



Figure 1. Location and geological map of Askote area, Pithogharh distt., Kumaun Himalaya.

pects of finding a large and rich lode beneath the one at Barigaon may be considered. Since here the rate of erosion is greater than the rate of weathering, no gossan is associated with the mineralised zone and as such, no zone of supergene enrichment can be anticipated.

Detailed investigation to establish the genetic relationships are underway. It is suggested that a detailed mapping of the mineralised zone on a large scale be carried out. If geochemical analyses of outcrop samples are indicative of ore potential, detailed geophysical investigations and drilling may be followed.

Financial assistance to the junior author (SF) from the Wadia Institute of Himalayan Geology, Dehradun, in the form of a Senior Research Fellowship is thankfully acknowledged.

1 August 1984; Revised 22 September 1984

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ANORTHOSITES AROUND KARAPPADI, PERIYAR DISTRICT, TAMIL NADU.

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THE anorthosites are found to occur as differentiated band in gabbros around Karappadi, Periyar district, Tamil Nadu (Long. 77° and Lat. 11° 30'). The trends of anorthosites and associated gabbros and pyroxenites vary from ENE-WSW through NW-SE to NNE-SSW.

Field Relationship

Anorthosites are generally found as a band in close association with gabbros. The contact between anor-

thosites and gabbros are gradational. The anorthosites enclose pods and lenses of chromitites. They often show primary banding with felsic and mafic layers. They consist occasional prophyroblastic garnet and mafic clots. Lineation due to parallel to subparallel disposition of prismatic hornblende is characteristic in anorthosites. Pinch and Swell structure of outcrops of these rocks suggests the fracture controlled emplacement. Selvan⁴ has inferred emplacement of basic igneous plutons along the 'Bhavani lineament'. Three sets of joints (NW-SE, E-W and NE-SW with higher angles of dips) are observed. Weathering of anorthosites is characteristic with the development of Kankar.

Petrography

These are medium to fine grained leucocratic rocks with plagioclase felspar and hornblende. Plagioclases are labrado-bytownites. The mafics are mostly, pale green hastingsite ($Z C = 19^\circ$; $2v = 70^\circ$) and relict diopside ($Z C = 40^\circ$; $2v = 60^\circ$). Plagioclases occur as

subhedral grains with triangular junctions. Untwinned grains are also not uncommon. Occasional garnets and common iron ores are accessories.

Chemical analysis of an anorthosite is presented in column I of table 1. Analyses of gabbros associated with anorthosites are furnished in columns II to IV in table 1. The high aluminous and calcic characters are akin to the anorthosites of Sittampundi⁵ complex.

The ultrabasic variant anorthosites and associated gabbros and pyroxenites represent basic magmatic activity in the Karappadi area. The primary nature of anorthosites is clearly exhibited not only by its occurrence as a differentiated band in the gabbros but also due to the preservation of primary banding and the presence of chromitites. The appearance of garnet, secondary foliation and lineation indicate that the suite might have recrystallised at high grade metamorphic conditions.

The authors express their sincere thanks to the University Grants Commission, New Delhi, for financial assistance provided to carry out field and laboratory studies.

20 August 1984

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Table 1 Chemical analyses and modal composition of the members of the layered basic suite of the Karappadi area.

	I	II	III	IV
SiO ₂	46.59	50.07	51.27	53.47
TiO ₂	Trace	0.49	0.13	0.12
Al ₂ O ₃	30.98	17.68	11.63	9.84
Fe ₂ O ₃	0.80	2.38	3.19	2.20
Feo	1.78	6.75	6.59	8.14
Mno	0.00	0.16	0.18	0.29
Mgo	1.93	8.78	14.58	11.23
CaO	15.23	11.35	11.07	9.58
Na ₂ O	2.35	2.48	1.55	2.95
K ₂ O	0.13	0.11	0.07	0.35
H ₂ O	0.30	0.34	0.40	1.08
	100.09	100.59	100.66	99.25
Plagioclase	82.50	45.00	32.80	53.00
Clnoamphibole	9.50	8.20	3.50	0.00
Clinopyroxene (Diopside)	2.50	16.30	26.35	19.50
Hypersthene	0.50	14.60	5.30	2.00
Garnet	0.50	14.00	29.15	24.50
Zoisite and Scapolite	3.50	0.00	0.50	0.00
Accessories	1.00	1.90	2.40	1.00
	100.00	100.00	100.00	100.00

I Anorthosite
 II Hyperite
 III Hypersthene gabbro
 IV Anorthositic gabbro

SIZE AND SEX-RELATED TOLERANCE TO CADMIUM IN THE FRESHWATER CRAB, *OZIOTELPHUSA SENEX SENEX*

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THE tolerance capacity to cadmium in the freshwater vertebrates, mainly fishes, is well investigated but very little work has been carried out in the freshwater invertebrates, particularly Crustaceans¹. Hence this study involving the tolerance capacity of the fresh-