CALIFORNIA NATURAL HISTORY GUIDES

INTRODUCTION TO CALIFORNIA BEETLES

ARTHUR V. EVANS and JAMES N. HOGUE

CHAPTER 1

A BRIEF HISTORY OF BEETLE STUDY IN CALIFORNIA

Beetles have long captured the imagination of California's human inhabitants. No doubt the earliest interest in California beetles came from the indigenous peoples who lived in the region for over 10,000 years, long before the arrival of the Europeans. Beetles played an important and practical role in the lives of these indigenous peoples, possibly as medicine and most certainly as food. Later, Spanish mission builders introduced agriculture to the state but had little direct interest in California beetles. The activities of the Spanish, however, did result in the introduction of several kinds of important beetle pests to California from the Old World.

The first scientific studies of California beetles began with the Russian occupation of northern California in the early 1800s. The influx of Americans and Europeans to California in the wake of the Gold Rush in the mid-1800s led to an increased interest in California's unique beetles. With the rapid increase of the state's agricultural prowess and subsequent pest infestations, the stage was set for the establishment of research institutions, universities, and societies fostering the study of California beetles. The early beetle collections of these institutions were built largely by dedicated amateurs who conducted extensive field work throughout the state on their own time and money.

Native Americans and Beetles

California's Native Americans considered the larvae of the Pine Sawyer *(Ergates spiculatus)* and the California Prionus *(Prionus californicus)* to be delicacies. These sausage-sized grubs are an excellent source of fat and were removed from logs or stumps to be cooked or eaten raw. Other longhorn beetle (Cerambycidae) larvae, including the Ribbed Pine Borer *(Rhagium inquisitor)*, Nautical Borer *(Xylotrechus nauticus)*, Spotted Pine Sawyer *(Monochamus maculosus)*, and

Black Pine Sawyer *(M. scutellatus),* were also consumed. Weevil grubs infesting stores of acorn and pine nuts not only provided an additional source of protein, but they probably enhanced the nutty and oily flavor of the meal. Adult Striped June Beetles (*Polyphylla crinita,* Scarabaeidae) and other common scarabs attracted to evening campfires were frequently consumed.

Not all Native American encounters with beetles were of the culinary sort. Large black and bumbling darkling beetles (Tenebrionidae) were certainly known to the Mojave by their offensive smell and were dubbed *humahnana.* The Juaneño people referred to bright red ladybugs (Coccinellidae) as *coronnes,* and yellow species were called *tepis.* Interestingly, these were the same words used to refer to the first and second wives of their chief.

European Colonization

The Spanish settlements in what is now California began with the establishment of Mission San Diego in 1769 and stretched northward to Sonoma. The influence of the mission system began to deteriorate in 1834 and abruptly ended in 1846. The primary aim of each mission was the development of agriculture to provide food for the native people and other mission workers. To this end the mission fathers brought with them all kinds of plant materials from Europe and elsewhere, including seeds, vines, and rootstock. Hidden among these materials were some of the first beetles introduced to western North America. European grain pests such as the Granary Weevil *(Sitophilus granarius)* and the Rice Weevil (*Sitophilus oryzae,* Curculionidae) were found sealed in the adobe bricks of the Santo Domingo mission in Baja California, built in 1775, which suggests that these and other pests were introduced to California with the establishment of the San Diego mission.

Beginning as early as 1779, whaling vessels and hide ships carrying furs and tallow from Asia and Europe landed at the harbors of San Francisco and Monterey to obtain supplies. From these ships were probably the first introductions of European ham beetles (*Necrobia,* Cleridae), skin beetles (*Anthrenus* and *Dermestes,* Dermestidae), and spider beetles (*Ptinus,* Anobiidae). Native skin and hide beetles were also spread up and down the coast by these ships and were very likely introduced to other ports elsewhere in the world.

Early Russian Influences

Unlike the Spanish, whose interests in California were primarily mission building, the Russians were very much interested in the exploration of the region's natural history. Russian America stretched from Alaska southward to coastal northern California. Fort Ross (pl. 1), located north of San Fran-

Plate 1. Fort Ross, located north of San Francisco, was a noted trading center and farming community established by the Russians in 1812 and was the first center of California beetle study.

Figure 1. Physician and naturalist Johann Freidrich Eschscholtz (1793 to 1831) was the first person to formally collect and describe beetles in California. Portrait from Eschscholtz's *Zoologischer Atlas,* Rare B0227, Alaska and Polar Regions Archives, Rasmuson Library, University of Alaska at Fairbanks.

cisco, was a noted trading center and farming community established by the Russians in 1812 in what was then called New California. The community became a focal point for many Russian insect collectors who scoured the territory between Bodega Bay and Mount St. Helena for specimens, especially beetles. Fort Ross was abandoned in 1841, but not before several prominent entomologists and naturalists had studied beetles from the region.

Johann Freidrich Eschscholtz (1793 to 1831) (fig. 1) made two voyages to California, courtesy of the Imperial Russian Navy. In 1815 Eschscholtz arrived on the brig *Rurik* as the ship's physician and naturalist. He collected for only one month in the vicinity of San Francisco and was accompanied by botanist Adelbert von Chamisso. On this trip, the first specimens of the California poppy were collected. Chamisso named the species *Eschscholtzia californica,* in honor of his friend and colleague.

Eschscholtz returned to San Francisco Bay in September 1824. His collections on this trip were made in the vicinity of San Francisco, Santa Clara, San Rafael, Bodega Bay, and the lower Sacramento River. He spent several days in the vicinity

of Fort Ross, where he obtained a large series of nearly 100 species of beetles.

Eschscholtz later visited the French naturalist Pierre Francois Marie Auguste Dejean in Paris. Dejean had accumulated the greatest collection of beetles in the world, with over 22,000 species. Here, Eschscholtz penned many of the descriptions of the beetles he collected during his last trip to California. After Eschscholtz's death, Dejean published many of Eschscholtz's descriptions in 1836. Although Dejean attributed the descriptions to Eschscholtz, the rules of zoological nomenclature dictate that he and not Eschscholtz is the author of the species.

The Governor of Finland, Carl Gustov von Mannerheim (1804 to 1854), prepared and described much of the beetle material accumulated by Russian museums, especially those collected on expeditions to Siberia, Alaska, and California. He wrote two of the first papers on California beetles in 1840 and 1843, describing hundreds of species. His collectors included the governor of Russian America (F. P. Wrangell), two physicians in the Russian American Company (E. L. Blaschke and F. Fischer), the overseer at Fort Ross (G. Tschernikh), and an entomologist (I. G. Vosnesensky).

Ilya Gavrilovich Vosnesensky (1816 to 1871) was the only Russian to visit California who was trained as an entomologist. He served as an apprentice to E. Ménétriés at the Imperial Academy of Sciences at St. Petersburg. The Imperial Academy sent Vosnesensky to Russian America specifically for the purpose of collecting insects. He arrived at Fort Ross in July 1840 and remained there until September 1841, collecting in the vicinities of San Francisco, Russian River, Bodega Bay, and New Helvetia. New Helvetia, now the site of Sacramento, was founded by the Swede John Sutter, who established Fort Sutter there in 1841. Russian entomologists C. V. von Mannerheim, V. I. Motschulsky, and E. Ménétriés described Vosnesensky's beetles.

Military Outposts and Entomological Exploration in California

Logistical difficulties excluded California and much of the West from any thorough explorations by American entomologists in the early nineteenth century. Collections made by a few adventurous collectors during railroad surveys and at military garrisons during the mid-1800s, however, yielded many exciting new beetles from California. American military outposts in California served as early centers of collecting activity for eastern entomologists employed as army surgeons.

Fort Tejon was a military post built in 1852 and was established to protect immigrants from bandits and renegades. Located in the mountains between Bakersfield and Los Angeles, Fort Tejon was a popular and fertile hunting ground for beetle collectors of the day. Hungarian zoologist and botanist John Xantus de Vesey collected there in 1857 to 1858. John L. LeConte collected beetles in the region in 1850 and described many beetles collected there by Xantus. G.H. Horn also visited Fort Tejon and collected a large number of beetles there sometime between 1863 and 1867.

Horn also collected numerous beetles at another important early entomological site in California, Camp Independence. Located east of the Sierra Nevada in Inyo County where what is now the town of Independence, Camp Independence was established on Oak Creek in the Owens Valley in 1862. The camp was leveled and immediately rebuilt after the earthquake of 1872 but was later abandoned in 1877.

American entomology at this time was frustratingly difficult, requiring consultation of European literature, specimens, and entomologists. The flow of specimens outside the country fueled efforts to build and maintain large, permanent, and comprehensive insect collections staffed by pro-

fessional entomologists. By the end of the Civil War and the completion of the first transcontinental railway in 1869, the stream of specimens from the West to entomologists and the scientific institutions of eastern United States increased dramatically. By the 1880s, institutions such as Harvard University, the Philadelphia Academy of Sciences, the Smithsonian Institution, and their publications established American entomology as a science comparable to that of Europe.

Centers for Beetle Study in California

Beginning with the discovery of gold in 1849, enormous numbers of people from all walks of life, including naturalists, immigrated to California. As California's population grew, so did the state's agricultural industry, particularly its fruit culture. This chain of events set into motion the establishment of California's research institutions and universities, first in the northern part of the state and then spreading southward. With its institutions approaching the status of those in the east, California continued to attract enthusiastic researchers and collectors from the rest of country.

California Academy of Sciences

Stemming the flow of western North America's insects to the institutions of the east was the establishment of the state's oldest scientific society, the California Academy of Natural Sciences. Founded in San Francisco in 1853, the Academy later changed its name to the California Academy of Sciences in 1868. Construction of its first permanent buildings to store collections began on Market Street in 1891. The Academy's collections and libraries provided the first focal point for California beetle study.

Unfortunately the Academy's collections and libraries were almost completely destroyed in the fire following the San Francisco earthquake of 1906. Temporarily headquartered in the Security Building on Market Street, the Academy immediately set out to rebuild its collections and library. The new buildings were completed in 1915 at their present location in Golden Gate Park.

Since 1933, the monthly meetings of the Pacific Coast Entomological Society have been held in the Academy's Entomology Department. Today the Academy houses the largest insect collection in California, with more than 12 million specimens, and is the site of the most important beetle collection west of the Mississippi River.

University of California

Founded at Berkeley in 1868, the University of California was established as California's foundation for agricultural investigation and teaching in the state. As the state's agricultural prowess grew, so did its insect pest problems. Special instruction in entomology at the university began in 1882, and the Department of Entomology and Parasitology was established in 1920. Agricultural Experiment Stations were set up throughout the state to study regional agricultural pest problems, especially those affecting citrus groves. The California Insect Survey was started in 1940 by the Agricultural Experiment Station in an effort to build a comprehensive collection of the state's insect fauna and facilitate projects in applied entomology in California. The Essig Museum of Entomology at the University of California at Berkeley was founded as the collection component of this survey and currently contains over five million specimens. The University of California system now has two other campuses (Davis and Riverside) that house important California beetle collections.

San Diego Museum of Natural History

About the same time the new California Academy of Sciences reopened its doors, two other important entomological institutions were founded in Los Angeles and San Diego. The San Diego Natural History Museum traces its roots to an enthusiastic group of amateur naturalists who formed the San Diego Society of Natural History in 1874. The Society opened its first exhibits in a hotel in 1912 and moved to Balboa Park five years later. Its present facility was built at that location in 1933. This small but historically important beetle collection contains species from the San Diego region and Baja California.

Natural History Museum of Los Angeles County

Under the auspices of the county of Los Angeles, the Museum of History, Science, and Art formally opened in November 1913. The early reputation of the museum was built on the internationally renowned Pleistocene deposits, including insects, recovered from the La Brea Tar Pits. With the departure of the Art Department in the early 1960s, the museum became known as the Los Angeles County Museum of Natural History and later as the present Natural History Museum of Los Angeles County.

During the 1920s and 1930s, the museum sponsored the annual Butterfly Show featuring numerous insect displays. This tradition continues today with the annual Insect Fair held in May. The museum is also the site of one of the country's largest insect zoos, attracting nearly a quarter million visitors each year.

With eight million specimens, the Entomology Section houses the second largest insect collection in California. Over the years it has absorbed the entomological collections of the University of California at Los Angeles, University of Southern California, and Stanford University. The collection is a

repository for the California Channel Island survey conducted in the 1930s and 1940s. The C. D. Nagano collection of tiger beetles is deposited here. In 1995, one of the authors (Evans) added his worldwide collection of scarab beetles, totaling some 40,000 specimens, to the museum. The Lorquin Entomological Society, named after the famed French naturalist who explored California in the mid-1800s, is affiliated with the Entomology Section and has held its meetings at the museum since 1927.

California Beetle Workers

California, with its profusion of beetles and habitats, has inspired professional entomologists and dedicated amateur naturalists for nearly 200 years. After the Russian explorers left California in the 1840s, several European and American coleopterists made significant contributions to our understanding of the state's beetle fauna. Although a few were trained as entomologists, most were physicians, tradesmen, or independently wealthy naturalists building their own private beetle collections (fig. 2). These private collections eventually found their way into museums and universities throughout the country and form the foundation of our understanding of beetle classification, distribution, and biology. The lives, interests, and contributions of some of these men are briefly presented below.

John Lawrence LeConte (1825 to 1883)

LeConte (fig. 3) was one of the most eminent American entomologists of the nineteenth century and was recognized as the premier authority on North American beetles throughout the world. He was a pioneer in the classification of North American beetles, earning him the reputation as the father of American beetle study.

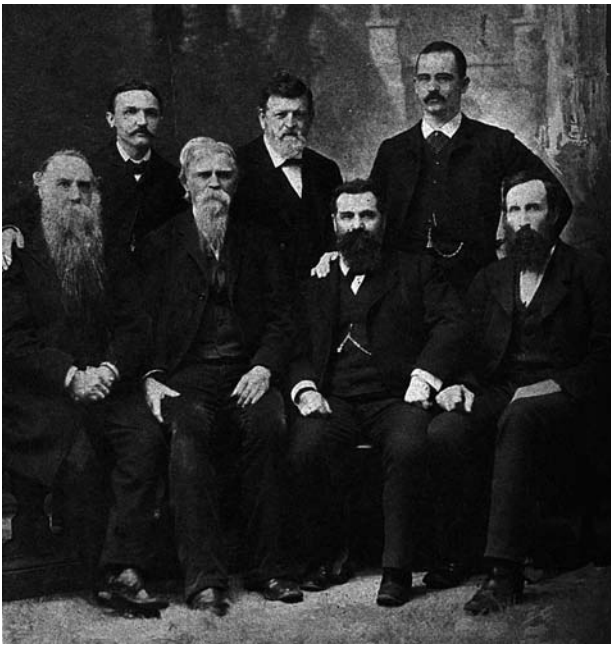

Figure 2. Taken in San Francisco in 1888, this photo includes some of the most prominent beetle collectors of the day. Standing, from left to right, are Albert Koebele, James H. Behrens, and Thomas Lincoln Casey. Seated, from left to right, are James Rivers, George W. Dunn, Charles Fuchs, and W.G.W. Harford. Photo from Grinnell (1914).

LeConte's mother died only a few months after his birth in New York City. His father, Major John E. LeConte, who had published several papers on butterflies and beetles, raised his son alone. The major instilled in young LeConte a passion for natural history at an early age. Publishing his first three papers on beetles in 1844 at the age of 19, LeConte would go on to describe some 5,000 species of beetles in his lifetime, many of which are represented in California.

In one of his first papers LeConte established himself as an outspoken advocate of the need for American entomologists

Figure 3. John Lawrence LeConte (1825 to 1883) was one of the most eminent American entomologists of the nineteenth century. A pioneer in the classification of North American beetles, LeConte is considered the father of American beetle study. Photo from Scudder (1884).

to describe American insects. He deplored the practice of sending specimens to Europe for determination or description and in 1845 announced "America's Entomological Declaration of Independence."

While training as a physician at the college of Physicians and Surgeons in New York, LeConte spent much of his time traveling about the United States collecting beetles. After receiving his medical degree in 1846, LeConte never entered practice, although he later served the army as a surgeon. LeConte traveled to California via the Isthmus of Panama in 1849 and collected insects from areas around San Francisco and San Diego. He once sent 10,000 beetles preserved in alcohol from San Francisco to his father in New York. Another 20,000 or so specimens were apparently lost in the fire that ravaged San Francisco in 1852.

Working with another pioneer entomologist, S. S. Haldeman, LeConte revised F. E. Melsheimer's *Catalogue of the Coleoptera of the United States.* Published in 1853 by the Smithsonian Institution, the catalog marked the first organized study of beetles in the United States and listed 540 species of beetles from California. Most importantly the catalog served as the foundation for subsequent catalogs of North American beetles.

LeConte examined some of the earliest California beetle specimens available to eastern entomologists. These specimens included those collected by Dr. Charles Pickering and Mr. Titian Peale, both ship's naturalists that visited California in 1841 as part of an exploratory expedition conducted by the U.S. Navy under the command of Captain Charles Wilkes. Other specimens were acquired from eastern private collectors such as J. Wittick and J. Child who had both visited the area around Sacramento. LeConte also examined material collected by the Russians Eschscholtz and Mannerheim, sent to him by Baron Chaudoir and Colonel Motschulsky. LeConte recognized early on that California constituted a unique zoological region based on the fact that many of its beetles were found nowhere else in nature.

LeConte's *Classification of the Coleoptera of North America* appeared in 1861 and 1862, but the Civil War curbed further publications on beetles until 1873. During the interim, LeConte served as an Army Medical Corps surgeon with the California volunteers in the infantry during the Civil War from 1862 to 1866. Once again he took this opportunity to collect many new and unusual species of beetles in the state.

In 1878, LeConte was appointed assistant director of the United States Mint in Philadelphia, a position he held until his death in 1883, the same year his final publication appeared. It was a revision of his earlier work on the classification of the Coleoptera, written with his student and longtime friend and colleague, G. H. Horn. LeConte's collection of beetles, including hundreds of California specimens, now resides in Harvard University's Museum of Comparative Zoology in Cambridge, Massachusetts.

George Henry Horn (1840 to 1897)

Born and educated in Philadelphia, George Henry Horn (fig. 4) received his medical degree from the University of Pennsylvania in 1861. His first paper on beetles appeared the same

Figure 4. George Henry Horn (1840 to 1897) arrived in California during the Civil War and collected beetles throughout the state. Upon LeConte's death in 1883, Horn became the preeminent coleopterist in North America. Photo from Skinner (1898).

year and attracted the attention of J.L. LeConte, who sought him out. The two men soon became friends and remained collaborators for more than 20 years.

Horn arrived in California during the Civil War, where Governor Leland Stanford commissioned him assistant surgeon in the Second Calvary, California Volunteers. He took his oath at Camp Independence in 1863. Like LeConte, he took the opportunity to collect beetles throughout much of California, as well as in parts of Arizona and Nevada. During his three years in the West, Horn collected at Fort Tejon, Fort Yuma (on the Colorado River, Arizona), Fort Crook (Shasta County), Surprise Valley (Modoc County), Warner's Ranch (San Diego County), and the Sacramento Valley. In 1865 he achieved the rank of major and eventually returned to Philadelphia in 1866. There he established his medical practice and became an obstetrician.

With a thriving practice, Horn's entomological pursuits were conducted in his spare time. He used several characters to describe and distinguish species and preferred to publish his findings as monographs so that all of the species in a

group known to him could be identified. He published a total of 265 papers on beetles, creating 154 new genera and describing over 1,600 new species, many of which are represented in California. Upon LeConte's death in 1883, Horn became the preeminent coleopterist in North America.

Horn traveled once again to California in spring of 1893, where he met with other California coleopterists, including H. C. Fall, and was introduced at the May meeting of the California Academy of Sciences in San Francisco.

Thomas Lincoln Casey (1857 to 1925)

Thomas Lincoln Casey (fig. 5) was born into a military family in West Point, New York. He entered the United States Military Academy and graduated with honors in 1879. He received a commission in the Engineer Corps of the U.S. Army as an engineer and retired in 1912 with the rank of colonel. He was stationed in South Africa and various parts of the United States, including California from 1885 to 1886. While in California, Casey collected from San Diego to Eureka and secured a wealth of material. He preferred to work primarily on obscure families of beetles, however, and many of his species are unfamiliar to many entomologists.

Although he collected many beetles himself, Casey amassed most of his remarkable collection by purchasing specimens from other collectors. His collection and library grew so large that Casey was forced to rent two apartments in Washington, D.C., one for living in and the other for his beetles, papers, and books. His library and collection, including thousands of California beetles, are now part of the National Museum of Natural History in Washington, D.C.

Casey published numerous papers on engineering, conchology, and astronomy. His first papers on beetles appeared in 1884. During the next 40 years Casey described nearly 10,000 new species, publishing almost 9,000 pages on their taxonomy and biology.

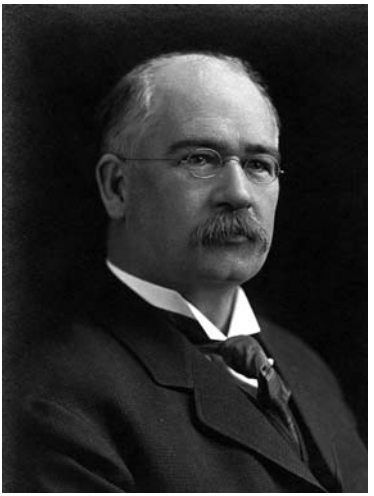

Figure 5. Thomas Lincoln Casey (1857 to 1925) collected from San Diego to Eureka in 1885 to 1886 and secured a wealth of material. Photo courtesy of the Department of Entomology, National Museum of Natural History, Smithsonian Institution.

Although Colonel Casey made one of the greatest contributions to the taxonomy of the Coleoptera by any one man, much of his work has been soundly criticized. Many of his beetles have been determined by others to be synonymous with previously described species. Unlike his predecessors who used hand lenses to examine specimens, Casey used a binocular microscope with good light and was thus able to see details missed by others. He refused to consult other collections, preferring instead to examine specimens found in his own collection.

Casey frequently authored new species based on single specimens, distinguishing them from existing species by trivial details. For example, Casey described no less than 19 different species and several additional subspecies names for one of the largest beetles in California, the California Prionus *(Prionus californicus)*. He seldom took into account the variation among species populations. Many of his descriptions were of individual variants rather than valid species. Sadly, subsequent coleopterists have developed a general mistrust of Casey's publications.

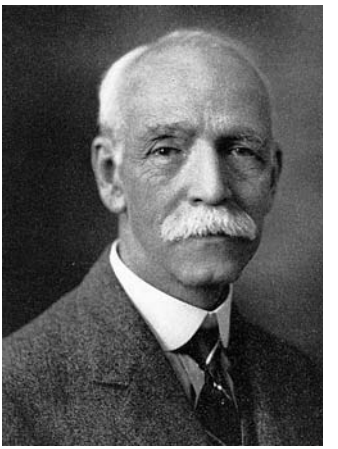

Figure 6. Henry Clinton Fall (1862 to 1939) was California's first resident to make significant contributions to the study of the state's beetles. He assembled one of the finest private beetle collections in North America, representing 20,000 species. Photo from Linsley (1940), courtesy of the Pacific Coast Entomological Society.

Henry Clinton Fall (1862 to 1939)

Henry Clinton Fall (fig. 6) was California's first resident to make significant contributions to the study of the state's beetles, inspiring future generations of coleopterists, including E.C. Van Dyke and F.E. Blaisdell. Born in Farmington, New Hampshire, Fall received his bachelor's and honorary doctoral degrees in science from Dartmouth. Prompted by ill health, Fall moved to southern California in 1889 after a brief stint teaching high school mathematics in Chicago. He taught physical sciences at Pasadena High School, serving as the head of the science department there for nearly 25 years.

Inspired by a visit from G.H. Horn, Fall's first scientific article on beetles appeared in 1893. Subsequent papers included revisions of various beetle families and lists of species known from the California Channel Islands and southern California. Fall was one of the first researchers to work on insects, particularly Coleoptera, of the Channel Islands. After retiring from teaching in 1917, Fall moved to Tyngsboro, Massachusetts, where he continued to publish, curate, and identify speci-

mens sent to him for determination. His 144th and last publication appeared in 1937.

At the time of his death, Fall had assembled what was up to that time the finest private beetle collection in North America. Reported to contain 200,000 specimens representing 20,000 species, his collection now resides appropriately next to those of LeConte and Horn in the Museum of Comparative Zoology at Harvard University.

Frank Ellsworth Blaisdell (1862 to 1947)

Born in Pittsfield, New Hampshire, Frank Ellsworth Blaisdell (fig. 7) moved with his family to San Francisco in 1870. The following year Blaisdell and his two younger brothers were stricken with scarlet fever, and only Frank survived. His poor health prompted his family to move to San Diego the same year. In 1875 the family moved to a ranch north of San Diego near Poway.

Largely self-taught and without the benefit of a modern high school or college education, Blaisdell enrolled in Cooper

Figure 7. Frank Ellsworth Blaisdell (1862 to 1947) grew up in San Diego County. After his retirement as a physician, Blaisdell worked on beetles at the California Academy of Sciences from 1924 to 1945, where his collection of some 200,000 beetles now resides. Photo from Van Dyke (1947), courtesy of the Pacific Coast Entomological Society.

Medical College, San Francisco, and received a doctor of medicine degree in 1889. He moved to San Diego to establish a medical practice but was unsuccessful. He returned to northern California in 1892, where he settled as a physician with his wife and son in the mining camp of Mokelumne Hill. In 1906 he began working at Cooper Medical College as a demonstrator and retired in 1927 as Professor of Surgery in charge of Surgical Pathology. After his retirement, Blaisdell worked on darkling (Tenebrionidae) and soft-winged flower (Melyridae) beetles at the California Academy of Sciences from 1924 to 1945, where his collection of some 200,000 beetles now resides.

Edwin Cooper Van Dyke (1869 to 1952)

Edwin Cooper Van Dyke (fig. 8) was California's first homegrown coleopterist. Born in Oakland, his family moved to Los Angeles in 1885, where his budding interest in botany and insects flourished. His first collecting trip was to Yosemite Valley in 1890, which he reached by pack train. Van Dyke earned his bachelor's degree in 1889 from the University of California, Berkeley, and his doctorate in medicine from Cooper Medical

Figure 8. Edwin Cooper Van Dyke (1869 to 1952) was an outstanding authority on the beetles of the Pacific States. He was also an expert on forest pests and the distribution of insects in North America. Photo from Essig (1953), courtesy of the Pacific Coast Entomological Society.

College in 1895. After serving as a physician in several hospitals in San Francisco and Baltimore, Van Dyke became the Physician in Charge at the Good Samaritan Mission in San Francisco from 1903 to 1912, a position he held while attending to his own medical practice. In 1913, Van Dyke returned to his first love, insects. He accepted the appointment of Assistant in Entomology at the University of California, Berkeley and became a full professor in 1927.

Van Dyke was an outstanding authority on the beetles of the Pacific States and made substantial contributions to the study of numerous families. He was also an expert on forest pests and the distribution of insects in North America. Van Dyke was an inspirational teacher whose door was always open to students. A tireless, enthusiastic, and conscientious collector, he was always mindful of preserving the habitat to ensure that collecting grounds remained fruitful for subsequent collectors. His collection of 200,000 beetles was presented to the California Academy of Sciences in 1924.

Hugh Bosdin Leech (1910 to 1990)

Born in Kamloops, British Columbia, Hugh Bosdin Leech's (fig. 9) early years were spent on the family farm in Salmon Arm, British Columbia. His interest in natural history, especially beetles, was apparent from an early age. He published his first paper in 1930, reporting a new host record for the longhorn beetle *(Phymatodes vulneratus)*. Leech earned his bachelor's degree from the University of British Columbia and master's degree from the University of California, Berkeley.

From 1930 to 1947 Leech worked in the Forest Entomology Laboratory in Vernon when not attending university. In 1947 he joined the staff of the California Academy of Sciences, where he became the Associate Curator of Coleoptera. Over the years he reorganized the beetle collection several times, processing tens of thousands of specimens each month from

Figure 9. Hugh Bosdin Leech (1910 to 1990) joined the staff of the California Academy of Sciences, where he became the Associate Curator of Coleoptera. He inspired many of today's coleopterists. Photo from Kavanaugh and Arnaud (1981), courtesy of the Pacific Coast Entomological Society.

collectors and shipping them on loan to researchers around the world. Leech reserved his days at the Academy for correspondence, curating, and visitors, conducting his research and writing in the evenings at home in "The Beetle Room." Leech was extremely influential and inspired many coleopterists living and working in California and elsewhere.

Earle Gorton Linsley (1910 to 2000)

Earle Gorton Linsley (fig. 10) was born in Oakland and developed his interest in insects as a child under the influence of E. C. Van Dyke and others. He attended the University of California at Berkeley, where he submitted his dissertation on the longhorn beetles of California. After graduation Linsley joined the Berkeley faculty as an instructor in entomology, became a full professor in 1953, and retired in 1973. He became one of the world's leading authorities on longhorns. Linsley's monumental work, *The Cerambycidae of North*

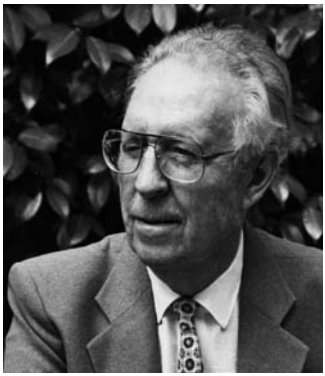

Figure 10. Earle Gorton Linsley (1910 to 2000) was one of the world's leading authorities on longhorn beetles (Cerambycidae). He was also an authority on rain beetles (Pleocomidae), as well as the biology, ecology, and taxonomy of native bees. Photo courtesy of John Chemsak.

America, completed in 1997 with J. A. Chemsak, stands as the only work to cover the entire American fauna. He was also an authority on the biology, ecology, and taxonomy of native bees. He published more than 400 books and articles. And, like several other California coleopterists, Linsley's first, and most enduring, entomological pursuit was rain beetles. He described 12 species or subspecies and established the taxonomic foundation for the group.

The Future of Beetle Studies in California

The history of beetle study in California is still being written. In spite of more than 200 years of exploration, many of California's regions remain poorly sampled or unexplored. As museum budgets continue to shrink, the burden of collecting, cataloging, and describing California's beetle fauna will depend on close cooperation between dedicated amateurs and skilled professional entomologists. There is still much to be done.