Who's who in mineral names

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Charlie Maxwell, October 1984, in the Black Range, New Mexico. Photo courtesy of Mimi Oakman Dickinson.

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 mi^2, 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.

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A selected New Mexico bibliography follows page 73.

WHO'S WHO in Mineral Names

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MAXWELLITE was named in honor of Charles Henry Maxwell by Dr. Eugene Foord and his coworkers at the U.S. Geological Survey (USGS); the description was published in *Neues Jahrbuch für Mineralogie* (Foord et al. 1991). In a private communication to the author, Dr. Foord wrote: "Charles Maxwell does not have his Ph.D. degree (M.S. from Univ. of New Mexico) but he knows more than 10 normal Ph.D.'s put together."

Maxwell (known as Charlie to his friends and colleagues) has spent forty years studying New Mexico geology and mineralogy, and so it is fitting that a new species from New Mexico should be named for him. In dedicating the 1989 New Mexico Geological Society *Guidebook* to Maxwell, his colleague Orin J. Anderson remarked that a more knowledgeable proponent of New Mexico and its diverse geology would be difficult to find.

Charles Maxwell was born in Las Palomas, New Mexico, into a family whose life in that state began in the 1870s with the arrival of his grandfather, Alexander J. Maxwell. Originally from the Dumfries area of Scotland, Alexander met a German immigrant, Anna Katarin Walther, and they were married in Deming in 1886. They soon moved and began operating saloons in the old mining towns of Kingston and Hermosa. William Henry Maxwell, Charles's father, was born in 1889. The family then moved in 1893 to Las Palomas, where they ran a general store, boarding house, farm, and cattle ranch. William went into the freight-hauling business, operated a blacksmith shop, and subsequently ran a garage and service station. He married Annie L. Stirling, a Texas native, in Las Palomas in 1921.

Two years later, on 9 July, they became the proud parents of Charles Henry Maxwell. His mother said that he collected "pretty rocks" as soon as he was able to walk. Perhaps the Maxwell family's connections with New Mexico mining towns first sparked the interest that turned into his passion for rocks and minerals. By the

time he finished graduate school at the University of New Mexico he had a large collection of minerals, many museum quality. Maxwell subsequently donated most of his collection to the University of New Mexico as well as to other museums and individuals. His knowledge of mineral localities, especially in New Mexico, is legendary, and he is always ready to share it with anyone who is interested.

Maxwell attended Hot Springs High School (1938-41) and went on to graduate from the University of New Mexico with a B.S. degree, majoring in geology and minoring in biology. In 1952, he received his M.S. degree with the very same major 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.

MAXWELLITE, ideally $NaFe^{3+}(AsO_4)F$, 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}, {$\bar{5}$26}, 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, sanidine, pseudobrookite, hematite, Fe- and Sb-bearing cassiterite, chernovite-(Y), and gasparite-(Ce). It is related to durangite and tilasite.

Maxwell's career with the USGS began in 1952. His first project was field mapping and preparing a report on the schröckingerite 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 planning 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 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), Sociedada Brasiliera 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 Alece (b. 1954), and William Alexander (born in Brazil in 1960). The Maxwells have been divorced since 1973.

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