NOTE ON JACUPIRANGITE IN TASMANIA.

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The wonderful aptitude of the alkaline magmas for differentiation is strikingly exhibited by the nepheline rocks at Port Cygnet. The promontory at the Regatta Ground south of the jetty consists of a central spur of elaeolite syenite, varying into alkali syenite, a light coloured alkaline eruptive of the character called leucocratic by Brögger, or salic in the new American terminology. The margins, especially the southern one, consist of the dark elaeolite-pyroxene rock known as jacupirangite. This locality name was given by Derby in 1891 to rocks in Brazil occurring as differentiation products in association with elaeolite syenite, usually laminated in habit and intersected by small dykes of the latter rock. The nepheline-pyroxene varieties pass into magnetite-pyroxene varieties and the latter into nearly pure titaniferous iron. This ore is found in Alnö (Sweden) connected with elaeolite syenite.

Megascopically, the Port Cygnet jacupirangite is a dark, medium-grained rock, speckled with elaeolite, and glistening with small brilliant crystals of augite. Under a magnifying glass a little iron pyrites is visible. The colour of the rock grows lighter as it merges into elaeolite syenite. The specific gravity is 2.89. Microscopically, the respective quantities of augite and elaeolite present do not differ much. The augite is green, slightly pleochroic, c : $\mathfrak{c}$ 35°. The elaeolite is in large hypidiomorphic plates. Sphene in fair quantity in wedge-shaped crystals. Melanite garnet, which is characteristic of all the Port Cygnet eruptives, is not absent from this, and is occasionally rather plentiful. Apatite is present in the forms of prisms and grains. Magnetite is scattered grains. A little brown biotite. In order of quantity, the minerals are elaeolite, augite, sphene, garnet, apatite, magnetite, biotite.

Professor H. Rosenbusch, in mentioning that this is a quite typical jacupirangite, says that search ought to be made in it for the rare mineral baddeleyite (dioxide of zirconium), which has been found in a Brazilian occurrence of the corresponding rock.

Both Rosenbusch and Zirkel treat this rather peculiar class of rock as a modification of elaeolite syenite. Mr. H.

Stanley Jevons includes it in the family of ijolites (pyroxene-felspathoid rocks), presumably owing to its mineral composition. As a rule, however, ijolites are much poorer in titanic acid and iron than jacupirangite.

At Port Cygnet the rock cannot be called a geological entity. It does not occur as a dyke of later material invading the main mass of syenite. It may rather be interpreted as resulting from differentiation by progressive crystallisation, the marginal parts of the cooling mass receiving concentrations of basic oxides, while the centre was left more acid. The minor variations are interesting; thus, vein-like bands of elaeolite syenite may be seen ramifying in the jacupirangite, and the latter also occurs as segregation spots enclosed in the lighter coloured rock. The central portion of the magma naturally consolidated after the cooling of the periphery.

The concentrations of iron ore into which the Brazilian rock merges have not been noticed at Port Cygnet; in fact, our rock is not at all rich in magnetite or ilmenite. The augite, too, is evidently not titanic. The titanium in the rock would appear to principally reside in the sphene.