The development of crystallography is a continuous process, but there are periods of exceptional growth as well. Three in particular occurred in the early 1910s, 1930s, and 1950s, and another may be occurring now. This talk will touch briefly on each of these, but will be devoted principally to the 1950s.

Historical Aspects of Protein Structure

By Robert Olby, Reader in History of Science, Leeds University, Leeds LS2 9JT.

It was in the 1950s that protein structure became a major field of interdisciplinary research. This followed the overthrow of the old crystalline-amorphous distinction and the critique of the conception of pseudo-high-molecular aggregates. As a result fibrous, as well as globular proteins could be studied as macromolecules by the techniques of structural crystallography. Attempts to achieve a unified structural picture of globular and fibrous proteins also date from this period. It is argued that this "1950s synthesis" sought not only to accommodate the data on the physiology and chemistry of proteins, but also to establish amino acid sequences in support of the conception of protein as discrete macromolecular species rather than as collections of variable chain length molecules with only mean molecular weights.

The features of this 1950s synthesis are analyzed in terms of the application to the proteins of crystallographic conceptions deriving from the study of small molecules. The extent to which these features have been incorporated into or rejected from our modern view of protein structure is discussed. Some conclusions are drawn for the cumulative model of scientific progress.