

FREMONTIA

A JOURNAL OF THE CALIFORNIA NATIVE PLANT SOCIETY



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CALIFORNIA NATIVE PLANT SOCIETY

Dedicated to the Preservation of the California Native Flora

The California Native Plant Society (CNPS) is an organization of laypersons and professionals united by an interest in the native plants of California, open to all. Its principal aims are to preserve the native flora and to add to the knowledge of members and the public at large by monitoring rare and endangered plants throughout the state; by acting to save endangered areas through publicity, persuasion, and on occasion, legal action; by providing expert testimony to government bodies; and by supporting financially and otherwise the establishment of native plant preserves. Much of this work is done by volunteers through CNPS Chapters throughout the state. The Society's educational work includes: publication of a quarterly journal, *Fremontia*, and a quarterly *Bulletin* which gives news and announcements of Society events and conservation issues. Chapters hold meetings, field trips, and plant and poster sales. Non-members are welcome to attend.

Money is provided through member dues and funds raised by chapter plant and poster sales. Additional donations, bequests, and memorial gifts from friends of the Society can assist greatly in carrying forward the work of the Society. Dues and donations are tax-deductible.

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CALIFORNIA NATIVE PLANT SOCIETY

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Members and others are invited to submit material for publication in *Fremontia*. Instructions for contributors can be found on the CNPS website, www.cnps.org, or can be requested from *Fremontia* Editor, Linda Ann Vorobik, vorobik@rockisland.com, or c/o University and Jepson Herbaria, 1001 Valley Life Sciences Bldg. #2465, University of California, Berkeley, CA 94720-2465.

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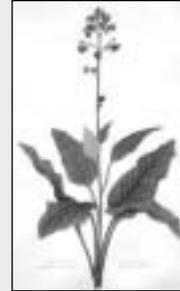
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When many think of the San Francisco Bay Area, they first imagine Silicon Valley. This article contrasts the urban side of the bay with its botanical jewels, such as the magnificent plants and habitats of Stanford University's Jasper Ridge, and is complemented with an inset story of and paintings by the late Herb Dengler, who served as a naturalist, teacher, and docent to the preserve and painted many of its wildflowers.



LATIN: A LIVING LANGUAGE IN THE SERVICE OF THE STUDY OF LIFE *by Charles E. Blair* 11

This article, reviewing the history of nomenclature and how Latin is used in the naming of plants, provides insight into the nature of species with numerous examples from the California flora. Images from Herb Dengler grace the pages of this, as well as the first, article.



MEIN LIEBER HERR COLLEGE: LETTERS FROM BEHR TO ENGELMANN *by Barbara Ertter* 18

Look back into the history of California through a series of letters by this state's first formally trained botanist. Along with an introduction that sets the stage for this conversation, one can imagine a bit of the San Francisco Bay Area flora at the time, as well as what the life of a scholar was about.

IN MEMORIAM: DR. HERBERT BAKER *compiled by Ellen Dean* 23

Although it has been over two years since his passing, Professor Herbert Baker is still thought of with great love and respect. Ellen Dean has gathered remembrances from several of his many students, who now hold professional positions throughout the world, and include the convening editor for the special double Fremontia issue (Volume 30 Nos. 3 and 4) on plants and insects: Dr. Gordon Frankie.



GROWING NATIVES IN THE GARDEN: CHAMISE AND RED SHANKS *by Glenn Keator* 26

This issue's article on growing California native plants describes two shrubs for the xeric garden: Adenostoma fasciculatum (chamise) and A. sparsifolium (red shanks or ribbonwood).

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THE COVER: Jasper Ridge Biological Preserve, home to approximately 600 native plants, is located near the Stanford University campus in the eastern foothills of the Santa Cruz Mountains. Photograph by L. Holub.

EDITORIAL

Many in the California Native Plant Society work incredibly hard for native plant protection, but in these times we all need to do something. Because we love native plants in their natural habitats, by default *we* are their stewards. This new editorial page in *Fremontia* is not presented as yet another implement of guilt, increasing the load we all share in our attempts to make this world a better place. Rather it is meant to be a place to visit for a bit of motivation and direction: organization and teamwork are necessary for effective policy change. Every issue will include invited commentary from members of the CNPS, along with helpful resources and contact information, as found in the adjacent sidebar.

Fremontia plays a large role in fulfilling CNPS's goals. (Note that the society's mission statement occurs in each issue of *Fremontia* on the inside front cover.) The objectives of this journal are not only to provide a sound scientific basis for the policies championed by our society, but as importantly, to continue to educate the readership about the wonders of California's native plants and natural habitats. Yet again I risk the criticism of those who think the journal is too academic, and thus over their heads, along with offending those who balk at the more casual writing style found in some articles. Remembering that my bottom line is getting more people to read articles in *Fremontia*, and thus increase their knowledge and appreciation of our native flora, I offer up my philosophy of *Fremontia*'s content and design.

While some may not wish to read every article in this journal, there truly is something for almost everyone. For the novice plant enthusiast, the journal is amply illustrated with drawings and photographs of native plants and natural landscapes; even our youngest readers can look at images and have their adult friends tell them the name of the plant portrayed. For the native plant gardener, regular articles appear on using natives in home landscapes, and the special horticultural issue (Volume 29, No.1) included native plant gardening philosophy, references, and resources. For those involved with policy decisions, there are articles elucidating aspects of the biology of particular rare plants, as well as the wealth of general information presented in the special double issue on rare plants (Volume 29, Nos. 2 & 3). For the academician, all articles are peer-reviewed; statements made and data presented are supported by citation of pertinent references.

The current issue includes a few changes beyond the addition of the editorial to help enhance its utility, along with your reading enjoyment. An abbreviated Table of Contents appears on the front cover, but is also expanded on page three, with thumbnail images and a brief article summary. The back matter is augmented with a regular feature titled "From the Archives," which highlights related articles from back issues of *Fremontia* that you may wish to read or reread. And, beginning with the next issue, regular reports from CNPS chapters will appear, so that we can all become more familiar with the activities of our friends throughout the state.

Finally, what can you do, with respect to *Fremontia*, to help protect native plants? Read the articles that interest and impassion you; share your enthusiasm with others. Give the gift of a membership to a student, library, or senior citizen on a budget. Offer sets of back issues to your local high school biology program. Encourage able members of your chapter to contribute articles to *Fremontia*. Send copies of relevant articles to government representatives. Visit some of the web links and use them as springboards to letter writing or phone calls in support of those causes that need the representation of those of us who value native plants in their natural habitats. We must be the strongest advocates for native plant protection.

—Linda Ann Vorobik, Editor

USEFUL WEBSITES AND CONTACT INFORMATION

California Native Plant Society:

www.cnps.org, with links to conservation issues, chapters, publications, policy, etc.

To sign up for "NPCC News," e-mail news on native plant science and conservation, send a request to npsc@cnps.org.

For updates on conservation issues:

Audubon Society
www.audubon.org

National Resources Defense Council
www.nrdc.org

Sierra Club
www.sierraclub.org

Wilderness Society
www.wilderness.org

For voting information:

League of Women Voters
www.lwv.org, includes online voter guide with state-specific nonpartisan election and candidate information.

US Senate
www.senate.gov

US House of Representatives
www.house.gov

California State Senate
www.sen.ca.gov

California State Assembly
www.assembly.ca.gov

To write letters:

President George W. Bush, The White House, 1600 Pennsylvania Ave. NW, Washington DC, 20500

Senator Barbara Boxer, 112 Hart Senate Office Building, Washington DC, 20510

Senator Dianne Feinstein, 331 Hart Senate Office Building, Washington DC, 20510

US House of Representatives
331 Hart Senate Office Building
Washington DC 20510



California blue oak (*Quercus douglasii*) growing on the ridgetop of the Preserve. Photograph by L. Holub.

PLANT DIVERSITY AT JASPER RIDGE BIOLOGICAL PRESERVE

by *Justin Holl*

Where can you find eight distinct plant communities within less than 1,200 acres, over a 100-year history of botany enthusiasts and scientific researchers, and more than 500 native California plant species—all within biking distance of a world-class university and a major urban area? The answer is Stanford Uni-

versity's Jasper Ridge Biological Preserve.

Jasper Ridge Biological Preserve is located near Stanford University's campus in the eastern foothills of the Santa Cruz Mountains. The preserve provides a natural laboratory for researchers from around the world, educational experiences for students and docent-led visitors, and

refuge to native plants and animals. Although not open to the public, Jasper Ridge is visited annually by an amazing number of people. More than 2,000 Stanford undergraduates, 200 to 500 other college students, and typically over 1,500 local school children visit its wildflowers and learn about California's native ecology each year. In addition, 100

docents lead tours for over 2,000 alumni, community residents, and the general public.

Because many of its ecosystems are so well understood, the preserve enables scholars to seek answers to questions that could not be posed elsewhere. With its biological diversity, wealth of baseline data, and diverse community of researchers and volunteers, the preserve supports the type of scientific inquiry necessary to address questions fundamental to understanding the biosphere. Scientists have pursued knowledge of the natural world on lands now encompassed by Jasper Ridge Biological Preserve continuously since 1891. This extensive research history includes long-term studies that are landmarks in ecology and population biology.

One prominent Jasper Ridge Biological Preserve botanist was Stanford Professor John Hunter Thomas, well-known for his classic work, *Flora of the Santa Cruz Mountains: A Manual of the Vascular Plants* (Thomas 1961). Professor Thomas

collected extensively at the preserve. In fact, his teaching herbarium, open to scientists and researchers at the preserve, resides on-site in the Oakmead Herbarium.

Botany research and observation continues at Jasper Ridge Biological Preserve today through the efforts of professional scientists, graduate students, as well as many volunteer naturalists and botanists. Just last year, botanists Toni Corelli and Ruth Porter completed the second edition of the Jasper Ridge Biological Preserve Vascular Plant List. The list was compiled from historical records of observations, from current observations of species, and from collection notes on Professor Thomas's herbarium specimens.

The newly updated Jasper Ridge Biological Preserve Vascular Plant List highlights the preserve's remarkable plant diversity. Thanks in part to its geologic and topographic diversity, the preserve supports eight distinct plant communities: aquatic, riparian woodland, chaparral, open woodland, broadleaf ev-

ergreen forest, coniferous forest, non-native grassland, and one of the few formally protected serpentine grasslands in the world. Within these diverse habitats, 822 vascular plants have been recorded as being present now or in the past. This count is comprised of 587 plants native to California and 235 plants that are not.

To give a general idea of the diversity of plants at the preserve, Ruth Porter and Toni Corelli compared the numbers of plants that appear in *Flora of the Santa Cruz Mountains* with the number of plants found at Jasper Ridge Biological Preserve. Of four vascular plant categories, the preserve has 56% of the ferns and fern allies, 40% of the gymnosperms, 42% of the dicots, and 42% of the monocots found in the Santa Cruz Mountains. Comparisons were also made using data from *The Jepson Manual* (Hickman 1993). Major taxonomic group comparisons show that 60% of the families found in California are represented at Jasper Ridge Biological Preserve, as are 33% of the genera, and 13% of the species.

In addition to this noteworthy diversity of plant communities, the Preserve provides habitat for a number of species that are rare and endangered. Unusual native Californian plants found at the Preserve include Gairdner's yampah (*Perideridia gairdneri* ssp. *gairdneri*), woolly-headed lessingia (*Lessingia hololeuca*), serpentine linanthus (*Linanthus ambiguus*), and a remarkable prevalence of western leatherwood (*Dirca occidentalis*).

With a rich diversity of plants and plant communities and a long and distinguished history of botanical research, Jasper Ridge Biological Preserve is truly one of California's botanical treasures. For more information about current research and other activities at the preserve, visit <http://jasper1.stanford.edu> and download the

continued on page 10

A view at the preserve looking out over the willows of the riparian woodland behind Searsville Lake. Photograph by L. Holub.



HERB DENGLER, NATURALIST AND ARTIST

For many, Herb Dengler was a link to the time before the dawn of Silicon Valley, when people marked their travel by the shape of the hills, not by freeway signs. A true native, he spent his 90 years walking the Santa Cruz Mountains, particularly Jasper Ridge and Portola Valley, coming to know all its inhabitants: butterflies, fishes, birds, trees, flowers, and people. He loved sharing his knowledge with family, friends, Stanford students, Jasper Ridge docents, and visitors. He persistently sought to protect the wildlands while leaving a place for people within it.

He taught the first class of Jasper Ridge docents, helped found the Portola Valley Conservation Committee, and built many trails throughout the area, allowing easy access to the beauty around us. In 1997, the Palo Alto Senior Coordinating Council honored him as having lived a “Lifetime of Achievement.” In 1999, he was the honoree at Portola Valley’s annual celebration of community and open space, “Blues and Barbecue.”

Herb’s other great love was art. From an early age he drew and painted butterflies, fish, birds, and wildflowers. This was during an era when biologists were expected to be competent artists. For many decades Herb ran a framing and art gallery in Burlingame, then later in Palo Alto. He was a well-known restorer of paintings and an expert in Western art.

Herb combined these two great loves in his home and in his own art and writings. For more than 50 years, he and his

family lived among the redwoods along Sausal Creek in Portola Valley in a house full of beautiful paintings and prints. His articles and drawings on natural and local history were published in local papers, the Stanford magazine, and the Peninsula Open Space Trust’s *Landscapes*.

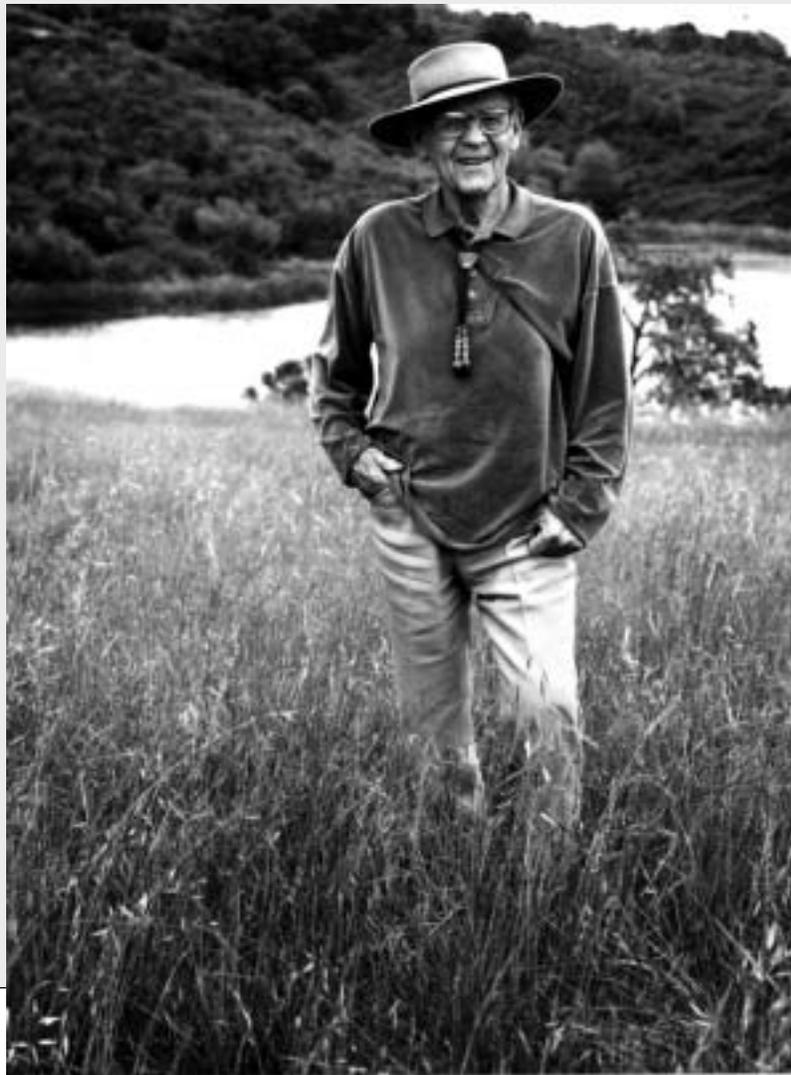
The paintings in this collection of wildflower watercolors were done in the 1980s and 1990s from specimens gathered on Jasper Ridge Biological Preserve. They are printed on an Iris printer in a limited edition of 250, each numbered and containing an engraved authentica-

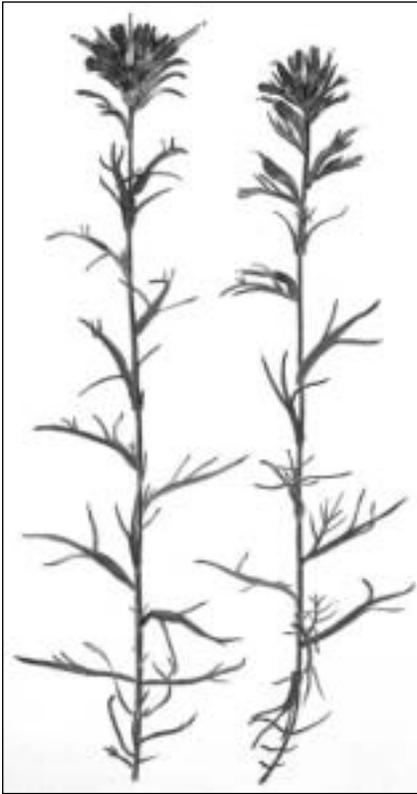
tion. All monies from the sale of the giclée reproductions, printed on acid-free paper, go to the Portola Valley Open Space Acquisition Fund or to Jasper Ridge, in Herb’s name.

In each of these works, Herb focuses our attention on the individual beauty, delicacy, morphology, and essence of our native wildflowers. And in each, his delight and love shine through. Although he died in September of 2002, he left a lasting legacy in the memories of the thousands of people whose lives he touched.

—Philippe Cohen, Nancy Lund, and Sunia Yang

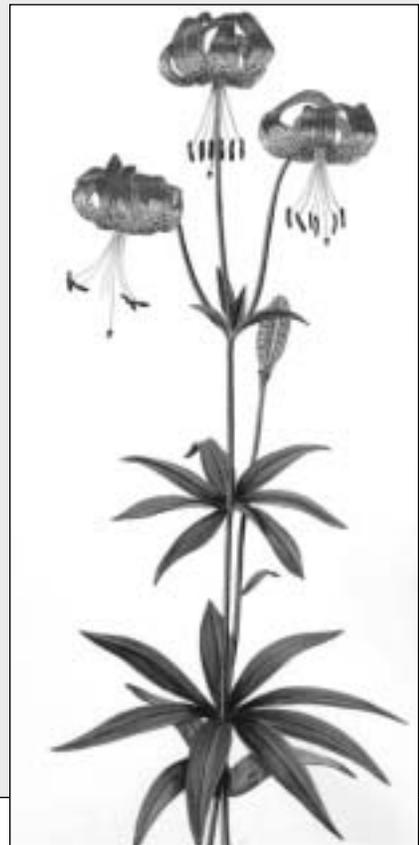
Portola Valley naturalist and artist Herb Dengler, photographed in front of Searsville Lake at Jasper Ridge Biological Preserve in 1997. Photograph by L. Holub.





Clockwise from above: Indian paintbrush (*Castilleja affinis*) • Douglas Iris (*Iris douglasiana*) • Annual lupine (*Lupinus nanus*) • Common California aster (*Aster chilensis*) • Leopard or tiger lily (*Lilium pardalinum*) • Bush or sticky monkeyflower (*Mimulus aurantiacus*) • Large godetia (*Clarkia purpurea* var. *viminea*) • California Indian pink (*Silene californica*). All paintings by H. Dengler.







Outcroppings of serpentine rock (above) on a Jasper Ridge grassland looking towards the Santa Cruz Mountains. Photograph by W. Woodward. • Acorn Woodpecker granary (below) in an oak snag at Jasper Ridge. Photograph by C. Comfort.

PRINTS FOR PRESERVATION

On May 3rd and 4th, the public had its first opportunity to view and purchase giclée reproductions of the late Herb Dengler's wildflower paintings. Dengler, who died in September 2002, was a beloved naturalist who introduced thousands of residents to the beauties of the land around us. However, few know that he was also a gifted artist. In his 70s and 80s, he completed a series of 24 watercolor paintings of flowers gathered on Stanford University's Jasper Ridge Biological Preserve. They are stunning in their beauty and botanical accuracy.

The exhibit and sale was in connection with the Portola Valley artists' annual Open Studios along with a publication and book-signing party for the newly released history of Portola Valley, *Life on the San Andreas Fault*, by Nancy Lund and Pamela Gullard.

The response to the prints was remarkable. Eight complete sets and 207 individual prints were purchased. All monies collected from the sale of the prints were donated to environmental causes dear to Dengler's heart, thanks to the generous donation of philanthropists Jean and Bill Lane for reproduction costs. Jasper Ridge Biological Preserve received \$5,815 and the Portola Valley Open Space Acquisition Fund gained \$10,885.

Interested people can view the entire collection (in color) at the Jasper Ridge website: <http://jasper1.stanford.edu>. For more information or to order prints, contact Tor Lund, 650-851-1072 or thelunds@ix.netcom.com. All proceeds continue to benefit Jasper Ridge Biological Preserve and the Portola Valley Open Space Acquisition Fund.



2001–2002 Annual Report. To request the Annual Report or a Jasper Ridge Biological Preserve Vascular Plant List, call (650) 851-0619 or email justinh@stanford.edu.

REFERENCES

- Hickman, J.C., Ed. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, CA.
 Thomas, J.H. 1961. *Flora of the Santa Cruz Mountains*. Stanford University Press. Stanford, CA.

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LATIN: A LIVING LANGUAGE IN THE SERVICE OF THE STUDY OF LIFE

by Charles E. Blair

In 1753 a Swedish physician and naturalist named Carl von Linné published a two-volume book, *Species Plantarum*, that streamlined the classification of plants and other forms of life and that remains the basis of our current systems. This book was an attempt to organize and simplify information about the myriad of new life forms being discovered throughout the world. As our understanding of the relationships among living organisms (“the Web of Life”) has increased and changed, so has the system developed by Linné expanded. So also has the language used in the original version grown.

The language Linné selected for his book was Latin because at that time it was widely used as the language of science and learning. Latin has been in continuous use for 2,500 years, and continues to grow along with expanding knowledge. Its author is much better known by the Latin version of his name, *Carolus Linnaeus*. In the course of his writing, he began adding a one-word description of new species to the previous concept of *genus*. Hence developed the current convention of two names for each species, plant, animal, and others—the *binomial system of nomenclature*.

Species Plantarum was not the first attempt at classification, nor has it been the last. It was rather a culmination and simplification of previous writings, and has served as the basis of nearly all subsequent systems. In this context, it is a real landmark in our scientific understanding of life. What follows is first a brief discussion of some of the previous efforts and subsequent modifications to this classification system, and next explanations of



Hound's tongue (*Cynoglossum grande*). All paintings by H. Dengler.

how these classifications have been established and are used.

William T. Stearn (1992) de-

scribes Botanical Latin as “a modern Romance language of special technical application, derived from

Renaissance Latin with much plundering of Ancient Greek, which has evolved, mainly since 1700 . . . to serve as an international medium for the scientific naming of plants in all their vast numbers and manifold diversity.”

PREVIOUS SYSTEMS

Since time immemorial, people have classified plants chiefly by their uses: as foods, flavorings, building materials, and ceremonial or medicinal uses. A student of Aristotle, Theophrastus of Eresus, wrote the first-known extant western written classification, *Historia Plantarum*. A treatise on the medical uses of plants, *De Materia Medica*, was written by the Greek physician Dioscorides in the 1st century AD. This work, describing around 600 medicinal plants, was written to improve medical care in the Roman Empire, and remained the principal book on classification for nearly 1,500 years.

One interesting outgrowth of some of the associated folklore of the time was the emergence of the *Doctrine of Signatures*, which held that a plant resembling part of the body could be used in its treatment. For example, since walnuts resembled little brains, they were used to treat brain disorders; similarly, *Hepatica* leaves were used to treat liver problems.

During the 15th century, as European explorers began bringing plants from many parts of the world, classification became more complex. As more plants accumulated, botanists turned from medicinal plants alone, and began studying all types, categorizing them by a few unique features. By 1623, a Swiss botanist, Gaspard Bauhin, classified around 6,000 plants using some two-part Latin names.

John Ray, a Protestant cleric, started to classify plants by multiple similarities, showing their mutual

relationships, which proved a major advance in thinking. His three-volume *Historia Plantarum Generalis* described over 18,000 plants in some detail. It was Ray that first divided flowering plants into monocots (think “kernel of corn”) including grasses, grains, and lilies; and dicots (think “split peas”) including roses, mustards, and daisies. J.P. de Tournefort, a French botanist, was probably the first to recognize the concept of *genus* (plural *genera*) as a level of organization between family and species. His was the most comprehensive system before Linnaeus (Moore et al. 1998).

THE IMPORTANCE OF LINNAEUS

Linnaeus’s chief contribution to the system we use today was one of organizing and simplifying classification. He replaced the several-word phrase with the two-word binomial. For example, consider peppermint, a member of the mint family and in the genus *Mentha*. Its full description was *Mentha floribus capitatus, foliis lanceolatis serratis subpetiolatis*, or “Mint with flowers in a head, leaves lance-shaped, saw-toothed with very short petioles.”

He replaced this description with a two-word summary in the margin, in this case, *Mentha piperata*. Initially, these binomials were considered to be abbreviations with the full phrase as the official name. Soon, the margin notes became the formal name of the plant (Moore et al. 1998). This practice was also extended to animals. “He also replaced earlier systems of groupings with the hierarchical (groups nested within groups) system that is still used today” (Futuyma 1998).

It helps to remember that Linnaeus was writing at a time of belief in a “one time” creation event, a century before Darwin published *Origin of the Species* in 1859. (Darwin developed his ideas during the

years following his round-the-world voyage on the HMS Beagle in 1831, incorporating many of his observations from that journey.) “Classification took on an entirely different significance after its publication. Darwin, convinced that species diverge gradually from common ancestors, described a hypothetical phylogenetic tree” (Futuyma 1998). This concept of phylogenetic relationships meshed well with family and other relationships described by Linnaeus.

Linnaeus’s original classification has undergone many modifications and revisions in light of subsequent advances in the fields of biochemistry and genetics, including DNA research. It has been reported that 75-80% of traditional names and relationships based on morphology are still considered valid. Any classification or naming system must be considered a current hypothesis of relationship. Although major changes in biologic classification have occurred, the Linnaean system remains the basis of biologic nomenclature two-and-a-half centuries later.

COMMON NAMES

When confronted by what initially seems to be a bewildering array of unfamiliar words written in funny script, many people ask, “What’s wrong with using common names?” In my opinion, nothing. Most people understand them, and many botanists use them as well. Although they are familiar to most people in a given country or area, they lack universality and precision. The scientific names attempt to be universally understood, and carry specific information about the organism. While the same plant or animal may have different names in other parts of the world or even in different regions of the same country, the scientific name is the same in the US, Germany, France, China, or India. Considering the

many recent changes in scientific names, common or “vernacular” names at times seem to be the more stable.

When people move to a new area, they tend to name unfamiliar organisms by their resemblance to familiar species. This leads to some anomalies, such as California’s

wild lilacs (*Ceanothus* spp. in the Rhamnaceae family), bearing no relationship to the European and eastern US lilacs (*Syringia* spp., in the Oleaceae family). The American Robin (*Turdus migratorius*, in the thrush or Muscicapidae family, turidinae sub-family) is not closely related to the British Robin Red-

breast (*Erithacus rubecula*, also in the thrush family). In California, flowers were often named by school marms and ranchers.

One wonders whether it was the schoolmarm or the rancher who named either of the common brodiaeas, Ithuriel’s spear (*Triteleia laxa*) or blue dicks (*Dichelostemma capitatum*). Another word used in many common names is wort. This is a German or Old English word that means plant. One sees it in such names as St. John’s wort, louswort, and pennywort.

Yellow mariposa lily (*Calochortus luteus*).



BINOMIAL NOMENCLATURE

The proper species name uses two names (hence the term binomial), and is always written in italics. The first name is the *genus* with its first letter capitalized, and the second, the *specific epithet* always in lower case, even if a proper name is used. If plants in the same genus are used in the same context (i.e., list or chapter), the genus name is abbreviated by its capitalized italic first letter. Varieties and subspecies are prefaced by “var.” or “ssp.,” respectively. Often the species name is followed by the abbreviated name of the author considered to have been the first to describe the plant. With a little knowledge of Latin, the names are not that confusing. They usually represent a traditional Latin (Roman) common name, a visible characteristic of the plant or animal, its geographic location, or the name of its discoverer or someone associated with it.

DIRECT USE OF LATIN NAMES

The Latin word for Sparrow is *Passer*. In my recent Latin class, we worked with a poem by Catullus where a hopeful swain talks about his beloved and her pet sparrow.



White globe lily (*Calochortus albus*).

One of the major orders of birds is known as perching or Passerine (Passeriformes) birds. Many sparrows are in the genus *Passer*. The Latin word for crab is *Cancer*, which is also the name of the genus. The term cancer for malignant tumors arose when a physician noticed that one resembled a crab clinging to a rock. As another interesting side-light, the lawn weed, crabgrass, has an invasive growth pattern similar to cancers. In some ways, invasive weeds are the cancers of the plant world, choking out many native species. Sometimes the scientific and common names are the same, as in the genera *Delphinium*, *Brodiaea*, and *Viola* (violet).

NAMES BASED ON VISIBLE CHARACTERISTICS

These types of names probably comprise one of the larger groups used. Size description such as *minimus* and *humilis* describe small plants, while *giganteum*, *grande*, or *magnus* describe larger ones. Colors often appear, e.g., *luteus* for yellow, *aureus* for gold, *cardinalis* or *rubrus* for red, *argentea* for silver, *albus* for white, and *caeruleus* or *cyaneus* for blue. At times shapes are used, e.g., *cuneatus* for wedge-shaped, *spathea* for spatula, or *glossus* or *lingula* for tongue. Other common items are prefixes and suffixes such as *in-* for not, *eri-* for red or woolly, and one of my favorites—*oides* for similarities. One also sees presumptive medicinal uses in the names as in *Salvia* referring to health for the true sages and *Pedicularis* for the louseworts, supposedly useful in warding off lice.

Two of California's favorite trees fit in this category. *Sequoia sempervirens*, or coast redwood, has as its specific epithet, a name describing it as always green, characteristic of its evergreen foliage, as opposed to the deciduous foliage of the related bald cypress (*Taxodium*). Another translation of the epithet is "always green." *Sequoiadendron giganteum*, or giant sequoia, big tree, or Sierra redwood, was named because of its amazingly large size. An English explorer wanted to name it *Wellingtonia*, since "as the Duke of Wellington towered over lesser men, so the *Wellingtonia* towers over the lesser trees of the forest!" This name was rejected since Wellington did not collect the plant and there was already a taxon by that name. *Wellingtonia* remains a common name for *Sequoiadendron*, used in Britain (Rushford 1980).

The genus *Mimulus* or monkey-flower has many examples: *M. aurantiacus*, the sticky monkey-flower, has an orange blossom; *M. cardinalis*, or scarlet monkeyflower,

is well-named for its floral color; *M. guttatus*, or seep-spring monkey-flower, has moist leaves with small drops or *guttae* on the undersurface of the leaves; and one of my favorites, *M. primuloides*, or primrose monkeyflower, is a diminutive and utterly charming denizen of wet mountain meadows which has a single flower above a basal rosette of leaves, much like a primrose.

The genus *Salvia* also has many such examples. *S. leucophylla* or purple sage has pale, almost white leaves, along with light purple flowers. *S. mellifera* or black sage has a sweet but very pungent smell to its leaves and flowers, and can be used in cooking. (Use it sparingly, as it is quite strong.) *S. spathacea* or hummingbird sage has spatula-like leaves. And finally *S. carduacea* or thistle sage, is named for its resemblance to *Carduus*, another genus related to thistles.

The genus *Sambucus*, or fluted player, includes various elderberries. The stems are hollow, and can be made into flutes. There are many more such examples.

NAMES BASED ON LOCATION

Many plants are named by their initial location. The Lompoc area, near where I live, has several examples. Two flowers found only in this vicinity are *Erysimum capitatum* ssp. *lompoensis*, or Lompoc wall-flower, a mustard with a head-like cluster of orange flowers, and *Mimulus aurantiacus* ssp. *lompoensis* or Lompoc monkeyflower. *Arctostaphylos purissima* or Lompoc manzanita is named for the La Purisima Mission. There are several plants in the San Luis Obispo area that carry the specific epithet *obispoensis*: *Calochortus obispoensis*, or San Luis mariposa lily; *Carex obispoensis*, a sedge; and *Arctostaphylos obispoensis*, or Bishop manzanita. All three grow mainly or exclusively on the

SPECIES AND THEIR NAMES

The concept of species, along with their identification and naming as a fundamental unit of life, is basic to our current understanding of the “Web of Life.” In view of the rapid changes in scientific understanding of the evolutionary relationship of plants at various levels, particularly in the last three to four years, vernacular or common names of species, genera, and even families seem more constant than the scientific names (see *Fremontia*, April 2002).

For many years, the universal constancy of scientific names, at times lauded as an advantage over the more variable familiar names, seems to be eroding. Why is this happening? In the mid-1930s to 1940s, a consortium of scientists—Mayr, Fisher, Wright, Haladine, Dobzhansky, and for plants our own G.L. Stebbins—arrived at what has been called “The Modern Evolutionary Synthesis.” This system strove to resolve Darwin’s concepts of evolution and Mendel’s understanding of genetics with the Linnean classification so that the names we use more accurately reflect our *current* understanding of the

evolutionary relationships. As the technical precision of our information improves, our interpretation of these relationships also changes. Hence, any naming or classification system can be best described as “the current hypothesis of relationship,” and not the permanent names of fixed species that Linneaus and many others saw.

The Paradox of Heraclides epitomizes much of our current dilemma. Basically, it goes like this: “Species are always changing and evolving, yet they are considered the same thing. How can you define or recognize something that is changing?” Nature’s impermanence demands of scientists the ability to resolve contradictions between discrete data (patterns) and continuous data (processes). Are species and other levels of taxa real, or are they artificial constructs of our perception?

I see most amateur botanists (such as myself) and some professional botanists as “essentialists” at heart (they emphasize patterns), while much of the professional and academic community are “nominalists” (they focus on process). Thus the amateur might see plants in the field as a “thing” (species or subspecies), while the more academic might consider them the momentary reflection of genetic informa-

tion expressed with respect to both evolution and environment. As with some individuals of plants, continuous series of minute bits seem to naturally cluster into recognizable groups, but often with “fuzzy” borders. Atoms group into elements and compounds. Nucleotides group into three-part codons for specific amino acids, and genes for specific proteins, etc. Musical sound groups into fundamental intervals we call “octaves,” with subdivisions specific to a variety of cultures. So organisms tend to group into species, chiefly by reproductive isolation (with notable exceptions), often with concurrent morphological differences. However, the scientific literature is rife with many nuanced variations on these themes.

Which to use: scientific or vernacular names? As a serious student of plant science, I agree with Dr. David Keil, one of my mentors, that we need to be botanically bilingual. We must be fluent in both scientific terminology *and* vernacular names, recognizing their limitations and fluidity, in order to effectively communicate with whomever we are dealing.

nearby West Cuesta Ridge. *Arctostaphylos morroensis*, or Morro manzanita, grows mainly north of Morro Bay.

ORGANISMS NAMED AFTER INDIVIDUALS

This group includes plants and some animals named after an explorer who described them, a naturalist who was believed to be the

first to study them, or in honor of a distinguished individual. Two famous explorers, Meriwether Lewis and William Clark, kept detailed journals of their expedition. In them they described numerous plants, animals, and landmarks, many of which have since inherited their names, including genera, specific epithets, and common names. There are the colorful Clarkias, brilliant white to pink to red flowers in the Onagraceae or Evening Prim-

rose family; Lewisias, white to pink flowers in the Portulacaceae or Purslane Family, and the Clark’s Nutcracker (*Nucifraga colombiana*), a high mountain Jay-like bird.

Another famous explorer, John C. Fremont, is immortalized in the various *Fremontodendron* or flannel bush species, for which, in turn, this journal is named. Flannel bushes have fuzzy, light green leaves and yellow to orange flowers. There is also a Fremont’s mon-



Coyote-mint (*Monardella villosa*).

keyflower, *Mimulus fremontii*. *Linnaea borealis*, twinflower, in the Caprifoliaceae or Honeysuckle Family, was named after Carolus Linnaeus. Alice Eastwood was a turn of the century botanist who rescued a part of the California Academy of Science Herbarium Collection from the fire that followed the 1906 San Francisco Earthquake. In her honor is a lovely yellow composite dry-area shrub, *Eastwoodiana elegans*.

There is a Cherokee Chief named Sequoia, who gave his tribe its first written alphabet. Although he had no real connection that I know of with the redwoods, his name is remembered by its use with these magnificent trees. This practice is known as *an honorific name*, or sometimes called an *icononym*.

I have met some people whose names are associated with plants, such as G. Ledyard Stebbins and James Shevock. There is *Calystegia stebbinsii*, or Stebbins's morning glory, and at least nine southern Sierra plants have *shevockii* in their names.

CONFUSION RESULTING FROM COMMON NAMES

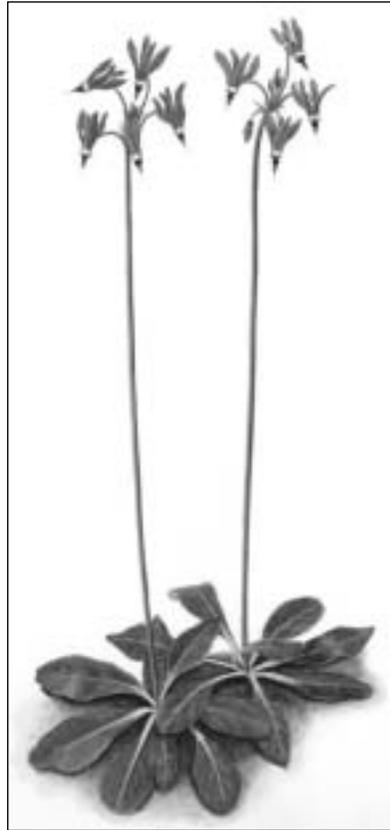
One of the more common and well-loved west coast conifers is the Douglas-fir. It is an important timber tree, and younger ones often serve as Christmas trees. While it looks very much like a true fir (*Abies* sp.) it is not. And although it carries the name Douglas—signifying an important early California naturalist—that name is not currently part of its scientific nomenclature. Apparently that name came from a shipment of several of the trees Douglas shipped to Britain. Its scientific name is *Pseudotsuga menziesii*. The literal translation of the genus name is “false hemlock;” again, hemlock is not a closely related plant.

Archibald Menzies was another

early West Coast naturalist whose name we frequently see elsewhere in nomenclature. More confusion can be found in one of the earlier scientific names given to Douglas-fir (I believe the name initially given by Menzies), *Pinus taxifolia*, the specific epithet referring to an apparent similarity of its foliage to that of the western or Pacific yew tree, or *Taxus brevifolia*. It was also called *Taxifolia menziesii*. To further confound the issue, there is a similar tree with much larger cones, *Pseudotsuga macrocarpa*, the specific epithet meaning large cone. It has two common names, the one I prefer being big cone Douglas-fir. The other name is big cone spruce, which creates even more confusion since spruces are part of the genus *Picea*. This is a prime example of the types of problems that sometimes occur, not only with common names but also with scientific names, when classifying plants. Interestingly enough, both species grow in Santa Barbara County.

We are all familiar with the

Spreading larkspur (*Delphinium patens*).



Henderson's shooting star (*Dodecatheon hendersonii*).

poem, "Sing a Song of Sixpence" in which four and twenty blackbirds are baked in a pie. As you recall, the birds began to sing when the pie was opened. These would have been European Blackbirds, *Turdus merula*, in the Thrush Family, with lovely voices. If anyone has heard American Blackbirds such as the Brewer's Blackbird or *Euphagus cyanocephalus*, they certainly do not have a very pleasant song. I have heard people complain about "those big blackbirds" referring to Common Crows, or *Corvus brachyrhynchos*.

One of the more amusing incidents was reported to have occurred on Beale Air Force Base in Northern California, near Marysville. This base has strategic reconnaissance aircraft (spy planes) that are vigorously protected. There is the U-2 (of Gary Powers fame) and the SR-71, known as the Blackbird.

Some birdwatchers were in the marshes and shrubs near the base with binoculars, spotting scopes,

and cameras equipped with powerful telephoto lenses. When approached by the Air Force Security Police and asked what they were doing, they replied that they were looking at Blackbirds. It took a lot of explaining to convince base officials that it was the feathered variety, and not the reconnaissance ones, that they were looking at. Had they used the scientific names such as *E. cyanocephalus*, Brewer's Blackbird, or *Agelaius phoeniceus* or *A. tricolor*, the Redwing and Tricolor Blackbirds, they would have been spared much unpleasantness.

Latina est Gaudium—et utiliis.

Carolus Blair

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MEIN LIEBER HERR COLLEGE: LETTERS FROM BEHR TO ENGELMANN

by Barbara Ertter

Most California plant-lovers are at least peripherally acquainted with many of the San Francisco Bay Area's first generation of resident botanists, if only by the numerous species named in their honor: *kelloggii*, *bloomeri*, *breweri*, *bolanderi*, and *lemmonii*. With a bit of extra sleuthing, the rich personalities behind these names come to light. Albert Kellogg, a beloved albeit eccentric founder of the California Academy of Sciences, failed in his career as pharmacist for lack of asking payment for his services. His colleague, Hiram G. Bloomer (as in the genus *Bloomeria*), a member of San Fran-

cisco's notorious Vigilance Committee, died after becoming ill following a night of exposure when lost on a field trip to Marin County. William Henry Brewer, Whitney's right-hand man on the California Geological Survey, abandoned California for a professorship at Yale after four years of unreliable pay by the State legislature. Henry Nicholas Bolander, who collected plants for the California Geological Survey following Brewer's departure, served briefly as State Superintendent of Schools in the 1870s. John Gill Lemmon, a survivor of the infamous Andersonville confederate prison, "after a year of liberal diet,

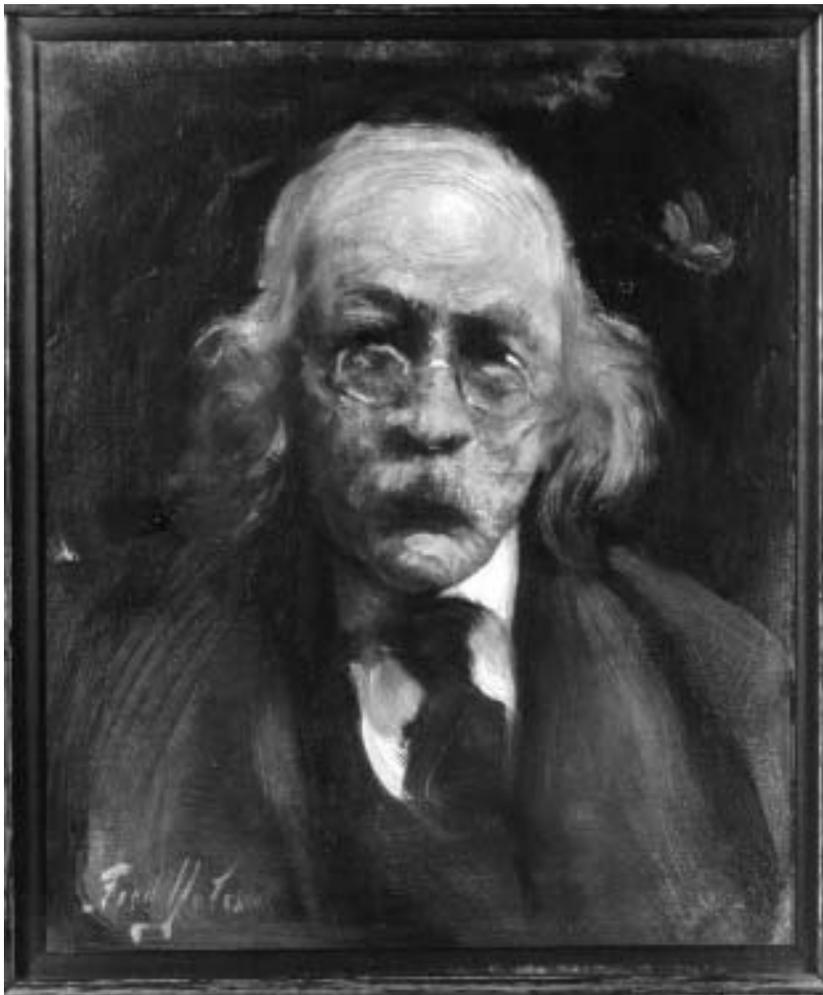
weighed finally a whole 90 pounds." He and his botanist-wife, Sara Allen Plummer Lemmon, took their honeymoon in the Santa Catalina Mountains outside of Tucson, with the highest peak subsequently named after Sara.

As much as I've enjoyed becoming acquainted with the above cast of characters, I've become particularly fond of one of their less-remembered contemporaries, Dr. Hans Hermann Behr. Behr was one of many educated refugees from the tumultuous birth-pangs of the modern German nation in the 1800s who, along with George Engelmann, Ferdinand Jakob Lindheimer, and Friedrich Adolph Wislizenus, provided an infusion of Continental science into rough-and-tumble frontier America. Whereas the seven founders of the California Academy of Sciences in 1853 were all gentlemen scholars, with no formal scientific training, Behr (who joined the following year) represented the first member of the Academy with solid professional credentials.

After having studied medicine and natural science at the universities of Halle, Wurzburg, and Berlin, Behr traveled to Australia, the East Indies, South America, and the Philippines, where he studied the botany, entomology, and native languages of the various lands. Returning briefly to Germany in 1847, he departed the following year, "his political views having brought him into antagonism with his family." Behr moved permanently to California in 1851, returning to Germany only to obtain a Polish bride, Agnes Omylska, who died young after bearing three children.

Behr, like Kellogg, sought a liv-

Portrait of Hans Hermann Behr, date unknown. Artist unknown, its use courtesy of University Herbarium archives, UC, Berkeley.



ing in the medical profession, but his high standards set him apart and made him a target of spurious practitioners. As summarized in his obituary:

In the early days, San Francisco was El Dorado not only for the miners, but also for so-called physicians who were in reality students who had failed to pass their examinations or former hospital-stewards or enterprising barbers, who had affixed unto themselves the doctor-title. Most of the regular physicians gave to these pretenders the benefit of the cloak of professional ethics. Behr never did and never hesitated to ridicule them. One of their number, who held sway in a local German paper because he wrote well and gratis, became Behr's furious enemy. He found nothing vulnerable in Behr's blameless life and solid knowledge. But Behr was a Catholic, and, for a modern scientist, had exceptionally strong religious feelings. This sufficed for his adversary, who charged him with being in secret affiliated with the Jesuits. He started in his paper the ever-popular Lutheran pastime of Jesuit-baiting. For years every number [issue] contained a leader against the Jesuits, winding up with a denunciation of Doctor Behr as one of the most dangerous of them.

This underhanded tactic took its toll, such that Behr's patients, most of whom were Lutherans from northern Germany, largely abandoned him. After rebuilding his practice among a more tolerant clientele, Behr took his revenge in a delightfully idiosyncratic fashion: "discovering a particularly obnoxious louse, he named it after his enemy."¹

As indicated, Behr's scientific interests were multifaceted, with entomology becoming his primary area of expertise. His botanical contributions were not inconsequential, however, including several spe-

¹Based on a search of the entomological bibliography by both Ron Hellenthal and Christian Thompson, this delightful story appears to be apocryphal, with no species of louse or other noxious insect published by Behr fitting the bill.

cies that he named: *Cordylathus palustre* [= *C. maritimus* ssp. *p.*], *Oxybaphus froebelii* [= *Mirabilis* f.], *Cuscuta ceanothi* [= *C. subinclusa*] and *Leptarrhena inundata* [= *Darmera peltata*]. Of even greater significance, Behr compiled the first flora of San Francisco and left us with the most complete description of the original vegetation of the city. These works have recently been rediscovered and are proving invaluable to current restoration efforts.

Behr's solid scientific credentials and self-assuredness might also have inspired, or at least bolstered, the decision of members of the fledgling Academy to publish new species independent of established authority. This was quite an audacious move, given that the Academy at this time had a library of less than 100 books and no access to authenticated comparative material. The decision accordingly generated considerable resistance from scientists in the eastern United States and Europe. One area where Behr and his frontier colleagues parted ways, however, was in the use of Latin: "It met with no encouragement from the Academy, partly because the members generally were not as good Latinists as Dr. Behr and partly because it was felt that plain English was better, or certainly good enough."

Shortly after the University of California was established in 1868, Behr became a professor at the affiliated College of Pharmacy in San Francisco, teaching botany as the basis for much of the available pharmacopoeia. Among his students was Mary Katharine Curran Layne, best remembered by her later married name of Katharine Brandegee. As recalled by a classmate:

We were all much interested in Materia Medica. Our professor was a very busy man and could not always give the time he wished to give to the subject: Therefore Mrs. Curran with a number of us who were members of the Academy of Sciences decided to go out



H.H. Behr, no date. Photographer unknown, its use courtesy of University Herbarium archives, UC, Berkeley.

with the Pharmaceutical Class—Dr. Herman Behr our instructor—and study the flora and plant life of the bay region, usually Marin, Contra Costa, and San Mateo Counties. Whatever was collected of value or of special interest was taken or given to the Academy of Sciences. Mrs. Curran was a very close student and observer—so also was Dr. Behr and his deep interest in the Academy—and the flora and plant life of California had a charm for the entire class.

It was with Behr's backing that Curran joined the Academy, serving as curator of botany for many years until handing the reins over to Alice Eastwood.

Given this background information, one can readily understand how delighted I was to stumble across a selection of letters written from Behr to George Engelmann in the archives of the Missouri Botanical Garden. Engelmann, one of the established authorities in American botany for his age, was located in St. Louis, the Gateway to the West, which allowed him to serve as a key point-person for much of the botanical exploration that was occurring beyond the Mississippi River. Engelmann had an especially

rich correspondence with fellow expatriate Germans, such as Behr, who appear to have been more likely than their American-born colleagues to share details beyond the purely professional (e.g., letters from Behr or Bolander, versus those from T.S. Brandegee or Vasey). Of course, such letters were handwrit-

ten in German, which makes them somewhat of a challenge to read by the average monolingual Anglo-American. We are therefore indebted to Edgar Denison, who laboriously translated and transcribed the letter written to Engelmann from German into typed English, stumbling over some botanical

names and other scientific jargon.

The letters written by Behr to Engelmann prove to be a treasure-trove beyond the purely botanical. In addition to additional description of the now eradicated vegetation of San Francisco, the letters provide insight into the horticultural use of native plants, tribula-

THE LETTERS

11 July 1859

Mein lieber Herr College

I read with great pleasure through the lines brought by Enno Sander, but fear however not to be able to fulfill your expectations completely. I do not have the time to collect, and lack the paraphernalia to prepare the collected material. I shall however talk to A. Kellogg about exchange of herbaria. Otherwise I refer you to Sander's letter, to whom I have given several ideas about dissertations to be presented, and it all depends on your kind council, for which theme I shall decide.

In the meantime I hope to get into permanent contact with a man whom I have known personally for a long time, and shall try to obtain dividends as far as possible.

10 November 1860

Lieber Herr College

First my heartiest greeting and thanks for the dissertations of your work, which you sent to me.

As to the exchange of duplicates of plants I must remark that I do not possess any and that what was gotten together during the first period of my stay here has long been shipped. I can only refer you to Dr. Kellogg, who will be glad to participate in an exchange.

The culture of native plants is still in a bad way. With exception of the *Ceanothus* I hardly know of a Californian plant in our gardens. Instead, the Celtic race in connection with the free-roaming pigs see to the destruction of the native flora in the vicinity of the city quite actively, so that the characteristic forms of the Flora are being displaced by certain indestructible [word unclear] e.g., *Atriplex*, *Chenopodium*, *Erigeron*. The beautiful and botanically interesting *Garrya californica*, which formed a small woods near my property has been totally eliminated by these hooligans as if [it were] a *Sigillaria* or a *Lepidodendron* [two long-extinct Carboniferous genera]. There is a slow beginning to incorporate the native conifers into gardens, but I am convinced that there are in any medium-size English city more

Wellingtonias [= *Sequoiadendron*] than in all the gardens of California.

The dominant ornamental plants are the Australian *Acacia lophantha*, *verticillata*, *longifolia* etc. *Kennedia integrifolia*, *Clianthus puniceus*, *Eucalyptus*, *Billardiera scandens*, *Pittosporum undulatum*, etc., a condition which represents a botanical *Testimonium pauperatis* in view of our rich native flora.

I shall collect seeds of *Echinocystis*, now *Megarhiza* [= *Marab*], for you. Nobody cultivates this beautiful climber, but our Celtic bovine status has not yet succeeded in completely eradicating the plant. Other Cucurbitaceae do not exist in this neighborhood.

Sparanium I have not yet found, *Typha* however in masses. *Nelumbium* [= *Nelumbo*] does not seem to be present here, the only plant of this group known to me is a *Nuphar*. Also Alisma[ta]ceae and Hydrochar[it]aceae are non-existent in this area with the exception of an edible *Sagittaria*, introduced by the Chinese, whose cultivation does not seem to be successful, but which nevertheless persists in the neighborhood as some escaped, miserable specimens.

Of *Cuscuta* I know two kinds, the one quite common on *Salicornia*, the other climbs on *Ceanothus*. Of the latter I gave once a diagnosis in the transactions [*Proceedings of the California Academy of Natural Science*] under the preliminary name *Cuscuta Ceanothi*. This diagnosis is by the nature of a search very incomplete, as for comparison I had only the just-mentioned parasitic kind on the *Salicornia* and none of the more closely related exotics.

Of Euphorbias there is only one rather unimpressive one, but we have another representative of the family, *Hendecandras* [= *Croton*], whose star-shaped trichomes are reminiscent of several Australian shore plants.

As there are no conifers in the area, it is difficult to obtain their seeds. There is however in the country an *Arceuthobium* or *Viscum* or *Loranthus*. In this connection I remember that I have seeds of a root-parasite, some *Pterospora*. I shall send some of them. I myself am trying

tions of the early Academy, developments in scientific theory, and Behr's opinion of the city's diverse ethnicity. Most of the plants discussed are in Engelmann's groups of special interest: e.g., conifers, oaks, cacti, parasitic plants, Cucurbitaceae, and wetland plants. The correspondence published here is

not quite comprehensive, in that I chose not to copy mundane passages that seemed to have limited contemporary value. I have also taken the liberty of altering some of Deniscon's translations where a different terminology or idiom seemed called for (e.g., "grueling labor" vs. "killing industry"). I left

the German salutation for each letter intact to show the transition from the formal "Herr College" (as noted by Deniscon, "Herr College was then and is still today the only proper greeting—both verbally and in writing—between two medical doctors in Germany"), to "Lieber Freund"—Dear Friend.

to grow the *Pinus* on whose roots I will sow the *Pterospora* sometimes. We also have an *Anoplangthus* [*Orobancha*]. I would also like to consider the Castillejas and *Triphysarias* also as parasites as I have never been able to raise them from seed or to transplant them, although a *Triphysaria* arrived on its own with me after a certain grass, a kind of *Koeleria*, began to form a turf. I remember that I heard something similar from Dr. Klotesch in Berlin about *Euphrasia*. *Euphrasia scabra*, sent to me by Dr. F. Mueller in Melbourne, did not germinate, which may be due to other circumstances.

I haven't heard for a long time from the Natural Science Society [California Academy of Sciences] and it seems that there are not too many signs of life. There are several things amiss, primarily the necessary funds. From this follows that neither collections can be wisely planned and carried out, nor that the needed literary support can be acquired. Much gets lost in the collections, and scientific descriptions and works lack all overview, because the few members who work can only refer to study-type monographs, travel reports, and natural history picture books. And thus it happens that the Society in the 7th year of its existence has really not achieved anything despite the grueling labors of one or two of its members. By the way, I must confess that I am only incompletely aware of the goals of the Society during the last years and as an outsider I can only judge the results. [This written just prior to the inception of the California Geological Survey, which rejuvenated and probably saved the fledgling California Academy of Sciences.]

With the exception of Kellogg I know of nobody who could be remotely called a botanist. The few garden-lovers are obsessed with a senseless dreaming about varieties with the exception of Colonel Walker's Pacific Gardens. However, he too possesses only a few native species. If you give me some time I could probably obtain seeds of species with striking beauty, e.g. of *Calochortus* or *Dendromecon*. Cacti do not grow in our area. With the enormous costs of transportation in California it is difficult to get them from Los Angeles,

San Bernardino, or San Diego. I myself have for a long time aimed at the species from there. Your synopsis of the Cacti is a stimulus to collect the Californian species for you.

One cannot get anything from the California peninsula [Baja California]. From some very fragmentary notes one may conclude that the flora there contains many endemic species. Some species correspond to genuine Mediterranean forms; e.g., a *Rhus* with a simple leaf almost like *Rh. cotinus*, a plant similar to *Neurada*, a *Phyllanthus* with the habit of a *Buxus*, a *Cressa*, and many others. The most stunning for me was the *Isomeris*.

At this time I cannot send you any more, but shall share with you the [word unclear; *Viburnum*?] which were sent to me. In return I would like to get your local butterflies, well packed and in good specimens. (American families seem to be always incomplete). If you will accept this proposal, I shall mail with my first shipment a small instruction, how, according to my experience, such shipments are best accomplished.

For now a small catalogue of identical species [of butterflies], or, to express myself more clearly, species which are common to both the East and West of our continent, and thus are of no interest for a shipment.

<i>Danaie Archippus</i>	<i>Vanessa Antiopa</i>
<i>Vanessa cardui</i>	<i>Pieris oleracea</i>
[<i>V.</i>] <i>Houteri</i>	[<i>P.</i>] <i>protodice</i>
[<i>V.</i>] <i>Atalanta</i>	<i>Colias chrysothème</i>

Up until now it has been only partly possible to compare the night butterflies of both shores. The showy forms of Sphinxes and Saturniae seem fairly different. I am however certain that in this large group many species have been shipwrecked all the way to us, and this fact would be a contribution to the geographic distribution, important enough to compensate, that instead of a new species one gets a new habitat.

Finally again my promise that I shall collect from now on more industriously.

—H. Behr

28 October 1863

Lieber Freund,

To give you a good example and simultaneously a little lesson for friend Enno Sander, I shall answer your esteemed letter only three days after receipt, and have asked Bolander [a recent arrival] to fulfill various requests as far as this is possible at this time. It is strange that in a city like St. Louis there is not one entomologist. Following your direction I have influenced Bolander to write in our next Flora about changes in species distribution, making available to him new facts, and agreed to compose an introduction. I will have to steal the time for this from another project, which I have begun about the Lepidoptera of California.

The copy of the proceedings of your Society I have not received yet. Some species of Cactus persist with us on rock and [word unclear]; e.g., there are in the environs of Los Angeles and San Diego two or three species native; one kind is found on rough silica on the tableland toward Oregon. I know it only through the systems [grapevine?] and the locality through Mr. Röder, gardener and very good collector of seeds who at this time is unavailable.

Mr. Bolander will contribute fertile conifers, seeds, and cones. The *Cuscuta* found by me on *Ceanothus* has been lost from the Flora of San Francisco. However Bolander will be able to provide it as he has found the species on botanical excursions in various localities. He has in addition a third species with surprisingly large flowers from the vicinity of Clear Lake, found, if I am not mistaken, on *Adenostoma*.

The *Sagittaria*, introduced by Chinese, has been collected and transferred to Bolander for drying. This species became lost from our Flora a few days ago when its locality was filled with sand and became a part of the

city. Anything is possible as this plant defended its existence so long against Irish swine and cows. I planted several plants in my garden. The others may be found after centuries in a post-Tertiary layer of broken bottles, torn pants, and gaping boots.

8 March 1864

Lieber Freund,

The *Sagittaria* has now also died in my garden, and that through the same geological process which antediluvianized your [unclear word]. It has been buried under a post-geological layer of sand, where one may find strange survivals of Australian plants [and] a submerged civilization, which was mostly occupied with the formation of bottles. Bolander considers the species identical with *Sagittaria sagittifolia*. He should know better, but *interdum Chonar dormit Homera* [note from translator: "a reference to the classical "*quamquam dormit Homerus*," sometimes Homer sleeps, alias "makes a mistake"]. Anyhow it would be surprising if our European *Sagittaria* was identical with the cultivated Chinese plant.

Quercus wislizenii will be obtained, and I shall send Röder one of these days after this oak species and make Bolander aware of it. The name Wislizenius sounds by-the-way very much of Halle, but maybe my problem with the people from Halle is the same as that of old school teachers, who see everywhere Greeks and Romans.

It is unfortunate that your academy has no entomologist. The Mississippi Valley has generally speaking been searched quite imperfectly so far, and I suspect there many entomological curiosities.

Mit herzlichen Grüßen
H. Behr Dr.

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IN MEMORIAM: DR. HERBERT BAKER (1920–2001)

Compiled by Ellen Dean

Dr. Herbert Baker, Professor of Botany at the University of California, Berkeley, passed away July 2, 2001. His wife, colleague, and constant companion, Irene Baker, had passed away over a decade before. Together, they created the field of evolutionary ecology, which has blossomed largely due to the efforts of the many students and researchers that they guided officially or unofficially. Here, as a tribute to them both, are a few remembrances from researchers that they mentored.

Herbert and Irene Baker were a wonderful and inspiring team who warmly welcomed all students and scientists to their lab. I was always struck by Herbert's exact, scientifically rigorous, and honest approach to research and teaching, infused with a good sense of humor. He was a very humble and down-to-earth person who held a fundamen-

tal respect for each student's life and priorities, never imposing his hard-working schedule on others and always giving time when asked.

Irene was the chemical wizard of the team, and loved the challenges of lab research. She was a true scientist at heart, recounting to me that she most enjoyed the downfalls of experiments because

they presented the opportunity to figure out the problems!

Both Herbert and Irene exuded warmth to their friends, regularly opening their house to students and colleagues for an informal evening where they could visit and exchange ideas while enjoying homemade desserts (including Irene's famous Welsh cakes). Herbert and Irene loved to talk about their daughter and grandson, generously gave their time to others, and left an indelible mark in their contributions to science.

—*Dr. Heidi E. M. Dobson*
Professor of Biology
Whitman College
Walla Walla, Washington

Dr. Herbert Baker, 1958. Photographer unknown, its use courtesy of University Herbarium Archives, UC Berkeley.



Herbert and I worked together for many years in Costa Rica on plant reproductive biology questions, especially those concerning pollination and pollinators. I often think of two important lessons learned through him. One had to do with keeping a strong focus on the details of achieving our goals. The second and related lesson was balancing that with openness to incorporating new ideas into our research agendas. Herbert was classic in his ability to “listen” to the organisms, their communities, and fellow biologists who had good “ears.”

—*Dr. Gordon W. Frankie*
Professor of Entomology
University of California
Berkeley, California

For Herbert and Irene Baker, it did not matter if a plant was struggling in the crack of a sidewalk, hanging from a tropical tree, or obscured in an agricultural field: all had their unique stories. Herbert's knowledge of plants was so broad-ranging and current that his sim-



Herbert and Irene Baker, Monteverde, Costa Rica, circa 1979. Photographer unknown, its use courtesy of R. Grimes.

plest questions would inevitably open up significant and lucrative aspects of my thesis topic. Irene provided crucial lab and fieldwork support through her ingenious microtechniques. Both Irene and Herbert inspired me tremendously as a graduate student.

—*Dr. Linda Newstrom*
Landcare Research
Lincoln, New Zealand

Herbert and Irene Baker anchored a vibrant community of botanists, zoologists, geographers,

entomologists, and anthropologists from across campus and around the world. These and others came to the Baker lab to learn from Herbert's encyclopedic knowledge of plants and Irene's inventive laboratory techniques, and to their home for "last Sunday" get-togethers to meet one another, share in the Bakers' enthusiasm for science, and indulge in a seemingly endless supply of delicious desserts.

The Baker lab was a tremendously stimulating and supportive atmosphere for students. We feel

lucky to have been a part of it. Luckiest of all, it is the place where we met, and hence the beginning of a new family.

—*Dr. Joshua Rosenthal*
National Institutes of Health, and
 —*Dr. Martha Weiss*
Assistant Professor of Biology
Georgetown University
Washington, DC

What Herbert taught me was to be inclusive. Botany at UC Berkeley was beyond compare when I arrived there in 1961, and the gentlemen's club that it was, tended to take itself a mite too seriously. Ecology did not become stylish until 1970, and except for H.G. Baker, was considered to be the place for those who weren't up to becoming "real" botanists.

But Herbert championed us all. We were a motley crew of grad students, mostly from the department, but there were some exotics as well—Gordie Frankie and Dan Janzen, for example. Our field trips were planned for about a dozen people, but ended up including as many as 40 because of his inclusiveness rule. And it became evident to me that each of those additional people contributed something special to our outings, as did some superstars who sometimes joined us such as Ledyard Stebbins, Jack Major, and Fritz Went. Dr. B. once told me, "There is no substitute for enthusiasm. If someone is interested in what you are doing, you need them." How I miss him.

—*Dr. Jane H. Bock*
Professor of Biology
University of Colorado
Boulder, Colorado

It was a privilege to be a student and friend of Herbert Baker. He taught me five important things that have greatly influenced my own career in evolutionary biology: 1) new ideas are the key to progress in science; 2) we stand on the shoulders of others, so it is important to pay

attention to the literature, both new and old; 3) natural history is the cornerstone of evolutionary biology, so getting into that field as much as possible is critical to maintaining a steady stream of new ideas; 4) enthusiasm and optimism are the key ingredients for successful graduate student training; and 5) if you like what you do, working long hours can actually be a lot of fun!

—*Dr. Spencer Barrett*
Professor of Botany
University of Toronto
Toronto, Canada

“How may I be of service to you?” were the first words Herbert said to me as an entering graduate student. My first assignment as the Bakers’ research assistant was to make a serial dilution and use it to construct a calibration curve for sugar fluorescence. It was also Irene’s gentle introduction to proper lab technique, and a self-graded test. Their greatness was revealed in their generosity of spirit, not just their scientific contributions.

—*Dr. Ed Guerrant*
Conservation Director
The Berry Botanic Garden
Portland, Oregon

Herbert and Irene influenced my life in many ways. Here, I will mention just three. First, Rob Schlising, a former Baker student, and long-time botany professor at California State University, Chico, inspired my interest in botany and served as my major advisor on a master’s degree (perhaps this makes me an “academic grandson” of the Bakers).

Second, Herbert was a tremendous role model, not only as a researcher, but also as a teacher. Each morning he could be seen polishing up that day’s lecture. Invariably, his presentations were information-rich and the topics flowed seamlessly.

And last, but not least, I met my spouse, Lisa Wagner, in the Bakers’ lab. Today, both Lisa and I, as

educators, strive to pass the baton by communicating to our students the passion for plants that Herbert and Irene instilled in us.

—*Dr. Timothy P. Spira*
Professor of Biology
Clemson University
Clemson, South Carolina

Herbert and Irene inspired me with their humanity, compassion, and commitment to their work. More than anything, the image of Herbert reviewing his lecture notes before each class influenced me as an educator. His devotion to good teaching and lifelong learning have shaped my teaching and research career.

Their interest in plants was wide-ranging and this proved a tremendous role model. From the ecology and evolution of plants to plant-animal interactions to economic botany—these are the themes that underlie what I share with my current “students”—the many teachers, children, families, and adults that come to the botanical garden where I work. And the more than 20 years that Tim and I have shared and explored the world of plants and nature together has enriched my life. Perhaps Herbert and Irene were an inspiration there as well!

—*Dr. Lisa K. Wagner*
Director of Education
The South Carolina Botanical Garden
Clemson, South Carolina

I first met Herbert after a public lecture he gave on the genetics of colonizing species. His studies showed how one could, indeed needed to, combine genetics and ecology to study the dynamics of evolutionary processes. That insight got me all fired up, and I immediately sought him out to see if he would agree to be my mentor for my PhD studies.

Herbert and Irene were role models in so many ways. Herbert was always available to discuss ideas.

Irene was the meticulous and organized one whom you consulted to ensure success in experimental endeavors. Both also clearly enjoyed their work, and that has also stayed with me. Through their eyes, I learned that nature was an endless source of pleasure, wonder, and intellectual stimulation, and that one could make a career out of it. What a deal!

The diversity of interests that Irene and Herbert passed on to their students is reflected in the diversity of topics that their students have spent their own life times studying. A partial sample of these topics is found in the book, *Evolutionary Ecology of Plants* (Bock, J.H. and Linhart, Y.B., Eds., Westview Press, Boulder CO, 1988).

—*Dr. Yan Linhart*
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Herbert and Irene Baker, Monteverde, Costa Rica, circa 1979. Photographer unknown, its use courtesy of R. Grimes.



GROWING NATIVES IN THE GARDEN: CHAMISE AND RED SHANKS OR RIBBONWOOD

by Glenn Keator

Two excellent candidates for California gardens are the two shrub species of the rose family (Rosaceae) genus, *Adenostoma*. *Adenostoma fasciculatum* (chamise) and *A. sparsifolium* (red shanks or ribbonwood) are each highly heat- and drought-tolerant, with densely branching, needlelike leaves, and frothy masses of tiny white flowers arranged in panicles. Both are dominant in chaparral: chamise with widespread distribution through much of California's foothills; red shanks forming exclusive stands in the mountains of southern California. Both can be propagated by cold stratifying seed or taking hardwood cuttings. Bottom heat should improve the rate of striking root.

Chamise is a densely branched, rounded or angular shrub inhabiting some of the poorest soils, often in exposed situations. The first years of growth are rapid, tapering off later. The mature height—three to ten feet—depends on the richness of soils; on serpentine, shrubs remain stunted. There is also a low, sprawling ground cover version (*A. fasciculatum* var. *prostratum*) from the northern Channel Islands. It is compact, semiprostrate, and seldom exceeds three feet in height.

Chamise has thick bunches of polished green leaves that remain

Red shanks or ribbonwood (*Adenostoma sparsifolium*). Photograph by J.T. Vale, its use courtesy of the Jepson Herbarium, UC.



Chamise (*Adenostoma fasciculatum*). Photograph by J. Hickman, its use courtesy of the Jepson Herbarium, UC.

on the shrub year-round. In hot weather, leaves carry a volatile oil that makes plants combustible, so plants need to be located well away from flammable structures. Flowers are in sprays reminiscent of spiraeas, covering plants in late spring to early summer. Blossoms dry a rusty brown and remain on shrubs well into fall.

Chamise is a fine shrub for naturalizing on steep, rocky slopes. The island form is a little-tried woody ground cover for a rock garden or steep bank. Fitting companions include fremontias (*Fremontodendron* spp.), wild lilacs (*Ceanothus* spp.), and manzanitas (*Arctostaphylos* spp.). One interesting possibility for an attractive partnering would be to sow the seeds of woolly paintbrush (*Castilleja foliolosa*) around the base of a chamise—its roots parasitize the chamise. The paintbrush features gray, woolly leaves and red, hot pink, or yellow flowers.

Red shanks is a bold, dramatic large shrub to small tree often top-

ping 25 feet in garden settings. Its tall stems develop trunks with handsome red strips of peeling bark, and it can be pruned as a single- or few-trunked tree. The branches create an open cloud of pale green foliage with sparsely distributed leaves. The flowers are a pretty addition in late spring and contrast nicely with the leaves and bark.

Red shanks is adapted to rocky soils and will tolerate some winter chill. Long-lived, it may take several years to reach maturity. It is ideal as a bold specimen, backdrop, or foundation plant in a xeriscape or desert garden. Or if you have the space, plant a grove to create dappled shade for drought-tolerant ground covers and tough ferns such as common wood fern (*Dryopteris arguta*), goldback fern (*Pentagramma triangularis*), and coffee fern (*Pellaea andromedifolia*).

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FROM THE ARCHIVES: PAST ISSUES OF *FREMONTIA*

Kim Kersh, assistant to the *Fremontia* editor, noted that one can find a wealth of information in past issues of our CNPS journal. This recurring column will highlight articles along a theme, and is targeted for those who are new members, or for others who might have missed some of the great issues or articles within their set of CNPS journals.

Two *Fremontia* issues in particular highlight functions and activities of the California Native Plant Society (CNPS). The April 1999 issue (Volume 27, No. 2) is a special issue on CNPS Statewide Programs. It begins with the lead article by Jacob Sigg (the state president at the time), titled "California Native Plant Society: Who Are We?" and follows with a series of articles which serve to answer that question, including but not limited to articles on the Rare Plant Program (by David Tibor), Education (by Lorrae Fuentes and Carol Baird), and Publications (by past *Fremontia* editor Phyllis Faber). Although articles are from four years ago, rereading them serves to highlight how members and officers in our society continue to work at fulfilling the mission of CNPS: "To increase understanding and appreciation of California's native plants and to conserve them and their

Fremontia cover for the October, 1990 issue.



FELLOWS OF THE CALIFORNIA NATIVE PLANT SOCIETY

<p>Charles Young, 1973 Roxanna Ferris, 1974 Philip A. Munz, 1974 Carl W. Sharsmith, 1974 John Thomas Howell, 1975 Edmund C. Jaeger, 1976 James B. Roof, 1976 G. Ledyard Stebbins, 1976 Mary DeDecker, 1977 Herbert L. Mason, 1977 Helen V. Chamlee, 1978 Herman Baum, 1978 Kenneth Taylor, 1979 Gerda Isenberg, 1980 Mildred E. Mathias, 1980 Elizabeth McClintock, 1980 Rimo Bacigalupi, 1981 Hans and Jean Jenny, 1981 Lyman Benson, 1981 Joyce and Horace (Doc) Burr, 1982 Virginia Rumble, 1982 August and Susan Frugé, 1983 Margedant Hayakawa, 1983 Reid Moran, 1983 Marjorie Schmidt, 1985 Wilma Follette, 1985 Scott and Jenny Fleming, 1985 Wayne Roderick, 1985 Nancy Dale, 1986 Wayne Dakan, 1987</p>	<p>Myrtle Wolf, 1987 Lawrence (Larry) Heckard, 1988 Dorothy King Young, 1988 Betty Lovell Guggolz, 1988 Alice and Bud Meyer, 1988 Paul Covel, 1989 Grace Heintz, 1989 June Latting, 1989 Mary Leolin Bowerman, 1991 Paul Covel, 1991 Mairan Reeve, 1992 Gladys Smith, 1992 Leonora Hohl Strohmaier, 1992 Doris Fredendall, 1994 James Payne Smith, Jr., 1995 John O. Sawyer, 1995 Jo Kitz, 1995 Peter Rubtzoff, 1996 Lillian Mott, 1996 Mary Ann Henry, 1996 Ralph and Evelyne Ingols, 1996 George M. Clark, 1996 Lyman Donald Smith, 1996 Phyllis M. Faber, 1997 Vince Yoder, 1997 Robert Ornduff, 1997 Sally Casey, 1997</p>
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Back issues of *Fremontia* are available for sale from the CNPS Office, 2707 K Street, Suite 1, Sacramento, CA 95816; phone (916) 447-2677. Issues for Volume 28 and later (2000-present): \$5 each or \$10 for three. Issues before Volume 28: \$2.50 each or \$6 for three. Double issues priced as two single issues; shipping costs determined upon order placement.

FREMONTIA

A Journal of the California Native Plant Society



SPECIAL ISSUE: CNPS STATEWIDE PROGRAMS

Fremontia cover for the April, 1999 issue.

natural habitats, through education, science, advocacy, horticulture, and land stewardship.”

Another special issue of *Fremontia* which includes general information about CNPS is the 25th Anniversary issue (October 1990; Volume 18, No. 4). Authors including James P. Smith, Jr., Ken Berg, Mark Skinner, Mary Meyer, Gary M. Fellers, Virginia Norris, Steve McCormick, Catherine Caufield, Jacob Sigg, Connie Millar, and Nevin Smith (each an individual who has contributed much to native plant protection) write articles covering the various programs of the society. As a special beginning to this issue, the story of the history of the society as a whole is related by the late G. Ledyard Stebbins, evolutionary botanist of world renown, as well as a man who knew and loved the California flora.

Two other features of the 25th Anniversary issue are a review of all of the CNPS Fellows to date (see sidebar on page 27 for list of all CNPS Fellows), and an overview of each of the Chapters. Beginning with the next issue, *Fremontia* will feature an article on one of the Chapters so that we might all become aware of the updated history and activities of our neighboring native plant enthusiasts, and perhaps visit their plant sales or attend one of their field trips.

NOTES AND COMMENTS

CALFLORA

Calflora is back (www.calflora.org) with a new look, a new plan for supporting operating costs, and a new hosting service.

In the past, the basic Calflora service has been funded mostly by grants from government agencies. Over the last year, this kind of support has dried up entirely. Calflora is not alone here—because of tighter government budgets, many non-profit organizations are having the same trouble, particularly in education and the environment.

We are happy to announce that the Calflora website is up and running on

a new hosting service, with updated species data. Calflora is back with a leaner budget and a business plan that calls for the basic service to be funded by donations from users. Calflora will continue to apply for grants to develop new services, but more than ever, we are relying on you for our core support.

If you have donated recently, thanks very much. Your support has made it possible to get through the last few difficult months. If you have not donated recently, please take this opportunity. Calflora is a not-for-profit, 501(c)3 organization.

John Malpas,
for Friends of Calflora

GREEN SCISSORS REPORT

The 2003 Green Scissors report was released on May 8. This annual report, prepared by a coalition of environmental, scientific, and taxpayers groups, details 68 federally funded programs that threaten our environment, natural heritage, and public health at a cost to taxpayers of nearly \$60 billion. The report includes sections on a wide array of issues including forests, roads, water, and public lands.

The Bush administration and the 108th Congress have proposed numerous programs with dubious fiscal and

environmental foundations. The report shows the fiscal irresponsibility inherent in many of the federal initiatives that we in the native plant science and conservation community oppose because of their impacts to our flora. For more information on current federal proposals of particular concern to plant scientists and advocates, see the Native Plant Conservation Campaign website: www.cnps.org/NPCC and click "Make A Difference." Read the full report at www.greencissors.org/publications/gc2003.pdf.

Emily Roberson,
CNPS Senior Policy Analyst

NATIVE PLANT CONSERVATION NEWS

To sign up for "NPCC News," e-mail news on native plant science and conservation, send a request to npcc@cnps.org.

BOTANIC GARDENS AND NATIVE PLANT PROTECTION

An article from the Associated Press and www.CNN.com elucidates the importance of native plant protection, and describes the great work done by botanic gardens to that end. The article can be found at www.cnn.com/2003/TECH/science/05/08/botanical.garden.ap/index.html.

LETTERS TO THE EDITOR

FREMONTIA NOT FOR THE NOVICE?

Dear Editor,

I just finished reading the *Fremontia* update in the CNPS *Bulletin* [January, February, March 2003]. It helped me understand why I have read so few of my *Fremontia* issues. I am content reading my local chapter's newsletter, but have kept all my unread copies of *Fremontia*, thinking that I really should find time to read them some day. After reading your update I see clearly that I am simply not the intended audience, as I am not interested in a scientific study of native plants at this time. Gone is the guilt I feel every time I see an unread issue. Thank you for helping lift this weight from me.

Now I wonder if there are many other CNPS members like me, who would be relieved NOT to receive *Fremontia* in their mail, cluttering our minds and desks, reminding us that we are not botanists. Perhaps the goal should not be to "make articles approachable to as broad an audience as possible without "dumbing them down." How about two different membership levels for the two audiences: 1) Lay member, receiving the local newsletter and *Bulletin* only, and 2) Scientific membership, receiving the above and *Fremontia*, for an additional fee (whatever the costs of producing/ mailing it). If offered the choice, I would save a tree and choose number 1. Now I am not in the least offended to be in the group of "plant enthusiasts who love plants but lack the academic background." And I do

not wish to offend you in letting you know that *Fremontia* does not fulfill my needs. How about acknowledging that different people have different needs, just like plants?

Gloria Brown
El Dorado Chapter

Dear Gloria,

Thank you for writing to let me know of your point of view. I think that you had misread my Bulletin article explaining that each article is peer-reviewed, but also noting how Fremontia is directed at a general audience. I do entreat you to take another look at your Fremontia issues. Although I agree with you that there are many articles that are dense with information, nevertheless, even those are profusely illustrated, and each photograph or drawing includes an informative caption. To be quite honest, looking at the pictures in Fremontia is one my favorite parts of the editorial process! In addition, numerous articles appear in the recent issues, as well as the older ones, that are about people in the society, gardening, or other topics of general interest. I will continue to work to provide something for everyone.

I have also redesigned the table of contents so that a brief summary and thumbnail photograph for each of the major articles appears with the title as an aid to readers more readily finding the articles that specifically appeal to them. I do appreciate your interest in a two-tiered membership, but as that would be very difficult to set up and manage at this time, may I suggest that you peek into the issues for some items that might amuse, and following that, pass your issues on to a friend, student, school, library, or government

representative who might be inspired to learn more about native plants?

Your Editor

MONOCOT TAXONOMY

Dear Editor,

I read with interest the latest edition of *Fremontia* [Vol.30, No.2], which has just arrived here, especially because of my connection with the Oregon Flora Project, where we are going to have to consider the various new interpretations of angiosperm family names and delimitations. I want to comment on the article by Dean Kelch, inasmuch as we have recently finished reviewing the members of the old family "Liliaceae" for this project and have run into recent publications that would impact some of the genera he mentions in that article.

With respect to family Melanthiaceae, I would call attention to studies of the genus *Zigadenus* and related genera published by Wendy Zomlefer and coauthors. *Zigadenus* should be restricted to *Z. glaberrimus*, the western species formerly placed in this genus being transferred to *Anticlea* (*Z. elegans* in particular) and *Toxicoscordion* (*Z. venenosus*, *Z. micranthus*, *Z. fremontii*, etc.).

Another genus mentioned by Kelch, *Stenanthium*, was reorganized so that the western *S. occidentale* is transferred to *Anticlea*. This means there are two generic additions to the California flora, *Anticlea* and *Toxicoscordion*, and two subtractions, *Stenanthium* and

Zigadenus. Zomlefer's paper in *American Journal of Botany* (2001) presents molecular evidence that if *Xerophyllum* is to be included in Melanthiaceae, then *Trillium* must also be included, as tribes Xerophylleae and Parideae, respectively.

The genus *Tofieldia* has been removed from our flora and limited to *T. pusilla*, *T. coccinea* being returned to the genus *Triantha* by John Packer, who assigned the name *Triantha occidentalis* (S. Watson) R.R. Gates ssp. *occidentalis* to the California taxon previously called *Tofieldia glutinosa* ssp. *occidentalis*.

The taxonomy of *Maianthemum* and *Smilacina* was clarified by James LaFrankie, who proposed submerging the latter genus under the former. The appropriate nomenclatural combinations in *Maianthemum* for the species *S. racemosa* and *S. stellata* were published as long ago as 1821 by J.H.F. Link. Likewise the western American taxa placed in *Disporum* have been persuasively shown by Z.K. Shinwari and coauthors to form the separate genus *Prosartes*. The Asian genus *Disporum* s. s. is more closely related, on molecular grounds, to *Uvularia*, while *Prosartes* is allied with *Streptopus*. *Prosartes* had been named as a separate genus in 1841, but it was merged with *Disporum* by Bentham and Hooker in 1883. The California taxa are *Prosartes bookeri* Torr. and *P. smithii* (Hook.) Utech, Shinwari, & Kawano.

Additional information about family Themidaceae was recently pub-

lished by Chris Pires and coauthors, supplementing the paper by Fay and Chase cited by Dr. Kelch. The so-called "*Brodiaea* complex" was shown to consist of two separate groups of taxa. *Brodiaea*, *Dichelostemma*, and *Triteleipsis* form one group, whose nearest relatives are *Milla*, *Bessera*, and allied genera (the "*Milla* complex"). *Triteleia* is separate from this group and closely linked with *Bloomeria*, *Muilla*, and *Androstephium*. *Allium*, which we used to think of as allied to *Brodiaea*, et al., is in its own family and well removed from the above genera, as Dr. Kelch pointed out.

Perhaps other readers will have noticed additional new publications that affect the taxonomy of members of the former Liliaceae. I hope they will call these to our attention, to help in our studies of the Oregon flora. Volume 26 of *Flora of North America*, which has just appeared, includes a useful discussion of the "Liliaceae problem" by Fred Utech, as well, along with numerous literature citations.

Kenton L. Chambers,
Emeritus Professor of Botany,
Oregon State Univ., Corvallis, OR

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BOOKS RECEIVED

Tarweeds and Silverswords: Evolution of the Madiinae (Asteraceae), Edited by Sherwin Carlquist, Bruce G. Baldwin, and Gerald D. Carr. 2003. Missouri Botanical Garden Press, St. Louis, MO. 294 pages. Tarweeds and silverswords of the Madiinae tribe of the Sunflower Family represent singular examples of adaptive radiation and speciation: they show us plants evolving first to meet the diverse environments of the California Floristic Province, and colonizing later the islands of Hawaii. This book introduces the student to the

Madiinae. Included are the phylogeny and taxonomy of the Madiinae and modern analysis of their macro- and micro-evolution as well as molecular investigations. Also profiled are their trichomes (hairs) and anatomies of leaf and wood. For more information about this book as well as the Madiinae, see www.botany.hawaii.edu/faculty/carr/tarweeds.htm. Price \$29.95, softcover.

Plants of the San Francisco Bay Region, Mendocino to Monterey, Revised Edition, by Linda H.

Beidleman and Eugene N. Kozloff. 2003. University of California Press, Berkeley, CA. 505 pages. This newly designed revision of Beidleman and Kozloff's earlier edition has been extensively revised, with improved identification keys and line drawings now appearing scattered throughout the text. It includes more than 2,000 species of wildflowers, trees, shrubs, weeds, and ferns, with 457 color photographs and 227 line drawings. A must buy for those living in or visiting California's central coast. \$60.00 cloth, \$29.95 softcover.

BOOK REVIEW

Geology and Plant Life: The Effects of Landforms and Rock Types on Plants, by Arthur R. Kruckeberg. 2002. University of Washington Press, Seattle, WA. 363 pages, with 98 photos and 21 line drawings, \$35.00, cloth.

Before any other influences began to fashion life and its lavish diversity, geological events created the initial environments—both physical and chemical—for the evolutionary drama that followed. Drawing on case histories from around the world, Arthur Kruckeberg demonstrates the role of landforms and rock types in producing the unique geographical distributions of plants and in stimulating evolutionary diversification. His examples range throughout the rich and heterogeneous tapestry of the earth's surface: the dramatic variations of mountainous topography, the undulating ground and crevices of level limestone karst, and the subtle realm of sand dunes. He describes the ongoing evolutionary consequences of the geology-plant interface and the often underestimated role of geology in shaping climate.

Kruckeberg explores the fundamental connection between plants and geology, including the historical roots of geobotany, the reciprocal relations between geology and other environmental influences, geomorphology and its connection with plant life, lithology as a potent selective agent for plants, and the physical and biological influences of soils. Special emphasis is given to the responses of plants to exceptional rock types and their soils—serpentines, limestones, and other azonal (exceptional) substrates. Edaphic ecology, especially of serpentines, has been his specialty for years.

Kruckeberg's research fills a significant gap in the field of environmental science by connecting the conventionally separated disciplines of the physical and biological sciences. *Geology and Plant Life* is the result of more than 40 years of research into the question of why certain plants grow on certain soils and certain terrain structures, and what happens when this relationship is disrupted by human agents. It will

be useful to a wide spectrum of professionals in the natural sciences: plant ecologists, paleobiologists, climatologists, soil scientists, geologists, geographers, and conservation scientists, as well as serious amateurs in natural history.

Arthur R. Kruckeberg is the author

of *The Natural History of Puget Sound Country*, *Gardening with Native Plants of the Pacific Northwest*, and *California Serpentine*. He is professor emeritus of botany at the University of Washington.

Anonymous, UW Press, June 2003
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FROM THE EDITOR

In contrast with the theme issues that we have recently published, this *Fremontia* reaches from art to history. The issue opens with an article about Jasper Ridge, a beautiful and diverse preserve of the San Francisco Bay area, where the late Herb Dengler created beautiful watercolors. Herb's work graces the pages of the next article by Charles Blair on botanical Latin. Next is Barbara Ertter's article, which looks into the life of one of California's first professional botanists, Dr. Hans Herbert Behr, through his correspondence with fellow German countryman, George Engelmann. Finally, a trib-

ute is provided for the late Herbert Baker, with heart-felt observations from his students and colleagues, assembled by Ellen Dean.

Fremontia continues to evolve, and Volume 31 includes a few changes. For ease in previewing articles, an abbreviated Table of Contents appears on the front cover, but on page three the Table of Contents appears in expanded form, with a thumbnail illustration and summary paragraph for each article. Look for an editorial as a regular feature on page four, informing you of current issues that need your attention, and suggestions of what you might do to help protect

our native flora. Contact information for government officials and other helpful resources will always appear alongside these editorials. Towards the back pages of *Fremontia*, along with Notes and Comments, Book Reviews, and Books Received, we will feature three regular short items: Growing Native Plants, From the Archives (a look back into the treasure-trove of information available in back issues), and last but not least (beginning with the next issue), an article introducing you to one of the local Chapters of the California Native Plant Society.

Linda Ann Vorobik, Editor

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