The composition and structure of plant cell walls are two distinct aspects of analysis that are often separated, yet must be considered together to understand the relative importance of differences. Composition concerns the quantitative contribution of a component to the whole. This may be expressed in anatomical terms or chemical and biochemical terms. Structure, on the other hand, describes the particular relationship of one entity to another or organization of the material in a qualitative sense. Structure can be considered at several levels. It may include the proximity of various cell types, the molecular structure of the chemical components of those tissues, the bonds between those components, or the stereochemical conformation of the components. Structural nuances must always be considered relative to their compositional importance. For example, a conformational difference between the orientation of phenolic constituents relative to associated carbohydrates (even though this makes cross-links more likely) may only be important if that component contributes a significant amount to the overall composition of a particular tissue type. For this type of structural difference to be important in affecting digestion of a plant species it must be in a tissue type that is susceptible to degradation, where it is not overshadowed by other effects. It is also possible that even mild lignification may prevent microbial access to the tissue and further lignification will have no effect unless it spreads to other tissue. Thus, many differences in structure may occur, but they may or may not significantly influence the extent or rate of digestion of forage cell walls. Therefore, in plant cell wall research, one must keep this constantly in mind and be extremely judicious in the choice of attributes one wishes to investigate. It is in this light that we must approach the study of the structure of forage cell walls.

1. SCOPE

Since the rate and extent of digestibility has been generally considered to be influenced by the cell wall constituents and the extent of lignification