of Delaware. He frequently employed the use of aircraft in his projects to spot surface drifters and moorings and enjoyed flying in small planes. Fourth, he had an abiding interest in history and genealogy. He was particularly interested in Civil War history as well as European immigration into North America and would converse in great depth on historical matters in general. Fifth, he was an avid naturalist and could identify trees, birds, and mammals with great facility. His advice for novices was simple: begin with trees, as they had a tendency to move much less than birds. Sixth and finally, he was a dedicated canoeist. He paddled in remote areas of the Adirondacks every year as well as other excursions to northern Maine including a trip following Thoreau's trail on the West Branch of the Penobscot River. These interests are just a sampling: there were many others.

Rich suffered from numerous health problems in the last fifteen years of his life. He had several back surgeries and was in constant pain for a number of years. He had Parkinson's Disease. He struggled with major surgery for pancreatic cancer. Throughout these ordeals

he rarely complained, and continued his canoeing and skiing nearly to the end of his life, even paddling on St. Regis Pond in the Adirondacks in the fall of 2007. He was a constant inspiration to others as he showed fortitude and grace despite suffering an uncommon degree of pain and debilitation. He was a devoted family man and was supported throughout his life by his wife Virginia (Ginny) and his son Randy and daughter Marcia.

The ocean community has lost a friend and leader. We celebrate his accomplishments and enduring influence.

Kenneth H. Brink
Glen G. Gawarkiewicz

Biographical Notes

Richard William Garvine

Date of Birth: January 7, 1940

Education:

1961 Massachusetts Institute of Technology Aerospace Engineering B.S.
1965 Princeton University Mechanical & Aerospace Engineering Ph.D.

Positions:

1965–1969 General Electric Company, Space Sciences Laboratory
1969–1977 University of Connecticut
1977–2007 University of Delaware College of Marine Studies
 (Now the College of Marine and Earth Studies)
1991 Named the Maxwell P. and Mildred H. Harrington Professor
 of Marine Studies

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