extended to noncompact groups following the now classical work of Eugene P. Wigner (incidentally, the book contains contributions from this great master). Coleman's article carefully elucidates the present knowledge on this subject.

The second part contains applications of group theory to such "classical" subjects as atomic spectroscopy (by J. R. Judd), solid-state physics (by Stig Flodmark), nuclear structure (by P. Kramer and M. Moshinsky) and to the "modern" subject of SU(3) symmetry of elementary particles by L. O'Raifeartaigh and R. G. Behrends.

The last part, consisting of an article on "De Sitter Space and Positive Energy" by J. O. Phillips and Eugene P. Wigner, is an attempt to elucidate the physical interpretation of the de Sitter group and in particular to understand how the energy's positive nature can be incorporated in this interpretation.

In praising this book I would like to mention specifically an attempt at using uniform notation. This is very essential in any effort to create interest in other fields. In fact, the very reason that books on group theory by theoretical physicists are bound to be much more popular among followers of this discipline is that the language used by mathematicians is not so readily and widely understood. These two books go a long way in bridging such gaps.

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The Collected Works of Count Rumford, Vol. 1: The Nature of Heat

Sanborn C. Brown, *ed.*
507 pp. Harvard U. P., Cambridge, Mass., 1968. $10.00

This is the first volume of a new five-volume edition of the technical papers of Benjamin Thompson (1753–1814), later Count Rumford. It was published under the auspices of the American Academy of Arts and Sciences and paid for in part by Rumford's own legacy to that organization. The work is edited by Sanborn C. Brown, professer at MIT and a life-long student of Rumford's activities.

It is a major improvement over the edition published nearly a century ago, as the new edition reproduces the original papers almost exactly as written with only a minimum of editorial changes made in the interest of clarity. Volume one of the set, titled *The Nature of Heat*, will be of greatest interest to physicists, as it deals with Rumford's basic studies on that subject. The additional four volumes are concerned principally with technical applications, especially those made while Rumford was employed by the Elector of Bavaria as his chief advisor on military applications of science, housing, and what would now be termed "inner-city problems."

Benjamin Thompson had spent his early years in intrigue as a Tory spy against the American colonies in Massachusetts and then in London as personal adviser to Lord George Germain, helping him to suppress the independence movement in the British–North-American colonies. Throughout his highly romantic life, Rumford was a very successful opportunist and, on the personal side, an aggressive and unattractive character.

When he returned from Bavaria to England with his title of Count of the Holy Roman Empire, he was not again accepted by the British sovereign and so was forced to return to scientific pursuits. He was the leading influence in the founding and development of the Royal Institution in London, and was responsible for the employment there of Thomas Young and Humphrey Davy. However, he felt snubbed in London and so transferred his activities to Paris for his final years of political and social climbing. These years were also unsuccessful for although he gained the salons of Paris society by marrying the widow of Lavoisier, he never won Napolean's confidence. Probably as a result of his disappointments in London and Paris, he left his principal legacy to the American Academy of Arts and Sciences in Boston.

The papers recorded in this book were first published during 1798–1805 and report work done in Munich, London and Paris. They expound pioneer contributions to our understanding of the science of heat. A person who could produce work of this caliber amid all his political, military, and social intrigues must have been near to genius. His experiments and their interpretation, on the nature of heat as a mode of motion, its generation by friction, its propagation in

AN EARLY HEAT EXPERIMENT. With this apparatus, Rumford found that an undisturbed vessel of water remains liquid at the bottom when surrounded by a freezing mixture and frozen at the top.

solids and liquids, thermal expansion and radiation, are all illustrated with direct and crucial quantitative experiments made with great skill and constitute an impressive achievement.

Although this edition is most welcome, many physicists will find the 1967 Pergamon Press paperback of selected readings from the works of Rumford (also edited by Brown) to be more useful for their personal libraries. The earlier book is not only considerably more reasonable in price, but also in many ways more attractive for the general reader, not least because Brown's own commentaries on some of Rumford's work are included. However, this new book is an important addition to physics literature, although the subsequent volumes will be of special value not only for their scientific content, but also for the early technical applications of heat that they reveal. These books should have general appeal, although it is probable that interest in Count Rumford diminishes rapidly with the reader's distance from Massachusetts Bay.

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The Game of Science

By Garvin McCain, Erwin Segal
171 pp. Brooks-Cole, Belmont, Calif. 1969.

In the preface Garvin McCain and Erwin M. Segal hope their book will ". . . lead the reader to a broader per-