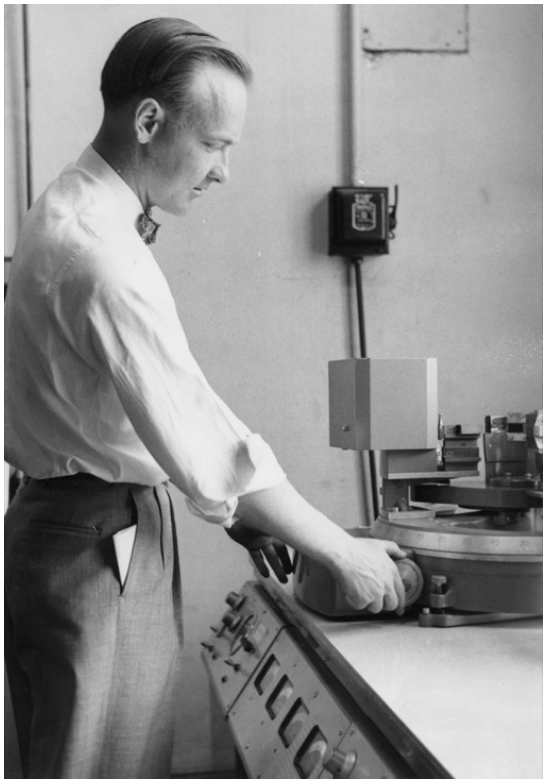
In Memory of Professor Robert E. Ogilvie
Remarks by Yet-Ming Chiang, 28 September 2013



This year marks Professor Robert Ogilvie's 60th year as an MIT educator. After completing his PhD with Professor John Norton, he joined the teaching staff in 1953, and although he officially retired as Professor Emeritus in 1985, he maintained an office in Building 13 continuously thereafter. We would see him like clockwork on Tuesdays for as long as he was able. He would park right out in front of Building 13 in the most privileged parking spot, and he favored driving two seaters that always sported the license plate "OPTIKI," in memory of his Cheoy Lee sailboat.

By the time I arrived at MIT as a freshman in 1976, Bob had already been on the faculty for some 20 years. Therefore, although I have my own indelible memories of Bob, I am indebted to many others, especially Sam Allen, John Vander Sande, and Joe Goldstein for helping to fill out this picture of Bob's earlier life and times at MIT.

Bob had many, many interests, scientific and otherwise, but the foundation of his professional career was the characterization of materials. He used characterization as the springboard to understanding fundamental materials thermodynamics and kinetics, as well as the many scientific mysteries you have and will hear about. In the mid 1960s, he built one of the very first electron microprobes, launching the field of electron probe microanalysis, or EPMA. This is a technique that uses a finely focused electron beam to measure the elemental makeup of materials at micrometer length scales by exciting the emission of X-rays that are characteristic of the elements within. In many ways, EPMA was to that era what nanotechnology, and the enabling nanometer-scale probes are to us today. It allowed for the first time the analysis of materials constitution at length scale that were then unprecedented. It is fair to say that without microanalysis, nanoanalysis would not exist today. EPMA is still in widespread use today, for instance in the field of geology, as is a methodology for quantitative analysis that bears Bob's name. The Ziebold-Ogilvie analysis, developed with Bob's student Tom Ziebold and published in two papers in 1963 and 1964, enabled the precise quantification of unknown compositions using appropriate reference standards. Based on this early research, Bob became

a cornerstone of the Microbeam Society, in which he was active for many years, including serving as its President.

Bob's interests then evolved towards electron microscopy; he and his graduate student Bill Morris built one of the early scanning electron microscopes. The company he founded with Professor Norton, AMR or Advanced Materials Research, built and sold these new electron imaging tools commercially. Bob was also instrumental in fostering the growth of transmission electron microscopy within our Department starting in the early 1970's. By mysterious methods that no one I have spoken to can recall, he came into possession of a valuable and then state-of-art TEM, the Philips EM300. Bob subsequently donated this instrument to help launch the Central Facility for electron microscopy that continues to this day within our Center for Materials Science and Engineering. These accomplishments laid the foundation for Bob's later contributions to conservation science that you have heard about from Arthur Beale.

However, an academic career is equal parts professional accomplishment and student education. Bob had a profound impact on generations of MIT students that crossed his orbit. If the mark of a good educator is that he or she changes the way that you view the world, Bob was a legendary educator. Bob helped to establish, and then taught for many years, one of the legacy courses of our Department, an undergraduate course on the characterization of materials known that was known for 30 years by its MIT course number 3.081, and which continues today as Course 3.014. With Bob, you would remember the core principles of materials science and engineering because you could not forget his stories, delivered with such wonder, wit, and humor. When Ogilvie spoke of the Japanese sword, you became part of his secret conspiracy, where true understanding beyond the art and the history came in the form of carbon concentrations, heat treatments and quenches, and time-temperature-transformation diagrams. For so many of us, the iron-carbon phase diagram would never again be the same. (For that matter, sunsets and martinis would never again be the same.)

And, what undergraduate student could fail to be fascinated by meteorites, true metallurgical objects from outer space? Microanalysis again played a key role in understanding their constitution. Bob loved scientific mysteries. For a number of years, he attempted to reproduce the Chinese magic mirror in his laboratory. This device is a cast hand-mirror in which you can see your image like any ordinary mirror, but if light is reflected off of it and onto the wall or ceiling, an artistic pattern or writing appears in the projected image. If you asked Ogilvie how it worked, the answer was always "It's magic!" The scientific answer had something to do with quenched-in residual stresses, the measurement of which, by X-ray diffraction, was a particular passion of Bob's.

No mention of Bob's academic career would be complete without mention of his famous, some would say infamous, sabbatical in 1971-72 in which he set off to sail around the world with his son Rob on Op-Tiki. As the end of that year approached, Bob concluded that he was not yet ready to return to MIT, and sent notification that he would be extending his sabbatical for a second year. I always believed that we had Bob to thank for the current sabbatical policy whereby a professor must request and have approved a sabbatical leave, and that such leave must include a professional development plan.

Above all else, Bob was an MIT original. To me, he embodied the unique meritocracy that is one of MIT's core values, where you can come from anywhere, including rural Idaho, and by virtue of scientific ability, rise to the very top of your profession. He also epitomized that combination of scientific curiosity, technological practicality, lifelong self-learning, love of discovery, and love of teaching that represents the best of MIT. Each conversation with Bob would remind you of why you chose to go into science. He was loved by his students and colleagues, and will be deeply missed.