Radioactivity Investigations At Ear Mountain Seward Peninsula Alaska, 1945

L. KILLEEN *and* R. J. ORDWAY

MINERAL RESOURCES OF ALASKA

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pectors and by the Geological Survey in 1940[1] and more thoroughly by drilling in 1953 and 1954. (See Collier, 1902, p. 9, 14, 20, 25, 28–30, 35, 52, 53, and 1904, p. 26–28; Knopf, 1908, p. 25–32; and Steidtmann and Cathcart, 1922, p. 102–111.)

Radioactive material was recognized in heavy-mineral concentrates from the gravels of streams heading in Ear Mountain when collections of the Geological Survey were scanned for radioactivity in the winter of 1944–45.[2] The occurrence of these radioactive minerals was investigated at Ear Mountain between July 4 and September 23, 1945. The field party consisted of P. L. Killeen and R. J. Ordway, geologists; Isidore Chamaris, cook; and John Otoyuk, Solomon Kopok, and Melton Henry, Eskimo camphands, who were employed for various periods during the season. Beta counts and chemical analyses were made in the laboratory of the Geological Survey. Aid was given in the field by Mr. and Mrs. George Goshaw of Shishmaref, Mrs. Peterson and Mrs. Marx of Teller, Otto Geist of the Alaska Territorial Guard at Nome, and personnel of the Wien Alaska Airlines and the Army post at Wales.

This report is essentially unmodified from the original manuscript as prepared in 1945–46 and is retained in that form partly as a record of the problems and uncertainties in what was then a new type of investigation when instruments and techniques were in an experimental stage. Retention of the original form also accounts for the fact, without repetitious statement at several places in the report, that some phases of the work—such as the mineralogy of the concentrates and more precise determination of the minerals responsible for the radioactivity—were not carried to more adequate completion despite the interval since manuscript preparation. The authors had no subsequent opportunity to study the samples.

GEOGRAPHY

ACCESSIBILITY, SOURCES OF SUPPLIES, AND WEATHER

Ear Mountain is on the north side of the Seward Peninsula, Alaska, approximately 58 miles east-northeast of Wales, at the extremity of the peninsula, and 12 miles southwest of Shishmaref Inlet. The town of Nome is 100 miles south-southeast of the mountain. (See fig. 6.) Access to the area during the field season is limited to plane travel from Nome, except by pack animal or a tracked vehicle. The airfield at Ear Mountain, more than a mile northeast of the mountain front, is about 1,000 feet long; the surface is not firm

[1] Coats, R. R. 1942, Unpublished preliminary report on the tin deposits of the Ear Mountain area, Seward Peninsula, Alaska: U. S. Geol. Survey.

[2] Harder, J. O. and Reed, J. C., 1945, Unpublished preliminary report on radioactivity of some Alaskan placer samples: U. S. Geol. Survey.

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area on August 7, and several ad
inches to a foot of snow before
Weather conditions on the
those of the surrounding lowland
Mountain was difficult because

enough for heavily loaded planes, and a cross wind is frequently troublesome. A dog sled trail between the villages of Shishmaref and Teller extends around the east side of the mountain. In summer the tundra and swamp of the Arctic coastal plain, between the narrow courses of streams entering Shishmaref Inlet, makes the mountain difficult to reach from Shishmaref, although the route from Shishmaref by barge and tracked vehicles was used in the drilling project of 1953. Wagons were used by the early prospectors approaching the mountain from Teller to the south.

The nearest village is Shishmaref, which lies 20 miles to the north on Sarichef Island, a part of the sand bar that separates Shishmaref Inlet from the Arctic Ocean. This Eskimo village has a post office, mission. school, radio station, store, and had a fox farm in 1945. Planes land on the beach, and coastwise ships anchor offshore to unload supplies by native boats or barges. Teller, a larger village with 2 stores, is about 46 miles south of Ear Mountain on an arm of the Bering Sea. However, the principal supply point for the area is Nome, on the south coast of the peninsula.

No prospectors were in the Ear Mountain area during the field season of 1945, although one man was reported to have made a brief prospecting trip up the Arctic River a short distance east of the mountain. The remains of previous habitations in the area comprise two partly dilapidated cabins, the site of a third cabin, a canvas-covered wood-frame shack, and a few scattered campsites.

Fuel for camp use must be brought into the area. Willows, scattered in clumps along several of the creeks, reach a height of only 4 feet and are inadequate for fuel. The amount of water in the creeks is meager despite the almost continuous dull weather and frequent driving rains. Only parts of the creeks were actually dry at various times during the season of 1945, but generally the water was only a few inches in depth. However, their depths fluctuate, and the creeks rapidly become torrents several feet in depth after a moderate rainfall. Snowbanks persist until late July along certain streams and against the lower flanks of the mountain. The ground is permanently frozen at shallow depth, locally not much more than a foot below the surface.

The weather is generally wet, windy, and cold. In 1945 the first 12 days of July were exceptionally warm and clear, but only 5 good days were counted in the rest of the season. A heavy snowfall covered the area on August 7, and several additional snowstorms deposited from 6 inches to a foot of snow before the party left the field on September 14. Weather conditions on the isolated mountain often differ from those of the surrounding lowland, and on many days when work on the mountain was difficult because of fog, rain, or wind, the camp on

Geology and Ore Deposits of the Willow Creek Mining District, Alaska

By RICHARD G. RAY

GEOLOGICAL SURVEY BULLETIN 1004

A study of the general and economic geology of a lode gold mining district in southern Alaska, with particular emphasis on the significance of vein, dike, and fault patterns

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1954

WILLOW CREEK DISTRICT, ALASKA

D METHODS OF FIELD STUDY

Willow Creek mining district have
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Vein, dike, and fault patterns have
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ACKNOWLEDGMENTS

Without the generous cooperation of mine operators and others in the Willow Creek mining district much of the work described in this report could not have been undertaken, and it is with pleasure that their help is acknowledged. The writer wishes particularly to express his appreciation to Mr. A. L. Renshaw, formerly at the Gold Cord mine, who made camp facilities available during 1948 and 1949. Others with whom he has had the pleasure of associating include Mr. J. B. Renshaw at the Gold Cord mine, Mr. Lloyd Hill and Mr. Charles Cope at the Lonesome mine, Mr. A. G. Dodson at the Fern mine, Mr. Phil Holdsworth at the Snowbird mine, Mr. Clyde Thorpe at the Thorpe mine, and Mr. Ralph Tracy at the Kelly-Willow prospect. The cooperation of Messrs. Stoll, Lane, Swedes, Brooks, O'Neil, and Schroff is also acknowledged.

During the summer of 1948 the writer was assisted in the field by Ollie Smith, Jr. In 1949, C. K. DeWitt, Jr., was employed as field assistant. Bernard W. Wilson, geologist, was assigned to the party in 1950 and assisted in both field and laboratory duties. John C. Reed, Jr., was employed as field assistant.

GEOGRAPHY

LOCATION AND ACCESSIBILITY

The Willow Creek gold mining district is an irregularly shaped area of about 50 square miles lying east of the railroad belt in southern Alaska (fig. 1). The center of the district is 23 miles by dirt road from the town of Wasilla, on the main line of the Alaska Railroad, and 21 miles from Palmer, on a spur of the Alaska Railroad. Both highway and rail connections link Palmer with Anchorage, 50 miles to the south.

Roads within the mining district are maintained by the Alaska Road Commission only during the summer season. Snow usually melts by early June, and roads remain open until sometime in October. During the winter most parts of the district are inaccessible except when roads are made passable at the expense of the mines.

TOPOGRAPHY, CLIMATE, AND VEGETATION

The Willow Creek district is within an area that was intensely glaciated. Much of the district now presents features of typical "biscuit board" topography. Steep-walled cirques and hanging valleys separated by sharp arêtes are characteristic. At the head of Archangel Creek and the Little Susitna River small glaciers are still present, but the glaciers have long since receded from most of the valleys. The glaciation was of the alpine type as attested by the jagged, sawtooth ridges which give most of the district a rugged and impressive ap-