Professor Tommy Dickey's Nominating Speech

About Professor Ray Smith

Who Received the Jerlov Award, November 2002

It is a great honor to be able to review a few of the many accomplishments of Ray Smith on this occasion of the presentation of the 2nd Jerlov Award. First I would like to acknowledge and thank my esteemed colleagues who wrote letters in support of Ray's nomination. These include Ken Carder, Curt Davis, Dave Karl, Curt Mobley, Dave Siegel, Charlie Yentsch, and Ron Zaneveld.

Ray received his Ph.D. in high energy physics from Stanford University in 1961. Following two years as a research fellow and lecturer at Harvard University and Northeastern University, he joined the Visibility Laboratory of Scripps where he was a major intellectual force and was responsible for much of the success of the Vis Lab. In 1981, Ray then joined the faculty of the University of California, Santa Barbara (UCSB). There he has been an active educator with several students completing graduate degrees under his direction. In 1994, Ray officially "retired" and became Professor Emeritus at UCSB. Ray's research efforts have continued at a high level in terms of both quality and quantity. Thus far, he has authored or co-authored over 100 articles that have had major impacts on optical oceanography and other areas of oceanography and environmental science.

Ray's accomplishments include the development of several novel optical instruments including spectral radiometers to measure in the visible to the UV. These were integrated into a bio-optical profiling system called BOPS. BOPS was the forerunner for many similar systems that have been used for a host of bio-optical studies including calibration and validation of aircraft and satellite ocean color remote measurements.

Ray was one of the early proponents of interdisciplinary oceanographic studies and the term "bio-optics" was, to my knowledge, first used in a classic Smith and Baker
Limnology and Oceanography paper in 1978. Ray has been a major contributor to several programs involving optics and bio-optics. These include: Warm Core Rings, FRONTS, the Optical Dynamics Experiment, Biowatt, Marine Light in the Mixed Layer, Water Colors, ICECOLORS, and the Antarctic Palmer Station Long-Term Ecological Research program. Ray is also well known for his work in the Arctic, Crater Lake, and Lake Tahoe.

Importantly, Ray led early efforts to place ocean optics on a sound scientific basis in terms of traceable optical standards, terminologies, and units. One of his most quoted and utilized papers dealt with the quantification of the optical properties of "pure" seawater, required as a standard for many interpretive and modeling applications. In the context of this nomination, it is also interesting to mention Ray's research concerning optical classification of natural waters - work that Nils Jerlov likely would have found most interesting. Ray also led a group of Biowatt investigators in developing the first credible estimate of an oceanic "photon budget."

Ray was one of the early proponents of and major contributors to the establishment of optical remote sensing from space. Much of his work has been important for the development of ocean color remote sensing algorithms, which expand the spatial domain of optical observations to regions and virtually the entirety of the world oceans.

Ray began work in ultraviolet (UV) radiation in the late 1970's. Within the past decade, Ray and colleagues have led groundbreaking studies dedicated to oceanographic and ecological effects of increased UV radiation off Antarctica in the Southern Ocean caused by the growing ozone hole. Importantly, research by Ray and co-workers stimulated a host of important ecosystem studies involving planktonic bacteria, fish larvae, and even terrestrial plants and animals.

Ray's scientific work in ocean optics has been the focus of this nomination. However, his contributions have extended well beyond into studies of ecosystems, population dynamics, cetaceans, sea ice, glaciology, and climatology.
Ray's seemingly limitless energy and enthusiasm have set high standards for his students as well as peers. I would like to conclude with just a few quotes from the supporting letters. Charlie Yentsch stated that "Ray, among a large group of scientists, has put more effort into making ocean color a legitimate area of optics than any other researcher." Dave Karl noted that "several of his many scientific papers might qualify as 'landmark' stature." Ron Zaneveld summarized his support by stating "Thanks to the vision and energy of researchers such as Professor Smith, we now have functioning ocean color satellites" and "There is no doubt that he has significantly advanced our knowledge of how light interacts with the ocean." Ken Carder stated, "Surely, Ray is a perfect example of a researcher who followed in the steps of Nils Jerlov?" And finally, Curt Mobley's assessment included the following statements "Without Ray's contributions over the last forty years, optical oceanography in general, and bio-optics and instrumentation in particular, would not be so nearly advanced as they now are. He is second to none in deserving the Jerlov Award." Curt also warns everyone to think twice before accepting an invitation from Ray to go mountain biking. In Curt's words "Ray is extremely honed, and you will be eating his dust all day."

Jim Yoder will now make the formal presentation.