$MgO-Al_2O_3-SiO_2$ indicate that the effect of pressure on the minimum melting point is less than 6°C/kilobar, a figure that is considerably smaller than those for the pure phases.

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DISCUSSION

by F. Dachille

It is of interest to observe that although the existence of an olivine-spinel polymorphic pair of Mg_2GeO_4 was reported by V.M. Goldschmidt[1] in 1931 the spinel form could not be verified and hence was doubted more or less completely by a number of workers until clearly demonstrated by Roy and Roy.[2] With this beginning, and interested in the geophysical importance of a transition of the olivine-spinel type by the suggestion of Bernal and the more elaborated one of Mason,[3] work was started in 1955 in this laboratory to study this transition by well established methods of phase equilibria in the system Mg_2GeO_4. The necessary pressure variable in the study of the solid solution fields soon went beyond the 80,000 psi working limits of the cold seal hydrothermal apparatus[4] but consistent results were obtained in the pressure-temperature region of the uniaxial apparatus. Thus it was possible to present to the 1956 Geological Society of America Meeting the p-t-x relations of the system summarizing the first high pressure work done on an olivine-spinel transition and illustrating the geologically important finding that the substitution of Fe^{2+} for Mg^{2+} broadened the spinel phase field in any isobaric section. Work continued for two more years and was reported in 1958, and later published.[5-6] Some of the findings will be of interest here. An isothermal section in this system at 550°C, the temperature selected in order to avoid the interference of hydrous phases and to stay within reasonable limits of the strength of the tool steel pistons (of the Speed Star or HS66 type), gave the positions of the spinel and olivine solid solution field boundaries (and the separating 2 phase field) to about 60 kb. At the highest experimental pressure the spinel composition contained