

PREFACE

Reservoirs help to maintain the balance between water resources and water demand. The water management of reservoirs is an important part of any flow regulation scheme.

In economically and socially advanced countries with high demands on water relative to their water resources, multi-purpose flow-regulation systems ensure a rational exploitation of what is available. Reservoirs play an important part in these systems and a system approach should therefore be applied in their design.

One of the more recent aspects of technical/scientific development is that more consideration must be shown for the environment, for nature. Water is one of its basic elements. Reservoirs have a fundamental impact on the environment, a fact which cannot be overlooked when designing and operating a reservoir.

Reservoirs are designed not only for immediate needs, but also for the future, and any concept concerning them must therefore be based on the dynamics of development and on prognoses.

In both parts of the water management balance—resource and demand—stochastic elements can be observed; a probability approach and the methods of mathematical statistics must therefore be applied to arrive at any solutions.

Reservoir operation influences both the economic and non-economic spheres of the life of any society. In evaluating the efficiency of reservoirs, both these influences must therefore be borne in mind and the optimization criteria must be adjusted accordingly.

To what extent the various aspects are weighted depends on the natural, economic and social conditions in the country concerned. All possible approaches have to be explored in these reservoir projects to arrive at a technical/economic/social optimum.

The 1966 edition of this book could not at that time provide approaches to all these new progressive goals; these only appeared, and the means to their solution have only been developed, in the past ten years. The subject therefore has to be treated in a new way.

Additional chapters deal with water-management systems and the environment. However, the technical approach to the subject has also been completely changed. The aim of the first edition was to build a bridge between the classical and probability methods, while, here, attention is focussed on the stochastic character of the problems.

The first edition included only an outline of modern computer calculations, while they are now of course, an essential tool in tackling the problems.

We have, within the space available, been unable to deal with all aspects equally. A choice has had to be made concerning the problems to be discussed and the methods of their resolution. Full reference has however been made to the literature and other sources. The authors are only too well aware that this book does not close a chapter on reservoirs. Questions relating to water management in reservoirs will continue to occupy the attention of experts for many years to come.

L. Votruba, V. Broža