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A NOTE ON TIN-TANTALUM PEGMATITES IN THE DAMARA OROGEN AND ALKALI ROCKS ASSOCIATED WITH THE BRANDBERG COMPLEX

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1. TI N-TANTALUM PEGMATITES ASSOCIATED WITH THE TIN BELTS

Gevers and Frommurze (1929) demonstrated that the most important tin deposits of central Namibia are confined to three distinct, approximately parallel, belts within the NE trending Damara Orogen, viz. -

a) the Northern Tin Belt, extending from the important Uis tin mine southwards towards the Strathmore tin pegmatites area near Cape Cross, a distance of some 80 km;
b) the Central Tin Belt, extending from the northern bank of the Omaruru River in the Nainais and Tsomtsaub area, 100 km east towards the Tjirundu Mountains, north of Omaruru;
c) the Southern Tin Belt, aligned along a tectonic feature, the Spitzkoppe in the south-west, to Otjimbajo in the north-east - a distance of some 120 km.

The pegmatite bodies in the tin-belts are conformable to the structures in the Damara Sequence and are commonly banded, with the different portions being separated by a thin band of schist. The pegmatite bodies are generally 1-2 m wide but may bulge in places to form extensive, zoned bodies with quartz cores. A characteristic feature of pegmatite bodies in the tinbelts is that they crop out as wall-like features rising sharply from the easy-weathering schistose country rocks. The pegmatites generally exhibit a relatively simple composition, with some marginal enrichment of muscovite and tourmaline. Many of the zoned pegmatite bodies contain replacement units of albite with major concentrations of fine-grained muscovite or lit hi an mica, and are often highly mineralized, containing pockets of disseminated cassiterite and some columbite-tantalite. Occasionally large bodies of microcline may be observed, that exhibit similar mineralization. Useful indicators of mineralized pegmatites are nodules of amblygonite-montebrasite and of lithium-manganese-iron phosphates. Locally, rather narrow, homogeneous, non-zoned pegmatite bodies are also highly mineralized, with cassiterite occurring in greisenized zones.

In the Northern Tin Belt, most of the occurrences in the Uis area and in the Namib Desert stretching from the "Namib Rock" toward the Strathmore tin mines were investigated. Here, a great number of mostly zoned pegmatite bodies have been mined for cassiterite. Large amounts of spodumene, amblygonite-montebrasite and in some cases eucryptite were seen. Accessory cassiterite is frequently associated with albitized or greisenized parts of the pegmatites.

The following occurrences were examined along the Omaruru River in the Central Tin Belt: Nainais, Aubinhonis, Nobgams, Humdigams and Tsomtsaub. In all these occurrences large amounts of cassiterite were observed, and beryl was also noted. At Tsontsaub, the rare mineral nigerite was observed in a quartz-sillimanite assemblage, together with colourless chrysoberyl and a greenish spinel (probably gahnite). At Kompaneno, cassiterite is associated with lithium mineralization, petalite and lithian mica.

In the Southern Tin Belt, the western-most tin occurrences at Trekkopje are of hydrothermal origin and were emplaced in marbles. Here, cassiterite is closely associated with polymetallic sulphide mineralization. However, pegmatites are also found in the area and one sample was found carrying a large amount of tapiolite. To the north-east from here, all cassiterite deposits are of pegmatitic origin and the most prominent of them is Sandamap, an extensive and varied body that consists of a number of distinct units, all of which contain cassiterite. Most of the mineralized pegmatites in this area, and further north-east, are zoned and contain quartz cores that form prominent ridges, e.g. Cameron, Sidney, Ariakas, Davib and Carsie Mines; (the two last are situated immediately south-west of Erongo). Most of these pegmatite bodies contain replacement units of albite, with muscovite and lithian mica, and are highly mineralized. The intermediate zones consist of large blocky microcline and the wall zones are highly tourmalinized.

Although a large amount- of tin was obtained from sporadic pockets of cassiterite, the bulk of the tin recovered in this area was, however, from extensive eluvial gravels, derived from the pegmatites.

2. ALKALINE ROCKS ASSOCIATED WITH THE BRANDBERG COMPLEX

The first exposures of alkaline rocks in this area were found in the Amis Valley, one of the main western approaches to the Brandberg. The most characteristic of the numerous varieties of alkaline rocks found is a grey, riebeckite-bearing granite containing bright yellow, glassy grains of uraniferous pyrochlore. Under the microscope, the groundmass consists of large microcline perthite, quartz and elongate, prismatic, blue riebeckite with ragged outlines, set in a matrix of fine-grained albite, microcline and quartz. There are many textural variations of these riebeckite granites and it is often difficult to distinguish separate- intrusions in the field.

An unusual, highly radioactive variety of granite contains aegirine rosettes with riebeckite, partly replaced by the rare mineral astrophyllite; in addition, there is an extremely fine-grained brown, radioactive mineral disseminated in the feldspar matrix. Leucocratic varieties of granite consist of small aggregates of riebeckite and scattered yellow pyrochlore grains in the fine-grained matrix of microcline, albite and quartz.

Pegmatitic varieties of granite contain large amounts of pyrochlore and zircon as well as monazite and fluorite. At present, the extent of these alkali rocks is not known, but boulders of similar alkali granites have been found in the Naib valley some 10 km north of the present locality, indicating that there may be a more extensive "marginal zone" of these alkali rocks.

3. REFERENCES

Gevers, T.W., and Frommurze, H.F. 1929. The tin-bearing pegmatites of the Erongo area, South-West Africa. *Trans. geol. Soc. S. Afr.*, **32**, 111-149.