that pressure. The melting curve was also found to be sensitive to variations in oxygen fugacity.

Yagi (1962, 1966) has investigated the 1-atm relations in the acmite-diopside system. Nolan and Edgar (1963) synthesized acmite hydrothermally along with other members of the acmite-diopside series. They presented the first well indexed powder pattern of acmite and calculated the cell parameters of their synthetic material. Their values are listed in table 1.

Work bearing on the relationship of acmite in more complicated chemical systems has been published by Bailey and Schairer (1966), who studied the anhydrous system Na_2O-Al_2O_3-Fe_2O_3-SiO_2 at 1 atm, and by Nolan (1966), who studied part of the Na_2O-CaO-MgO-FeO-Fe_2O_3-Al_2O_3-SiO_2-H_2O system at a pressure of 1000 kg/cm^2. Ernst (1960, 1962) encountered acmite as a decomposition product in studying the stability relations of the amphiboles magnesioriebeckite and riebeckite-arfvedsonite.

EXPERIMENTAL PROCEDURES

Starting material was fine-grained crystalline acmite (conditions of formation are listed in table 1) and hematite + glass of acmite composition, both obtained from J. F. Schairer. Values of 2θ of the crystalline acmite were measured for ten reflections with high-intensity copper $K\alpha$ X-radiation and a NaF internal standard. Indexing was done by comparison with Nolan and Edgar (1963). Cell parameters were then calculated with the use of the least-squares refinement program of Burnham (1962), and the results are listed in table 1 as Ac SM.

Experiments were carried out on the single-stage, piston-cylinder device described by Boyd and England (1960). The furnace-cell arrangement currently employed is shown in figure 1 of Bell and England (1967). Problems of pressure calibration in piston-cylinder apparatus have recently received much attention. Boyd and others (1967) showed how the sign of any pressure discrepancy due to frictional effects may be determined by the history of piston motion during a run. In essence, three types of run are possible in a piston-cylinder device: (1) piston-out, where piston motion during the run is always out-stroke, resulting in a *higher* pressure on the furnace cell than calculated from the gauge pressure; (2) piston-in, where piston motion is always in-stroke, resulting in a *lower* pressure on the cell; and (3) to temperature at pressure where the nature of piston travel is unknown throughout the run. Although the first two types of run maximize friction, an advantage is gained in knowledge of the sense of the frictional correction. Details on performance of these two types of experiment are now available (Boyd and others, 1967; Richardson, Bell and Gilbert, 1968).

Pressure discrepancy due to strength of the solid pressure media is a separate factor which is not easily evaluated. Green, Ringwood, and Major (1966) advocate applying a −11 percent correction to the calculated run pressure, supposedly to take into account the strength of

TABLE 1

Cell parameters of synthetic acmite

, Å	c, Å	β, degrees	Vol., Å^3	T, °
	5.294	107.42	429.1	75
± 0.003	5.2891 ± 0.0010	107.33 ± 0.03	429.4 ± 0.3	82
± 0.001	5.2951 ± 0.0003	107.44 ± 0.01	429.0 ± 0.1	130
± 0.002	5.2916 ± 0.0007	107.57 ± 0.02	428.9 ± 0.2	100
± 0.002	5.2925 ± 0.0007	107.54 ± 0.02	428.9 ± 0.2	100
± 0.001	5.2932 ± 0.0005	107.45 ± 0.01	428.7 ± 0.1	90
± 0.001	5.2924 ± 0.0004	107.47 ± 0.01	429.2 ± 0.1	105
± 0.0011	5.2284 ± 0.0006	108.43 ± 0.004	437.6 ± 0.1	115

e II and p. 627).

(1965, table 22) and D. H. Lindsley (personal communication).

cell parameters are those generated by the least-squares solutio

aques + Na silicate + quartz + glass). A84 contained Ac + trace
contained Ac.