ture. Yet, the author must be complimented for the clear and lucid presentation.

In the ensuing statements, the author's concern for fishing and biodiversity is reflected: 'Fishing is not just about catching fish and making money; rather it is bound up with the culture of coastal societies' (p. 81). 'Fishing has always been and continues to be a highly dangerous occupation' (p. 302). 'Fishing reduces both species richness and ecosystem stability (p. 88). Hence, the author had to strike the right balance between these opposing poles and the job is more difficult, with the provision of the Exclusive Economic Zones by the United Nation's Convention of the Law of the Seas, as these zones include about 90% of the world's fishing geographical area, and as many states have taken advantage of this new opportunity. The author has struck the right and justifiable balance by suggesting that any development plan must be economically sound, technically feasible, socially acceptable and environmentally sustainable. Hence, the management and conservation of the resource base must ensure the continued satisfaction of human needs for both present and future generations.

The reviewer is also constrained to point out incorrect statements and avoidable errors. For instance, it is stated that 'Fisheries began using such military technologies as radar, sonar and loran to peaceful attempts of food gathering. The technologies opened up the previously inaccessible possibilities of catching fish in dense fog, deep beneath the ocean's opaque blanket.... It is so overcapitalized with excess killing power that over $120 billion is spent each year to catch $70 billion worth fish' (p. 30). It is stated elsewhere (p. 88) that 'The total value of fish trade between nations exceeds $50 billion each year and the trade within nations is much more'. An estimate of marine fishes and products traded and consumed within India alone is in the range of $44 billion. Hence world production of marine fishes traded within and among nations must be more than $70 billion. Secondly, several tables and figures are densely accommodated in any chapter. For instance, there are 30 figures and 4 tables within 44 pages of chapter 3. Consequently, many remain to be fully explained and in many others, errors have crept in. In table 3.1, the quantity of global marine discarded bycatch is listed, and is expressed as ratio of the targeted species (?). For example, to land 10,000 t of eel, about 3360 t of bycatch is discarded. Not only is the corresponding ratio wrongly expressed as percentage, but is totally not understandable. The values are also not compatible with the corresponding ones in table 3.2. Thirdly, it is difficult to understand certain phrases; e.g. 'regression tree' (p. 105), 'chemicals entering receiving waters' (p. 160), 'ready breeding' (p. 230), 'easy breeding' (p. 232), and so on. Examples of avoidable errors are 'Eatern' (p. 79), and for reference cited in text but wanted in bibliography is Kumar 1995 (cited in p. 230). Yet these do not demerit the book.

The book represents a contribution to fisheries science.

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Geodynamics of the Lithosphere. Kurt Stüwe. Springer, New York. 2002. p. 449. US$ 69.95.

The author of the book Kurt Stüwe, deserves to be called the Renaissance man – a term usually reserved for a rare breed of scientists who have a wide range of interests. The blurb of this book describes him as a field geologist, a mountain-climbing guide, a Ph D in metamorphic petrology who has also contributed to varied branches within earth sciences, including geodynamics, geomorphology, geophysics and structural geology. The book is a reflection of the author's amazing grasp of various facets of geodynamic processes, technically a difficult subject to communicate – discussed in most lucid terms. This book differs from its predecessor *Geodynamics* by Turcotte and Schubert, a classic textbook in its own right, in that the target audience purportedly is the field geologists. The new book also differs in its emphasis on orogenesis, metamorphism, heat transport, crustal thickening and geomorphology, probably an indication of the author's own predilections as a geologist. The high point of the book is its treatment of mathematics and the way in which it is made accessible to field-oriented geologists.

The book opens with a discussion on the imperatives of developing mathematical models. The author justifiably points out that many geologists do not trust models (one is reminded of the 1992 inaugural address by Charles Drake, President of the IGC in which he made a tongue-in-cheek statement that 'model building, not truth, was what earth sciences is all about...'). In fact, modelling studies do provide us a powerful way of approximating the evolution of earth in space and time, as most of the earth processes are not amenable to direct observation even with most advanced instrumentation. Of course, a good quantitative model must be testable by observations, and it should be able to describe a 'large set of observations with a small set of parameters'. This book essentially tells you how we go about modelling various earth processes with mathematical tools. After this introductory chapter, the author deals with basic aspects of the theory of plate tectonics, and the discussion eventually veers round to the kinematics of processes that occur on spherical earth. A major part of the book is devoted to the thermal structure of the lithosphere – a starting point of any book on geodynamics. This chapter introduces the role of heat and temperature in the lithospheric processes, most importantly for regional metamorphism. The section starts with Fourier's law of heat conduction, goes onto the principles of heat production, advection, thermal structures of continental and oceanic lithospheres, temperature distribution around intrusives and thermal advection associated with fold and faults. The book deals in detail with other important topics like uplift, exhumation, isostasy, stress and strain, and rheology of the lithosphere. The last part of the book covers processes including mechanics of continental extension, collision and also some currently hot topics like evolution of mantle plumes. Finally, the author discusses the metamorphic evolution of rocks and its relation to changing pressure and temperature and deformation paths with respect to space and time.

What fascinated me most was the author's knack of blending field observations with theoretical studies from the point of view of causes and consequences. What we find on the surface is the ultimate effect of various processes that are taking place within the earth and the author is in a vantage position to focus on the interrelationships because of his

background. Probably, that is the philosophy which compelled him to include topics like geomorphology and feedback systems in a book on geodynamics. Another important component of the book is the set of problems given at the end of each chapter. Going through them will help the readers solidify the concepts described in the text. There are also several attachments, including a math refresher and solutions to the problems. The math refresher contains tutorials on differential equations and basic statistical parameters, and how they are being used to construct quantitative models, something that even a mathematically semi-literate person like me can comprehend. A list of internet addresses related to geodynamics is also appended. Although the book follows a reader-friendly format, it is not without some distractions like spelling mistakes and its usage of English. I also feel that some chapters need to be better balanced as far as the choice of topics discussed under each of them is concerned. To mention one example, the topic of map projection looks out of place in the second chapter – a section primarily devoted to plate tectonics. But these are minor problems that can be corrected in the next edition. Here is a book that is highly eligible to be included in the geology graduate studies under our universities. I also encourage our geologists to read this educative book, indeed a valuable addition to the expanding information base on quantitative geodynamics.

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