

Progress Report.

Geology of the Grizzly Creek Kyanite Deposit,
Albany County, Wyoming

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The Grizzly Creek kyanite deposit is located in sec. 35, T. 24 N., R. 71 W., in Albany County, Wyoming. The dominant rock types of the area are Precambrian granitic gneiss and hornblende schist. Of particular interest are several kyanite and sillimanite rich schists which occur in a narrow band 300 feet wide and 5000 feet long. Kyanite and sillimanite are both forms of Al_2SiO_5 which can be converted into a refractory material, mullite.

The occurrence of these mineral assemblages in the area is unique, and the extensive exposures provide an excellent opportunity to investigate the chemical and mineralogical changes that have taken place and the possible structural forces that may have influenced these changes.

Field mapping was undertaken by the junior author in the summer of 1964 with the assistance of John T. Wilband. The field study included detailed topographic and geologic mapping by plane table and alidade. The principal map was constructed on the scale of 1 inch to 100 feet, and another map of part of the deposit was made on the scale of 1 inch to 25 feet. Structural data were collected on foliation and lineation of the rocks, both within the aluminum-rich schist bodies and the surrounding gneiss and schist. Specimens were collected for laboratory studies of changes in mineral assemblages and major and trace element variations.

The foliation of the various rock types is conformable, except for the contacts of the aluminum-rich schists which are cross-cutting at a gentle angle to the gneiss and hornblende schist. The deposits coincide with a fault zone, several miles long, as indicated by drag folds, brecciation of some of the schist, and topography. Preliminary investigations of the mineral assemblages indicate an enrichment of Al-bearing minerals and a decrease of Na-bearing ones. The mode of this change and the factors controlling it are the final objectives of this study.

Modal analyses and spectrochemical analyses will be used to investigate the mineralogical and chemical changes, which, when correlated with an analysis of structural data and the known physical-chemical conditions under which these minerals are stable, should provide an explanation of the formation and genesis of these deposits.