Seibert Quimby Duntley Biography

Deborah Day and Roswell W. Austin

Seibert Quimby Duntley was born in Bushnell, Illinois on October 2, 1911 and was known to friends and family as Quimby. He received an SB in physics from Massachusetts Institute of Technology in 1933. During his undergraduate years, Duntley was a member of the Coast Artillery R.O.T.C. unit at MIT and received a reserve commission of second lieutenant. Duntley received an MS degree from California Institute of Technology in 1935 and an Sc.D. in physics from MIT in 1939. Duntley was a teaching fellow in the Department of Physics from February

1937 through June 1939. He was appointed to the faculty as Instructor in Physics in 1939. While at MIT, Duntley met and worked with Karl Compton, Harold Edgerton, and many other prominent physicists. Duntley's primary interest was in applied physics and, in particular the optics of turbid media.

The Visibility Laboratory was created at the Massachusetts Institute of Technology in 1939/40. It was the brainchild of Duntley and MIT physics chair Dr. Arthur C. Hardy. Initial funding for the laboratory came from the Works Progress Administration (WPA). It was created to apply optics to problems of camouflage and misdirection with respect to an anticipated aerial bombardment of Boston. Among other projects, Duntley worked to make Watertown, Massachusetts look like Boston from the air. When World War II actually began, the National Defense Research Committee (NDRC) funded the laboratory and its work was expanded to include research on target location, visibility of submerged objects in the sea, the location of enemy submarines, and recovery of downed pilots. Duntley described the wartime work of the laboratory in the Summary Technical Report for the NDRC Division 16, which he headed.

At the end of the war, MIT's physics department was less interested in applied research and more interested in nuclear physics. Support for the Visibility Lab expanded to include project funds from the Air Force and the Office of Naval Research. The Visibility Lab continued to work on visibility of submerged objects including mines, submarines, shoals, reefs and other hazards to navigation at its Diamond Island facility on Lake Winnepesaukee in New Hampshire. However, its research was increasingly focused on the Pacific and the laboratory needed access to ships and military aircraft. Duntley developed contacts with Pacific coast scientists including Walter Munk at Scripps and Max Lund and others at the Naval Electronics Laboratory. Duntley approached Munk to ask if the laboratory might move to San Diego. In 1952, Roger Revelle and Quimby Duntley agreed that the laboratory would become part of the Scripps Institution of Oceanography in San Diego, and the U.S. Navy Bureau of Ships agreed to pay for the move.

Duntley was appointed Associate Research Physicist and Director of the Visibility Laboratory at Scripps Institution of Oceanography in 1952 and was promoted to Research Physicist two years later. The laboratory was physically located on Naval Electronics Laboratory property at Point Loma. The laboratory was entirely supported by grant or contract research, and the size of the staff varied from 25 to almost 100 at its peak. The work of the laboratory centered on the transmission of visible light through the atmosphere and water and the related problems of image formation and recognition. Other major studies at the laboratory which Duntley initiated or to which he made major contributions included the development of specialized photoelectric scanning and detection systems, the psychophysical investigation of various visual capabilities of a population of young, emmetropic observers, the mathematics and physical implementation of digital image processing, and the remote sensing of ocean properties from aircraft and space using the optical signal generated by the ocean. The nature of much of the research required measurements of the optical properties of the ocean or atmosphere for which no instruments existed. As a result of these requirements, many unique and very specialized instruments were developed by the laboratory, many of which were based on concepts or optical designs devised by Duntley.

Duntley served on a number of SIO committees and was an active in the Academic Senate. He was a member of the SIO Director's Administrative Advisory Council. In 1956, Duntley was a member on the advisory committee for the SIO International Geophysical Year (IGY) research program. He was active on SIO Staff Council. He served on many Staff Council committees including Public Ceremonies, Information and Lectures (1958-1961), Building and Campus Development Committee (1956-1959), and the Military Research Panel (1959-1963). He also served on the Research Advisory Council, SIO Space Committee, and the SIO Committee on Research Involving Human Subjects (1973-1975).

Although Duntley was most widely known as an administrator and research scientist, he also taught courses at SIO and UCSD. In 1955, he gave lectures on visibility in Oceanography 220, Special Topics in Oceanography. Duntley earned the academic rank of Professor in 1966 and taught at SIO and at the Department of Applied Physics and Information Science (APIS) at UCSD until his retirement. Duntley's graduate students included: Bryan Coles, Gilbert Van Dyke, Otto Orzech, Robert Owen and Wayne Wilson at SIO, and Keith Bromley, William Martin, Stephen Moran, Robert Morley, and Lowell Rosen at APIS.

Duntley participated in one of the Visibility Lab's most famous experiments, the Visual Acuity Experiment undertaken with funding from NASA in 1965. On May 15, 1963 NASA astronaut Gordon Cooper reported that he could see vehicles raising dust along the U.S.-Mexico border from his Mercury VII space capsule. Some scientists suggested that it was not possible to make such an observation from orbit, and others thought that human vision might be distorted in space. NASA contracted with the Visibility Laboratory to investigate the observation and perform a visual acuity experiment to test sight in flight. The laboratory designed the Gemini Visual Acuity Experiment for Gemini flights 5 and 7 in 1965. Visibility Laboratory scientists including Duntley confirmed 84% probability that a trained pilot could correctly interpret dust patterns as vehicles and that Cooper's observation was consistent with border patrol vehicles operating that day in El Centro, California.

Duntley was unaccustomed to controversy when the Visibility Laboratory came under increasing scrutiny by student groups protesting the Vietnam War in the late 1960's. The Visibility Lab was specifically criticized by UCSD student newspapers for doing "war research." Research funded at the Visibility Laboratory by the Central Intelligence Agency (CIA) was singled out for particular criticism. In April 1970, Duntley met with UCSD Dean Herbert York to review all classified research at the Visibility Laboratory. He reported to York that no Visibility Laboratory research contributed directly to military operations in Southeast Asia. He directed Visibility Laboratory Associate Director James L. Harris to prepare a full report on the work of the laboratory.

May 1970 was a challenging period for UCSD, for research scientists at UCSD, and, in particular, for the scientists and staff of the Visibility Laboratory. Students at college campuses across American went on strike during first week of May. On May 4, 1970, the UC Regents, at the request of UCSD Chancellor William J. McGill, obtained a restraining order against students occupying Urey Hall. A number of resolutions were introduced at Academic Senate condemning research sponsored by defense organizations. A protest march to the Visibility Laboratory was

scheduled for Friday, May 8, 1970, and widely reported in local newspapers, although only a few protesters actually went to Point Loma. Visibility Laboratory Associate Director James L. Harris issued a memorandum on the Visibility Laboratory to members of the Academic Senate in which he noted that the Visibility Laboratory conducted research on all aspects of visibility, including perception, illumination, reflection, visual processing and sensors from mechanical sensors to the human eye. Harris noted that in 1970 the annual budget of Visibility Laboratory was approximately one million dollars with 60% from the Department of Defense, 20% from the CIA, and the remaining 20% from NASA, NSF and the American Optical Company. He estimated that 98% of the lab's work was unclassified, including all of the work undertaken for the CIA. Duntley was interviewed extensively by the press and television throughout this period.

Duntley was an active member of many professional associations, particularly the Optical Society of America and Sigma Xi. He was president of the Optical Society of America in 1965 and 1966. He was Chairman of the Representatives of the Optical Society on the U.S. National Committee of the International Commission on Illumination. During the 1960's he was a member of the Armed Forces-National Research Council Committee on Vision. He was a participant in the 1971 JASON Laser Summer Study. He chaired the Richardson Medal Committee of the Optical Society of America from 1972 to 1975.

Duntley resigned as director of the Visibility Laboratory in 1975, and retired in 1977.

Quimby Duntley wrote over a hundred papers in physics and optics on topics that ranged from spectrophotometry of living human skin to remote sensing. He received international recognition for his work in what became known as environmental optics and was an invited participant and contributor at many international committees and congresses. He received many awards, including the Army-Navy Certificate of Appreciation and, in 1961, the Frederic Ives Medal, the highest award of the Optical Society of America, "recognizing overall distinction in optics."

Quimby Duntley died in La Jolla on October 22, 1999 after a long battle with Alzheimer's disease. His wife, Mabel Austin Duntley, and their three children, Susan, Nola and Stephen survived him.