Basaltic andesite											
10	900	6	cpx	opx	amph		plag		glass	30	Abundant prismatic amphibole and plagioclase; minor stubby clinopyroxene and rare laths of orthopyroxene; amph, plag ≫ cpx > opx
10	940	4	cpx	opx	amph				glass	60	Abundant prismatic amphibole; common stubby clinopyroxene; rare laths of orthopyroxene; amph > cpx ≫ opx
10	960	4	cpx	opx ?	amph			psdb	glass	70	As above except that accessory pseudobrookite present
10	980	4	cpx	opx	amph			psdb		80	Common stubby clinopyroxene, minor amphibole, rare laths of orthopyroxene and accessory pseudobrookite needles; cpx > amph > opx
10	1,020	4	cpx	opx				psdb		95	Minor stubby clinopyroxene and lath-like orthopyroxene; amphibole not identified; accessory pseudobrookite needles; opx > cpx
Andesite											
10	900	$4^1/_2$	cpx	opx	amph	ga	plag	psdb	glass	40	Abundant laths of plagioclase, minor euhedral garnet; rare amphibole, clino- and ortho-pyroxene; plag ≫ cpx, ga > amph, opx
10	940	4	cpx				plag		glass	85	Large plagioclase laths common, rare stubby clinopyroxene; plag ≫ cpx

1968) and at 27 kb in the dacite (this composition was not studied at 18 kb) garnet is the liquidus phase. The garnet appears to become enriched in grossular as well as pyrope with increasing pressure.

Interpretation of Results

As indicated previously (p. 114) the experimental procedure involving wet conditions was not ideal, and involved iron loss from some of the samples and uncertain water vapour pressures. In spite of these limitations the results on the crystallization of high-alumina quartz tholeiite at 9—10 kb ($P_{H_2O} < P_{LOAD}$) strongly support the hypothesis for the origin of the calc-alkaline series by the wet partial melting or fractional crystallization of basalt as outlined earlier (p. 112). Thus the large field of crystallization of sub-silicic amphibole together with subordinate clinopyroxene and minor orthopyroxene and possibly calcic plagioclase, provides an efficient mechanism for silica and alkali enrichment, and to a smaller extent alumina enrichment (before crystallization of calcic plagioclase begins).

xperimental runs on the dacite composition under wet conditions

een carried out to determine the liquidus phase in this composition at high pressures accompa
o to grow garnets in the partial melting field large enough, and sufficiently free of inclusions, to a
his several exploratory runs under varying degrees of "wet" conditions were carried out before a
n carried out without boron nitride sleeves and without sealing the sample capsule or drying the

Water added (mgm)							Estimated % of glass	R.I. garnet (±0.01)	Comments and estima crystal phases present
—	qz	cpx	felds	ga		glass	20		Medium grained, garn filled, qz, cpx ≫ ga >
—	qz	cpx	felds	ga		glass	50		Medium grained; pyro size; garnet large, ir qz > cpx ≫ ga ≫ feld
<1	qz	cpx	felds	ga		glass	20		Similar to 1220°, 27 k
>1						glass	100		Above liquidus.
>1						glass	100		Above liquidus.
>1				ga		glass	99	1.78	Rare, very large (50 μ garnet, pale green c
>1		cpx		ga		glass	85	1.785	Common, large euhedr common aggregates crystals.
>1	qz	cpx		ga		glass	70	1.785	Common, large euhedr common stubby pyr ga > cpx ≫ qz.
>1	qz	cpx		ga	ky	glass	40		Abundant stubby pyr garnet crystals, min cpx > ga ≫ qz, ky.
>1	qz	cpx	plag			glass	?		Very fine grained, cpx than rest; qz, plag >