

THE KILIMANJARO VOLCANIC ROCKS
OF THE AMBOSELI AREA, KENYA

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SUMMARY

The thesis presents the results of an investigation of hitherto undescribed Tertiary to Recent volcanic rocks in the Amboseli area of south-central Kenya. These rocks represent a continuation of the lavas and pyroclastics forming Mt. Kilimanjaro, and the name Kilimanjaro Volcanic Rocks is proposed to cover the entire suite.

The earliest flows in the Amboseli area are predominantly basaltic, whereas the younger lavas are chiefly rhomb porphyries, phonolites and trachytes. Thin nephelinitic flows conveniently subdivide the basalts into two groups; other nephelinitic lavas overlie the basaltic rocks. Pyroclastic material is poorly represented in the main succession, but tuffs accompany scoriaceous basalts and melanephelinites at the parasitic vents.

Most of the flows were derived from Kibo, the most recently active centre on Kilimanjaro, but the early basalts may have come from the Shira centre. The lavas became progressively more viscous, and the youngest flows are found closest to the eruptive centre.

Chemical analyses of rocks from the Amboseli area are compared with published analyses of Kilimanjaro lavas, and it is concluded that a mildly alkaline series comprises mugearitic olivine basalts, zeolite basanites, trachybasalts, olivine-zeolite trachytes, olivine rhomb porphyries and olivine-bearing and olivine-free phonolites. A strongly alkaline series embraces ankaratrites, melanephelinites,

nephelinites and possibly some phonolites. The rocks of the strongly alkaline series were evidently derived from a parental magma of ankaratritic composition, whilst the mildly alkaline types are probably differentiated from a magma of alkali olivine basalt composition. Parental magmas for the two series may have arisen independently from a common source in the mantle.

The account deals with the composition, form and structure of the pre-volcanic surface, in so far as these features controlled volcanic events or the distribution of volcanic rocks.

A summary of the results of an investigation of the deposits occupying the Amboseli basin is included in the thesis because some of the sediments were probably derived from volcanic ashes.