the medium. If the viscosity imparting substance deteriorates, or if the flocculation characteristic (the "diameter" of the particles) changes, then the yield value may change, and what originally was not prone to cake might at a later time have such a propensity.

It has been stated elsewhere that for Bingham bodies, a yield diameter of the bottle can be calculated and below this bottle diameter there will be no settling.

3.3. Sedimentation Rates

The rational treatment of sedimentation rates has been described by Carstensen and Su (1970). Since the suspension, when placed on stability, has just been well agitated, the floccule size is not the same as it will be at equilibrium (it will be smaller). The first part of a settling curve is, therefore, governed by the reforming of the equilibrium floccule, and the latter part is governed by settling towards the equilibrium sedimentation volume. A typical plot of the final settling phase of kaolin suspensions is shown in Fig. 5. The intercept does not correspond to full height, because the settling is the final phase. The first phase, as mentioned, consists of reflocculation of the equilibrium floccule (which does not exist at time zero, because the suspension has been thoroughly shaken at that point).

The sedimentation curve is, therefore, two-phasic, and the equation for the settling curve is

$$Y - Y_\infty = A_0 \exp(-k_0 t) + A_1 \exp(-k_1 t) \tag{10.16}$$

and the curve can be deconvoluted by feathering, or by programmed four-parameter techniques.

3.4. Preservation Stability

Methyl, ethyl, propyl, and butyl esters of 4-hydroxybenzoic acid are used in various combinations in antacid suspension (and other pharmaceutical) products. The

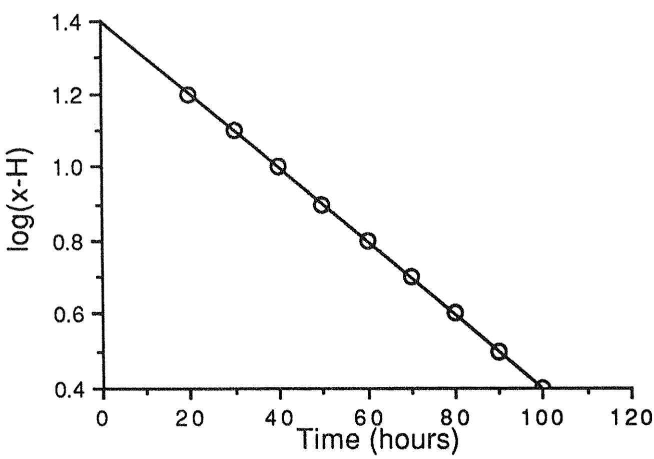

Fig. 5 Settling of kaolin suspensions. (Constructed from data published by Carstensen and Su, 1969.)