Observatory inlet has its whole course in the Coast range and the rock section along it consists mostly of granite. A large included mass of argillites associated with greenstones, mostly pyroclastic in origin, occurs at the junction of the two arms, and argillites also occur along the upper part of Alice arm.

GRANITES.—Granites occur along Observatory inlet from Pt. Ramsden, opposite Pearce island, northward to a point near the southern end of Goose bay where they are replaced by argillites and greenstones. The latter are exposed along the shores of the inlet for a distance of 9 miles and are then followed by granites and allied rocks which continue to the head of Hastings arm and for some distance beyond.

Alice arm extends eastward beyond the eastern edge of the Coast Range batholith. The mountains along the lower portion consist of granite, and those bordering the upper portion of argillites interbanded in places with greenish feldspathic beds.

The granites along Alice arm and the lower part of Hastings arm are medium grained, occasionally porphyritic, greyish rocks made up mostly of quartz orthoclase and plagioclase with sparingly distributed biotite. In the upper part of Hastings arm, the grey granite is replaced by a dark coloured, more basic and apparently older variety, feebly schistose in places, and cut near the contact by acid granitic dykes. This rock is very coarse grained in places, has hornblende as the principal dark mineral, and represents a transition phase between the granites and diorites.

ARGILLITES.—An area of dark argillaceous rocks with some greenstones enclosed on all sides by granite occurs at the junction of Alice and Hastings arms. The area has a width along the west shore of Observatory inlet of 9 miles, but narrows to the east. On the east shore, it is barely 2 miles wide and the area appears to wedge out in the bordering mountains. Larcom, Brooke, and other smaller islands near the junction of the two arms, consist of argillites cut by granitic dykes. The area, while not traced through, probably extends westward to Portland canal, as similar rocks somewhat more highly altered occur in the same strike in the vicinity of Maple bay.

The argillites and associated beds are very similar to the rocks of the Bitter Creek series of Bear river, but cannot be definitely correlated with them until the intervening region is more closely examined. The principal variety is a fine-grained sedimentary rock, made up largely of quartz grains with some feldspar, darkened with carbonaceous material. Mica, mostly secondary, is usually present, and in places the argillite passes