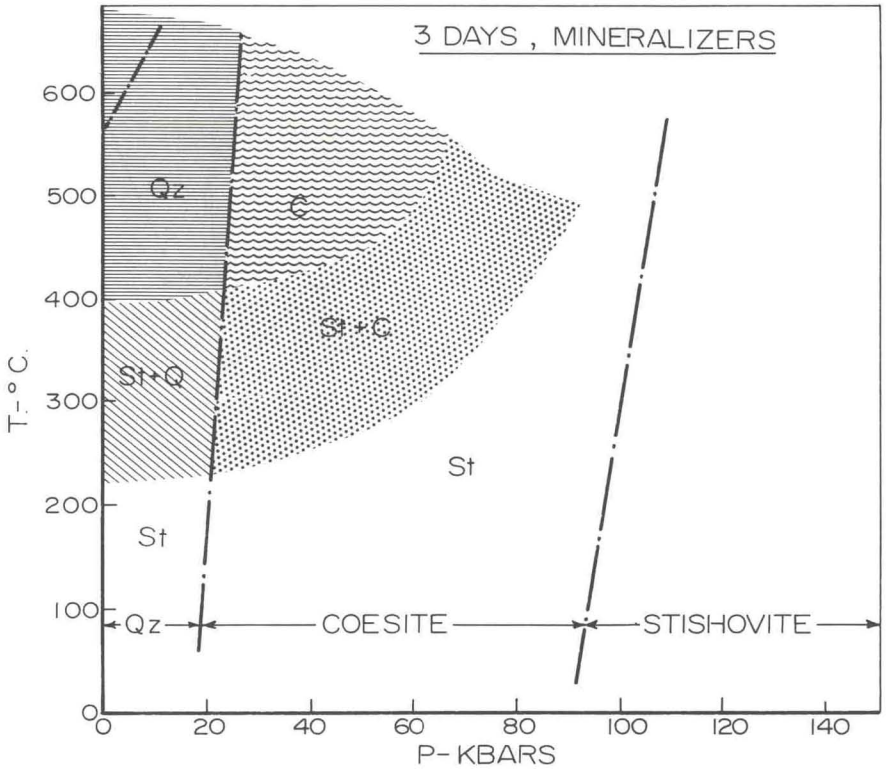

FIGURE 5—"Wet" system. The diagram is similar to Figure 2. Mineralizers were added to the system in this case. Note the crystallization of quartz from stishovite both at lower pressures and lower temperatures than those of the dry system.

An unexpected result was observed in the SRO phase at extreme pressures (Figure 7). The index n of the samples was found to increase when exposed to increasing temperature. This would indicate an unlikely decrease in the rate of reaction as the temperature was increased. This phenomenon can be attributed to the competition between two simultaneous reactions producing opposite effects on n: 1) the conversion of stishovite to the SRO phase, and 2) the densification of the SRO phase.

Since the SRO phase and silica glass are similar in structure and other characteristics, they might be expected to behave in a similar manner under similar conditions. Cohen and Roy (1961) have shown that silica glass can be permanently densified above a threshold pressure of 20 kbars with a corresponding increase of index n. They also found that increase of temperature at a given pressure increases

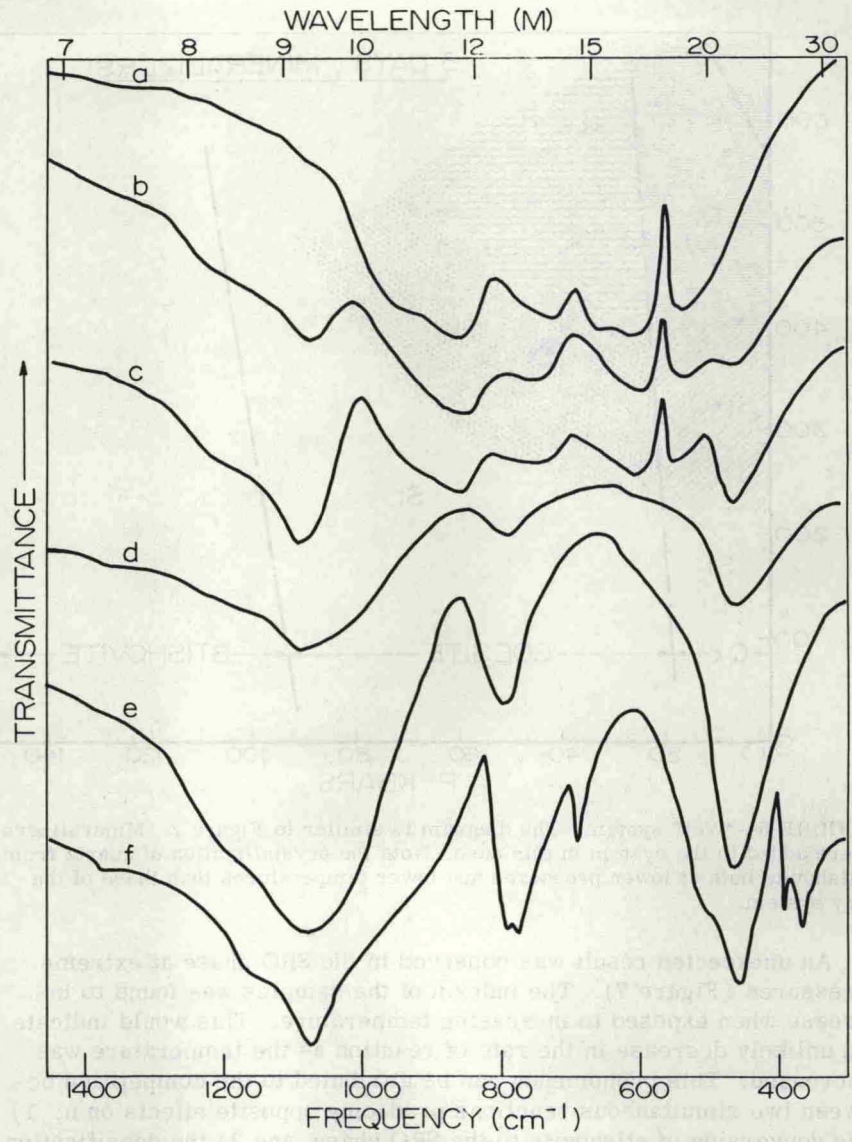

FIGURE 6—Infrared absorption spectra for the interval of 500-1500 cm^{-1}. a) stishovite; b), c), and d) are spectra of reaction products containing increasing concentrations of SRO phase, respectively; e) silica glass; f) α-quartz. The Si-O stretching frequency at 1050-1150 cm^{-1} is characteristic of Si in 4 coordination and that of 850-950 cm^{-1} is of Si in 6 coordination.

densification. We have found that the SRO phase derived from stishovite behaves in the same manner. For example, stishovite heated at