Ronald J. Crowley
1937-2009
Professor of Physics, Emeritus
B.S., M.S. Ph.D. University of Southern California
California State University, Fullerton 1965-1990
Birth: June 12, 1937; Death: November 7, 2009

Ron Crowley joined the Physics Department as an assistant professor in 1965 soon after receiving his Ph.D. degree in theoretical physics from the University of Southern California. For his thesis research under the supervision of John Nodvik, Ron investigated the question of whether an electric charge accelerating in a local gravitational field radiates – basically a question in general relativity. At the time gravitational theory was considered somewhat of a backwater. However, interest in this research area grew markedly with the discovery of pulsars (highly magnetized rotating neutron stars), quasars (point-like sources of electromagnetic radiation from the compact centers of distant galaxies that surround central black-holes), and the cosmic microwave background (a remnant of the Big Bang).

When Ron came to Fullerton the majority of our small cadre of undergraduate physics majors was composed of older students who were intent on careers in local industry. Seeing that there were very limited opportunities at that time to engage our students in research projects in general relativity theory, Ron joined with another theoretician in the department, Kurt Bengtson, to develop an experimental program in low-temperature physics, specifically to investigate critical phenomena at cryogenic temperatures.

Low-temperature physics appeared to be an ideal choice for a research lab that could involve undergraduate physics students. It was basically “table-top” experimental physics. However, success in low-temperature experimental work required the use ultra-high-vacuum (UHV) equipment. At the time relatively little UHV equipment was commercially available, and what was available was prohibitively expensive. The alternative and much less costly approach was to construct the needed equipment from scratch. A valiant, but unsuccessful attempt was made in that direction. This was due in part to the limitations of our machine shop, and in part to unfamiliarity with the lore of UHV physics.

This excursion into experimental physics on Ron’s part, however, was not a total loss. He developed a close friendship with Professor Jim Woodward, a historian of science who was working

in the same laboratory on experiments related to Mach's Principle. Together they published a number of papers on aspects of gravitation. And, eventually Ron returned to his work on gravitational physics.

Ron was a gifted, if somewhat unusual, teacher. For example, in the early days he experimented with a grading system that was keyed to the scores that the top one or two students in the class received on the exams, rather than on the conventional "curve." Nevertheless, he received a number of awards for the quality of his teaching, including campus-wide recognition in 1970 for outstanding teaching.

He was especially adept at explaining scientific concepts to non-science majors. The late 1960s and early 1970s was "the age of Aquarius;" and, students were willing to accept all sorts of wild and wacky theories about the world around them. Most of this was pseudo-scientific nonsense. To counter this trend towards unquestioning belief in ideas that sounded good but which had little in the way of solid evidence to support them, Ron developed the famous "Fads and Fallacies in the Name of Science" course. The title of the course was taken from the famous book of the same name by Martin Gardner, who for many years wrote the "Recreational Mathematics" column in *Scientific American*.

In this remarkably popular general education course, Ron taught students how to examine critically the claims of parapsychology, biorhythms, bio-cosmic energy, orgone energy, UFOs, Kirlian auras and Kirlian photography, out-of-body and near death experiences, pyramid power, and faith healing. He was not satisfied with mere explanations of the fallacies involved in these claims. He engaged the students in classic double-blind experiments to test the claims of psychics, he showed students how magnetometers could be manipulated to show excess "energy" when they were placed under plastic pyramids, and he even had one of his classes construct an "orgone energy box," which he used to show them that in reality the box did not "concentrate" vital energy. He even had his students attempt to replicate the experiments of Cleve Backster, who claimed that plants listened when he talked to them. Backster used a polygraph (lie detector) attached to the plants to support his claims. Ron's students discovered that Backster was observing nothing more than the background noise that the device records when it is operating at the limits of its sensitivity. Ron's students obtained the same "signals" whether they connected the polygraph to plants, pieces of Styrofoam, or coins.

Frank J. Wessel, who was one of Ron’s earliest students and who now is a project scientist at U.C., Irvine wrote the following about Ron:

> My first acquaintance with Professor Ronald J. Crowley was triggered by my interest in his laboratory at CSUF. Strolling down the hall on the 6th floor, I glanced at something I had never seen before in my life, except perhaps in movies. It was a large laboratory stuffed full of electronics, cryogenic equipment, meters, wires, a walk-in Faraday cage, and lots of other apparatus. As I stopped to gaze, I was greeted by a young professor with penetrating eyes and a long, bushy beard; a rather mad scientist looking fellow, I thought.
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> “Come in,” he demanded, “have a look.” He gave me a quick tour, describing how this equipment was used for research on superconductors; a “hot topic” in physics at the time. But what intrigued me the most during my visit, was the brain-wave monitor in the Faraday cage. Wow - a physics professor investigating brain emissions! As I got to know him better, I realized that under that mystique was just an ordinary fellow, having fun.
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> Professor Crowley's unbridled enthusiasm for all things technical was infectious to all who came in contact with him. So teaching was second nature for him. Although he preferred an informal classroom style, his classes were probably the most rigorous available in the department. I recall how many of my student colleagues feared taking his classes, due to the tremendous work load required to get a passing grade. Nevertheless, few faulted him when they realized they had been coached to perform far beyond their own expectations, learning abstract concepts ranging from simple mechanics to gravitational cosmology. They knew that the grade they got was the one that they really earned!
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> Teaching provided Professor Crowley with an opportunity to challenge students who were sincerely interested in learning. At one of the many parties held at his house, I recall him defending his premise that teaching science was the most rewarding profession that one could ever hope to have. As an impressionable young physics freshman at CSUF, that discussion was disruptive: since I had never considered this possibility before and because his words have never left me.

> The best metric of Ron's ability to connect with students is the large number of former students who maintained contact with him, decades after they first made his acquaintance. Indeed, I am one. Ron and I were close friends for over 35 years. He was my confident and mentor for much of my adult life.

In the early 1970s, together with Professor Louis Shen, Ron developed the Discovery Center. The Discovery Center, which was patterned on the Exploratorium in San Francisco, was a traveling science museum that brought "hands-on" exhibits that illustrated scientific principles to a variety of sites in Cal State Fullerton's service area, including schools and shopping malls. The purpose of the Discovery Center was to generate interest in science among both children and adults and to let the general public know that we had an active physics department at Cal State Fullerton. Many of the original Discovery Center exhibits now can be seen at the La Habra Children's Museum.

Ron also was one of the founders of the "No Name Faculty Club." This started out as an eclectic group of faculty members from across campus who met to drink beer and discuss the issues of the time. Initially, the club met at the somewhat notorious 301 Café on Santa Fe Avenue in Placentia. Later it morphed into a forum where CSUF faculty from across the university gave evening lectures to their colleagues about their current research and professional activities after a potluck supper. Ron and his wife Marilyn initiated this phase of the No Name Faculty Club by offering their home for the first few years of its long life. Indeed their home often was the focus of department social gatherings that included faculty, staff, and students.

In the 1980's Ron also was active in the Skeptics Society, a group of scientists, magicians and lay people formed to examine the claims of paranormal phenomena, such as the Bermuda Triangle, Uri Geller's telekinesis claims, etc. For years the lectures of the Skeptics Society were held at Caltech, but Ron succeeded in bringing the evening lecture series to our campus for a year so that more of our students and faculty could benefit.

As time moved on, the department began to attract younger students, some of whom were interested in pursuing advanced degrees in physics. As a result, Ron was able to conduct research with and mentor several students who went on to obtain Ph.D. degrees in the field. Ron returned to the study of general relativity and gravitation, which was becoming a very

exciting field during the 1970s and 1980s. When the opportunity for a sabbatical arose, Ron joined Kip Thorne's group at Caltech where he published a number of papers in the field. He received a Visiting Associate appointment at the Institute and continued his collaboration well beyond his retirement from Cal State Fullerton in 1990.

Even though Ron was a gifted theoretician, he was comfortable working with his hands. Together with his wife Marilyn, he built a magnificent home in Fullerton, which became a focus of department and campus social activity. This home-building project was so successful that he decided to move on to a new career as a builder and developer. He took an early retirement from Cal State Fullerton in 1990 to pursue this work and other entrepreneurial ventures. Though retired from Fullerton, he maintained close contact with his colleagues on campus and at Caltech.

Ron was possessed of an adventuresome spirit. He enjoyed his "toys." These included fast cars, trucks, and motorcycles. He also enjoyed a variety of extreme sports including mountain biking, ice climbing, ocean kayaking, river rafting and similar adventures. Though he had broken his neck in a cycling accident, he continued to ride until he died much too young from the complications of an off-road cycling accident in La Mirada in 2009.

Ron is missed by a host of colleagues and friends. He is survived by his wife Marilyn, his son Sean and his daughter Colleen.

Submitted by
Mark Shapiro (with contributions from many of Ron's friends and colleagues including Roger Dittmann, Dorothy Woolum, Jim Woodward, and Frank Wessel).
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