solid solution. Ringwood and Green (1966) and Green and Ringwood (1967) had previously called attention to the effect of chemical composition in determining the relative importance of component reactions in the gabbro-eclogite transformation. It must also be stated that theoretical consideration of these component reactions, all involving solid solutions with end members having very different stability fields, shows that the incoming of garnet or disappearance of plagioclase must occur gradually over a P,T interval with compositions of solid solutions changing until one of the phases involved in the reaction disappears. The failure of Ito and Kennedy to observe change in the $\frac{Mg}{Mg+Fe}$ ratio of garnet through the garnet granulite stability field is inconsistent with theoretical analysis of the reactions involved or with the published garnet compositions of Green and Ringwood (1967a), T.H. Green (1967) and may be due to problems in iron contamination of their charge. Although Ito and Kennedy (1971), quoting Banno (1970), argue that pressure effect on the Fe-Mg distribution coefficient between garnet and pyroxene may cause garnet to become more Fe-rich with increasing pressure, this effect is minor (Banno, 1970). Furthermore, this effect is irrelevant to the reaction being considered, which is the production of garnet (± clinopyroxene, ± quartz) at the expense of olivine, orthopyroxene and plagioclase and is not simply an exchange reaction between garnet and clinopyroxene solid solutions. Ito and Kennedy (1970 and 1971) attach considerable geophysical significance to the presence of 'steps' in the density vs pressure curve correlating these with seismic velocity 'discontinuities' in the deep crust or crust-mantle boundary. In attempting this application of their data, Ito and Kennedy argue for a major significance for the results of NM5 composition on the basis of similarity of NM5 composition to the average composition of oceanic tholeiites (Table 1, Table 2). However, the comparisons of Table 1 and Table 2 demonstrate important differences in both chemical composition and eclogite mineralogy between NM5 and average oceanic tholeiite. In addition, more recent data on deep-sea basalts shows very clearly that there is large variation in chemical composition between individual samples. Thus, even if it could be convincingly demonstrated that there are sharp mineralogical boundaries for a specific basalt composition, these 'discontinuities' would be diffuse or smeared out if present in a sequence of chemically diverse individual lava flows or intrusions.

Extrapolation of Phase Boundaries to Low Temperature.

Ito and Kennedy (1971) state "Our results on the stability field of eclogite are remarkably in contrast to those published by Green and Ringwood (1967a)". This statement is untrue. In Figs. 1 and 2 and the preceding sections, we have shown that the experimental results obtained at 1100^{o}C and on the solidus by Ito and Kennedy are in excellent agreement with our own experimental data. In Fig. 4, we compare the extrapolation to lower temperatures which we have previously made with that now advocated by Ito and Kennedy (1971). The latter authors note the difference in slope of our line of best fit (27.5 bars/^{o}C between 1000^{o}C and 1250^{o}C) for the outgoing of plagioclase in quartz tholeiite B composition, relative to their chosen line of best fit (20 bars/^{o}C