Recent investigations of radioactive occurrences in Sierra, Doña Ana, and Hidalgo Counties, New Mexico

Boyd, Fred S., Jr. and Harold D. Wolfe, 1953, pp. 141-142

in:

Southwestern New Mexico, Kottlowski, F. E.; [ed.], New Mexico Geological Society 4th Annual Fall Field Conference Guidebook, 153 p.

This page is intentionally left blank to maintain order of facing pages.

The maximum strike length of ore shoots is about 1,500 feet. The deepest ore developed is about 900 feet below the surface. Some of the ore shoots showed an increase in proportion of copper with depth (Schmitt, 1938, p. 11).

RECENT INVESTIGATIONS OF RADIOACTIVE OCCURRENCES IN SIERRA, DONA ANA, AND HIDALGO COUNTIES, NEW MEXICO

by
F. S. Boyd and H. D. Wolfe

Reconnaissance examinations have recently been made of a number of radioactive occurrences in Sierra, Dona Ana, and Hidalgo Counties, New Mexico. Properties briefly described in this paper were selected to indicate a few of the diverse types and ages of radioactive occurrences now known in this part of southwestern New Mexico.

Uranium-Bearing Fluorite

A deposit of uranium-bearing fluorite, currently under lease by the Hanosh Mining Company of Grants, New Mexico, is located in Sierra County about 2 miles northeast of Monticello in Section 26, T. 10 S., R. 6 W. Original discovery was made in 1948 by the Terry brothers of Truth or Consequences.

The deposit is located on a low south-trending ridge at the southern limits of the San Mateo Mountains. Two prominent masses of interbedded Paleozoic quartzite, limestone and chert are exposed along the ridge. These are separated and partially enveloped by a Tertiary andesite intrusive. The sediments are moderately folded, have a northerly strike, and dip to the east at moderate angles. The chert beds are irregular and in part have been derived by replacement of limestone beds. Several small bodies of sediments are found as inclusions in the andesite.

Principal mineralization is found in a lenticular body of brecciated chert, included in the andesite. Uranium mineralization is associated with dark purple fluorite which occurs principally in small, closely-spaced, intersecting veins and less commonly as cementing material in the chert breccia. No primary uranium minerals have been noted, but uranophane and some gummite are present in portions of the fluorite body. Uranium mineralization is believed to have accompanied fluorite mineralization at a very late stage of the andesite intrusion. Similar occurrences of uranium and thorium-bearing fluorite have been noted elsewhere in southwestern New Mexico.

Radioactive Syenite Dikes

Radioactive syenite dikes are found at several points in the south Red Hills area of Sierra County along the western slopes of the Caballo Mountains. The principal occurrences are located on the Red Rock Claims, Section 33, T. 16 S., R. 4 W., owned by Mr. Truman Griffith, Arrey, New Mexico, and on the Plainview Claims, Section 4, T. 17 S., R. 4 W., owned by Mr. Jack Chatfield, Caballo, New Mexico.

Red syenite dikes, intrusive into a large mass of Precambrian granite, out crop at many points in the south Red Hills area southeast of the Caballo Dam. The geology of this area has been described by Kelley and Silver (1952). The syenite dikes are predominantly coarse-grained and commonly are coarsely porphyritic with abundant large phenocrysts of red orthoclase. Much of the syenite, particularly radioactive portions, contains a considerable amount of a black, interstitial, chloritic mineral. The age of the syenite is not known.

A similar syenite in an adjacent area cuts beds of the Bliss formation, thus it seems questionable that the syenite exposed at the Plainview and Red Rock Claims is Precambrian as field relationships there suggest.

Approximately one-fourth of the syenite dikes noted show appreciable radioactivity and many others show some anomalous radioactivity. The radioactive dikes, although megascopically similar, show considerable variance in radioactive mineralization. Notable amounts of thorium accompany uranium mineralization at the Red Rock Claims, but at the Plainview Claims, thorium is absent or present in minor amounts. The only visible mineralization, a small amount of uranophane (?), was noted at one of the more highly radioactive outcrops at the Plainview No. 6 Claim. Origin of the uranium and thorium mineralization has not yet been established. It is probable that the mineralization accompanied the initial syenite intrusion but some field evidence suggests the possibility that mineralization may have been introduced by hydrothermal solutions at a later date.

Radioactive Tufa

A deposit of radioactive tufa outcrops on the

Russel Soper Property nine miles southeast of Hatch, New Mexico. The occurrence is located at the western base of San Diego Mountain in the NE¼ of Section 36, T. 19 S., R. 2 W., Dona Ana County.

Outcrops of calcareous tufa deposited by Quaternary thermal springs are very common in this area. Radioactivity is restricted to a single lenticular outcrop of tufa deposited by thermal waters which emanated from between two layers of Tertiary volcanics, the upper – a rhyolitic breccia and the lower – an andesitic porphyry. Elsewhere in the immediate area the thermal springs, in general, flowed from Tertiary sand and gravel layers.

Occurrence of Radioactive Minerals in Pegmatites

Pegmatite dikes containing uranium and thorium minerals outcrop 11 miles northeast of Lordsburg, New Mexico, on claims owned by W. G. Weatherford of Lordsburg. The claims are in Sections 15 and 22, T. 21 S., R. 17 W., Hidalgo County.

The area is near the western margin of a large mass of Precambrian granite, schist and gneiss which has been intruded by numerous pegmatite dikes, also Precambrian in age. Uranium and thorium mineralization is associated with magnetite which is found coarsely disseminated in some of the pegmatites. Less commonly, the magnetite is found in small masses and stringers. Euxenite, allanite, cyrtolite, and samarskite have been reported from similar pegmatites in this district.

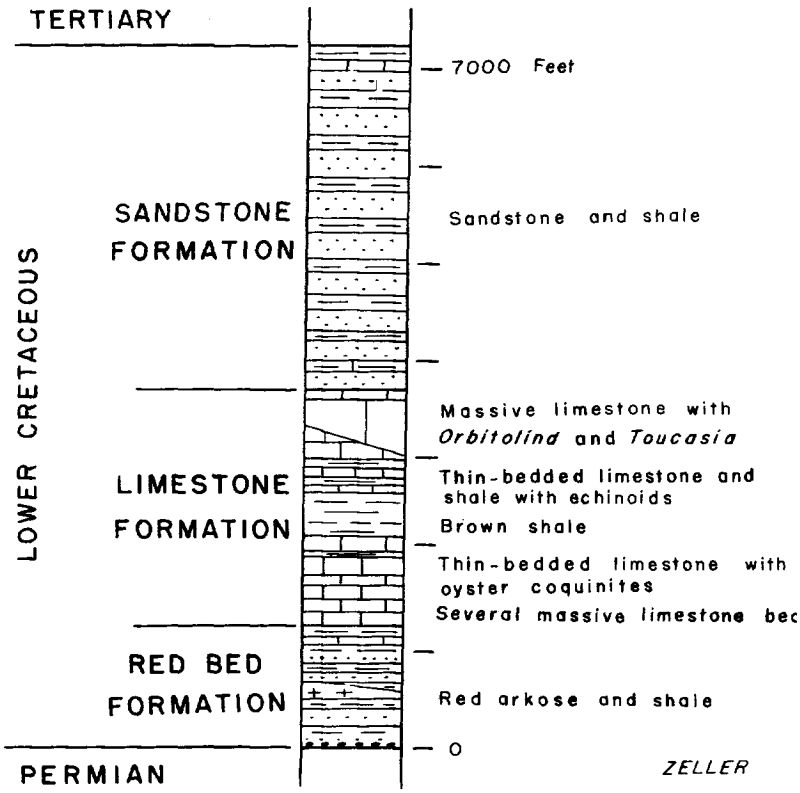
LOWER CRETACEOUS STRATIGRAPHY OF SOUTHWESTERN NEW MEXICO

by
Robert A. Zeller

Many geologists have been puzzled by the stratigraphy of the Lower Cretaceous rocks of southwestern New Mexico. A detailed study of the Lower Cretaceous beds of the region is in progress, but the work is not sufficiently advanced to yield a final solution to the puzzle. The general character of the section is described below and preliminary ideas on correlation are mentioned. These must not be interpreted as final conclusions.

Inasmuch as the Lower Cretaceous section in the Big Hatchet Mountains has been studied in detail by the writer, it is shown as a type section, and comparisons are made with other areas, largely from the literature.

GENERALIZED LOWER CRETACEOUS SECTION OF THE BIG HATCHET MOUNTAINS



The Lower Cretaceous section in the Big Hatchet Mountains is divisible into three lithologic units: a lower clastic formation, a middle limestone formation, and an upper clastic formation (see columnar section).

The lower clastic formation rests unconformably upon an irregular surface cut on Permian rocks. The thin basal conglomerate is overlain by alternating beds of red shale and arkose with a few gypsum beds. These red beds abruptly change in both thickness and lithology. No fossils have been found in the unit, but its Lower Cretaceous age is indicated by interbedded Lower Cretaceous limestones at the top.

The middle limestone formation varies laterally in thickness and lithologic character, but a general lithologic and faunal sequence is recognized over a large region. The lowermost beds in most places