

for the coastal groundwater community. The same author discusses the observed freeliving marine nematodes on p. 19-43.

The zonation of the fringing coral reefs of the two principal islands, which are raised coral reefs themselves, is described by W. Klausewitz on p. 44-68. The morphology along three profiles (one across a sandy-muddy area) reaching roughly the 5-m depth is presented, and the most conspicuous and characteristic corals and fishes are listed with remarks on some other invertebrates and algae. Possible changes of sea level between -4 m and the present level are described. The ecology and biology of five species of Salariidae and three Gobiidae (fishes) down to about 1 m below the low water line is treated by C. D. Zander for four beach profiles (p. 69-84). On rocky shores, the Salariidae that feed on algae seem to adapt more easily to amphibian life than the predatory Gobiidae that have been more successful in the mangrove region. One of the Gobiidae involved, *Acentrogobius meteori*, n. sp., is described by Klausewitz and Zander on p. 84-87.

Observations, particularly on breeding and hunting of the osprey (*Pandion haliaetus* L.), from the Red Sea and the Gulf of Aden during the mating season are given by W. Kost (p. 88-98). The bird feeds exclusively on fish, breeds on the ground, and shows only weak territorial behavior.

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GERKING, S. D. [ED.]. 1967. **The Biological Basis of Freshwater Fish Production.** Wiley and Sons, New York. xiv + 495 p.

This volume is a collection of original papers which attest anew that aquatic science has left its descriptive phase far behind and has passed to a dynamic, theoretical, and experimental phase that augers well for man's ultimate control of aquacultural production in the broadest sense. The papers were presented at a symposium that was part of a technical meeting sponsored by the International Biological Program (IBP) at the University of Reading, U.K., in September 1966. The editor, S. D. Gerking, chaired the meeting and was also key organizer of the symposium. The book contains 20 papers by authors from 13 countries and is arranged, like the symposium, along five major lines: vital statistics of fish populations (five papers); the relation of fish populations to food supply (five papers); competitive and behavioral factors influencing production (four papers); predation and exploitation by man (five papers); and the contribution of freshwater fish production to human nutrition and well-being (one paper).

Also included in the book is an excellent introduction by the editor, a useful address list of participants, and indices to species, authors, and subjects. Each paper has a list of references that

reflects the nationality of the author and, in so doing, bears witness once again to problems of communication in international science. The lists clearly demonstrate the opportunities and need for improvement of efficiency in research and thinking that may result from improved communication. The symposium, the technical meeting of which it was a part, and the IBP itself are in themselves, of course, evidence of such improvement.

Technically the symposium centers on fish *production*, defined as "the total quantity elaborated over a stated period of time regardless of whether or not all of it survives to the end of that time . . ." (p. xii). Although production and yield can be synonymous in certain forms of intensive aquaculture, in natural waters they are distinct. In such waters, yield is simply the catch and thus typically only a part of the production, say, of a year. Obviously, in natural waters, for the on-going process of production and the quantity of fish produced, indirect methods of measurement and estimation must be employed and experimental procedures must be used to gain understanding of the underlying processes. It is to these matters and finally to the ultimate benefits to be derived from increased human control of aquatic production that the papers are addressed. In terms of Gerking's introduction (p. xii): the first part of the symposium "deals with various subjects which enter directly into the calculation of production, such as recruitment, growth, survival and population abundance." The next three sections "are secondary in the sense that they represent a variety of factors tending to limit one or more of these basic measurements."

The state of knowledge on production will hardly make it possible for anyone using this book to solve completely the problems of production or to regulate production easily in natural waters. However, the papers set the stage for a vast number of studies that may now go forward at an accelerated rate because of the investigative platform of information that is established—information that is sometimes contradictory but is persistently challenging.

No one should be misled by the adjective "freshwater" in the title. The principles of production that are considered have a vast commonness with those of salt-water production. In fact, to add to the attestations of this volume, it bespeaks anew the oneness of *aquatic science* be it called freshwater biology, marine biology, fishery biology, or, for that matter, be it called limnology or oceanography.

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BARDACH, J. 1968. **Harvest of the Sea.** Harper and Row, New York. 301 p. \$6.95.

"For men, taken weight for weight and volume for volume, arc and will remain the best circuit