perature UC_2 phase may throw further light on the UC–UC_2 miscibility problem.

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Transitional cryptoperthites.

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In course of a study of some photometrically analyzed cryptoperthites and X-ray perthites of the Malani rhyolites of W. Rajasthan, reciprocal lattice angles α^* and γ^* of the unmixed sodarich phases have been determined from the albite- and pericline-twinned individuals using the *b*-axis X-ray oscillation method of Smith & Mackenzie (1955).

Table 1 gives the chemical composition and optic axial angles together with the reciprocal lattice angles α^* and γ^* of the unmixed phases (where they could be measured). To compare these values with those of the natural alkali feldspars of different composition and from different geological environments the values of α^* of the unmixed soda-rich phases have been plotted against the corresponding values of γ^* (after Mackenzie & Smith, 1955). Each plot has been indexed for correlation with Table 1. In Fig. 1 have also been plotted α^* and γ^* of orthoclase (monoclinic potash feldspar), maximum microcline (Mackenzie, 1956); two intermediate microclines; high-temperature albite and synthetic feldspars $Or_{10}Ab_{90}$, $Or_{20}Ab_{80}$, $Or_{30}Ab_{70}$ and low-temperature albite. Apart from these plots for reference, corresponding positions for the sanidine cryptoperthites and orthoclase microperthites studied by Mackenzie & Smith (Figs. 2 and 3 in Mackenzie & Smith, 1956) are shown by symbols (Fig. 1).

In this diagram positions of the α^*–γ^* plots of the rhyolitic alkali feldspars from Rajasthan show that most of these unmixed feldspars have soda phases which are possibly transitional between the high- and low-temperature modifications of the soda-rich alkali feldspars. This possibility is indicated by optic axial measurements also. The values of the optic angles (Table 1) have been plotted on a slightly modified form of Tuttle's (1952) diagram which shows the relation between optic angle and chemical composition in the alkali feldspar series. It will be seen from the position of the plots in the diagram (Fig. 2) that the examined feldspars have optic axial angles roughly intermediate between those of sanidine–cryptoperthites and orthoclase–microperthites within the same compositional range.

Mackenzie & Smith (1955, 1956) have found that the soda-rich phase of the orthoclase microperthites and sanidine cryptoperthites have reciprocal lattice angles α^* and γ^* close to those of low-temperature and high-temperature soda-rich feldspars respectively. Tuttle & Keith (1954) have shown that specimens which optically fall intermediate between the orthoclase microperthite

Table 1

		Composition			Reciprocal lattice angles			
					Na-phase (Albite twinned)		K-phase	
Sp. no.	Plot no.	Or.	(Ab + An)	$2V_\alpha$	α^*	γ^*	α^*	γ^*
*M*581	1	60·2	39·8	80–82·5	88° 1′	89° 52′		
*M*586	2	60·8	39·2	79·2–83·1	88° 7′	90°		
*M*562	3	64·2	35·8	48·4	88° 27′	90°		
*M*2393	4	50·6	49·4	60·5–66·0	87° 38′	90°		
*M*2389	5	42·3	57·7	80·2–84·3	86° 40′	89° 50′		
*M*1808	6	54·2	45·8	62·5–65·0	87° 45′	89° 44′		
*M*2103	7	59·5	40·5		87° 54′	90°	90° 49′	90° 52
*M*301	8	59·8	40·2	74·5–77·2	87° 57′	89° 50′		
*M*2437	9				87° 54′	90°	90° 45′	91° 5′
*M*2225	10	60·1	39·9	81·1	88° 1′	90°		
*M*1849	11	62·7	37·3		88° 1′	90°		
*M*2307	12	59·6	40·4		88° 3′	90°	91° 3′	90° 9′
*M*1535	13	49·3	50·7	76·5–82·3	87° 48′	90°		
*M*2147	14				87° 38′	90°	91° 34′	90° 10′
*M*308	15				87° 22′	89° 42′		

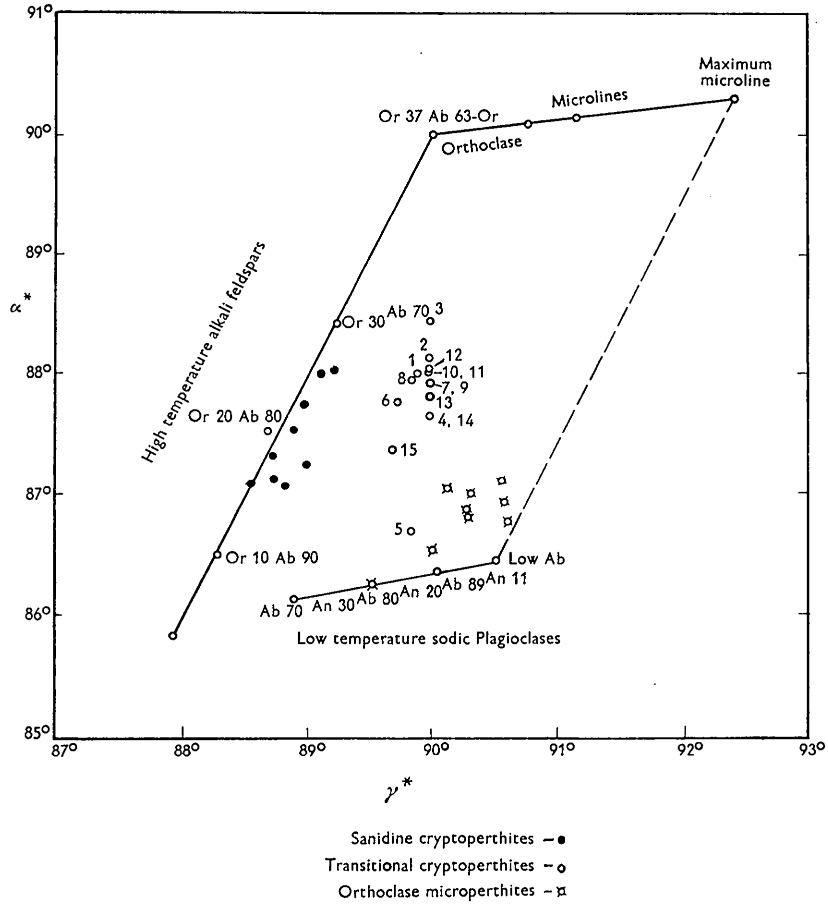

Fig. 1.

series and the sanidine cryptoperthite series have two soda phases, one a high-temperature form and the other a low-temperature form.

On the basis of these observations and the assumed absence of transitional forms between high- and low-temperature soda-rich phases, Mackenzie & Smith (1956) argued in favour of a simple classification of the perthites

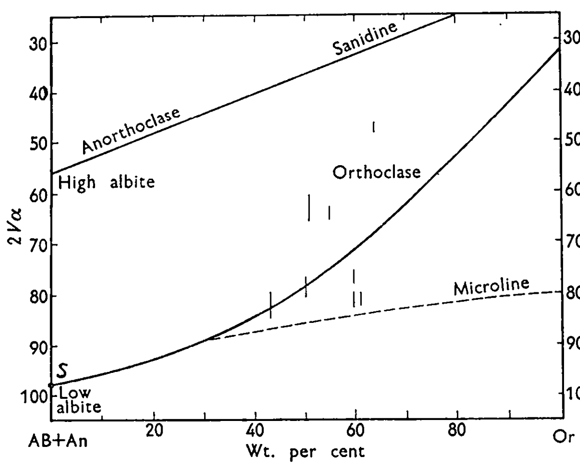

Fig. 2.

into sanidine–cryptoperthites and orthoclase microperthites. According to them, 'the existence of specimens whose optic angle places them intermediate between these two series in no way detracts from the usefulness of this subdivision since these specimens have two sodium feldspar phases, one a high-temperature phase and the other a low-temperature phase (Tuttle & Keith, 1954)'.

The object of the present note is to report the existence of transitional soda-rich phases in crypto- and X-ray-perthites, and also to point out that these transitional forms necessitate a modification of the simple classification of perthites proposed by Tuttle (1952) and supported by Mackenzie & Smith (1956).

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