Contents

Part 4 River Models

Part 5 River engineering

Preface

The idea of the present 'River Book' – as it has been known during its years of preparation – was first broached some eight years ago. Its roots go back even further: to the extensive studies of the Rivers Niger and Benue undertaken by NEDECO for the Government of Nigeria in the late fifties. These studies, and much information of a more general nature, were presented in the 'River Studies and Recommendations on Improvement of Niger and Benue' (1959). The book subsequently became a basic handbook for many river engineers because of the wide coverage of the subject not found elsewhere. When the first edition had sold out and demand was still high, it was obvious that the book would need updating to maintain its value. Rather than update a book based on a particular river system, would it not be better to produce a completely new book about river engineering generally, thus filling a gap in engineering literature?

An editorial board was set up to organize this major undertaking. The members of the board – from Delft University of Technology, the Rijkswaterstaat (Netherlands Ministry of Public Works), NEDECO and the Delft Hydraulics laboratory – are the main authors of the present volume, but the many other contributors have also played an important part.

The 'River Book' has taken several years to reach its final form. During that time it has been constantly revised and updated and it is now felt to be representative of the present state of river engineering.

The ambitious aim of the book is to provide the reader with an overall view which will make it possible to see different aspects of river engineering in their proper perspective. It does not contain all the detailed information available on the various problems dealt with: needless to say, much material had to be left untouched to keep the volume within reasonable limits. For the same reason the authors have restricted their work mainly to the examination of the non-tidal alluvial river and to *pure* river engineering, not going into, for instance, river valley development schemes. Within this framework the book aims at a comprehensive survey of the factors that determine the character of a river, of the problems encountered in river engineering and of the ways and means to solve these problems. When detailed information is required, reference can be made to the many publications mentioned in the text.

Of course, not all problems in river engineering can yet be solved simply. There are still many gaps in our knowledge and understanding of the complex nature of water movement, sediment movement, changes in bed configuration, etc. However, the engineer can use modern equipment and advanced techniques to sound the river's properties. He can make use of scale models and mathematical models to improve his insight into the behaviour of the river. Then, by combining his experience with a thorough basic knowledge of the laws which determine the movement of water and sediment, the engineer should be able to master most river problems satisfactorily.

This book is intended both for the practising river engineer who, with its help, will be able to tackle problems giving all aspects the correct weights – without overlooking any of these aspects – and for the post-graduate student who wishes to know the latest developments in the subject, as well as the wide background from which these developments have come.

It is divided into five parts, the first of which is a general introduction to the subject. The next three parts deal with the basic subjects River Hydraulics, River Surveys and River Models, ad the final part deals with their application under the heading River Engineering. It should be stressed that most benefit will be gained by studying the book as a whole, not just turning to a particular section.

Extensive use has been made of research work published by experts in many countries. Special mention should be made of the 'River Studies' of the Niger and Benue referred to above. Another factor that should be mentioned is that, although the authors think that their conclusions are generally valid, they admit that quite a few of their examples have been drawn from their wide experience of the River

Rhine. They feel justified in their choice by the fact that the Rhine is a good example of a river which requires man's constant attention, presenting as it does such a wide range of rivr egineering problems.
Finally, Iwould like to thank my colIeagues on the editorial board, as well as our other contributors, for the effort they have put into their work and the perseverence they have shown during these years of preparation, many of them facing the major problem of fitting this work into their already tight schedules.

The Hague, P.Ph. Jansen
November 1978