

NOTES AND NEWS

SODA-ALUNITE FROM MOLOKAI, HAWAIIAN ISLANDS

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A white, chalky mineral from the desert strip of Molokai was collected by Mr. Ray Fosberg of the University of Hawaii. When first collected, the mineral was tentatively identified as a clay mineral. Samples of the material were sent to Pomona College for study and qualitative tests established its identity as alunite.

Wentworth¹ makes no mention of alunite as occurring in the desert strip. The fact that he did not observe the presence of the mineral is not very remarkable. Unless especially looked for the material, like the samples submitted, might easily be identified as a compact, chalky limestone. Wentworth states that calcium carbonate occurs abundantly as joint fillings and nodular masses in basalt and also as casts of decayed roots and shrubs.

As to the occurrence of our sample, Mr. Fosberg² says:

... The material was found near the middle of the desert strip, about three miles from the coast. A very small outcrop was found and pieces were scattered here and there over a considerable area. It did not seem that they could have all come from this one small deposit. . . .

A microscopic study of the mineral made by A. O. Woodford of Pomona College, shows the soft, white, chalky masses to be made up of minute equidimensional crystals, 1.5 to 4.0 microns in diameter. The crystals are probably rhombohedrons, perhaps chiefly (60 $\bar{6}$ 5), as the face angles are commonly about 82 and 98 degrees, and the long diagonal is Z'. A few rectangular grains are probably unit rhombohedrons. $\alpha = 1.570 \pm .005$; $\gamma - \alpha = .020$ or greater, as indicated by addition and subtraction effects with the gypsum plate.

A preliminary spectrographic analysis of the sample taken for the quantitative determinations was made by T. G. Kennard of the Claremont Colleges and showed the following elements in the proportions estimated:

¹ Wentworth, Chester K., The Desert Strip of West Molokai: *University of Iowa Studies, New Series* No. 89, vol. XI, No. 4, pp. 41-56, 1925.

² Mr. Ray Fosberg, University of Hawaii. Personal communication.

<i>Element</i>	<i>Amounts</i>
Al.....	large
K.....	small
Fe.....	"
Na.....	"
Cu.....	very small
Si.....	" "
Ca.....	trace
Sr.....	"
Ba.....	"
Mg.....	"
Ti.....	"
V.....	"
B.....	"
Li.....	extremely minute trace
Mn.....	" " "
Pb.....	" " "
Rb.....	" " "
Cs.....	" " "

A chemical analysis of the material made by the writer, showed it to have a composition which is in agreement with that of an alunite from Kanowna, West Australia, as given by Doelter.³ The two analyses follow below:

ALUNITE FROM MOLOKAI			ALUNITE FROM KANOWNA	
	per cent	molecular ratios, atomic wts. 1934		per cent
Na ₂ O	4.62	.0745	Na ₂ O	4.07
K ₂ O	6.08	.0646	K ₂ O	5.42
MgO	trace		MgO	—
CaO	0.28	.0050	CaO	—
Al ₂ O ₃	34.64	.3398	Al ₂ O ₃	36.46
Fe ₂ O ₃	2.16	.0135	Fe ₂ O ₃	0.24
SO ₃	37.02	.4624	SO ₃	37.64
P ₂ O ₅	—		P ₂ O ₅	—
SiO ₂	0.04		SiO ₂	0.95
H ₂ O (total)	15.38	.8537	H ₂ O (above 110°)	15.45
TiO ₂	0.60	.0075	H ₂ O (below 110°)	0.06
	100.82			100.29

A spectrographic analysis of the insoluble fraction given as TiO₂ in our summation showed it to contain also Mg, Si, Fe, etc., but in quantities too small to justify separation.

The high percentage of soda (54 molecular per cent Na-alunite) justifies the classification of the mineral as soda-alunite in the broad sense.

³ Doelter, C., *Handbuch der Mineralchemie*, vol. IV, Pt. 2, p. 496, No. 6, 1929.