sule. Both samples are at 0.15% in KBr, and the curves are linear in cm^{-1}.

It is hoped that this note will help other workers avoid our time consuming error. Because of the low levels of the contamination, and the similarity of the peaks at 1448 and 1490 cm^{-1} with "carbonate" peaks, and those at 752 and 692 cm^{-1} to other "silicate" peaks this was not discovered for several months. Any spectrum with a sharp peak at 692 to 696 cm^{-1} (14.45 microns) should always be checked for the other three peaks of polystyrene.

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NOTES ON WESTERN MINERAL OCCURRENCES[1]

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1. An Unusual Schorl Crystal from Montana

In contrast to many districts, in the Precambrian pegmatites of Montana, tourmaline is an unusual accessory mineral (Heinrich, 1949A, 1949B). Most of the pegmatites genetically related to the Dillon granite gneiss are structurally and mineralogically simple, showing no zoning and containing mainly microcline, quartz and sodic plagioclase. The Dillon granite gneiss is a post-Cherry Creek synkinematic leucogranite widely distributed in Precambrian terraines in southwestern Montana (Heinrich, 1948A, 1948B, 1960; Scholten *et al.*, 1955).

The Dillon granite gneiss is well exposed in the Armstead Prebeltian area (Lowell, 1953), where it intrudes both Cherry Creek group rocks and a group of gneisses believed to be older than Cherry Creek. Pegmatites, as sills and dikes, also cut both of the older groups of metamorphic rocks. Although much of the Dillon granite is gneissoid, its pegmatites usually are weakly foliated or not at all, at least in the Armstead area, indicating a general diminution of stress near the end of the period of crystallization of the main, parent granitic mass.

A few of the pegmatites contain scattered crystals of schorl of unusual habit (Fig. 1). The crystals are doubly terminated, with very short prismatic development. Brown tourmaline (dravite), developed metasomatically in marbles or contact altered limestones, not uncommonly shows a habit approaching equi-axial. However, pegmatitic tourmalines, both schorl and the more brightly colored Fe-low types, are almost invariably developed markedly elongate, parallel with *c*.

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2. Zeolites in Jackson Hole, Wyoming

Chabazite. The igneous rocks that are exposed in the Gros Ventre Buttes near the south end of Jackson Hole, Wyoming, consist chiefly of extrusive types (andesite porphyry, andesite, basalt; flow breccia and tuff), but locally, subordinate amounts of intrusive rocks also are represented—andesite and monzonite (Scopel, 1956). The monzonite, which occurs along the southwest corner of West Butte, is well exposed in a road cut along Wyoming Highway 22, just east of the Snake River Bridge and in a quarry on the east side of the Snake River. The rock is a gray fine- to medium-grained monzonite porphyry containing phenocrysts of oligoclase in a phaneritic matrix of orthoclase, oligoclase, hornblende and

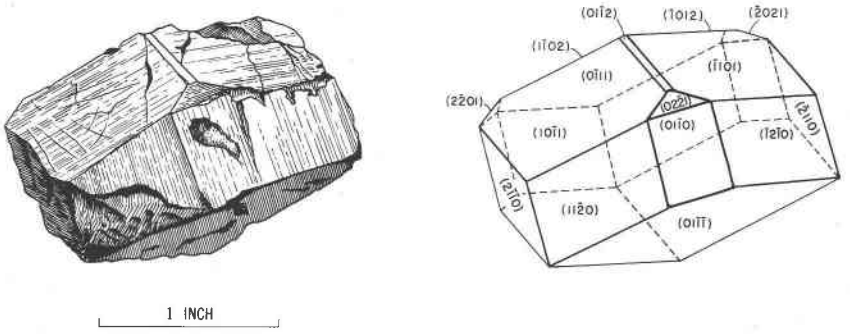

Fig. 1. Schorl crystal from near Armstead, Montana.

augite. The phenocrysts are markedly altered to a sericite-calcite mixture. Two distinctive features characterize the rock:

1. Numerous small (<1″–6″), angular xenoliths of a variety of Precambrian regional metamorphic rocks. Especially abundant are the mafic types: hornblende gneiss and schist, biotite schist and gneiss, chlorite schist and epidote gneiss. However, xenoliths of quartzite, granite, migmatite and pegmatite also are present. All these rock types are exposed in the Precambrian core of the Teton Mountains, several miles to the northwest.
2. Many irregular blebs and masses of coarse-grained, rusty chabazite, ranging in maximum dimension from $\frac{1}{4}$ inch to three inches.

The chabazite, pale buff to brownish orange in color, appears to have been formed by a replacement of the monzonite minerals. It is rare in the quarry exposures, locally abundant in the road cut exposures. It was identified on the basis of its *x*-ray powder diffraction pattern.

Chabazite, a widespread cavity mineral in basalts and andesites, is to

the best of the writer's knowledge unreported as a deuteric species in intrusive rocks of intermediate composition.

Heulandite. At several places in the Snake River Canyon, about 20 miles south of Jackson, exposures of the Aspen formation (Lower Cretaceous) contain dark red felted films that coat bedding planes of sandy, grayish black shales. Individual cleavage surfaces reach 0.1 inch. *X*-ray powder diffraction data identify the species as heulandite. No record could be found of this type of occurrence for heulandite.

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OCCURRENCE OF CRYPTOMELANE IN MANGANESE ORES, BALAGHAT DISTRICT, INDIA

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In the course of detailed geological studies around the village Ukwa, Balaghat District, Madhya Pradesh, India, a large number of samples of manganese ores were collected. Thorough microscopic and *x*-ray diffraction studies of the ores were carried out.

Ore microscopic investigation of the polished ores revealed that the mineral cryptomelane is usually associated with other manganese minerals such as braunite, bixbyite, hollandite and pyrolusite. Cryptomelane occurs as

1. irregular veins in other neighboring minerals except pyrolusite,
2. colloform bands alternating with pyrolusite,
3. irregular bodies surrounding braunite grains.

The color under the ore microscope is white with a bluish tint, and the mineral is weakly anisotropic. The mineral gives the following etch reactions:

With $SnCl_2$—darkens immediately.
With $H_2O_2+H_2SO_4$—etches strongly.
With HNO_3—stains brown.