



Fig. 2. Results of high-pressure runs on the quartz-coesite transition at 1100°C using different pressure cells.

the pressure vessel and to friction within the talc and boron nitride. It represents a -4% pressure correction to a two-stage compression run, and the quartz-coesite transition at 1100°C, using this correction, is placed at 34.3 kb.

With the silver chloride + boron nitride pressure medium for a two-stage compression run, the quartz-coesite transition at 1100°C occurs at a nominal pressure of 32.5 kb; in a two-stage decompression run it occurs at 31 kb. Thus the difference in pressure between compression and decompression results for the quartz-coesite transition is 1.5 kb. This is attributed to piston friction and to friction within the boron nitride, since friction losses in the silver chloride are considered to be negligible, and it represents a -2% friction correction to a two-stage compression run. The quartz-coesite transition at 1100°C, using this correction, is placed at 31.8 kb.

There remains a discrepancy of 2.5 kb between the results obtained using talc and silver chloride pressure mediums, even after corrections for friction losses have been made. To bring these results into agreement, a further correction of -7% is needed for a two-stage compression run with talc + boron nitride as the pressure medium.

DISCUSSION

This work indicates that at 35 kb and 1100°C a total pressure correction of -11% is needed on a two-stage compression run, and this correction appears to consist of two components. The first of these is an irreversible component being characterized by hysteresis; it is attributed to frictional losses between the piston and cylinder and in the talc + boron nitride pressure medium. This correction amounts to -4%. The second component of pressure loss is re-

TABLE 2. Quartz-Coesite Transition at 1100°C as Determined in Piston-Cylinder Apparatus

	Boyd and England [1960a]	Kitahara and Kennedy [1964]	Khitarov [1964]	This Work
Corrected pressure, kb	32.3	32.8	31.3	31.8
Uncorrected pressure, kb	35	35.3		35.5

versible (i.e., it is not steresis) and is attribute tribution of stress in the experimental work established of this component as a distribution of stress in likely to occur even in there is no irreversible pro friction. It is probably cau in strengths and compress ous components of the pro For example, the talc an have substantially greater graphite furnace and its especially since the graph hotter than most of the v boron nitride cylinders. I sure on the end of the p the base of the pressure the same as the actual pr sample in the middle of t this effect that causes the the results for the silver with negligible strength a cell with significant strengt

In Table 2 a comparison results of previous worker sults. Good agreement is and England's early, corr to be expected because o from their design. We agr tion [Boyd and England, strength of the pressure m increasing temperature bu their conclusion that a p therefore no longer requir probably remains essent the run temperature beca volume of the talc colum vicinity of the hot spot, fected by changes in run t shown that, as well as an pressure loss, there is also loss due to the appreci pressure cell.

The difference between tion for our piston-cyli Kennedy's apparatus we variations in design and to the different time facto periments used to determ rection. Kennedy and co