process of segregation producing bands and irregular patches, black, green, white and red in colour, corresponding to concentrations of arfvedsonite, aegirine, feldspar and eudialyte respectively.

Apart from the green bands which are identical to green lujavrite, these segregational rocks lack the lamination and fissility which is so characteristic of the lujavrites. In the lowermost levels the material of the segregation zone has intruded green lujavrite generally parallel to its fissility. Upwards these rocks form apophyses into each other with conformable and sharp boundaries. In the higher levels of the segregation zone black lujavrites occur.

The contacts of the lujavrites and their roof rocks of naujaite are everywhere characterised by development of irregular bands, veins and pegmatites. The contact rocks are characterised by mineralisation of thorium, uranium and rare earth metals occurring in steenstrupine. Pyrochlore, neptunite and other minerals have been found.

Future field and laboratory work is necessary to substantiate the field observations and to define more closely the rock types of the transitional and segregational series. The mineralisation of rare metals should be further investigated for economic and mineralogical purposes.

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MINERALISED ULTRAMAFIC ROCKS IN SOUTH GREENLAND

H. K. Schönwandt

In 1960 several mineralised ultramafic boulders with a remarkable content of Pt were found by M. Lorétan in the neighbourhood of Sarqâ fjord in the Nanortalik district, South Greenland. This stimulated interest in a closer examination of the mafic and ultramafic rocks of South Greenland and in 1962 and 1963 J. P. Berrangé mapped three ultramafic plutons in the district. One of the plutons is situated close to the place where Lorétan had found the mineralised ultramafic boulders. Berrangé (in press) concluded that the plutons had a greater affinity to the appinitic suite of

rocks than to Gardar rocks, and that the plutons were emplaced late during the plutonic development of the Ketilidian mobile belt. Berrangé also considered that none of the plutons carried sulphides in an amount big enough to constitute ore.

In 1969 thanks to a grant from "Statens Teknisk Videnskabelige Fond", the Mineralogical Institute at the Technical University of Denmark, where the laboratory work is done, and GGU collaborated in starting a new investigation of South Greenland's mafic and ultramafic rocks and their mineralisation.

Because of bad ice conditions in both 1969 and 1970, the field work has been concentrated around the fjords Sarqâ and Tasermiut. Among the most important results of this work has been the discovery of an ultramafic body on the west side of the island Amitsoq. Detailed geological mapping and magnetic survey have shown that this body is the westerly continuation of the ultramafic pluton which Berrangé mapped on the east side of Amitsoq. The pluton is now known for a length of 1.5 km and the breadth ranges between 90 m and 250 m. The pluton can best be described as a dyke-like body which pinches and swells both horizontally and vertically. The main strike direction is east-west, but the local strike runs parallel to joints and small faults in the country rock. No cross-cutting faults have been observed, but in the westerly part of the pluton one finds smaller east-west faults in the pluton.

The eastern part of the pluton up to the highest exposures (330 m) consists exclusively of rhythmically layered ultramafic rocks. On the other hand, the western part of the pluton shows from sea level up to an elevation of 200 m a differentiation from hornblende peridotite to quartz-biotite diorite. In contrast to the early differentiates, the late differentiates have a distinct subhorizontal lamination. The content of sulphides in the ultramafic rocks is about 0.2% by volume and can rise up to 10-15% by volume in 10-20 cm wide zones. The sulphides consist mainly of pyrrhotite, pentlandite, chalcopyrite and cubanite. The textural relationships between some of the sulphides seem to be a result of exsolution from hitherto undescribed high temperature phases.

Together with the sulphides, one normally finds 5-10% by volume of magnetite and this is of interest concerning the two magnetic anomalies which have been found in the central, covered, part of the pluton. One of the anomalies is a presumed dipole with a polar distance of about 40 m and an amplitude difference of 6000 γ. The other anomaly is a maximum with a highest value of 4000 γ above the background values. Both anomalies are situated where the pluton has a change in its strike.

One of the results from the study of the basic boulders indicates that a valley about 4 km south of the above mentioned pluton could contain another pluton of the same type. Because of the overburden a magnetic survey is necessary for the localisation of the presumed body.

Reference

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