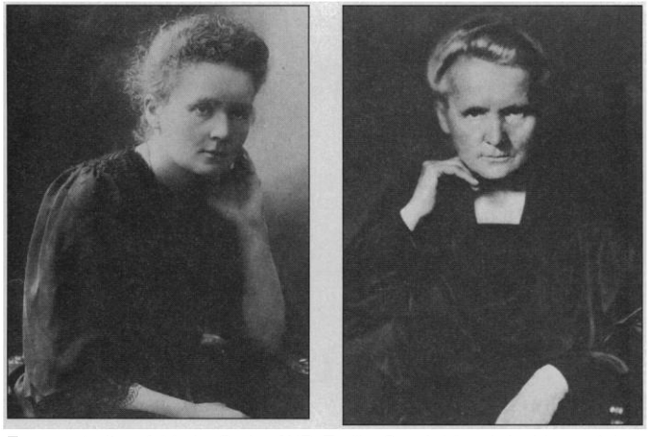
BOOK REVIEWS

A Heroine in Her Times

Marie Curie. A Life. SUSAN QUINN. Simon and Schuster, New York, 1995. 510 pp. + plates. $30 or $C40.

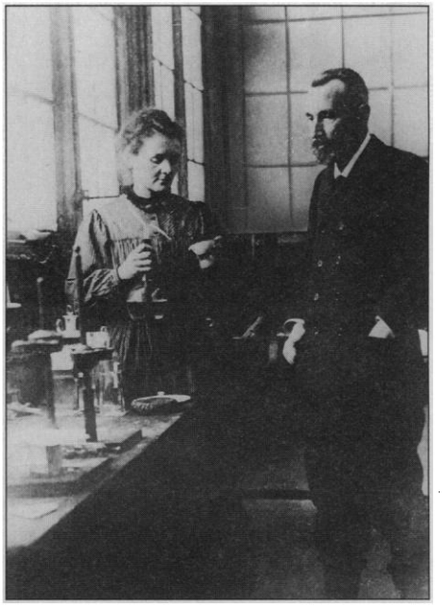
Marie Curie is one of the best-known scientists, surely the most celebrated woman scientist, of all time. Honored for her discoveries in radioactivity by two Nobel prizes, she is as famous for who she was as for what she did: the patriot naming her first new element for her native Poland; the wife-scientist-mother toiling in a run-down shed to extract radium from pitchblende; the Curie couple refusing to profit from the radium discovery; the widow carrying on their work after Pierre Curie's accidental death; the single parent of two daughters, of whom the older, Irène, garnered the family's third Nobel (with her husband, Frédéric Joliot), and the younger, Eve, wrote the famous biography, *Madame Curie*, that was published soon after her mother's death in 1934. By emphasizing Marie Curie's passion for science, physical labor, and sacrifice, Eve Curie placed her mother at the brink of scientific sainthood. The heroic outline is not inaccurate, biographer Susan Quinn points out, but it is incomplete. Missing almost entirely is Curie's relationship to the larger French society in which she lived and worked—a deliberate omission, Quinn believes, by a daughter seeking to insulate her mother's image from the public defeats and humiliations she had suffered during her life. Quinn has explored just these questions of social context. She portrays a woman who was both independent and ambitious, in a society that was unprepared for either. The result is a fresh, powerful new biography of a very human Marie Curie.



Two portraits of Marie Curie. [AIP Emilio Segrè Visual Archives; Johns Hopkins Medical Institute Alan Mason Chesney Medical Archives (left) and Meggers Collection (right)]

Quinn's portrait of Maria Skłodowska's formative years in Russian-controlled Warsaw is very fine. From journals of Maria's siblings that were previously available only in Polish, Quinn gives an intimate sense of a close-knit, intellectual family whose resistance to cultural oppression, love of country, and egalitarian political ideals encouraged the girls, no less than the boys, to pursue an education—preferably a practical, scientific education—as a means of empowering themselves and their country. By the time Maria left Warsaw to study in Paris, she was imbued with a "transcendent life-purpose beyond the personal" (p. 84), a dedication that would see her through some of the difficulties that lay ahead.

It took an exceptional man to keep her from returning to Poland. In her marriage to Pierre Curie, Maria—now called Marie—had a partner who craved equality in marriage and work; together they embarked on an "anti-natural path" that permitted them time only for science and family. Pierre had a modest position and a laboratory where Marie was permitted to work; the collaboration was essential for Marie (as it was for other women at that time, such as Lise Meitner with Otto Hahn in Berlin), since it is unlikely that she would otherwise have found a place to do independent research. Although this is not primarily a scientific biography, Quinn gives a solid account of the work they did together and independently, noting that Marie Curie's greatest contribution—even more than the discovery and isolation of radium, for which she is best known—may have been her early recognition of radioactivity as an atomic phenomenon, which defined the field and led to the subsequent discoveries.



Marie and Pierre Curie in their laboratory, 1896. [AIP Emilio Segrè Visual Archives]

The period between the two Nobel prizes, from 1903 to 1911, is the dramatic focus of this biography. As Quinn describes it, the 1903 Nobel Prize in physics, shared by the Curies and Henri Becquerel, brought instant fame to the Curie couple, especially to Marie, who became a barometer of the public's nervousness about the changing roles of women. The issue came to a head in 1910, four years after Pierre's death, when Marie submitted her name for election to the French Academy of Sciences. The resulting melee, fanned by the press, pitted feminists against feminine idealists, clericals against the "godless" Sorbonne, and an assortment of right-wing nationalists, republicans, monarchists, Dreyfusards, anti-Semites, and xenophobes of every stripe against one another. One reads the details with horrible fascination, knowing that as sertive, independent women are still curiosities in the tabloid press and targets for misogynistic talk-show hosts and opportunistic politicians. The academy voted Curie down. Soon after, there was another, more damaging furor: over her affair with the physicist Paul Langevin, married and the father of four. At the height of the scandal, the Royal Swedish Academy announced the award of the 1911 Nobel Prize in chemistry to Curie and then, a few weeks later, asked her to renounce the prize until she had cleared her name. Marie gathered up Irène, went to Stockholm, and claimed her prize.

Quinn's treatment of this period is a

riveting analysis of politics, the press, and excerpts, published for the first time, from testimonials that Marie's friends wrote in her defense at the peak of the Langevin scandal. Quinn notes that Curie, like many women, did not always make the wisest choices in love, but her life went on. She brought up her daughters, established and administered the Institut du Radium, provided mobile x-ray units for the military during World War I, traveled to America, and continued her research. Quinn's account of the comparatively high incidence of radiation-induced illnesses and deaths among Curie's co-workers is particularly interesting, as is her description of Curie's near-blindness and the pernicious anemia—almost certainly radiation-induced—from which she died, at the age of 67. This is an exemplary work, rich in the details and connections that bring a person and her era to life. It is certain to be this generation's definitive biography of Marie Curie.

Ruth Lewin Sime
Department of Chemistry, Sacramento City College, Sacramento, CA 95822, USA

■

Neanderthal Carnivory

Honor Among Thieves. A Zooarchaeological Study of Neandertal Ecology. MARY C. STINER. Princeton University Press, Princeton, NJ, 1995. xxii, 447 pp., illus. $69.50 or £46.50.

The fossil record suggests that modern humans originated in Africa and replaced the Neanderthals in Europe around 40,000 years ago. Some authorities argue that African invaders essentially extinguished the Neanderthals, while others propose interbreeding, based on putative Neanderthal traits they see in early modern and even living European populations. These differences aside, most authorities agree that the Neanderthals were behaviorally (culturally) primitive compared to their successors and that this helps explain their disappearance. More limited cultural abilities for the Neanderthals are implied by numerous archeological traits, including their relatively unsophisticated stone tools, their failure to manufacture standardized artifacts from bone and related materials, and their apparent lack of art.

In the research that underlies the present book, Mary Stiner sought to determine whether the Neanderthals also differed in their ability to obtain animals. To this end, she analyzed the animal remains from four presumed Neanderthal cave sites, three cave sites occupied by later modern humans, and an apparent fossil spotted-hyena den, all in west-central Italy. In one of the Neanderthal sites she also detected a layer in which the bones were apparently accumulated by wolves. From detailed comparisons of bone damage, species and skeletal part representation, mortality profiles, and other fossil data and from the ecological literature on hyenas, wolves, and other predators, she concludes that west-central Italian Neanderthals were probably less specialized than their modern successors. As she sees it, Neanderthals both hunted and scavenged, whereas modern people hunted almost exclusively. She emphasizes, however, that the difference is subtle and that some west-central Italian Neanderthals actually anticipated modern humans, particularly in their ability to obtain prime-age prey through "ambush hunting." There is thus something in the book for both advocates and opponents of continuity between Neanderthals and modern Europeans.

Stiner's conclusions are patently relevant to a key issue in human evolution, but are they warranted? I think the answer is "maybe." Her presentation is clearest and most compelling when she uses surficial bone damage (chewing and cut marks and the like), the relative abundance of associated objects (mainly artifacts and coprolites), and the frequency of hyena or wolf bones to infer whether people, hyenas, or wolves were primarily responsible for a particular fossil assemblage. Her argument is much harder to follow when she analyzes species abundance, skeletal part representation, and mortality profiles to test for ecological differences or similarities among Neanderthals, modern humans, and other kinds of large predators. Part of the problem is that her fossil samples are few and mostly small, and her analyses often proceed from percentages, ratios, or other transformations rather than from raw numbers. Without independent effort, it is thus difficult to know whether many of her numerically based conclusions would stand up statistically.

There are also some potentially limiting methodological quirks. For example, in her comparisons of skeletal-part representation among assemblages, Stiner explicitly excludes teeth, carpals, and smaller tarsals, "because the uniformly dense structure of these elements tends to inflate their relative abundances in archaeological contexts, and they may arrive as non-nutritious riders on more substantial food-bearing elements" (pp. 237–238). This may be true, but it does not preclude informative differences in dental or carpal/tarsal abundance among samples. I have found, for example, that southern African archeological assemblages contain many more carpals and small tarsals than like-aged hyena assemblages, probably because hyenas often digest such small bones. Surely it would be useful to investigate whether west-central Italian archeological and hyena assemblages differ in the same way.

The most serious problem, however, lies in Stiner's use of mortality profile analysis. Like most other paleobiologists, she introduces the subject with a discussion of "catastrophic" and "attritional" age profiles. These are essentially mathematically interdependent, theoretical representations (i) of the age structure of a stable live population and (ii) of the age structure of the set of individuals that must die to maintain population stability through time. The two age structures are complementary mathe-

Vignettes: A Low-Key Profession

There are aspects of statistics other than it being intellectually difficult that are barriers to learning. For one thing, statistics does not benefit from a glamorous image that motivates students to persist through tedious and frustrating lessons. . . . there are no TV dramas with a good-looking statistician playing the lead, and few mothers' chests swell with pride as they introduce their son or daughter as "the statistician."

—*Chap T. Le* and *James R. Boen*, in *Health and Numbers: Basic Statistical Methods* (Wiley-Liss)

Strangely, the motto chosen by the founders of the Statistical Society in 1834 was *Aliis exterendum*, which means "Let others thrash it out." William Cochran confessed that "it is a little embarrassing that statisticians started out by proclaiming what they will not do."

—*Edmund A. Gehan* and *Noreen A. Lemak*, in *Statistics in Medical Research: Developments in Clinical Trials* (Plenum)