An All-Time Great

Linus Pauling: Scientist and Peacemaker. Edited by *Clifford Mead* and *Thomas Hager.* Oregon State University Press, Corvallis, Oregon 2001. x + 272 pp., hardcover $ 35.00.—ISBN 0-87071-489-9

Almost everything about Linus Pauling was larger than life. The internationally acclaimed scientist, educator, humanitarian, and political activist has been variously called "one of the twenty greatest scientists of all time, on a par with Newton, Darwin, and Einstein", one of the two greatest scientists of the 20th century (the other being Einstein), and the greatest chemist since Lavoisier. His magnum opus *The Nature of the Chemical Bond* (1939) is considered one of the most influential and frequently cited scientific books of our century.

The idea for a centenary volume to commemorate Pauling's hundredth birthday (he was born on February 28, 1901 in Portland, Oregon) originated with Clifford Mead, Associate Professor and Head of Special Collections at Oregon State University's Valley Library, who oversees the Linus Pauling Collection, which contains Pauling's complete personal papers and includes hundreds of thousands of letters, articles, photographs, memoranda, and molecular models comprising his entire life's work. Mead is also the coeditor of two books on Pauling and the Pauling Papers. Thomas Hager, coeditor of this book, is a science writer, biographer, editor, Assistant Professor at the University of Oregon, Acting Director of the University of Oregon Press, and author of two biographies of Pauling. Many of the pieces that appear in the book, a number of which have never been published, were obtained from the collection.

Mead decided that, inasmuch as a number of biographies of Pauling had already been published, the best approach for a commemorative volume would be that of a "mosaic" similar to the centenary volumes devoted to Albert Einstein and Niels Bohr—collections of first-person accounts, historical reminiscences, illustrations, and brief anecdotes that illuminated their subjects from various viewpoints. This approach allowed the editors to use the Ava Helen and Linus Pauling Papers at Oregon State University and to make public some of the written documents and photographs that might otherwise be limited to a small number of scholars. Hager also included, as marginalia in the book, quotations from interviews that he had held with Pauling's colleagues, contemporaries, and students.

The resulting anthology contains 27 pieces arranged in three major sections (Parts I–III), as well as a short fourth section (Part IV). Here we have identified previously unpublished pieces with asterisks.

Part I, "Linus Pauling, the Man"

"The Roots of Genius"* (6 pp.): Tom Hager summarizes Pauling's life and career with emphasis on events that influenced his sometimes contradictory personality. "A Pauling Chronology"* (13 pp.): Robert Paradowski chronicles the main events in Pauling's life. "My Best Friend"* (4 pp.): Pauling pays tribute to Lloyd Alexander Jeffress, who introduced the young Pauling to chemical experimentation and encouraged him to continue his college education although his widowed mother opposed it. "Diary Excerpts"* (6 pp.): 11 entries by the 17-year-old Pauling. "Interview with Dr. Linus Pauling" (25 pp., the longest piece): Pauling answers questions asked by Wayne Reynolds, Executive Director of the American Academy of Achievement. "Summer Employment"* (3 pp.): Pauling describes several jobs that enabled him to attend college. "Children of the Dawn"* (4 pp.): A college speech in which young Pauling describes his belief in progress through the scientific method. "Linus Pauling, the Teacher"* (8 pp.): David P. Shoemaker describes Pauling's ability to impart his knowledge in the classroom and lecture theater. "The Incident on the Cliff"* (5 pp.): Pauling describes his ordeal when he was trapped on a cliff (January 31–February 1, 1960), an incident that received wide press coverage.

Part II. "Linus Pauling, The Science"

"The Scientific Contributions of Linus Pauling" (20 pp.): Jack Dunitz reviews the highlights of Pauling's long scientific career. "Early Years of Physical Chemistry at Caltech"* (10 pp.): Pauling describes his years as a graduate student and young professor. "The Original Manuscript for *The Nature of the Chemical Bond*"* (3 pp.): Pauling discusses the genesis and course of publication of his most important article (*J. Am. Chem. Soc.* **1931**, *53*, 1367). "Modern Structural Chemistry: Nobel Lecture 1954" (8 pp.): Pauling reviews his career. "Pauling and Beadle" (8 pp.): George Gray describes the partnership between Pauling and geneticist George Beadle in their attempt to combine chemistry and biology. "Sickle-Cell Anemia"* (7 pp.): Bruno Strasser discusses Pauling's explanation of the properties of hemoglobin in terms of molecular structure and his founding of molecular medicine. "How I Developed an Interest in the Question of the Nature of Life"* (7 pp.): Pauling intended this excerpt to be part of the first chapter of a book to be called *The Nature of Life—Including My Life.* "The Discovery of the Alpha Helix" (9 pp.): Pauling offers his own memories of this seminal discovery. "The Triple He-

This section contains book reviews and a list of new books received by the editor. Book reviews are written by invitation from the editor. Suggestions for books to be reviewed and for book reviewers are welcome. Publishers should send brochures or (better) books to the Redaktion Angewandte Chemie, Postfach 101161, D-69451 Weinheim, Federal Republic of Germany. The editor reserves the right of selecting which books will be reviewed. Uninvited books not chosen for reviews will not be returned.

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lix"* (19 pp.): Tom Hager examines one of Pauling's relatively rare failures: his mistakes in method and approach in the race for the structure of DNA. "The Genesis of the Molecular Clock"* (8 pp.): Gregory J. Morgan examines how Pauling and Emile Zuckerkandl developed the new field of molecular evolution. "Orthomolecular Medicine Defined" (7 pp.): Pauling introduces the word "orthomolecular", meaning "the right molecules in the right amounts". "There Will Always Be Something Interesting"* (7 pp.): Neil A. Campbell interviews Pauling, then aged 80, about things that, in retrospect, seemed most important to him.

Part III. "Linus Pauling, The Peace Work"

"An Episode That Changed My Life"* (3 pp.): Pauling relates how his wife convinced him to become knowledgeable about the nature of war and the need for peace, which caused him to devote at least half his time to world peace and world problems. "The Ultimate Decision"* (6 pp.): Pauling summarizes his advocacy of world government, civilian control of nuclear weapons, and international oversight of the development of new weaponry. "Meet the Press" (7 pp.): transcript of the May 18, 1958 program of the public affairs TV show on which Pauling was severely cross-examined, showing how negatively his efforts on behalf of peace were viewed by the press. "Science and Peace, Nobel Lecture 1963" (15 pp.): Pauling summarizes his thoughts after 15 years of working for peace. "Man: An Irrational Animal"* (4 pp.): Pauling argues that a one-world government based on scientific reasoning is the way to avoid a worldwide nuclear catastrophe. "A World in Which Every Human Being Can Live a Good Life"* (1 page, the shortest piece): Pauling proposes seven ways "for all nations and all people to cooperate in building a world free of war and militarism, a world based on rationality and ethics".

Part IV. "Linus Pauling, Facets" (28 pp.)

This section, well adapted for browsing, consists of 42 quotations, many amusing and humorous, mostly by Pauling, ranging from a single sentence to more than a page in length. They provide insights into his character and personality and complete the portrait provided by the earlier pieces.

This attractive book includes 84 photographs from Pauling's earliest youth to his older years, many of which we had not seen previously. It also contains drawings and reproductions of original manuscripts and typescripts by Pauling. A 9-page "Selected Bibliography" lists 101 of Pauling's more than 1100 articles (1920–1994), 13 of Pauling's 16 books, and 20 articles and books about Pauling, while a 7-page (double-column) index makes it user-friendly.

Mead and Hager have selected the primary and secondary materials for quality and comprehensiveness to produce "an almost cubistic view from many angles—personal and critical, contemporary and historical, first-person and third-person—of one of the central scientists in twentieth-century history." In our opinion Pauling's fellow Oregonians have succeeded in achieving their goal. We think that Pauling, who viewed himself as "a multi-faceted crystal with many dimensions", would be pleased with the book.

This collection portrays the life and legacy of the most famous chemist of our time as an ambitious, complex, conflicted human being who spoke his own mind and lived a long and fruitful life on his own terms. It shows the complexities and inconsistencies of a creative, brilliant, and outspoken human being who was neither saint nor sinner.

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Information Retrieval. SciFinder® and SciFinder® Scholar. By *Damon D. Ridley*. John Wiley & Sons, New York 2002. 252 pp., paperback $ 45.00.—ISBN 0-470-84351-9

In the last years of the 20th century *Chemical Abstracts* became available on the PC desktops of many scientists. SciFinder® in industry and SciFinder® Scholar in academic institutions made it very easy to process queries, even including structures. The user interface is intuitive and accepts search strings in natural language.

So why a book about such an apparently easy thing?

The system will give back answers to nearly all questions, just because the underlying databases are so comprehensive. But how to get the right references or substances, and how to catch them all?

Damon Ridley's message is to apply scientific method in information retrieval in order to receive all the information needed for high-quality scientific research. He also states that to work with SciFinder can be creative and even fun. The author is well-known as the writer of many publications about chemical information, and he is also an active chemistry researcher at the University of Sidney.

The book does not compete with the manual, which may be downloaded from the CAS server. It rather concentrates on background information and tips for searching. This keeps it refreshingly short (181 pp. + 52 pp. of appendices and index). Each of the six chapters starts with an introduction to the specific subject followed by comprehensible practical examples. Additionally, there is always a summary and an extensive section containing exercises. The solutions to these can be accessed through the Internet. Many tables and illustrations contribute to the clear layout.

A broad spectrum of different sources, such as bibliographies, patents, substances, structures, reactions, and more is available within the search interface of SciFinder (which throughout this review means both SciFinder® and SciFinder® Scholar). Chapter 1 explains the contents, structure, and indexing of these databases. The search interface of SciFinder is able to handle natural language questions. This unique key feature is a mystery to many users. Chapter 2 demonstrates how the search strings are translated into several sets of candidates (combinations of concepts) by the system. The user may choose between these candidates. Hints for selecting an appropriate search strategy are given.

There are many ways to find substances in SciFinder. Chapter 3 presents the variations. The differences between the alternative paths are carefully outlined here. Chapter 4 offers an insight into the

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