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Mathematical methods of classical mechanics, by V. I. Arnold, translated from the 1974 Russian edition by K. Vogtmann and A. Weinstein, Graduate Texts in Math., Vol. 60, Springer-Verlag, New York and Berlin, 1978, x + 462 pp.

A course in mathematical physics, vol. 1: *Classical dynamical systems*, by Walter Thirring, translated from German by Evans M. Harrel, Springer-Verlag, New York and Berlin, 1978, xii + 258 pp., $19.80.

The science of mechanics is the oldest branch of applied mathematics. The principles underlying the kinematics of a particle were established early in the seventeenth century by Galileo, and their applications developed further by Christian Huygens after Galileo's death. The fundamental principles of particle dynamics were laid down by Newton and expounded by him in his great work *Philosophiae naturalis principia mathematica* (1687). The extension of these principles to cover the theory of the motion of rigid bodies was carried out by d'Alembert and the results published in his *Traité de mécanique* (1743). Although the foundations of analytical dynamics (or, as it is sometimes called, rational mechanics) were laid before that date as is evidenced by the publication in St. Petersburg in 1736 of Euler's *Mechanica, sive motus scientia analytice exposita*, the outstanding event in the early history of mechanics was the publication of Lagrange's *Mécanique analytique* in 1788.

The opening words of the *Avertisement* to Lagrange's treatise were: "On a déja plusieurs Traités de Mécanique". Of course, the number of treatises on analytical dynamics is vastly greater now than it was in 1788, for the reason that many distinguished mathematicians found the subject a rich source of research problems and the literature of the subject became correspondingly large. The theoretical work of the century and more after the death of Lagrange was crystallized by E. T. Whittaker in a treatise [**19**] which has not been superseded as the definitive account of classical mechanics. That work reveals that among those who have made significant contributions to the subject are Carathéodory, Cauchy, Darboux, Gauss, Jacobi, Lie, Liouville, Poincaré, and Weyl. In that era, mathematicians worked in both pure and in applied mathematics. That problems in analytical mechanics stimulated research in pure mathematics was shown by the work of G. D. Birkhoff whose Colloquium Lectures in 1920, [**5**], led ultimately to the development of a new branch of abstract mathematics.

The position of classical mechanics within university curricula changed after World War I. No doubt because a knowledge of the principles of dynamics is basic to astronomers, physicists, and engineers–and because each group demands a different selection of topics from the many making up the subject–the responsibility for the teaching of classical mechanics was surrendered by mathematics departments in many universities and assumed by faculty members in other departments. (It is interesting to observe that, a few years ago, some mathematics departments, conscious of the gap left by