MINERAL DEPOSITS*

For the last nine or ten years borax has been shipped from the works near the hot springs south of Alvord Lake. Of the deposit here Joseph Struthers says: (a)

> "The marsh deposits of sodium borate in Harney County, which extend over 10,000 acres south of Lake Alvord, have been operated during the last few years, and the refineries have produced a yearly output of approximately 400 short tons of refined borax, which is carried by mules to Winnemucca, on the Central Pacific Railway, whence it goes to Chicago, St. Louis, and occasionally to San Francisco. The Rose Valley Borax Company owns 2,000 acres of the richest portion of the deposit close to the lake. The ground is level and treeless and is incrusted with a layer of sodium borate several inches in thickness, which contains also sodium carbonate, sodium sulphate, sodium chloride, and other salts. During the summer the loose surface deposit is shoveled into small heaps and is replaced by a second incrustation within a comparatively short time. As no mining is done in winter, sufficient material is collected in summer to furnish a supply to operate the refining works throughout the entire year. The crude mineral, containing from 5 to 20 per cent of boric acid, is shoveled into tanks of boiling water, and chlorine or sulphuric acid is added to decompose the alkali salts, and thus free the boric acid. After twenty-four hours the clear supernatant liquor is drawn off into crystallizing tanks and cooled, yielding white pearly scales of high-grade boric acid, and a mother liquor, which is used repeatedly if it contains a sufficient quantity of sodium salts to warrant a separate treatment."

In the collection of the alkali crust Chinamen have been employed chiefly. This crude deposit is first scraped into windrows with shovels and then loaded into wagons and hauled to the works. Sagebrush is used as fuel under the dissolving tanks. The refining plant consists of two of these tanks, of 6,000 and 8,000 gallons capacity, respectively, and 24 crystallizing tanks, each of 1,200 gallons capacity. The crystallized product of borax is sacked and hauled to Winnemucca, Nev., by 16-mule teams.

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* U.S. Geological Survey Water Supply Paper 231, Geology and Water Resources of the Harney Basin Region, Oregon, by Gerald A. Waring, 1909, p. 72.

(a) Struthers, Joseph, Borax: Mineral Resources U.S. for 1901, U.S. Geol. Survey, 1902, pp. 870-871.

LAKES OF LAKE COUNTY
LONG NOTED FOR INTERESTING STORIES*

By
Paul DeLaney

(Paul Delaney was a Lake County man who went to Portland and for years wrote for the Oregon Journal. Many of his articles were about Lake County. The following article was used in The Examiner of February 26, 1906, reprinted from the Journal. Editor.)

Other big lakes

The two Warner Lakes and Silver and Summer Lakes are each surrounded by settlements of well-to-do ranchers and stockmen. The Warner Lakes are about 40 miles from Lakeview and Summer Lake is about 60 miles from the county seat, while Silver Lake is 100 miles distant. These are each large bodies of water and along their shores and along the streams that flow into them beautiful meadows formerly existed which are now cultivated and produce large crops annually. Some of these people are more than 200 miles from a railroad train yet are intelligent and prosperous and happy.

Salt and borax lakes

Only a few miles from the Warner Lakes are a cluster of small lakes that produce large quantities of salt and borax. For a number of years the ranchers of Lake County have obtained their supply of stock salt exclusively from these lakes. The lakes "go dry" in summer and leave a deep layer of salt of good quality over their beds. The ranchers come with wagons and shovel this salt up and haul it away by the ton. Of more recent years a wealthy man of the county has obtained ownership of one of the principal lakes and hires the salt shoveled up and supplies the Lake County market. No salt is shipped in from the outside except for table use.

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* From the Lake County Examiner, Lakeview, Oregon, Thursday, July 31, 1958, p. 10.

How borax was discovered

Borax was discovered to exist there through mere accident. One year when the lakes "went dry" they left no salt on the surface. The ranchers were annoyed about the matter and concluded that if there was no salt on top of the ground there ought to be some under the ground, and they proceeded to dig in the bed of the lake for salt. Within a few feet they came to a bed of a white substance which they immediately discovered was not salt. In sheer disgust one of the men took a full sack of it to town to find out what it was. The town blacksmith was regarded as the best authority on such matters and the case was submitted to his judgment. He took a shovelful of the substance and used it in welding a piece of steel, and immediately pronounced it borax.

It has since been learned that the blacksmith was right, and that rich borax deposits lie at many points in the county. Steps are being taken by capitalists to establish mines, and the results are looked to with enthusiasm, as borax commands a good price in the market and the quality discovered in Lake County is said to be of a superior quality.

Boran

January 6, 1959

Hon. C. W. Craddock
Harney County Court
Court House
Burns, Oregon

Dear Judge Craddock:

Information has come to this office that there was drilling in the Alvord Lake region of southern Harney County this past summer. This drilling presumably was to investigate the occurrence of borax.

Do you have any information on such activity and, if so, are you at liberty to divulge it?

As you know, this Department is interested in keeping up to date on the mineral activities in the State. If drillings were done, an attempt will be made to contact the company to obtain the drilling data when it has served their purpose.

Any help you can give us will be greatly appreciated.

Sincerely yours,

Hollis M. Dole
Director

HMD:jr

January 26, 1959

To: Staff

From: Ralph S. Mason

Borax Leases in Harney County

The Bureau of Land Management reported on January 22, 1959 that approximately 77,000 acres had been leased in the Alvord Lake area since July 1, 1958. There has been relatively little activity during the past two months, however. Townships in which leasing has occurred include:

T.	R.
37	33
33	35
34	35
36	34
36	33
35	36
35	35
38	35
34	34
35	36
38	30
36	35
39	35
39	36
37	34

Most of the leases are concentrated in T. 37 S., R. 33 E.

See June 1958 Ore.-Bin for details on Bureau of Land Management leasing procedures for borax.

To: Don, John B. December 27, 1988

From: Ron

Subject: Anadarko geothermal observation well, Borax Lake, Harney County

Anadarko Petroleum Corporation has been issued a permit to drill a 1500 foot geothermal observation well on BLM land about 1.3 miles southwest of Borax Lake and about 5 miles northeast of Fields in Harney County. The well is to be drilled in the spring or summer of 1989. If permission could be secured from Anadarko, this well offers an opportunity to document, to a moderate depth, the stratigraphy, mineralogy, and chemistry of playa lake sediments in a basin from which borax has been produced.

The Borax Lake area has been leased and drilled in the past for both geothermal resources and borate minerals, but detailed geologic data were not collected from the geothermal holes and the borate test holes were shallow, apparently less than 50 feet. In either case no information has ever been available to permit even gross generalization on the mineral potential of the basin to depths amenable to solution mining techniques.

Proposal: Approach Anadarko with proposal to sample cuttings, core, and possibly fluids; give copies of data and analyses to Anadarko as generated; release information after appropriate confidentiality period.

Field Requirements: One to two weeks on drill rig; on-site sampling is essential to insure sample integrity and to minimize interference with drilling operation; sample on 5 foot intervals and intermediate lithologic breaks.

Analytical Approach: X-ray diffraction analysis of all samples; qualitative testing for borate on all samples; quantitative wet chemical analysis on selected samples for Li, B, Na. Mg. Al, S, Cl, K, Ca, As, Se, Sr, Hg; petrographic examination of selected samples.

Laboratory Requirements: Sample preparation; x-ray diffraction analysis; atomic absorption analysis; titration of high borate samples.

Product: Open-file report or section of larger borate study to be published after confidentiality period; text and lithologic, mineralogic, and chemical logs and tables.

- Baker

February 2, 1959

Hon. C. W. Craddock, County Judge
County Court for Harney County
County Court House
Burns, Oregon

My dear Judge Craddock:

I wish to thank you very much for your letter of January 28 in response to my letter concerned with information on mineral exploration drillings in the Alvord Lake region.

I certainly appreciate the cooperation that you have given us. This Department will follow up this information and we will attempt to get as much data for the State of Oregon from the drilling companies as possible. You can rest assured that we will keep you informed of the status of our knowledge.

I hope to call on you when next in Burns.

Sincerely yours,

Hollis M. Dole
Director

HMD:jr