

James Bell Benedict 11 November 1938 to 8 March 2011 **In Memoriam**

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James Bell Benedict

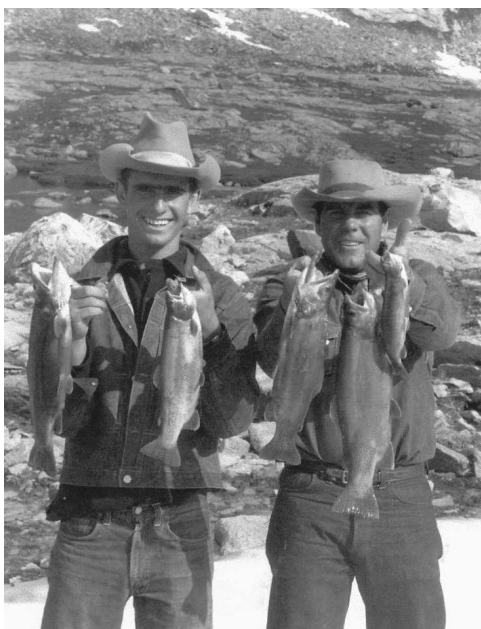
11 November 1938 to 8 March 2011

In Memoriam

James Bell Benedict passed away at the age of 72 on 8 March 2011 at his mountain home located within the area of the Tertiary erosion surface of the Front Range, Colorado. His decades of research focused on the adjacent mountains, mainly the alpine, where he did ground-breaking work in geomorphology, Quaternary stratigraphy, and archaeology. If there is any thread that characterizes this work, it is the extreme detail with which he undertook any project, using many innovative methods.

Jim was born in Cincinnati, Ohio, on 11 November 1938. Because he enjoyed the high mountains, in 1957 he came west to the University of Colorado at Boulder, took an introductory geology course from Professor Bill Bradley, and that decided his lifelong work. By the time of his graduation in 1961 he was already a member of INSTAAR and began his Ph.D. at the University of Wisconsin–Madison on work he started while at CU. Bob Black was his dissertation advisor, and the degree was earned in 1968.

Jim's dissertation was on the neoglacial history of the Colorado Front Range. It consisted of an extensive study of glacial advances and retreats in the cirques over the past about 12,000 years, and included dating the mantles of rock glaciers. To help date the younger deposits, he developed an ingenious radiocarbon-dated lichen-growth curve. Few workers have matched the detail of this curve for any mountain environment. He also correlated these deposits with alluvial deposits in the Colorado Piedmont, as well as with the known archaeology. By the



Jim Benedict (left).

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time he earned his Ph.D. degree, Jim had published 5 papers, a major accomplishment in those days. Two of the papers, published in 1967 and 1968, formed his Ph.D. dissertation. He continued with the stratigraphic and lichen work throughout his life.

In 1961 he began work on the processes, rates, and climatic significance of soil movement on Niwot Ridge, adjacent to the Mountain Research Station. This monumental work was published as an entire issue (summer 1970) of this fairly new journal, then called *Arctic and Alpine Research*. The work so impressed the geomorphological community that the Geological Society of America awarded him the Kirk Bryan Award in 1975, given yearly for the top publication in geomorphology. Of interest, Kirk Bryan also was a geomorphologist who incorporated archaeology into his research during his distinguished career.

Jim hiked across the alpine landscape repeatedly and at least by 1963 he noticed evidence of early humans, and so began the long-term study of archaeological sites. The sites included campsites, hearths, game drives, hunting blinds, cairns, and a vision quest site. His first archaeological publication was in 1969, and by the mid-1970s they were coming out regularly. In the stratigraphy of the deposits are stone tools, including projectile points and ceramics. Dating involved numerous radiocarbon dates, and an ingenious way of using the lichen-growth data. The oldest sites date to the early Holocene (ca. 10,000 years before present). Adaption to changing climate was a common thread throughout this work. In later years he followed snow-patch melting trends in search of new sites.

Putting all the above together, Jim was actively researching across a broad range of fields in the 1960s at a young age. Speculation is that it would have been difficult to write a traditional Ph.D. with all the research, especially as some was completed and some was long term. Hence, his committee may have suggested that the completed work be the Ph.D. dissertation, and that he continue on with the other research.

An outgrowth of the archaeological studies was that artifact lithologies could be used to suggest several human migrations. One was seasonal—summer in the alpine and winter in the plains to the east. The other was a 300- to 400-km-long counterclockwise “grand circuit” that went from the alpine, east to the plains, northward into southern Wyoming, southward through the parks west of the Front Range, and back to the alpine.

By the early 1970s he moved his operation from INSTAAR to his home and research laboratory in the mountains west of Jamestown, Colorado. There he formed the Center for Mountain Archeology. He first published his works in peer-reviewed journals. However, as time went on he felt they were too restrictive in page allotments, and he began the Research Reports of the Center, the first in 1978. These are large format (8½ × 11 inches) and are richly illustrated with his superb photography and detailed line drawings. The latter depict the site stratigraphy, including soil horizons, position, and shape of clasts, and position of the artifacts. The longest report was 215 pages. I especially liked to run student field trips through his areas as all the pertinent data were easy to access and understand. Jim kept me well supplied with his publications, often autographed with a humorous note to Sue and myself, followed by “Jim.”

His work was incorporated into the teaching at CU. Bill Bradley and Nel Caine used the Niwot Ridge periglacial work in their geomorphology lectures and associated field trips. I used the Quaternary stratigraphy work in my Quaternary lectures, and because students had to do field projects, we had intimate knowledge of his work, and it passed this critical screening. Sometimes we all went out to places he had worked, using his illustrations, and students collected their own data, sometimes with high-altitude headaches and approaching thunderstorms. This turned out to be a great exercise in the physical conditions under which Jim worked, and served to mute some criticisms so easily made from the comfort of a classroom.

In time, soils were added to his investigations. In fact, soils are listed as his Ph.D. minor at the University of Wisconsin. One study involved the interaction between vegetation and podzolization as krummholz trees migrated across the tundra, the rates of which were dated by radiocarbon. Another involved soil chemistry that included soils he had collected from the Mt. Everest area. Still another involved the origin of fine-grained materials in both soils and archaeological deposits that seemed out of place, and he and others soon suggested a loess source. This idea was supported with the help of a geochemist, and source areas were targeted. These soil studies were yet another field of inquiry for him.

He enjoyed interacting with students and others. He was on thesis committees of students working on Quaternary projects at CU, and on archaeology at Colorado State University, where he was a Research Affiliate. He also collaborated with many others working on archaeological projects in the Front Range (see reference list).

Jim led others through his work via field trips. I first met him on his periglacial field trip on Niwot Ridge during the 1965 INQUA meeting in Boulder. In 2003 Jim joined several of us to lead another INQUA field trip in the Front Range. With him, one



day was spent on Niwot Ridge and the other in the vicinity of Arapaho Pass. At the end of the latter day, we were taken to valley-side rock glaciers adjacent to an archaeological site. Knowing the cooling effect of air at depth between the huge rock-glacier clasts, Jim produced naturally cooled beers and toasted the group!

His work inspired others to collect more data in the area. Some workers tried to improve on the dating using lake cores, sometimes collected from frozen lakes accessed by long ski trips, and others have collected rock samples for cosmogenic dating. Still others used his mapped geological deposits as substrates for soil studies.

Jim Benedict will always be known for the thoroughness of his imaginative work on a wide variety of geomorphological, Quaternary stratigraphic, and archaeological phenomena. Besides the studies mentioned above, others that clearly demonstrate the breadth of his interests involved the snowkill effects on lichens by late-lying snow and winter frost, location of field sites for future workers to directly measure lichen growth rates, the long-term measurement of snowbank size, the position of tree limit, rock weathering, and the eolian deposition of forest-fire charcoal. His work in the southern Rockies has attracted the attention of a diverse international community over 5 decades.

We are forever reminded of him and his work as we ski and hike through these mountains, and often we change course to revisit his sites. It enhances our mountain experience, for sure. Good job, well done, my friend.

Several people helped me with this memoriam in various ways; these include Audrey Benedict, Bill Bradley, Nel Caine, Shemin Ge, Vance Holliday, Jessica King, Jim Knox, Jason La Belle, Rich Madole, John Pitlick, and Al Werner.

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