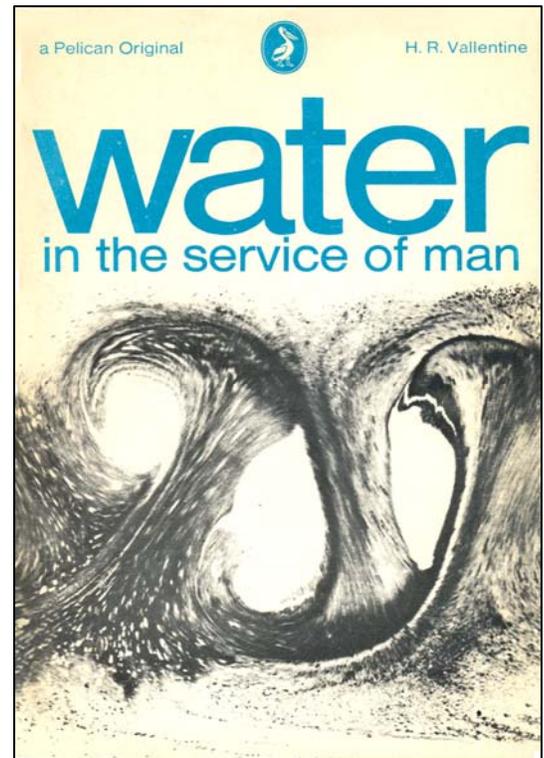


title **Water in the Service of Man**

author **H. R. Vallentine**
A civil engineer, was Chair of Civil Engineering,
University of New South Wales

category Instructional history of water science and
engineering

publisher Penguin Books, A Pelican Original
1967 paperback edition, 224 pages
ASIN: BOOOBDVMK8



who will be interested in this book?

Anyone interested in the science and engineering aspects of water given in a very readable, condensed text book form.

why read this book?

From water at rest, water in motion, flow in pipes, rivers and canals, waves, pumps and turbines, hydrology, this book gives the reader an overview of water science and engineering. Vallentine presents technical information in a readable manner, and states in the preface *“This essay is intended to arouse the curiosity of the general reader in the behaviour, the use and abuse of a commonplace yet vital substance. Although it has a technical background, the book is certainly not an engineering text; nor does it pretend to be comprehensive, profound or wholly serious. Mathematics has been kept to a minimum and most of it has been confined to footnotes, to be by-passed by those who prefer facts to figures”*

review / outline by Lance Brown, vistadelsol@telus.net

Overview

Written in 1967, this book is a ‘mini’ text book covering all the basics of water.

Sixty-eight figures and eight black and white photos are given to assist in the technical explanations. It has a bibliography and index.

Chapters & Points of Interest

1. *Introduction*

- of all the resources in nature, the most important for the welfare of mankind is water
- water – what it means to different people
- water is both non-uniform (unevenly distributed over the earth’s surface) and unsteady (delivery rate fluctuates with time)
- knowledge of water is drawn from a jumbled accumulation of thousands of years of engineering experience; a few hundred of scientific analysis; a few score of experiments; and just a few years with modern techniques
- water is used as a scientific standard for mass, specific gravity, temperature, heat, and viscosity

2. *Ancient Water Practice*

- water use in ancient Egypt, Babylonia, Crete, Greece, Rome
- Plato, Aristotle, Archimedes

3. *The Development of Theory*

- Roger Bacon, L. da Vinci, , Simon Stevin, Francis Bacon, Galileo, Isaac Newton, Bernoulli, Euler, Chezy, Lgrange,
- Continuity Equation, Laws of Motion, Equations of Acceleration, Velocity of Flow in rivers and canals
- early civil engineering works

4. *Water at Rest*

- study of pressure forces in a fluid at rest- hydrostatics; in motion – hydrodynamics
- buoyant forces; pressures; dams; accelerating motions; flotation

5. *Effects of Viscosity*

- laminar flow; turbulent flow; boundary layer; viscosity

6. *Water in Motion*

- uniform and non-uniform flow
- basic tools are continuity (Continuity Equation), energy (Bernoulli Equation), momentum (Momentum Equation)

7. *Flow in Pipes*

- pipe strength; head; energy loss; Reynolds number; hydraulic gradient; branching pipes; water hammer; rising mains (pumped water);

8. *Flow in Rivers and Canals*

- laminar or turbulent; uniform or non-uniform; steady or unsteady; sub-critical or super critical
- Manning formula for flow; hydraulic jump

9. *Waves*

- effects of wave extend below the surface; wave velocity; types of wave motion; effect of water depth; wave changes at beach and vertical wall

10. *Pumps and Turbines*

- types and operation; horsepower required

11. *Hydraulic Models*

- use of laboratory models to predict unknowns

12. *Hydrology*

- hydraulics deals with fundamental mechanics of water movement – the rules of water's behaviour
- hydrology deals with water origins, occurrence in various forms and places, its transportation on earth – describes behaviour under natural circumstances
- hydrologic cycle

13. *More Hydrology*

- evapotranspiration; infiltration; runoff; hydrograph; ground water and aquifers; percolation

14. *Water Resources Engineering*

- engineering and economics; water supply engineering; waste-water disposal; irrigation engineering; river engineering; water-resources planning

15. *Conclusion*

- in underdeveloped countries – problem of regulation of water resources for the sake of the people
- in developed countries, problem of the regulation of the people for the sake of their water resources

Men have used water since the dawn of history; but the realization of its importance and, in some instances, of its danger, to health is a relatively recent development. Even today this knowledge is not complete, particularly with regard to the relationship which apparently exists between the quantity of water available per person and the incidence of certain communicable diseases. Water-treatment practices for the control of bacteriological quality, begun in the late 1800's and the early part of the present century, dramatically demonstrated the need for and value of these measures. Since then, cholera has been eliminated from most countries, and typhoid is rapidly following. Water supply for rural areas. Lately, MAN Diesel & Turbo has concentrated on further enhancing the Service Experience of MAN B&W Two-Stroke Engines. fuel efficiency while fulfilling Tier II. In order to improve the specific fuel oil consumption, the pressure in the combustion chamber has been increased on the newest engine designs, especially at low/part load. Could the water from the chimney cause the water in the bottom of the boiler? There is a lot of water coming in when it rains. Submitted: 11 years ago. Category: Plumbing. Show More. My well is spewing out water out of the pvc pipes that come directly out of it. It only happens in the morning and then stops at about 9:00 a.m. It is coming out of the pvc elbow above ground directly. read more. Rick. Supervisor.