

3. C. G. Gibson, *Singular points of smooth mappings*, Research Notes in Math., no. 25, Pitman, New York, 1979.
4. M. Golubitsky and V. Guillemin, *Stable mappings and their singularities*, Graduate Texts in Math., vol. 14, Springer-Verlag, Berlin and New York, 1973.
5. J. Martinet, *Singularities of functions and differentiable maps*, London Math. Soc. Lecture Note Series, no. 58, Cambridge Univ. Press, Cambridge and New York, 1982.
6. J. Milnor, *Singular points of complex hypersurfaces*, Ann. of Math. Studies, no. 61, Princeton Univ. Press, Princeton, N. J., 1968.
7. C. T. C. Wall, *Finite determinacy of smooth map-germs*, Bull. London Math. Soc. **12** (1980), 401–421.

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The higher calculus: A history of real and complex analysis from Euler to Weierstrass, by Umberto Bottazzini; translated by Warren Van Egmond. Springer-Verlag, New York, Berlin, Heidelberg, London, Paris, Tokyo, 332 pp., \$39.00. ISBN 0-387-96302-2

This book is the second, much revised and augmented edition of one first published in Italian [1]. The first edition was good, and this one is better. The subject is not really analysis as a whole but the foundations of analysis, the origins of concepts and rigorous proofs, by no means devoid of examples to show how need for change arose and how new modes of thought developed. Of course Bottazzini makes good use of his few recent predecessors' works, for example [2], which covers a greater range, and [3, 4], which suffer from their authors' lack of experience in mathematics itself and in mathematical ways of thinking, and [5], which treats only the concept of function. Bottazzini's book is much better than [2, 3, 4], for he speaks with authority, understands and treats fairly his sources, quotes neither too much nor too little, and writes compactly yet with precision. He lets his authors speak for themselves to a great part, aiding the reader to pass from one quotation or paraphrase to the next by brief yet informative transitions, and at the ends of many sections are excellent summaries in a few well chosen words, free of the pontifications in unsupported generalities that often deaden academic theses and writings by authors still close to them.

A standard defect in historical writings on mathematics comes from their authors' failure to see that the sources of pure mathematics often lie in works that today's mathematicians would consider to be "applied" mathematics or "physics". This defect damages most severely the researches of the eighteenth century, in which "applied" mathematics had not been invented, and mathematics was divided into "pure" and "mixed"; in Samuel Johnson's words, "pure considers abstracted quantity...; mixt is interwoven with physical considerations." Another is the writers' tendency to assume that rigor was sought for rigor's sake, which while true of some works of some mathematicians was not at all characteristic of the search for and achievement of rigorous