Charles Henry Maxwell 1923–2000

Charlie Maxwell was a familiar visitor around the Bureau of Mines. Although Charlie made his home in Lakewood, Colorado, he traveled often to New Mexico. Usually he was en route to his hometown, Las Palomas, or to Truth or Consequences, although it was still known as Hot Springs in 1941 when Charlie graduated from high school there. One trip each year in November coincided with the New Mexico Mineral Symposium.

During his 37-year career with the U.S. Geological Survey, Charlie undertook many mapping and resource-evaluation projects in New Mexico, Brazil, Kentucky, Wyoming, and Colorado. Charlie spoke fluent Portuguese and Spanish and worked for 5 years in Brazil, a research project that culminated in the 1972 publication of USGS Professional Paper 341J, Geology and ore deposits of the Alegria district, Minas Gerais, Brazil, an important contribution to the understanding of the stratigraphy, structure, and mineral resources of the region. From 1980 to 1988 Charlie headed a project to study the resource potential, mineralogy, and geochemistry of the Black Range tin district. Publication in 1986 of Geologic map of El Malpais lava field and surrounding areas, Cibola County, New Mexico, a 1:62,500-scale sheet that covers 950 mi², includes the first detailed mapping of some of the flow units south of Grants.

For many years Charlie made generous donations of minerals to the Mineral Museum of the New Mexico Bureau of Mines and Mineral Resources. In 1996, Charlie loaned a sizable collection of fine Brazilian cut gemstones, which enabled the museum to create a gem display for the first time. Among the faceted stones are aquamarine, various tourmalines, topaz, andalusite, chrysoberyl, and many varieties of quartz—aventurine, amethyst, rose, and smoky quartz. The focus of the display is a 32-pound clear-to-blue, gem-quality partial crystal of topaz from Minas Gerais, Brazil, and five faceted clear and blue stones taken from the large topaz.

Charlie was a classic field geologist, doing his mapping and resource studies by walking the hills and acutely observing everything around him. He looked for his facts in the rocks rather than speculating about how things should fit a theoretical model. Charlie will be remembered for his outstanding professional career and additionally by his friends for his wit and charm and for his generosity in sharing his expertise with professionals and amateurs alike.

The Editors wish to thank Mimi Oakman Dickinson, Virgil Lueth, Robert Eveleth, Marie Huizing, and Robert Gait, whose contributions make this memorial to Charlie more complete.

The following article was originally printed in Rocks & Minerals in 1992.

A selected New Mexico bibliography follows page 73.
MAXWELLITE, ideally NaFe$^{3+}$(AsO$_4$)$_2$F, a sodium iron fluoro-arsenate, was found at the Squaw Creek tin prospect, Catron County, and at another tin deposit at Willow Spring Draw, Sierra County, New Mexico. The mineral is monoclinic with space group $Aa$ or $A2/a$. The crystals, up to 1 mm and in clusters up to 3 mm across, are medium to dark red with a medium to pale orange streak, blocky to short prismatic, exhibiting the following forms in decreasing order of importance {013}, {526}, {526}, and {011}. Its density is 3.90, and its Mohs hardness is 5 to 5.5. It has a vitreous luster, a good cleavage on {110}, and an irregular to conchoidal fracture. Associated minerals are squawcreekite, quartz, tridymite, sani- dine, pseudobrookite, hematite, Fe-, and Sb-bearing cassiterite, chermoyite-(Y), and gasparite-(Ce). It is related to dartangite and tila- site.,

and minor. His master’s thesis is entitled “Pleonaste [pleonaste] is an old term for a variety of spinel] crystals from an olivine basalt, Caballo Mountains, New Mexico.” While still studying at the university, he did X-ray and blowpipe analysis of minerals for the state of New Mexico, taught the laboratory part of courses in mineralogy, and assisted in optical mineralogy and petrography. In the summer of 1952, he had a part-time job with Shell Oil Company (Houston, Texas) doing X-ray and differential thermal analysis and microscopic studies in basic research on carbonate rocks.

Maxwell’s career with the USGS began in 1952. His first project was field mapping and preparing a report on the schrøckingerite deposits of Sweetwater County, Wyoming; it was the forerunner of numerous similar projects. In 1965, while working with the Strategic Studies Section, Branch of Military Geology (Washington, D.C.), he devised a system of graphs to translate refraction of UHF transmission and the curvature of the earth to the plane of topographic maps, making it possible to read directly—with a straight edge—the line-of-sight coverage. This system was widely used for the preliminary site plan-

ning for microwave facilities.

From 1973 onward, he was chief of several major geological and resource evaluation projects undertaken by the USGS. Between 1978 and 1980, he headed the study of the El Malpais lava field and surrounding areas in Cibola County. This included the first detailed mapping of over 400 square miles of Quaternary basalt flows, containing ten flow units, for resource evaluation. Among the guidebooks, maps, and open-file reports that came out of this project, Maxwell’s map (published in 1986) is an outstanding achievement. It covers an area of 950 square miles—at a scale of 1:62,500—including 400 square miles never before mapped. This is the first accurate and detailed map of the flow units in the basalt field to the south of Grants. It also made possible new Cretaceous correlations and is a major contribution to the geologic knowledge of the region that is now El Malpais National Monument.

On a visit to Denver in 1990, I had the privilege of meeting Maxwell, who recounted some of his experiences in El Malpais lava field. He waxed eloquent about the walk-through lava tunnels and how wonderful little frozen lava “ stalactites” could be seen in some of them. His enthusiasm is infectious, and I cannot wait to visit this national monument that came into being partly at his instigation.

Yet another of his major undertakings was the study of the Black Range tin district, carried out under his supervision between 1980 and 1988. The objectives were to determine the resources and potential resources, the mineralogy and geochemistry of the veins, and the genesis of the deposits; to prepare detailed maps of the major deposits; to produce a reconnaissance map of the 500-square-mile tin belt; and to relate the several types of tin deposits to the geology. At least eight papers and abstracts resulted from this study; a major report in preparation contains several aspects for tin mineralization that are not generally known, notably the persistent substitution of antimony, lead, and arsenic for tin in cassiterite. Also of importance was the recognition, for the first time, of the fact that rather than being a single system, the tin mineralization is part of the complex, cyclic chemistry and paragenesis of several overlapping types of mineralization.

He is a member of the New Mexico Geological Society and the Geological Society of America and has been a member of the Rocky Mountain Association of Geologists (1954–56), Sociedad Brasileira de Geologia (1956–61), the Mineralogical Society of America (1960–75), and the Geological Society of Washington (1963–70). Maxwell’s bibliography contains over eighty entries and is still growing. It contains over twenty geologic maps (most of them of New Mexico); of the remaining sixty, many relate to base or precious metals deposits and radioactive and strategic minerals. The New Mexico Geological Society published eight of his works. It is of special note that he was not only the chief of many of these projects, but that he also did the field work himself. Although he retired in 1989, he is still actively involved as a volunteer emeritus with the USGS and with the New Mexico Bureau of Mines and Mineral Resources. At present, he has several papers and maps in various stages of preparation and editing, including one with Foord on the tin deposits of the Black Range. He and Foord are also working on the description of yet another new fluoro-arsenate from Durango, Mexico. Maxwell’s geologic map of El Morro quadrangle, a cooperative effort with Orin Anderson, is also reaching publication stage.

Besides having had an outstanding professional career, Maxwell is an accomplished artist, an avocation and hobby that he acquired early on and one he has maintained up to the present. Although he favors landscapes, he also creates naturalist, impressionist, and objective abstracts; he works with watercolors, some oils, and pencil. His art has received awards at local shows, including one Best of Show award. Another of his hobbies is HO model railroading, and he is especially interested in “scratch-built” models. It is clear that Charles Maxwell is a man of considerable intellect, drive, and energy, whose contributions to science and art are most remarkable.

Maxwell married Jacqueline Perkinson of Albuquerque in 1952; they have three children: Florence Ann (b. 1953), Patricia Alice (b. 1954), and William Alexander (born in Brazil in 1960). The Maxwells have been divorced since 1973.

Acknowledgments—I would like to express my special thanks to Charlie Maxwell, who provided me with a perfect set of data from which I was able to write this biography. Dr. Eugene Foord kindly provided me with the galley proofs of his paper prior to publication and made it possible for me to contact Charlie Maxwell directly.

Reference