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J. E. HUMPHREYS

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Differential topology, by Morris W. Hirsch, Springer-Verlag, New York, x + 221 pp.

The study of manifolds is the central theme of topology, and provides the overall motivation. In the early period, which ended around 1940, the methods used were rather intuitive and geometric. One school viewed the manifold primarily as a combinatorial object; algebraic topology developed out of this approach. The other tried to work directly with the differential structure of the manifold; for example, de Rham's theory of differential forms and Morse's theory of calculus of variations in the large. The importance of Morse's approach does not seem to have been fully appreciated at the time, and from the mid-thirties to the mid-fifties was a period of relative neglect for the differential viewpoint. Algebraic topology was progressing by leaps and bounds, during this period, but was little concerned with manifolds as such. It was not until the mid-fifties that it was seen how to use the powerful new techniques which had been discovered to obtain results of a kind which would have excited Poincaré and other pioneers. One such result was undoubtedly Milnor's discovery of the exotic spheres. Another was Thom's theory of cobordism, the first serviceable classification of manifolds to be obtained. These outstanding successes led to a great resurgence of interest in the study of manifolds and the modern phase of differential topology got under way. Hirsch's book is not so much concerned with the