Robert E. Ogilvie  
1923 - 2013

Brief biography
Ogilvie was born in Wallace, Idaho and graduated from high school in Spokane, Washington in 1941. During the war he worked for Boeing to support the war effort and saw service in the Navy Air Corps. In 1945 he returned to the University of Washington, which he had entered in 1939. He studied nuclear physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1949 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 1948 respectively at the University of Washington. In 1950 he received his bachelor of science degree in physics, which by way of Masters and Engineers degrees, he did in 1946 and 315

Early microprobe instruments

Ogilvie’s major contribution to x-ray microanalysis was the development of the “a” factor (aka “alpha”) for x-ray microanalysis. In the early 1960s, the ZAF method was not well-developed and assignment errors were made quite frequently. Furthermore, assignment errors were generally available. In response to the state of affairs, Ziebold and Ogilvie developed an empirical adjustment technique called the “a” numeric factor. This factor is related directly to the concentration of element 1 in the sample for a given electron beam energy and take-off angle. The prominence of the “a” factor increased greatly when it was further developed by Bence and Albee (1968) and applied to geological problems. The “a” numeric factor was a step forward in x-ray microanalysis that has been used in most of the best articles in the geological sciences.


Pioneering scientific contribution

Ogilvie proposed starting a consulting company, to be called Advanced Research Analytical Corp., which initially had three commercial probes. He had a number of different collaborations, both in starting the company and later in working with it. He was an active member of the electron microprobe community, and was elected an honorary member of EPMAS in 1986. He also started a week-long summer course in x-ray microanalysis in the 1960s with each successive session in Raymond, Connecticut and then in Princeton. This course eventually moved and grew to become the Lehigh summer course in microscopy.

An Empirical Method for Electron Microanalysis
T.G. Ogilvie and R.D. Bence
Anal. Chem. 36:322-327

AMR/AMRAY

AMR went on to become AMRAY, the first US manufacturer of high performance electron microprobes. Ogilvie was on the board of AMRAY. The company was located in Cambridge, Massachusetts.

Founder of MAS

Ogilvie was a founder of EPMAS (Electro Probes Analysis Society of America), the forerunner of MAS (Microanalysis Analysis Society of America). He organized the "World's 3rd 3rd International Congress of X-ray Microanalysis" in 1970, which was the first microanalysis meeting in the United States, and which was quite successful. The meeting was organized in a hotel on the beach in Galveston, Texas, which was chosen because it was a low cost location and because Ogilvie wanted a more "laid back" atmosphere. W. "Bill" Ogilvie was an entrepreneur and a visionary, and he was very successful in his business endeavors.

An alternative view of Ogilvie’s major contribution to x-ray microanalysis was the development of the “a” factor. Ogilvie created this factor in the 1960s, when the ZAF method was not well-developed and assignment errors were made quite frequently. Furthermore, assignment errors were generally available. In response to the state of affairs, Ziebold and Ogilvie developed an empirical adjustment technique called the “a” numeric factor. This factor is related directly to the concentration of element 1 in the sample for a given electron beam energy and take-off angle. The prominence of the “a” factor increased greatly when it was further developed by Bence and Albee (1968) and applied to geological problems. The “a” numeric factor was a step forward in x-ray microanalysis that has been used in most of the best articles in the geological sciences.


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Acknowledgements

This paper is a compilation and synthesis of:


Research interests

While active at MIT, he began working with William Young, founder of the Research Lab at the Museum of the Arts, Boston, and developed a long collaboration and supportive relationship with what is now the Department of Conservation and Collections Management at the MFA, as well as with conservation and preservation committees throughout the state and nation. He was instrumental in establishing and growing the microscope community with a focus on technical advancements.

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Another application of the electron microanalyzer was the examination of meteorites. The technique could determine the elements present in the material by measuring the size of the signal from each element. This was done by Ogilvie and his team at the Boston Museum of Fine Arts. They determined the chemical composition of meteorites, which are found on Earth and are believed to be remnants of the early solar system.

Ogilvie had a long fascination with the creation and structure of samurai swords, leading him to visit swordsmen in Japan, including the famous Gassan family, to see how swords were made. He worked with his students on the processing and compositional changes that took place as a result of heat treatment. His research involved using the electron microprobes and scanning electron microscopes to analyze the structure and composition of the steel used in swordmaking.

At the right, he is shown later in life at Kinkaku-ji in Kyoto.

Author’s note

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