DOCUMENTS OF THE GENERAL FACULTY

REPORT OF THE MEMORIAL RESOLUTION COMMITTEE FOR
RAYNOR L. DUNCOMBE

The special committee of the General Faculty to prepare a memorial resolution for Raynor L. Duncombe, professor emeritus, aerospace engineering and engineering mechanics, has filed with the secretary of the General Faculty the following report.

Dean P. Neikirk, Secretary
General Faculty and Faculty Council

IN MEMORIAM
RAYNOR L. DUNCOMBE

Raynor Lockwood Duncombe was born in Bronxville, New York, on March 3, 1917. Dr. Duncombe died at his home in Austin, Texas, on July 12, 2013. During his ninety-six years, he had great impact on the field of astronomy and especially on students in aerospace engineering at The University of Texas at Austin. He was a Fellow of the American Astronomical Society, the Royal Astronomical Society, the Institute of Navigation, and the American Association for the Advancement of Science. He was an Associate Fellow of the American Institute of Aeronautics and Astronautics. He was a member of the International Astronomical Union, the International Association of Institutes of Navigation, the Association of Computing Machinery, the Washington Philosophical Society, the New York Academy of Science, the Washington Academy of Science, the Celestial Mechanics Institute, Sigma Gamma Tau, and Sigma Xi. Dr. Duncombe received the Norman P. Hays Award of the Institute of Navigation and the Navy’s Meritorious Senior Executive Award. Minor planet 3368, Duncombe, is named in his honor.

Ray recalled that his interest in astronomy was probably inspired by the 1925 solar eclipse that went through his hometown of Newtown, Connecticut. He earned his B.A. degree in English Literature with a minor in astronomy from Wesleyan University in 1940 and an M.A. in English Literature from the University of Iowa in 1941. However, he retained his interest in astronomy and soon joined the staff of the U.S. Naval Observatory (USNO) in 1942. He worked in the Transit Circle Division until 1946, when he transferred to the Nautical Almanac division. There, he helped to automate the publication of the Nautical Almanac and other USNO publications. In 1948, he was detailed to Yale University to help set up a computer laboratory there. He became a graduate research assistant at Yale, earning a Ph.D. in Astronomy in 1956. His dissertation was titled The Determination of the Corrections to Newcomb’s Theory of the Motion of Venus. His work was part of an effort to update the ephemerides of moon and the planets.

In the mid-1950s, Ray was asked to participate in an orbits working group, organized by the Vanguard Project, which was the U.S. organization planning to launch a satellite as part of the International Geophysical Year. When the Soviet Union launched the first artificial satellite in 1957 (Sputnik-1), Ray contributed to an orbit determination effort that led to a graphical representation of the orbit, which was presented to President Eisenhower. Ray also consulted on the Vanguard Project and the U.S. manned spacecraft projects (Mercury, Gemini, and Apollo), as well as the U.S. Navy Space Surveillance System.

Dr. Duncombe served as assistant director for research at the USNO from 1958 to 1962 and as director from 1963 to 1975. In this position, he was responsible for all USNO publications (The American Ephemeris and Nautical Almanac, The Air Almanac, The Nautical Almanac, and The Astronomical Phenomena). He was responsible for all USNO computer facilities and was a driving force in the introduction and use of computers for astronomical calculations.
Ray’s research focused in many areas of astronomy and astrometry. His work includes papers on occultation of stars by the moon, on variable stars, on dynamics of the planets, and on fundamental reference systems for description of astronomical phenomena. He studied the motions of the planets Venus and Mars and the motions of the main belt asteroids Ceres, Vesta, Pallas, and Juno. He advised students on the determination of a reference system based on minor planet observations and was an international leader in the development of a modern reference system for these observations. This reference system replaced the Newcomb-based reference system in 1984. Later, he did research in celestial navigation and the preparation of sight reduction tables. His research resulted in more than one hundred and fifty papers.

In 1975, Ray retired from the U.S. Naval Observatory and joined the faculty of the Department of Aerospace Engineering and Engineering Mechanics at The University of Texas at Austin with the rank of professor. While there, he served as the executive editor of the journal *Celestial Mechanics* from 1976 to 1987. In 1978, he became a founding member (and secretary) of the Hubble Space Telescope (HST) Astrometry Science Team, reflecting his continued interest in questions concerning fundamental astronomy. It became clear early on that the problem would require much more time than possible with HST, and Ray obtained a National Science Foundation grant to observe a selected set of minor planets to map system irregularities. Ray was also part of the team that exploited the Fine Guidance Sensors on the HST to measure the unknown rotation of the HIPPARCOS (a European astrometric satellite) instrumental coordinate system with respect to the celestial sphere. These results, published in 1997, were incorporated into the final determination of the HIPPARCOS reference frame.

After retiring and being awarded professor emeritus status, Professor Duncombe and his wife, Julie, spent each summer and fall at their summer home in Highlands, North Carolina. They would return to Austin in time for him to teach his *Determination of Time* course to graduate students at The University of Texas at Austin during each spring semester. His course always included a class trip to the McDonald Observatory in West Texas. Many students signed up for his course just to go on the trip and then found that the information in the course was much more important to them than the class trip.

Dr. Duncombe was a teacher, a pilot, and a musician. He could recite poetry and discuss the universe with equal ease. With his wife of over fifty years, he entertained many colleagues and students. He always considered the humanity of any course of action as well as the technical and professional aspects. He was a humble man with a contagious sense of humor. He is sorely missed.

This memorial resolution was prepared by a special committee consisting of Professors Wallace T. Fowler (chair), Professor Bob E. Schutz, and John C. Ries.

Distributed to the dean of the School of Engineering on November 18, 2013, and posted under “Memorials” at http://www.utexas.edu/faculty/council/.