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ABSENCE OF OPTICALLY POSITIVE POTASH FELDSPAR IN  
THE INYO MOUNTAINS, CALIFORNIA-NEVADA

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An unusual, untwinned potash feldspar of low refractive index and positive sign was reported by Anderson (1937, p. 11) to be abundant in the Boundary Peak granite of the Northern Inyo Range, California-Nevada. The mineral, tentatively identified as the "isorthoclase" of Duparc (1904), was studied in more detail by Anderson and Maclellan (1937). By  $x$ -ray, universal stage and spectroscopic techniques this mineral was found to be an optically positive, triclinic potash feldspar ( $\text{Or}_{72}\text{Ab}_{28}\text{An}_2$ ) with  $2V\gamma = 64-89^\circ$ ,  $\alpha = 1.518$ ,  $\beta = 1.520$ ,  $\gamma = 1.524$ . This description more closely fits the "isomicrocline" of Kazakov (1959).

Optically positive potash feldspars (isomicrocline, isorthoclase, isosanidine) have been reported from several other areas (Barth, 1933; Duparc, 1904; Kazakov, 1956; Lucizky, 1905; Tsuboi, 1936). As indicated by Smith and MacKenzie (1961) further study by  $x$ -ray as well as optical techniques is needed before these feldspars can be fitted into the overall feldspar classification.

Attempts to obtain a sample of the original material from the collections of Anderson or Maclellan (both of whom died early in life) and from the  $x$ -ray laboratory of Dr. Linus Pauling were not successful. During the course of the author's studies of granitic rocks in the Inyo batholith (Emerson, 1959), the feldspars from over one hundred samples of Anderson's Boundary Peak granite were examined. No optically positive potash feldspar was found when conoscopic figures were checked on the flat stage or, in doubtful cases, on the universal stage. In addition, the potash feldspars of ten samples from the Boundary Peak granite "type" areas on the east face of Montgomery Peak and in Middle Canyon were studied in thin section. Direct measurements between optic axes were made with a universal stage using the Leitz UMK 50X/0.60 N.A. objective and conoscopic light. All of the potash feldspar was found to be optically negative, intermediate to maximum microcline (Tuttle, 1952) with  $2V\alpha = 62-86^\circ$ . Figure 1 shows the  $2V\alpha$  distribution of fifty grains from the "type"

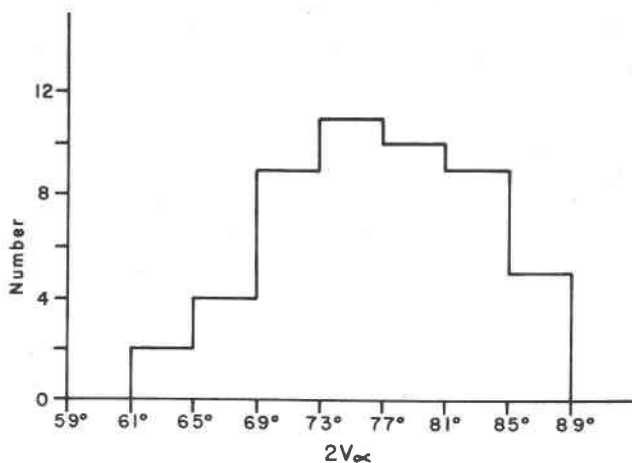


FIG. 1. Histogram of  $2V_{\alpha}$  of 50 potash feldspar grains from the "type" Boundary Peak granite.

Boundary Peak granite. Potash feldspars separated from three Boundary Peak samples were analyzed by flame photometry for Na and K and by  $\alpha$ -ray spectroscopy for Ca. The chemical variation between them was small and their average is  $Or_{83.6}$ ,  $Ab_{14.9}$ ,  $An_{1.5}$ . Either the reported optically positive potash feldspar of the Inyo Mountains is very rare or the previous optic sign and index of refraction determinations were in error.

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