BOOK REVIEW

"STREAMFLOW MEASUREMENT", R.W. Herschy, published by Elsevier Applied Science Publishers, 1985 (price in UK £65)

This book presents a comprehensive account of common methods for discharge measurement. Although the author is based in England, and British examples are common through the book, they by no means dominate, and in fact, the international coverage achieved is commendable.

Velocity-area gauging, collection of stage records, and construction of rating curves that connect the two items is the most common means of collection of streamflow records, and the book reflects the method's prominence. It gives details that are not widely available on matters such as the maintenance and rating of current meters. The material on rating curve construction and extrapolation using logarithmic curves is comprehensive, but the section on shifting controls deals mainly with sand-bed channels and has little to offer NZ readers concerned with gravel bed rivers. Loop ratings, prominent in American literature, are correctly set in the context of ". . . larger rivers with very flat slopes with channel control extending far downstream." It also offers details on discharge measurement by floats, and by slope-area methods.

Other chapters deal with: the stage-fall-discharge method; weirs and flumes; dilution gauging; the moving boat method; the ultrasonic method; the electromagnetic method; accuracy; processing of discharge records.

Some of these chapters repeated material available elsewhere, particularly in a book "Hydrometry", edited by Herschy (1978). The extent of repetition was unclear because references were largely excluded from the text in favour of a bibliography at the end of each chapter. A disadvantage of this practice is that original source references are available only indirectly, via other publications in the bibliography.

Many of the illustrations and photographs are attributed to a jointly produced Tanzanian/Norwegian manual by O.A. Tilrem, and readers who wish to check their references may have difficulty obtaining the manual. Nevertheless, valuable new material was included. For instance the description of Chinese practice for gauging deep fast-flowing rivers will be new to many readers.

The chapter on "Weirs and flumes" included a description of the Saniiri flume which is widely used in the Soviet Union. This was new to me, but the other material is available in greater detail in the book "Weirs and flumes for flow measurement" (Ackers et al, 1978).

Chapters 14 "Accuracy" and 15 "Processing of discharge records" are the least satisfactory part of the book. The verbatim reproduction of much of Chapter 14 from the author's 1978 book perpetuates the minor errors and poorly defined terms that marred that earlier work: this is regrettable, and somewhat ironic considering the chapter's title.

Chapter 15 describes what I understand to be British and North American practice for processing discharge records. The final products of these procedures are records of daily mean discharge that are archived. This section of the book will date the most quickly. More modern systems archive original field records; that is the stage records, gaugings, and rating curves, and use compression techniques to effect economies in storage. Summaries such as daily mean discharges are calculated at the time of interrogation. Amongst

the advantages of these systems are the availability of flood hydrographs from the same archive, and the ease with which rating curves can be adjusted retrospectively, should high flow gaugings become available. Microcomputers receive only cursory mention, and there is virtually nothing on their significant impact on data collection and processing.

Apart from brief mention of quality control in relation to telemetry there is no discussion of quality control or quality assurance as they relate to hydrological data collection and processing. I feel this is a deficiency.

The author has been closely involved with the International Standards Organisation (ISO) Technical Committee 13 "Liquid flow measurement in open channels". Lists of ISO standards are in the bibliographies, and it is implicit through the text that the recommended methods will give results that conform with these standards. Justification for the more important recommendations of the standards is not given; what, for instance, is the reasoning that led to the recommendation in ISO 4373 that uncertainties in water level measurement should be ± 3 mm, or ± 10 mm (or 0.1% of range, whichever is greater)?

These omissions do not detract from the book. It is a comprehensive up-to-date summary of standard methods for measuring discharge that is to be recommended. Unfortunately, the price (in NZ dollars about three times the British price of 65 pounds) will be beyond the reach of the intended readership.

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