AN OCCURRENCE OF ISO-ORTHOCLASE IN VIRGINIA

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The iso-orthoclase which will be described in the present note was found in a granitic gneiss in northern Virginia. This gneiss forms the highest crests of the Blue Ridge east of Luray, Va. Specimens were collected along a newly constructed highway running through the southern part of an area topographically mapped as Sheet 4 of the Shenandoah National Park. The gneiss is a typical injection gneiss with parallel oriented crystalloblasts of potash feldspar in a fairly coarse-grained matrix of quartz, plagioclase, and biotite.

The potash feldspar is always perthitic and may, according to common practice, be classified in part as orthoclase, and in part as microcline, the difference being that microcline shows an inclined extinction, whereas orthoclase, being a monoclinic mineral, is supposed to show parallel extinction in the zone normal to (010). The indices of refraction of this potash feldspar seem to be fairly constant and are about: $\gamma = 1.528$, $\alpha = 1.523$.

A closer inspection of the feldspars (with the Fedorov stage) brought out the interesting fact that the value of the optic axial angle varied conspicuously in various grains, and a total range from $(-)\ 2V = 10°$ to $(+)\ 2V = 86°$ was observed. Now it is well known that orthoclases with small axial angles occur (although as far as the present author knows they have not before been encountered in highly metamorphic gneisses), but the existence of an optically positive orthoclase or an iso-orthoclase seems worthy of special notice.

Only once before has an optically positive orthoclase been observed. It has been described by Duparc[1] and by him given the name, "iso-orthoclase." It is said to occur in granites and porphyritic granites from Troitsk (Ural), but the description given is not very definite. Neither indices of refraction nor optical orientation were measured by Duparc. He only stated that the orthoclase was optically positive with an axial angle that in all cases was relatively small and probably slightly variable.

[1] Duparc, L., Sur une nouvelle variété d'orthose. *Compt. rend.*, **138**, 714, 1904.

(Excerpt: ". . . il est en tout cas relativement petit et probablement légèrement variable.")

It should therefore be of some interest to record the optical constants of the Virginia iso-orthoclase.

A stereographic projection normal to the c-axis of the iso-orthoclase is given (Fig. 1). The direction γ is normal to (010) or nearly so, the mineral is consequently an orthoclase rather than a microcline; $a:\alpha=0°$; (+) $2V=86°$; indices of refraction as given above.

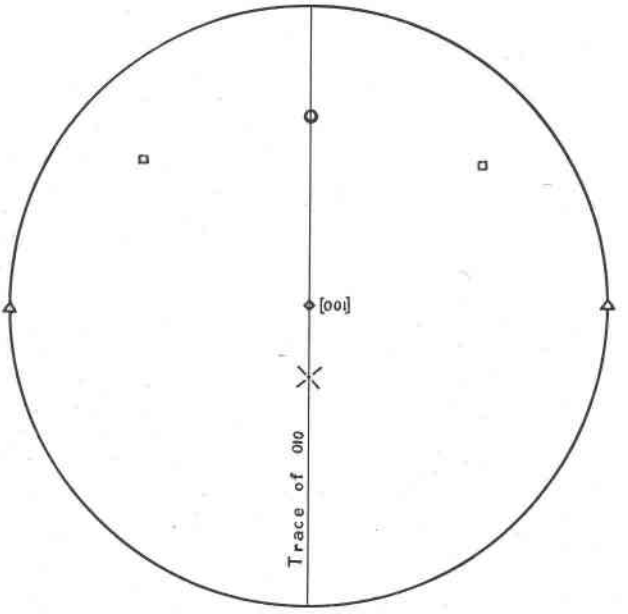

FIG. 1.

Stereographic projection normal to the c-axis of the Virginia iso-orthoclase. The pole of (001) and the direction β coincide and are marked with a cross, ×. ○ = α, △ = γ, □ = optic axes.

According to these data the existence of an optically positive orthoclase must be accepted, and thus far the conclusions of Duparc are verified. But, whereas the Ural iso-orthoclase has a "relatively small" axial angle, the Virginia iso-orthoclase has a large axial angle. In view of the great susceptibility of variation in the optical angle of orthoclase it is in itself not so surprising that sometimes the angle may equal and even pass 90°, and thereby become positive, although the reason for this is just as little understood as the reason for the small, negative axial angles so frequently encountered in orthoclases associated with extrusive rocks.