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TORREYANA

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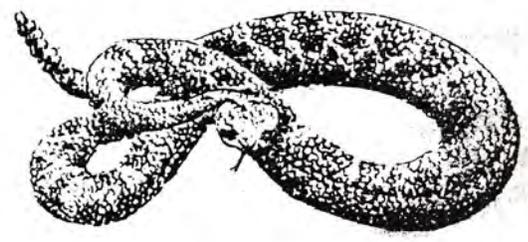
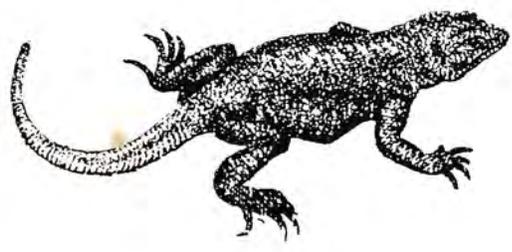
Next Docent Society Meeting

SATURDAY, NOVEMBER 16, 9 A.M. AT THE LODGE

Our special guest for the November meeting will be Dick Schwenkmeyer, who will present an illustrated slide talk on herpetology.

One of the best known general naturalists in the San Diego area, Dick received his B.S. and M.S. degrees from San Diego State University and is now Professor of Biology at Mesa College. He was formerly Chairman of the Education Department and a member of the Herpetology Department at the Natural History Museum. He has led numerous exploration and study trips to Baja California, and at one time he assisted Laurence Klauber in a study of rattlesnakes.

This is sure to be an interesting meeting. Be there!



* * * * *

'TIS THE MONTH BEFORE CHRISTMAS

So, don't forget to watch for the December
TORREYANA with details of the Docent
Christmas Party!

Secretary's Notes by Isabel Buechler
(substituting for Betty Andrews)



The October 19 meeting of the Torrey Pines Docent Society was held at the Lodge and was attended by about 30 members, visitors, and park staff. Vice-president Judy Carlstrom presided.

Judy presented a gift from the docents to Ranger Bob Wohl for his baby daughter Shayna--a cuddly "Smokey the Bear" teddy bear and a darling overall outfit. Bob reported that, after the initial weight loss of a few ounces, Shayna is becoming a "butter ball."

[FINAL CORRECTION: Last month's front-page correction of the original birth announcement was also incorrect. Much to the editor's dismay, the birth date was given as September 24, but the correct date is AUGUST 24. Again, my apologies to the Wohls.]

New badges, which had been ordered by Bob Amann, were displayed and distributed to members. Each full docent is entitled to one free badge; additional badges are \$2.00.

Judy Carlstrom described the botanical witch hunt for which she and Judy Schulman had prepared and hidden clues before the meeting. Docents were divided into two teams; Judy C. accompanied one team on the Guy Fleming trail while Judy S. went with the other on the Parry Grove trail.

The Parry Grove team arrived back at the Lodge first (perhaps because several of their clues had completely disappeared from the trail?). Both teams enjoyed the refreshments provided by Judy Schulman and

Getting to Know You by Grace Martin



Having grown up on the East Coast with the opportunity to go to the beach frequently, it was natural to select a community such as Encinitas when moving to California in 1956. My love for the area developed immediately and has grown as the years have gone by.

Although French had been my major in college the first time around, I took the opportunity of returning to major in anthropology, particularly cultural anthropology. Most recently I was an instructor in the community college with credentials in Office Services and Related Technologies as well as Anthropology and Sociology. With my many interests and varied employment over the years, I consider myself a generalist in a world of specialists.

When retirement became possible, I looked forward to including, among other activities, serving in the Torrey Pines Reserve as I had become aware of the Docent Society two years earlier but at that time could not devote sufficient time to it. Consequently, it was with great delight that I learned of this year's training session for new docents and feel very privileged to be a part of the organization.

Notes from the Naturalist by Hank Nicol

BIG EYES AND LITTLE CATS

In the Caucasus the Russians have a telescope with a mirror almost 20 feet across. At Mount Hopkins in Arizona there is a telescope with 248 independently mounted mirrors each two feet across. It detects the faint bluish light emitted when cosmic rays enter Earth's atmosphere. The same mountain has a telescope made up of six mirrors (Air Force surplus). Each mirror is six feet across. They all focus on a single spot. This rig is called the MMT for Multiple Mirror Telescope. Only its computer can keep things in order. There are telescopes with mirrors segmented like slices of apple pie. Then there is, abuilding, the "Eye of Texas," which is designed to be the biggest single-mirror telescope anywhere. Trust the Texans to reach for the superlative. Even so, our 200-inch neighbor on Mount Palomar is still mighty impressive. Ranger George Kowatch of Palomar Mountain State Park cooked up a behind-the-scenes tour of the observatory. I'm more than just curious, and I'd recently survived a survey course in astronomy. I headed for the mountain.

The group that gathered all had something to do with State Parks: rangers, maintenance people, park aides, volunteers, docents, Bob and Marge Amann of Torrey Pines, one naturalist, and one naturalist's son, Surat Nicol by name.

Somewhere I read that science is no more nor less than extremely careful measurement. Astronomers measure angles in arc seconds. A second is a 60th of a minute, which is a 60th of a degree, which is a 360th of a circle. That's careful! Nowadays computer-enhanced images are made much faster than exposures on film. A chip the size of a postage stamp replaces Mr. Kodak's product. An astronomer doesn't have to track stars all night. Seconds, or minutes (the time kind, not the angle kind), will do. Even so, things have to move smoothly without jerky starts or slam-bang stops. The giant scope and the dome move together on many, many wheels around a circular railroad track. Our guide started the dome on its slow spin. I took two round trips. If I hadn't been standing on the outside deck, I'm sure I wouldn't have known it had moved. Careful measurement requires extraordinary cleanliness. The cleaning crew would put the Navy to shame. I've never seen a restaurant so clean. I'll go further than that. I've never seen a hog farm so clean! The telescope turns on a huge bearing shaped something like a horseshoe. The opening in the horseshoe is the slot where the telescope goes up and down. The "body" of the telescope is an open cage. It doesn't have a tube like your Bush and Limb special or your NikanoFlex F XYZ. It doesn't need a tube because the primary receiver is the large mirror down at the base and well inside the dome, because the telescope is used only at night, and because any cars which might shine headlights around are banned at night. The open structure also allows the temperature of the telescope to adjust more quickly to that of the atmosphere after the sun goes down. An astronomer doesn't want his instrument stretching, shrinking, or creaking in the middle of an exposure. This has been a big problem with the giant Russian telescope. It's mirror is so heavy and takes so long to adjust that, on most nights, its usable time is short.

The 200-inch telescope is of the Cassegrain type. This means, among other things, that it has a 40-inch hole smack in the middle of

the main mirror. The rays of light, or, rather, the photons, hit the main mirror, bounce up to a secondary mirror, and then go back down through the hole to the eyepiece, camera, spectroscope, or whatever. The main mirror has a parabolic surface but, since it's such a small slice of a very large parabola, it would have looked pretty flat if we could have seen it. There's a concrete replica of the mirror outside to give you the idea.

The Palomar Observatory was a product of the Great Depression. Some people wanted to make the 200-inch mirror out of quartz. That would have been too expensive if not impossible. A new product had been developed. On March 25, 1934, the Corning Glass Company cast a mirror in Pyrex. Some ceramic cores which were to form air spaces to lighten the mirror floated into the molten glass. On December 2 another try was made. This time everything worked. The casting was held in an annealing oven and cooled slowly over a full year. It was taken out on December 8, 1935. The mirror rough was shipped to Pasadena in a special railway car. The proprietors, the people at the California Institute of Technology, had some polishing to do. They used 31 tons of abrasives to remove $5\frac{1}{4}$ tons of glass. They lightened the disc to only $14\frac{1}{2}$ tons. The dome was finished in 1938. The mirror still had a way to go. Then a problem came up. It is known as World War II. The mirror was finally finished to a tolerance of one twelve-thousandth of an inch. More careful measurement.

The mirror was sent on a specially built truck up a specially built road. It was delivered during a storm to a group of very nervous astronomers. The telescope was put together and tested. It was dedicated on June 3, 1948. The first photographs were made in January 1949. While the telescope was still a new toy, it was pointed at the moon and at the Red Spot on Jupiter. But the main point of any giant telescope is not magnification but light-gathering power. It would be a waste to use one one other than on objects at the very limits of visibility. The Palomar 200-incher can gather light up to 360,000 times better than the human eye. It can penetrate two billion light years into space. For those of you who speak Camera, the telescope can be used at focal lengths and apertures of 55 feet at F:3.3, 267 feet at F:16, and 500 feet at F:30. This depends on which of several secondary mirrors is used and on whether the ocular/camera/computer-receiver is placed at the base or up in front of the secondary mirrors.

Palomar Observatory has four domes and five telescopes. Besides the big one in the big dome, those of most fame are the Schmidt cameras. Their mirrors are based on the circle rather than the parabola. They are easier to grind that way. The telescope makers can get away with this because of a correcting objective lens up top. The well-known Questar is a small Schmidt. One Schmidt camera has a 40-inch mirror. The other, newer one has a 60-inch mirror. They are comparatively wide-angled instruments which are used in sky surveys. While we were visiting, the larger one was giving some of the staff fits. They had just resilvered it (with aluminum, not silver), and it was giving a fuzzy image. They were cleaning it off and starting over. It is understandable that they didn't want tourists hanging around.

The observatory is not right up on top of the mountain. Palomar doesn't have a proper peak anyway. The domes are all down in a dip. This may shield the observatory a bit from the wind. More importantly, it helps block off the lights of San Diego. Our guide expressed the

opinion that the city's new "bug light" system is helping "the seeing" to hold its own. No way is there going to be improvement.

There was much, much more. The various computer rooms, the dome's aluminum siding (the inside surface is as smooth and shiny as the day it was built), the perfect welds on the exterior steel. Of course we didn't see it all, but I'm well pleased that we saw far more than the average visitor.

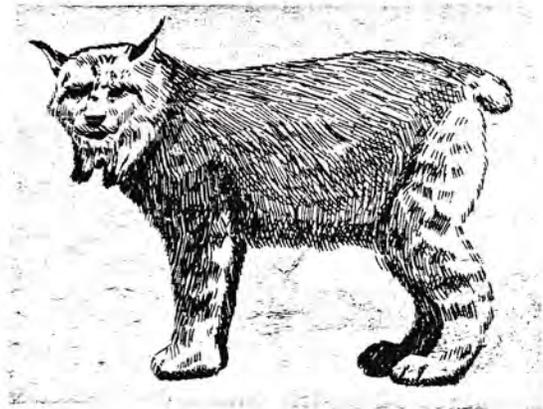
After taking the tour of Palomar Mountain Observatory, I made another tour. My 17 year old son, Surat, and I hiked one of the trails in Palomar Mountain State Park. We didn't know where we were headed. We had no map. We misread the sign. It turned out to be more fun that way.

I was plodding along. I didn't know where I was going. I didn't know where I'd been. My lean, limber, sharp-eyed offspring was a few yards ahead. Suddenly he stage whispered, "Look at the bobcat!"

I had a hard time focusing in the spotty light. Finally I saw the bobcat, or bobkitten. It looked to be of the current year's crop. Then a second one dropped out of a tree. Together they scampered up the trail. I thought how well a spotted cat was camouflaged in speckled light filtering through the canopy. I made a stupid remark. "They could be hiding ten feet from the trail and we would never see them."

Surat pointed. Not ten feet away, but maybe twenty, there was mamma bobcat. My camera was stuffed in its bag behind my back. I made a very slow, very careful draw. The cat retreated. I raised the camera. The cat retreated some more. I used full zoom, all 250 millimeters of it. I wished for something better. A 200-inch telescope? I snapped the shutter..., twice. But who cares that the pictures were taken from too far away in very bad light? I'd been at Torrey Pines for seven years before I'd seen a bobcat.

This was only my second visit to Palomar, and I'd seen three!

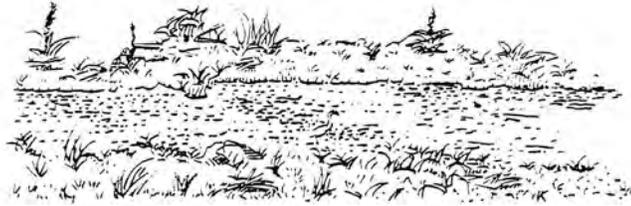


Docent Doings

WORKSHOP FOR VOLUNTEERS by Judy Schulman

On October 5th, the League of California State Park Non-Profit Organizations held a Fall Workshop at Old Town San Diego State Historic Park. Subjects discussed included insurance for volunteers, how to spend the organization's money in accordance with its by-laws, and expenditures and purchasing.

The 60 volunteers attending the meeting represented 10 different docent groups in the Southern California region. Torrey Pines Docent Society members in attendance were Bob and Marge Amann (who also represented Cuyamaca), Isabel Buechler, Millicent Horger, Janet Humphreys, and Judy Schulman. As editor of the League's newsletter, Judy represents the docents in the state-wide League.



Los Penasquitos Lagoon Foundation
P.O. Box 866 Cardiff, CA 92007

LOS PENASQUITOS LAGOON FOUNDATION REPORT by Jessie La Grange

The annual meeting was held on October 14, 1985.

Chairman Joan Jackson presented the annual summary and a statement of goals for the coming year. The latter include implementation of the first phase of the Lagoon Enhancement Plan with lagoon opening and monitoring as well as stream gauge and sedimentation monitoring.

Board members, as approved at this time, are: Joan Jackson, Chairman; Bob Conway, Treasurer; Don Rose, SDG&E representative; Steve Zimmer, developer; Jim Casey, City of San Diego; Bill Fait, California Department of Parks and Recreation; and Dwight Worden, Karen Watling, and Jessie La Grange, citizens.

An update of the SDG&E land acquisition was presented by Bill Fait and Don Rose. The Public Hearing of this issue has been scheduled by the State Department of Parks and Recreation for November 14 at 7:00 p.m. at Earl Warren Jr. High School, Solana Beach. Attendance at this hearing, as well as letters of support for the proposed wetlands and lagoon acquisition, are important individual and community actions at this time. State protection and stewardship of wetlands within the Torrey Pines Reserve should be extended in order to maintain the integrity of Los Penasquitos Lagoon.

Letters may be addressed to:

William Briner
Director of Parks and Recreation
P.O. Box 2390
Sacramento, CA 95811

DOUBLE-CRESTED CORMORANTS



If we see, flying over the waves, a long string of dusky birds, larger than Ducks, the chances are they are Cormorants. Some people mistake their single-file flocks for Geese, but Geese are noisy, Cormorants silent. They are blacker than Loons, especially the adults, which are black below as well as above. At close range they show an orange-yellow throat pouch. On the water they swim low and can be told from Loons by their blacker look, snakier necks and the way they point their bills upwards at an angle.

LAGOON NOTES by Jack Bradshaw

Although low growing and lacking in brightly colored flowers, saltmarsh plants illustrate some marvelous examples of ecological adaptation. Unlike their upland Sage-scrub and Chaparral relatives which cannot survive if the soil salinities rise above 5 o/oo, the salt-marsh plants thrive in full strength seawater and can even survive in salinities of up to 80 o/oo. This is truly remarkable when we recall that seawater has a salinity of 34 o/oo.

Saltwater affects plants in two basic ways. First there is the direct effect of excessive concentrations of specific salt-ions upon the cell's metabolism. Although chloride is essential for all plants using C_4 photosynthesis (e.g. Cordgrass and Saltgrass), seawater contains about a thousand times the required amounts. Elevated levels of sodium and chloride as found in seawater are believed to induce nutrient deficiencies and even direct toxicity. The second effect caused by seawater is osmotic. Water moves across membranes from a less concentrated salt solution to a more concentrated one or looking at it the other way, from a higher water concentration (potential) to one of lower water potential. With terrestrial vegetation the cell sap is usually more concentrated than the surrounding soil water. That is, the water potential is higher in the soil than in the cell and water will flow into the plant until equilization is reached. But when the outside water is loaded with salt, as in a salt marsh, the water potential is lower than in the cell sap and osmosis is reversed. Most land plants will wilt and die when water is lost to the soil rather than taking it in. In effect, a salt marsh is a chemical desert with water problems more severe than a true climatic desert. Saltmarsh plants have the ability to selectively concentrate certain salt ions within their cells and so maintain the imbalance necessary for osmosis.

There are at least four ways in which saltmarsh plants have adapted to the high salt environment: salt-ion selection; salt-ion extrusion; salt-ion accumulation; and salt-ion dilution. Different species may utilize one or more of these strategies simultaneously and vary their relative importance depending upon age and environmental conditions.

Salt-ion selection has been shown for Arrowgrass, Pickleweed and Seablite. In these species optimum uptake of potassium and growth occurred only when both sodium and potassium in the external medium were high. This suggests that for these forms seawater is an absolute necessity for life.

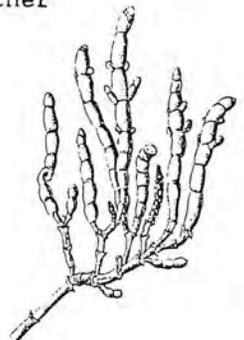
Salt-ion extrusion or excretion has been demonstrated by the evolution of special salt-glands in Cordgrass, Saltgrass and Sea lavender. In Sea Lavender, chloride (Cl^-) is actively pumped out of the gland cells onto the leaf surface. The electrical gradient produced across the membrane will then passively drag the positive ions sodium (Na^+) and potassium (K^+) across the membrane. The salt pump of Cordgrass is structurally quite different and here sodium (Na^+) appears to be the actively extruded ion.

No evidence of salt glands has been found in other prominent saltmarsh genera. In species both with and without salt glands a significant method of salt loss may occur by the accumulation of salt ions in older leaves, stems and roots and then by shedding them along with the stored salts.

Salt-ion dilution caused by increased water content with succulence is shown by Pickleweed, Saltwort, Jaumea and Seablite. Interestingly this same device of storing water in tissue is also employed by cactus and other succulent desert plants.

(Next time: Plant adaptations to water-logged conditions)

Pickleweed, *Salicornia virginica*, a characteristic plant of the lagoon



TORREY PINES DOCENT SOCIETY

President: Glenn Dunham

Deadline for Torreyana copy is the 25th of each month.

Send contributions to:

Isabel Buechler, Editor

3702 Oleander Drive

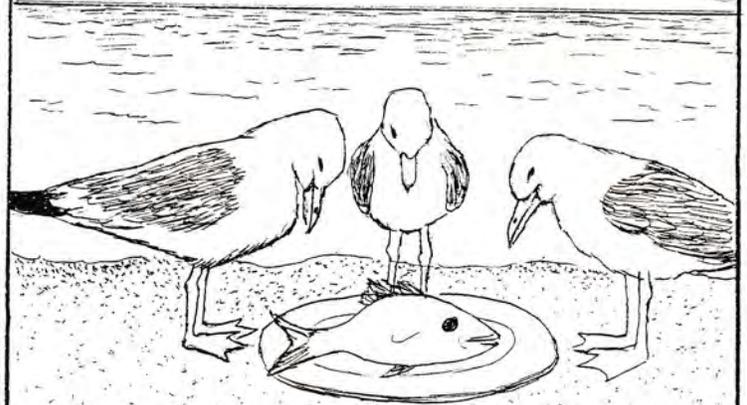
San Diego, CA 92106

Phone: 222-7016



HAPPY THANKSGIVING TO ALL

Torrey Titters



But most of all oh great Spirit.....
on this Thanksgiving day, we are
especially thankful that you saw
fit to make us seagulls.....
and not ..TURKEYS !!!

— GANPURTUM —

Torrey Pines Docent Society
c/o Torrey Pines State Reserve
268C Carlsbad Boulevard
Carlsbad, CA 92008

FOR

