

Territory of Alaska
Department of Mines

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by D. C. Poehn

MEMORANDUM

ON

CHROMITE DEPOSITS

IN

ALASKA

RESOURCE SECTION
U. S. GEOLOGICAL SURVEY
WASHINGTON, D. C.

The most important known deposits of chromite in Alaska occur at Claim Point and Red Mountain at the southwesterly tip of Kenai Peninsula in the general vicinity of the town of Seldovia.

A preliminary report on these deposits by Mertie was published by the U. S. Geological Survey in Bulletin No. 692: Mineral Resources of Alaska, 1917, pp. 265-267, which is now out of print but which may be consulted at larger libraries.

A quite exhaustive study of the deposit was made later by A. C. Gill for the U. S. Geological Survey and the final report on his findings appears in Bulletin No. 742: Chromite of Kenai Peninsula, Alaska, which may be obtained for the price of fifteen cents from the Superintendent of Documents, Washington, D. C.

A preliminary report by Gill on the Kenai Peninsula deposits appeared in Bulletin No. 712, which is now out of print.

Also in Bulletin No. 712 there is recorded at pages 183-184 the abundant occurrence of chromite in the placer concentrates of several streams in the Tolovana mining district, northwest of Fairbanks. According to Mertie the bedrock source of the placer chromite is probably to be found in serpentine rocks of which some extensive exposures have been mapped in and adjacent to the upper portions of the drainage basin of the Tolovana River.

The occurrence of chromite in masses of dunite and serpentine rocks at Red Bluff Bay on Baranof Island and at Mt. Burnett on Cleveland Peninsula is known. These occurrences have not been examined by representatives of the U. S. Geological Survey and the only notes on them that have appeared in print are brief descriptions that have been furnished by the Territorial Department of Mines to local newspapers at Ketchikan and Juneau. A copy of the press article on the Cleveland Peninsula occurrence with some added data on assay returns on ore samples is attached to this memorandum.

At Red Bluff Bay on the East coast of Baranof Island chromite occurs in the form of small masses and detached stringers of quite pure high grade chromite and also in disseminated form in an extensive area of dunite and serpentine rocks of which the low bare ridge that forms the north shore of the entrance to the bay is composed and from whose reddish color the name of the bay is derived. Although the chromite ore that is found near the entrance to Red Bluff Bay is of high grade it occurs in such small masses and in such scattered form that no attempt has been made to develop it. However, further prospecting of the belt of rocks in which it occurs appears to be justified. Specimens of chromite of similar type have been found in the form of float in the vicinity of Green Lake at the head of Silver Bay near Sitka on the northerly slopes of the rugged ridge of mountains that separates this area from the Red Bluff Bay drainage basin. The occurrence of chromite at this locality suggests the possibility that the belt of dunite and serpentine rocks may extend from Red Bluff Bay northwesterly across the mountains to Silver Bay, a distance of about fifteen miles.

Several exposures of ultra-basic rocks with which chromite may be associated and which probably have never been examined are known to occur in other localities. One of these is on Blashke Island, one of the Kashaverof Group that lies off the northeast shore of Prince of Wales Island near the junction of Stikine and Clarence Straits and about 30 miles southwest of the town of Wrangell.

TERRITORY OF ALASKA,
DEPARTMENT OF MINES
MEMORANDUM FOR THE PRESS

FOR RELEASE AUGUST 1, 1938.

THE OCCURRENCE OF CHROMITE IN THE
KETCHIKAN DISTRICT, ALASKA.

An interesting result of field investigations recently conducted in the Ketchikan mining precinct by the Territorial Department of Mines is the discovery of the occurrence of the mineral chromite on Cleveland Peninsula.

The discovery was made by J. C. Roehm, associate engineer of the Department of Mines, who has been engaged for the past two months in examining mining properties and assisting prospectors in the Ketchikan region.

The locality where the chromite was found is along the summit of the divide that separates Vixen Inlet from Union Bay, which are indentations from Ernest Sound on the north coast of Cleveland Peninsula. The principal observed occurrences of the mineral are on and adjacent to the summit of Mt. Burnett, otherwise known locally as Red Mountain, and on the ridge that extends westerly from it toward Union Bay. By reason of its pronounced reddish color, and the absence of vegetation upon it, Mt. Burnett forms a conspicuous landmark.

Investigation and mapping of this mountain mass disclosed that it consists of a central core of dunite and pyroxenite surrounded by alternating bands of other ultra-basic rocks that include hornblendite, gabbro and pyroxenite, all of which have been intruded into a broad belt of altered sedimentary rocks. Many black basic dikes penetrate the schists adjacent to their contacts with the intrusives.

An oval mass of dunite approximately 2 miles long and 1½ miles wide embraces the summit and flanks of Mt. Burnett. Within this area chromite occurs in the form of irregular bunches, small masses, and as a crystalline constituent of the rock. Although the chromite is associated with magnetite at some of the occurrences it is of a very pure quality at others.

Another oval mass about 2 miles long and one mile wide occupies the summit of the high ridge that extends westerly from Mt. Burnett. It lies about 3 miles distant from the first described mass. Within this second mass the dunite occurs intermixed with pyroxenite and the composition of the rocks is less uniform. Also,

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*See also summary
Roehm's Report on Ketchikan
District, 1941
for additional
notes re
Mt. Burnett
B.D.S.*

more magnetite is here associated with the chromite and large bunches of pure magnetite were observed. It is sometimes difficult to distinguish chromite from magnetite in the field. The surest method is by use of a magnet.

Much prospecting and development work will be required to determine the commercial value of these deposits. Even the proper sampling of the best deposits observed will require considerable time and expense.

Should commercially valuable bodies of chromite be proven the area is a favorable one for mining operations, as it is within 2 or 3 miles of deep water transportation. The mineral occurrences are at elevations ranging from 1,500 to 2,400 feet above sea level. A limited water power could be developed on the river that empties into the head of Vixen Inlet, and which flows within one mile of the principal chromite showings. This river issues from a lake more than a mile in length whose elevation is about 160 feet above sea level and whose outlet is within 2 miles of salt water. The river has a fall of 30 feet within less than one-half mile from its outlet.

The mineral chromite is used principally in metallurgical processes; especially in the manufacture of stainless steels of which it is the rust-preventing component. Although the United States is the largest consumer of chromite, it is one of the smallest producers. Large quantities of chromite ores are imported by this country. In 1936 the principal sources of supply, named in the order of their importance were: Africa, Oceania (New South Wales), Cuba, Greece, and Turkey. Probably the largest known deposits of chromite ores in the United States are situated in California and Montana. Other known deposits in Alaska are situated at Port Chatham and the nearby Red Mountain on the southerly tip of Kenai Peninsula (#); and at Red Bluff Bay on the east coast of Baranof Island.

During the World War approximately 20,000 tons of chromite ore was mined and shipped from the deposits at Port Chatham. Since that time the properties have been idle.

The name of Red Bluff Bay is derived from reddish color of the weathered ultra-basic rocks of dunite and serpentine types of which the conspicuous promontory that forms the north shore of the entrance to the bay is composed. These rocks contain scattered oc-

(#) Described in U.S. Geol. Survey Bull. No. 742, Chromite of Kenai Peninsula, Alaska, by A. C. Gill.

currences of high-grade chromite, but the mineral has not yet been found there in bodies of commercial size.

The current prices paid for chromite c.i.f. Atlantic coast ports range from \$18 to \$25 per long ton (2140 pounds) for ores that contain from 43 to 49 per cent chromic oxide (Cr_2O_3).

Further interest attaches to the mass of ultra-basic rocks found in the vicinity of Mt. Burnett on Cleveland Peninsula by reason of the similarity that exists in their composition and nature of occurrence to the platinum-bearing rocks of the Red Mountain area at Goodnews Bay.

Sampling and Assays

During the interval spent in obtaining the geology of Mt. Burnett and vicinity very little attention was given to sampling the central portion of the dunite masses which contained the disseminated chromite deposits. No massive bodies of chromite, other than minor segregations, were seen. However, sizable float pieces up to two feet in length and eighteen inches in diameter were noted. Later reports were to the effect that small lenses were observed on the north side of Mt. Burnett ranging up to thirty feet in length and from two to three feet in width. These were reported found after the examinations.

Several pounds of chromite pieces were, however, collected during the various trips. These were pieces of high-grade chromite mixed with various pieces of lower grade containing magnetite and ilmenite. From these a sample was taken for assay to arrive at an average figure of chromium content. This sample, No. 441, consisting of ten pounds of chromium ore gave a chromium content of 17.72 per cent. The sample was assayed at Territorial Assay Office at Ketchikan.

From the various samples representing the types of ore found on Mt. Burnett and the mountains north, four different types were sent to Territorial Assay Office at Fairbanks to determine the chromium and iron content and the presence of platinum minerals. Of these samples the following results were obtained:

Sample	No.	Type	Percentages	
			Chromium	Iron
558	1		7.0	10.6
" 559	2		25.8	20.2
" 560	3		17.4	41.8
" 561	4	was found to be nearly pure magnetite		

Samples 560 and 561, which were assayed for platinum, were found lacking.

Sample No. 559, with the content of 25.8 per cent chromium

has a chromium oxide (Cr_2O_3) content of 37.7 per cent. This is the only sample that is near a commercial ore - however, the iron content is rather high.

Commercial assays could possibly be obtained from picked pieces from selected areas. However, these would not represent any massive ore bodies. Further prospecting for ore bodies may, however, reveal commercial bodies.

Top Red Mountain
Cleveland Peninsula

showing rapidly weathering dunite.

Top Red Mountain — (1st. Burnet?)
Cleveland Peninsula

showing rapidly weathering dunite

Red Mountain
Cleveland Peninsula

showing minor
weathered concentrations
of spinel in dunite.

Red Mountain
Cleveland Peninsula

showing minor
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