Flow in Channels

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Preface

This book is intended mainly for students of hydraulic engineering who have already gained a basic knowledge of fluid mechanics and who wish to study the hydraulics of open channels as a whole. At the same time it is hoped that the inclusion of a full range of selected references will make the book of value to postgraduate students and practising engineers looking for an introduction to the subject.

Although flow in channels constitutes only one part of hydraulics, it is today too large a subject for it to be treated easily in detail in a single small volume. Here, an introduction to alluvial or loose boundary flow as well as one to unsteady channel flow is given, together with the more complete treatment of uniform and non-uniform flow in fixed boundary channels.

A student using the early chapters of this book will be expected to be familiar with the application to fluid mechanics of such basic concepts as energy, momentum and continuity as well as with the simple properties of fluids. An understanding of the boundary layer concept and the existence of shear stresses in fluids will also be an advantage. The references given at the end of each chapter have been selected on two criteria: they either describe important original work or thinking on the topic under discussion or else they refer to more complete treatments of the subject than is possible in the present volume. It was the author's intention to make the second category as up to date as possible bearing in mind that the best in

hydraulics appears to have an enduring validity that far exceeds many other disciplines in science and technology.

In conclusion, it is necessary for me to express my indebtedness to all those from whom I have learnt both personally and through print. The foundations of the subject were most carefully laid by Dr. E. F. Gibbs of the University of Bristol without whose interest and encouragement I might never have pursued the subject further. Finally I would like to thank Professor T. M. Charlton for the opportunity to write this book and his continuing interest in it.

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