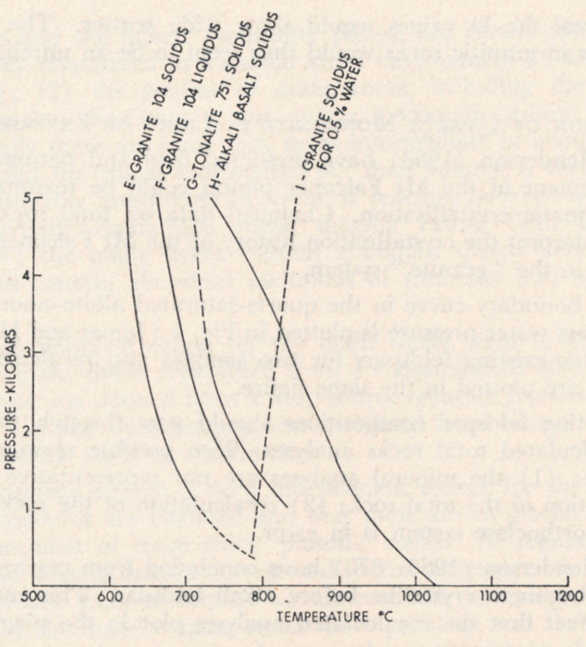

Fig. 3.—Solidus and liquidus curves for granite, tonalite, and alkali basalt as a function of pressure, temperature, and water content (data from Piwinskii, 1968a).

sericite and are considered to be postmagmatic. If the ilmenite is magmatic, oxygen fugacities less than that of the magnetite-hematite buffer are suggested (Buddington and Lindsley, 1964). According to Wones and Eugster (1965: 1264) the ratio of Fe‴/Fe‴ + Fe″ is about 0.25 for hematite–magnetite buffer conditions, 0.10 for nickel–nickel oxide buffer conditions, and 0.05 for fayalite–magnetite–quartz buffer conditions. The ferric iron content of biotite from FP2-17 appears to be too high to be in equilibrium with ilmenite and suggests the possibility of oxidation during late-stage hydrothermal alteration (see Ghent and Henderson, 1968: 866). The ferric iron content of biotite from FP2-6 appears compatible with the presence of ilmenite, and presumably this biotite was more resistant to late-stage oxidation.

Estimations of water fugacity during the crystallisation of the Mt Falconer pluton based upon biotite composition have not been attempted. Until the effects of Ti and F on the stability of biotite have been experimentally determined, estimates of the fugacity of water are of limited reliability.

Table V.—Partial chemical analyses of biotite from the Mt Falconer pluton.

Sample No.	FP2-6	FP2-17
Fe_2O_3	4.67*	7.94
FeO	23.29	20.52
Fe‴/Fe‴ + Fe″	0.16	0.26

*** Analyses by Technical Services Laboratories, Toronto.**

Amphiboles

Electron microprobe analyses of amphiboles from the Mt Falconer pluton and early mafic dykes and xenoliths were presented in an earlier paper (Ghent and Henderson, 1968: 859, 872). In the present study, electron microprobe analyses of brown hornblende from one camptonite dyke (FB3-2) were obtained. The analyses and a calculated structural formula are presented in Table VI.