Lives

Recollections of My Life. SANTIAGO RAMÓN Y CAJAL. MIT Press, Cambridge, MA, 1989. xxvi, 638 pp., illus. Paper, $16.95. Translated from the third Spanish edition (1923). Reprint, 1937 edition.

The Never-Ceasing Search. FRANCIS O. SCHMITT. American Philosophical Society, Philadelphia, 1990. xvi, 399 pp., illus. $30. Memoirs of the American Philosophical Society, vol. 188.

Song Among the Ruins. WILLIAM J. SCHULL. Harvard University Press, Cambridge, MA, 1990. x, 305 pp. + plates. $25.

Science, Churchill, and Me. HERMANN BONDI. Pergamon, New York, 1990. x, 142 pp. + plates. $30.

A Very Decided Preference. Life with Peter Medawar. JEAN MEDAWAR. Norton, New York, 1990. 256 pp., illus. $19.95.

Landau. The Physicist and the Man. I. M. KHALATNIKOV, Ed. Pergamon, New York, 1989. viii, 323 pp., illus. $100. Translated from the Russian by J. B. Sykes.

Chandrasekhara Venkata Raman. A. JAYARAMAN. Allied East-West Press, New Delhi, 1989 (available from the author, AT&T Bell Laboratories, Murray Hill, NJ 07974). xiv, 214 pp. + plates. $10; paper, $8.

"Too few scientists devote the effort to writing their autobiographies," began a recent review of one of the works in the well-known series sponsored by the Sloan Foundation. Be that as it may, the number of such works continues to swell, the more so if one includes another category of books similar in character, recollections of the living and recently dead by their friends and associates. Some 20 such personal books have been reviewed in *Science* in the past two years, for instance, and the future holds, among others, a projected series of 22 autobiographies of organic chemists and collections in which a like number of astronomers give an accounting of themselves. On hand in the meantime is the assortment listed above.

The neuroanatomist Santiago Ramón y Cajal might be considered something of a pioneer in the autobiographical genre, his straightforwardly titled *Recuerdos de Mi Vida* having appeared, in two volumes, in 1901 and 1907. The work was translated into English in 1937 and published as volume 8 of the *Memoirs* of the American Philosophical Society, itself now a long-standing sponsor of such works. A 1966 reprint was reviewed in *Science* (**156**, 763 [1967]), and now MIT Press has reissued it. Given the inevitable schema of education, researches, and established position, Cajal's book has much in common with its successors, but the tone is that of another era. A detail that struck this reader as telling is Cajal's comment that his wife's most attractive feature was her air of melancholy resignation; the present-day autobiographer's wife is more likely to be depicted as an energetic doer.

Another neurobiologist to join the list is Francis O. Schmitt. *The Never-Ceasing Search* is a series of loosely connected accounts of Schmitt's studies at Berkeley and in London and Berlin in the 1920s, his subsequent work at Washington University investigating the molecular structure of living tissues by polarization optical and x-ray diffraction methods, and his career at M.I.T., including further research in biophysics, his involvement with the National Institutes of Health, and the development of the Neurosciences Research Program. One recurring theme is the molecularization of neurobiology. Conferences, travels (including a visit to the Cajal Institute in Madrid), and such personal matters as the death of the author's wife and his involvement in the Lutheran church are also recounted.

An author whose career has had a particular element of uniqueness is the geneticist William J. Schull, who beginning in 1949 has spent considerable time in Japan in association with the Japanese-American Atomic Bomb Casualty Commission. Billed by the publisher as "a lyrical account of an American scientist's sojourn in Japan after the atomic bomb," Schull's *Song Among the Ruins* gives some information about the Commission's work but is preeminently an account of the "sights, smells, and sounds" of Japan, reporting on such matters as means of transportation, housing, night life, holidays, cuisine, popular literature, and the arts, with a bit of the nation's history thrown in and a brief bibliography and glossary relating to these themes.

From the British scene comes a brief work by the physicist and astronomer Hermann Bondi, who began his life in England as an emigré from Austria in 1937. Bondi studied at Cambridge and when war broke out was, like many others in his situation, interned for a time as an enemy alien, eventually becoming involved in the radar work of that time. After the war he returned to Cambridge and later, after a year in the United States, became professor of applied mathematics at Kings College London. Subsequent positions he has occupied include director general of the European Space Research Organization and in Britain chief scientific adviser to the Ministry of Defence and head of the National Environmental Research Council. Bondi outlines and comments on these moves and on various family concerns, giving relatively little detail about the content of the work with which he was associated. The "Churchill" of the title refers not to the statesman himself (though he is clearly a hero of the author's) but to Churchill College Cambridge, of which Bondi has been master since 1982.

The late Peter Medawar was a prolific essayist, leaving behind among other works expounding the broader aspects of the scientific life a 1986 autobiography, *Memoirs of a Thinking Radish*. In *A Very Decided Preference* his widow provides her own reminiscences of their life together, beginning with her marriage, over the opposition of her family, to the "slightly farouche" young immunologist and including vignettes of family life in a series of locations and reports of numerous ceremonial occasions. A major theme of the book is the health problems, described in some detail, that beset Medawar in his last two decades and his efforts to maintain his activities in spite of them—the preference referred to in the title is his preference "for remaining alive."

Some scientists particularly stand out as heroes to their contemporaries. One of these is Lev Landau, who died, some years after a disabling accident, in 1968. Among the writings in English about Landau are a translation of a brief biography by Anna Livanova, reviewed in *Science* **211**, 158 (1981), and two essays, by I. M. Khalatnikov (now director of the Landau Institute for Theoretical Physics in Moscow) and Vitaly L. Ginzburg, that appeared in *Physics Today* (**42**, no. 5, 34 and 54) in May 1989. Now we have further reminiscences by some 30 of Landau's "friends and pupils." The sources of the papers are not always clearly identified, but many if not most of them presumably come from a series of decennial "Landau birthday" events, the most recent of which occurred in 1988. Among the authors are not only Khalatnikov and Ginzburg but several Western scientists (Casimir, Peierls, Pellam, and Shoenberg). Also included are several contributions from the late E. M. Lifschitz, Landau's collaborator in the renowned ten-volume *Course of Theoretical Physics*, and an exchange of letters among Landau, Bohr, and Kapitza in the troubled years between 1936 to 1941. In content, the papers range from substantive discussion of work in physics to accounts of holiday travels. As in the biography, virtually nothing is said of Landau's domestic life, but the views on love and marriage attributed to him suggest a reason for the silence. Some comments of *Science*'s reviewer on Livanova's biography might stand for this work as well—if "written with a bit too much naive adulation and Russian schmaltz," it is also "open enough to docu-

ment a few of the weaknesses of Landau's cocksure, ad personam, open-and-shut judgments."

Equally admired by his compatriots appears to be C. V. Raman (1888–1970) of Raman spectroscopy. Raman has recently been the subject of a lengthy biography, *Journey into Light* by G. Venkataraman (reviewed in *Science* **244**, 848 [1989]), that included considerable technical detail about his work in physics as well as recounted his activities as a leader of science in India. Now only a year later we have a more informal account by a scientist who was for 11 years an associate of Raman's at the Raman Research Institute in Bangalore. Organized according to theme rather than strict chronology, the book treats virtually all aspects of Raman's more publicly known activities as well as gives information about such matters as his attitudes toward his protégés, his interest in gardens, his investments, and various personal habits. The author draws heavily on published (though not always easily available) sources but also includes many personal anecdotes. On the scientific side, there are expositions, aimed at a general readership, of the problems in optics and acoustics with which Raman's research was concerned, and there are also accounts of Raman's travels and of visits to his institute made by eminent scientists and others from India and abroad. The difficulties of Raman's personality, which led among other problems to his dismissal from the Indian Institute of Science and a rancorous controversy with Max Born, are frankly acknowledged, but the author repeatedly stresses Raman's love of nature and his "seriousness and fearlessness, clarity and honesty."

Apart from their appeal to casual curiosity and the gratification they may provide to their authors and sponsors, how useful ultimately are works of the types represented here? This of course is a matter that in part has to be assessed by those knowledgeable about the particulars of individual cases, but one observation that might be permitted here is that those of the subjects' peers whose assessments are negative are seldom willing to commit them to print. It is further noteworthy that a general reader who turns to such works for insight into the workings of science is likely, whatever else, to encounter much about meals and entertainments, struggles to locate and acquire suitable real estate, the rearing and careers of offspring, and comic episodes and remembered *bons mots*, not to mention household hints and assessments of scenery and weather. Given that such few academics in non-scientific fields as are moved to recount their lives are likely to be schooled to more literary modes, such works as these may have prime value as sources on the life-styles of the academically well placed.

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Metrology in Physics

The Art of Measurement. Metrology in Fundamental and Applied Physics. BERNHARD KRAMER, Ed. VCH, New York, 1989. xiv, 335 pp., illus. $66. Research—Measurement—Approval. From a symposium, Berlin, F.R.G., 1987.

The Art of Measurement is an account of the symposium "Metrology in Fundamental and Applied Physics" held on the 100th anniversary of the founding of the Physikalisch-Technische Bundesanstalt. With its great history of precision and measurement, the German "National Bureau of Standards" is an ideal place on which to focus the work discussed in this book. The book is divided into parts on fundamental physics, precision experiments, and medicine, all connected by the primary thread of *precision*, and is an unusual marriage of the most fundamental with the highly applied.

Wilhelm Walcher's long introduction provides an even treatment and smooth weld of the history of gravity experiments from Kepler's time up to the fifth force work going on now, but in an analytical context of the practicalities of assuring the precision of the results. The manner of exposition of the progression of electrical work from Coulomb's law through the unification of electricity and magnetism through light and radiation also seems right for this purpose. In both topics, Wilhelm discusses the fundamental questions that still remain or have recently surfaced in the steps of these progressions. And because the point of view taken is that of precision measurement, this is not just a rehash of the usual history.

Albert Schmid's paper takes us through some effects in the borderline region between microscopic physics (where quantum mechanics is necessary) and macroscopic physics (where classical mechanics dominates). The Josephson junction is viewed in several interesting ways. The dynamics of two weakly coupled superconductors is shown to be equivalent to that of a particle in a potential with two degenerate minima. This leads into a section on dissipative objects and the effect of dissipation on the dynamics and other behavioral features of precision low-temperature devices. The analogous physical models Schmid uses to illustrate the basic mathematical properties of two weakly coupled superconductors encompass a surprising richness of phenomena due to quantum coherence effects.

Two papers, "Precision when dealing with atoms" by Peter E. Toschek and "Optical frequency standards: atomic clocks of the future?" by Jurgen Helmcke, are timely in view of last year's Nobel prizes. The first is a fairly extensive and interesting review of atomic processes, with a nice, brief discussion of trapped ions, including single, cooled ions in a trap. The second intensively puts to use principles and technology evolving from Ramsey fringes in an explanation of frequency chains from the cesium clock to visible light.

"Lasers in medicine" by Werner Schmidt is both a gee-whiz exhibition of some unexpected (to me) laser phenomena and a serious review of a number of important, or potentially important, uses of the laser with the human body. It is surprising how much more there is to the use of laser light in the eye than just as a simple "surgical knife"—I would not have anticipated the ways in which laser metrology becomes the basis for diagnostic or therapeutic processes.

This book is different from most conference proceedings, both in its overall structure and in the way in which many of the individual contributions come across. It reads as if the various authors were instructed to make their papers a combination of brevity and completeness (not necessarily thoroughness) and to write them on a nontrivial scientific level yet make them readable for the nonspecialist. In this they achieve varying degrees of success—some papers seem too superficial to interest any reader—but my proclivity is to like most of them. It is nice to be taken, in a succinct and understandable manner, into and through a topic one has heard with stiletto thrusts for some years. One would have to be a world expert indeed, not to find many new things about precision measurement in this book.

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Heat Shock

Stress Proteins in Biology and Medicine. RICHARD I. MORIMOTO, ALFRED TISSIÈRES, AND COSTA GEORGOPOULOS, Eds. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY 1990. x, 450 pp., illus. $97. Cold Spring Harbor Monograph Series 19.

In the early 1960s, Ferruccio Ritossa inadvertently heated a preparation of *Drosophila* salivary glands and observed a new pattern of chromosomal puffing, an activity that we now associate with transcriptional activation of genes in polytene chromosomes. Thus began a research area that now