

## Collecting Gender: Women Participation in 1930s Scientific Collecting

Felicia Hammons

The professionalization of science during the latter 19th and early 20th centuries had a profound effect upon the place of women within the science discipline. Women were refused access to higher education and its translation into employment, especially in higher status positions such as professorship.<sup>1</sup> As authors Henry Etzkowitz and Carol Kemelgor explained, "The traditional family environment freed up men to pursue research, while also giving them time to engage in the 'laboratory politics' that leads to managerial positions."<sup>2</sup> Women remained bound to and defined by their gendered domestic roles as wife and mother, which strained their pursuit of research and their activity within science culture politics.<sup>3</sup> Women scientists were therefore relegated to lower status positions, commonly those of periphery science. Periphery science has historically been less favored and less publicly acknowledged or honored compared with the work of "professional" male scientists.<sup>4</sup> But gender historians should discuss *both* the obstacles women scientists faced as well as the ways in which women did participate in science. This work is an investigation into the subculture and community of scientific collecting through the analysis of 1920s and 1930s entomological collecting trip field notes by the Beamer family from University of Kansas. A subculture can be defined as "an ethnic, regional, economic, or social group exhibiting characteristic patterns of behavior sufficient to distinguish it from others within an embracing culture or society."<sup>5</sup> Collecting was a subculture of both professional science culture and mainstream American society. It was marked by its regional location in the American West and did exhibit patterns of behavior that distinguished it from professional science culture and society. This scientific subculture both accepted and promoted women involvement in collecting, and science in general. Collecting was a vein of science open to all participants, regardless of expertise, experience, education, age, or sex. Within this collecting subculture, members developed strategies for the existence of their culture and also felt a level of acceptance and camaraderie within their community.

Recent historical scholarship on gender in 20<sup>th</sup>-century science has focused on case studies of women periphery scientists. Patrons, collectors, assistants, editors, illustrators, teachers, librarians, and support staff are examples of periphery scientists. Case studies of

---

<sup>1</sup> Henry Etzkowitz and Carol Kemelgor, "Gender Inequality in Science: A Universal Condition?," *Minerva* 39, no. 2 (2001): 162.

<sup>2</sup> *Ibid.*, 164.

<sup>3</sup> *Ibid.*

<sup>4</sup> Sally G. Kohlstedt, "Sustaining Gains: Reflections on Women in Science and Technology in 20<sup>th</sup>-Century United States," *NWSA Journal* 16, no. 1 (Spring 2004): 1-2.

<sup>5</sup> Merriam-Webster Dictionary, "subculture," accessed March 7, 2015, <http://www.merriam-webster.com/dictionary/subculture>.

periphery women scientists communicate the constraints women faced in society and in academia, and emphasize the exceptionalism of women scientists who broke through the “glass ceiling.”<sup>6</sup> But case studies focus on specific individuals who may not have been representative of women within the larger scientific community. Trends describe a greater portion of the population and, more importantly, trends describe movements within the history of science. These movements either reflected or rejected those of mainstream American society. By promoting women participation, the collecting subculture, as a social movement, rejected gendered definitions of both professional science culture and mainstream society.

Work investigating collection practices has produced abundant material, but these works are divided among and geared toward scholarly specialization. Most focus on anthropology or art history, and two issues limit the scope of these works. The first is that they focus on the work of amateur collectors, influenced by cultural and scientific aims rather than systematic and exacting types of scientific collecting. The second issue is that analyses focuses far more on the collections rather than the collecting. The few that do focus on science are geared toward specialized topics. For example, authors Patricia C. Warner and Margaret S. Ewing focused on the work of women aquatic collectors in the latter 19th and early 20th centuries. But the theme was not about collecting; it focused more on the role of collecting in the evolution of women’s fashion.<sup>7</sup>

To understand collecting as a community, it must be placed within the context of early 20th century entomological collecting. The late 19<sup>th</sup> to early 20<sup>th</sup> century is considered the era of economic entomology. Economic entomology was product of the agricultural movement westward in North America. Entomology grew in popularity to address “pest” insects injurious to farmers’ crops. The Great Plains region was affected especially by the migratory patterns of insects. For half a century, outbreaks of migratory locusts were the prominent obstacles to settlement in the future “bread basket” of the nation. In response to pest devastation, Congress established land grant colleges that focused on the sciences and mechanics that advanced agriculture. The proportion of paid entomologists rose to about eighty percent of paid researchers.<sup>8</sup>

But following World War I, private and federal funding shifted from the natural sciences to the more profitable disciplines, such as chemistry and engineering, which had proven their

---

<sup>6</sup> Sally G. Kohlstedt, “Women in the History of Science: An Ambiguous Place,” *Osiris* 10, no. 2 (1995): 46.

<sup>7</sup> Robert E. Kohler, “Finders, Keepers: Collecting Sciences and Collecting Practice,” *History of Science* 45, no. 4 (December 2007): 429–430; Patricia C. Warner and Margaret S. Ewing, “Wading in the Water: Women Aquatic Biologists Coping with Clothing, 1877–1945,” *BioScience* 52, no. 1 (January 2002): 97–104.

<sup>8</sup> Scott Elias, “A Brief History of the Changing Occupations and Demographics of Coleopterists from the 18th Through the 20th Century,” *Journal of the History of Biology* 47, no. 2 (May 2014): 228.

usefulness during the war.<sup>9</sup> But the Dust Bowl of the 1930s rejuvenated the activity of natural scientists, especially ecologists and organismal biologists. Before the dust storms, scientists had been detecting other evidence of disturbances; the alteration of organismal foraging and migrations.<sup>10</sup> By upsetting the checks and balances of nature, it became apparent that authorities had not understood its workings and components.

The counsel of professional ecologists and biologists was sought for expert understanding of “ecological synthesis” in land management. These professionals were trained to categorize and understand organismal biology and behavior. This allowed them to better manage and manipulate nature’s ecosystem for the sustainability of both nature and western agriculture.<sup>11</sup> The collecting of organic specimens proved pivotal to the scientific identification and categorization of nature. To scientific collectors, they were performing science by analyzing and cataloguing specimens. Biosystematics is the term and “powerful tool for obtaining information about the basic biology of closely related species within a genus.”<sup>12</sup> Collecting became vital to taxonomic classification and a means of theorizing about the mechanisms of speciation. Understanding the geographic distribution, behavioral characteristics, and system of relationships within biosystematics created a blueprint to follow when dealing with a new agricultural pest.<sup>13</sup>

In the latter 20th and early 21st centuries, taxonomy was, and still is, dependent on geneticists, who discover species relations through DNA analyses. Consequently, historians have neglected field practices, such as specimen collection. It is technically outside of “proper science” and the grand narrative of scientific progress. Collecting was a practice performed by naturalists before they became “proper” scientists.<sup>14</sup> But this type of science was a haven for women scientists.

Natural history grew in popularity in the early 20th century. Field studies and the protection of nature and wildlife promoted the involvement of middle and upper-class women in natural history circles. But women’s prominence in science education was reversed by the 1920s due to programs on domesticity in higher education, and, more importantly, patriarchal concerns over professional masculinity. Men were intended for agricultural sciences and women for domestic sciences.<sup>15</sup> Professional work in science, and society in general, was designated by

---

<sup>9</sup> David M Hart, *Forged Consensus: Science, Technology, and Economic Policy in the United States, 1921–1953* (New Jersey: Princeton University Press, 1998), 34–47.

<sup>10</sup> Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 2004), 200.

<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*; John L. Capinera, ed., *Encyclopedia of Entomology* (New York: Springer Science & Business Media, 2008), 792; Kohler, “Finders, Keepers,” 447.

<sup>13</sup> Marcos Kogan and Ronald Prokopy, “Agricultural Entomology,” in *Encyclopedia of Insects*, 2nd ed., eds. Vincent H. Resh and Ring T. Cardé, (New York: Elsevier, Inc., 2009), 4.

<sup>14</sup> *Ibid.*, 428.

<sup>15</sup> Watts, *Women in Science: A Social and Cultural History* (New York: Routledge, 2007), 150–1; *Ibid.*, 153.

gender, favoring the masculine or male gender. Women, no matter how qualified, were restricted to assistant or technician posts in research and teaching. Women, therefore, participated widely in collecting trips as assistants and technicians to their male counterparts or kin.<sup>16</sup>

Author Debra Lindsay analyzed the socio-cultural position of nineteenth-century women involved in science through their marriages. Lindsay's work added more to the historical discussion of gender and power in science. Her aim was to shift focus away from women scientists' struggles for accreditation, recognition, and status, the prominent theme in gender studies of science. Lindsay is most keen about the response of wives immersed in a community that formally excluded them. Informally, women did gain access to science through marriage and familial relationships. The sphere of science shifted from the public to the domestic sphere as wives, sisters, mothers, and daughters of male scientists became unofficial members of the scientific community. Science became the context for their lives, rather than simply an intellectual activity.<sup>17</sup>

The family of Kansas entomologist Raymond H. Beamer is an example of kinship-based involvement in scientific collecting. Raymond Beamer became Associate Professor of Entomology at the University of Kansas in 1935, Full Professor in 1939, and Curator of the Francis Huntington Snow Collections in 1949. Raymond and his wife, Lucy, had three children named Imogene, Raymond Jr., and John. When the Beamer children were old enough, the entire Beamer family went on summer collecting trips together during the 1920s and 1930s. The Beamer children became experienced collectors and grew up immersed in the scientific community.<sup>18</sup>

Lucy Beamer warrants an introduction because without her field notes and photography, this work would not have been possible. Lucy Beamer wrote all the field notes and photographed all the collecting trips consulted. But Raymond Beamer's name and initials are on all the field reports and, consequently, the photographs as well. Her roles were not acknowledged outright within any of the notes, but three types of evidence support her accreditation. Raymond's script is drastically different than the script of the notes, while Lucy's script is identical. The second evidence is what she writes about. She describes everyone's actions apart from her own, including "R.H.B" being Raymond H. Beamer, her husband. Lucy is also widely absent from photographs, while Raymond is present in nearly all of them. Lucy is clearly the writer and photographer for the collecting trips.<sup>19</sup> Lucy's notes and photographs act as a window into the intricate relationships that composed the 1920s and 1930s scientific collecting community.

An essential element to this scientific community was the automobile. By 1925, the Ford Company assembly line completed an automobile every ten seconds. By 1929, every fifth person in the United States owned a Ford automobile. The automobile improved travel and campsite

---

<sup>16</sup> Suzanne Le-May Scheffield, *Women and Science: Social Impact and Interaction* (Santa Barbara, California: ABC-CLIO, 2004), 129–30; *Ibid.*, 138–9; Watts, *Women in Science*, 153.

<sup>17</sup> Debra Lindsay, "Intimate Inmates: Wives, Households, and Science in Nineteenth-Century America," *Isis* 89, no. 4 (Dec. 1998): 631–2; *Ibid.*, 635; *Ibid.*, 631–3.

<sup>18</sup> "Raymond Hill Beamer," *Kansas Entomological Society* 31, no. 2 (April, 1958): 59; *Ibid.*, 64–6.

<sup>19</sup> Lucy Beamer, field notes, 1932, box 1, Raymond Beamer Collection, Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

assembly tremendously, as the author Scott Johnson attested in 1917, “We made the trip over by auto, it was different and a pronounced success. We had plenty of time to find a good camping ground and put up camp in first class shape.”<sup>20</sup>

Automobiles proved pivotal to women’s participation in collecting as well. During the agricultural survey trip in 1917, the party from the University of Kansas hiked twenty–four miles in one day. When moving campsites, they handled nearly 1000 pounds of baggage two to three times in one day, besides taking down and putting up tents.<sup>21</sup> Women at this time in general were smaller and carrying heavy weights over such long distances would have been challenging. And considering women collectors were generally upper class, they were not accustomed to heavy labor. As seen in figure 1, the automobile allowed collectors to transport their supplies via wagons rather than backpacks. Without the physical strain of supply transport and travel by foot, women more easily participated in collecting.



Figure 1. Photographed by Lucy Beamer, August 20, 1938. Lucy Beamer, field notes, 1938. Raymond Beamer Collection. Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

The automobile also allowed collectors to travel further faster. During the 1920s and 1930s collecting trip itineraries were determined by where the automobile could go. The origins of the US Interstate System date back to the late 1930s and early 1940s, with the Federal Aid Highway Act of 1944, which authorized the designation of 65,000 kilometers for a national system of interstate highways. But the major construction of highways was slow until the administration of Dwight D. Eisenhower in the 1950s. Never the less, road building was a major public interest during the 1930s. The entomology trip of Scott Johnson in 1917 took two weeks and surveyed only parts of Kansas. During the Beamer collecting trips, the party covered sectors of all western states, apart from Alaska and Hawaii, and within a two–month period.<sup>22</sup>

---

<sup>20</sup> Scott Johnson, biological field survey report, 1917, box 2, folder Lauren D. Anderson 1927, Personal Papers of Raymond Beamer, Raymond Beamer Collection, Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

<sup>21</sup> Ibid.

<sup>22</sup> Richard F. Weingroff, “The Year of the Interstate,” *Public Roads* 69, no. 4 (January–February 2006), <http://www.fhwa.dot.gov/publications/publicroads/06jan/01.cfm>; Johnson, biological field survey report, 1917, Raymond Beamer Collection.

But while the automobile expanded the geographical scope of collecting trips, it also altered the spatial distribution. Collecting became a roadside activity, with parties rarely collecting in extreme wilderness. During a collecting trip in 1935, the party had to turn around on a back road because the treeline was too dense for automobile passage. In 1938, the party planned their trip by navigation of state highways, such as the drive from Santa Cruz to Davenport, California. Throughout their field notes, Raymond, Lucy, and Imogene Beamer wrote about their collecting parties stopping frequently to collect among roadside flowers or flooded irrigation ditches.<sup>23</sup>

The automobile also connected collectors within the scientific community. They could visit and collect together more easily. Part of the collecting community was informal cooperation among collectors. During the 1935 trip, the party was periodically joined by many guests, including a woman named Peggy and a man named Paul, who collected and travelled with the party for four days. Directly afterward a Mr. Wilcox, Mr. Bahe, and Mr. Crumb joined the party.<sup>24</sup> The dropping in and out of travelling parties shows that collecting was a community open to varied participants.

The community also harbored person-to-person instruction, communication, and cooperation. Those more experienced would instruct the less experienced, as seen in figure 2. The collectors are practicing pinning insect specimens in the field. There were few published instruction manuals for collectors on pinning in the 1930s. Even in the current year of 2015, pinning specimens requires personal instruction by experienced collectors and scientists. Collecting in general still requires personal instruction by the experienced. A book can describe techniques for using a net, or which specimens are stored in alcohol or paper envelopes for example. But they cannot explain tricks created by or acquired through the grapevine of cooperation and communication.



Figure 2. Photographed by Lucy Beamer, August 14, 1931. Lucy Beamer, field notes, 1931. Raymond Beamer Collection. Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

During collecting trips, parties were advised and often joined by professional entomologists from prominent institutions throughout the West. In 1928, the party visited the Botany Department of Lincoln College in California to study Manganites, a type of mineral, and to consult maps. They met Dr. Epling and he offered assistance. He recommended they visit Dr.

---

<sup>23</sup> Imogene Beamer, field notes, 1935, box 1, Raymond Beamer Collection.

<sup>24</sup> Lucy Beamer, field notes, 1935, box 1, Raymond Beamer Collection.

Memo of Pomona College in Claremont, California for more information on Manganites. The party continued on to Pomona College to visit Dr. Memo and also spent time collecting with a botanist, Dr. Mung, outlining their itinerary further. Mung advised them to collect in San Antonio Canyon. These interactions are perfect examples of connections within the scientific community.<sup>25</sup> If scientists didn't have the information, they knew who and where one could find it.

Parties visited scientific and agricultural institutions, presenting them as spaces open to the science community. In 1927, a party visited the Agriculture College of New Mexico at La Spruces and met a few professors who recommended collecting in Sabino Canyon. The 1935 party visited Dr. Van Duzee at University of California, Berkeley. Raymond Beamer worked on collections with Van Duzee while the women in the party toured Berkeley.<sup>26</sup> Visiting scientific and agricultural institutions presented perfect opportunities for the younger generation, which made professional contacts and reviewed college program options.

The parties also visited and learned from amateur entomologists, not formally associated with institutions. Western farmers commonly became amateur entomologists to understand agricultural "pest" insects. In 1938, Near Ramsey Canyon in Arizona, they visited Mr. Beaderman. They collected together around his walnut orchard. In a group photograph from 1935 (fig. 3), the Beamers are with friends and amateur entomologists.<sup>27</sup> Raymond listed the people as Jean Luisdale, Mary Anne and a friend, Curt Hesse, Mr. and Mrs. Comptore, Mr. and Mrs. Hill, Mrs. Hall and her three sons, Ben, Hubert, and Billy. This mixing of colleagues and friends created a community benevolent toward any experience, age, and sex.



Figure 3. Photographed by Lucy Beamer. 1938. Lucy Beamer, field notes, 1938. Raymond Beamer Collection. Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

No apparent negative group dynamics between generations or sexes were recorded within Beamer field notes. As more women joined the party, Lucy wrote of the "boys" and the "girls." It seems sororal and fraternal relations developed between collectors. Age and sex did influence group formation within collecting parties as well. In 1938, the party spent a week camped in Ben Hein's Orange orchard in California. Women grouped together by sex. Raymond and John took

---

<sup>25</sup> Lucy Beamer, field notes, 1938, box 1, Raymond Beamer Collection.

<sup>26</sup> Lauren D. Anderson, field notes, 1927, box 1, Raymond Beamer Collection; Lucy Beamer, field notes, 1935, Raymond Beamer Collection; Lucy Beamer, field notes, 1938, Raymond Beamer Collection.

<sup>27</sup> *Ibid.*; Lucy Beamer, field notes, 1935, Raymond Beamer Collection.

charge of Thelma's three boys. And the three young men, L.G., Raymond Jr., and Ben, grouped together.<sup>28</sup>

The most important groupings were those by expertise. Entomologists in general specialize in specific families of insects, such as Hymenoptera (bees), Coleoptera (beetles), and Lepidoptera (butterflies and moths) for example. In 1938, the party collected on the Frances Simes Hastings Natural History Reservation as guests of Dr. Jean Luisdale. Chas Michener, a student at Berkeley University and a specialist on Hymenoptera (bees) joined the party. Raymond Beamer focused on collecting cicadas, his specialty, and the rest of the party, under Michener, focused on collecting bees.<sup>29</sup> Evidently, group formation depended predominately on scientific specialty.

A revealing photograph from the field notes was from a party's visit to Yellowstone National Park in 1931 (fig. 4). The party is not posed like other group photographs with men and women intermixed. They assembled for their common scientific interests. Rather than collecting, they spent their time touring the park's attractions. The photograph is symbolic of the communication and cooperation of entomologists so diverse as individuals, yet similar in their commitment to furthering science. The same concept of camaraderie was present at the more formal 1931 Rocky Mountain Conference of Entomologists in Pingree Park, Colorado (fig. 5).<sup>30</sup>



Figure 4. Photographed by Lucy Beamer, August 14, 1931. Lucy Beamer, field notes, 1931. Raymond Beamer Collection. Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.



Figure 5. Photographed by Raymond Beamer or Lucy Beamer, August 20–22, 1931. Lucy Beamer, field notes, 1931. Raymond Beamer Collection. Kenneth Spencer Research Library, University of Kansas, Lawrence, Kansas.

---

<sup>28</sup> Ibid.

<sup>29</sup> Lucy Beamer, field notes, 1938, Raymond Beamer Collection.

<sup>30</sup> Lucy Beamer, field notes, 1931, box 1, Raymond Beamer Collection.



For the Beamer Five, scientific collecting was intrinsically a family affair. As adults, Imogene and John studied entomology at University of Kansas, and Lucy assisted Raymond the rest of his career until 1958. But the Beamers were not an anomaly; they were a small part of the western collecting community. The themes and relationships presented in this work can be applied to the entire western collecting community and subculture. Unfortunately, statistical data to support this assertion does not exist because statistics and historical analyses emphasize the professional world of science. The only statistical evidence found for Lucy Beamer is approximately 702 specimens she collected, which are housed in the University of Kansas Snow Entomology Museum.<sup>31</sup> But there were many families like the Beamers throughout the West. An example is depicted in figure 3. Mrs. Hall and her three young sons were a family and were active collectors.

This collecting community helped create and catalogue the specimen collections scientists still utilize today. But the greatest legacy of the community was its children. The younger generation spent their childhood immersed in science. They communicated, cooperated, and learned from their experiences and personal contacts. Indeed, Imogene and John Beamer eventually sought careers in science, no doubt attributable to their childhood experiences. This younger generation of collectors would become the geneticists and taxonomists that occupy and further professional science in the latter 20th century to current times.

The collecting community also presents a new perspective on gender in the history of science. Case studies of women in the periphery of science describe many of the challenges they faced in gendered society. Women received less educational and professional opportunities solely based upon their gender. They were relegated to the domestic sciences or assistant positions in periphery science. But gender historians need to describe *both* the obstacles women scientists faced as well as the ways women did participate. And the scope of analysis needs to be broadened past case studies. Trends describe a greater portion of the population than anomaly case studies. More studies about the regional and national subcultures of science would improve our understanding of gender in the history of science and mainstream American society.

At the local level of collecting, gender was not an obstacle. But at the institutional and national level, gender was a deciding factor for professional accreditation. The field of gender in science requires more studies on localized grass-roots science to better comprehend the levels and ways in which women have participated in science. But studies should not focus on solely on gender cases; they should reflect larger trends that included multiple minority groups. Collecting included minorities barred from professional science, such as amateur naturalists and farmers, children, and women.

The 1930s collecting community is indicative of the agricultural movement westward and the professionalization of science in the latter 19<sup>th</sup> and early 20<sup>th</sup>-centuries. A concrete example of this trend was membership in the American Association for the Advancement of Science. In

---

<sup>31</sup> List of collecting events by Lucy Beamer, 2014, Collection Event Records. Division of Entomology Collections, University of Kansas Biodiversity Institute, Lawrence, Kansas.

the latter nineteenth century, twenty-three members were listed in *American Men of Science*, a volume book series that published biographies of prominent scientists. Twelve of the selected men were born in the Midwest and only seven were born in the New England region. These origins describe that it was not necessarily only easterners who were considered professionals; western scientists were achieving professional accreditation as well. But professional accreditation was geared toward the younger male professional generation, which was progressively displacing the older, primarily amateur generation.<sup>32</sup> Another group that was not included in that volume of *Men of Science* was women. Amateur naturalists and farmers, children, and women were barred from professional occupations and accreditation in science. But these three minority groups found and shaped a collecting subculture and community benevolent toward their participation in science.

---

<sup>32</sup> Richard T. Read, "In Pursuit of Professionalism: The Oregon State Academy of Sciences, 1905–1914," *Oregon Historical Quarterly* 90, no. 2 (Summer 1989): 185–6; Read, "In Pursuit of Professionalism," 188.