Mechanisms of Synaptic Transmission: Bridging the Gaps (1890-1990)

Winner of the 2004 Outstanding Book Award from the International Society for the History of Neuroscience

Synaptic transmission plays a central role in the nervous system as the mechanism that allows for chemical and electrical communication between cells and thus connects discrete elements into the functioning whole. This is a broad account of anatomical, biochemical, embryological, medical, pathological, pharmacological, and physiological studies on synaptic transmission during the hundred years beginning in 1890. During this century, the process of synaptic transmission came to be recognized not only as the most fundamental neurophysiological process, but also as a seat of pathological changes, and as the predominant site of action for drugs used to treat a wide range of psychiatric and neurological disorders. At the same time, research from these various disciplines was transformed into a new and unifying field, neuroscience. The course of these investigations reveals ingenious experiments, powerful new techniques, and imaginative insights.

The author describes broadly who did what, when, where, and how (and, in cases where it is apparent, why) and uses experimental results and interpretations to display the evolutionary course to our current understanding of how nerve cells communicate: the basic principle of neural functioning. The book will be of interest to basic and clinical neuroscientists, pharmacologists, and physiologists, to historians and philosophers of the life sciences and medicine, and to their respective students.