(characterising a subfield) be to a real analyst? If the theory of ordered fields is to be done at all, surely the existence of one such field should be proved (assuming, if you like, the properties of the rationals).

As to Chapters II and III, they include very important ideas and add greatly to the usefulness of the book. However, for the less mature reader, it would seem better to define convergence and continuity for real spaces only at first, consigning the general theory to a later stage—perhaps between the present Chapters V and VI.

Lastly, one should mention the excellent collection of exercises, including hints for the more difficult ones. The book is certainly valuable to any graduate student, more particularly if he is given guidance about the order in which it should be read.

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HYSLOP, J. M., *Real Variable* (University Mathematical Texts Series, Oliver and Boyd, 1960), viii+136 pp., 8s. 6d.

This book has chapters on numbers, bounds, limits, continuity and differentiability, exponential and logarithmic functions, Taylor's expansion, the evaluation of limits, upper and lower limits, and circular functions. It is intended for the use of Honours students, either at the beginning of their formal study of analysis or for private reading at an earlier stage. No attempt is made to give all that is necessary for an Honours course; for example, the real numbers are not defined by means of Dedekind sections, but there is a careful statement of the properties which they are assumed to have.

To avoid overlaps with other University Texts, the present book includes a minimum of convergence theory and does not discuss integration. These are severe handicaps in a subject which holds formidable difficulties for the average student without the introduction of artificial ones. If the beginner is to be attracted to a further study of analysis, an elegant presentation is essential, and the reviewer cannot accept the author's claim that this has been achieved.

In a book of this size, there are naturally omissions which will not meet with universal approval. The possibility that a sequence may oscillate is not mentioned in the chapter on limits. The significance of the theorem on the limit of a function of a function (Theorem 23) will surely be lost in the absence of a counterexample in which the result does not hold because the inner function takes its limiting value in every neighbourhood of the limit point. Often an extra sentence would make an explanation easier to understand; thus in several proofs the author establishes a contradiction but fails to say explicitly what the contradiction is.

On the other hand several proofs could be shortened or simplified, notably those of Theorems 5 and 17, and the book contains many unimportant theorems, such as $\overline{\lim}\{f(x)-g(x)\}\leqslant\overline{\lim}\,f(x)-\underline{\lim}\,g(x)$. If these theorems were omitted or given as examples, it would be easier for the reader to see which results were important.

The circular functions are defined by series expansions, and are not identified with the functions encountered in trigonometry. The behaviour of $f(x)$ as x tends to a is dealt with by considering the behaviour of $f(a+y^{-1})$ as y tends to infinity, so that one group of theorems may be deduced from another. In a textbook for beginners, the reviewer feels that it is unwise to use statements such as " $\overline{\mathrm{bd}}\,f(x) = +\infty$ " or " every monotonic function of x has a limit as x tends to infinity ".

The printing is of the high standard of other books in the series, except for the large vertical bars. There are singularly few misprints, the most serious of which are the superfluous commas in the statement of Theorem 18.

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