

ABSTRACTS OF PAPERS SUBMITTED FOR THE NOVEMBER MEETING IN
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URANIUM CONTENT OF THE LAVAS OF LASSEN VOLCANIC NATIONAL
PARK, CALIFORNIA

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Nineteen samples of volcanic rocks from Lassen Volcanic National Park have been analyzed for U, Na, K, and Ca. In addition, the alpha activities were measured with scintillometers. U and K correlate positively, indicating that both tend to be enriched as differentiation proceeds toward more siliceous lavas. In the samples studied the U is enriched about fourfold, while the K is enriched about threefold. The correlations with Ca, Na, and total K + Na are less well defined than the K correlation. The correlation between K and alpha particle activity under standard conditions is rather well defined.

The correlation between alpha particle activity and U is not well defined when all samples are included. However, the samples that are furthest from the main trend may be considered special cases—*e. g.*, mud flows and rocks that were probably partially weathered and thus leached of part of their U. The main trend in the U content vs. alpha particle activity indicates that the Th/U ratio did not shift significantly during the differentiation of the Lassen lavas.

URANIUM CONTENT, ALPHA PARTICLE ACTIVITY, AND K_2O , Na_2O , CaO ANALYSIS
OF OBSIDIANS, PITCHSTONES, AND TEKTITES

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Seventy-four glassy rocks, including obsidians, pitchstones, tektites, and possible tektites have been analyzed for uranium fluorimetrically. Alpha activities have been measured with scintillometers. K_2O , Na_2O , and CaO have been determined on the flame photometer. The indices of refraction have also been measured. About half the samples are from the United States. The thermoluminescence of several samples was also measured, but no thermoluminescence was detected except in one obsidian from Ascension Island.

The uranium contents range from 0.77 ppm in an obsidian from Shizuoka Prefecture, Japan, to 16 ppm in an obsidian from Liparii, Italy. Few of these obsidians have as much as 0.50 per cent CaO . A plot of alpha particle activity under standard conditions vs. uranium content has little scattering from linearity. This linearity indicates that the Th/U ratio is rather constant in the obsidians measured. Several geochemical interpretations of this linearity are advanced.

LOGNORMAL DISTRIBUTION OF THE ELEMENTS

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The statistical nature of the distribution of Li, K, Rb, Cs, Ga, Sc, V, Co, Cr, Cu, F, Pb, La, and Zr in many specimens of two specific rock types—granite (New England and Canada) and diabase (Ontario, Canada)—has been examined. Distribution *appears* to be normal only when dispersion is small, as in the examples of Ga (granite and diabase) and Sc, V, and Co (diabase only). Skewness, however, increases regularly with increase in the amount of dispersion and is extreme for Cr (granite and diabase) and Sc, V, and Pb (granite only). All elements, irrespective of whether they have a small or