larger monetary damages. Proponents of the jury, including social scientists, are committed to the normative order symbolized by the jury. This commitment colors their evaluation of the research.

The long-term future of the jury is uncertain. In this country, there is a constitutional right to trial by jury, but in the last two decades the composition and functioning of the American jury have been eroded. Elsewhere the jury is disappearing. Over four-fifths of all jury trials in the world are held here. Even in England, which gave us the jury, civil jury trials are virtually nonexistent and criminal jury trials are not commonplace. Thus, the ultimate question to be addressed in judging the jury is: If so many other democratic countries exist and thrive without the institution of the jury, why can we also not live without it or live with it in diminished form?

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Life of a Physicist

Kapitza. Life and Discoveries. F. B. KEDROV. Mir, Moscow, 1985 (U.S. distributor, Imported Publications, Chicago). 199 pp., illus. $6.95. Outstanding Soviet Scientists. Translated with revisions from the Russian edition (1979) by Mark Fradkin. John Crowfoot, Ed.

Peter Kapitza was known as much for his life and personality as for his physics, and in this rather chatty book Kedrov devotes more attention to the former than to the latter. The main chapters in Kapitza's life are covered here—his childhood and student years in St. Petersburg, his 13 years with Rutherford in Cambridge, his setting up of the Institute of Physical Problems in Moscow in the mid-1930's, his years of virtual house arrest after the war, and his later life as a grand old man of physics. Kedrov also describes briefly Kapitza's research in low-temperature physics and on controlled thermonuclear fusion. This book was first published in Russian some years before Kapitza's death in 1984, but it has since been brought up to date.

Kapitza was incapable of saying or writing anything uninteresting, and consequently this book, with its excerpts from his letters, reports of conversations with him, and anecdotes about him, makes for lively reading. It contains no great revelations, however. Kedrov does not mention that when Kapitza stayed in the Soviet Union in 1934 it was because he was prevented from leaving the country. Nor does he refer to Kapitza's courage in going to the Kremlin in 1938 and declaring that he would leave his new institute if Landau was not released from prison. Kapitza's threat worked, but it could just as well have resulted in Kapitza's arrest as in Landau's release.

Kapitza was dismissed from the directorship of his institute in 1946. Kedrov reports that a commission was appointed in 1946 to find defects in Kapitza's wartime work on the production of liquid oxygen, and it found them. The real reason for Kapitza's removal from the institute, however, was apparently his refusal to work on the Soviet atomic bomb project. Unfortunately Kedrov is not able to explore this issue. Still, he has the sense not to try to cover up those things he cannot write about.

This is a readable book and conveys some feeling for Kapitza and his eventful life. But it does not really do justice to the various stages of Kapitza's extraordinary career. Nor does it ask the interesting questions about his readjustment to Soviet life after the mid-1930's and his ability to function in that society as a prominent scientist with an independent mind and sometimes critical tongue.

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Electronic Structure Methods

Comparison of *Ab Initio* Quantum Chemistry with Experiment for Small Molecules. The State of the Art. RODNEY J. BARTLETT, Ed. Reidel, Dordrecht, 1985 (U.S. distributor, Kluwer, Hingham, MA). x, 513 pp., illus. $79. Based on a symposium, Philadelphia, Aug. 1984.

This volume takes its title from a symposium held two years ago at the national meeting of the American Chemical Society. The invited talks at this symposium (attended by the reviewer) nicely demonstrated the dynamic interplay between experiment and theory in modern chemical physics. Six of the invited speakers at the symposium have contributed papers to this volume. The remaining ten papers are for the most part by theorists engaged in accurate ab initio electronic structure calculations.

The first three papers deal with the properties of dimers and larger clusters of transition metal atoms. The paper by Weltner and Van Zee reviews the results of recent electron spin resonance studies of small transition metal clusters, and that of Walch and Bauschlicher emphasizes the role of *ab initio* electronic structure calculations in characterizing the bonding in the dimers. The latter will be of considerable value to researchers trying to understand the bonding in these species. Smalley's paper demonstrates the utility of supersonic cluster beams for studying the chemisorption and reactivity of H_2 and N_2 on transition metal clusters containing up to 30 atoms. These complex systems, which are beyond the capability of current *ab initio* methods, underscore the need for developing new approaches to the electronic structure problem in many-electron systems.

Other closely related papers are those of Peterson *et al.* and Dykstra and Lisy on the structure and bonding in "hydrogen-bonded" molecular dimers. The former authors focus primarily on the results of rotational and infrared microwave double-resonance spectroscopy, the latter on the application of high-quality electronic structure calculations coupled with vibrational analysis. The paper by Peterson *et al.* is particularly timely in that it summarizes the evidence that the ammonia dimer is not hydrogen-bonded.

Three of the papers deal with the properties of excited states of diatomic molecules. That by Werner and Rosmus provides a comprehensive review of the radiative properties of diatomic molecules and their ions, with emphasis on the results obtained with the multiconfiguration self-consistent field (MCSCF) and configuration interaction (CI) methods. Kurtz *et al.* demonstrate the utility of the antisymmetrized geminal power (AGP) wavefunction for the calculation of transition energies and moments. Bernheim *et al.* review the experimental and theoretical data available for the excited states of Li_2.

The papers by Dunning *et al.* and Truhlar *et al.* show the strong interplay between electronic structure theory and collision theory for predicting reaction mechanisms and rates. The former paper provides a good example of the role that theoretical methods now play in elucidating the dynamics of complex chemical reactions such as the oxidation of hydrocarbons. Bunker discusses the beautiful laser magnetic resonance studies carried out at Ottawa on the ground electronic state of CH_2 and also shows how these studies when coupled with theoretical calculations allow for an accurate determination of the structure and the energy separation between the lowest singlet and triplet electronic states of this molecule.

In other papers Ermler *et al.* present their results for the vibrational levels of H_2O as determined from *ab initio* potential energy surfaces, Langhoff *et al.* provide a comprehensive review of theoretical dissociation energies of ionic diatomic and triatomic molecules, Nakatsuji discusses the use of ab