

## Zincian staurolite from Uganda

SOME of the amblygonite specimens collected in 1957 from the main Nyanga granite pegmatite (E.  $30^{\circ} 09' 24''$ , S.  $0^{\circ} 58' 16''$ ) in Ankole, Uganda, were found to be sheared, partly reworked, and replaced by fine-grained muscovite. In addition to larger corroded amblygonite augen set in a sugary matrix of amblygonite, the specimens contain fine-grained apatite, wavellite, and smaller amounts of bertosaitite (a second occurrence), crandallite, reddish crystals of goyazite, eosphorite, bluish corundum, arsenopyrite, and veinlets of chloritoid. In some muscovite veinlets a pinkish mineral was also seen. An X-ray powder pattern and a series of single-crystal X-ray precession photographs of this mineral proved it to be staurolite. Because of its rather unusual colour and mode of occurrence, this staurolite variety was examined more closely.

Because only a few milligrammes of the mineral were available for this study, a wet chemical analysis could not be made. Table I summarizes the result of a microprobe analysis carried out by one of us (J. S.). Adopting the ideal composition of  $\text{Fe}_4\text{Al}_{18}\text{Si}_8\text{O}_{46}(\text{OH})_2$  for staurolite, the unit cell content, based on a sum of cations = 30, is added to the table. This analysis indicates a marked excess of Al over the theoretical staurolite formula and a deficiency in (Fe + Zn + Mn).

*Department of Earth Sciences, The University, Leeds LS2 9JT*

*Department of Geology, Snellmanink. 5, SF-00170 Helsinki, Finland*

TABLE I. *Chemical composition of the staurolite from Nyanga, Uganda. Microprobe analysis. MgO, CaO, TiO<sub>2</sub> not detected. Total iron as FeO.*

	Wt. %	Unit cell based on cation sum = 30	
SiO <sub>2</sub>	27.3	Si	7.61
Al <sub>2</sub> O <sub>3</sub>	60.5	Al	19.91
FeO	9.30	Fe	2.17
MnO	0.05	Mn	0.01
ZnO	1.46	Zn	0.30
Total	98.61		

The unit cell dimensions calculated from the powder pattern are:  $a = 7.867(3) \text{ \AA}$ ,  $b = 16.559(5) \text{ \AA}$ ,  $c = 5.643(3) \text{ \AA}$ . Density (calc.) = 3.74. Refractive indices:  $\alpha = 1.720$ ,  $\beta = 1.726$ ,  $\gamma = 1.733$  (immersion method, all  $\pm 0.003$ ). Optical orientation:  $\gamma \parallel c$ ,  $\beta \parallel a$ ,  $\alpha \parallel b$ .  $2V_{\gamma}$  large. Colour very slightly pinkish with no pleochroism.

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OLEG VON KNORRING

TH. G. SAHAMA

JAAKKO SIIVOLA

## An unusual calcite from Muirshiel, Renfrewshire

FLUID inclusion studies were made on a specimen of vein calcite found on the tip of the disused Muirshiel barytes mine, which is situated some fifteen miles west of Glasgow. The country rocks of the immediate area are Lower Carboniferous lavas intruded by an abundance of various doleritic bodies of Lower Carboniferous, Permo-Carboniferous, and Tertiary ages.

There are several baryte veins in the area, cutting the lavas, but only one has been mined. The veins

are fault-controlled and typical of the simple fissure-infill type orebody, consisting almost totally of pink baryte and a little quartz. Calcite is not common. Although there has been some debate in the past concerning the age of the mineralization, a Permo-Triassic age is indicated by K/Ar dates on the fault gouge clays (J. G. Mitchell, pers. comm.).

*Mineralogical description.* The pearly-grey rhombohedra of calcite, sometimes pinkish in colour due to inclusions of finely divided hematite,