

Tectonics and Mineral Resources of Southwestern North America

A Volume Honoring
VINCENT C. KELLEY

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FOREWORD

This volume consists of articles contributed by the former students and colleagues of Vincent C. Kelley at the University of New Mexico. The title "Tectonics and mineral resources of southwestern North America" is not intended to imply a comprehensive coverage of these topics, but rather to reflect the interests of Professor Kelley and his students.

A glance at the table of contents reveals several articles that clearly do not concern tectonics nor mineral resources; these papers are authored by Kelley's colleagues and indicate the scope of the scientific activities at the institution that he has been associated with for nearly 40 years.

His efforts and contributions have been instrumental in the growth and development of the Department of Geology at the University of New Mexico. Those of us who have had the opportunity to work and study with Vincent Kelley have profited immensely from that association. It is fitting that the New Mexico Geological Society should publish these articles honoring Vincent Kelley, as he was one of the founders of the Society and has been deeply involved in many of the field conferences sponsored by the NMGS.

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Lee A. Woodward
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Vincent C. Kelley

VINCENT C. KELLEY

Vincent Cooper Kelley was born at Seattle, Washington on July 6, 1904. His professional training was in California; he received his A.B. from UCLA in 1931 with a field problem involving volcanics, anorthosite, syenite, banded gneiss, and ilmenite deposits; his M.S. was granted from Cal Tech in 1932 with a thesis in the Santa Monica Mountains where diabase sills intruded a thick marine sequence; the Ph.D., also from Cal Tech, was obtained in 1937 with study of contact metamorphics and pyrometamorphic base-metal deposits of the Darwin stock and a mineragraphic investigation of La Colorada copper pipe at Cananea, Mexico. He studied under Frederick L. Ransome, William Morris Davis, Beno Gutenberg, Ian Campbell, and Horace Fraser.

Kelley came to the University of New Mexico in 1937 as an instructor in Geology, and was promoted to assistant professor in 1938, associate professor in 1941, and professor in 1945. He became chairman in 1962 and held that position until his retirement in 1970. In 1950-51, 1959-60, and 1961-62, he had served as acting chairman.

During summer sessions and sabbatical leaves he also taught at Columbia University, University of Hawaii, University of California at Los Angeles, and University of California at Santa Barbara.

Courses that he taught include mineralogy, petrology, optical mineralogy, petrography, structure, advanced structure, regional tectonics, ore deposits, nonmetalliferous deposits, petroleum geology, field geology, and numerous seminars.

He was the chairman of about 60 thesis and dissertation committees for graduate students. Before Kelley came to the University of New Mexico in 1937, the department had granted only 38 bachelor's and four master's degrees (1901-1937).

From 1938 through 1970, 460 bachelor's, 148 master's, and 22 doctoral degrees were conferred. Thus, during Kelley's teaching career, 92 percent of the bachelor's, 97 percent of the master's, and 100 percent of the doctor's degrees for the entire period 1901-1970 were granted.

His research was mostly field oriented and concerned regional problems in many areas of the west, including New Mexico, Colorado, Wyoming, Idaho, Nevada, Arizona, and California. The emphasis has been varied and commonly multiple in structure, stratigraphy, mineral deposits, petrology, and geomorphology. Although considerable research was done without sponsorship, most was sponsored by Federal, state, or private sources. He passed the U.S. Geological Survey junior geologist exam in 1937 and worked w.a.e. for the Survey in several branches from 1938 until retirement in 1970. U.S.G.S. work began in Utah under Eugene Callaghan on volcanics and alunite deposits in the Marysvale region. From 1939 to 1942 he worked in the San Juan Mountains on volcanic geology and mineral deposits. This was followed by studies of iron-ore deposits in New Mexico from 1942-1944, and these were followed by oil and gas stratigraphic studies within the Survey's Fuels Branch on the Sierra Lucero, New Mexico, Pagosa Springs, Colorado, and Big Horn Basin, Wyoming areas through 1944-1945. Also during 1942-1943 a number of special local strategic mineral surveys of copper and tungsten deposits in Colorado and New Mexico were made.

The years between 1945 and 1950 were given mostly to preparation of manuscripts on iron-ore deposits, in particular the "Oolitic iron deposits of the Bliss Sandstone" and compilation of University of New Mexico Publications in Geology No. 2, "Geology and economics of New Mexico iron-ore deposits" (1949). From 1950-1952 research was concentrated largely on

studies of the Caballo Mountains with Caswell Silver (U.N.M. Pubs. Geology No. 4).

In 1953, as consultant for the Raw Materials Division of the U.S. Atomic Energy Commission, work was begun on the regional structure and tectonic history of the Colorado Plateau to determine possible relationships with the origin and distribution of uranium. This research was continued through 1956 and resulted in two reports to the Atomic Energy Commission and two University of New Mexico Publications in Geology, Nos. 5 and 6. This work led to several subsequent studies and reports on local areas and special geologic features such as the origin of monoclines. The timeliness and scope of these studies resulted in wide professional recognition.

In 1963 work was begun on the tectonics and general geology of the Ruidoso country and the ancient Pedernal landmass; this led in 1965 to the beginning of extensive regional stratigraphic and structural studies of the Pecos slope and the Permian basin as a research consultant for Humble Oil and Refining Company. During this period the very interesting and unusual Precambrian rocks at Pajarito Mountain were found and studied. The Pecos slope studies for Humble were completed in 1967, but his interest and studies continued as the company agreed to release all reports for eventual publication. From 1967 to 1970, the New Mexico Bureau of Mines and Mineral Resources supported the Pecos country studies and this resulted in "Geology of the Pecos country, southeastern New Mexico" (NMBMMR Memoir 24) in 1971. However, his interest continued in the east-side Permian stratigraphy and this work went on through 1972, culminating in "Geology of the Fort Sumner sheet, New Mexico" (NMBMMR Bull. 98).

In the meantime, work on the Albuquerque area geology was put together as Scenic Trips to the Geologic Past No. 9 (1969). Interest in Permian basin problems continued beyond the Pecos slope memoir with special studies of the Capitan reef and its relationship to the Delaware basin which resulted in an AAPG paper "Geometry and correlation along Permian Capitan Escarpment" (1972).

In 1972 his interest again returned to the Sandias and in 1973, joined by Stuart A. Northrop, studies of the Sandia area culminated in a joint publication, Memoir 29 by the New Mexico Bureau of Mines and Mineral Resources (1975). In the summer of 1974 work was begun on the Albuquerque basin of the Rio Grande trough and the results of this study are now in press.

Vincent Kelley has been active in numerous professional organizations, including the Geological Society of America, Society of Economic Geologists, American Institute of Mining, Metallurgical, and Petroleum Engineers, American Association of Petroleum Geologists, New Mexico Geological Society, the New Mexico Mining Association, Sigma Gamma Epsilon, and Sigma Xi.

He was elected a fellow of the Geological Society of America in 1942, a councilor for 1960-1962; and chairman, Rocky Mountain Section, 1962-1963. He was elected to the Society of Economic Geologists in 1949; elected to the Council for 1960-1962; and served on Admissions and Penrose Medallist committees, the latter as chairman. He was also general chairman and leader of the first SEG field conference, "Uranium Field Conference" in 1963. Papers which he secured as editor for this conference were published in New Mexico Bureau of Mines and Mineral Resources Memoir 15 and used at the conference.

He was one of the organizers and the first president of the New Mexico Geological Society in 1947; chairman and editor of the first field conference guidebook in 1950. He has been

leader of several subsequent field trips and contributor of a number of articles; he was made an honorary member in 1955. It is particularly fitting that the New Mexico Geological Society honor Vincent Kelley with this volume.

Kelley was a student charter member of Sigma Gamma Epsilon at UCLA in 1930. He was instrumental in establishing the Beta Mu Chapter at the University of New Mexico in 1953 and served as faculty advisor from 1953 to 1961.

In 1940 he was a charter member of the New Mexico Mining Association. He was elected to the Board of Directors in 1945 and was vice president during 1947-1950.

The University of New Mexico student chapter of the American Institute of Mining, Metallurgical, and Petroleum Engineers was established by Kelley, who had been a member since 1942.

He has served on panels and committees for the National Science Foundation, Education Testing Service (for the Graduate Record Examination), the Bureau of Land Management, National Aeronautics and Space Administration, and the New Mexico Environmental Improvement Board. In addition, he has done private consulting in the investigations and evaluations of many base and precious metal deposits, water well locations, highway routing, turquoise, gravel, limestone for cement, tungsten, barite, fluorite, uranium, coal, pumice, perlite, kyanite, manganese, and petroleum.

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