mathematical chair at Cambridge. During the ensuing years Newton continued his sheltered life at Trinity College, leaving Cambridge only a few times. He worked assiduously on his researches in mathematics, chemistry, and optics. From these years dates his construction of the reflecting telescope. He corresponded with John Collins in London, a man of wide scientific connections, eager to assist him in making his discoveries known, and with Henry Oldenburg, secretary of the Royal Society. Oldenburg, a man of even wider scientific connections, sponsored Newton's entry into the Royal Society after Newton had presented a communication on his telescope. Shortly after having become a Fellow of the Society, in 1672, Newton published in its *Philosophical Transactions* the "New theory about light and colours," his first printed paper.

Most of Newton's mathematical work in the period 1670–1673 dealt with the preparation of his Lucasian lectures on optics and with the casting of his discoveries in the theory of infinite series and fluxions into publishable form. The manuscripts on these subjects form the bulk of this third volume, and the greater part consists in the majestic tract "De methodis serierum et fluxionum," on the methods of series and fluxions, the first ample exposition of what we now call the calculus. The market for a book on such an abstruse subject being severely limited, Newton first expected it to be published as an appendix to a Latin version of an "Algebra" written by the Dutchman Kinckhuysen. Nothing came of this or of any modified plan of publication, and the manuscript rarely left Newton's files until it was published in 1736, after his death, by John Colson in an English translation from a copy made by William Jones. The original Latin text appeared only in 1773. If this manuscript, a labor of reworking and amplifying older notes, composed in the winter of 1670–71, had been published at the time, the history of the calculus would have run a different course. As it was, the calculus came to published light only in 1684 by means of a small paper by Leibniz (who did not mention Newton), and Leibniz's version won the day, but only after a bitter fight of gigantic pettiness.

Perhaps the most interesting sections of the remaining part of this third volume are the extant texts of Newton's optical lectures. They can now also be compared with the published text, in this case the posthumous *Lectiones opticae* of 1729. Another interesting paper, unpublished so far, is a study on the harmonic motion of a point in a cycloidal arc under gravity. Here Newton finds its tautochronic character, and this independently of Huygens, who published his famous results on the pendulum in 1673. Here, happily, there was no priority fight.

We can only have the greatest admiration for the patient, painstaking, and dedicated scholarship which the editor and his colleagues have bestowed on their task. Studying, understanding, dating, and collating the Newton manuscripts is an arduous task. An added task was the English translation and the preparation of the introduction and the generous notes, which by themselves almost constitute an introduction into late-17th-century mathematics. Beautifully presented by the publisher, this is a work which will be eagerly consulted for many years to come, a veritable (we blush for the cliché) *momentum aere perennius*.

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## NMR in Organic Chemistry

**Nuclear Magnetic Resonance Spectroscopy**. FRANK A. BOVEY. Academic Press, New York, 1969. x + 398 pp., illus. $16.50.

The book under review is a brief introduction to nuclear magnetic resonance spectroscopy in the tradition of the now classic monograph by Pople, Bernstein, and Schneider (1959). Since the book is actually an introduction to applications of high-resolution NMR to organic chemistry, the title is somewhat too broad.

The sections the reviewer found best are those that reflect the research of the author: the part dealing with various aspects of molecular shielding, the chapter on coupling of nuclear spins and their dependence on molecular structure and geometry, and the section dealing with symmetry and polymer configuration. Polymer chemists in particular will benefit from the treatment of problems related to molecular symmetry and polymer configuration, because coverage of NMR applications to the study of polymers is usually missing in comparable monographs. The actual text is only 242 pages long (the rest are various appendices), and many important topics are treated only briefly. But even the sketchy outline of some recent developments is helpful; on the basis of a few key references the reader can choose several literature sources from which to learn in detail about the subject in question.

For a chemist dealing with organic structural problems acquaintance at least with some of the rules and approaches used in the analysis of high-resolution NMR spectra of strongly coupled spin systems has become a necessity. The author introduces in an empirical way the analysis of simple spin systems such as $AB$, $ABX$, and $AB_2$. The reader who attempts to recognize a typical spectral pattern of a simple, strongly coupled spin system often occurring in organic compounds is also aided by a rather extensive appendix in which about 300 computer-generated line spectra are given.

In the section dealing with chemical exchange processes a more extended discussion of complete line-shape analysis and of the relative merits of various approximative methods still often used by organic chemists might have been helpful.

As the author points out, the book is an extension of a review article on NMR which he published in *Chemical and Engineering News* in 1965. Owing to its nonmathematical, empirical approach and condensed size, the monograph would be useful to chemists and workers in other fields who want to be introduced to the basic ideas of high-resolution NMR spectroscopy and who also are trying to develop some working knowledge in solving problems related to organic chemistry.

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## Antibodies, DNA, and RNA

**Nucleic Acids in Immunology**. Proceedings of a symposium, New Brunswick, N.J., Oct. 1967. OTTO J. PLESCIA and WERNER BRAUN, Eds. Springer-Verlag, New York, 1968. xviii + 726 pp., illus. $22.

This book begins with a discussion of methods for obtaining antibodies to nucleic acids. Antigens can be obtained either by complexing oligo- or polynucleotides with methylated serum albumin or by the covalent bonding of