nozzles or subjected to shocks is discussed.

As a general criticism, one may say that the choice of subject of this volume has the obvious drawback that a variety of topics are accumulated which are only loosely related.

A few minor slips of the pen: On page 2, the author gives for the dilute gas the laws of Boyle and Charles in the form $PV=mR'T'$, "where R' is a constant, and T' is the temperature on a scale whose zero is at a temperature at which the extrapolated pressure of the gas at constant volume becomes zero". However, if this is the only condition imposed on the temperature scale, the law of Charles is in general not obeyed by the dilute gas. On page 25, right after stating that the zeropoint of entropy is arbitrary, the author proceeds on a discussion of the zero from which the entropy is measured.

These few remarks, however, can by no means invalidate the conclusion, that the author has done a remarkable job in lucidity and exposition and in the amount of information provided. Volume 5 of Topic 10 meets the standards put forward by the editors of the Encyclopedia, providing graduate and research workers with a comprehensive and up-to-date account of an aspect of the field between chemistry and physics.

Theory of Spin Relaxation. By W. J. Caspers. 160 pp. Interscience, New York, 1964. $9.75.
Reviewed by Peter Grosewald, The Pennsylvania State University.

This volume is the sixth in a series of monographs on statistical physics and thermodynamics. The essential idea of the series is a thorough presentation of fundamental theory and applications to the problems of equilibrium and nonequilibrium thermodynamics, complete (hopefully) with the latest information on research and development.

As the author states in his preface, the greater part of the book is devoted to paramagnetic spin–spin relaxation (Chapter 2). In this area the monograph's purpose is fulfilled. Present theory is covered fully with references as recent as 1962. In fact, the author's main justification for his presentation is the lack of any works covering the theory of spin-spin relaxation.

Chapter 3 is merely an outline of spin-lattice theory, while Chapter 1 is a general survey of the theory of magnetic relaxation.

Unfortunately, the title is somewhat misleading since nuclear magnetic phenomena are not discussed, and spin-lattice theory, which has been discussed in other works, is only surveyed. At the same time, the tract reads well in the area delineated for it. In striving to clarify the physical argument, purely mathematical proofs have been rightly consigned to an Appendix. Additionally, a slim, but complete, list of references has been included.

The book is thus intended for a definite group of theorists, and as such can be fully recommended. However, the relatively high price and small size seem somewhat discordant.

Dynamics of Satellites. Symp. Proc. (Paris, May 1962). Maurice Roy, ed. 335 pp. Academic Press, New York, 1963. $15.00.
Reviewed by R. E. Street, University of Washington.

This collection of papers and notes read at the IUTAM symposium in Paris is an excellent summary of our state of knowledge of the motion of artificial earth satellites. There are 22 papers in English and three in French by participants, mostly from America, England, France, and Russia, although Belgium, Germany, Holland, Spain, and Sweden had at least one representative apiece.

To illustrate the contents of this volume, we pick at random a few of the subjects discussed. Baker considers the elimination of spurious data on the basis of preliminary orbit determination and a filtering technique. Musen discusses long-range effects caused by the moon and sun and the tesseral harmonics in the earth's potential. The solar radiation effect on artificial satellite motion is reformulated by Brouwer. Herrick presents recent work on orbit correction, and Kozai reviews his own work on the determination of the coefficients in the earth's potential by means of

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satellite observations. Batrakov analyzes the perturbations due to the second zonal harmonic of the earth's potential while Kulikov shows how Cowell's method with a variable interval can be adapted to machine computation. Effects of atmospheric drag on the orbital elements of the satellite are considered in papers by Davies, Jacchia, and King-Hele.

Other topics, such as orbit evolution, atmospheric heat sources, radiation pressure, general relativity, librations, orbit transfer, torque-producing forces, and related topics, are covered. The longest paper, by Shapiro, is on a perturbation technique used to predict orbits disturbed by various external forces. As the topics indicate, this is a book for specialists in orbit theory; to them it will be useful but not invaluable since most of the theories and results have been published in the many papers referred to. The value of the book lies in its survey of those aspects of orbit theory of especial significance for close-in earth satellites.

The Lunar Society of Birmingham. A Social History of Provincial Science and Industry in Eighteenth Century England. By Robert E. Schofield. 491 pp. Clarendon Press, Oxford, 1963. $11.20. *Reviewed by R. B. Lindsay, Brown University.*

The relationship between science and technology during the Industrial Revolution in 18th-century England is a fascinating subject for historical research. It is particularly so in view of the controversy over the extent to which 17th- and 18th-century science may have directly influenced the inventions basic to the remarkable technological development of the period. This, in turn, suggests a look at the men concerned with that development and at the nature of their mutual association.

In the neighborhood of the city of Birmingham, there grew up, in the latter half of the 18th century, a group of rather remarkable individuals who formed the habit of meeting monthly in each other's homes in the afternoon of the Monday nearest the time of full moon, in order to discuss matters of mutual scientific interest. As a result, they were referred to as the Lunar Society. The association was a highly informal one, however, and no elaborate records of meetings were kept. Hence the character of the organization, if one can call it that, has always aroused curiosity. The book under review is a successful effort to pull together and present in coherent form the principal facts about the relations among the men who formed this circle and to assess its importance in the science and technology of their time.

What a noteworthy group it was! Among its members were men like James Watt, Matthew Boulton, Erasmus Darwin, Joseph Priestley, Josiah Wedgwood, Richard Levering Edgeworth, and William Withering. Boulton (1728-1809) was in effect the founder of the group. In 1766 he established the famous Soho works near Birmingham for the manufacture of all sorts of metal parts as well as many other things, eventually including steam engines. For the work on the latter, he entered into partnership with James Watt in 1775, and it was this close association which formed the nucleus of the Lunar Society. The other members of the group all lived at various times in or near Birmingham and, though engaged in a variety of professions, had a highly developed curiosity about natural phenomena and scientific ideas, particularly as they might be applied to practical inventions. Erasmus Darwin (the grandfather of the famous naturalist) and William Withering were well-known physicians, while Wedgwood's name will forever be associated with pottery. Priestley was a Unitarian clergyman whose researches in electricity and chemistry made him a world-renowned figure. Edgeworth was a brilliant amateur inventor of all kinds of devices, but scattered his energies too widely to secure the posthumous fame of the others. He was the father of the famous novelist Maria Edgeworth.

All these and many others are brought vividly to life by the author. At times, indeed, his story gets a bit bogged down with too much detail and becomes somewhat tedious. In general, however, the style is clear and attractive. The book is loaded with footnotes and other references