The role of women has changed dramatically in North American society over the past century. Until the mid 1900s, the widely accepted concept of “separate spheres” held that the primary role of women was marriage and the raising of children (Abir-Am and Outram, 1989; Ainley, 1989; Bailey, 1994; Ogilvie, 1986, 1989; Slack, 1989). Professional careers were virtually unheard of and educational opportunities were limited. The establishment of co-educational colleges began in 1833 when Oberlin College first admitted women (Bailey, 1994; Rossiter, 1982). The first institution to establish a graduate program for women was Bryn Mawr College in 1885, although female students were still segregated from their male colleagues (Bailey, 1994; Ogilvie, 1986; Rossiter, 1982). For the vast majority of women, however, advanced education was restricted. Before 1920, for example, only 439 women had received baccalaureate degrees in science in the United States (Bailey, 1994).

Despite societal pressures, women did become scientists. Collaboration with a male (father, brother, or more often a spouse) sometimes provided a back door through which they could enter science with few negative consequences (Abir-Am and Outram, 1989; Bailey, 1994; Bonta, 1991; Ogilvie, 1989; Slack, 1989). Wealthy women had the ability to indulge their scientific inclinations as an avocation or, vicariously, by becoming benefactresses. For example, Mrs. E. H. Harriman, the widow of a railway magnate, sponsored the work of C. H. Merriam for 30 years (Sterling, 1989). Occasionally, women became scientists against the prevailing societal norms. These individuals generally paid a heavy price. They often sacrificed a normal family life and were viewed as “unwomanly” (Abir-Am and Outram, 1989; Bailey, 1994; Bonta, 1991; Ogilvie, 1986, 1989;
FIG. 1.—Viola S. Schantz examining skins of mammals at the United States National Museum of Natural History (courtesy of Smithsonian Institution Archives, record 7288, negative 95-20481).
Slack, 1989). Sometimes a widow was able to make the transition from collaborator to investigator. For example, Wanda Farr worked as an unpaid assistant for many years in her husband’s lab, then continued their work alone when he died. Her efforts eventually lead to the discovery of cellulose (Bailey, 1994).

When women did become scientists, their roles were different from those of their male colleagues. They generally were confined to positions as instructors, technicians, or research assistants, and were expected to also perform menial tasks, which sometimes included sewing or cooking (Bailey, 1994; Ogilvie, 1986, 1989; Rossiter, 1982). Women often had difficulty obtaining the respect of their scientific peers. “I am not a housewife. I am a trained zoologist” Margaret Morse Nice is reported to have stated to a male colleague when he commented that her work was only that of an “untrained housewife” (Bonta, 1991; Slack, 1989). Some colleges avoided listing women in the faculty roster to prevent problems with the trustees, alumni, and fellow faculty members (Bailey, 1994). Women who did obtain faculty positions often were expected to resign them when they married; this continued into the 1950s (Ainley, 1989).

Attitudes about roles of females began to change during World War II. Women took over many traditional jobs of males as men were shipped off to fight in the war. To some extent, the effect carried over into educational institutions. Academic and research institutions, however, tend to reflect change more slowly than other areas of society and not until the affirmative-action movement of the 1960s and 1970s did real changes occur in the types of roles and in the degree of involvement women have in science (Kammer et al., 1978). This transition is described in the following special feature from several perspectives.

The first article, by Smith and Kaufman, contains a quantitative analysis of the activities of women within The American Society of Mammalogists from its founding in 1919 to the present. It documents both scientific productivity by women as reflected by publications in the *Journal of Mammalogy*, and participation by women in the affairs of the Society. The analysis shows that women have always contributed in both ways to some degree. The first article by a female author, for example, was published in volume four of the *Journal of Mammalogy* (Jones, 1923), and ca. 4% of the charter members of the Society were women. The analysis also shows, however, that until quite recently participation by women was relatively limited.

The second article, by Stein, recounts the histories of three early female naturalists. Martha Maxwell (1831–1881) was an example of a woman whose drive to pursue her interests in science lead to abandonment of a traditional female role at enormous personal sacrifice. Annie Alexander (1867–1950), was the patron of Joseph Grinnell and the founding benefactress of the Museum of Vertebrate Zoology at the University of California, Berkeley. Louise Kellogg (1879–1967), first pursued her interests in science as the companion and collaborator of Annie Alexander, but then continued after Alexander’s death working primarily as a botanist. Although the roles of these females were distinctly different from those of their male contemporaries and from modern female mammalogists, each of them made substantial contributions to the science of mammalogy.

The third article, by Kaufman et al., is a history of a number of women active in The American Society of Mammalogists from ca. 1900 to 1949. These early scientists are relatively unknown to contemporary mammalogists although each made substantial impacts on the field. The article is organized into sections dealing with women who were primarily laboratory scientists (such as Helen Dean King), those who were active in field research (e.g., Margaret Altman and Lucille Stickel), those who were active in museums (e.g., Erna Mohr, Barbara Lawrence), and general naturalists
We thank O. J. Reichman and R. T. Bowyer for their interest in this special feature. Many of the ideas investigated in the articles originated within the ASM ad hoc Committee on Women and Minorities Issues. S. M. Elliott and G. R. Michener made numerous helpful suggestions on the manuscript, and E. A. Elliott Smith provided inspiration. Support was provided by grants from The National Science Foundation (DEB-9508715 and BIR-9308033 to FAS).

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**LITERATURE CITED**


