

**XXXV. CELESTITE, A NEW MINERAL FOR
OKLAHOMA**

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The finding among the past year of crystals of celestite in masses weighing up to 6 pounds in Stephens County, Oklahoma is of much interest in that it adds another mineral to the already large list of constituents of the Permian red beds of western Oklahoma.

The mineral celestite so named from *coelestis*, the sky, on account of the faint shades of blue often present, is strontium sulphate, (SrSO_4). The crystalization is orthorhombic and with commonly tabular or prismatic habit. According to Dana it is:

“Usually associated with limestone or sandstone of various ages, occasionally with metalliferous ores, as with galena and sphalerite; also in beds of gypsum or rock salt and sometimes fills cavities in fossils, e.g. ammonites.”

Celestite is not particularly rare in the United States but usually occurs in small quantities in any one locality. The chief commercial use is in the manufacture of fire works and for refining sugar. The largest commercial source of supply in this country is at Put-in-Bay, Lake Erie, but no production has been reported to the United States Geological Survey since 1918. All celestite used in this country is imported from Europe. The market price runs around \$45.00 per ton.

The specimen herein described was found during a field conference held in January 1924; participated in by Messers Miser, Beede, Hughes, Howell, Floyd, Sawyer and the writer. The locality is north side of sec. 24, T. 2 N., R. 6 W., about nine miles east of Marlow and one and one-half miles east of Bray post office. On the west side of a small creek flowing south there is a steep bank 15 to 25 feet high and along this bank one may see a good contact unconformity between the top of Chickasha formation (the Purple sandstone, of Sawyer) and the base of the Blaine (Marlow). At this line of conformity several masses of crystals were found, rather loosely imbedded in the soft red clay, so that they were easily removed with the hammer.

At the time of the discovery, the character of the material was not recognized by any member of the party but on account of its general appearance and weight it was assumed to be barite, or heavy spar. Mr. Don Hughes, of Duncan, took the larger mass home and threw it out in his back yard, where the writer secured it and brought it to the Survey offices at Norman. Mr. A. C. Shead, of the Department of Chemistry of the University of Oklahoma, first recognized the true character of the mineral, and by analysis determined the fact that it is not barite but celestite.

It has been known for many years that the Permian red beds contain the salts of many metals, especially calcium, sodium, magnesium, potassium, barium and lithium, in various combinations. Such materials as hydrous calcium sulphate, or gypsum, and sodium chloride, or common salt, make up a considerable part of the red beds. Analysis of clays and water from various places in the red beds invariably show one or more, and unusually several, of these various chemical substances.

So far as known the only occurrence of strontium in Oklahoma is from water obtained at a depth of 2695 feet from the Deaner Oil field, sec. 16, T. 11 N. R. 11 E., Okfuskee County. However it may not be out of place to remark in this

connection that some 30 years ago the writer found, near Winfield, Kansas, some biscuit-shaped concretionary geodes, lined with crystals of celestite. The geological horizon at which the geodes occur is the Marion formation, just below the Herrington limestone, which lies several hundred feet stratigraphically below the base of the Blaine formation, at which point the Stephens county celestite occurs. It is quite probable that careful observation will reveal the presence of other localities where celestite may be found, and it is not impossible that eventually the mineral may be found to occur in commercial quantities in this State.