

Rivers of the United States" volume II, Chemical and Physical Characteristics

by **Ruth Patrick**, published by John Wiley and Sons, Baffins Lane, Chichester, West Sussex PO19 1UD, England, in 1995, ISBN 0-471-10752-2.

Review by Christopher G. Kendall

This text uses the riverine systems of the USA as examples to an introduction to general characteristics of riverine systems. The book may be of use in the evaluation of the structure and functioning of ecosystems associated with rivers both in the United States and other parts of the world. The book is divided into seven chapters. It includes the landscape topography associated with rivers; the pattern and form of riverine systems; and how they are controlled by the geology underlying the area; precipitation; the size of drainage area; and slope of the landscape. River flow is related to the precipitation for various parts of the United States except Alaska; their yearly run off; size of head waters; response time of individual rivers to a heavy down fall; and the nature of the land surface on which the water collects and is transported across. The characteristics of flowing water in riverine systems are considered in terms of how water flows within river channels, using various models to describe the flow of water in river channels, and the relationship of this flow to the underlying bed form sediments, characteristics of river banks, river discharge, etc. The character of the sediments and sediment loads carried by rivers and formation of various types of sedimentary structure in response to different flow regimes is described. Tables are provided which characterize the river loads of various rivers within the United States. There is a chapter on wetlands and various maps showing the wetland areas of the United States (except Alaska), whether they are saline or fresh water, or are connected with different types of climate or pre-existing topography. Finally there is a chapter on chemicals in riverine water including arsenic, barium, boron, bromine, chromium, cobalt, copper, fluorine, gallium, iodine, iron, manganese, molybdenum, nickel, rubidium, selenium, strontium, tungsten, etc., all of which are handled in a very cursory way. For instance, selenium is just touched on and there is no discussion of the role of mercury. This book might be some interest to advanced undergraduates but is disappointing in that it treats material so lightly and has rather dated references from the 60's, the 70's, and a few references from the 80's and even fewer from the 90's. There is no indication of who this volume was written for, but it seems to be aimed at providing a very general description to our understanding of rivers of the United States at an introductory level. If you are an undergraduate student who wants to get a first hand feeling for riverine systems, this book could be for you. The emphasis of this volume is on physical processes and chemistry of rivers in general, though the book is about rivers of the United States and these are illustrated throughout the text. The section on chemistry of the waters is dated and there is much more recent and advanced information on the presence of metallic and other ions in the waters of these rivers. I think that you should look at this volume before you consider purchasing it, to see if it meets your needs, or you may be disappointed. It is not certainly not an advanced text but it may be of some interest to some geomorphologists and river managers as a reference.