

The most probable age of the early high-grade complex is Scourian. However, the nearest dated Scourian rocks are 30 miles distant across the Laxfordian strike, and no detailed structural work has been published for the intervening ground. Alternatively, the early complex could be Inverian in age, or could correspond to some other metamorphic episode as yet unrecorded.

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A New Carbonatite in the Legetet Hills, Kenya

As a result of recent laboratory examination of some specimens obtained while collecting rock-types in the Legetet area of the Kericho District of Nyanza Province, a new occurrence of carbonatite has been found. The outcrop, which is quarried for lime, is located $35^{\circ} 15' 32''$ W, $0^{\circ} 9' 7''$ S (first edition of the 1:50,000 sheet South A-36, F-1-NE). Later inspection of aerial photographs of the region suggests that the carbonatite forms a hill about 200 ft. high, and extends for about half a mile north from the above locality (Fig. 1).

The carbonatite was formerly thought to be equivalent to the Koru limestone of Miocene age, which forms the hill just west of the carbonatite and just north of Legetet (Fig. 1). The Koru limestone is itself problematic, since although it is interbedded with fossiliferous rocks¹⁻³, some curious features have been recorded. Thus Pulfrey⁴ gives its mineralogy as "calcite 85 per cent, hydrated iron oxides and manganese oxides (mainly iron) 9.5 per cent, apatite 3 per cent, silicates 2.5 per cent".

In a 1927 Survey report, Wayland⁵ recognized two distinct limestones at Koru, a fossiliferous one, and underneath it an "apparently unstratified, essentially crystal-

line" grey limestone with "no trace of organic structures", which "does not display the characters one usually associates with the limestones of the archaen complexes". Wayland further mentions that the grey limestone "seems to contain about 2.5 per cent of calcium phosphate".

On this evidence, it seems possible that other parts of the Koru limestone may also turn out to be carbonatite.

Our own observations, which are restricted to the one locality examined, are that the Legetet carbonatite is a fine-grained dark-grey carbonatite (specimen U.1 which was mistaken in the field for a calcified volcanic tuff) cut by dyke-like bodies three to four feet wide of a creamy calcite rock with conspicuous octahedra of magnetite (specimen U.3). The carbonatite seems to pierce the tuffs of Tinderet which are Tertiary in age. The dyke-like bodies trend approximately north-east—south-west, which is similar to that of the nephelinitic and alnoitic dykes which locally cut the Tinderet tuffs and Koru limestone.

In thin section the grey carbonatite (specimen U.1) consists of small phenocrysts of twinned calcite, embedded in a matrix of anhedral calcite grains nearly all of which are coated with iron oxide. Occasional apatite and a few small wollastonite crystals occur. The rock is cut by a thin vein of a clear untwinned carbonate mineral with platy habit which proved, by X-ray powder photography, to be pure calcite.

The creamy carbonatite U.3 contains phenocrysts up to 4 mm long of a carbonate mineral. Staining techniques indicate that the matrix is pure calcite but the phenocrysts are slightly ferrous calcites. An examination of the rock in thin section indicates a mixture of two carbonatites. A coarse carbonatite rich in apatite and containing crystals of pyrochlore and cancrinite is invaded by a fine-grained carbonatite. The texture of the apatite suggests that it is being replaced by calcite. The phenocrysts in the fine-grained carbonatite appear to be derived from the coarser carbonatite.

Preliminary geochemical evidence from Mr. T. Deans of the Overseas Geological Surveys, London, suggests that specimens U.1 and U.3 contain amounts of strontium, barium, niobium and yttrium comparable to those found in other carbonatites, and in excess of those normally to be expected in sedimentary limestones.

That carbonatite should occur here is not surprising. The area lies on the south-west flanks of the Tertiary alkaline volcano of Tinderet described by Binge¹. It is considered significant that these new outcrops and the fenitized rocks of Buru Hill, seven miles south-west of Legetet, as well as Tinderet itself should lie in the eastward extension of the Nyanza (formerly Kavirondo) rift-valley described by Shackleton².

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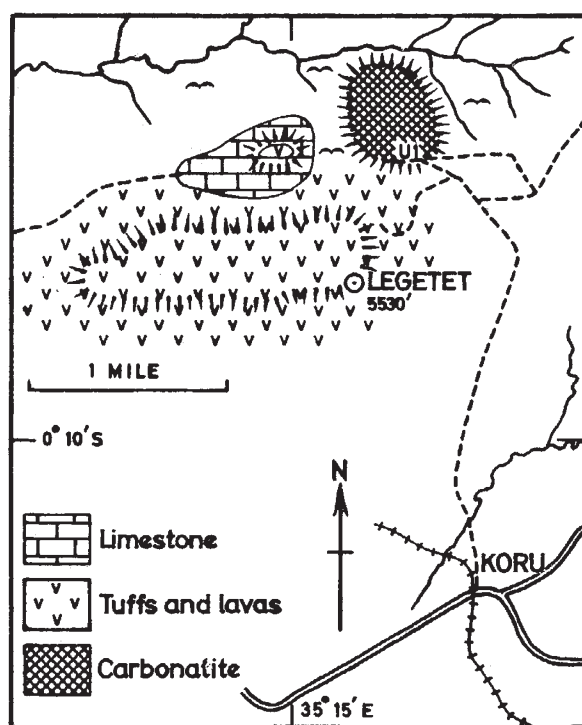


Fig.

METALLURGY

Distribution of Grain Size in Annealed Metals

MUCH consideration has been devoted to the statistical distribution of grain size in a well annealed metal, as examples of which the work of Smith and of Beck¹ may be cited who, however, did not give a formula to represent the distribution curve. Recently, Papadakis² has published a paper concerning the relation between the volume distribution of grain size and the distribution as revealed by surface examination, but the measurements considered do not suffice to provide the basis for a precise, experimentally confirmed law.