Friends of Edgewood Natural Preserve

Edgewood Explorer

PRESERVE • EDUCATE • RESTORE

June 2017 Volume 24 Number 2

Wildflower Walks - 2017 Season

by Todd Reimche

Wow! Edgewood Park and Natural Preserve's wildflower season was amazing. It seemed as if the crowds were like those that frequent Muir Woods or Yosemite Valley. Yet Friends of Edgewood docents handled the magnitude of visitors. Great job by all FoE docents, hosts, volunteers, and more. As of May 5th, 746 visitors had participated in Wildflower Walks. 746! Last year at this time, we'd recorded 336 visitors on Wildflower Walks. On Sunday, April 2, 57 visitors signed up for a Wildflower Walk. Thankfully, 5 docents showed up to lead walks that day. There were 44 different docents who led wildflower walks this season. Many of the docents led multiple walks. What a great group of docents we have at Edgewood Park - the veterans, the rookies, and others. A real 'esprit de corps' exists amongst Edgewood docents.

And how about those flowers?! Talk about fields of gold. Just fabulous. Blue dicks, goldfields, tidy tips, larkspur, buttercup, fairy lantern, lupine, and Ithuriel's spear just to name a few. San Francisco collinsia was sure out to please the visitors this year, as was Franciscan onion. Our state flower really made a great showing this year. Thank you, California poppy. Wow! April showers really do bring May flowers.

Let's not forget the Edgewood visitors. Thank you, visitors! Great visitors, always out for a good time and looking to learn something new about Edgewood Park and Natural Preserve. Getting together with family and friends to enjoy this wonderful Park.

Here's what some Edgewood docents had to say about the wildflower walks and the visitors:

"They enjoyed all the information about how plants adapt to changes in moisture and soil. They took lots of pictures of flowers. They were very excited about the wide views of the Bay and East Bay Hills when we got up toward the top of the Sylvan. They were a wonderful group, and we had a lovely hike."

"Sunday I had a best-of-the-best group -- 4 people, all with similar levels of knowledge, willing to take time to observe closely, wonder about, and discuss the 'mad, mad world of flower advertising' for the woodland and mixed scrub wildflowers on the Sylvan Trail."

"Our group was very interested in every flower, and made sure to call our attention to any single one we had not mentioned first! After pointing out the Fat Solomon's Seal and talking about the two kinds, it was one of the group who spotted the Slim Solomon's Seal on the other side of the Sylvan Trail. It worked out well. They asked good questions, and the several photographers in the group were happily recording every flower close to the trail (most of them!). Joerg gave a very nice talk on the Warrior's Plumes where they are so abundant on the Sylvan."

Thanks to all Friends of Edgewood docents, volunteers, and visitors for a wonderful wildflower season! ❧

IN THIS EXPLORER...

Why Do Checkerspotters Spot Checkerspots?

by Kathy Korbholz

With excerpts from Christal Niederer's 2017 "reintroduction" report describing the impacts of this year's weather.

It's a tough job but somebody has to do it.

As a condition of the US Fish and Wildlife permit received by Creekside Center for Earth Observation (Creekside) to relocate Bay checkerspot butterfly larvae from Coyote Ridge to Edgewood, scientific counts of adult butterflies must be obtained. Stuart Weiss, PhD, and Christal Niederer, both of Creekside, ask volunteers to do this monitoring each spring.

This year, Alf Fengler, Erika Ghose, Bill Korbholz, Perry McCarty, Kelly Rogers, Howie Smith, Anita Stewart, Lucy and Oscar Vega, Christine Williams, and Trevlyn Williams raised their hands. Some spotters monitor one day each week during flight season, some replaced spotters who had to drop out, while others are occasional fill-in replacements.

The spotters walk a carefully prescribed 1800-meter course (a little over one mile). There are 36 segments of the course, each 50 meters long. Each of these segments must be walked in exactly 90 seconds by the clock. Not faster or slower. The checkerspotters are supposed to record the number of Bay checkerspot butterflies seen within a 3-meter arc covering both sides and in front of the observer. Butterflies may be on the wing, resting on the ground, or on a convenient flower head.

The numbers are reported to Christal each day. Creekside compiles them and applies a scientific formula to estimate the total number of adult butterflies present. For the last few years, the numbers reported have been declining. The checkerspotters saw only 47 butterflies during all the timed transects in 2017, down from 78 in 2016, 451 in 2015 and 800 in 2014.

Discouraging – yes, but we should remember that only about half as many caterpillars were introduced this year versus in past years. We should also remember that one butterfly can lay hundreds of eggs, and if only a small percentage of them make it to adults, the year will be very successful. Since the plantain and owl's clover looked healthy well into the flight season too, we can hope the larval mortality will be lower than usual.

It takes great timing – flight season, rain and sun – for a successful year. Cool March and especially April temperatures favor checkerspots, as they allow host plants to stay fresh longer as prediapause larvae race to the fourth instar (molt) when they can enter diapause, the dormant state in which they pass the hot, dry summer. This year, while the persistent rains were good for the plants upon which the larvae depend, the weather did not favor the butterflies. The low number of adults after the 2016 and 2017 relocations may have been caused by heavy rain after introduction, perhaps damaging the pupal stage.

When asked why they volunteered, the checkerspotters described a variety of connections that have drawn them to the program. Perry McCarty had recently retired and was figuring out his next chapter. After going on a few 3rd Saturday nature hikes, he decided to become involved with the docent program and adopted Edgewood as his home park. Perry says, "Becoming a checkerspotter is a way to practice some citizen science in my adopted park and to get some experience with a model system [for population biology]."

Erika Ghose volunteered to be a checkerspotter after taking a class to become a Certified California Naturalist and hearing Stuart Weiss speak at one of the classes. She grew up near Coyote Ridge and had no idea about the history and preservation efforts going on there. In her own words, "I feel like it's so important to preserve our native natural life here in California so I was excited about the opportunity to help out!"

Anita Stewart recounts, "I have been fascinated by the Checkerspot story even before I became involved in Edgewood, having heard about it through Jasper Ridge. I have been to Coyote Ridge and attended some of Stuart's events at Edgewood to distribute larvae or just hear the story again ... I avidly read Christal's 'reintroduction' reports on the progress."

When asked to comment on the best part about checkerspotting, all responding spotters mentioned the wonderful array of wildflowers – some not seen from the trails. Perry McCarty said, "It's spectacular to be right in the middle of all of those wildflowers. I feel that I should be walking on

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Junior Explorers Report - Spring 2017

by Carol Hankermeyer

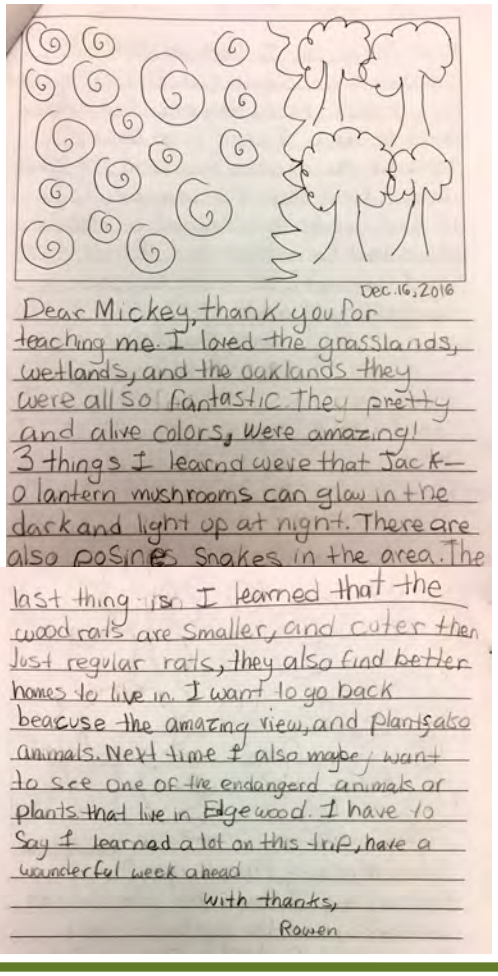
Friends of Edgewood has been flooded with an exceptionally high volume of Junior Explorers (JE) field trip requests in 2017. By the end of the school year, JE docents will have led more than 300 students on 20 field trips. Huey-Shin Yuan has done an outstanding job of managing these trips, so we have been able to handle them all. We're very grateful for her dedication and hard work.

However, it's not just about the number of students and Scouts who have participated in our program but also the quality of their experience that we can be proud of. Kathy Goforth reports that she invited a troop of Brownie Scouts to roll wood mint gently between their fingers to feel the square stems, causing the flower whorls to twirl beautifully. One girl exclaimed, "The flowers look just like us when we hold hands and dance in a circle." Kathy G. anticipates these Brownies may always remember wood mint as "the dancing Brownie flower." Juliet Ryan-Davis recounts her adventure with Daisy Scouts, who were exploring plants, bugs, rocks, and wildlife signs at Edgewood. As a result of the trip, they affirmed enthusiastically that they wanted to learn more and more about nature as they grow up. In striking contrast to these idyllic moments was Kathy Dollard's experience with Scouts finding a dead, maggot-infested rodent. They were delightedly grossed out but professed it to be the most interesting thing on the hike. Kathy D. hopes this perfect example of decomposition and nutrient cycles impressed them as much as its goriness.

Experiences like these with kids on JE field trips provide clear evidence that our efforts to educate and inspire youngsters about the amazing natural world found at Edgewood are really paying off. Kudos to all our terrific docents for being so willing to volunteer their time, energy, and expertise to support Junior Explorers.

Such a high demand for field trips this spring has kept our docents stretched to their limit. We are always welcoming new docents. If YOU have an interest in leading children's walks, please contact Huey-Shin Yuan at JuniorExplorers-Coordinator@FriendsOfEdgewood.org to learn how you can observe Junior Explorers field trips and receive coaching on how to lead a walk.

Thank you notes from Wilkinson School:



Docent Class of 2017 Graduates

by Sandy Bernhard

Photo: 2017 Docent Class Graduation © 2017 Francisco Mesa

This year's docent class demonstrates the power of cross-pollination. Many of our trainees had led nature walks for other organizations, including Año Nuevo, Midpeninsula Regional Open Space District, Santa Clara Valley Open Space Authority, Filoli, CNPS, and the Sierra Club. Several trainees have professional experience in biosciences. Others had only the most important prerequisites for a Friends of Edgewood Wildflower Docent—a love of nature, a curiosity to learn more, and a willingness to share. (Does that describe you?)

Out on Edgewood's trails you'll find our newest docents: Emily Anderson, Fred Endicott, Lara Fox, Joerg Lohse, Bonnie MacCurdy, Perry McCarty, Lina Mesa, Leslie Mooi, Jan Rusnack, Stacy Tyrala, Michael Willemsen, and Christine Williams. The majority of them already led a walk this spring!

We added one new instructor this year, Drew Shell, who has taken up the Woodlands class previously taught by Ken Himes. Ken, who has been teaching in the Docent Training program since the late 1980s (back when CNPS led the Wildflower Walks and the park was not yet a preserve) continues to teach the Chaparral class.

Many thanks to all our dedicated instructors, who not only teach but inspire us with their passion for Edgewood: Kathy Korbholz (History), Paul Heiple (Geology), Ken Hickman (Wildlife), Mary Wilson (Morphology), Ken Himes (Chaparral), Drew Shell (Woodlands), Alf Fengler (Grasslands), and Trevlyn Williams (Leading Hikes).

This was my first year as Docent Training Coordinator, and it has been a joy to work with both students and instructors. Special thanks to Deanna Schiel and Trevlyn Williams—who came early and stayed late to help with set up, who swept on many of the hikes, and who are the best of colleagues in our continued efforts to improve an already great program! ♡

Edgewood Park Haikus

by Todd Reimche

Shhh - What do I hear
Running through the grass so fast
Western Fence Lizard

Can it really be
Edgewood Natural Preserve
So much to enjoy

Nocturnal creatures
Woodrats and some Great Horned Owls
Are you up all night

Edgewood County Park
A nature preserve for all
Loved by many Friends

Walking down a trail
Oaks and Bays and Lupine too
Best day is today

Haiku *by Jessica Reimche*

Hanging from the trees
Two organisms, one name
Symbiotic Life

Peter White (1955-2017)

by Dave Hershey

For the last years of his life, Peter White was a key member of the Edgewood Friday Weeders. His tall, thin figure, almost always in dark clothing, could be easily recognized across the grasslands even at a distance. Though he was interested in nature and science from the time he was a child in Delaware (with a typical youthful fascination with herps), he claimed to know little of plants when he joined the weeding group in 2009. Peter had his share of difficulties in life, but in some complex, perhaps unknowable way, he found in the activities and fellowship of the weeding group something that gave him great satisfaction and inspired great dedication. He was always the first to arrive each Friday morning and usually among the last to leave in the mid-afternoon. He was generous with his time, energy, intellect, curiosity, humor – really, his whole person. In 2016, the Friends of Edgewood named Peter its first "Habitat Hero" in recognition of his service to the Park and Preserve.

Peter held a degree in engineering, but his curiosity knew no bounds. His wide-ranging and long-running discussions with Paul Heiple and others during weeding sessions (not infrequently continuing from one session to the next) included every imaginable subject, though science and technology were a specialty. Peter was a rationalist and precise thinker who applied his knowledge and opinions to discussions while always remaining open to evidence and arguments that others raised. He absorbed an immense amount of information about plants over his time as a weeder. Other than the group naturalists, he was the most reliable source for plant identification and general information. He frequently supplied the first (or only) solutions for Alf Fengler's "mystery" photos of park phenomena. His extensive peregrinations during weeding sessions made Peter familiar with nearly every part of Edgewood and led to his discovery of a number of weed and native plant populations. New populations of *Orobanche fasciulata* and *Lessingia hololeuca* and the single example of the non-native *Euphorbia lathyris* were among his finds (the *Euphorbia* was immediately removed!). Besides these intellectual interests, he also served as one of the weeding group "mules" - members who carried the heavy sacks of weeds to the nearest access point for removal.

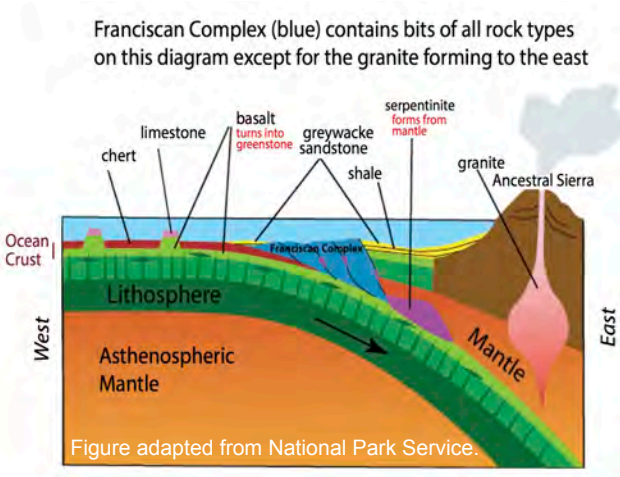
Peter's love of words and language and his gentle humor are evident in the names he coined for particular weeding areas. A spot where he was admonished by a ranger for weeding without a permit (it wasn't Friday morning!) he called "The Rock of Shame." An extremely weedy drainage was dubbed "Hell on Earth." And a tocalote-infested chaparral area on the south flank of the central ridge became "Tocalopolis." (Because of the aggressive weeding efforts advocated by Peter, the tocalote population in this spot is much reduced, and the numbers of several native plant species are increasing dramatically.) Interesting word origins, odd expressions, clever logical puzzles – all were sure to amuse him.

With his quiet, serious demeanor, keen intellect and imposing physical appearance, Peter could be an intimidating presence – until one engaged with him. His agreeable personality accounts for his group of very loyal friends, many of whom helped him manage his illness. He was particularly close to his sister, Drea, an artist, who, sadly, died not long before Peter was diagnosed with pancreatic cancer. The two of them had found an unfamiliar orchid during a walk near Ano Nuevo. After Drea's death and his own diagnosis, Peter returned and successfully relocated this plant, which turned out to be *Piperia michaelii*, a species previously unreported for the locale. It seems that re-finding and identifying this plant was a fulfilling link to his sister and his own ever-growing interest in native plants.

Peter faced his illness in his characteristically rational way, being very analytical about his treatments and his body's response, never complaining, but at the same time giving his friends full and unvarnished accounts in weekly status reports. His grace and courage during this time were exemplary. When his condition limited his physical activities, he entertained himself with musings about word origins, solving mathematical problems, and revisiting analytical math adventures from past years. His closest friends were with him when he died on March 3, 2017. The weeding group was eased into the reality of his absence by his reduced participation in the months before he died. But he will be truly missed by all of us who came to know him. Just over a week before he died, Peter expressed a strong wish to visit Edgewood for what would turn out to be the last time. Rather than walk a trail, he chose to gear up and go weeding, despite his weakness and pain. Peter would probably find it too serious an interpretation, but this demonstration of the intimate connection to and love of the land testifies to the power of the natural world in our lives. He would be content with the notion of being "recycled." ♻

"WRAPPING ONE'S HEAD" AROUND EDGEWOOD'S GEOLOGY

by Jake Lowenstern, Edgewood Docent and USGS Geologist



We all know that Edgewood's special native plants have adapted to their unique geological environment; yet it can be daunting to try to explain that geology, especially when the lexicon of rock terms contains so many unfamiliar words and concepts. This short article is intended to summarize, in plain language, the key points in Edgewood's geologic history, to give you a better understanding of the different rock types and where they formed.

To understand the geology of any location, let alone Edgewood, one must recognize that a landscape represents a long history of separate events that all contribute to what we see today. Most of Edgewood's rocks are part of what is known as the Franciscan Complex, formed in a subduction zone, late in the age of the dinosaurs (~150 to 66 million years ago). The Whiskey Hill Sandstone represents younger sediments formed about 40 million years ago, along the coast of California, and deposited on top of the older Franciscan rocks. Most recently, the rocks were faulted and tilted by activity along the San Andreas Fault as well as many other related smaller faults that can be found on the San Francisco Peninsula. The landforms evident today reflect this most recent activity rather than what was happening when the rocks first formed.

Subduction is the process by which ocean crust sinks underneath the continent (see figure above). The ocean crust is created by volcanism at the mid-ocean ridge. New crust is constantly forming, and it rides a conveyer belt that ultimately sinks below the continent during subduction. The basaltic lava, and indeed the ocean crust itself, is only a few miles thick. The basaltic crust and uppermost mantle make up the oceanic lithosphere, which is today called the Pacific Plate in our part of the world. The ocean crust is very young…the oldest oceanic rocks in the world are less than about 40 million years old. In contrast, some rocks on the continents are almost 100 times older! Continental rocks are less dense and more buoyant, and so they ride high when colliding with the dense ocean rocks. The Franciscan Complex represents some of the buoyant materials created near the continental margin. They were thrust up onto the continent when the now-defunct Farallon Plate was subducted beneath the North American Plate. The granites of the Sierra Nevada represent roots of volcanoes that were formed further east, when fluids released from the deeply subducted ocean rocks caused melting in the overlying mantle. The same thing is happening today further north of us, in the Cascades of northern California, Oregon, and Washington.

We can link Edgewood's rocks to different locations around the subduction zone. Greenstone represents the ocean basalts that were metamorphosed (subjected to elevated temperature and pressure). Blueschist is a similar rock, but it was subjected to higher pressures, as some of the basalt lavas were forced down to depths of 10-20 miles prior to getting thrust back to the surface. Graywacke and chert are sedimentary rocks forming in the oceans, the latter consisting of the bodies of tiny plankton called radiolaria. Similar rocks are forming today in submarine canyons like the one near Monterey Bay. And serpentinite represents ocean mantle, the rock that resides below the thin ocean crust.

Because greywacke and serpentinite are the two most common rocks at Edgewood, I'll spend a bit more time discussing each of them. The images of each were obtained by scanning standard rock thin sections at high resolution on a flatbed scanner. A rock thin section is made from a small rock billet trimmed with a diamond rock saw to a size of approximately 27 mm x 46 mm, or about 1 inch by 1.75 inches. The billet is then wafered, attached to a glass slide, and polished down to a thickness of 30 micrometers, or about 0.001 inch.

Once the sample is sufficiently thin, you can see through it!

Above, Franciscan Greywacke: Graywacke is a sedimentary rock that forms in the ocean as sediments accumulate through normal erosion of the continents and subsequent transport of sediment by rivers. Greywacke is similar to a sandstone and contains small fragments of the minerals quartz and feldspar as well as small rock particles. Most of the particles are about the same size as one or two widths of the thin section; that is, they are 25 to 50 microns in diameter. Similar rocks are also found in the Great Valley Sequence, where tens of thousands of feet of sediments were laid down in a shallow ocean basin to the east of the subduction zone but west of the Sierra Nevada volcanoes.

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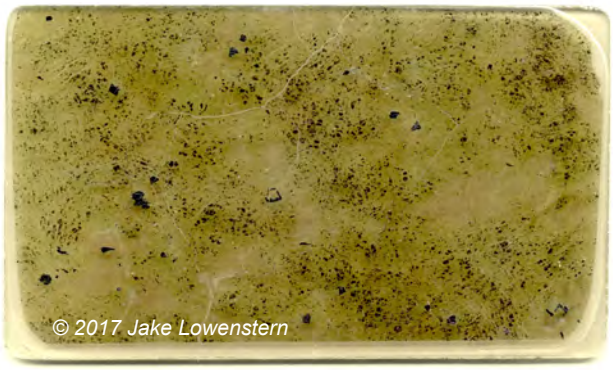
(Geology, continued from Page 6)



Above, Serpentinite: This dark green rock is formed when rock from the earth's mantle (>5 miles down beneath the ocean crust) is transported to the surface, cooled and hydrated (water is added), during and after the process of subduction. Original minerals such as olivine and pyroxene are transformed (metamorphosed) to serpentine minerals such as chrysotile, antigorite, and lizardite. These minerals form the dominant green parts of the rock sample and are composed of hydrated magnesium silicate, with very little else. Serpentine minerals are "asbestiform," meaning that they consist of fibers made of coiled sheets; in essence they are like rolled-up carpets. The visible dark/black minerals in the rock section are likely to be chromite or iron oxides. The earth's mantle consists almost entirely of the elements silicon, magnesium, and oxygen, with a little bit of iron. Trace metals include nickel and chromium. Serpentinite is thus very low in nutrients and makes poor soil.

Why is serpentinite the California state rock? Serpentinite forms by hydration of deep mantle rock. As hydration progresses, the rock becomes less dense, and more buoyant, allowing the pliable rock to work its way into faults and fissures. Thus, serpentinite is commonly found near faults, including the New Melones Fault, in the Mother Lode country where California earned its moniker "the Golden State." Though gold was never found within the serpentinite, the general association of the two likely engendered fondness for this strange, and relatively rare, green rock.

(Checkerspotters, continued from Page 2)

tippy toes as I go through it." Erika Ghose commented, "I think the best part of being a checkerspotter is getting the opportunity to help track the butterflies, and in turn help the researchers working on the project. It's so exciting when you're out and you see a checkerspot flying or resting on a flower. That's the best part. :)" Anita Stewart remarked, "It strikes me as a small miracle that it survived."

Anita Stewart concluded by saying, "What could be nicer in these troubled times than being out on the meadow and seeing the familiar Edgewood meadows and slopes blazing with goldfields and tidy tips, all bending in the breeze." It's a tough job, but somebody has to walk among the wildflowers and count butterflies - sigh.

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Bill and Jean Lane Education Center - Summer Hours and By Appointment*

Wed	9:30 am to 12:30 pm
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Sun	9:30 am to 4 pm

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UPCOMING EVENTS

Adopt-A-Highway
Next Sessions: 7/9, 8/5, 9/10
To volunteer or get more information, contact Dave Hershey at adoptahighway-coordinator@FriendsOfEdgewood.org

Second Sunday Bird Walks
6/11/17 - 8 AM @ Clarkia Trailhead
7/9/17 & 8/13/17 - 8 AM @ BJLEC

Third Saturday Nature Hikes
7/15/17 to 2/17/18; 10 AM @ BJLEC

For more event info, see
www.FriendsOfEdgewood.org/events

The Edgewood Explorer is published quarterly by the Friends of Edgewood Natural Preserve, a nonprofit organization dedicated to preserving and restoring Edgewood and to educating the public about its treasures. The newsletter is edited by Linda Leong and is supported by contributions from many Friends. For more information about the Friends of Edgewood, visit our website at www.FriendsOfEdgewood.org, mail us at PO Box 3422, Redwood City, CA 94064-3422, leave a message or fax us toll-free at (1-866) GO-EDGEWOOD (1-866-463-3439), or email us at info@FriendsOfEdgewood.org.