K'_{CaEGTA}) by a Scatchard plot (fig. 5). A value of 7.2 for log K'_{CaEGTA} was obtained. This value is slightly higher than that reported by others at pH 7[9,10]. This may be explained by the lower ionic strength used in the present determinations. Since the sensitivity of the reaction, between Ca and aequorin, decreased as the ionic strength was increased[5], comparative measurements of free Ca using EGTA could not be made in solutions of higher ionic strength. The present data also show that in the presence of Ca complexes of lower affinity than that of Ca and aequorin, free Ca concentrations cannot be measured; this is in agreement with the observations of Izutsu et al.[11].

Discussion. The proportionality between Ca concentration and luminescence, observed at the maximum of the curve, is the basis of various methods for the assay of Ca concentration[4,5]. Because of the time spent in introducing the vial into the counter, it is not possible to record the starting portion of the curve with the present instrument. However, if the reaction is slowed down by the dilution of the reactants, not only is the initial maximum less pronounced but the luminescence decays exponentially over a relatively prolonged period of time. Along the exponential portion of the curve, the light intensity happens to be proportional to the Ca concentration. The rate of decay appears to be related to the intensity of the initial peak. This phenomenon may provide an explanation for the anomalous behavior of the luminescence signal at high Ca concentration reported by Johns[7], although no information by the author was given about the time at which the samples were counted. The time elapsed between mixing the sample and counting, as shown by the present data, is very critical. Since liquid scintillation counters are available in most biochemical laboratories, and aequorin can be obtained commercially, the present method may find widespread application.

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In Memoriam

It is with profound sorrow that we announce the tragic and untimely death of Hugo Aebi. We have lost a dear friend and respected colleague. Professor Aebi joined the Experientia Editorial Board in 1974. As editor, he skillfully sought a balanced representation of disciplines covered by the journal and was an energetic proponent of Experientia's interdisciplinary goals. A tribute expressing our thanks and indebtedness to Professor Aebi will appear in a forthcoming issue of Experientia.

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