

buted in the rock and is generally surrounded by a shell of calcite, and is of a pale green colour. But a pink variety of the mineral occurs along the intrusive contacts of the anorthite gneiss and chromite-amphibolite. It is probable that the two varieties of the mineral are of diverse origin.

In thin section the rock is equi-granular and made up of a groundmass of broken up basic feldspars. These have been described as 'Indianite' (anorthite) by Count de Bournon. Determinations of the An content of a few pieces of the mineral on the Fedorov universal stage however, show them to range in composition from An = 55% to 100%. The pieces examined displayed twinning of the ALA, MANEBACH, and MANEBACH-ALA types. Variation in the An content of adjacent lamellæ to the order of 18% is a feature recorded in some of the pieces examined. The amphibole noticed in these rocks is of a pale green variety with the following optical characters:—

X = yellow green, Y pale green, Z grass green, $2V = -80^\circ \pm 4$, $C \wedge Z = 13^\circ \pm 2$, conforming to those of Actinolite. Other minerals noticed in micro-sections of these rocks are, chondrodite, garnet, apatite, corundum, scapolite and clinozoisite (Fouqueite) with $2V = +88^\circ$.

The chromite bearing amphibolite is a beautiful green rock made up of acicular needles of green hornblende, and grains and stringers of chromite, while grains of pink corundum are noticed in the rocks along the contact zone. Experiments on the electromagnetic concentration of this rock show the maximum chromite content to be about 55 per cent.

In thin sections the rock is made up of an aggregate of green pleochroic amphibole with the following optical characters:—

X = green, Y = yellowish green, Z = bluish green, $2V = \pm 78^\circ \pm 4$, $C \wedge Z = 23^\circ \pm 3$ (or even 30°). It is probably a variety of pargasite. In some of the microsections a non-pleochroic bladed amphibole displaying straight extinction was noticed. The optic axial angle was found to be $2V = -84^\circ$, indicating it to be the rhombic amphibole gedrite. The fine play of colours exhibited by the mineral in hand specimens may be attributed to the presence of microscopic inclusions. Other minerals observed are zoisite, corundum, picotite, secondary chlorite and talc.

The garnetiferous pyroxenite is made up of a groundmass of diopsidic pyroxene ($2V = +56^\circ$) in which are embedded crystals of pale yellow garnet which show alteration to kelyphite and chlorite. The rock is devoid of feldspars. The pyroxenite is an aggregate of clino and orthopyroxenes, the former has the following optical constants, ($2V = +48^\circ$; $C \wedge Z = 40^\circ$), while the latter is pleochroic hypersthene.

Origin of Corundum.—As already referred to, the pale green corundum in these rocks is generally covered by a shell of calcite. This is suggestive of the splitting of anorthite by the action of CO_2 , produced during the intrusive period, and the consequent formation of Al_2O_3 and calcium carbonate ($\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 + \text{CO}_2 = \text{CaCO}_3 + \text{Al}_2\text{O}_3 + 2\text{SiO}_2$). The possibility of such action is supported by the presence of veins of calcite and quartz in the area.

The corundum in the amphibole rock may be due merely to an excess of alumina in the original basic intrusive, probably a pyroxenite. Its abundance in the zone of contact with the anorthite-coriundum gneiss may be attributed to concentration during intrusion possibly aided by chemical changes resulting in the production of free alumina.

Our grateful thanks are due to Dr. M. S. Krishnan for his valuable suggestions in the preparation of this note.

Madras,
May 24, 1948.

N. K. N. AIYENGAR,
A. P. SUBRAMANIAM.

VERMICULITE IN MYSORE

While engaged in the mineral survey of the Pavagada taluk, Tumkur District, a yellowish-brown micaceous mineral with a bronzy lustre was noticed lying scattered in the neighbourhood of pits from which corundum had been taken out. The mineral swelled enormously when heated, more than ten times its original volume and turned fluffy and silvery grey in the process. This property of expansion by exfoliation with a worm-like movement is characteristic of vermiculite and it was therefore considered that the brittle mica was no other than vermiculite possessing its characteristic property. Subsequently, similar brittle mica, but of different shades of colour, was met with in some of the altered ultrabasic rocks near Koratagere and Nidavanda in the Tumkur District. These also possessed the property of expansion by exfoliation. Whether at any of these places vermiculite is found in abundance and in quantities capable of being commercially exploited remains yet to be investigated.

Vermiculite is one of the few minerals which till recently had remained obscure and known only as an alteration product chiefly of the micas. It is only recently that it has come to be of importance as the mineral which has revolutionized building construction. Vermiculite which when expanded weighs only 6 to 8 lbs. per cu. ft. as compared to sand which weighs 100 lbs. is used as a substitute for sand or gravel in plaster and concrete to save weight. Vermiculite plaster is said to be fire proof and sound proof, and on account of that is extensively used in the construction of radio studios, theatres, libraries, etc. It is used in making panels for prefabricated houses. Many new uses of vermiculite are being found and the demand for vermiculite is daily increasing. The important deposits of vermiculite are in Montana and North Carolina, U.S.A., and new mines are being developed in the Transvaal, South Africa.

The object of the present note is merely to draw the attention of investigators in the field to the possibilities of finding commercially important deposits of vermiculite in our country especially in areas which show lenses of basic and ultrabasic rocks in the Gneisses. The extent of the now known occurrences of vermiculite in the Tumkur District is being investigated and the results of the investigations will be published elsewhere.

B. P. RADHAKRISHNA,

Mysore Geological Department,
June 16, 1948.