Table 8 Data (Fig. 16) from Which Fig. 29 Was Generated

	Fraction remaining		Standard normal deviate	
Time (h)	A	B	Z_A	Z_B
0	1.00	1.00		
0.2	0.698		0.50	
0.25		0.72		0.58
0.3	0.33		−0.43	
0.5	0.17	0.42	−0.92	−0.2
0.7	0.08	0.28	−1.5	−0.58
1.0		0.11		−1.18
1.25		0.08		−1.4

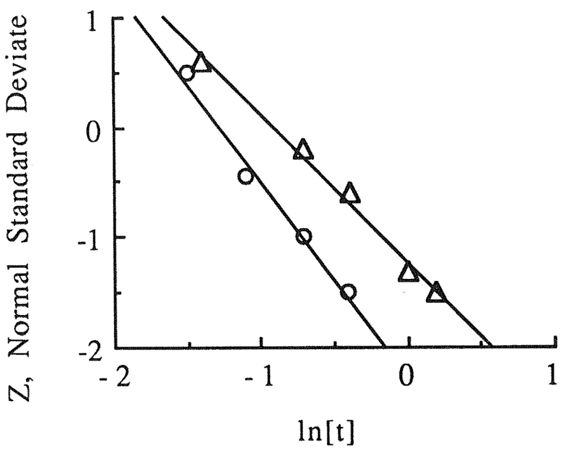

Fig. 29 Data from Fig. 16 treated as log-normally distributed in time.

The data from Fig. 16 are shown in tabular form in Table 8. These data are plotted log-normally in Fig. 29, and it is seen that there is excellent linearity. The model is much simpler and much more reasonable in the case of polymorphic transformations than other models relying on farfetched mechanistic assumptions.

The reason for the log-normal relationship is not difficult to understand. Solids are usually log-normally distributed. If the nucleation time is inversely proportional to size, then it too would be log-normally distributed.

Dehydration, at times, results in a morphic transformation. For instance, Lo (1976) showed that the transformation of crystalline ampicillin trihydrate to amorphous penicillin was primarily first order, it either was first order or followed a contracting cylinder model ($(1-x)^{1/2}$ being proportional to time).

16.1. Pseudo-Polymorphic Transformations. Dehydration Kinetics of Hydrates

A special case of polymorphism is pseudo-polymorphism which deals with hydrates. Anydrates and hydrates often crystallize in different crystal systems, but the mol-