Supplementary Note on Felspar from Kilima-njaro. (Ante p. 11.)

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A CHEMICAL analysis of this felspar, to which our attention was directed by Professor Bonney,[1] and which was subsequently described[2] on crystallographic and optical grounds as orthoclase, shows it to be a soda-potash felspar of somewhat peculiar composition.

In the following table, the first two columns give the results obtained on analysis (Fletcher) of two loose crystals, of which the second was a twin-crystal of lighter colour than the first; the next two columns represent the same analyses if the oxide of iron (present as visible enclosures) and the loss on ignition are neglected; the numbers in the fifth column are obtained by taking the means of the numbers in the two preceding columns. For the sake of comparison the composition of felspars from Svenoer[3] and Tyveholmen[4] is given in the last two columns.

	Kilima-njaro.					Svenoer.	Tyveholmen.
	1st. Crystal.	2nd. Crystal.	1st. Crystal.	2nd. Crystal.	Mean.	Vogt.	Fischer.
Silica	60·52	61·03	62·59	61·74	62·17	61·35	61·90
Ferric Oxide ..	2·96	1·68					
Alumina ..	22·29	23·71	23·06	23·98	23·52	22·37	23·59
Lime	2·77	2·91	2·86	2·94	2·90	4·66	5·26
Magnesia ..	trace	trace				0·04	
Soda	6·48	6·83	6·70	6·91	6·80	6·59	2·60
Potash	4·63	4·38	4·79	4·43	4·61	4·97	6·64
Loss on ignition	0·18	0·24					
	99·83	100·78	100·00	100·00	100·00	99·98	99·99

The Oxygen ratio of the Kilima-njaro felspar is therefore

9·86 : 3·29 : 1

[1] Bonney. *Rep. Brit. Ass.* 1885, p. 682.

[2] Miers. *Min. Mag.* vii. p. 11.

[3] Brögger. *Die Silurischen Etagen* 2 *und* 3. 1882, p. 261.

[4] Mügge. *Neues Jahrbuch.* 1881 (2), p. 106.

If expressed as a mixture of Anorthite, Microcline, and Albite substance, this felspar would be represented as

$$An_1\ Or_{0\cdot94}\ Ab_{2\cdot11}$$

A re-determination of the optical and crystallographic characters (Miers) affords no proof that the crystals are not mono-symmetric. The angle between the cleavages is 90° (the deviation being never greater than 16′), and double images are given by *b* (=M) as frequently as by *p*.

The angle of extinction in clino-pinacoid sections is 4°20′ in the positive direction; in sections perpendicular to the clino-pinacoid the directions of extinction are parallel and perpendicular to that face

$$2\ E = 102°,\ 2\ H_a = 64°,\ 2\ H_o = 129°\ 30',$$

therefore $2\ V = 60°44'$; $\beta = 1{\cdot}5373$. (Sodium light.)

The acute bisectrix is negative. The obtuse bisectrix is positive.

Examination of a thin section cut perpendicular to both cleavages shows that the cross-hatching, referred to by Prof. Bonney and in the previous note, is formed by a vertical series of extremely fine lines intersected by a horizontal series of shadowy bands, both series being only visible near the position of general extinction between crossed nicols; each vertical line remains light on one side of this position, and becomes dark during a considerable rotation on the other side; it is impossible to assign any definite extinction angle; the average inclination to the vertical is about 10°. These lines have not the continuity of twin-lamellæ, they sometimes taper at the ends, and their general appearance suggests something more akin to microcline structure; there is no trace of them in sections parallel to the basal plane.

The spots alluded to in the previous note are seen in thinner sections to be glass enclosures, similar to those in oligoclase from Pantelleria (Rosenbusch, *Mikr. Phys.* 1886, Plate vii. fig. 3); there are also inclusions of the ground-mass, numerous crystallites, and a little apatite. This felspar therefore bears some resemblance to those of Teneriffe,[1] Mt. Esterel,[2] Pantelleria,[3] and especially to the felspars from the Svenoer Augite-Syenite and the Tyveholmen "Rhombenporphyr" (quoted above), a group with reference to which the names oligoclase, soda-orthoclase, soda-microcline, and anorthoclase[4] have been employed. Mügge[5] has lately described the felspar from the recent eruptive rocks of L. Naiwascha, Massai-land, a locality not far distant from Kilima-njaro, under the name of soda-microcline.

[1] Deville. *Comptes Rendus*, 19, 1844, p. 46.
[2] Rammelsberg. *Min. Chem.* 1875, ii. p. 569.
[3] Förstner. *Zeits. f. Kryst.* viii. 1884, p. 125.
[4] Rosenbusch. *Mikro. Phys.* 1885, p. 550.
[5] *Neues Jahrbuch.* Beil. Bd. 4, 1886, p. 291.