VERMICULITE DEPOSITS IN WYOMING

by

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The vermiculite deposits seen by the writer in Wyoming are all of one type and are found only in areas of pre-Cambrian granites and metamorphic rocks. The vermiculite occurs along the contacts between dikes or irregular bodies of granite-pegmatite, which is a very coarse-grained rock consisting of quarts and feldspar, and metadiabases and metabasalts, which are dark green to black, medium-grained to fine-grained rocks consisting of labradorite and pyroxene or hornblende. The vermiculite occurs in bands or lenses of varying width between the granite-pegmatite and the unaltered basic rock. The vermiculite is usually of the best quality, i.e. shows greatest swelling when heated, in the part of the contact zone close to the pegmatite. Outward from the pegmatite the amount of vermiculite in the rock decreases and there is a gradation into unaltered metadiabase or metabasalt.

In a few cases vermiculite is found in tabular masses standing at high angles within areas of metamorphosed basic igneous rocks, apparently without genetic connection with pegmatites. It is probable, however, that in these cases there is a pegmatite dike a short distance beneath the surface striking parallel to the mass of vermiculite.

The vermiculite is a product of hydrothermal alteration of a basic igneous rock, or its metamorphosed equivalent, by hot waters coming from the pegmatite magma soon after its intrusion. Consequently the width of the vermiculite zone is dependent on a number of variable factors, such as size of the pegmatite body and degree of fracturing of the country rock to permit penetration by hot waters.

Small deposits of vermiculite are very common in Wyoming. Along the contacts of most of the small pegmatites cutting basic igneous rocks there are small pockets up to a few inches thick. The writer has seen no deposits of

vermiculite in Wyoming which have been proved by development work to be large enough to produce vermiculite in hundreds of tons, which would probably be necessary in order to establish sale for the material from a deposit. The following are some of the mining properties examined in detail or visited by the writer and known to have vermiculite:

Fred Abernathy asbestos claims, S. E. $\frac{1}{4}$ sec. 19, T. 30 N., R. 96 W., Fremont County.

An upturned uninjected basic sill within granite injection gneisses is cut by a pegmatite a few feet wide. Along one contact of the pegmatite there is a zone of vermiculite at least two feet, but probably not more than six feet wide. The width of the outcrop of the basic sill is not more than 25 feet, and this probably represents the lateral extent of the vermiculite lens. The depth of the lens is unknown. A prospect hole has been sunk some 10 feet and possibly 10 tons of vermiculite have been thrown on the dump.

"Mica Mine" on the railroad between Saratoga and Encampment.

A knot of pegmatite cuts metadiabases and metabasalts. Various platy minerals of the mica and chlorite groups, including vermiculite, have been developed in the basic rocks. The vermiculite has been mined and sold along with the other platy minerals. It would probably not be practicable to mine and extract vermiculite alone.

Kyanite claims about five miles southeast of Encampment.

The claims were once under lease or owned by the Parcq Development Co. They may now belong to the Sinclair Oil Company.

Basic schists of igneous origin are cut by numerous pegmatites. The schists have been contact metamorphosed with the development of kyanite, vermiculite, quartz, acid feldspar and various minerals of the mica and

chlorite groups. It is improbable that it would pay to separate the vermiculite from the other platy minerals during the treatment of the rock to separate the kyanite. There are probably various pockets of pure vermiculite on the property, but the writer was interested in the kyanite at the time of the examination and did not look for deposits of vermiculite.

Vermiculite deposit in Colorado five or ten miles from the state line southwest of the south end of the Laramie Basin.

The deposits are in an area of basic schists and pegmatites rather heavily covered with soil. Most of the workings are caved. It is reported that the workings were made for "magnetic iron". Magnetite and ilmenite were not found on the dumps, but there were some tens of tons of vermiculite.

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